

PUBLIC VERSION

Final Decision on Proposed
Revisions to the Access
Arrangement for the Goldfields Gas
Pipeline

Submitted by Goldfields Gas Transmission Pty Ltd

30 June 2016

As amended on 21 July 2016

Economic Regulation Authority

WESTERN AUSTRALIA

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Contents

Final Decision	1	
Background	1	
Authority Approved Access Arrangement	4	
Overview	5	
Key Points of this Final Decision	6	
Decision Making Framework	9	
Regulatory Framework	9	
Content of an Access Arrangement	12	
Key Dates and Identification of the Pipeline	13	
Pipeline Services	17	
Total Revenue	44	
Revenue Building Blocks	44	
Demand Forecast	50	
Key Performance Indicators	65	
Operating Expenditure	69	
Opening Capital Base	97	
Projected Capital Base	120	
Rate of Return	143	
Gamma	300	
Depreciation	344	
Taxation	390	
Allocation of Total Revenue between Reference Services and Other Services	404	
Reference Tariffs	432	
Reference Tariff Variation Mechanism	458	
Other Access Arrangement Provisions	493	
Requests for Access and Queuing Policy	493	
Extensions and Expansion Requirements	508	
Capacity Trading Requirements	523	
Trigger Events	537	
Terms and Conditions Applying to Firm Services	540	
Appendices	549	
Appendix 1	Summary of Required Amendments	550
Appendix 2	Abbreviations	558
Appendix 3	Automatic updating formulas for the return on debt	562
Appendix 4	International Bond Sample	597
Appendix 5	Depreciation methods compared	600
Appendix 6	Authority's required amendments to GGT's revised Terms and Conditions applying to the firm service.	605
Appendix 7	Public Reference Tariff Model	675

Tables

Table 1	Comparison of GGT's Revised Proposal and the Authority's Final Decision	8
Table 2	Comparison of GGT's Revised Proposal Tariffs and the Authority's Final Decision Tariffs (Nominal)	8
Table 3	GGT's Proposed Total Revenue (Nominal) Building Blocks (AA3)	45
Table 4	Authority's Draft Decision Approved Total Revenue (Nominal) Building Blocks (AA3)	47
Table 5	GGT's Revised Proposed Total Revenue (Nominal) Building Blocks (AA3)	48
Table 6	Authority's Final Decision Approved Total Revenue (Nominal) Building Blocks (AA3)	50
Table 7	Minimum, maximum and average historic demand by category (TJ/d)	51
Table 8	Number of receipt points, delivery points and users	52
Table 9	Forecast capacity and throughput 2015-2019	52
Table 10	GGT's pipeline capacity, forecast contracted capacity (average and maximum) and throughput for the covered pipeline (TJ/day)	55
Table 11	GGP (Covered Pipeline): changes in capacity since August 2014	58
Table 12	GGP's covered pipeline capacity using different HHV's	63
Table 13	Authority's approved pipeline capacity, forecast contracted capacity (average and maximum) and throughput for the GGP covered pipeline (TJ/day)	65
Table 14	GGT's Proposed Forecast Operating Expenditure (AA3) by Category	72
Table 15	Authority's Draft Decision Approved Operating Expenditure Forecast by Category (AA3)	73
Table 16	GGT's Proposed Revised Forecast Operating Expenditure (AA3) by Category	76
Table 17	GGT's Proposed Revised Forecast Operating Expenditure (AA3) by Category	76
Table 18	Authority Approved APA Operations Expenditure Forecast (AA3)	87
Table 19	Authority Approved GGT Operations Expenditure Forecast (AA3) under rules 91 and 74 of the NGR	89
Table 20	Authority Approved APA Commercial Operations Expenditure Forecast (AA3) under rules 91 and 74 of the NGR	92
Table 21	Authority Approved Corporate cost Expenditure Forecast (AA3) under rules 91 and 74 of the NGR	95
Table 22	Authority's Final Decision Approved Operating Expenditure (AA3)	96
Table 23	Authority's Final Decision Approved Operating Expenditure (AA3)	96
Table 24	GGT's Initial Proposal Proposed Opening Capital Base for AA3	100
Table 25	GGT's Initial Proposal Proposed Conforming Capital Expenditure 2010-2014	100
Table 26	Authority's Draft Decision Approved Conforming Capital Expenditure 2010-2014	102
Table 27	Authority's Draft Decision Approved Opening Capital Base at 1 January 2015 for reference services only	102
Table 28	GGT's Revised Proposal Proposed Conforming Capital Expenditure 2010-2014	103
Table 29	GGT's Revised Proposal Opening Capital Base	104
Table 30	Authority's Final Decision Approved Conforming Capital Expenditure on Pipeline and Laterals 2010-2014	108

Table 31	GGT's Revised Proposal Capital Expenditure on Compressor Stations 2010-2014	109
Table 32	Authority's Final Decision Approved Capital Conforming Capital Expenditure on Compressor Stations 2010-2014	111
Table 33	Authority's Final Decision Approved Conforming Capital Expenditure for Receipt and Delivery Points 2010-2014	112
Table 34	GGT's Revised Proposal Capital Expenditure on SCADA and Communications 2010-2014	112
Table 35	Authority's Final Decision Approved Conforming Capital Expenditure for SCADA and Communications 2010-2014	113
Table 36	GGT's Revised Proposal Capital Expenditure on Maintenance Bases and Depots for 2010-2014	114
Table 37	Authority's Final Decision Approved Conforming Capital Expenditure for Maintenance Bases and Depots 2010-2014	115
Table 38	GGT's Revised Proposal Capital Expenditure on Other Assets 2010-2014	116
Table 39	Authority's Final Decision Approved Conforming Capital Expenditure for Other Assets 2010-2014	117
Table 40	GGT's Revised Proposal Depreciation 2010-2014	118
Table 41	Authority Approved Depreciation (AA2)	118
Table 42	Authority's Final Decision Approved Conforming Capital Expenditure 2010-2014	119
Table 43	Authority's Final Decision Approved Opening Capital Base at 1 January 2015	120
Table 44	GGT's Initial Proposal Proposed Conforming Capital Expenditure (AA3)	122
Table 45	Authority's Draft Decision Approved Capital Expenditure (AA3)	123
Table 46	Authority's Draft Decision Approved Projected Capital Base (AA3)	123
Table 47	GGT's Revised Proposal Proposed Conforming Capital Expenditure (AA3)	124
Table 48	Authority's Approved Final Decision Conforming Capital Expenditure for Pipelines and Laterals (AA3)	130
Table 49	Authority's Approved Final Decision Conforming Capital Expenditure for Main Line Valve and Scraper Stations (AA3)	131
Table 50	Authority's Final Decision Approved Conforming Capital Expenditure for Compressor Stations (AA3)	133
Table 51	Authority's Final Decision Approved Conforming Capital Expenditure for Receipt and Delivery Points (AA3)	135
Table 52	Authority's Approved Final Decision Conforming Capital Expenditure for SCADA and Communications (AA3)	136
Table 53	Authority's Approved Final Decision Conforming Capital Expenditure for Cathodic Protection (AA3)	137
Table 54	Authority's Approved Final Decision Conforming Capital Expenditure for Maintenances Bases and Depots (AA3)	138
Table 55	Authority's Approved Final Decision Conforming Capital Expenditure for Other Assets (AA3)	139
Table 56	Authority's Final Decision Approved Real Forecast Conforming Capital Expenditure (AA3)	140
Table 57	Authority's Final Decision Approved Nominal Forecast Conforming Capital Expenditure (AA3)	140

Table 58	GGT's Revised Proposal Depreciation (AA3)	141
Table 59	Authority's Final Decision Approved Depreciation (AA3)	142
Table 60	Authority's Final Decision Approved Projected Capital Base (AA3)	142
Table 61	Market EBIT Growth and Correlation with GGT/Mining EBIT	192
Table 62	Growth GGT EBIT Growth and Correlation with Mining EBIT Growth	193
Table 63	Equity Beta Estimates over 5 years to 2014	194
Table 64	Relative shares of GGT end user demand	196
Table 65	Companies matching equity screen with relevant data	202
Table 66	GGT Actual versus Forecast AA2 Demand and Revenue Adjustment Factors	203
Table 67	GGT AA2 Further Final Decision Accounts	203
Table 68	GGT Determinants of Systematic Risk	203
Table 69	Average Operating Margin	204
Table 70	Coefficient of Variation in Operating Margin	204
Table 71	5 Year Degree of Operating Leverage (Absolute Value)	204
Table 72	5 Year Average Degree of Financial Leverage	205
Table 73	Degree of Total Leverage	205
Table 74	Coefficient of Variation in Return on Equity	205
Table 75	Equity Beta Estimates over five years to 2016	206
Table 76	BHM and NERA long-run historic nominal and real annual average market returns for 1883 to 2015 (excluding imputation credits)	214
Table 77	Average annual imputation credit yields and grossed up arithmetic average returns (nominal, consistent with the estimate of gamma of 0.4)	216
Table 78	Recent estimates of the MRP using the DGM	217
Table 79	Estimates of bill and bond-based 5 year grossed up nominal average Market Risk Premiums	222
Table 80	Average annual imputation credit yields and grossed up arithmetic average returns (nominal, consistent with the estimate of gamma of 0.4)	233
Table 81	Other regulators' recent MRP decisions	241
Table 82	Australian corporate bonds denominated in various currencies	264
Table 83	Bonds in Draft Decision Sample with Country of Risk other than Australia	265
Table 84	Nelson-Siegel-Curve Fitted Parameters and Constraints	270
Table 85	Nelson-Siegel-Svensson Curve Fitted Parameters and Constraints	270
Table 86	Estimated effective annual spot yields at each tenor for the cost of debt as at 31 May 2016	271
Table 87	Regression of interpolated estimates on simple average	274
Table 88	Reserve Bank of Australia versus GGT Final Decision Sample by Tenor May 2016	278
Table 89	Hedging transactions costs for four legs, BBB credit rating	295
Table 90	Rate of return for the Final Decision	298
Table 91	Summary of views on the distribution rate for listed equity	340
Table 92	Estimates of the value of imputation credits	342
Table 93:	GGT's Proposed Depreciation (AA3)	347

Table 94	Authority's Draft Decision Approved Forecast Depreciation	349
Table 95	GGT's Revised Proposed Forecast Depreciation	351
Table 96	Asset lives for the derivation of forecast depreciation	389
Table 97	Authority's Final Decision Approved Forecast Depreciation	389
Table 98	GGT's Proposed Estimated Cost of Corporate Income Tax (AA3)	392
Authority Approved Calculation of Estimated Cost of Corporate Income Tax (AA3)	Authority's approved Tax Asset lives	395
Table 100	Authority Approved Estimated Cost of Corporate Income Tax (AA3)	396
Table 101	GGT's Proposed Revised Estimated Cost of Corporate Income Tax (AA3)	397
Table 102	GGT's proposed cost of debt financing for taxation purposes	400
Table 103	Authority's Final Decision on cost of debt financing for taxation purposes	401
Table 104	Authority Approved Calculation of Estimated Cost of Corporate Income Tax (AA3)	402
Table 105	Authority Approved Estimated Cost of Corporate Income Tax (AA3)	402
Table 106	Authority Approved Estimated Closing Tax Asset Base (AA3)	403
Table 107	Initial Proposal Relocated Reference Tariff Clauses	433
Table 108	GGT Proposed Allocation of Total Revenue to Reference Tariff Components	434
Table 109	GGT's Initial Proposal Reference Tariff (Nominal \$)	435
Table 110	Authority's Draft Decision Reference Tariff (Nominal \$)	437
Table 111	GGT's Revised Proposal Reference Tariff (Nominal \$)	438
Table 112	Authority's Approved Final Decision Reference Tariff (Nominal \$)	457
Table 113	Authority's Approved Final Decision Reference Services Revenue (AA3)	458
Table 114	Bond Yield Approach Search Criteria – Bloomberg Search Structure	566
Table 115	Appending Bloomberg Bond Tickers for use in Pricing Formulas– Microsoft Excel Template Structure	568
Table 116	Pricing Waterfall Set in Bloomberg for Retrieving Bond Price Data	568
Table 117	Formula to Retrieve Bond Prices and Attributes– Microsoft Excel Template Structure	572
Table 118	Formula for Converting to Hedged Australian Dollar Equivalent Yields– Microsoft Excel Template Structure (continued on from Table 117)	573
Table 119	Averaging Yields over the Averaging Period - Microsoft Excel Template Structure	574
Table 120	Gaussian Kernel Point Estimation Methodology – Microsoft Excel Template Structure	575
Table 121	Linear Interpolation and Extrapolation of Gaussian Kernel Estimates – Microsoft Excel Template Structure	577
Table 122	Nelson Siegel Decay Factor Estimation – Microsoft Excel Template Structure	578
Table 123	Nelson Siegel Starting Value Regression – Microsoft Excel Template Structure	581
Table 124	Nelson Siegel Curve Fitting Methodology – Microsoft Excel Template Structure	582
Table 125	Nelson Siegel Yield Estimation Methodology – Microsoft Excel Template Structure	584
Table 126	Annualising Semi-Annual Bond Yields - Microsoft Excel Template Structure	584

Table 127	Nelson Siegel Svensson Starting Value Regression – Microsoft Excel Template Structure	586
Table 128	Nelson Siegel Svensson Yield Curve Estimation Methodology – Microsoft Excel Template Structure	588
Table 129	Nelson Siegel Svensson Yield Estimation Methodology – Microsoft Excel Template Structure	590
Table 130	Annualising Semi-Annual Bond Yields - Microsoft Excel Template Structure	590
Table 131	Debt Risk Premium Calculation - Microsoft Excel Template Structure	591
Table 132	Contingency approaches to data related issues	592
Table 133	Sample of Bonds with Australia as Country of Risk as at 31 May 2016	597

Figures

Figure 1	GGT Proposed Total Revenue Building Blocks (AA3)	45
Figure 2	Nickel Price Trend 1960-2016	59
Figure 3	Gold Price Trend 1960-2016	60
Figure 4	Iron Ore Price Trend 1960-2016	61
Figure 5	Approach to estimating the return on equity	177
Figure 6	GGT EBIT Growth versus Market and Mining EBIT Growth	192
Figure 7	Dividend Growth Model implied return on equity: All Ordinaries Index (monthly, grossed up)	219
Figure 8	ASX All Ordinaries dividend yields	224
Figure 9	All Ordinaries Index and Implied Dividend	225
Figure 10	5 Year interest rate swap versus 5 year default spread	226
Figure 11	Implied Volatility (ASX200 VIX) Over Time	227
Figure 12	Implied Volatility (ASX200 VIX): 2 January 2008 to 31 May 2016	228
Figure 13	Equity risk premium from relevant valuation reports over time	238
Figure 14	5 year swap spread 2000-2013	257
Figure 15	Estimated Effective Annual Spot Yield Curves for the Cost of Debt for the Averaging Period up to 31 May 2016	269
Figure 16	Reserve Bank of Australia F03 Australian Corporate Bond Spreads and Yields Disclaimer	272
Figure 17	Linear Interpolation versus Simple Average of RBA End of Month Estimates	273
Figure 18	Conceptual distance between linear interpolation and simple average of RBA end of month estimates	275
Figure 19	Effective Tenor of Reserve Bank of Australia 10 year Spread	276
Figure 20	Extrapolating 10 year Estimates from Reserve Bank of Australia Data	277
Figure 21	Comparison of BBB trailing average DRP and the regulated rate	285
Figure 22	Estimates from alternative historical DRP data series (spread to CGS)	286
Figure 23	Share of domestic ownership in listed and unlisted equities – excluding government ownership and refined to account for use of imputation credits	320
Figure 24	Iron Ore Price Trend – Annual Average Prices 1960-2016	367
Figure 25	Nickel Price Trend – Annual Average Prices 1960-2016	367
Figure 26	Gold Price Trend – Annual Average Prices 1960-2016	368
Figure 27	Unit reference tariff under HCA and CCA – 2015 to 2030	372
Figure 28	Moving from HCA to CCA depreciation	385
Figure 29	Bloomberg ‘SRCH’ Function Populated with Sample Selection Criteria.	567
Figure 30	Security Pricing Classes List	569
Figure 31	Pricing Source Window Default Setting - US Dollar Corporate Bond Example	570
Figure 32	Nelson Siegel Decay Factor Estimation – Microsoft Excel Solver Settings	579
Figure 33	Microsoft Excel GRG Nonlinear Solver Settings	579
Figure 34	Nelson Siegel Starting Value Regression – Microsoft Excel Regression Settings	581

Figure 35	Nelson Siegel Parameter Constraints - Excel Solver Settings	583
Figure 36	Nelson Siegel Svensson Starting Value Regression – Microsoft Excel Regression Settings	587
Figure 37	Nelson Siegel Svensson Parameter Constraints – Microsoft Excel Solver Settings	589
Figure 38	HoustonKemp’s nominal depreciation heuristic	600
Figure 39	HoustonKemp’s nominal capital related revenues heuristic	600
Figure 40	Illustrative closing Asset Value under HCA and CCA (real \$)	602
Figure 41	Illustrative depreciation under HCA and CCA (real \$)	603
Figure 42	Illustrative total revenue under HCA and CCA (real \$)	604

Final Decision

Background

1. On 15 August 2014, Goldfields Gas Transmission Pty Ltd (**GGT**) submitted to the Economic Regulation Authority (**Authority**) its proposed revisions to the access arrangement for the Goldfields Gas Pipeline (**GGP**). The proposed revised access arrangement covers the period 1 January 2015 to 31 December 2019 (herein referred to as **AA3**, or the third access arrangement period). The proposed revised access arrangement is applicable to the covered pipeline, which excludes uncovered expansions of the GGP.
2. The role of the Authority is to approve or not approve the proposed access arrangement revisions in accordance with the requirements of the National Gas Law (**NGL**) and National Gas Rules (**NGR**) as implemented in Western Australia by the National Gas Access (WA) Act 2009 (**NGL(WA)**). GGP's first access arrangement and revisions to the GGP access arrangement for the second access arrangement period were considered under the National Third Party Access Code for Natural Gas Pipeline Systems (**Code**).
3. The access arrangement revision proposal was submitted by GGT pursuant to rule 52 of the NGR and comprises a proposed revised access arrangement and revised access arrangement information. GGT also made several submissions of supporting information to the Authority with and following the submission of the access arrangement revision proposal. These submissions were made during the course of the Authority's assessment. The proposed revised access arrangement, access arrangement information and access arrangement supporting information (except for confidential information, which is redacted) are available on the Authority's website.
4. The Authority notes that the current access arrangement has a review submission date of 1 January 2014, which means that GGT would have had to lodge its access arrangement proposal to the Authority on or before this date.¹ However, as a result of the amendment to rule 87 of the NGR by the Australian Energy Market Commission (**AEMC**) in 2012, the Authority was required to exercise its power under rule 52(3) of the NGR to extend the period for GGT to submit its access arrangement proposal. Furthermore, clause 35 of schedule 1 to the NGR, extended the period for GGT to submit its access arrangement proposal to six months after the date on which the Authority's Rate of Return Guidelines were published. A notice to this effect was published concurrently with the Authority's Rate of Return Guidelines on 16 December 2013.²
5. However, on 13 June 2014, the Authority approved a request by GGT to extend the date for submission of proposed revisions to the GGP access arrangement from 16 June 2014 to 15 August 2014. The Authority granted the extension to allow GGT to complete work that it had deferred, pending the Authority's decision on

¹ Economic Regulation Authority, *Access Arrangement for the Goldfields Gas Pipeline*, 30 March 2012.

² Economic Regulation Authority, Notice, *Final Guidelines, Rate of Return Guidelines for Gas Transmission and Distribution Networks*, 17 December 2013.

- 30 May 2014 regarding GGT's election to treat an expansion of the GGP as not part of the covered pipeline.
6. GGT's current access arrangement (also referred to as **AA2**, or the second access arrangement) applies until a revised access arrangement is approved by the Authority.
 7. The purpose of an access arrangement is to provide details regarding the terms and conditions, including price, upon which an independent third party user can gain access to the GGP for the purpose of transporting gas.
 8. The Authority invited submissions from interested parties on the revised access arrangement by publishing an initiating notice on 5 September 2014. On 3 November 2014, the Authority published an Issues Paper in order to assist interested parties with understanding some of the significant issues to be addressed by the Authority in determining whether to approve or not to approve the proposed revised access arrangement. Interested parties were invited to make submissions on GGT's proposed revised access arrangement proposal for the GGP Access Arrangement Proposal by 17 November 2014.
 9. The following parties provided submissions on GGT's proposed revised GGP access arrangement by the closing date:
 - BHP Billiton Limited (**BHPB**)
 - Santos (BOL) Pty Ltd (**Santos**)
 10. The Authority also accepted further submissions after the closing date from:
 - GGT (in response to BHPB's submission)
 - BHPB (in response to GGT's further submission)
 11. The submissions from these parties can be found on the Authority's website.
 12. As required by rule 59(1) of the NGR and section 65(a) of the NGL (WA), in arriving at its Draft Decision the Authority considered the public submissions that it received in response to its Issues Paper. The details of the public submissions that were received and considered by the Authority are set out in its Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline, published on 17 December 2015 (the **Draft Decision**).
 13. Under rule 59 of the NGR, the Authority was required to make a Draft Decision that indicates whether the Authority is prepared to approve the access arrangement revision proposal as submitted and, if not, the nature of amendments that are required in order to make the proposal acceptable to the Authority. An access arrangement Draft Decision must include a statement of the reasons for the decision.
 14. After considering submissions received from interested parties and advice from its technical advisor, Energy Market Consulting associates (**EMCa**), and its economic advisor, Associate Professor Martin Lally, the Draft Decision of the Authority was to not approve the access arrangement revision proposal. The Authority's reasons for not approving the access arrangement revision proposal are set out in its Draft Decision.

15. The Draft Decision set out 22 amendments that the Authority required GGT to implement in its revisions to the proposed revised access arrangement (herein referred to as the **revised proposal**).
16. Under rule 59(3) of the NGR, the Authority is required to fix a period (revision period) within which GGT may, under rule 60 submit additions or other amendments to the access arrangement revisions proposal to address matters raised in its Draft Decision. The Authority fixed the revision period to be approximately six weeks from the date of its Draft Decision, expiring at 4:00pm Western Standard Time (WST) on Friday, 29 January 2016.
17. The Authority received GGT's revised proposal and Response to the ERA Draft Decision submission by the close of the revision period on 29 January 2016. The Authority published a notice to this effect on 4 February 2016. GGT subsequently submitted an amended version of its revised proposal to correct an omission from its 29 January 2016 submission.
18. Consistent with the requirements of rule 59(5)(c)(iii) of the NGR, the Authority also invited submissions on its Draft Decision for a period of 20 business days following the revision period allowed to GGT. The closing date for submissions was 4:00 pm WST on Friday, 26 February 2016.
19. The following party provided a submission on the Authority's Draft Decision:
 - GGT (supplementary submission to its revised proposal)
20. The Authority also accepted further submissions after the closing date from:
 - BHPB (submission in response to the Authority's Draft Decision)
 - BHPB (in response to GGT's supplementary submission)
21. Copies of the public submissions received are available on the Authority's website.
22. Under rule 62 of the NGR, the Authority must consider any submissions received on the Draft Decision and make a final decision to approve, or to not approve, the revisions to the proposed revised access arrangement submitted by GGT.
23. After considering submissions received from interested parties and advice from its technical advisors, Energy Market Consulting associates (**EMCa**) and Sleeman Consulting, and economic advisor, Associate Professor Martin Lally of Capital Financial Consultants, the Final Decision of the Authority is to not approve the revisions to the proposed revised access arrangement. The Authority's reasons for not approving the access arrangement revision proposal are set out in this Final Decision.
24. A consolidated list of the 19 amendments that are required to be made to the proposed revised access arrangement and access arrangement information are listed in Appendix 1. For the purposes of clarity, the required amendments are also indicated in the reasons for its Final Decision at the point at which each relevant element of the revised proposal is considered.

Authority Approved Access Arrangement

Regulatory Requirements

25. Rule 62(2) of the NGR states:
- Access arrangement final decision
- ...
- (2) An access arrangement final decision is a decision to approve, or to refuse to approve, an access arrangement proposal
26. Rule 64 of the NGR states:
- 64 [Authority's] power to make or revise access arrangement on refusing to approve an access arrangement proposal
- (1) If, in an access arrangement final decision, the [Authority] refuses to approve an access arrangement proposal (other than a variation proposal), the [Authority] must itself propose an access arrangement or revisions to the access arrangement (as the case requires) for the relevant pipeline.
- ...
- (2) The [Authority's] proposal for an access arrangement or revisions is to be formulated with regard to:
- (a) the matters that the Law requires an access arrangement to include; and
- (b) the service provider's access arrangement proposal; and
- (c) the [Authority's] reasons for refusing to approve that proposal.
- (3) The [Authority] may (but is not obliged to) consult on its proposal.
- (4) The [Authority] must, within 2 months after the access arrangement final decision, make a decision giving effect to its proposal.
- (5) When the [Authority] makes a decision under this rule, it must:
- (a) give a copy of the decision to the service provider; and
- (b) publish the decision on the [Authority's] website and make it available for inspection, during business hours, at the [Authority's] public offices.
- (6) The access arrangement or the revisions to which the decision relates takes effect on a date fixed in the determination or, if no date is so fixed, 10 business days after the date of the decision.

Decision

27. Under rule 64(1) of the NGR, when the Authority refuses to approve an access arrangement revision proposal, the Authority is required to itself propose revisions to the access arrangement. Under rule 64(4) of the NGR, the Authority must make a decision giving effect to its proposal within two months of the date of this Final Decision.
28. As per rule 64(1) of the NGR, the Authority has made the necessary revisions to the proposed revised access arrangement, consistent with the list of required amendments as referred to above in paragraph 24, and listed in full in Appendix 1 of this Final Decision.

29. In accordance with rule 64(2) of the NGR, the Authority has formulated its proposed revisions having regard to the requirements of the NGL, GGT's revised proposal and the Authority's reasons for refusing to approve the revised access arrangement.
30. The Authority considers that for the purposes of rule 64(4) of the NGR, this Final Decision constitutes the decision that gives effect to its approved access arrangement for the GGP. As provided for under rule 64(3) of the NGR, the Authority has decided not to consult on its approved access arrangement for the GGP. Consistent with the requirements of rule 64(5) of the NGR, the Authority has published its approved access arrangement on its website and has provided GGT with a copy.
31. In accordance with rule 64(6) of the NGR, the Authority has decided that its approved access arrangement will take effect on 1 July 2016.
32. As a consequence of the Authority's Final Decision to not approve GGT's revisions to the proposed revised access arrangement, the Authority has also drafted and approved its own access arrangement information, consistent with the Authority's approved access arrangement for the GGP and the contents of this Final Decision.
33. Both the Authority's approved access arrangement and access arrangement information are available on the Authority's website.

Overview

34. The GGP has been a regulated pipeline for third party access since its construction in 1996 by the Goldfields Gas Transmission Joint Venture (**GGTJV**). The first access arrangement for the GGP was approved by the Authority's predecessor, the Office of Gas Access Regulation under the Code. A subsequent access arrangement was made for the GGP under the Code for the second access arrangement period.
35. The GGP transports gas from gas fields in the Carnarvon basin and the North West Shelf to mining customers in the Pilbara, Murchison and Goldfields regions of Western Australia for industrial use and power generation.
36. The GGP is a pipeline with covered (regulated) users and uncovered (unregulated) users. Uncovered capacity consists of expansions that have not been covered by the access arrangement. Expansions of the pipeline are additional assets that lead to increased capacity of the pipeline, as opposed to extensions of the pipeline that extends the geographic range of the pipeline.
37. The regulated users of the GGP use the mainline (1,378 km in length) running from Yarraloola to Kalgoorlie, and a lateral pipeline 47 km in length extending from the mainline to Newman.³
38. The GGP's total gas transmission capacity is currently 200 TJ/day:⁴
 - 109 TJ/day capacity provided by the covered portion of the pipeline; and

³ APA Group, <http://www.apa.com.au/our-business/energy-infrastructure/western-australia.aspx>, 23 October 2014.

⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal*, 15 August, 2014, p. 3.

- 91 TJ/day capacity provided by the uncovered portions of the pipeline.
39. The construction of the GGP was completed in 1996 by the GGTJV. The original joint venture participants were a consortium of mining companies, including: Westminco Oil Pty Ltd; Normandy Pipelines Pty Ltd; and BHP Minerals Pty Ltd. The current joint venture participants, and their shares in the GGTJV are: Southern Cross Pipelines Australia Pty Ltd (62.664 per cent); Southern Cross Pipelines (NPL) Australia Pty Ltd (25.493 per cent); and Alinta Energy GGT Pty Ltd (11.843 per cent). Southern Cross Pipelines Australia Pty Ltd and Southern Cross Pipelines (NPL) Australia Pty Ltd are APA Group entities. Alinta Energy GGT Pty Ltd is an entity within the Alinta Energy group.⁵
40. The GGTJV participants have assigned the task of operating the GGP to GGT, which is a wholly owned subsidiary of APA Group. The GGTJV has given its written permission for GGT to act on its behalf in respect of service provider requirements under the NGL(WA) and NGR. GGT is considered a service provider because it controls and operates the GGP. In accordance with section 10(2) of the NGL(WA), GGT is considered to be the “complying service provider”.

Key Points of this Final Decision

41. The Authority has reviewed GGT’s proposed revised access arrangement for the third access arrangement in accordance with the NGR and NGL(WA), including the National Gas Objective (**NGO**).
42. In undertaking its assessment, the Authority appointed its technical advisor, EMCa to assist its review of GGT’s proposed capital and operating expenditure and related governance arrangements. The Authority engaged Sleeman Consulting to review GGT’s methodology for calculating covered pipeline capacity of the GGP and GGT’s capacity modelling to confirm GGT’s assertion that the covered pipeline capacity was 102.5 TJ/d based on a minimum HHV of 35.5 MJ/m³.⁶ The Authority also drew on a number of reports commissioned from Associate Professor Martin Lally of Capital Financial Consultants, reviewing GGT’s proposed options pricing method for estimating the rate of return, as well as on the present value principle – in developing its estimates for the rate of return for this Final Decision.
43. The Authority provided the report prepared by EMCa to GGT prior to this Final Decision. The Authority considered GGT’s response in preparing this Final Decision.
44. The key amendments to GGT’s proposed revised access arrangement for the third access arrangement period required by the Authority’s Final Decision are as follows:
- The Authority now accepts the cost allocation methodology submitted by GGT in its revised proposal and has applied a ‘standalone cost’ methodology for the covered pipeline. However, the Authority rejects GGT’s position that the total revenue it has submitted for the GGP complies with the RPP or promotes outcomes for the GGP as required for consistency with the NGO. Further, it disagrees with GGT’s application of its cost allocation methodology for capital and operating expenditure.

⁵ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 29 January, 2016, p. 2.

⁶ Sleeman Consulting, *Goldfields Gas Pipeline Access Arrangement 2015 – 2019, Comments on Pipeline Capacity Modeling and the Impact of Changing Gas Quality*, June 2016.

- The forecast operating expenditure for the third access arrangement used to calculate reference tariffs is to be capped at \$99.978 million (nominal). The main adjustments to the forecast operating expenditure address GGT's proposed corporate cost.
 - The forecast capital expenditure for the third access arrangement period used to calculate reference tariffs is to be capped at \$9.414million (nominal). The main adjustments to the forecast capital expenditure address issues with GGT's proposed sustaining capital expenditure for pipeline and laterals, receipt and delivery points, compressor stations, mainline valve and scraper stations and other assets.
 - Nominal post-tax WACC revised to 5.84 per cent for 2016, which will be updated annually commencing each year on 1 January.
 - The calculation of depreciation for the forecast capital base is to be amended via the application of straight-line depreciation with the Current Cost Accounting (CCA) approach.
 - The calculation of the estimated cost of taxable income should be based on the smoothed tariff revenue rather than the building block revenue and tax depreciation should be based on assets recognised as commissioned rather than on an incurred basis. The valuation of imputation credits should be based on a value of gamma of 0.4 rather than 0.25. The calculation of the estimated cost of taxable income for the use of calculating reference tariffs is based on inputs following an allocation of joint costs to the uncovered pipeline.
 - The tariff variation formulas, notice period requirements and cost pass-through events for the reference tariff variation mechanism are required to be amended.
 - The wording of certain current general terms and conditions should be maintained. Also, GGT should ensure that the clauses remain in the proposed revised terms and conditions, in addition to being relocated into various sections of the access arrangement.
45. Table 1 and Table 2 compare key figures in GGT's proposal with the Authority's Final Decision. The Authority notes that GGT's revised proposal is only for an access arrangement period of three and a half years from 1 July 2016 to 31 December 2019 as GGT does not consider there is an interval of delay for the period between 1 January 2015 and the date on which tariffs for the third access arrangement are set to commence. The Authority does not approve GGT's revised proposal and has determined total revenue and tariffs for a five year period from 1 January 2015 to 31 December 2019. This is discussed further in the interval of delay section of the Reference Tariffs chapter of this Final Decision. As a result, the values for GGT's revised proposal column in Table 1 (based on a three and a half year period), excluding WACC and gamma, are not directly comparable to the other columns which are based on a five year period.
46. Table 2 shows the Authority's approved reference tariffs that are to begin on 1 July 2016, which are to be adjusted in accordance with the approved tariff variation mechanism in the Access Arrangement, as discussed in the Reference Tariff Variation Mechanism chapter of this Final Decision.

Table 1 Comparison of GGT's Revised Proposal and the Authority's Final Decision

Component	GGT Revised Proposal ⁷	Authority Final Decision ⁸
Tariff Revenue (nominal \$ millions)	282.525	235.204
Forecast Operating Expenditure (nominal \$ millions)	93.789	99.978
Forecast Capital Expenditure (nominal \$ millions)	4.435	9.414
Nominal post-tax WACC (per cent)	9.67%	5.84%
Gamma	0.25	0.40
Regulatory Depreciation (nominal \$ millions)	38.263	24.065
Estimated Cost of Corporate Income Tax (nominal \$ millions)	23.572	3.995

Source: Goldfields Gas Transmission Tariff Model, January 2016; ERA, GGP Tariff Model, June 2016.

Table 2 Comparison of GGT's Revised Proposal Tariffs and the Authority's Final Decision Tariffs (Nominal)

Tariff Component	Tariff
GGT Revised Proposal	
Toll Charge (\$/GJ)	0.245608
Capacity Reservation Charge (\$/GJ km)	0.001488
Throughput Charge (\$/GJ km)	0.000458
Authority Final Decision	
Toll Charge (\$/GJ)	0.116369
Capacity Reservation Charge (\$/GJ km)	0.000620
Throughput Charge (\$/GJ km)	0.000228

Source: Goldfields Gas Transmission Tariff Model, January 2016; ERA, GGP Tariff Model, June 2016.

⁷ For the period 1 July 2016 to 31 December 2019, as GGT considers that there is no interval of delay. This is further discussed in the interval of delay section of the Reference Tariffs chapter of this Final Decision.

⁸ For the period 1 January 2015 to 31 December 2019, consistent with the Authority's Final Decision on reference tariffs and the applicability of rule 92(3) of the NGR in determining reference tariffs for the third access arrangement period.

Decision Making Framework

Regulatory Framework

47. The purpose of an access arrangement for a gas pipeline is to provide details of the terms and conditions, including price, upon which an independent third party (user) can gain access to the pipeline.
48. The requirements for an access arrangement are established by the NGL(WA) and NGR as enacted by the *National Gas (South Australia) Act 2008* and as implemented in Western Australia by the *National Gas Access (WA) Act 2009* as the NGL(WA).
49. This is GGT's first access arrangement submitted in accordance with the requirements of the NGL(WA) and NGR. The Authority considered GGT's previous access arrangements under the Code. In January 2010, the *National Gas Access (WA) Act 2009* came into effect, replacing the scheme of access regulation of the Code with the scheme of the NGL(WA) and the NGR.
50. Under rule 100 of the NGR all provisions of an access arrangement are required to be consistent with the NGO.
51. The NGO is defined in section 23 of the NGL(WA) as:
- 23 The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.
52. Section 24 of the National Gas Law outlines the Revenue and Pricing Principles:
- Revenue and pricing principles
- (1) The revenue and pricing principles are the principles set out in subsections (2) to (7).
 - (2) A service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in-
 - (a) providing reference services; and
 - (b) complying with a regulatory obligation or requirement or making a regulatory payment. [RPP2]
 - (3) A service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides. The economic efficiency that should be promoted includes-
 - (a) efficient investment in, or in connection with, a pipeline with which the service provider provides reference services; and
 - (b) the efficient provision of pipeline services; and
 - (c) the efficient use of the pipeline. [RPP3]
 - (4) Regard should be had to the capital base with respect to a pipeline adopted-
 - (a) in any previous-
 - (i) full access arrangement decision; or
 - (ii) decision of a relevant Regulator under section 2 of the Gas Code;
 - (b) in the Rules. [RPP4]

- (5) A reference tariff should allow for a return commensurate with the regulatory and commercial risks involved in providing the reference service to which that tariff relates. [RPP5]
- (6) Regard should be had to the economic costs and risks of the potential for under and over utilisation of a pipeline with which a service provider provides pipeline services. [RPP6].
- (7) Regard should be had to the economic costs and risks of the potential for under and over utilisation of a pipeline with which a service provider provides pipeline services. [RPP7]

53. Section 28(1) and (2) of the NGL(WA) specify the manner in which the Authority must perform or exercise its economic regulatory functions or powers.

28 Manner in which [Authority] must perform or exercise [Authority] economic regulatory functions or powers-

(1) The [Authority] must, in performing or exercising an [Authority] economic regulatory function or power-

- (a) perform or exercise that function or power in a manner that will or is likely to contribute to the achievement of the national gas objective; and
- (b) if the [Authority] is making a designated reviewable regulatory decision –
 - (i) ensure that –

...

(ii) specify –

- (A) the manner in which the constituent components of the decision relate to each other; and
- (B) the manner in which that interrelationship has been taken into account in the making of the decision; and
- (iii) if there are 2 or more possible designated reviewable regulatory decisions that will or are likely to contribute to the achievement of the national gas objective –
 - (A) make the decision that the [Authority] is satisfied will or is likely to contribute to the achievement of the national gas objective to the greatest degree (the preferable designated reviewable regulatory decision); and
 - (B) specify reasons as to the basis on which the [Authority] is satisfied that the decision is the preferable designated reviewable regulatory decision.

(2) In addition, the [Authority]—

- (a) must take into account the revenue and pricing principles—
 - (i) when exercising a discretion in approving or making those parts of an access arrangement relating to a reference tariff; or
 - (ii) when making an access determination relating to a rate or charge for a pipeline service; and
- (b) may take into account the revenue and pricing principles when performing or exercising any other [Authority] economic regulatory function or power, if the [Authority] considers it appropriate to do so.

54. Section 28(1) and (2) of the NGL(WA) were substantially amended in 2013. Section 28(1)(b)(ii) of the NGL(WA) now requires the Authority to specify how the constituent components of this Final Decision relate to each other and how the Authority has taken those interrelationships into account in making its Final Decision. Further,

section 28(1)(b)(iii) of the NGL(WA) now requires that if there are two or more possible designated reviewable regulatory decisions that will or are likely to contribute to the achievement of the NGO, then the Authority must make the decision (and provide reasons for it), that it is satisfied will or is likely to contribute to the achievement of the NGO to the greatest degree.

55. The NGL(WA) does not prescribe how the Authority is to apply these requirements and as a result, the Authority has exercised its regulatory judgement in applying them. The Authority also notes that, in *Applications by Public Interest Advocacy Centre Ltd and Ausgrid* [2016] ACompT 1 (**PIAC-Ausgrid**), the Tribunal approved and adopted the approach used by the AER in that matter.⁹ The Authority has therefore sought to adopt a similar approach to the Australian Energy Regulator (**AER**) in this matter and has applied the section 28 requirements by determining total revenue and reference tariffs in accordance with the detailed requirements of the NGR.
56. The Authority's Final Decision is complex and many of the components of the decision are interrelated. The adoption of a value for a component has implications for other elements or values elsewhere in the decision. As identified by the AER in the *PIAC-Ausgrid* matter, interrelationships can take various forms, including:
- underlying drivers and context which are likely to affect many constituent components of our decision
 - direct mathematical links between different components of a decision
 - trade-offs between different components of revenue
 - trade-offs between forecast and actual regulatory measures. The reasons for one part of a proposal may have impacts on other parts of a proposal
 - the service provider's approach to managing its network. The service provider's governance arrangements and its approach to risk management will influence most aspects of the proposal, including capex/opex trade-offs.
57. The Authority has considered these types of interrelationships in its analysis of the constituent components of this Final Decision. For example:
- the value of imputation credits (gamma) has an impact on the estimated cost of corporate income tax;
 - the value of imputation credits (gamma) has an impact on the estimate of the return on equity, through the estimates of the market risk premium;
 - the definition of the benchmark efficient entity has strong links to all aspects of the rate or return, including:
 - the composition of the benchmark efficient sample;
 - the relevant estimation methods, financial models and market data and other evidence used for estimating the return on equity and the return on debt;
 - the gearing;
 - beta;
 - the credit rating;

⁹ *Applications by Public Interest Advocacy Centre Ltd and Ausgrid* [2016] ACompT 1 at [1202] to [1203].

- the debt risk premium;
 - the return on debt is considered in conjunction with the return on equity, to ensure consistency;
 - the term of the estimates influences the return on equity and the return on debt, including, for example, through the estimate of the risk free rate;
 - the definition of the benchmark efficient entity also has links to the value of the RAB, and relevant considerations about whether it reflects the net present value of the expected future cash flows; and
 - the approved demand forecasts will affect the calculation of reference tariffs.
58. The Authority considers that, in making its decision in accordance with the detailed requirement of the NGR and being mindful of any interrelationships between components, the Authority has made a final decision which will or is likely to contribute to the achievement of the NGO to the greatest degree. The Authority's assessment is set out in the following sections of this final decision.

Content of an Access Arrangement

59. Under section 2 of the NGL(WA), a “full access arrangement” means an access arrangement that:
- (a) provides for price or revenue regulation as required by the NGR; and
 - (b) deals with all other matters for which the NGR require provisions to be made in an access arrangement.
60. The required content of a full access arrangement proposal is specified in rule 48 of the NGR.
- 48 Requirements for full access arrangement (and full access arrangement proposal)
- (1) A full access arrangement must:
- (a) identify the pipeline to which the access arrangement relates and include a reference to a website at which a description of the pipeline can be inspected; and
 - (b) describe the pipeline services the service provider proposes to offer to provide by means of the pipeline; and
 - (c) specify the reference services; and
 - (d) specify for each reference service:
 - (i) the reference tariff; and
 - (ii) the other terms and conditions on which the reference service will be provided; and
 - (e) if the access arrangement is to contain queuing requirements – set out the queuing requirements; and
 - (f) set out the capacity trading requirements; and
 - (g) set out the extension and expansion requirements; and
 - (h) state the terms and conditions for changing receipt and delivery points; and
 - (i) if there is to be a review submission date – state the review submission date and the revision commencement date; and
 - (j) if there is to be an expiry date – state the expiry date.

- (2) This rule extends to an access arrangement proposal consisting of a proposed full access arrangement.
61. When submitting a full access arrangement proposal, the service provider must also submit access arrangement information as per rule 43 of the NGR. Access arrangement information is information that is reasonably necessary for users to understand the background to the access arrangement, and the basis and derivation of various elements of the access arrangement as per rule 42 of the NGR.
62. The GGP access arrangement is a full access arrangement, for which a proposed revised access arrangement and a revised access arrangement information have been submitted by GGT. The reasons for the Authority's Draft Decision address elements of GGT's access arrangement revision proposal in the following order:
- A description of the pipeline.
 - Pipeline services, including the specification of reference services.
 - Total revenue requirements.
 - Reference tariffs (including variation mechanism)
 - Non-tariff components.

Key Dates and Identification of the Pipeline

Regulatory Requirements

63. Rule 48(1)(a) of the NGR requires an access arrangement to identify the pipeline to which the access arrangement relates and to make reference to a website at which a description of the pipeline can be inspected.
64. Rule 49(1)(a) of the NGR requires a full access arrangement to contain a review submission date and a revision commencement date, but must not contain an expiry date.
65. Rule 50(1) of the NGR states that:
- (1) As a general rule:
- (a) a *review submission date* will fall four years after the access arrangement took effect or the last revision commencement date; and
- (b) a revision commencement date will fall five years after the access arrangement took effect or the last revision commencement date.
66. Under rule 50(2) of the NGR, the Authority must accept the service provider's proposed dates if it is in accordance with rule 50(1) of the NGR.
67. If the service provider's proposed dates do not conform to rule 50(1) of the NGR, then rule 50(4) of the NGR allows the Authority to approve dates that are consistent with the NGO and the Revenue and Pricing Principles.

GGT's Initial Proposal

68. GGT has referred to the pipeline as the Goldfields Gas Pipeline in the proposed revised access arrangement.

69. GGT has provided a website address (<http://www.apa.com.au>) that redirects to the APA group website.¹⁰
70. GGT has provided a description of the Goldfields Gas Pipeline in section 1.2 of its access arrangement revision proposal as follows:¹¹
- Completed in 1996, the Pipeline delivers natural gas from the offshore gas fields in the north west of Western Australia to the mineral rich, inland regions of the State. The Pipeline's Receipt Point is located at Yarraloola. There are no other gas sources located along the route of the Pipeline. Gas is delivered to Delivery Points along the length of the Pipeline, primarily for use in electricity generation facilities associated with mining and minerals processing.¹²
71. GGT has also provided the following definition for Pipeline or Goldfields Gas Pipeline in Schedule C.1 of its proposed revised access arrangement:
- Pipeline or Goldfields Gas Pipeline means the pipeline as defined in Pipeline Licence 24 issued under the Petroleum Pipelines Act 1969 (WA), being the pipeline or pipeline system for the transmission of natural gas from the North-West of Western Australia into the inland Pilbara and Goldfields regions, together with all structures for protecting or supporting the pipeline or pipeline system and associated facilities for the compression of gas, the maintenance of the pipeline and the receipt and delivery of gas and all fittings, appurtenances, appliances, compressor stations, scraper stations, mainline valves, telemetry systems (including communication towers) works and buildings used in connection with the pipeline or pipeline system and includes the lateral pipeline to Newman.¹³
72. GGT's proposed access arrangement information and supporting information outlines the assets included in the covered portion of the pipeline as:
- Diameter Nominal 400mm main pipeline section (Yarraloola to start of Newman Lateral), and Diameter Nominal 350mm pipeline section (start of Newman Lateral to Kalgoorlie);
 - Diameter Nominal 200mm Newman Lateral;
 - Corrosion mitigation by trilaminate pipe coating and impressed current cathodic protection;
 - Compressor stations at Yarraloola, Paraburdoo, Ilgarari and Wiluna;
 - Custody transfer metering at Yarraloola, and at various delivery points along the pipeline;
 - Gas control centre, Perth head office, and backup gas control centre in Kewdale;
 - Maintenance bases and depots in Karratha, Newman, Leinster, and Kalgoorlie;
 - Supervisory Control and Data Acquisition (SCADA) system;
 - Satellite data communications system;
 - Satellite telephone system; and

¹⁰ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, p. 2.

¹¹ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, p. 2.

¹² Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, p. 2.

¹³ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, p. 58.

- Operations, maintenance, commercial, quality, safety, and environmental management systems.¹⁴
73. GGT has not included a date of commencement for its proposed revised access arrangement. GGT states in section 1.6 that this Access Arrangement commenced on the date on which the approval of the regulator took effect under rule 62 or rule 64 of the NGR (as relevant).
74. GGT has proposed a review submission date of the later of;
- on or before 1 January 2019; or
 - 4 years from the date of commencement of the (proposed) revisions to the GGP access arrangement.
75. GGT has proposed that the revision commencement date will be the later of;
- 1 January 2020; or
 - the date on which the Authority approves the revisions to the GGP access arrangement to take effect under the NGL(WA) and the NGR.
76. GGT submits that the proposed review submission and commencement dates are consistent with rule 50 of the NGR. The dates proposed by GGT for the third access arrangement period result in a four year access arrangement period beginning at a new calendar year and ending at the beginning of a calendar year.

Draft Decision

77. The Authority considered that the website link GGT provided in relation to the GGP in the access arrangement revision proposal did not take an interested party directly to information about the GGP, but rather to the APA group website. The Authority required GGT to include a website address that links directly to the description of the GGP in order to comply with rule 48(1)(a) of the NGR.
78. The Authority noted that a review submission date as the later of: on or before 1 January 2019; or four years from the date of commencement of the proposed revised access arrangement, would result in the next access arrangement being submitted after GGT's intended commencement date of 1 January 2020.
79. The Authority required GGT to amend the revised access arrangement to require that the service provider to submit revisions to the access arrangement on or before 1 January 2019.
80. The Authority considered that this revised review submission date would appear to best achieve the purpose or object of rule 50(1) of the NGR and would be consistent with the NGO and Revenue and Pricing Principles.

¹⁴ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information*, 28 August 2014, pp. 2-3.

GGT's Revised Proposal

81. GGT indicated that it accepted the ERA's Required Amendment 1 from the Draft Decision.¹⁵

Submissions

82. There were no submissions made in response to GGT's proposed amendments to the Key Dates or Identification of the Pipeline to which the reference service applies.

Considerations of the Authority

83. The Authority considers that GGT has complied with the first component of Required Amendment 1 from the Draft Decision, which was to include a website address that links directly to the description of the GGP.
84. The Authority considers that GGT has not complied with the second component of Required Amendment 1 from the Draft Decision. GGT has not removed provisions from the proposed revised access arrangement that would allow it to submit revisions to the access arrangement four years from the commencement date of this access arrangement.
85. GGT did not provide reasons it should not comply with this component of Required Amendment 1 from the Draft Decision. The Authority requires GGT to remove the provision to submit revisions to the access arrangement four years from the commencement date of this access arrangement. Also, the Authority has required a consequent change to the intended revisions commencement date to a fixed date of 1 January 2020. The required amendment is specified below.
86. The Authority notes that under rule 49(1)(b) a full access arrangement must not contain an expiry date. It is therefore not necessary to state that the Access Arrangement will not expire until the date of the next revisions commencement date. As such, the Authority had decided to remove this statement from section 1.7 of the proposed revised access arrangement. The Authority notes that the statement in section 1.7 of the proposed revised access arrangement regarding provisions under rule 52 are not necessary and as a result should be removed from the proposed revised access arrangement.

¹⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, February 2016, p. 8.

Required Amendment 1

Amend the following sentences under section 1.7 of the proposed revised access arrangement as follows:

Service Provider will submit revisions to this Access Arrangement (Proposed Revisions) to the Regulator on or before 1 January 2019, ~~or four Years from the commencement date of this Access Arrangement, whichever is the later~~ (Review Submission Date).

The revisions to this Access Arrangement are intended to ~~will~~ commence on the ~~later of~~ 1 January 2020 ~~and the date on which the approval by the Regulator of the revisions to the Access Arrangement takes effect under the National Gas Rules~~ (Revisions Commencement Date).

~~In the event that the Access Arrangement Proposed Revisions in relation to the Access Arrangement Period next following the period of this Access Arrangement ("Next Access Arrangement") does not come into effect on the intended Revisions Commencement Date this Access Arrangement will not expire until the date after the Revisions Commencement Date on which the Regulator specifies that the Next Access Arrangement comes into effect.~~

~~Service Provider may also at any time between the commencement of this Access Arrangement and the Review Submission Date, submit revisions to this Access Arrangement to the Regulator under Rule 52.~~

Pipeline Services

Regulatory Requirements

87. A "pipeline service" is defined under section 2 of the NGL(WA).

Pipeline service means –

- (a) a service provided by means of a pipeline, including –
 - (i) a haulage service (such as firm haulage, interruptible haulage, spot haulage and backhaul); and
 - (ii) a service providing for, or facilitating, the interconnection of pipelines; and
- (b) a service ancillary to the provision of a service referred to in paragraph (a), but does not include the production, sale or purchase of natural gas or processable gas.

88. Under rule 48(1) of the NGR, a full access arrangement must:

- (a) identify the pipeline to which the access arrangement relates and include a reference to a website at which a description of the pipeline can be inspected; and
- (b) describe the pipeline services the service provider proposes to offer to provide by means of the pipeline; and
- (c) specify the reference services; and
- (d) specify for each reference service:
 - (i) the reference tariff; and

(ii) the other terms and conditions on which the reference service will be provided; and ...

89. Rule 101 of the NGR requires a full access arrangement to specify all reference services.

(1) A full access arrangement must specify as a reference service:

(a) at least one pipeline service that is likely to be sought by a significant part of the market; and

(b) any other pipeline service that is likely to be sought by a significant part of the market and which the [Authority] considers should be specified as a reference service.

GGT's Initial Proposal

90. GGT's proposed revised access arrangement retained the following services on the covered pipeline:¹⁶

- a firm service, which is a reference service; and
- a negotiated service, which is a non-reference service.

91. GGT's proposed firm service is a reference service provided at the reference tariff on the covered pipeline for the receipt of gas at Yarraloola, and the transmission of gas to, and the delivery of gas at, the agreed delivery point(s).

92. GGT's proposed negotiated service is a gas transportation service to meet the specific needs of a user, where such needs may differ from those of a user of the firm service. Examples of negotiated services include as-available and interruptible services.

93. GGT considers that the firm service continues to be the appropriate and relevant reference service for the next access arrangement period and GGT does not consider that any other service is likely to be sought by a significant part of the market.¹⁷

94. GGT has revised its access arrangement to:

- give effect to specific requirements of the NGL(WA) and the NGR; and
- align the revised access arrangement with other approved APA Group access arrangements and align the terms and conditions with the terms and conditions that have been incorporated into recent gas transportation agreements.¹⁸

95. Furthermore, GGT has undertaken a comprehensive revision of the terms and conditions that apply to the firm service. GGT considers that the terms and conditions that are currently in the GGP Access Arrangement no longer correspond with those negotiated with users in GGT and APA Group gas transportation

¹⁶ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, p. 5.

¹⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 8.

¹⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 10.

- agreements, or with the terms and conditions in the access arrangements for other APA Group pipelines.¹⁹
96. GGT considers that the majority of changes have been made for one or more of the following three reasons:²⁰
- the change simplifies and/or streamlines the provisions of the GGP Access Arrangement without changing the essence of those provisions;
 - the change transfers material from the terms and conditions to the main body of the GGP Access Arrangement, so that the access arrangement more clearly complies with the requirements of rule 48; and
 - the change removes parts of the terms and conditions that are obsolete either because they are not used in GGT's gas transportation agreements or they no longer accord with the way in which the GGP is operated.
97. GGT replaced the section "Services Policy" in the current access arrangement with "Pipeline Services" in the proposed revised access arrangement. GGT has introduced the following sections into the proposed revised access arrangement: "Services under Access Arrangement"; "Transportation Agreement"; and "Access to and Request for Service" along with relocating the "Conditions" section. GGT's new "Access to and Request for Service" section sets out the process a prospective user must follow to gain access to a service on the covered pipeline, including meeting queuing requirements, prudential requirements and the need to enter into a transportation agreement specific to the service.
98. GGT moved some of the terms and conditions related to the firm service from the general terms and conditions into section 2.2 of its proposed revised access arrangement. GGT has also made the following comprehensive changes:²¹
- GGT required users to establish a firm Maximum Daily Quantity (**MDQ**) and Maximum Hourly Quantity (**MHQ**) at the commencement of the transportation agreement, for each contract year and has varied the MHQ formula to be in line with other APA contracts on the GGP.
 - GGT included a mechanism that provides for the user's MDQ to be reduced and for the user to pay higher transportation tariffs if the user's gas has a "Higher Heating Value" (**HHV**) below the minimum higher heating value specification for gas shipped through the GGP.²²
 - GGT proposed to increase the minimum HHV from 35.5MJ/m³ to 37MJ/m³.
 - GGT changed the terminology of "Overrun" to align its approach with other APA Group access arrangements. GGT has made changes to how the MDQ is affected because of an overrun. GGT removed the "Supplementary Quantity Option (**SQO**)" and replaced it with the "Authorised Overrun" process. Finally, GGT has removed a clause that entitled GGT to only impose overrun (and

¹⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 11.

²⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 12.

²¹ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, pp. 7-11.

²² Higher Heating Value is also known as Gross Heating Value.

- imbalance) charges where there was significant risk threatening the integrity of the GGP.
- GGT revised the minimum term of a transportation agreement for a firm service from 12 months to five years.
 - GGT proposed that title to gas *not* transfer to GGT when it takes possession of the gas at the receipt point.
99. GGT also included reference to the following terms and conditions that apply to the firm service:²³
- the technical specifications required to connect to the GGP;
 - the requirement for compliance with the gas specification and commingling provisions;
 - the user operational obligations in respect of System Use Gas (**SUG**) and linepack;
 - the charges for the firm service; and
 - the toll and capacity reservation tariff.
100. GGT relocated negotiated services to section 2.3 of the proposed revised access arrangement and removed text it claims is restrictive, in order to increase the flexibility in offering and accessing alternative services to the firm service.
101. GGT submitted that these changes were necessary due to the elapsed time since its last review of the terms and conditions for its firm service, and to the differences between its current firm service terms and conditions and those of its negotiated services. GGT submits that the terms and conditions under its current access arrangement for providing firm services no longer correspond with those of other transmission pipelines.²⁴

Draft Decision

102. The Authority was satisfied that the firm service is a service that is “likely to be sought by a significant part of the market”, and therefore meets the requirements of rule 48 of the NGR. The Authority accepted GGT’s nomination of its firm service as the reference service around which this access arrangement is constructed.²⁵
103. The Authority accepted GGT’s proposal to include terms and conditions for pipeline services in section 2 of the proposed revised access arrangement. However, the Authority did not accept GGT’s proposal to remove these terms and conditions from the terms and conditions applying to the firm service in Schedule D of the proposed revised access arrangement. Furthermore, the Authority did not approve changes proposed by GGT to the terms and conditions that have the effect of preventing

²³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, pp. 6–11.

²⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 11.

²⁵ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 18.

those terms and conditions being in a single document or bundle of documents annexed to the access arrangement.²⁶

104. The Authority assessed the terms and conditions in section 2 and required GGT to make a number of amendments.²⁷ These required amendments are set out below.

MDQ and MHQ

105. The Authority required GGT to:
- specify how MDQ and MHQ were to be established. This was to be done as follows:²⁸
 - for MDQ, as specified by the user in the user's Order Form (or other contractual document); and
 - for MHQ, as mathematically derived from the MDQ by application of a formula.
 - reinstate the existing MHQ formula ($\text{MDQ} \div 24 \times 1.2$). GGT did not provide adequate justification for its proposed change to reduce the limit in the MHQ formula from ($\text{MDQ} \div 24 \times 1.2$) to ($\text{MDQ} \div 24 \times 1.1$).
 - expressly exclude SUG and user's linepack from the determination of whether the service provider received more than the "Firm MDQ" on any gas day or exceeded the receipt point MDQ and MHQ limits.

Adjustment in MDQ for Higher Heating Value

106. The Authority noted that on 10 March 2015, the *Gas Supply (Gas Quality Specifications) Act 2009 (GSL)* was amended to include explicit gas specifications for the GGP.²⁹ In accordance with the regime of the GSL, a user can deliver gas into the GGP with a HHV of a minimum of 35.5 MJ/m³ without having to compensate GGT for the effects this may have on pipeline capacity, or on the costs of operating the pipeline. However, it was noted that this should not have an impact on pipeline capacity as the reference gas specification set out by the GSL was consistent with the gas specification in GGT's current access arrangement.
107. The Authority noted that GGT considered that the minimum HHV applicable to the DBNGP is 37 MJ/m³ and is a "de facto market standard" that also applies to the GGP. The Authority also noted that the Western Australian Government has now amended the GSL to include explicit gas specifications for the GGP, which were different to the gas specification for the DBNGP. The Authority considered that it is reasonable to assume that the Western Australian Government had reasons for stipulating a different gas specification for the GGP and that in these circumstances the DBNGP gas specification was not relevant.³⁰

²⁶ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 24-25.

²⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 26-27.

²⁸ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 19.

²⁹ Western Australian Government Gazette, Perth, *Gas Supply (Gas Quality Specifications) Amendment Regulations 2015*, Tuesday 10 March 2015, No. 36, p. 836.

³⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 19.

108. The Authority considered that GGT provided no reasonable justification for the proposed variations to the gas specification or to the associated provisions in section 2.2.3 of GGT's proposed revised access arrangement. The Authority agreed with the concerns raised in the submissions received from BHPB and Santos. Specifically, the Authority considered that the GSL already provides an appropriate compensation mechanism for below specification gas and contains rules against double compensation.
109. The Authority required that section 2.2.3 of GGT's proposed revised access arrangement be deleted and the changes to the Gas Specification in Appendix 2 to the proposed terms and conditions be reversed.

Overruns

110. The Authority considered that GGT's proposed revisions to overruns are inflexible in comparison with the terms and conditions regarding supplementary quantity options and overruns in the current access arrangement. The Authority considered that the overrun provisions needed to be comprehensively included in the terms and conditions.
111. The Authority required that section 2.2.4(c) of the proposed revised access arrangement be amended to clarify that the user may, but need not, nominate its authorised overrun with its monthly nomination for the firm service (at least 3 days before the month start) but must nominate its authorised overrun by no later than the nomination deadline of 4pm on the day before the relevant gas day.³¹
112. The Authority noted that GGT's proposed replacement provisions in section 2.2.4(k), and section 4.2.2(f) of the proposed revised access arrangement contain indemnities for unauthorised overrun by the user.³² As there were no such indemnities for overruns in the second access arrangement and GGT did not provide any good justification as to why it was reasonable for these indemnities to be provided, the Authority required that these indemnities be deleted.
113. The Authority required GGT to delete new section 2.2.4(l) of the proposed revised access arrangement and reinstate old clause 7.3(d) in the terms and conditions.³³ The Authority considered that section 2.2.4(l) of GGT's proposed revised access arrangement is potentially detrimental to users as it:
- applies to exceeding the receipt point MDQ or the delivery point MDQ, whereas existing clause 7.3(d) of the current terms and conditions only applies to exceeding the delivery point MDQ;
 - applies if a user exceeds its MDQ by over five per cent on any 12 occasions within each year (which need not be consecutive), whereas current clause 7.3(d) requires 30 consecutive days of excesses [overruns]; and

³¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 21.

³² At the time of making the Draft Decision this provision in GGT's proposed revised access arrangement was section 2.2.4(k). However, due to subsequent clause renumbering following implementation of other amendments required by the Draft Decision, the relevant provision is now section 2.2.3(k).

³³ Since the Draft Decision, this provision in GGT's proposed revised access arrangement has been renumbered as section 2.2.3(l).

- applies even if the overrun is an authorised overrun, whereas under current clause 7.3(d) the SQO (the equivalent of an authorised overrun) is subtracted from the calculation of "daily overrun quantity", so it is only unauthorised overruns that can trigger the threshold.
114. In relation to GGT's proposed changes to overrun charges, the Authority required GGT to amend its:³⁴
- overrun charging mechanism (including rates) to ensure users are no worse off than under the current access arrangement;
 - authorised and unauthorised overrun charge rate so it is no worse for users than the rate applicable under the current access arrangement;
 - drafting to make it clear whether the authorised overrun is or is not intended to be on a take or pay basis;
 - drafting to extend the circumstances where Users are excused from payment of the overrun charge to cover situations where an overrun is caused to any extent (not just "solely caused") by GGT or by any Related Body Corporate of GGT or by any person acting for on behalf of any of them, or is caused by any event beyond the reasonable control of the User; and
 - calculation of "Authorised Overrun" for gas received (but excluded from the calculation of the Authorised Overrun Charge) so that Users do not end up paying Overrun Charges (new section 4.2.2 of the proposed revised access arrangement) or having their MDQ forcibly increased (new section 2.2.4(l) of the proposed revised access arrangement) because of their SUG and user's linepack gas contributions.

Minimum Term

115. The Authority required GGT to amend the minimum term for a contract under its reference service from five years to the minimum term currently stipulated in the existing terms and conditions of 12 months.
116. The Authority considered that GGT's reasoning for increasing its minimum term from 12 months to five years did not justify amending the minimum term for its reference service. Furthermore, the Authority considered that if GGT's proposed minimum term of five years was approved, then prospective users who may wish to access the firm service for less than five years would be forced to enter into a negotiated service agreement with GGT, an outcome that does not promote the NGO.³⁵

Title to Gas

117. The Authority decided that GGT's access arrangement terms and conditions must be amended to provide that title to gas must pass from the user to GGT at the receipt point, and that title to an equivalent Gigajoule (**GJ**) quantity (but not the same molecules) of gas must pass from GGT to the user at the delivery point.³⁶

³⁴ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, Appendix 9.

³⁵ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 22.

³⁶ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 23.

118. The Authority was of the view that GGT should take responsibility for gas when it is in its possession and control, even if title does not transfer to GGT. The Authority noted that if GGT does not take title to gas, it would not assume responsibility for the gas while it is in its possession.

Technical Specifications for connecting to the Pipeline

119. The Authority decided that:³⁷
- while section 2.2.6 of GGT's revised proposed access arrangement deals generally with technical specifications for connecting to the pipeline, it appears to be limited to dealing with prospective users;
 - the transportation agreement does not clearly set out any technical specifications; and
 - section 2.2.6 places on the user a compliance obligation that current clause 6.8 placed on GGT (albeit at the user's cost).
120. The Authority required GGT to replace proposed section 2.2.6 with clause 6.8 of the current terms and conditions and to reinstate clause 6.8 into GGT's proposed revised terms and conditions. Consequently, the Authority required that Appendix 3 to the revised access arrangement ("Technical Requirements for Delivery Facilities") be deleted.³⁸

Gas specification and commingling

121. The Authority required GGT to align proposed section 2.2.7(a), (b) and (c) of the proposed revised access arrangement with the Authority's required amendments for clause 43 in GGT's proposed terms and conditions set out in Part 1 of Appendix 9 to the Draft Decision.
122. The required amendments for clause 43 concern GGT:³⁹
- clearly stating which of the relevant parties is obliged to ensure gas received at the receipt point complies with the gas specification;
 - deleting the words 'authorised or'; and
 - changing the word 'Authority' (not a defined term) to 'Governmental Authority' (defined term).
123. The Authority also required that a new paragraph be added at the end of section 2.2.7 of the proposed revised access arrangement regarding user and service provider rights and obligations in terms of gas specification and commingling being more particularly set out in the terms and conditions.⁴⁰

³⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 23.

³⁸ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 23.

³⁹ Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016, p. 39.

⁴⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 23.

Operational obligations – System Use Gas and the User’s Linepack

124. The Authority required GGT to incorporate the required amendments for “System Use Gas and Line Pack” set out in the Authority’s review of GGT’s terms and conditions in Part 1 of Appendix 9 of the Draft Decision into proposed section 2.2.9.⁴¹

Toll and Capacity Reservation Tariff

125. The Authority required that the drafting of proposed section 2.2.11 be amended to remove any doubt that all, not just “any”, Conditions be satisfied.⁴² The Authority suggested this be done by amending “any Conditions” to read “all and any Conditions”.

Negotiated Services

126. The Authority was of the view that GGT did not provide adequate justification for its proposed change to remove section 4.2(c), which details the process of providing to a user an interruptible service when there is not sufficient spare capacity to meet the user’s requirements. Therefore, the Authority required GGT to reinstate this section.⁴³

GGT’s Revised Proposal

127. In its initial proposal, GGT moved the terms and conditions relating to the firm service from the general terms and conditions into section 2.2 of its proposed revised access arrangement.
128. The Authority in its Draft Decision accepted GGT’s proposal to include terms and conditions for the pipeline services in section 2.2 of its revised proposed access arrangement. However, the Authority did not accept the removal of these terms and conditions from Schedule D and requested that GGT reinstate them. The Authority noted that, while this approach would have resulted in a degree of duplication, it was preferred.
129. In its response to the Draft Decision, GGT has not complied with the latter requirement in full. GGT assessed the Authority’s Draft Decision required amendments with regard to the terms and conditions applying to the firm service and responded as follows.

MDQ and MHQ

130. GGT has accepted the Authority’s required amendments to specify how MDQ and MHQ are to be established for each contract year and how a user with multiple delivery points can “establish” an MDQ and MHQ for each delivery point. GGT has also reinstated the existing MHQ formula.⁴⁴

⁴¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 24.

⁴² Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 24.

⁴³ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 24.

⁴⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision Submission*, January 2016, p. 8.

131. GGT has not expressly excluded SUG and user's line pack from the determination of whether the service provider received more than the "Firm MDQ" on any gas day or exceeded the receipt point MDQ and MHQ limits in sections 2.2.2(d)(i) and 2.2.2(d)(iii). GGT states that adding SUG and line pack to Firm MDQ is operationally fraught as Firm MDQs and associated constraints on receipt points are calculated by reference to the total gas in the system/required to be in the system and to add it to the system could collapse the system. Line pack is generally only provided once (at the commencement of the agreement). SUG is provided as required but does not materially affect haulage quantities from an individual user's perspective. In practice (as of necessity) GGT determines the total SUG required for the previous day and allocates between users equitably (rather than specifying quantities upfront). This is the case for every APA Group pipeline.

Adjustment to MDQ for Higher Heating Value

132. GGT has deleted section 2.2.3 of the proposed revised access arrangement (adjustment in MDQ for HHV), and has reversed the change to the Gas Specification in Appendix 2 in accordance with the Authority's Draft Decision required amendment 2.
133. However, GGT claims that if the HHV of gas delivered into the GGP is, as anticipated by the reference specification, 35.5 MJ/m³, the capacity of the pipeline, given its current configuration of pipes and compressors, the topography of the pipeline route, and given a similar distribution of gas along the pipeline, is 102.5 TJ/d⁴⁵ (down from 109 TJ/d when the HHV of gas delivered into the GGP is above 37.0 MJ/m³). To support these claims, GGT relies on gas flow modelling studies for GGT, which were undertaken by APA Group's Infrastructure Strategy and Engineering division.
134. Consequently, GGT states that as the reference specification for the GGP has been promulgated, clause 1.5 of the current GGP access arrangement must be amended so that it states that the capacity of the covered pipeline is 102.5 TJ/d⁴⁶ (instead of 109 TJ/d as currently stated).

Overruns

135. GGT has accepted all of the Authority's Draft Decision required amendments except for the deletion of the indemnity for unauthorised overruns. Also, although in its written response to Appendix 9 to the Draft Decision, GGT indicated it accepted the Authority's recommendation that the overrun provisions be included in the terms and conditions in full, GGT's redraft of its terms and conditions has not actually included that change.
136. GGT accepted the following Draft Decision required amendments:⁴⁷
- amend section 2.2.4(e) to clarify that a user may, but need not, nominate its authorised overrun with its monthly nomination for the firm service (at least three days before the month start) but must nominate its authorised overrun

⁴⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision Submission*, January 2016, p. 8.

⁴⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision Submission*, January 2016, p. 16.

⁴⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision Submission*, January 2016, pp. 8-9.

by no later than the nomination deadline of 4.00pm on the day before the relevant gas day;

- reinstate clause 7.3(d) of the existing terms and conditions in place of proposed section 2.2.4(l); and
 - delete the indemnities for unauthorised overruns in the overrun charges of section 4.2.2(f) of GGT's revised access arrangement.
137. As stated in paragraph 136, GGT has deleted the indemnities for unauthorised overruns in the overrun charges of section 4.2.2(f). However, GGT has not deleted the requirement that the User will be liable to the Service Provider and will indemnify the Service Provider for any loss or damage suffered by the Service Provider as a consequence of an Unauthorised Overrun in former section 2.2.4(k) (now section 2.2.3(k)) of GGT's proposed revised access arrangement.
138. GGT has submitted the following:⁴⁸

A balanced pipeline is critical both to pipeline operability and the ability to meet the requirements of all users. The only practical way to deal with rogue shipper behaviour is to have the flexibility to pull them into line quickly, as all users have a legitimate expectation that GGT will ensure that the pipeline is operated in balance, it is not unlikely that they may seek redress from GGT for failure to provide contracted services resulting from the actions of other shippers. Given that creating an imbalance per se is not a breach of the agreement, the indemnity for unauthorised overrun [in former section 2.2.4(k)] is necessary to attach liability for such rogue behaviour. APA does not benefit from rogue behaviour and should not have bear the risk.

Minimum Term

139. GGT has not accepted the Authority's Draft Decision required amendment to amend section 2.2.5 of GGT's proposed revised access arrangement so the minimum term of the firm service will be 12 months rather than five years. However, GGT states that if the Authority maintains the position that a five year term is too long, it is willing to accept a minimum term of three years.
140. GGT considers that a minimum term of one year is inappropriately short. This is in terms of:⁴⁹
- Risk Sharing – GGT asserts that a low risk profile is predicated on users making a firm commitment to pay capacity charges for an appropriate period of time. As such, if that period is shortened to 12 months, the risk profile faced by GGT is increased.
 - Encouraging Inefficient Strategic Behaviour – A shorter minimum term such as 12 months may enable users to hoard capacity so as to prevent other users from accessing capacity. GGT gives an example in which a user at the front of the capacity queue may take up capacity for 12 months with a view to preventing the user who is second in the queue from contracting for that capacity, albeit the second place user may be prepared to contract for a longer term so as to support a major project.

⁴⁸ Goldfields Gas Transmission Pty Ltd, *Attachment 1 Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline - Terms and conditions*, February 2016, p. 107.

⁴⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision Submission*, January 2016, p. 9.

- System Set-Up Costs – GGT states that its contract administration costs (associated with the setup of new users and new contracts into the user interface system), are not immaterial. Thus, the shorter the contract term and the higher the turnover of contracts and users, the higher GGT’s system configuration and contract management costs.

Title to Gas

141. GGT has not accepted the Authority’s Draft Decision required amendments to:⁵⁰
- delete proposed clauses 57 and 66 of GGT’s proposed terms and conditions and reinstate clauses 14.3 and 14.4 of the current terms and conditions; and
 - amend section 2.2.8 of GGT’s proposed revised access arrangement accordingly to clarify that title to gas does pass to GGT at the receipt point and will pass from GGT to User at a delivery point.
142. GGT states that its proposed title to gas provisions reflect general industry practice across Australia, as well as the substance of the agreement as one for haulage of another’s property. GGT also states that, as a matter of law, when gas is commingled in a circumstance such as on the GGP, pipeline users retain ownership of the gas in proportion to their respective contributions. Thus, GGT’s obligation to deliver gas to users is not to deliver the same molecules, but rather, to deliver the same quantities of gas received for transportation (subject to agreed adjustments) that meet the agreed specification.⁵¹
143. GGT adds that its proposed deletion was to limit its responsibility to losses arising from GGT’s negligence, breach of agreement or wilful misconduct. That is, for losses beyond its control, the risk would remain with the owner as a normal incidence of ownership.

Technical Specifications for connecting to the Pipeline

144. GGT accepted the Authority’s Draft Decision required amendments to replace proposed section 2.2.6 with clause 6.8 of the current terms and conditions and to reinstate clause 6.8 into GGT’s proposed revised terms and conditions. GGT also deleted Appendix 3 to the proposed revised access arrangement (“Technical Requirements for Delivery Facilities”).⁵²

Gas specification and commingling

145. GGT accepted the Authority’s Draft Decision requirement 2 requiring GGT to amend sections 2.2.7(a),(b) and (c) of GGT’s proposed revised access arrangement to align the content with the Authority’s required amendments for clause 43 in GGT’s

⁵⁰ Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016, pp. 50-52.

⁵¹ Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016, pp. 50-52.

⁵² Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016 (Attachment 1 to GGT Response to Draft Decision), p. 133.

proposed terms and conditions set out in Part 1 of Appendix 9 to the Draft Decision.⁵³

146. GGT has not accepted the Authority's Draft Decision required amendment to add a new paragraph at the end of section 2.2.7 of GGT's proposed revised access arrangement regarding user and service provider rights and obligations in terms of gas specification and commingling being more particularly set out in the terms and conditions. GGT states that it does not consider the required amendment necessary.

Operational obligations – System Use Gas and the User's Linepack

147. GGT accepted the Authority's Draft Decision required amendment for "System Use Gas and Line Pack", except for the addition of SUG and line pack to firm MDQ.⁵⁴
148. However, GGT has not added the "System Use Gas and Line Pack" terms and conditions set out in section D.13 of the terms and conditions to its access arrangement as required by the Authority.⁵⁵

Toll and Capacity Reservation Tariff

149. GGT accepted the Authority's Draft Decision required amendment to clarify the drafting in section 2.2.11 to remove any doubt that all, not just "any" conditions must be satisfied.⁵⁶ This was with regard to the toll and capacity reservation tariff applying from the later of the date of the transportation agreement or satisfaction or waiver of all and any conditions in the nature of conditions precedent.⁵⁷

Negotiated Services

150. GGT has not reinstated section 4.2(c) of the current access arrangement that details the process of providing to a user an interruptible service.

Submissions

151. BHPB made submissions in response to GGT's initial proposal and in its response to the Authority's Draft Decision. BHPB submits that GGT has made substantial changes from the current access arrangement. BHPB considers that GGT's proposed amendments represent a significant deterioration to the rights of both new and existing users compared to the current access arrangement. BHPB considers that GGT has not provided any compelling rationale for the changes to be made,

⁵³ Goldfields Gas Transmission Pty Ltd, *Goldfields gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision Submission, January 2016*, p. 10.

⁵⁴ Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016 (Attachment 1 to GGT Response to Draft Decision), p. 133.

⁵⁵ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 24.

⁵⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision Submission, January 2016*, p. 10.

⁵⁷ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement – Amended in response to ERA Draft Decision dated 17 December 2015*, January 2016, p. 10.

and that substantial changes should only be considered where they will increase economic efficiency and ultimately contribute to achievement of the NGO.

152. Santos made submissions in response to GGT's initial proposal which considered that GGT had not adequately demonstrated the need for change. Santos considers that GGT's proposed wholesale changes create an unnecessary burden and cost to all stakeholders. Santos further considers that the continual change also creates an exposure for shippers and the regulatory process should provide a stable backdrop for both the users and the pipeline operator.⁵⁸
153. BHPB supported the ERA's rejection of GGT's proposed amendments to the gas specification as they are not consistent with the GSL. BHPB is also concerned:
- "about GGT's proposal to reduce the covered capacity of the GGP. BHPB considers that GGT has not provided sufficient evidence to support its contention that maintaining the HHV at 35.5MJ/m³ (which is consistent with the current access arrangement and the GS Act), leads to a reduction in the covered capacity of the GGP from 109 TJ/d to 102.5 TJ/d".⁵⁹
154. Santos submitted in its response to GGT's initial proposal that:⁶⁰
- "Tightening the specification on the GGP is contrary to the intention of the *Gas Supply (Gas Quality Specifications) Regulations*. Also contrary to the Regulations is GGT's proposal to penalise shippers through reduced capacity and higher tariffs should they obtain gas from a supplier utilising a broader specification field."
155. BHPB supports the ERA's rejection of the proposed increase of the minimum term from 12 months to 5 years. BHPB considers that this increase would force users who require shorter terms to acquire higher priced negotiated services. This is likely to discourage use of the GGP and does not contribute to the achievement of the NGO.
156. BHPB also submitted in its initial submission that GGT's proposal:⁶¹
- offered no compelling rationale why such a change is necessary; and
 - was not consistent with reference services offered by other transmission pipelines such as the Dampier to Bunbury Natural Gas Pipeline (**DBNGP**).⁶²
157. BHPB submits that the regime relating to the transfer of title from the current access arrangement should remain. BHPB considers that users have no visibility or control over the transportation of gas via the GGP and therefore should not bear the risk of loss while gas is being transported.

⁵⁸ Santos (BOL) Pty Ltd, *Public Submission by Santos in Response to the Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement and Access Arrangement information*, 15 August 2014, dated 10 November 2014.

⁵⁹ BHP Billiton, *Public Submission by BHP Billiton In Response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Limited's*, 11 March 2015, p. 6.

⁶⁰ Santos (BOL) Pty Ltd, *Public Submission by Santos in Response to the Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement and Access Arrangement information*, 15 August, 2014, dated 10 November 2014, p. 2.

⁶¹ BHP Billiton, *Public Submission by BHP Billiton In Response to the Goldfields Gas Transmission Pty Limited's Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement*, 27 November 2014, p. 16.

⁶² BHP Billiton, *Public Submission by BHP Billiton In Response to the Goldfields Gas Transmission Pty Limited's Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement*, 27 November 2014, p. 16.

158. BHPB also submits that;

“it is not acceptable for GGT to vary the terms and conditions just to align with other APA pipelines in Australia. The proposed terms and conditions would significantly erode the rights of users as compared with the terms and conditions of the current access arrangement. GGT has provided no compelling rationale for these changes and, as a result, the existing terms and conditions should remain”.

Considerations of the Authority

MDQ and MHQ

159. GGT claims that adding SUG and linepack to Firm MDQ is "operationally fraught" (as it claims Firm MDQs and associated constraints on receipt points are calculated by reference to the total gas in the system/required to be in the system; and to add it to the system could "collapse the system"). However, GGT has provided no evidence to justify this claim. GGT has not shown that allowing for SUG and linepack would cause any such claimed operational issues or that those claimed operational issues do not arise from some other cause or could not be dealt with efficiently by improvements in GGT's operational practices. Even if it is true (as GGT claims) that "Firm MDQs and associated constraints on receipt points are calculated by reference to the total gas in the system/required to be in the system", GGT has not explained why (as GGT claims) it is "operationally fraught" for a user to add to that system (on top of its MDQ/MHQ) the extra system use gas and linepack which GGT has told the shipper is "required to be in the system". However, the Authority notes that such "operationally fraught" eventualities cannot be entirely ruled out if the pipeline is fully or near fully contracted up to the pipeline capacity.
160. Further, while GGT claims that SUG does not materially affect haulage quantities from an individual user's perspective, GGT has provided no evidence to justify this claim and the Authority notes that, to the extent that it does affect haulage quantities, this would effectively require pipeline users to sacrifice capacity (MDQ or MHQ) they have contracted and paid for in order to supply the SUG and linepack that the pipeline operator has required them to provide to maintain the system.
161. The Authority notes that no submissions were received from pipeline users specifically in relation to this issue and that there is no indication it is of particular concern to them.
162. However, the Authority cannot ignore that, GGT's proposed revisions to sections 2.2.2(d)(i) and 2.2.2(d)(iii) as currently drafted by GGT, do not make logical sense. GGT's proposed change to section 2.2.2(d)(i) merely alters the section so that, instead of setting an overall cap on all receipts and deliveries based on Firm MDQ, it now repeats the individual receipt and delivery point caps based on MDQ in existing section 2.2.2(d)(ii) – but without the necessary carve-out for SUG and linepack that is contained in section 2.2.2(d)(ii). GGT's proposed change to section 2.2.2(d)(i) therefore creates inconsistency and potential confusion with section 2.2.2(d)(ii). GGT's proposed change to section 2.2.2(d)(iii) introduces the MDQ as a further cap on the hourly MHQ and is not logical. The provision appears to have been drafted in error. To the extent GGT's proposed revisions to sections 2.2.2(d)(i) and 2.2.2(d)(iii) create uncertainty, this could lead to unnecessary and inefficient disputes.
163. Given the above issues, the Authority is of the view that GGT's proposed revisions to sections 2.2.2(d)(i) and 2.2.2(d)(iii), as presently drafted by GGT, are likely to detract from achieving the NGO. GGT has not provided adequate justification for

its proposed revisions to sections 2.2.2(d)(i) and 2.2.2(d)(iii) as presently drafted by GGT. In particular, as noted above, those proposed revisions are not logical. The Authority therefore requires GGT to reinstate sections 2.2.2(d)(i) and 2.2.2(d)(iii) as those provisions appeared in GGT's initial revised proposal.

Adjustment to MDQ for Higher Heating Value

164. The Authority notes that GGT has deleted section 2.2.3 of its proposed revised access arrangement (adjustment in MDQ for HHV), has amended the Gas Specification in Appendix 2 to include a minimum HHV of 35.5 MJ/m³ as required by the Authority's Draft Decision. However, GGT has reduced the pipeline capacity in section 1.5 of its proposed revised access arrangement.
165. GGT has sought to have the capacity of the pipeline available for reference services changed on the basis that the GSL has formally mandated the minimum HHV for the GGP to be 35.5 MJ/m³ and it has argued that the prior 109 TJ/d capacity was based on a gas specification with a higher heating value.⁶³
166. The Authority has considered the pipeline capacity matter in full in the Demand Forecast section of this Final Decision. The Authority does not accept GGT's proposal to reduce the covered capacity of the GGP from 109 TJ/d to 102.5 TJ/d for the third access arrangement period. As a result, the Authority requires that the covered pipeline capacity in section 1.5 of GGT's proposed access arrangement is amended to 109 TJ/d.

Overruns

167. Although in its written response to the Authority's Appendix 9 to the Draft Decision, GGT indicated it accepted the Authority's recommendation that the overrun provisions be included in the terms and conditions in full, GGT's redraft of its terms and conditions did not actually include that change. No reason was given by GGT for that omission and the Authority presumes it was an oversight on the part of GGT. The Authority therefore continues to require that the overrun provisions be included in the terms and conditions in full.
168. Contrary to the Authority's required amendment, GGT has not deleted that the User will be liable to the Service Provider and will indemnify the Service Provider for any loss or damage suffered by the Service Provider as a consequence of an Unauthorised Overrun (see section 2.2.3(k) of GGT's proposed revised access arrangement).
169. The justification given by GGT for retaining this indemnity is essentially that the indemnity is a necessary and practical way to deal with "rogue shipper" behaviour that impinges on the legitimate expectation of all users that GGT will ensure that the pipeline is operated in balance.⁶⁴
170. The Authority accepts that, in principle, it is consistent with the NGO to have an efficient and effective means of managing "rogue shipper" behaviour so that it does

⁶³ Goldfields Gas Transmission Pty Ltd, *Goldfields gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision Submission*, January 2016, pp. 15-16.

⁶⁴ Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016 (Attachment 1 to GGT Response to Draft Decision), p. 107.

- not prevent the pipeline being operated in balance, and that the financial penalty associated with an indemnity may provide such a means.
171. However, the Authority notes that GGT already has an ability to manage unauthorised imbalances via the Imbalance Charge mechanism (see section 4.2.3 of GGT's proposed revised access arrangement).
172. Further, the indemnity proposed by GGT in section 2.2.3(k) of GGT's proposed revised access arrangement is for the consequence of an *Unauthorised Overrun*. However, the fact that a shipper has overruns does not necessarily mean that an unauthorised *imbalance* will also have occurred. It is conceptually possible for a shipper to *overrun* (i.e. exceed its allowance for taking gas out of the pipeline), yet remain overall *balanced* as regards the quantities of gas it has put into and taken out of the pipeline. So GGT's justification based on pipeline balancing for this proposed indemnity is not supported.
173. If balancing is the true concern and unauthorised imbalances cannot be properly managed via the Imbalance Charge mechanism, then there may in principle be a need to supplement the Imbalance Charge mechanism with an indemnity for consequences of an unauthorised imbalance that are not already covered by the imbalance charge. But that is not the indemnity GGT is seeking in section 2.2.3(k) of GGT's proposed revised access arrangement.
174. The indemnity proposed by GGT in section 2.2.3(k) of GGT's proposed revised access arrangement is for the consequences of an *Unauthorised Overrun*. GGT already has an ability to manage unauthorised overruns via the Unauthorised Overrun Charge mechanism (see section 4.2.2 of GGT's proposed revised access arrangement). GGT has not provided any adequate justification for having an indemnity for the consequence of an *Unauthorised Overrun* in addition to the Unauthorised Overrun Charge mechanism.
175. There is a risk that inclusion of the indemnity proposed by GGT in section 2.2.3(k) of GGT's proposed revised access arrangement would over-compensate GGT for a user's unauthorised overrun and/or compensate GGT for inefficient behaviour that may be contrary to the NGO.
176. With regard to the potential for GGT to be over-compensated:
- there is no clear statement that the amount of the indemnity is to be reduced to the extent GGT has received any Unauthorised Overrun Charge for the unauthorised overrun; and
 - the drafting of GGT's proposed section 2.2.3(k) not only creates an indemnity, but also creates a separate liability in addition to that indemnity (i.e. "the User will be liable to Service Provider and will indemnify..."). It is not clear on what basis this additional liability is justified.
177. With regard to the potential for GGT to be compensated for inefficiency, the Authority notes that there is no clear statement that the amount of the indemnity is to be reduced to the extent GGT has failed to take reasonable steps to mitigate its loss (cf. clause D.34.4 of GGT's proposed terms and conditions).
178. There is also no limit on the user's liability under GGT's proposed section 2.2.3(k) as it is not clearly subject to the liability limitation in clause D.34 of GGT's proposed terms and conditions.

179. The Authority is therefore of the view that GGT has not provided adequate justification for the inclusion of section 2.2.3(k) of GGT's proposed revised access arrangement.

Minimum Term

180. The Authority is of the view that GGT has not provided adequate justification for having a minimum term of five years, three years, or greater than 12 months.
181. GGT has stated three reasons (risk sharing, discouraging inefficient "strategic" behaviour and system set up costs)⁶⁵ for not accepting the Authority's required 12 month minimum term for the firm service (rather than the five year minimum term sought by GGT - see section 2.2.5 of GGT's proposed revised access arrangement). The Authority has considered each of those stated reasons and has assessed GGT's claims in light of the justification provided by GGT and the Authority's understanding of the requirements of the NGL(WA) and NGR, including the need to achieve consistency with the NGO and, where applicable, the RPP.
182. Risk Sharing – GGT claims that the reference tariff "reflects a low risk assumption on the part of the Service Provider" and that that low risk profile "is predicated on Users making a firm commitment to pay capacity charges for an appropriate period of time". GGT claims that, if that period is shortened to 12 months, the risk profile faced by GGT is increased and it is unreasonable to require the Service Provider to assume that higher level of risk by requiring a shorter minimum term.
183. The Authority notes GGT has not provided any evidence to support these claims or otherwise to justify them under the NGL(WA) and NGR (including the need to achieve consistency with the NGO and, where applicable, the RPP). The Authority does not accept GGT's assertion that keeping the minimum term at 12 months increases GGT's risk profile, as GGT claims that it does not anticipate any material tranches of capacity on the covered pipeline to be uncontracted before 2029.⁶⁶
184. Discouraging Inefficient Strategic Behaviour – GGT claims that a shorter minimum term such as 12 months may enable users to "hoard" capacity so as to prevent other users from accessing capacity. GGT gives an example in which a user at the front of the capacity queue may take up capacity for 12 months with a view to preventing the user who is second in the queue from contracting for that capacity, albeit the second place user may be prepared to contract for a longer term so as to support a major project. GGT claims that setting a longer minimum term for reference services will mitigate this risk.
185. The Authority notes GGT has not provided any evidence to support these claims. Without such evidence it is difficult for the Authority to assess whether the risk of "hoarding" of capacity by users so as to prevent other users from accessing capacity represents a real and serious risk that would actually be mitigated to any material extent by lengthening the minimum contract term, or whether this claimed risk is merely speculative and unlikely to occur in practice. The Authority notes that, even if the opportunity for such "hoarding" of capacity were to arise, the "hoarding" of capacity in this way could be a high risk strategy for the would-be "hoarder". Not only would the would-be "hoarder" take on the financial burden (including take-or-pay obligations) of a capacity contract that it presumably did not really need, even if

⁶⁵ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 9.

⁶⁶ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 160.

only for 12 months, but also, if (as GGT claims) it did so to prevent other users from accessing capacity, then it faces potential legal sanctions for anti-competitive conduct (including under section 133 of the NGL(WA) for seeking to prevent or hinder access by another person to a pipeline service provided by the covered pipeline). Further, even if (which GGT has not shown) there is a real risk that such capacity "hoarding" may occur on some occasions where a user having the requisite motivation and financial ability fortuitously finds itself ahead of a competitor in the access queue, the Authority considers that, given the other mechanisms for dealing with such anti-competitive behaviour, the risk does not outweigh the benefits to all users of having the opportunity to obtain shorter minimum terms (and the consequent promotion of the NGO).

186. System Set-Up Costs – GGT claims that its contract administration and system configuration costs (associated with the setup of new users and new contracts into the user interface system), are not immaterial and that therefore, the shorter the contract term and the higher the turnover of contracts and users, the higher GGT's system configuration and contract management costs.
187. The Authority notes GGT's claims regarding higher costs but considers that GGT has not provided any evidence to support these claims or otherwise to justify them under the NGL(WA) and NGR (including the need to achieve consistency with the NGO and, where applicable, the RPP).
188. GGT has also stated that if the Authority maintains the position that a five year term is too long, GGT is willing to accept a minimum term of three years. GGT claims that a minimum term of three years would be consistent with the AER's approval of a three year minimum term for the 2011-2016 access arrangement for the Amadeus Gas Pipeline.
189. The Authority has considered GGT's proposal of having a minimum term of three years instead of five years in light of the reasons provided by GGT (risk sharing, discouraging inefficient "strategic" behaviour, system set-up costs and consistency with the AER's approval for Amadeus Gas Pipeline). The Authority refers to its considerations set out above and considers that the lack of justification based on the NGL(WA) and NGR (including the need to achieve consistency with the NGO and, where applicable, the RPP) remains irrespective of GGT's proposed concession of a minimum term of three years instead of five years.
190. The Authority also notes that approval by other regulators, such as the AER's approval of a three year term for the Amadeus Gas Pipeline is neither conclusive nor necessarily relevant to establishing whether GGT's proposed terms and conditions overall achieve the NGO better than the existing terms and conditions or at all. Other regulators may have had different context, circumstances and reasons for their decisions. The question for the Authority is whether the changes that GGT is proposing are consistent with the NGO in the circumstances in which they are being proposed.
191. The Authority notes that none of the public submissions received from third parties (BHPB and Santos) were in favour of a minimum contract term of more than 12 months. BHPB expressly supported rejecting GGT's proposed increase of the minimum term from one year to five years.
192. The Authority considers that users who wish to contract for the reference service for five years or longer may still do so under the current minimum term of 12 months. However, if GGT's proposed minimum term of five years is approved, then

prospective users who may wish to access the firm service for less than five years will be forced to enter into a negotiated service agreement with GGT, an outcome that does not promote the NGO.

193. Given the lack of supporting evidence provided by GGT and the considerations above, the Authority is of the view that GGT has not provided adequate justification for having a minimum term greater than 12 months.

Title to Gas

194. The Authority is of the view that GGT's proposal that user's retain title to gas supplied by them into the GGP (other than SUG) is acceptable provided that:
- adequate safeguards are included to ensure those retention of title arrangements are honoured by GGT and other users of the GGP;
 - GGT will take full responsibility for that gas (including for the risk of loss or damage to the gas or caused by the gas) when it is in its possession and control; and
 - gas delivered to/for users at delivery points will be free from third party encumbrances or claims (other than any agreed by the user).
195. GGT has not accepted the Authority's required amendments to clarify that title to gas passes from a user to GGT at the receipt point and from GGT to the user at a delivery point.⁶⁷ Instead, GGT expects users to retain title to the gas they inject into the GGP. GGT claims that, as a matter of law, when gas is commingled in a circumstance such as on the GGP, pipeline users retain ownership of the gas in proportion to their respective contributions⁶⁸ and that this reflects general industry practice across Australia as well as the substance of the agreement as one for haulage of another's property where GGT "is a mere transporter and bailee of gas belonging to users".⁶⁹ GGT also expects risk associated with the gas would remain with the owners (i.e. users) as a normal incidence of their ownership, but claims that "GGT accepts responsibility for gas in its possession and control and has never sought to avoid it."
196. The Authority has considered GGT's claims. The Authority notes that the legal position in Australia concerning retention of title to gas injected into a pipeline and mixed with gas injected by others is not as clear as GGT claims. In the Authority's view, it is not certain that an individual user contributing gas into the GGP would, as a matter of law, retain title to that gas once it has been inextricably mixed with gas contributed by others or that GGT would merely be a bailee for that gas. If some form of common ownership of the mixed bulk were to arise, then presumably this would require a common intention of all of the "co-owners" as to how the common bulk could be dealt with. It is not clear how such a common intention would be evidenced, except by requiring GGT to include appropriate provision for this in all of

⁶⁷ Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016 (Attachment 1 to GGT Response to Draft Decision), pp. 50-52.

⁶⁸ Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016 (Attachment 1 to GGT Response to Draft Decision), p. 51.

⁶⁹ Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016 (Attachment 1 to GGT Response to Draft Decision), p. 51.

its contracts with users on the GGP. Accordingly, if, as GGT proposes, title to gas is to be retained by users in a form of common ownership, the Authority is of the view that the access arrangement terms and conditions must contain a provision requiring GGT not to act, nor allow any other user of the GGP to act, inconsistently with the arrangements in the access arrangement terms and conditions regarding retention of title to gas (excluding SUG contributions) supplied by the user, commingling of that gas with gas belonging to GGT and others and the delivery by GGT at outlet points of an equivalent quantity of gas to that originally supplied by the user (excluding SUG contributions).

197. Irrespective of who legally owns the gas in the GGP, the Authority remains of the view that, from an NGO perspective, GGT should take responsibility for that gas when it is in its possession and control, even if title does not transfer to GGT.⁷⁰

Risk of loss or damage to gas, or caused by gas, while in transit

198. Whoever bears the risk of loss or damage to or by gas in transit will usually bear an added cost (usually via insurance) to mitigate the risk. From an NGO perspective, it is relevant to know whether it is more efficient to bear that risk and cost at the pipeline operator level or the pipeline user level (in either case with possible flow-on effects for the long term interests of consumers).
199. It is reasonable to expect that GGT, as the party having day-to-day control of the management and operation of the pipeline, is better placed than pipeline users to prevent and control against the risk of loss or damage to gas (or caused by gas) in transit in its pipeline. In this regard, the Authority notes the submission from BHPB that "users have no visibility or control over the transportation of their gas via the GGP" and therefore should not bear the risk while gas is being transported.⁷¹
200. While this risk normally goes with ownership, allocation of this risk to GGT (as pipeline operator) does not necessarily require GGT to take ownership of the gas in its pipeline. More importantly, whether or not GGT takes title to the gas in its pipeline, GGT should provide users with contractual undertakings as to its assumption of these risks and maintaining adequate insurance in respect of them.
201. GGT's proposed revised terms and conditions therefore need to be amended to require GGT to take responsibility for the risk of loss or damage to gas (or caused by gas) in transit in the pipeline and to maintain adequate insurance for those risks.
202. The Authority notes that its approach in the Draft Decision⁷² of explicitly providing for GGT to take title to the gas would have put this issue beyond doubt (and would have been consistent with the typical position in Western Australia,⁷³ including that adopted by GGT in AA2). GGT's approach of seeking to have users retain title to

⁷⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, paragraph [112].

⁷¹ BHP Billiton, *Public Submission by BHP Billiton In Response to the Goldfields Gas Transmission Pty Limited's Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement*, 27 November 2014, p. 16.

⁷² Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, paragraph [113].

⁷³ For example, see Bowen, M. and Cole, R., *"Principles of Energy Contracting"*, AMPLA Yearbook 2003, p. 309 at p. 335; and the practice on the Dampier to Bunbury Natural Gas Pipeline – for example: *Dampier To Bunbury Natural Gas Pipeline Full Haul T1 Contract Terms & Conditions* (February 2015), at clause 13.3.

gas once mixed in the pipeline means that, from an NGO perspective, it must be explicitly stated in the terms and conditions that GGT will take full responsibility for that gas (including for the risk of loss or damage to the gas or caused by the gas) when it is in its possession and control.

Risk of returned gas being encumbered

203. Even if title to gas does not transfer to GGT, given that GGT is proposing to deliver at outlet points an equivalent quantity of gas (not the original molecules supplied by the user), from an NGO perspective it must also be explicitly warranted by GGT that the quantities delivered at the outlet points are free from any encumbrances or claims (other than any created by or with the agreement of the user itself).

Risk of insolvency of the pipeline operator

204. Another potential concern from an NGO perspective is how best to allocate and treat the risk of insolvency of the pipeline operator before it has honoured its obligation to deliver an equivalent quantity of gas to pipeline users.
205. While GGT claims its proposed provisions leave users in a better position in the event of GGT's insolvency, as retaining ownership of gas gives them priority to creditors,⁷⁴ that claim may prove worthless to users if, as a matter of law, they do not in fact retain ownership to their gas once it has become inextricably mixed. If GGT's legal analysis proves to be incorrect, then users could find themselves with no ownership of the gas once it becomes mixed (which the Authority notes is a position no different from that under AA2 where title to gas is transferred to GGT). In this case, users could be left as unsecured creditors upon GGT's insolvent winding-up in respect of any gas not "returned" to them. While it may be possible for individual users to protect against the risk of GGT's insolvency by taking and registering appropriate company charges or other security interests, in order to do so they would require GGT's agreement. Unless that agreement were enshrined as a requirement of the reference service terms and conditions, presumably GGT would have no incentive to give it as part of the reference service.
206. However, the Authority does not have sufficient information available to it to know if the level of risk involved would justify (in terms of best achieving the NGO) making it a requirement (as part of the access arrangement terms and conditions) for GGT to provide such security for reference service users as a matter of course. The Authority accepts that in respect of this insolvency risk users would be in a similar situation if title to the gas were expressly transferred to GGT at the outset. The Authority also notes it did not receive any public submissions concerning this insolvency risk. The Authority therefore does not propose making it a requirement in the terms and conditions that GGT provide users with appropriate security to protect against the risk of GGT's insolvency.

Technical Specifications for connecting to the Pipeline

207. The Authority notes that GGT has made the Authority's required amendments to replace GGT's proposed section 2.2.6 with clause 6.8 of the current (AA2) terms

⁷⁴ Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016 (Attachment 1 to GGT Response to Draft Decision), p. 52.

- and conditions and to reinstate clause 6.8 into GGT's proposed revised terms and conditions (which GGT has done at clause D.22).
208. However, while GGT stated in its response to Appendix 9 to the Draft Decision that it accepted the Authority's required amendment to delete Appendix 3 to GGT's proposed revised access arrangement ("Technical Requirements for Delivery Facilities"),⁷⁵ GGT has not made that deletion in its amended proposed revised access arrangement of January 2016.
209. Clause D.22 of the amended proposed revised terms and conditions simply provides that if new Delivery Facilities are required by the User, the Delivery Facilities installed by GGT (at the User's cost) must comply with the technical specifications required by a reasonable and prudent pipeline operator. It does not mention what standard is to apply (or who pays) if someone other than GGT installs the Delivery Facilities. Nor is there any reference to GGT's proposed Appendix 3 ("Technical Requirements for Delivery Facilities") applying.
210. GGT's proposed Appendix 3 ("Technical Requirements for Delivery Facilities") sets out a long list of requirements, some very specific and not all of which are necessarily technical specifications that would be required by a reasonable and prudent pipeline operator (although some of them may be).
211. Appendix 3 is not referred to by any provision in the proposed revised access arrangement or its terms and conditions and it is therefore unclear if or how GGT expects it to be invoked as part of the terms and conditions.
212. The Authority considers that having appropriate technical specifications for Delivery Facilities is important, including for achieving the NGO, irrespective of who installs them or pays for that installation. The Authority also notes that the "technical specifications required by a reasonable and prudent pipeline operator" is an evolving concept and likely to change from time to time in accordance with changing standards and other circumstances. The Authority therefore considers that the access arrangement should not be overly prescriptive concerning the level of detail of particular technical specifications unless there is some good justification for doing so. GGT has not provided any justification for the inclusion of Appendix 3.
213. The Authority is also concerned to ensure that neither users nor GGT are put to unnecessary expense in relation to technical specifications for Delivery Facilities, as that could be inconsistent with achieving the NGO.
214. The Authority therefore considers that the access arrangement terms and conditions must require delivery facilities (including their construction, installation, operation, maintenance, replacement and decommissioning) to comply with those technical specifications that would be required by a reasonable and prudent pipeline operator, acting efficiently, in accordance with Good Engineering and Operating Practice and consistent with achieving the NGO set out in section 23 of the NGL.
215. The Authority therefore proposes amending the terms and conditions accordingly. That amendment also involves the Authority requiring that its previous required

⁷⁵ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, paragraph [114]; Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline – Terms and Conditions*, February 2016 (Attachment 1 to GGT Response to Draft Decision), p. 133.

amendment to delete Appendix 3 (“Technical Requirements for Delivery Facilities”) be made.

Gas specification and comingling

216. GGT has not accepted the Authority’s required amendment to add a new paragraph at the end of section 2.2.7 of GGT’s revised access arrangement to the effect that the user’s and service provider’s rights and obligations in terms of gas specification and comingling are more particularly set out in the terms and conditions. GGT states that it does not consider the required amendment necessary.
217. The Authority has reconsidered the matter and accepts that its proposed new paragraph need not be included.

Operational obligations – System Use Gas and the User’s Linepack

218. Contrary to what was required by the Authority:
- despite stating that it accepted those amendments, GGT has not amended clauses 24 to 29 of GGT’s proposed revised terms and conditions (now clauses D13.1 to D.13.6 of GGT’s amended proposed revised terms and conditions of January 2016) as per all of the Authority’s requirements in Appendix 9 to the Draft Decision;⁷⁶ and
 - GGT has not added the “System Use Gas and Line Pack” terms and conditions set out in section D.13 of the terms and conditions to its access arrangement as per the Authority’s requirements in the Draft Decision,⁷⁷ to ensure consistency between the access arrangement and the terms and conditions.
219. GGT did not justify these omissions. The Authority requires that these amendments be made.

Toll and Capacity Reservation Tariff

220. The Authority notes that GGT has made the Authority’s required amendment to the drafting in section 2.2.11 (shown as section 2.2.10 in GGT’s amended proposed revised access arrangement of January 2016).

Negotiated Services

221. GGT has not made the Authority’s required amendment to reinstate section 4.2(c) of the current access arrangement (AA2) that details the process of providing to a user an interruptible service. GGT did not justify this omission. The Authority requires that this amendment be made.

Final Decision

222. For the reasons stated above, the Authority has decided that:
- MDQ and MHQ: GGT has not provided adequate justification for its proposed revisions to sections 2.2.2(d)(i) and 2.2.2(d)(iii) which, as currently drafted by

⁷⁶ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 533-535.

⁷⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, paragraph [116].

GGT, are not logical, create uncertainty and could lead to unnecessary and inefficient disputes. The Authority therefore requires GGT to re-instate sections 2.2.2(d)(i) and 2.2.2(d)(iii) as those provisions appeared in GGT's initial revised proposal.

- Overruns: GGT has not provided adequate justification for the inclusion of section 2.2.3(k) of GGT's proposed revised access arrangement.
- Minimum Term: GGT has not provided adequate justification for having a minimum term greater than 12 months.
- Title to gas: GGT's proposal that user's retain title to gas supplied by them into the GGP (other than system use gas) is acceptable subject to inclusion of certain safeguards for users.
- Technical Specifications for connecting to the Pipeline: The access arrangement terms and conditions must be amended to require Delivery Facilities (including their construction, installation, operation, maintenance, replacement and decommissioning) to comply with those technical specifications that would be required by a reasonable and prudent pipeline operator, acting efficiently, in accordance with Good Engineering and Operating Practice and consistent with achieving the NGO set out in section 23 of the NGL(WA). The Authority also requires that Appendix 3 ("Technical Requirements for Delivery Facilities") be deleted.
- Gas specification and commingling: The Authority accepts that its proposed new paragraph at the end of section 2.2.7 of GGT's revised access arrangement need not be included.
- Operational obligations – SUG and the User's Linepack: The Authority requires that clauses 24 to 29 of GGT's proposed revised terms and conditions (now clauses D13.1 to D.13.6 of GGT's amended proposed revised terms and conditions of January 2016) be amended as per all of the Authority's requirements in Appendix 9 to the Draft Decision; and the "System Use Gas and Line Pack" terms and conditions set out in section D.13 of the terms and conditions be added to the access arrangement as per the Authority's requirements in the Draft Decision, to ensure consistency between the access arrangement and the terms and conditions.
- Negotiated Services: The Authority requires that section 4.2(c) of the current access arrangement (AA2) be reinstated.

223. The Authority therefore requires that the following amendments be made.

Required Amendment 2

MDQ and MHQ

Amend section 2.2.2(d) of GGT's proposed revised access arrangement as follows:

(d) Except as an Authorised Overrun, Service Provider will not be obliged:

(i) on any Gas Day, to receive or deliver a quantity of Gas greater than the Firm MDQ applicable ~~Receipt Point MDQ~~ or to deliver at any ~~Delivery Point~~ a quantity of Gas greater than the applicable ~~Delivery Point MDQ~~;

(ii) on any Gas Day, to receive at a Receipt Point a quantity of Gas, excluding System Use Gas and the User's Linepack, greater than the applicable Receipt Point MDQ or to deliver at any Delivery Point a quantity of Gas greater than the applicable Delivery Point MDQ; or

(iii) in any Hour, to receive at a Receipt Point a quantity of Gas greater than the MHQ for that Receipt Point, or to deliver at any Delivery Point a quantity of Gas greater than the MHQ for that Delivery Point, ~~greater than the applicable Receipt Point MDQ or to deliver at any Delivery Point a quantity of Gas greater than the applicable Delivery Point MDQ.~~

Overrun

Delete section 2.2.3(k) of GGT's proposed revised access arrangement and replace it with the following (as per the Authority's Draft Decision Required Amendment 2 to reinstate clause 7.3(d) of the existing terms and conditions in place of GGT's proposed section 2.2.4(l), which was accepted but not implemented by GGT in its revised access arrangement proposal):

"(k) If for a period of 30 Gas Days the Daily Overrun Quantity at the Delivery Point for each of those Gas Days is positive then Service Provider may give notice to the User ("Overrun Notice"). If on any Gas Day after the expiry of 7 Gas Days from receipt of the Overrun Notice, the User's Daily Overrun Quantity at the Delivery Point is positive then with effect from the next Gas Day the User's MDQ will be increased by either:

(i) the average of the Daily Overrun Quantity at the Delivery Point for a period of 12 months; or

(ii) if the Transportation Agreement has been in force for less than 12 Months then the average of the Daily Overrun Quantity at the Delivery Point between the Commencement Date and the date of the Overrun Notice,

and the Transportation Agreement will be deemed to be amended accordingly.

So that the proposed revised terms and conditions for the Firm Service are consistent with section 2.2.3 of GGT's proposed revised access arrangement, insert a new clause D.8A in the proposed revised terms and conditions for the Firm Service in accordance with the required amendments in Part 2 of Appendix 6.

Minimum Term

Amend section 2.2.4 of GGT's revised access arrangement so the minimum term of the firm service will be 12 months rather than 5 years.

Technical Specifications for connecting to the Pipeline

Delete the contents of Appendix 3 ("Technical Requirements for Delivery Facilities") from the proposed revised terms and conditions for the Firm Service in accordance with the required amendments set out in Part 1 of Appendix 6.

Title to Gas

Amend section 2.2.7 of the proposed revised access arrangement so that it is substantially the same (with necessary changes) as clauses D.26.2 – D.26.7 of the proposed revised terms and conditions for the Firm Service (as amended by the required amendments to those clauses set out in Appendix 6).

Operational obligations – System Use Gas and the User's Line pack

Amend section 2.2.8 of the proposed revised access arrangement so that it is substantially the same (with necessary changes) as clause D.13 of the proposed revised terms and conditions for the Firm Service (as amended by the required amendments to clause D.13 set out in Appendix 6).

Negotiated Services

Amend section 2.3 of the proposed revised access arrangement by adding the following as section 2.3(c) (and renumber existing section 2.3(c) consequentially as section 2.3(d)):

2.3(c) To the extent that the Spare Capacity of the Covered Pipeline is not sufficient to meet the User's requirements in their entirety with a Firm Service, Service Provider will, on the User contracting to take the entire Spare Capacity as a Firm Service, offer an Interruptible Service, as a Negotiated Service, for the balance of the User's requirements in excess of that contracted as Firm Service. Should Spare Capacity become available on the Covered Pipeline, the User will be required to contract for that Spare Capacity as a Firm Service and reduce the amount of Interruptible Service accordingly.

Total Revenue

Revenue Building Blocks

Regulatory Requirements

224. Rule 76 of the NGR provides that total revenue is to be determined for each regulatory year of the access arrangement period using a building block approach:

76 Total revenue

Total revenue is to be determined for each regulatory year of the *access arrangement period* using the building block approach in which the building blocks are:

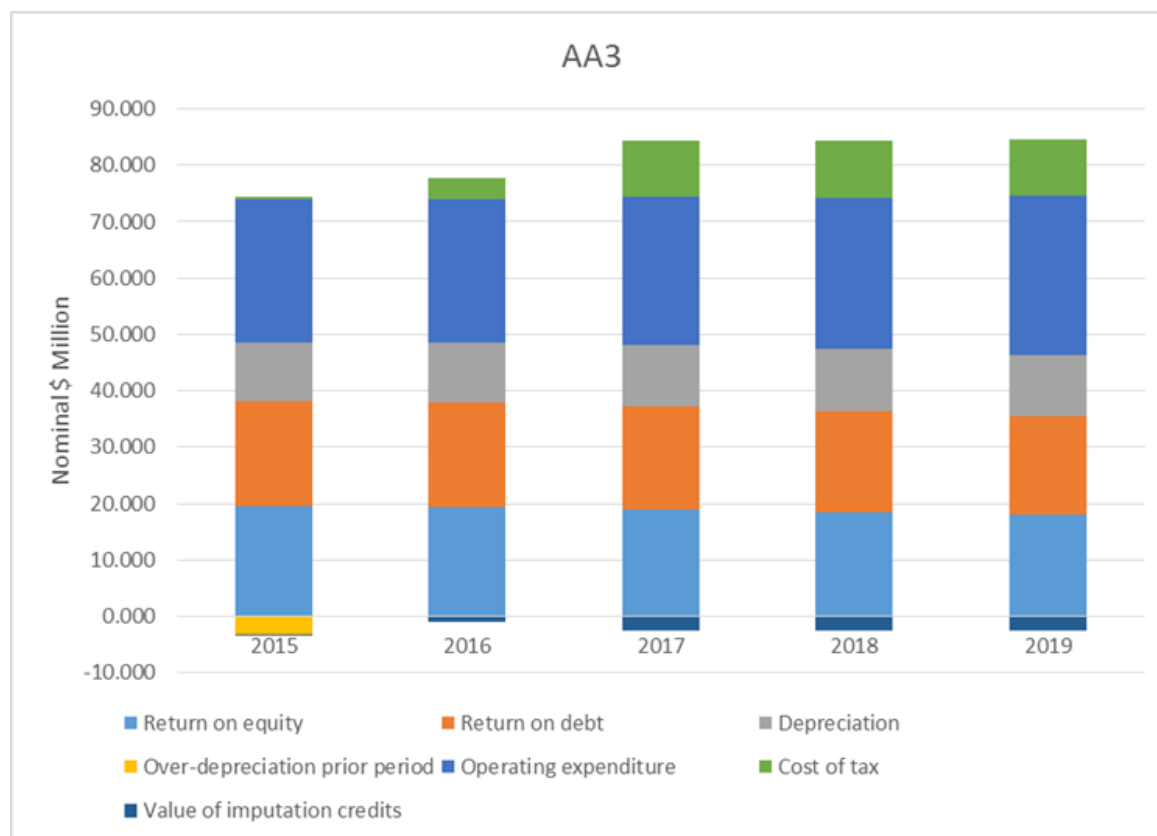
- (a) a return on the projected capital base for the year; and
- (b) depreciation on the projected capital base for the year; and
- (c) the estimated cost of corporate income tax for the year; and
- (d) increments or decrements for the year resulting from the operation of incentive mechanism to encourage gains in efficiency; and
- (e) a forecast of operating expenditure for the year.

GGT's Initial Proposal

225. GGT's proposed revised access arrangement had a total revenue requirement for the third access arrangement period of \$393.76 million. GGT calculated the total revenue in accordance with the building block approach, to determine the total revenue for the third access arrangement period, as the sum of the following:

- forecast operating expenditure;
- return on the projected capital base;
- depreciation of the projected capital base;
- an adjustment for an amount of over-depreciation during the prior period; and
- estimated cost of corporate income tax (net of imputation credits).

226. GGT's proposed total revenue for each year of the third access arrangement period is shown by the building blocks in Figure 1.

Figure 1 GGT Proposed Total Revenue Building Blocks (AA3)

Source: Goldfields Gas Transmission, Proposed revised Access Arrangement Information, 28 August 2014, Table 15, p. 28.

227. A breakdown of GGT's proposed total revenue for each year of the third access arrangement period in nominal dollars is set out in Table 3.

Table 3 GGT's Proposed Total Revenue (Nominal) Building Blocks (AA3)

Nominal \$ million	2015	2016	2017	2018	2019	Total
Return on equity	19.47	19.30	18.98	18.52	18.01	94.28
Return on debt	18.77	18.60	18.30	17.85	17.37	90.89
Depreciation	10.35	10.72	10.91	10.99	11.00	53.97
Over-depreciation prior period	(3.21)	0.00	0.00	0.00	0.00	(3.21)
Operating expenditure	25.28	25.41	26.17	26.90	28.26	132.02
Cost of tax	0.59	3.68	9.99	10.13	10.03	34.42
Value of imputation credits	(0.15)	(0.92)	(2.50)	(2.53)	(2.51)	(8.61)
Total	71.11	76.79	81.85	81.85	82.17	393.76

Source: Goldfields Gas Transmission, Access Arrangement Revision Proposal: Supporting Information, 15 August 2014, Table 27, p. 188; GGT, Tariff Model, October 2014.

228. GGT proposed to include all costs associated with the provision of services for the covered pipeline, and to exclude from its calculation of total revenue any incremental capital and operating costs associated with assets that are not covered.⁷⁸
229. GGT submitted that this method of calculating total revenue was previously approved by the Authority and subsequently upheld by the Western Australian Electricity Review Board (**ERB**) on review for the last access arrangement, at which time the pipeline was covered by the Code.⁷⁹ GGT submitted that its approach to calculating its total revenue ensures efficient use of the existing pipeline capacity as well as efficient investment in new capacity.
230. GGT included an explicit cost of corporate income tax in its calculations to determine its rate of return for the third access arrangement period, as per rule 76 of the NGR. GGT notes that this is an amendment to its previous access arrangement, as the Code did not have this requirement.
231. GGT proposed that the return on the projected capital base should be calculated at the beginning of each regulatory year of the period from 1 January 2015 to 31 December 2019 as the product of a proposed nominal allowed rate of return and the projected historical cost capital base for the GGP.⁸⁰

Draft Decision

232. The Authority's assessment of GGT's proposed total revenue was documented in the following Draft Decision chapters:
- Demand Forecast;
 - Key Performance Indicators;
 - Operating Expenditure;
 - Opening Capital Base;
 - Projected Capital Base;
 - Rate of Return;
 - Gamma;
 - Depreciation; and
 - Taxation.
233. As a result of the Authority's assessment of GGT's proposed total revenue building blocks as per rule 76 of the NGR, the Authority did not approve GGT's proposed total revenue for the third access arrangement period. The Authority's Draft Decision approved total revenue by building block in nominal dollars is set out in Table 4.

⁷⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 23.

⁷⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 23.

⁸⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information: Attachment 3, CEG Cost Allocation for the Goldfields Gas Pipeline*, 15 August 2014, p. 30.

Table 4 Authority's Draft Decision Approved Total Revenue (Nominal) Building Blocks (AA3)

Nominal \$ million	2015	2016	2017	2018	2019	Total
Forecast Operating Expenditure	21.848	21.816	22.405	22.589	23.546	112.204
Return on Projected Capital Base	24.781	25.089	25.061	24.850	24.591	236.576
Regulatory Depreciation						
<i>Depreciation</i>	7.418	11.326	11.595	11.800	11.879	54.019
<i>Inflationary Gain</i>	(7.449)	(7.541)	(7.533)	(7.470)	(7.392)	(37.384)
Estimated Cost of Corporate Income Tax						
<i>Corporate Income Tax</i>	3.496	0.000	0.146	0.678	0.486	4.806
<i>Imputation Credits</i>	(1.398)	0.000	(0.059)	(0.271)	(0.194)	(1.923)
Authority's Draft Decision Approved Total Revenue	48.696	50.690	51.616	52.177	52.917	256.095

Source: ERA, GGP Tariff Model, December 2015.

234. The Authority noted that Table 4 contains an adjustment to regulatory depreciation for inflationary gain. The Authority's Draft Decision required amendment for GGT to adopt the Current Cost Accounting (**CCA**) depreciation approach necessitated a removal of the inflationary gain, which was as a result of having a nominal post-tax weighted average cost of capital applied to an indexed regulatory asset base. This was discussed further in the Depreciation chapter of the Draft Decision.
235. In the Draft Decision, the Authority decided to apply the same approach it utilised in the Final Decision on the Mid-West and South-West Gas Distribution Systems (**GDS**), and removed inflationary gain from depreciation using the AER's Post Tax Revenue Model (**PTRM**) method (which removes the double count associated with indexation from the depreciation building block).⁸¹ The Authority noted that the removal of inflationary gain did not constitute a deferral of depreciation under rule 89(2) of the NGR. The Authority considered that there is a need for transparency and as such required the removal of inflation from the depreciation building block to be expressly acknowledged and shown as a separate line item.
236. The Authority adjusted the approved total revenue in Table 4 for the purposes of calculating reference tariffs for the covered pipeline in the "Allocation of Total Revenue between Reference Services and Other Services" chapter of the Draft Decision. The approved total revenue for the purposes of calculating reference tariffs for the covered pipeline was \$206.752 million (nominal) over the third access arrangement period.

GGT's Revised Proposal

237. In its response to the Authority's Draft Decision, GGT did not accept the Authority's required amendment for total revenue. Discussion of GGT's revised proposal for total revenue is discussed in the subsequent chapters of this Final Decision.

⁸¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, December 2015, p. 31.

238. GGT considers that there is no interval of delay for this current access arrangement review under rule 92(3) of the NGR and therefore, the operation of rule 92(3) of the NGR is not to be taken into account in fixing reference tariffs for the forthcoming access arrangement period. As such, GGT contends that the capital base must be rolled forward to the commencement of the revised access arrangement, which GGT considers to be 1 July 2016. Accordingly, GGT's forecast conforming capital expenditure and forecast operating expenditure for the third access arrangement period only starts from 1 July 2016. This is further discussed in the interval of delay section of the Reference Tariffs chapter of this Final Decision.
239. GGT's revised calculation of total revenue is shown in Table 5.

Table 5 GGT's Revised Proposed Total Revenue (Nominal) Building Blocks (AA3)

Nominal \$ million	2016 ⁸²	2017	2018	2019	Total
Return on capital	18.71	37.07	36.12	35.13	127.03
Depreciation	5.46	10.97	10.97	10.86	38.26
Operating expenditure	13.04	25.99	26.70	28.06	93.79
Cost of tax	1.82	6.70	7.60	7.45	23.57
Total	39.03	80.73	81.40	81.49	282.65

Source: Goldfields Gas Transmission Pty Ltd, Access Arrangement Information, January 2016, Table 15, p. 28. GGT, Tariff Model,

Submissions

240. BHPB submitted that the changes to the total revenue building blocks proposed by GGT would contribute to financial gains that are inconsistent with the operation of a regulated asset. BHPB also considered that the proposed changes were not in accordance with the Authority's Rate of Return Guidelines.⁸³

Considerations of the Authority

241. The Authority's assessment of GGT's proposed total revenue is documented in the following Final Decision chapters:
- Demand Forecast;
 - Key Performance Indicators;
 - Operating Expenditure;
 - Opening Capital Base;
 - Projected Capital Base;
 - Rate of Return;
 - Gamma;
 - Depreciation; and

⁸² GGT considers that the third access arrangement period commences on 1 July 2016 and as result, the values expressed in the 2016 column represent only half a year.

⁸³ BHP Billiton, *Public Submission by BHP Billiton In response to the Goldfields Gas Transmission Pty Limited's Proposed revisions to the Goldfields Gas Pipeline Access Arrangement*, 27 November 2014, p. 2.

- Taxation.
242. Given that the Authority's Final Decision requires the adoption of the CCA depreciation approach, the regulatory depreciation amount requires an adjustment for inflationary gain, which is a result of having a nominal post-tax weighted average cost of capital applied to an indexed regulatory asset base. This is discussed further in the Depreciation chapter of the Authority's Draft Decision.
243. As noted in the Draft Decision, the Authority decided to apply the same approach it utilised in the Final Decision on the Mid-West and South-West Gas Distribution Systems (**GDS**), and removed inflationary gain from depreciation using the AER's Post Tax Revenue Model (**PTRM**) method (which removes the double count associated with indexation from the depreciation building block).⁸⁴ The Authority notes that the removal of inflationary gain does not constitute a deferral of depreciation under rule 89(2) of the NGR. The Authority maintains that there is a need for transparency and as such requires the removal of inflation from the depreciation building block to be expressly acknowledged and shown as a separate line item.
244. In its Draft Decision, the Authority adjusted the approved total revenue for the purposes of calculating reference tariffs for the covered pipeline in the "Allocation of Total Revenue between Reference Services and Other Services" chapter of the Draft Decision. However, in this Final Decision, the Authority has determined that there is no allowance under rule 93 of the NGR for it to adopt an interpretation or to exercise its discretion for a part allocation of the total revenue calculated under rule 76 of the NGR to improve the compliance of the associated reference tariff with the RPP and the promotion of the NGO. The basis of the Authority's determination on this matter is provided in the section on Allocation of Total Revenue between Reference Services and Other Services in this Final Decision.
245. The Authority considers that there is an interval of delay and as such, the Authority has determined that the commencement of the third access arrangement period begins on 1 January 2015. Therefore, the Authority's total revenue building blocks is calculated for the period 1 January 2015 to 31 December 2019. This is further discussed in the interval of delay section of the Reference Tariffs chapter of this Final Decision.

Final Decision

246. The Authority has considered GGT's response to the Draft Decision. The Authority does not approve GGT's revised proposed total revenue for the third access arrangement period. The Authority's reasoning for each building block is set out in the chapters identified in paragraph 241.
247. The Authority's approved total revenue in nominal dollars is set out in Table 6.

⁸⁴ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, December 2015, p. 31.

Table 6 Authority's Final Decision Approved Total Revenue (Nominal) Building Blocks (AA3)

Nominal \$ million	2015	2016	2017	2018	2019	Total
Forecast Operating Expenditure	19.211	19.695	20.135	20.210	20.728	99.978
Return on Projected Capital Base	22.362	22.994	22.849	22.567	22.263	113.036
Regulatory Depreciation						
<i>Depreciation</i>	7.084	11.110	11.301	11.449	11.486	52.430
<i>Inflationary Gain</i>	(5.699)	(5.748)	(5.712)	(5.641)	(5.565)	(28.365)
Estimated Cost of Corporate Income Tax						
<i>Corporate Income Tax</i>	5.385	1.273	0.000	0.000	0.000	6.658
<i>Imputation Credits</i>	-2.154	-0.509	0.000	0.000	0.000	-2.663
Authority's Final Decision Approved Total Revenue	46.189	48.815	48.574	48.585	48.912	241.074

Source: ERA, GGP Tariff Model, June 2016

Required Amendment 3

The proposed revised access arrangement values for total revenue (nominal) must reflect the values in Table 6.

Demand Forecast

Regulatory Requirements

248. Rule 72 of the NGR contains specific requirements for access arrangement information.

72 Specific requirements for access arrangement information relevant to price and revenue regulation

(1) The access arrangement information for a full access arrangement proposal (other than an access arrangement variation proposal) must include the following:

(a) if the access arrangement period commences at the end of an earlier access arrangement period:

...

(iii) usage of the pipeline over the earlier access arrangement period showing:

(A) for a distribution pipeline, minimum, maximum and average demand and, for a transmission pipeline, minimum, maximum and average demand for each receipt or delivery point; and

(B) for a distribution pipeline, customer numbers in total and by tariff class and, for a transmission pipeline, user numbers for each receipt or delivery point.

...

- (d) to the extent it is practicable to forecast pipeline capacity and utilisation of pipeline capacity over the access arrangement period, a forecast of pipeline capacity and utilisation of pipeline capacity over that period and the basis on which the forecast has been derived; ...

249. In addition, rule 74 contains specific requirements for the provision of forecasts and estimates.

Forecasts and estimates

- (2) Information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate.
- (3) A forecast or estimate:
- (a) must be arrived at on a reasonable basis; and
 - (b) must represent the best forecast or estimate possible in the circumstances.

GGT's Initial Proposal

250. GGT submitted that users of the GGP are primarily companies producing gold and nickel with mining and mineral processing operations in the Pilbara, Mid-West and Goldfields-Esperance regions of Western Australia. Some gas is transported for power generation in regional communities, and a small quantity is delivered into the Kalgoorlie distribution system for commercial and residential use in the town.

251. In accordance with rule 72 of the NGR, GGT provided the required pipeline usage information for both the second and third access arrangement periods. Table 7 below shows the actual contracted capacity and throughput of the pipeline over the second access arrangement period.

Table 7 Minimum, maximum and average historic demand by category (TJ/d)

(TJ/d)	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Forecast
Contracted Capacity					
Minimum	105.2	104.8	104.7	102.7	93.4
Maximum	106.1	105.5	105.6	106.7	102.0
Average	105.7	105.2	105.2	104.5	97.7
Throughput					
Minimum	84.0	81.3	80.6	80.6	77.8
Maximum	87.0	84.1	84.8	84.6	84.3
Average	85.6	82.4	82.5	83.5	81.1

Source: Goldfield Gas Transmission Pty Ltd, Access Arrangement Information, 28 August 2014, Table 4, p. 8.

252. Table 8 shows the user numbers for each receipt or delivery point over the second access arrangement period.

Table 8 Number of receipt points, delivery points and users

	2010	2011	2012	2013	2014
Receipt points	2	2	2	2	2
Delivery Points	15	15	15	15	15
Users	9	9	9	10	8

Source: Goldfields Gas Transmission Pty Ltd, Access Arrangement Information, 28 August 2014, Table 5, p. 8.

253. GGT submitted that its demand forecasts for the third access arrangement period are based on:

- user capacity entitlements in existing gas transportation agreements;
- GGT expectations concerning termination of existing transportation agreements, and likely new users of the GGP; and
- user provided estimates of the use of contracted capacity in the GGP.

254. GGT's forecast of covered pipeline capacity and throughput for the third access arrangement period are shown in Table 9 below.

Table 9 Forecast capacity and throughput 2015-2019

TJ/d	2015	2016	2017	2018	2019
Capacity	94.79	105.33	105.04	105.04	105.04
Throughput	71.42	78.04	78.04	78.04	78.04

Source: Goldfield Gas Transmission Pty Ltd, Access Arrangement Information, 28 August 2014, Table 11, p. 14.

255. GGT forecast that demand for contracted capacity would largely remain stable over the third access arrangement period (except for 2015 where it will be approximately 10 TJ/day lower). However, average throughput would decline by 5 TJ/day from the amounts recorded over the second access arrangement period and will be 11 TJ/day lower in 2015. GGT submitted that 75 per cent of the current use of the capacity of the covered pipeline is contracted to companies using gas in nickel and gold mining and processing operations.

Nickel

256. [REDACTED]

Gold

257. [REDACTED]

Other uses

258. GGT advised that apart from nickel and gold production, the remainder of the total contracted capacity (some 22 TJ/d) was allocated as follows:

- 17 TJ/day is contracted by [REDACTED] (16TJ/d) and [REDACTED] (1 TJ/d) for the transport of gas for power generation in [REDACTED];
- 0.40 TJ/day is contracted by [REDACTED] for the transport of gas for power generation in [REDACTED];
- 3.00 TJ/day is contracted by [REDACTED] for the transport of gas through the GGP and into the [REDACTED] for power generation in [REDACTED]; and
- 1.04 TJ/day is contracted by [REDACTED] for the transport of gas into the [REDACTED].

259. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

260. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

261. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Pipeline capacity

262. GGT stated that the capacity of the covered pipeline is 109 TJ/day.⁸⁵ GGT's forecast contracted capacity for the covered pipeline from 2016 to 2019 is approximately 105 TJ/day. GGT states that (3.5 TJ/day) capacity became available in 2013 when Apex Minerals gold mining operation at Wiluna went into administration.

Draft Decision

263. The Authority reviewed GGT's actual contracted capacity and throughput during the second access arrangement. The Authority analysed the customer mix of the covered pipeline and their requirements for gas usage. The Authority also assessed whether the conditions in relevant international commodity markets had an effect on customer demand. The Authority was satisfied that GGT's forecast for contracted capacity and throughput was reasonable, and based on the best information available at the time they were made. The Authority considered that the pipeline capacity would remain the same at 109 TJ/day. Therefore, the Authority determined that GGT's forecast contracted capacity of around 105 TJ/day, resulted in spare capacity of approximately 4 TJ/day.

⁸⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal*, 15 August 2014, p. 3.

264. The Authority reviewed the relative importance of customer use on the GGP and considers that the following share of capacity of the covered pipeline is represented by:
- Nickel mining, 55 per cent;
 - Gold mining, 25 per cent;
 - Iron ore mining, 16 per cent; and
 - Power generation, 4 per cent.
265. The Authority checked historical World Bank Commodities Price Data to determine if GGT's forecast matched the conditions in international commodity markets. Specifically, the Authority checked the historical trend of the price of nickel, gold and iron ore. The Authority noted that GGT forecast contracted capacity to return to pre-2013 figures from 2016 onwards and a decline in throughput of 5 TJ/d for the third access arrangement period. The Authority noted that GGT's forecast decline in throughput was due to a decline in nickel mining operations. Based on its assessment of commodity price data from the World Bank, the Authority considered that GGT's assessment of the impact of projected prices for Nickel on demand was reasonable.
266. The Authority noted that GGT, in its initial proposal, revised the minimum HHV of the GGP covered pipeline from 35.5 MJ/m³ to 37 MJ/m³ in the second access arrangement. The Authority acknowledged that GGT submitted its proposal prior to the *Gas Supply (Gas Quality Specifications) Act 2009 (GSL)* amendment, which took effect on 10 March 2015. The GSL was amended to include explicit gas specifications for the GGP. The reference gas specification set out by the GSL was consistent with the gas specification in GGT's second access arrangement (35.5 MJ/m³). Therefore, the Authority considered that the covered capacity of the GGP would remain the same at 109 TJ/day and that the amendment to the GSL would have no impact on the spare capacity available.

GGT's Revised Proposal

267. In its Revised Proposal, GGT states that it is no longer facing any difficulty in securing customers for existing capacity on the covered pipeline. Consequently, GGT expects that the covered pipeline will be at, or close to, full utilisation over the forthcoming access arrangement period.⁸⁶ GGT's revised forecast of contracted capacity and throughput for the covered pipeline is shown in Table 10.

⁸⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision*, March 2016, p. 9.

Table 10 GGT's pipeline capacity, forecast contracted capacity (average and maximum) and throughput for the covered pipeline (TJ/day)⁸⁷

	2015	2016	2017	2018	2019
Pipeline capacity	102.50	102.50	102.50	102.50	102.50
Average contracted capacity	97.56	102.17	99.80	102.50	102.50
Maximum contracted capacity	97.89	103.70	101.0	102.50	102.50
Throughput	71.12	76.61	74.93	76.91	76.91

Source: Goldfield Gas Transmission Pty Ltd, Access Arrangement Revision Proposal Response to ERA Draft Decision Submission January 2016 p.107; GGT Tariff Model, January 2016,

268. GGT submits that the updated forecasts, which have been used in GGT's tariff model, are not substantially different to those that were used in 2014. GGT explains that [REDACTED] GGT expects the capacity of the covered pipeline to be fully contracted by 2018.⁸⁸

Pipeline Capacity

269. GGT considers that, following promulgation of the reference specification for the GGP in 2015, the capacity of the covered pipeline is now 102.5 TJ/day, not 109 TJ/day as assumed by the Authority in the Draft Decision.
270. GGT considers that, as a prudent pipeline operator, it must anticipate that gas delivered into the GGP could have a HHV as low as 35.5 MJ/m³ and, if GGT were to contract with users for a total amount of firm capacity in the covered pipeline that exceeded 102.5 TJ/day, there may not be sufficient capacity in the pipeline to allow the service provider to meet its obligations under its gas transportation agreements.
271. GGT notes that it was not planning for the total contracted capacity of the covered pipeline to exceed the capacity of the covered pipeline at the minimum HHV of the GGP reference specification. GGT forecasts that available capacity of the covered pipeline will be fully contracted in 2018 and 2019 and that there will be no spare capacity on the covered pipeline.⁸⁹

Submissions

272. In its supplementary submission. GGT considers that the Authority has no basis for assuming that there is a risk of covered capacity becoming, and remaining, under-utilised. Since mid-2014, GGT has been able to secure new customers for capacity

⁸⁷ The figures in Table 10 are the average over the year. The figures in GGT's access arrangement information show the highest capacity throughout the year.

⁸⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 167.

⁸⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 167.

and it now expects that the covered pipeline will be at, or close to, full utilisation over the forthcoming access arrangement period.⁹⁰

273. GGT advises that, using a minimum HHV of 35.5 MJ/m³, the capacity of the covered pipeline is approximately 102.5 TJ/day as a lower minimum HHV corresponds to a reduction in available capacity on the covered pipeline.⁹¹
274. GGT has provided a statutory declaration signed by Mark Fothergill, General Manager, Infrastructure and Engineering at APA Group that explains the calculation of covered pipeline capacity based on a HHV of 35.5 MJ/m³. The statutory declaration was submitted under the *Oaths, Affidavits and Statutory Declarations Act 2005 (WA)*. Mr Fothergill declares that historically the HHV of the gas transported in the GGP was around 39 MJ/m³. Mr Fothergill states that following amendment to the GSL in March 2015 the required minimum HHV for the GGP was changed to 35.5 MJ/m³. Mr Fothergill also states that with this change to the heating value, the capacity of the pipeline and therefore, the covered pipeline has also changed. Mr Fothergill advises that to determine the capacity of the covered pipeline, a gas pipeline simulation model was used (Synergi Gas v48.0). Mr Fothergill explains that the capacity is the summation of current covered throughput contracts and calculated surplus capacity, using a reference gas specification. The output from the pipeline simulation is a weighted average capacity of 102.5 TJ/day resulting from the following two delivery points:
- capacity of the covered pipeline, with surplus capacity calculated at Kalgoorlie is 102.0 TJ/day; and
 - capacity of the covered pipeline, with surplus capacity calculated at Newman is 103.7 TJ/day.⁹²
275. GGT submits that only if the minimum HHV were 37 MJ/m³, as has previously been assumed for the GGP, would covered pipeline capacity be approximately 109 TJ/day.⁹³
276. In its submission to GGT's initial proposal, BHPB suggests that GGT's forecast drop in quantities for contracted capacity and throughput on the covered pipeline should be carefully tested and considered to ensure that they comply with the forecasting requirements of the NGR. BHPB also suggests that the Authority should confirm whether GGT's proposed changes to its minimum HHV are included in the forecast.⁹⁴

⁹⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision*, March 2016, pp. 9-10.

⁹¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision*, March 2016, p. 9.

⁹² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Fothergill, Mark, *Statutory Declaration*, 26 February 2016.

⁹³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision*, March 2016, p. 10.

⁹⁴ BHP Billiton Limited, *Public Submission by BHP Billiton In Response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Limited's Proposed revisions to the Goldfields Gas Pipeline Access Arrangement*, 27 November 2014, p. 10.

277. In its submission to GGT's revised proposal, BHPB supports the Authority's rejection of GGT's proposed amendments to the gas specification as they are not consistent with the GSL.⁹⁵
278. Moreover, BHPB is concerned about GGT's proposal to reduce the covered capacity of the GGP. BHPB considers that GGT has not provided sufficient evidence to support its contention that maintaining the HHV at 35.5 MJ/m³, which is consistent with the current access arrangement and the GSL, leads to a reduction in the covered capacity of the GGP from 109 TJ/d to 102.5 TJ/d.
279. BHPB considers that GGT has a clear incentive to understate the covered capacity of the GGP as it forces shippers to use the higher-priced uncovered capacity. As a result, BHPB notes that the Authority should carefully consider whether it is appropriate to accept GGT's proposed reduction of the covered capacity of the GGP.

Considerations of the Authority

280. In its draft decision, the Authority accepted GGT's forecast contracted capacity of approximately 105 TJ/day and covered pipeline capacity of 109 TJ/day, which resulted in approximately 4 TJ/day of spare capacity. However, in its response to the Authority's draft decision, GGT has revised its forecast contracted capacity downwards from approximately 105 TJ/day to approximately 102.5 TJ/day covered pipeline capacity of the GGP downwards from approximately 109 TJ/day to approximately 102.5 TJ/day, and its forecast throughput downwards by approximately 1 TJ/day.⁹⁶
281. GGT states that it has revised the capacity of the pipeline downwards following promulgation of the reference specification for the GGP by the Government of Western Australia in March 2015.
282. GGT states that it has revised its forecast contracted capacity of the pipeline downwards as a result of a number of updated factors in 2015, such as relinquished capacity, termination of agreements, recontracting for new amounts of capacity and signing contracts with new users.
283. The Authority has assessed GGT's revisions to its forecast contracted capacity, including whether it still reflects what is happening in the international commodity markets, and GGT's revisions to the capacity of the covered pipeline.

Contracted Capacity

284. GGT proposed changes in forecast capacity since August are summarised in Table 11.

⁹⁵ BHP Billiton Limited, *Public Submission by BHP Billiton In Response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Limited's Proposed revisions to the Goldfields Gas Pipeline Access Arrangement*, 11 March 2016, p. 6.

⁹⁶ Goldfield Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information Amended in response to ERA Draft Decision dated 17 December 2015*, 29 January 2016, p. 14.

Table 11 GGP (Covered Pipeline): changes in capacity since August 2014

Contracted Capacity		
Capacity reductions since August 2014		
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
Total		-15.0
[REDACTED]		
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
Total		12.5
Difference	TJ/d	-2.5

Source: Goldfield Gas Transmission Pty Ltd, Response to information request ERA25, March 2016, p. 1.

285. The Authority understands that GGT has reduced its forecast for contracted capacity due to a number of factors such as relinquished capacity, termination of agreements recontracting for new amounts of capacity and signing contracts with new users as shown in Table 11.

Contracted capacity - assessment of gas uses and international commodity prices

286. The Authority has assessed GGT's revised forecast capacity to determine whether there are any changes to the proportions of gas use and whether GGT's proposed changes still reflect what is happening in the international commodity markets.

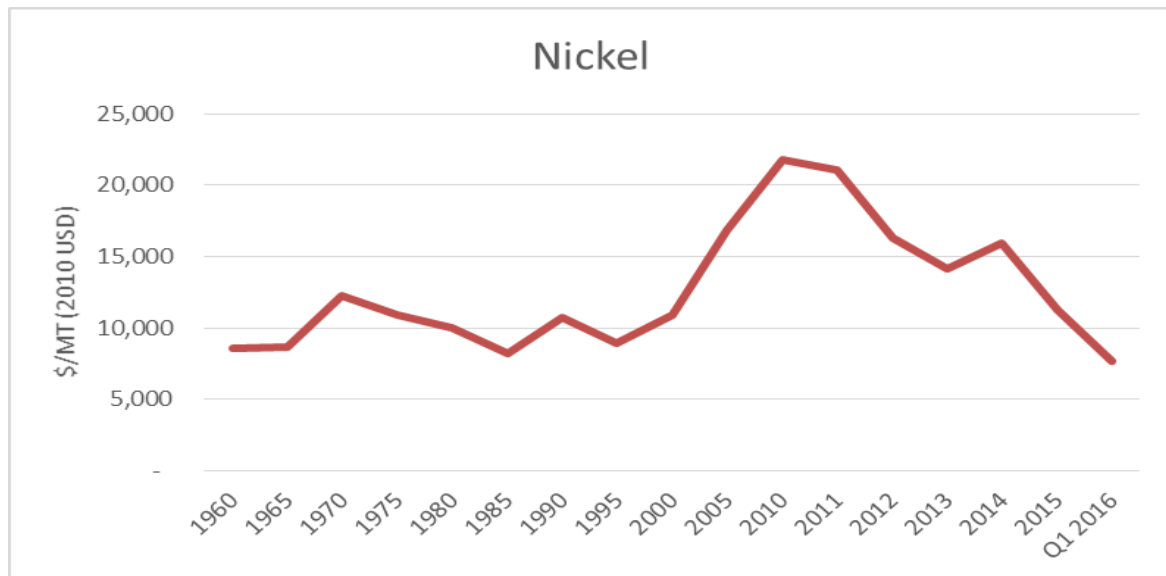
287. The Authority considers that GGT's revised forecast provides for the following proportions of gas use for the GGP covered pipeline:

- Nickel mining, reduced from 55 per cent to 53 per cent;
- Gold mining, increased from 25 per cent to 27 per cent;
- Iron ore mining, unchanged at 16 per cent; and
- Power generation, unchanged at 4 per cent.

288. The Authority has assessed the most recent data from the World Bank for each commodity below.

Nickel

289. Figure 2 shows the trend in nickel prices from the World Bank from 1960 to 2016.

Figure 2 Nickel Price Trend 1960-2016

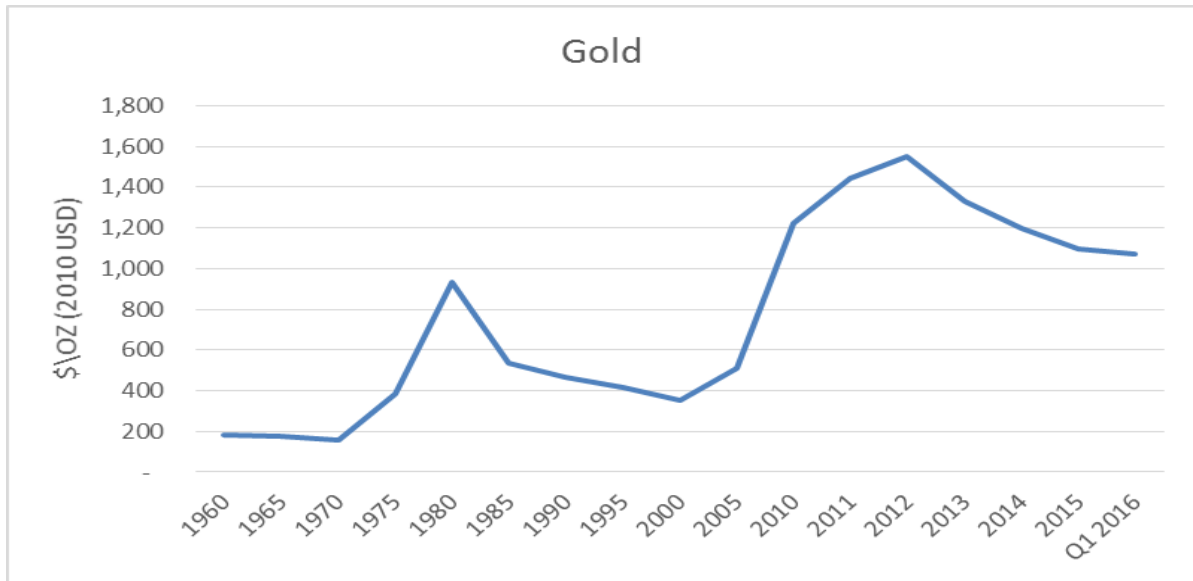
Source: *Global Economic Monitor (Commodities)*, *World Databank*, *The World Bank*; *ERA Analysis (2016 based on first quarter of 2016 and 2016 nominal to real conversion derived using the US GDP implicit price deflator series – see research.stlouisfed.org/fred2/series/GDPDEF)*.

290. GGT's revised forecast shows a drop in contracted capacity of 2.9 TJ/day. GGT submits that [REDACTED], has indicated its intention to relinquish 2.9 TJ/day capacity in accordance with the terms of its gas transportation agreement. GGT has not forecast any further drop in throughput for nickel mining.
291. The Authority considers that GGT's forecast reduction in capacity and throughput for nickel mining is consistent with the downward trend in nickel prices from 2010 as shown in Figure 2.

Gold

292. Figure 3 shows the trend in gold prices from the World Bank from 1960 to 2016.

Figure 3 Gold Price Trend 1960-2016



Source: Global Economic Monitor (Commodities), World Databank, The World Bank; ERA Analysis (2016 based on first quarter of 2016 and 2016 nominal to real conversion derived using the US GDP implicit price deflator series – see research.stlouisfed.org/fred2/series/GDPDEF).

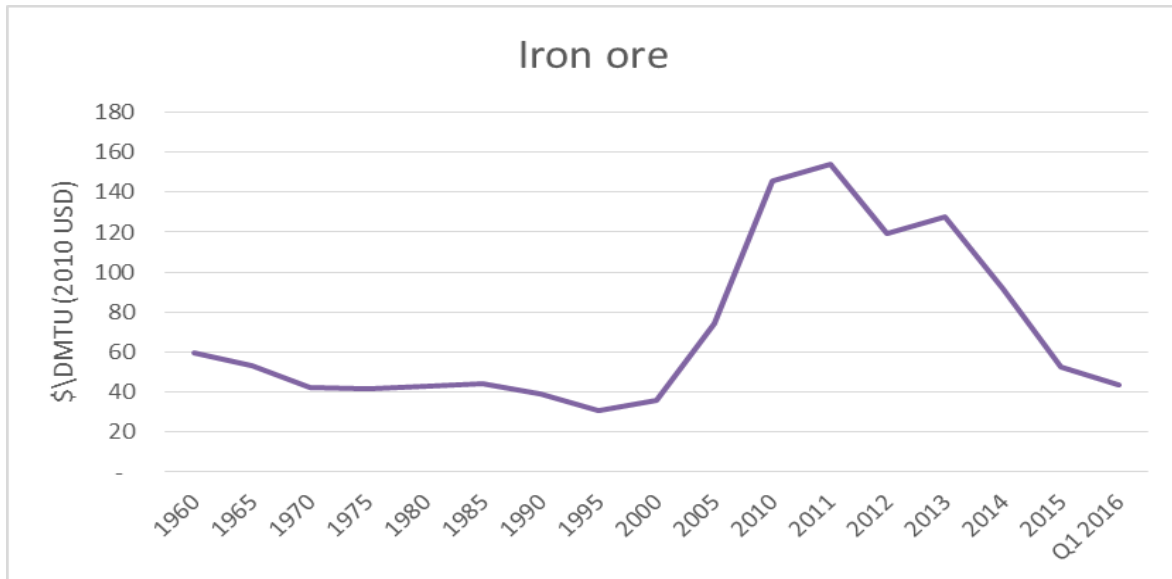
293. [REDACTED]

294. The Authority accepts GGT’s reasoning for a forecast reduction in capacity and throughput for a number of customers and considers that a reduction is also consistent with the downward trend in gold prices as shown in Figure 3. The Authority also notes, as it did in the draft decision, that GGT forecast for capacity and throughput for gold mining will actually increase in the third access arrangement period after 2016. The Authority notes that this is primarily due to the construction of the Eastern Goldfields Gas Pipeline as GGT has forecast a further increase of 7 TJ/day capacity (2 TJ/day [REDACTED] and 5 TJ/d for new users in 2017). The Authority accepts GGT’s forecast capacity and throughput for gold mining.

Iron ore

295. Figure 4 shows the trend in Iron Ore prices from the World Bank from 1960 to 2015.

Figure 4 Iron Ore Price Tend 1960-2016



Source: Global Economic Monitor (Commodities), World Databank, The World Bank; ERA Analysis (2016 based on first quarter of 2016 and 2016 nominal to real conversion derived using the US GDP implicit price deflator series – see research.stlouisfed.org/fred2/series/GDPDEF).

296. [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED] The Authority accepts GGT’s forecast for iron ore mining.

297. The Authority is satisfied that GGT’s revised forecasts for contracted capacity reflect the trends in international commodity prices, and that GGT has adequately explained why its forecast has changed since 2014.

Contracted Capacity - methodology

298. GGT states that its forecast contracted capacity is based on user capacity entitlements in existing gas transportation agreements.

299. The Authority accepts GGT’s method for forecasting contracted capacity as it considers that this method is similar to previous methods of calculating demand on the GGP covered pipeline and methods used on other transmission pipelines in Australia.

Pipeline capacity

300. GGT has revised the capacity of the covered pipeline downwards from 109 TJ/day to 102.5 TJ/day following promulgation of the reference specification of the GGP in

2015.⁹⁷ GGT considers that following this promulgation there is no longer any spare capacity available on the covered pipeline as the capacity of the covered pipeline is forecast to be fully contracted in 2016, 2018 and 2019.⁹⁸

301. GGT states that if the minimum HHV of gas delivered into the GGP is, as anticipated by the reference specification, 35.5 MJ/m³ the capacity of the pipeline given its current configuration of pipes and compressors, given the topography of the pipeline route, and given a similar distribution of gas demand along the covered pipeline is only 102.5 TJ/day. GGT states that it determined the capacity of the covered pipeline using a gas pipeline simulation model (Synergi Gas v48.0). GGT explains that it has taken the distance weighted average of the total capacities at the Newman lateral offtake and at Kalgoorlie West as the measure of capacity in the Covered Pipeline. When the HHV of the gas delivered into the pipeline is 35.5 MJ/m³, the distance weighted average total capacity is 102.5 TJ/day.
302. GGT considers that as a prudent pipeline operator it must anticipate that gas delivered into the GGP could have a HHV as low as 35.5 MJ/m³. Furthermore, GGT states that if it were to contract with users for a total amount of firm capacity in the covered pipeline which exceeded 102.5 TJ/day there may not be sufficient capacity in the pipeline to allow the service provider to meet its obligations under its gas transportation agreements.
303. The Authority acknowledges that in March 2015, the GSL was amended to include a reference specification for the GGP and that this amendment established a broader gas quality reference specification for gas to be transported through the GGP. The Government decided that the minimum HHV for the GGP reference specification should be 35.5 MJ/m³, based on the minimum HHV in GGT's current access arrangement. GGT contends that the capacity of the covered pipeline should be determined using this lowest-case HHV outlook as GGT cannot refuse to transport gas of this quality, nor will compensation be payable for the consequent reduction in pipeline capacity.
304. The Authority accepts that the GSL obliges GGT to accept delivery of gas into the GGP with a HHV as low as 35.5 MJ/m³.⁹⁹ The Authority also accepts that gas with a lower HHV will reduce the capacity of a pipeline and for any given composition of gas, this physical maximum capacity (volume) will produce a corresponding commercial maximum capacity (energy). However, the Authority considers that the fact that the GSL or the Access Arrangement requires a broader specification does not immediately require GGT to amend all of its existing contractual arrangements. Furthermore, the Authority notes that GGT has always had a minimum HHV of 35.5 MJ/m³ in its access arrangement and GGT states that it has previously based the pipeline capacity of the covered pipeline on a HHV of 37 MJ/m³.^{100 101}

⁹⁷ Goldfield Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information in response to ERA Draft Decision dated 17 December 2015*, January 2016, p. 3.

⁹⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, pp. 106–107.

⁹⁹ Goldfield Gas Transmission Pty Ltd, *Response to information request ERA32*, 3 June 2016.

¹⁰⁰ Goldfield Gas Transmission Pty Ltd, *Goldfield Gas Pipeline Access Arrangement, Appendix 3, Terms and Conditions*, 15 December 1999, p. 50.

¹⁰¹ *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision*, p. 10.

305. The Authority engaged Sleeman Consulting to review GGT's methodology for calculating covered pipeline capacity of the GGP and GGT's capacity modelling to confirm GGT's assertion that the covered pipeline capacity was 102.5 TJ/day based on a minimum HHV of 35.5 MJ/m³.¹⁰²
306. Sleeman Consulting concludes that GGT has utilised a high-quality, properly configured and calibrated model in its calculation of the capacity of the covered pipeline and the approach adopted by GGT gave outputs (in terms of capacity reduction) that are reasonably indicative of the impact of changing HHV. Sleeman Consulting confirms that GGT's model related specifically to the covered pipeline. Therefore, the Authority accepts that the capacity of the covered pipeline is 102.5 TJ/day if the HHV is 35.5 MJ/m³ and 106.9 TJ/day if the HHV is 37.0 MJ/m³.
307. Table 12 shows the different pipeline capacities provided by GGT based on different HHV's for the covered pipeline using GGT's modelling.

Table 12 GGP's covered pipeline capacity using different HHV's

HHV	35.5	37	39
Average Pipeline Capacity TJ/d			

Source: Goldfield Gas Transmission Pty Ltd, Response to information request to ERA29 and ERA32, June 2016.

308. In its supplementary submission, GGT states that historically the HHV of the gas transported in the GGP was around 39 MJ/m³.¹⁰³ The Authority notes that the average HHV of the GGP has varied between 37.8 MJ/m³ and 39.9 MJ/m³ from August 2013.¹⁰⁴
309. Sleeman Consulting advises the Authority that from a purely technical perspective, it is conceivable that all gas delivered into the GGP covered pipeline could have a HHV of 35.5 MJ/m³. However, based on its experience Sleeman Consulting considers it unlikely that the specification of gas to be transported through the covered pipeline will change markedly in the near-term because:
- the composition of gas from large reservoirs from which gas is sourced will change only marginally over the production life of each reservoir; and
 - new sources of gas supply that will come on line in the near-term, namely Gorgon or Wheatstone, are expected to have a HHV above 35.5 MJ/m³ to comply with the gas quality requirement of the DBP, into which they will be delivered. Further, they will be supplied into the DBP to the south of the point at which the DBP and the GGP are interconnected.¹⁰⁵

¹⁰² Sleeman Consulting, *Goldfields Gas Pipeline Access Arrangement 2015 – 2019, Comments on Pipeline Capacity Modeling and the Impact of Changing Gas Quality*, June 2016.

¹⁰³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Fottergill, Mark, *Statutory Declaration*, 26 February 2016.

¹⁰⁴ Australian Energy Market Operator, Gas Bulletin Board for Western Australia <https://gbb.imowa.com.au/#reports/gasSpecification>.

¹⁰⁵ For example, see Table 8, page 25 of "Review of Gas Specification for the Dampier to Bunbury Pipeline...", MJ Kimber Consultants Pty Ltd, 22 February 2006, which estimated the HHV of Gorgon Gas to be above 37.0 MJ/m³.

310. Sleeman Consulting also notes that for the overall HHV of gas transported in the GGP to fall to 35.5 MJ/m³, all gas entering the GGP (directly or from the DBP) would have to have a HHV at this lowest-case level.
311. The Authority shares Sleeman Consulting's view that it is unlikely that users of the covered pipeline would change the specification of gas markedly over this access arrangement period.
312. The Authority considers that it is reasonable to use the lower value in the range of recently recorded HHV on the GGP. The Authority considers that using a HHV of 37.8 MJ/m³, the lowest recorded value since August 2013, it is reasonable to conclude that the pipeline capacity is approximately 109 TJ/day based on the pipeline capacities provided by GGT, as shown in Table 12.
313. Based on GGT's forecast contracted capacity of approximately 102.5 TJ/day, the Authority concludes that there is approximately 6.5 TJ/day of spare capacity on the covered pipeline.
314. The Authority considers that GGT's proposal to reduce the capacity of the covered pipeline to 102.5 TJ/day would mean that there would no longer be any spare capacity available on the covered pipeline. The Authority shares BHPB's view that GGT has an incentive to understate the covered capacity of the GGP as it forces shippers to use the higher-priced uncovered capacity. The Authority considers that reducing the pipeline capacity of the covered pipeline for the purpose of determining capacity available for future reference services during the next access arrangement period would not achieve the NGO.

Final Decision

315. The Authority accepts GGT's forecast contracted capacity and throughput for the covered pipeline.
316. The Authority has decided that the promulgation of the GSL will not alter the capacity of the covered pipeline in the near term. The Authority considers that a prudent pipeline operator when determining the pipeline capacity would use the existing average HHV of the covered pipeline. The Authority understands that contracted capacity on the GGP is not expected to change significantly during the third access arrangement period. Accordingly, the Authority considers that the pipeline capacity of the GGP will be 109 TJ/day for the covered pipeline for the duration of the access arrangement period. The Authority recognises that the pipeline capacity for the covered pipeline may be reduced if users source lower HHV gas in the future. The Authority requires GGT to update the spare capacity register.
317. Table 13 shows the Authority's approved pipeline capacity, forecast contracted capacity (average and maximum) and throughput for the GGP covered pipeline (TJ/day).

Table 13 Authority's approved pipeline capacity, forecast contracted capacity (average and maximum) and throughput for the GGP covered pipeline (TJ/day)

TJ/day	2015	2016	2017	2018	2019
Pipeline capacity (TJ/day)	109	109	109	109	109
Average contracted capacity (TJ/day)	97.56	102.17	99.80	102.50	102.50
Maximum contracted capacity (TJ/day)	97.89	103.7	101.0	102.5	102.5
Throughput (TJ/day)	71.12	76.61	74.93	76.91	76.91

Source: ERA Analysis, June 2016.

Required Amendment 4

Pipeline capacity in section 1.5 of the Access Arrangement must be amended to 109 TJ/day.

Figures in GGT's access arrangement information should be amended to reflect those in Table 13.

Key Performance Indicators

Regulatory Requirements

318. Rule 72(1)(f) requires the access arrangement information for a full access arrangement proposal to include the Key Performance Indicators (**KPIs**) to be used by the service provider to support expenditure to be incurred over the access arrangement period.

GGT's Initial Proposal

319. GGT frames its KPIs in terms of unit operating costs of \$/PJ per day and \$/PJ Km per day for capacity reservation and throughput. GGT attests that the use of only a \$/PJ per day measure does not account for the fact that the outlets of the covered pipeline are distributed over 78 per cent of its length.¹⁰⁶
320. GGT's forecast unit operating costs indicate an overall reduction in operating expenditure over the third access arrangement period.¹⁰⁷
321. GGT submits that the unusually low operating expenditure on engineering operations from late 2012 to the first half of the 2014 calendar year was partially due to the reassignment of labour from the covered pipeline to support the expansion of the

¹⁰⁶ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information*, 28 August 2014, p. 16.

¹⁰⁷ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information*, 28 August 2014, p. 16.

pipeline in the Pilbara.¹⁰⁸ GGT submits that the reduction in administration costs in 2013 was due to the transfer of administration staff to operations related to uncovered portions of the pipeline. In 2014, these staff were transferred back to their substantive administrative roles where they will remain for the third access arrangement period.

Draft Decision

322. The Authority made the following required amendments to GGT's proposed KPIs:¹⁰⁹
- GGT must provide an operating expenditure cost per Km KPI in units of \$/Km of pipeline to facilitate benchmarking with comparable firms; and
 - GGT must provide operational expenditure linked KPIs that relate to pipeline integrity, availability and reliability as shown in its asset management plan.
323. The Authority's technical consultant Energy Market Consulting associates (EMCa) assessed GGT's proposed KPI's. EMCa considered that, while GGT's KPI in units of \$/PJ per day and \$/PJ Km per day supports its expenditure over the third access arrangement period, it does not facilitate comparison with other transmission pipelines, which base their KPIs on units of \$/Km. Furthermore, EMCa did not concur that GGT's explanation of the link between its forecast operational expenditure and the KPI conclusively supports that its forecast operating expenditure is efficient. Rather, EMCa found that the reduction in operating expenditure was mainly a result of a dilution of allocated to GGP.
324. EMCa benchmarked GGT's operating costs against those of other regulated transmission pipeline operators, with operating expenditure normalised by pipeline length. EMCa found that, of seven benchmark firms, GGT's operating expenditure was the equal second highest when normalised by pipeline length and pipeline diameter in the year 2011.¹¹⁰
325. EMCa also suggested that based on KPIs in GGT's Asset Management Plan (**AMP**), the Authority could consider requiring GGT to include pipeline integrity and availability KPIs and targets in its access arrangement and link expenditure to them.¹¹¹
326. EMCa did not accept GGT's explanation that the link between its forecast operational expenditure and KPI's conclusively supports that its forecast operating expenditure is efficient. EMCa found that the reduction in operating expenditure was mainly a result of a dilution of corporate costs allocated to GGP.
327. The Authority agreed with EMCa that GGT provided no link between its expenditure and KPIs and that the units provided by GGT did not facilitate benchmarking with comparable firms.

¹⁰⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 166.

¹⁰⁹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 38.

¹¹⁰ Energy Market Consulting Associates, *Goldfields Gas Transmission's Proposed Revised Access Arrangement for the Goldfields Gas Pipeline: Review of Technical Aspects of the Proposed Access Arrangement*, December 2014, p. 29.

¹¹¹ Energy Market Consulting Associates, *Goldfields Gas Transmission's Proposed Revised Access Arrangement for the Goldfields Gas Pipeline: Review of Technical Aspects of the Proposed Access Arrangement*, December 2014, p. 29.

GGT's Revised Proposal

328. GGT has not accepted required amendment 4 of the Authority's Draft Decision as it considers that the required amendment is beyond the scope of the NGL and NGR.¹¹² GGT submits that rule 72(1)(f) requires that access arrangement information include the KPIs to be used by the service provider to support expenditure to be incurred over the access arrangement period.¹¹³
329. GGT considers that it has provided the following:
- annual operating expenditure trend for the period 2010 to 2019 at constant (December 2013 prices);
 - trends in forecast and projected operating expenditures for 2010 to 2019;
 - unit operating expenditure trend in \$/PJ per day at constant (December 2013 prices);
 - unit operating expenditure trend in \$/PJ km per day at constant (December 2013 prices); and
 - unit engineering and field services expenditure trend in \$/PJ km per day at constant (December 2013) prices.¹¹⁴
330. GGT considers that the indicators which use a PJ Km measure are particularly important as the single measure of the service delivery provided by the GGP is the product of capacity and distance. It is not capacity alone; nor is it distance alone.¹¹⁵
331. GGT notes that the first part of required amendment 4 is designed to facilitate comparisons of GGT with comparable firms. GGT considers the Authority could construct KPIs to allow comparison should it find comparisons useful, but that such KPIs are not a requirement of the NGL and the NGR and that it is not the purpose for which rule 72(1)(f) requires that the access arrangement information include KPIs.¹¹⁶
332. In response to the second part of required amendment 4, GGT submitted that EMCa provided no indication of what the operational expenditure linked KPIs might be and how they might be constructed given the fact that the AMP is for management of the GGP and is not limited to the Covered Pipeline. GGT concludes that such KPIs would not be the KPIs required by rule 72(1)(f).¹¹⁷

¹¹² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, February 2016, p. 127.

¹¹³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, February 2016, p. 125.

¹¹⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, February 2016, p. 125.

¹¹⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, February 2016, p. 125.

¹¹⁶ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, February 2016, p. 126.

¹¹⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, February 2016, p. 127.

333. GGT considers that all of the performance indicators which GGT provided showed a decline in forecast operating expenditure relative to past expenditure.¹¹⁸ GGT also considers that the KPIs it has provided support its expenditure proposal as required by rule 72(1)(f) of the NGR.¹¹⁹

Submissions

334. None of the submissions made to the Authority on the proposed revisions to the access arrangement address KPIs.

Considerations of the Authority

335. The Authority notes that GGT has not accepted its required amendments to provide an operating expenditure cost per Km, or to provide operational expenditure linked KPIs that relate to pipeline integrity, availability and reliability as shown in its AMP.
336. GGT maintains that its proposed indicators measured in PJ Kms are particularly important, because the service delivered by the GGP needs to be measured as a product of capacity and distance.
337. The Authority accepts GGT's view that the purpose of rule 72(1)(f) of the NGR is for KPIs to be used by the service provider to support expenditure to be incurred over the access arrangement period.
338. The Authority considers that the operating expenditure cost per km KPI can be used to support forecast expenditure. However, given that this KPI can be easily calculated from information already provided by GGT in its access arrangement information, the Authority considers that GGT does not need to provide this KPI.
339. The Authority does not agree that all operating expenditure should be measured as a product of capacity and distance. However, the Authority accepts GGT's proposed KPIs as GGT has proposed to measure unit operating expenditure using both \$/PJ per day and \$/PJ km per day.
340. As a result of the Authority's adjustment in paragraph 477 to GGT's proposed operating expenditure in this final decision, the Authority requires GGT to amend the data in Figures 1 and 2 of its access arrangement information.^{120,121}
341. The Authority does not agree with GGT's assertion that asset health indicators in the second part of required amendment 4 of the Draft Decision do not meet rule 72(1)(f) of the NGR. The Authority considers that a KPI that relates to pipeline integrity, availability and reliability, as shown in its AMP, should be used by the service provider to support expenditure to be incurred over the access arrangement period.

¹¹⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, February 2016, p. 126.

¹¹⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, February 2016, p. 127.

¹²⁰ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information, Amended in response to ERA Draft Decision dated 17 December 2015*, 29 January 2016, p. 16.

¹²¹ GGT amended its operating expenditure and capacity in its response to the Authority's draft decision. However, GGT did not update its KPI data. GGT provided updated data for its KPIs reported in Figures 1 and 2 of its Access Arrangement Information on 9 May 2015 in response to *information request ERA30*.

342. The Authority notes that GGT's current AMP is for the whole pipeline. However, the Authority still considers that GGT could develop asset health KPIs for the covered pipeline for the fourth access arrangement period and link all KPI values and proposed targets to operating expenditure and capital expenditure allowances for the fourth access arrangement period. The Authority requires GGT to identify an asset health measure for the covered pipeline for use as a KPI during the fourth access arrangement period.

Required Amendment 5

Amend operating expenditure and capacity data in Figures 1 and 2 of the Access Arrangement Information in line with Required Amendment 4 and 477 in this final decision.

Operating Expenditure

Regulatory Requirements

343. Rule 91 of the NGR sets out the criteria the Authority must consider in approving a service provider's operating expenditure:

Criteria governing operating expenditure

- (4) Operating expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.
- (5) The [Authority's] discretion under this rule is limited.

344. Rule 69 of the NGR defines operating expenditure for the purposes of Part 9 of the NGR as follows:

operating expenditure means operating, maintenance and other costs and expenditure of a non-capital nature incurred in providing pipeline services and includes expenditure incurred in increasing long-term demand for pipeline services and otherwise developing the market for pipeline services.

345. Rule 74 of the NGR contains specific requirements for the provision of forecasts and estimates.

74 Forecasts and estimates

- (1) Information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate.
- (2) A forecast or estimate:
 - (a) must be arrived at on a reasonable basis; and
 - (b) must represent the best forecast or estimate possible in the circumstances.

346. Rule 71 of the NGR is also relevant to the Authority's consideration of forecast operating expenditure.

71 Assessment of compliance

- (1) In determining whether capital or operating expenditure is efficient and complies with other criteria prescribed by these rules, the [Authority] may, without embarking

on a detailed investigation, infer compliance from the operation of an incentive mechanism or on any other basis the [Authority] considers appropriate.

- (2) The [Authority] must, however, consider, and give appropriate weight to, submissions and comments received when the question whether a relevant access arrangement proposal should be approved is submitted for public consultation.

GGT's Initial Proposal

347. GGT initially forecast operating expenditure of \$117.205 million for the third access arrangement period.^{122 123} GGT's forecast operating expenditure was 6.7 per cent lower than GGT's actual operating expenditure of \$125.64 million during the second access arrangement period.^{124 125}
348. GGT's forecast operating expenditure (\$117.205 million) for the third access arrangement period consisted of the following:
- APA Operations accounts for 44 per cent (\$51.75 million)
 - GGT Operations accounts for 15 per cent (\$17.38 million)
 - APA Commercial Operations accounts for 15 per cent (\$17.95 million)
 - Corporate Costs accounts for 26 per cent (\$30.12 million).
349. GGT developed its forecast operating expenditure for APA operations, GGT operations and APA commercial operations over the third access arrangement period based on the latest five-year budget approved by the GGTJV on 20 June 2014.¹²⁶ GGT periodically prepares a detailed operating expenditure budget five years ahead for the GGP. GGT noted that its budget is prepared as follows:¹²⁷
- all forecast operating expenditure directly attributable to uncovered assets has been removed;
 - forecasts of operating expenditure attributable to both the covered pipeline and uncovered assets are allocated to the covered pipeline using different ratios;
 - a "base year" of actual expenditure has been selected and the five-year budget forecasts have been compared against the base year; and
 - significant differences have been identified and, where appropriate, adjustments have been made to the budget forecasts.
350. GGT's forecast Corporate Costs are calculated using an approach which allocates Corporate Costs across the APA Group entities on the basis of revenues earned. The Corporate Costs are actual Corporate Costs which have been identified from the

¹²² Real \$ million at 31 December 2013.

¹²³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 170.

¹²⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Table 24, p. 164.

¹²⁵ The Second access arrangement period was less than five years from 20 August 2010 to 31 December 2014. However for comparison purposes, the operating expenditure is compared on a five year basis i.e. from 1 January 2010.

¹²⁶ Goldfields Gas Transmission Pty Ltd, *Email response to EMCa17*, 10 October 2014.

¹²⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 165.

audited accounts from the APA Group in 2013. GGT's forecast Corporate Costs were calculated as follows: actual Corporate Costs were identified from APA Group's audited accounts in 2013:¹²⁸

- APA Group's Corporate Costs were allocated, on the basis of revenues earned in 2013, to each of the entities within the APA Group, including APT Goldfields Pty Ltd, and GGP service providers Southern Cross Pipelines Australia Pty Ltd and Southern Cross Pipelines (NPL) Australia Pty Ltd;
- Corporate Costs attributable to specific projects which are unrelated to GGP service provision are removed;
- escalation is applied to the total to obtain estimates of Corporate Costs for each year in the period 2015 to 2019; and
- a proportion of GGT's forecast Corporate Costs is attributed to the covered pipeline, the proportion, 70 per cent, is the ratio of TJ.km/day of capacity in the covered pipeline to the total TJ.km/day of capacity in the covered pipeline and the uncovered pipeline.

351. GGT proposed to include in total revenue, all costs that would be incurred by a prudent service provider in operating the covered pipeline on a standalone basis, as in the current access arrangement. The only costs that are not included in total revenue for the covered pipeline are the incremental costs associated with the uncovered pipeline and a share of APA's Corporate Costs. GGT proposed to allocate operating expenditure attributable to both the covered and uncovered pipeline using a ratio.
352. GGT selected 2012 as the base year for assessing the efficiency and prudence of forecast operating expenditure for the third access arrangement period as operating expenditure in 2013 and 2014 was abnormally low.
353. Table 14 shows GGT's proposed operating expenditure forecast by category for the third access arrangement period.

¹²⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Supporting Information*, 15 August 2014, pp. 183-184.

Table 14 GGT's Proposed Forecast Operating Expenditure (AA3) by Category¹²⁹

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	Total
APA Operations	10.027	10.430	10.823	10.391	10.083	51.753
GGT Operations	3.449	3.480	3.483	3.483	3.483	17.378
APA Commercial Operations	4.325	3.322	2.920	3.303	4.080	17.950
Corporate Costs	6.025	6.025	6.025	6.025	6.025	30.123
GGT Operating Expenditure	23.826	23.257	23.250	23.202	23.670	117.205

Source: Goldfields Gas Transmission Pty Ltd, Access Arrangement Revision Proposal Supporting Information, 15 August 2014, Tables 24 and 26, p. 164 and p. 170.

354. APA operations expenditure can be broken down as follows:

- Administration (business services), \$1.685 million or 3 per cent;
- Engineering, \$7.319 million or 14 per cent;
- Field services, \$40.805 million or 79 per cent; and
- Major expenditure jobs, \$1.944 million or 4 per cent.

355. GGT Operations expenditure can be broken down as follows:

- Administration, \$7.951 million or 46 per cent;
- APA operations recoverable, -\$4.934 million or - 28 per cent;
- APA operations management, \$6.526 million or 38 per cent;
- APA commercial management, \$5.947 million or 34 per cent;
- Projects/operations, \$1.599 million or 9 per cent;
- 1 per cent or \$0.215 million for a contractor to provide field services on the Newman Lateral.
- Less than 1 per cent or \$0.058 million on marketing, \$0.005 million on public relations and \$0.010 million on technical regulatory.

356. APA commercial Operations expenditure can be broken down as follows:

- Administration, \$2.490 million or 14 per cent;
- Legal, \$1.114 million or 6 per cent;
- Marketing, \$2.582 million or 14 per cent;
- Public relations, \$0.022 million;

¹²⁹ GGT's proposed corporate cost forecast includes an allocation of 30 per cent to the uncovered pipeline.

- ERA charges, \$2.065 million or 12 per cent;
- GGT regulatory costs, \$5.105 million or 28 per cent;
- Communications equipment lease and maintenance, \$1.089 million or 6 per cent; and
- Insurance, \$3.483 million or 19 per cent;

357. Corporate Costs expenditure was \$30.123 million.

Draft Decision

358. The Authority decided that \$90.631 million of GGT's forecast operating expenditure for the third access arrangement period satisfied the NGR:

- \$49.237 million for APA Operations expenditure;
- \$15.366 million for GGT Operations expenditure;
- \$9.536 million for APA Commercial Operations expenditure; and
- \$16.492 million for Corporate Costs.

359. Table 15 summarises the Authority's Draft Decision approved operating expenditure by category for the third access arrangement period.

Table 15 Authority's Draft Decision Approved Operating Expenditure Forecast by Category (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	Total
APA Operations	9.524	9.926	10.319	9.888	9.580	49.237
GGT Operations	3.073	3.073	3.073	3.073	3.073	15.366
APA Commercial Operations	2.371	1.700	1.523	1.680	2.262	9.536
Corporate Costs	3.298	3.298	3.298	3.298	3.298	16.492
Authority Approved Operating expenditure under the NGR	18.268	17.998	18.214	17.939	18.213	90.631

Source: ERA, GGP Tariff Model, December 2015.

360. The Authority engaged a technical consultant, EMCa to review GGT's forecast operating expenditure.

361. The Authority assessed GGT's proposed forecast operating expenditure for the third access arrangement period covering the following:¹³⁰

- Base year
- Labour rates
- APA Operations
- GGT Operations

¹³⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, December 2015, p. 50.

- APA Commercial Operations
 - Corporate Costs
362. The Authority determined that GGT's forecast operating expenditure was not based on the base year 2012.¹³¹ The Authority identified that GGT's forecast operating expenditure was made up of mainly labour related expenditure. The Authority assessed GGT's proposed labour rates under each of the four cost drivers.
363. The Authority's draft decision determined that \$49.237 million of GGT's proposed \$51.753 million for APA Operations complied with the NGR. The Authority did not accept GGT's proposed cost allocation for APA Operations. The Authority decided to allocate administration costs based on capacity and to allocate engineering costs in line with field service costs.
364. The Authority's draft decision determined that \$15.366 million of GGT's proposed \$17.378 million for GGT Operations complied with the NGR.¹³² The Authority did not accept GGT's proposed cost allocation for GGT Operations. The Authority decided to allocate 54.5 per cent of administration, APA operations recoverable, marketing and public relations costs to the covered pipeline based on capacity (109 TJ/day on the covered pipeline against total capacity on the GGP of 200 TJ/day). The Authority allocated 75 per cent of technical regulatory costs to the covered pipeline based on a ratio of 3:1 as it recognised that while significant costs relate to the covered services, some regulatory costs relate to uncovered services.
365. The Authority decided that GGT had not provided sufficient justification for the step increase to compensate APT Goldfields for its APA Commercial fee from 2016. The Authority also considered that GGT had not provided sufficient information to justify the increased provision in projects/operations for unspecified repairs resulting from cyclones from the second access arrangement period.
366. The Authority's draft decision determined that \$9.536 million of GGT's proposed \$17.950 million for APA Commercial Operations complied with the NGR.¹³³ The Authority did not accept GGT's proposed cost allocation for APA Commercial Operations. The Authority decided to allocate administration, legal, marketing, public relations, communications and insurance costs based on capacity of the covered pipeline against total capacity and to allocate regulatory costs on a ratio of 3:1 to the covered services.
367. The Authority decided that GGT's proposed APA Commercial Operations labour rates for administration, marketing and regulatory costs were excessively high and that the appropriate basis for the APA commercial operations labour rates is the internal (APA Group) comparator. Therefore, the Authority reduced the labour rates for APA Commercial Operations by 27 per cent.
368. The Authority decided that the Full Time Equivalent (FTE) amount for the regulatory function was too high and appeared disproportionate in relation to the rest of the

¹³¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, December 2015, p. 51.

¹³² Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, December 2015, p. 57.

¹³³ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, December 2015, p. 61.

entities within the APA Group. Therefore, the Authority reduced GGT's regulatory expenditure by \$0.446 million.

369. The Authority considered that should there be a regulatory regime change in the future with respect to the transfer of access functions, any changes to the ERA charges as a result of that change could be considered a change in law and would be assessed under the tariff variation mechanism.
370. The Authority decided that GGT's forecast insurance costs should be reduced by the amount of self-insurance costs incurred by GGT in the base year (2012).
371. The Authority's draft decision determined that \$16.492 million of GGT's proposed \$30.123 million for Corporate Costs complied with the NGR.¹³⁴
372. The Authority decided that GGT's proposed Corporate Costs were not derived on a reasonable basis and were biased towards imposing a higher proportion of APA Group's Corporate Costs on the covered GGP.
373. EMCa determined that GGT's annual costs before allocation between the covered and uncovered pipeline should be \$6.053 million based on a contribution of revenue of 13 per cent, not \$8.480 million as calculated by GGT.
374. The Authority considered that the provision of corporate services provided by a corporate centre are a necessary function of the prudent operation of a large business. However, the Authority was not satisfied that GGT's proposed corporate support operating expenditure was consistent with what a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest sustainable cost, would incur because of the following:
- GGT had not plausibly explained the derivation of its allocation of Corporate Costs to its GGP business or provided a calculation that shows this derivation.
 - GGT had not supported its claim that this allocation follows the same process as it has applied in regulatory resets with the Australian Energy Regulator and is as used internally for GGTJV budget approvals.
 - GGT provided inconsistent cost and revenue information through its responses to information requests from EMCa.
375. The Authority was not satisfied that GGT's proposed annual forecast of \$8.480 million which is allocated to the GGP complied with the NGR. The Authority did not accept GGT's proposed cost allocation for Corporate Costs. The Authority decided to allocate Corporate Costs based on capacity of the covered pipeline against total capacity. The Authority decided that an annual amount of \$3.299 million met the NGR.

GGT's Revised Proposal

376. GGT contends that the third access arrangement period begins on 1 July 2016 as outlined in the Interval of Delay section of the Reference Tariffs Chapter of this Final Decision. Accordingly, GGT's forecast operating expenditure for the third access

¹³⁴ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, December 2015, p. 65.

arrangement period only includes expenditure from 1 July 2016 to 31 December 2019 as shown in Table 16.

Table 16 GGT's Proposed Revised Forecast Operating Expenditure (AA3) by Category

Real \$ million at 31 December 2013	2016	2017	2018	2019	Total
APA Operations	5.385	11.297	10.964	10.754	38.400
GGT Operations	1.797	3.636	3.675	3.715	12.822
APA Commercial Operations	2.032	2.880	3.310	4.167	12.389
Corporate Costs	3.111	6.289	6.357	6.425	22.182
Total	12.326	24.102	24.305	25.061	85.794

Source: GGT, *Tariff Model*.

377. Table 17 summarises GGT's revised forecast operating expenditure for the period 2015 to 2019.¹³⁵

Table 17 GGT's Proposed Revised Forecast Operating Expenditure (AA3) by Category¹³⁶

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	Total
APA Operations	10.245	10.771	11.297	10.964	10.754	54.031
GGT Operations	3.492	3.594	3.636	3.675	3.715	18.111
APA Commercial Operations	3.472	4.065	2.880	3.310	4.167	17.894
Corporate Costs	6.155	6.222	6.289	6.357	6.425	31.448
Total	23.365	24.651	24.102	24.305	25.061	121.485

Source: GGT, *Access Arrangement Revision Proposal Response to ERA Draft Decision, Submission, January 2016*.

378. In its revised proposal GGT has proposed changes to its APA Commercial Management fee and Insurance and has reallocated its Regulatory costs. GGT has also increased its forecast operating expenditure in real dollars due to using different inflation assumptions.

379. Under GGT Operations expenditure, GGT submits that its proposed increase for projects/operations is required for rectification of damage to the pipeline and its easement caused by cyclones. GGT states that it provided evidence from the Bureau of Meteorology regarding the frequency and severity of cyclones in the Pilbara region, which result in heavy rains to inland regions and cause significant damage to the Covered Pipeline easement. GGT acknowledges that its proposed annual allowance for the third access arrangement period of \$0.320 million is higher than the average expenditure for 2010 to 2014 of \$0.225 million per year. GGT states that the higher amount recognises:¹³⁷

¹³⁵ Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, January 2016, p. 129.

¹³⁶ Goldfield Gas Transmission Pty Ltd, has applied different inflation assumptions since its initial proposal.

¹³⁷ Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, January 2016, p. 131.

- that flooding can be extensive and may cause substantial damage when it does occur;
 - the likelihood that La Niña events, which result in higher than average rainfall and increased frequency and severity of cyclones, will characterise much of the remaining third access arrangement period (although GGT understands that Australia is moving out of an El Nino cycle during the period).
380. GGT does not appear to address the Authority's required reduction for GGT's proposed step increase in APA Commercial Management fees to compensate APT Goldfields from 2016 onwards.
381. In its proposed APA Commercial Management expenditure, GGT notes that the Authority accepted forecasts which reflect a reduction of 27 per cent to the labour components of administration, marketing and GGT regulatory costs. GGT advises that the labour costs for APA Commercial Operations had been developed by applying the hourly rates reflected in the Commercial Services Agreement, which was established in 2003. GGT points out that the current owners have not sought to amend the labour rates and the opportunity and mechanism to enable GGT Joint Venture Participants to renegotiate these rates are in place. Further, there are appropriate incentives for Joint Venture Participants, particularly Alinta Energy GGT, to undertake such a renegotiation should the rates contained in the Agreement be considered "excessively high". GGT further notes that the issue of the labour rates for operating expenditure was raised in the previous access arrangement period and the Authority accepted the labour costs based on the rates in Commercial Services Agreement.¹³⁸
382. For its proposed regulatory costs, GGT submits that it has been unable to establish a direct link between EMCa's method for cutting forecast expenditure and the rationale it has provided. GGT considers that EMCa list a number of disjointed concerns with GGT's forecast resourcing activity, however, the recommended cuts to regulatory expenses involve unspecified and unjustified "adjustments to corporate-level resourcing of the regulatory function" to reduce the total from \$5.110 million to \$4.660 million. GGT acknowledges that some variation in the timing of regulatory expenditure is now expected for the period 2015 to 2019, as a result of release of the Draft Decision some six to nine months later than anticipated. GGT has reflected the timing change in its amended operating expenditure forecast.¹³⁹
383. GGT considers that the Authority's decision regarding approval of an insurance value based on 2012 is inconsistent with its view that, "The Authority generally accepts EMCa's assessment of GGT's operating expenditure that it does not consider base-lining operating expenditure costs based on 2012 costs."¹⁴⁰ GGT is also concerned that the cuts to forecasts result in an insurance allowance which is well below the estimate provided by Marsh when applied to the Covered Pipeline. GGT calculates that the total expenditure for the period 2010-2014 on insurance less self-insurance was \$2.796 million which equates to an average annual cost of \$0.559 million. GGT submits that given the nature of risks associated with the pipeline have not materially

¹³⁸ Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, January 2016, p. 132.

¹³⁹ Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, January 2016, p. 133.

¹⁴⁰ Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, January 2016, p. 133.

changed and current market quote indicates a significantly higher insurance cost should the pipeline be insured on a standalone basis, the forecast insurance expenditure should, as a minimum, be adequate to cover the average annual cost for the second access arrangement of \$0.559 million per year.¹⁴¹

384. In relation to Corporate Costs, GGT considers that EMCa has made some incorrect statements and considers that its assertion that GGT's proposed allowance for Corporate Costs is biased towards imposing a higher proportion of APA Group's Corporate Costs to the GGP is incorrect.¹⁴²
385. GGT explains that the APA Group comprises multiple businesses, including businesses which are regulated and businesses which are not regulated. GGT states that APA's exposure to commercial incentives drives the APA Board budget process. In the budgeting process, the Board is required by the Corporations Law to act in the interests of APA Group shareholders. Excessive Corporate Costs are not in the interests of those shareholders. There are, then, strong corporate governance reasons for the Authority to be confident that APA Group Corporate Costs are prudent and efficient – at the lowest sustainable level as would be incurred by a prudent service provider, acting efficiently in accordance with good industry practice. GGT also states that corporate level budgets are not prepared for any regulatory purpose. There is no presumption, at corporate level, that Corporate Costs can be recovered from customers through regulated tariffs. GGT notes that shareholder scrutiny will be facilitated following APA's announcement, in August 2015, that Corporate Costs would be reported as a separate line item in the audited financial statements for the Group. GGT notes that neither the Authority nor its consultant raised any concerns with the aggregate level of Corporate Costs incurred by APA Group.
386. GGT rejects EMCa's conclusion that APA Corporate Costs are biased towards imposing a higher proportion of APA Group's Corporate Costs on the GGP for the following reasons:
- GGT demonstrates that there is no "spike" in the allocation of Corporate Costs to the GGP in 2013, the relevant "base year" for the forecast of Corporate Costs used in the revision proposal for the GGP Access Arrangement.¹⁴³
 - GGT advise that APA Group owns a number of regulated assets, each of which is subject to periodic price review, principally by the AER, and that APA applies the same corporate cost allocation methodology to each of those assets. Were APA to allocate Corporate Costs in a biased way to inflate the base year costs of an entity undergoing a price review, the time series of the data available to the AER would make this readily apparent.
 - GGT demonstrates through a review of APA's regulated assets that there is no obvious variation in the allocation of Corporate Costs among businesses for price review purposes and no indication of bias in the allocation of Corporate Costs to the GGP.¹⁴⁴

¹⁴¹ Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, January 2016, p. 134.

¹⁴² Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, February 2016, p. 135.

¹⁴³ Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, February 2016, p. 137.

¹⁴⁴ Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, February 2016, pp. 137-138.

387. GGT shows the allocation of Corporate Costs for a number of APA Group regulated assets over a number of recent regulatory price reviews.¹⁴⁵ GGT states that corporate cost for the GGP in 2013 was \$8.480 million before costs were further allocated between the covered and uncovered pipeline. GGT states that any costs attributable to projects that are not related to regulated service provision were deducted.
388. GGT states that the cost allocation methodology used within APA Group was developed when APA Group owned a number of electricity transmission assets, which were subject to the rigorous cost allocation requirements of the National Electricity Rules and that the revenue based allocation methodology has been accepted by the AER and ACCC.
389. GGT explains that the allocation of Corporate Costs to the GGP is conducted on the same basis as other APA Group assets, and consistently over time and in a number of regulatory submissions. GGT explains that the actual allocation process is complex and that Corporate Costs are:
- directly attributed to cost centres where possible;
 - allocated among cost centres using causal allocators where possible, and
 - if there are remaining unallocated costs, allocated on the basis of contributions to revenues.
390. GGT asserts that the direct attribution of costs to particular cost centres is undertaken at the individual invoice level and, as a result, is not evident in aggregate data from APA's general ledger system. GGT submits that this aggregate data was hard coded into a spreadsheet and communicated to the Authority
391. GGT states that due to the nature of corporate support activity, only a relatively small proportion of the costs can be directly attributed to any particular operating business. Therefore, in order to test the reasonableness of the allocation process, APA monitors the difference between the finance system application of the process described in paragraph 389, and a direct allocation over revenue. GGT states that this was shown in the corporate cost spreadsheet previously provided to the Authority.
392. GGT seeks to demonstrate the reasonableness of its corporate cost allocation amount using the more detailed allocation process described in paragraph 389 by calculating the allocation of Corporate Costs that would have been obtained on a direct revenue allocation basis. GGT states that this allocation of Corporate Costs made solely on the basis of revenue, should not be materially different from the allocation which results from APA's actual allocation process.
393. GGT states that it is clear that EMCa did not understand the corporate cost allocation methodology and the revenue based reasonableness test and that EMCa mistakenly used a measure of:
- total Corporate Costs calculated by double counting costs related to the former Epic Energy assets; and
 - total corporate revenue that incorrectly includes amounts that are either removed on consolidation or do not attract Corporate Costs. GGT acknowledges that the Corporate Costs provided to EMCa were not transparent.

¹⁴⁵ Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, February 2016, p. 138.

394. GGT seeks to demonstrate the reasonableness of the allocation process by calculating the allocation of Corporate Costs that would have been obtained on a direct revenue allocation basis using the following 5 steps:¹⁴⁶
- Step 1: Calculate base revenue for corporate cost allocation purposes. In this step, the revenues over which Corporate Costs are allocated, are determined by reference to the APA Group audited financial statements. GGT shows the APA Group revenue less the revenues that it considers do not drive corporate management activity in table format for the years 2010 to 2013.
 - Step 2: Obtain revenues by operating entity. In this step the revenue for each of the relevant APA Group operating entities is obtained from the consolidated trail balance spreadsheet. GGT states that GGP revenues are earned by GGT Joint Venture participants Southern Cross Pipelines (NPL) Australia Pty Limited and Southern Cross Pipelines Australia Pty Limited, and by commercial services provider APT Goldfields Pty Limited.
 - Step 3: Calculate allocation percentage for each operating entity. The corporate cost allocation percentages used to test the reasonableness of the APA Group corporate cost allocation process are calculated by dividing the operating entity revenues by the APA Group revenue base. GGT shows the percentages for GGP and other regulated pipelines from 2010 to 2013. GGT calculates that the GGP allocation should be 16.3 per cent.
 - Step 4: Allocation of Corporate Costs using revenues. In this step, the total amount of APA Group Corporate Costs is allocated to the operating entities using the percentages determined in step 3. GGT states that the APA Group Corporate Costs for 2013 are \$56.018 million and the allocation to GGP is \$8.169 million based on the 16.3 percentage calculated in step 3.
 - Step 5: Compare results from APA Group corporate cost allocation process with results from revenue based allocation. In this step, the results of the corporate cost allocation carried out in APA Group's corporate financial system are compared with the results of revenue based allocation of Corporate Costs. GGT shows the differences are small when compared.
395. GGT concludes that its forecast was an allocation of Corporate Costs incurred by a corporate management team cognisant of the commercial and shareholder pressures to keep those costs as low as possible. GGT considers that the Corporate Costs allocated to the GGP were, therefore, costs such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

Submissions

396. BHPB considers that GGT's approach to cost allocation needs to be reconsidered following the transition from the Code to the NGL(WA) and NGR. BHPB considers that a key distinction between the Code and the NGL(WA)/NGR is the introduction of the NGO.

¹⁴⁶ Goldfield Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision*, February 2016, Table 10, pp. 142 - 146.

Considerations of the Authority

Access Arrangement Period

397. The Authority has determined that the commencement of the third access arrangement period begins on 1 January 2015. The Authority's consideration of the access arrangement periods are further discussed in the interval of delay section of the Reference Tariff chapter of this Final Decision. Therefore, the Authority has assessed GGT's forecast operating expenditure for the period 2015 – 2019.

Verification of Operating Expenditure

398. In the Draft Decision the Authority verified GGT's operating expenditure for the years ending 31 December 2010, 31 December 2011, 31 December 2012 and 31 December 2013 that were reviewed by Deloitte. The Authority found a discrepancy between the regulated accounts and the access arrangement supporting information for insurance costs. The Authority noted its concerns that the process and approach in which the expenditure figures were recorded by GGT and provided to Deloitte for review did not record this discrepancy. The Authority required GGT to submit its reviewed regulatory accounts for the year ending 31 December 2014 in any response to the Authority's Draft Decision.
399. GGT has provided its reviewed accounts for 2014 and the Authority has verified that the amounts in GGT's regulatory accounts are consistent with GGT's actual operating expenditure amounts in its access arrangement information.
400. However, as noted in this Chapter of the Final Decision, the Authority does not accept all of GGT's derived values for operating expenditure using GGT's cost allocation methodology under rule 91 of the NGR.

Assessment of Operating Expenditure

401. GGT initially forecast operating expenditure of \$117.205 million for the third access arrangement period.¹⁴⁷ The Authority did not approve GGT's forecast and determined that only \$90.631 million was acceptable for forecast operating expenditure under the NGR. GGT has submitted a revised proposed forecast operating expenditure of \$121.485 million.^{148,149}
402. The increase in GGT's proposed operating expenditure from its initial proposal, is predominantly explained by GGT's amended inflation assumptions, discussed below under the heading "Conversion between Real and Nominal Terms".
403. The Authority engaged EMCa to prepare an Addendum Report, to assess all elements of forecast operating expenditure that the Authority rejected in the Draft

¹⁴⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: submission*, pp. 128-129.

¹⁴⁸ GGT's revised proposal has higher real values for forecast operating expenditure than originally submitted. GGT state that this is a result of a change to inflation rate.

¹⁴⁹ Real \$ million at 31 December 2013.

Decision but that GGT still considers should be included.¹⁵⁰ EMCa's assessment shows that apart from its different inflation assumptions, GGT has proposed no change to its nominal expenditure forecast except for the following three items:¹⁵¹

- APA Commercial Management fee
- Regulatory costs
- Insurance

404. In its revised proposal, GGT has proposed to continue with the cost allocation approach used to allocate total revenue to reference services approved by the Authority for the second access arrangement. That is, GGT calculated total revenue for the third access arrangement period as the standalone costs associated with providing the covered services, excluding incremental operating costs associated with providing the uncovered services. GGT proposed to allocate operating expenditure on the following basis:

- APA Operations are allocated 100 per cent except for:
 - Field services are allocated based on GGT's assessment of the expected relative direct cost of field services in 2015, with a resulting 76 per cent allocation to the covered service.
- GGT Operations are allocated 100 per cent except for:
 - APA operations management is allocated 76 per cent to covered services in line with field services.
 - APA commercial management is allocated 69 per cent to covered services based on relative distance-weighted contracted capacity (i.e. contracted TJ.km/day between covered service contracted capacity and the contracted capacity for uncovered services), with a resulting 69 per cent allocation to the covered service.
- APA Commercial Operations costs are allocated 100 per cent to the covered services.
- Corporate Costs are allocated first to GGP based on relative revenue within the APA Group, and then within GGP are allocated to the covered service based on distance-weighted contracted capacity (i.e. 69 per cent, as above).

405. The Authority's assessment of GGT's proposed forecast operating expenditure for the third access arrangement period has included separate discussion on the following issues:

- Conversion between real and nominal terms
- Standalone cost assessment

406. The Authority's determination of GGT's proposed forecast operating expenditure is included under the following operating expenditure categories:

- APA Operations

¹⁵⁰ Energy Market Consulting associates, *Goldfields Gas Transmission's Proposed Revised Access Arrangement for the Goldfields Gas Pipeline Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016.

¹⁵¹ Energy Market Consulting associates, *Goldfields Gas Transmission's Proposed Revised Access Arrangement for the Goldfields Gas Pipeline Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016 p. 32.

- GGT Operations
- APA Commercial Operations
- Corporate Costs

Conversion between Real and Nominal Terms

407. GGT's revised forecast for operating expenditure is \$121.485 million (real dollars 2013) compared to its initial proposal of \$117.205 million. As stated in paragraph 403, GGT has proposed no change to its forecast except for three items. The main difference between GGT's initial forecast and revised forecast is a result of GGT changing its inflation assumptions, which are discussed in the following paragraphs.
408. GGT states that the starting point for the operating expenditure forecast of GGT's August 2014 access arrangement proposal was a set of nominal estimates which were de-escalated at 3 per cent to give the estimates at constant, December 2013, prices.¹⁵² In GGT's response to the Authority's Draft Decision, the August 2014 nominal estimates were de-escalated using the inflation assumption of 1.9 per cent from the Draft Decision.
409. EMCa has assessed GGT's proposed method of conversion of forecast costs and does not accept GGT's revised real or nominal amounts for forecast operating expenditure in the third access arrangement period. EMCa states that it is not valid to escalate costs to nominal terms using an inflator of 3 per cent but to then deflate at a lower rate to express them in real terms.¹⁵³
410. The Authority has considered GGT's proposal and EMCa's assessment and considers that GGT's revised forecast operating expenditure does not meet rule 74 of the NGR. The Authority does not accept GGT's proposal that the starting point for the operating expenditure forecast of GGT's August 2014 access arrangement proposal was a set of nominal estimates.¹⁵⁴ The Authority considers that GGT's initial forecasts for operating expenditure were based on historical expenditure inflated by 3 per cent.
411. GGT states that rule 87(4) of the NGR, imposes a requirement that the total revenue from which reference tariffs are determined is to be in nominal terms. Therefore, the forecast of operating expenditure used in total revenue determination must, be in nominal terms.
412. GGT explains that GGT's forecast capital and operating expenditures are largely forecasts of the costs of services provided by external suppliers. The proportions of labour and materials in these costs are not known to GGT. For the purpose of preparing the nominal forecasts required for total revenue determination, GGT has assumed inflation of 3 per cent, which is, approximately, the mid-point between the

¹⁵² Goldfields Gas Transmission Pty Ltd, *Response to information request EMCa 04*, 22 April 2016.

¹⁵³ Energy Market Consulting associates, *Goldfields Gas Transmission's Proposed Revised Access Arrangement for the Goldfields Gas Pipeline Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016.

¹⁵⁴ Goldfields Gas Transmission Pty Ltd, *Response to information request EMCa 04*, 22 April 2016.

Budget Paper No. 3 forecast of the increase in the Consumer Price Index (CPI) and the Wage Price Index.¹⁵⁵

413. In its Draft Decision the Authority determined that the expected rate of inflation for the coming 5 year regulatory period was 1.90 per cent.¹⁵⁶ In this Final Decision the Authority has determined an expected rate of inflation of 1.46 per cent as discussed in paragraph 813.
414. The Authority considers that the lower inflation estimate accepted by GGT in its response to the Authority's draft decision should reduce the nominal forecast operating expenditure compared to that initially proposed exclusive of any proposed adjustments. The Authority considers that it is not valid to escalate costs to nominal terms using an inflator of 3 per cent but to then deflate them at a lower rate to express them in real terms. The Authority also considers that in real terms, GGT's proposed forecast operating expenditure does not change by virtue of the lower inflation rate now used in its revised proposal. Therefore, the Authority considers that GGT's forecasts do not meet rule 74 of the NGR. The Authority determines that \$5.125 million of GGT's forecast operating expenditure does not meet rule 74 of the NGR.

Standalone Cost Assessment

415. In the Draft Decision the Authority determined that a number of APA operations expenditure items were not directly attributable to covered services and hence should be adjusted.¹⁵⁷ As discussed in depth in the section on 'Allocation of Total Revenue between Reference Services and Other Services', for these expenditure items the Authority determined under rule 93(2)(c) that it had the discretion to flexibly apportion to covered services only a share of the joint costs included in the total revenue calculation under rule 76.
416. In this Final Decision, the Authority has determined that there is no allowance under rule 93 of the NGR for it to adopt an interpretation or to exercise its discretion to provide for a part allocation of the total revenue calculated under rule 76 to improve the compliance of the associated reference tariff with the RPP and for the promotion of the NGO. The basis of the Authority's determination on this matter is provided in the section on 'Allocation of Total Revenue between Reference Services and Other Services'. As noted in paragraph 404, GGT calculated total revenue for the third access arrangement period as the standalone costs associated with providing the covered services, excluding incremental operating costs associated with providing the uncovered services. The Authority agrees that incremental operating costs associated with providing the uncovered services must be excluded. However, the Authority notes that there are also some other costs that GGT has included as "standalone" costs that must also be excluded as a result of the operation of rules 69 and 91 of the NGR. Thus, in this Final Decision, under rule 69 of the NGR, the Authority notes that operating costs will not be included as "operating expenditure" unless they are "incurred to deliver pipeline services" and under rule 91 of the NGR, the Authority notes that operating expenditure must reflect the standalone costs incurred in providing the covered services that are:

¹⁵⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 58.

¹⁵⁶ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 125.

¹⁵⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 324.

“such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

417. The Authority is of the view that, as used in rule 91 of the NGR and in the definition of "operating expenditure" in rule 69 of the NGR, "pipeline services" means "pipeline services provided by means of the covered pipeline" (and therefore does not include pipeline services provided by means of uncovered pipeline assets). This interpretation of rules 69 and 91 of the NGR (which are located in Part 9 of the NGR) is supported by GGT in its Response to the Draft Decision, where GGT submits that:¹⁵⁸

"... the qualifier “provided by means of the covered pipeline” is not found in Part 9 of the NGR because it is redundant. It is clear from the text of the NGL and the NGR that references to pipeline services, or services, in Part 9 of the NGR is to “services provided by means of the covered pipeline”, because it is precisely these services to which the access arrangement applies." (Emphasis added.)

418. The Authority therefore considers that where any operating costs are incurred to deliver pipeline services that are provided by means of the uncovered portion of the GGP, those costs are either:

- not "operating expenditure" within the definition in rule 69 (i.e. they are not incurred in providing pipeline services provided by means of the covered pipeline) and therefore, by that fact alone, are not to be included as forecast operating expenditure in determining the total revenue under rule 76(e) of the NGR; or
- if they are "operating expenditure" within the definition in rule 69, then they cannot be included in total revenue unless they are also such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services provided by means of the covered pipeline (as required by rule 91 of the NGR).

APA Operations

419. GGT has increased its forecast APA Operations expenditure from its initial proposal as it used different inflation assumptions as discussed in paragraphs 407 to 414.

420. GGT maintains its cost allocation methodology from its initial proposal, that total revenue for covered services includes all costs that would be incurred by a prudent service provider on a standalone basis. For APA Operations, GGT allocated 76 per cent of field services costs and 100 per cent of engineering and administration costs to the covered service as discussed in paragraph 404.¹⁵⁹

421. The Authority has assessed whether GGT's proposed forecast APA Operations expenditure meets rules 91 and 74 of the NGR. As stated in paragraph 416 the Authority's assessment under rule 91 of the NGR now includes an assessment of whether GGT's forecast APA Operations expenditure reflects only the standalone costs associated with the covered services. GGT argues that 100 per cent of

¹⁵⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision, February 2016*, p. 153.

¹⁵⁹ Goldfields Gas Transmission Pty Ltd, *Response to Information request EMCa 11, 14, 15 and 21*, 13 October 2014.

administration expenditure should be allocated to covered services on the basis that this cost would not be avoided if the assets comprising the GGP did not include uncovered assets.¹⁶⁰

422. The Authority does not accept GGT's proposal to use an allocator of 100 per cent to allocate administration costs as it does not represent the best forecast possible as required by rule 74 of the NGR. The Authority considers that it is unlikely that this category of operational expenditure is solely required to provide covered services and is therefore not "operating expenditure" within the definition in rule 69 of the NGR and are not the lowest sustainable costs of delivering covered pipeline services consistent with rule 91 of the NGR. Furthermore, the Authority considers that administration costs are largely independent of the length of the pipeline over which the gas is transported and are more closely related to the total capacity of the pipeline.
423. On this basis, the Authority has determined that the lowest sustainable, standalone administration cost that would be incurred by a prudent and efficient service provider in delivering the covered services of the GGP should be based on the relative capacity of the GGP to deliver those services. Given the total capacity of the GGP is 200 TJ/day, of which 109 TJ/day can be used to deliver covered services, the Authority has determined that 54.5 per cent of GGT's proposed administration costs meet rules 91 and 74 of the NGR.
424. The Authority accepts EMCa's recommendation that engineering costs for the covered services should be allocated on the same basis as field service costs. The Authority considers that GGT has not provided adequate information to determine otherwise. The Authority has determined that 76 per cent of GGT's proposed engineering costs meets rules 91 and 74 of the NGR as that is the expenditure that reflects the standalone cost that a prudent and efficient service provider would have incurred when providing the covered service.
425. The Authority has decided that \$49.237 million of GGT's forecast APA operations expenditure for the third access arrangement period meets rules 91 and 74 of the NGR. Table 18 shows the Authority's approved APA Operations expenditure forecast for the third access arrangement period.

¹⁶⁰ Goldfields Gas Transmission Pty Ltd, *Response to Information request EMCa 11, 14, 15 and 21*, 13 October 2014.

Table 18 Authority Approved APA Operations Expenditure Forecast (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	Total
GGT Proposed	10.245	10.771	11.297	10.964	10.754	54.031
Inflation correction	(0.218)	(0.341)	(0.475)	(0.573)	(0.671)	(2.278)
Administration and business services	(0.153)	(0.153)	(0.153)	(0.153)	(0.153)	(0.767)
Engineering	(0.350)	(0.350)	(0.350)	(0.350)	(0.350)	(1.749)
Total reductions	(0.721)	(0.845)	(0.978)	(1.076)	(1.174)	(4.794)
Authority Approved	9.524	9.926	10.319	9.888	9.580	49.237

Source: ERA Analysis, June 2016.

GGT Operations

426. GGT has increased its forecast GGT Operations amount as a result of using different inflation assumptions as discussed in paragraphs 407 to 414. At the same time, GGT has slightly decreased its “APA commercial management fee” in its revised forecast of GGT Operations expenditure in 2015.
427. GGT maintains its cost allocation methodology from its initial proposal, that total revenue for covered services includes all costs that would be incurred by a prudent service provider on a standalone basis. For GGT Operations, GGT has allocated 76 per cent of APA operations management, 69 per cent of APA commercial management, and 100 per cent of administration, APA operations recoverable, marketing, Newman, projects/operations, public relations and technical regulatory costs to the covered service as discussed in paragraph 404.
428. GGT has also addressed the Authority’s required amendment for a reduction to its proposed increase in projects in its response to the draft decision.
429. The Authority has assessed whether GGT’s proposed forecast for GGT Operations meets rules 91 and 74 of the NGR. As stated in paragraph 416, the Authority’s assessment under rule 91 now includes an assessment of whether GGT’s forecast GGT Operations expenditure reflects only the standalone costs associated with the covered services. GGT considers that 100 per cent of administration, operations recoverable, marketing, public relations and technical regulatory costs should be allocated to covered services on the basis that these costs would not be avoided if the assets comprising the GGP did not include uncovered assets.
430. The Authority does not accept GGT’s proposal to use an allocator of 100 per cent to allocate these costs as it does not represent the best forecast possible as required by rule 74 of the NGR. The Authority considers that it is unlikely that these costs are solely required to provide covered services and that none of the costs are required to provide uncovered services. Furthermore, the Authority considers that these costs are largely independent of the length of the pipeline over which the gas is transported and are more closely related to the total capacity of the pipeline.
431. On this basis, the Authority has determined that the lowest sustainable, standalone administration, operations recoverable, marketing and public relations costs that would be incurred by a prudent and efficient service provider in delivering the covered services of the GGP should be based on the relative capacity of the GGP to deliver

those services. Given the total capacity of the GGP is 200 TJ/day, of which 109TJ/day can be used to deliver covered services, the Authority has determined that 54.5 per cent of these costs meet rules 91 and 74 of the NGR.

432. For technical regulatory costs, the Authority accepts that a significant proportion of these costs relate to the covered service. Therefore, the Authority considers that 75 per cent of technical regulatory costs meets rules 91 and 74 of the NGR, as that is the expenditure that reflects the standalone costs that a prudent and efficient service provider would have incurred when providing the covered service.
433. As stated in paragraph 379, GGT has not accepted the Authority's required amendment to reduce its forecast for projects/operations. GGT maintains its position from its initial proposal that a higher amount of expenditure will be required for unspecified repairs to the pipeline easement and to surface facilities to cover for higher than average rainfall and an increased frequency of cyclones because of La Niña events. EMCa has assessed GGT's revised proposal and considers that the additional information provided by GGT is limited and fails to provide clear evidence to justify the increase in expenditure. EMCa maintains that its initial recommendation to reject the increase in forecast expenditure stands. The Authority has considered EMCa's recommendation and agrees that GGT has not provided adequate evidence to justify the increase in expenditure. The Authority has decided that \$0.475 million of GGT's proposed projects/operations expenditure does not meet rules 91 and 74 of the NGR, as GGT's forecast was not arrived at on a reasonable basis and GGT has not adequately demonstrated that the higher amount of expenditure is such as would be incurred by a prudent service provider acting efficiently.
434. As stated in paragraph 426, GGT has decreased its proposed forecast expenditure for APA commercial management fee in 2015 by \$0.033 million. However, GGT does not address the Authority's required reduction for APA commercial management fee from the draft decision or its proposed decrease in 2015. Therefore, the Authority considers that GGT has not justified the step increase in its initial proposal. In line with its draft decision, the Authority has decided that \$5.815 million for GGT's proposed APA commercial management fee meets rules 91 and 74 of the NGR as GGT's forecast was not arrived at on a reasonable basis and GGT has not adequately demonstrated that the higher amount of expenditure is such as would be incurred by a prudent service provider acting efficiently.
435. The Authority has decided that \$15.366 million of GGT's forecast GGT Operations expenditure for the third access arrangement period meets rules 91 and 74 of the NGR. Table 19 shows the Authority's approved forecast GGT Operations expenditure for the third access arrangement period.

Table 19 Authority Approved GGT Operations Expenditure Forecast (AA3) under rules 91 and 74 of the NGR

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	Total
GGT Proposed	3.492	3.594	3.636	3.675	3.715	18.111
Inflation correction	(0.074)	(0.114)	(0.153)	(0.192)	(0.232)	(0.765)
Administration	(0.724)	(0.724)	(0.724)	(0.724)	(0.724)	(3.618)
APA operations recoverable	0.449	0.449	0.449	0.449	0.449	2.245
Marketing	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.026)
Public relations	0.000	0.000	0.000	0.000	0.000	(0.002)
Technical regulatory	0.000	0.000	0.000	0.000	0.000	(0.002)
APA commercial management	0.000	(0.025)	(0.025)	(0.025)	(0.025)	(0.101)
Projects/operations (AA2 baseline)	(0.095)	(0.095)	(0.095)	(0.095)	(0.095)	(0.475)
Total reductions	(0.450)	(0.515)	(0.554)	(0.593)	(0.633)	(2.745)
Authority Approved	3.042	3.079	3.082	3.082	3.082	15.366

Source: ERA Analysis, June 2016.

APA Commercial Operations

436. GGT has increased its forecast APA Commercial Operations amount as a result of using different inflation assumptions as discussed in paragraphs 407 to 414.
437. GGT has reduced its insurance costs to remove an amount for self-insurance in line with the Authority's Draft Decision and has reflected a timing change of the access arrangement review in its regulatory costs.
438. GGT maintains its cost allocation methodology from its initial proposal, that total revenue for covered services includes all costs that would be incurred by a prudent service provider on a standalone basis. For APA Commercial Operations, GGT has allocated 100 per cent of administration, legal, marketing, public relations, communications and insurance costs to the covered services as discussed in paragraph 404.
439. The Authority has assessed whether GGT's proposed forecast APA Commercial Operations expenditure meets rules 91 and 74 of the NGR. As stated in paragraph 412, the Authority's assessment under rule 91 now includes an assessment of whether GGT's forecast APA Commercial Operations expenditure reflects the standalone costs associated with the covered services. GGT considers that 100 per cent of administration, legal, marketing, public relations and communications costs should be allocated to covered services on the basis that these costs would not be avoided if the assets comprising the GGP did not include uncovered assets.
440. The Authority does not accept GGT's proposal to use an allocator of 100 per cent to allocate these costs as it does not represent the best forecast possible as required by rule 74 of the NGR. The Authority considers that it is unlikely that these costs are solely required to provide covered services and that none of the costs are required to

provide gas transportation services to those users who make use of the uncovered capacity. Furthermore, the Authority considers that these costs are largely independent of the length of the pipeline over which the gas is transported and are more closely related to the total capacity of the pipeline.

441. On this basis, the Authority has determined that the lowest sustainable, standalone administration, legal, marketing, public relations and communications costs that would be incurred by a prudent and efficient service provider in delivering the covered services of the GGP should be based on the relative capacity of the GGP to deliver those services. Given the total capacity of the GGP is 200 TJ/day, of which 109 TJ/day can be used to deliver covered services, the Authority has determined that 54.5 per cent of these costs meet rules 91 and 74 of the NGR.
442. For regulatory costs the Authority recognises that while significant costs relate to the covered services, some regulatory costs relate to uncovered services. Therefore, the Authority has determined that 75 per cent of regulatory costs meet rules 91 and 74 of the NGR, as that is the expenditure that reflects the standalone costs that a prudent and efficient service provider would have incurred when providing the covered service.
443. As stated in paragraph 382, GGT does not accept the Authority's draft decision to reduce regulatory costs to reflect the disproportionate Full Time Equivalent (FTE) resourcing it proposed for regulatory activities. GGT submits that EMCa's reasons are disjointed and the cuts are unjustified. EMCa has assessed GGT's response and considers that its assessment on FTE resourcing has not changed, as GGT has not provided any further evidence to support the FTE resourcing assumptions used in its build-up of regulatory costs.
444. The Authority notes that GGT has reallocated its costs due to timing and also notes that GGT's forecast includes preparation costs for access arrangements in 2016 and 2019. The Authority notes that the second access arrangement period included an approved allowance for preparation costs for the third access arrangement review in 2014 and, by rule 71(1) of the NGR, the Authority is entitled to infer that the amount allowed for those preparation costs was efficient and otherwise compliant with the NGR. GGT has not shown why any additional amounts claimed for preparation costs for the third access arrangement review are justified in accordance with rule 91 of the NGR. The Authority therefore considers that an inclusion of regulatory costs for the preparation of the third access arrangement review in 2016 would be a windfall gain for GGT as the Authority already approved preparation costs for the third access arrangement in 2014 and the Authority considers that this would not be in the long-term interests of consumers in accordance with the NGO.
445. The Authority considers that a prudent service provider acting efficiently would have incurred the majority of expenditure related to preparing an access arrangement review prior to submitting its access arrangement, which was during the third access arrangement period. The Authority notes that GGT spent \$3.46 million on regulatory costs in the second access arrangement period. The Authority considers that GGT has not provided any further evidence to support its regulatory expenditure. This Final Decision does not approve any preparation costs for this revised access arrangement in 2016. The Authority has decided to reduce GGT's forecast expenditure for 2016 in line with GGT's forecast expenditure in 2015.
446. As stated in paragraph 381, GGT did not accept the Authority's draft decision to reduce labour rates for its APA Commercial Operations. EMCa has assessed GGT's rationale for using higher labour costs for its APA commercial operations and

recommends that its initial recommendation to reduce labour costs by 27 per cent stands. EMCa considers that GGT does not appear to have considered potential efficiencies in its cost estimates based on the opportunity/mechanism it claims are in place which allows renegotiation of labour rates. Furthermore, GGT provides no material to support why the costs in APA's commercial operations should be higher than in other parts of the business. The Authority considers that GGT has not provided sufficient evidence to support higher labour costs for its APA Commercial Operations costs and that these costs would not be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services. Therefore, the Authority has decided that \$1.346 million, which represents a labour rate reduction of 27 per cent, for administration, marketing and regulatory costs does not satisfy rules 91 and 74 of the NGR.

447. GGT submitted the cost of insurance is a portion of the APA Group cost of insuring the assets. GGT has removed an amount for self-insurance from its forecast insurance costs and revised its forecast insurance cost from \$3.483 million to \$2.796 million to be in line with the historic average annual cost for the second access arrangement of \$0.559 million per year.¹⁶¹
448. The Authority accepts GGT's revised approach to base its forecast insurance costs on an average annual insurance cost less self-insurance for the period 2010-2014 rather than just for the 2012 year as required in the Draft Decision.
449. However, the Authority has been unable to determine how much GGT's portion is compared to other APA Group companies as GGT has not provided the total APA Group cost of insurance or the percentage that is allocated to GGT. Due to this lack of information the Authority has assessed a non-binding quote provided by GGT in support of its proposal.
450. GGT's quote provided an estimate of the annual cost of the GGP of \$0.937 million from Marsh (an insurance broker). Based on GGT's allocation method, GGT allocated 70 per cent to the covered pipeline (based on TJ MDQ km/d) which resulted in an estimate of \$0.656 million.
451. The Authority has determined that the lowest sustainable, standalone insurance cost that would be incurred by a prudent and efficient service provider in delivering the covered services of the GGP should be based on the relative capacity of the GGP to deliver those services rather than TJ MDQ km/d as the itemised quote from Marsh shows that the insurance costs are largely independent of the length of pipeline over which the gas is transported.
452. Given the total capacity of the GGP is 200 TJ/day, of which 109 TJ/day can be used to deliver covered services, the Authority has determined that 54.5 per cent of GGT's proposed insurance costs meets rule 91 of the NGR. Therefore, the Authority has calculated that an annual Insurance cost of \$0.506 million (based on the Marsh quote) meets rules 91 and 74 of the NGR.
453. The Authority has decided that \$10.479 million of GGT's forecast APA Commercial Operations expenditure for the third access arrangement period meets rule 91 and rule 74 of the NGR. Table 20 shows the Authority's approved APA Commercial Operations expenditure forecast for the third access arrangement period.

¹⁶¹ GGT's revised amount also incorporates its revised inflation assumption.

Table 20 Authority Approved APA Commercial Operations Expenditure Forecast (AA3) under rules 91 and 74 of the NGR

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	Total
GGT Proposed	3.472	4.065	2.880	3.310	4.167	17.894
Inflation correction	(0.074)	(0.129)	(0.121)	(0.173)	(0.260)	(0.757)
Administration	(0.300)	(0.300)	(0.300)	(0.300)	(0.300)	(1.499)
Legal	(0.101)	(0.101)	(0.101)	(0.101)	(0.101)	(0.507)
Marketing reduction	(0.311)	(0.311)	(0.311)	(0.311)	(0.311)	(1.555)
Public relations	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.010)
GGT Regulatory costs reductions	(0.295)	(1.083)	(0.164)	(0.319)	(0.584)	(2.444)
Communications equipment lease & maintenance	(0.099)	(0.099)	(0.099)	(0.099)	(0.099)	(0.496)
Insurance	(0.041)	(0.035)	(0.030)	(0.024)	(0.018)	(0.149)
Total reductions	(1.223)	(2.060)	(1.128)	(1.329)	(1.675)	(7.415)
Authority Approved	2.249	2.005	1.752	1.980	2.492	10.479

Source: ERA Analysis, June 2016.

Corporate Costs

454. GGT has increased its forecast Corporate Costs as a result of using different inflation assumptions as discussed in paragraphs 407 to 414.
455. GGT maintains its cost allocation methodology from its initial proposal, that total revenue for covered services includes all costs that would be incurred by a prudent service provider on a standalone basis. Corporate Costs are allocated first to the GGP based on relative revenue within the APA Group, and then 69 per cent is allocated to the covered service based on relative contracted capacity-distance relationship (in TJ.km/day) as described in paragraph 404.
456. The Authority has assessed whether GGT's proposed forecast Corporate Costs meets rules 91 and 74 of the NGR. As stated in paragraph 416, the Authority's assessment under rule 91 of the NGR now includes an assessment of whether GGT's forecast APA Operations expenditure reflects the standalone costs associated with the covered services.
457. The Authority does not accept GGT's proposal to use an allocator of 69 per cent to allocate Corporate Costs to the covered service based on a relative contracted capacity-distance relationship (in TJ.km/day), as it does not represent the best forecast possible as required by rule 74 of the NGR. The Authority considers that Corporate costs are largely independent of the length of the pipeline over which the gas is transported, and are more closely related to the total capacity of the pipeline.
458. On this basis, the Authority has determined that the lowest sustainable, standalone Corporate Cost that would be incurred by a prudent and efficient service provider in delivering the covered services of the GGP should be based on the relative capacity of the GGP to deliver those services.

459. In its revised proposal, GGT explains that the actual corporate cost allocation process is complex and that Corporate Costs are:
- directly attributed to cost centres where possible;
 - allocated among cost centres using causal allocators where possible, and
 - if there are remaining unallocated costs, allocated on the basis of contributions to revenues.
460. GGT also states that in order to test the reasonableness of the allocation process, APA Group monitors the difference between the finance system applications of the process described above, and a direct allocation over revenue.
461. EMCa has assessed GGT's revised proposal on Corporate Costs in its Addendum Report. EMCa explains in its report that it met with APA Group in order to run through GGT's revised 3-step approach described in paragraph 457.¹⁶² However, EMCa consider that APA Group was unable to provide a reasonable response to indicate the materiality of Corporate Costs which are assigned to GGT at each of the 3 component stages. EMCa found that information submitted by GGT failed to provide any transparency on how its corporate cost allocation was derived in its accounting systems. EMCa also states that in attempting to assess GGT's actual approach to allocating its Corporate Costs, it is left with a three-line explanation, no data, no further understanding of the calculations and GGT's acknowledgement 'that the accounting system output is not transparent'.
462. GGT states in its revised proposal that the approach it outlines as part of its 'reasonableness test' produces a result that is close to the allocated amounts produced in its accounting systems and that therefore no adjustments to corporate overheads should be made.
463. EMCa states that GGT's revised approach outlined in paragraph 457 is contrary to information initially proposed and GGT was unable to provide a reasonable response to indicate the materiality of Corporate Costs which are assigned to GGT at each of the 3 component stages. Therefore, EMCa has had to revert to the calculations that GGT claims demonstrate the reasonableness of the allocated value and its assessment of benchmarks in KPMG's report to determine a Corporate Cost that meets rules 91 and 74 of the NGR.

Measures of costs and revenues used in reasonableness test

464. GGT claims that EMCa has made an error in calculating GGT's Corporate Costs and total APA Group revenue. GGT suggests that further revenues in the region of \$155.3 million should also be excluded from the total APA Group revenue.
465. EMCa has evaluated its assessment of total APA Group revenue. EMCa demonstrates in Table 18 of its Addendum Report that its total APA Group revenue excludes revenues which GGT had classified as 'pass-through', 'sales', 'interest income', 'interest paid' and 'dividends received'. EMCa states that it appears that some of the additional revenues GGT has identified for exclusion relate to Epic Energy. However, the 'Subsidiary investment and fee income' reported in Table 10 of GGT's revised proposal is \$100 million and is therefore inconsistent with including \$155.3 million of Epic Energy revenues. Further EMCa states that it questions

¹⁶² Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, pp. 25-26.

whether the excluded revenues should actually be excluded as it seems unlikely that such a level of revenue is able to be earned without the application of any corporate resource.

466. EMCa agrees with GGT that Epic Energy assets of (\$5.96 million) should be excluded from APA Corporate Costs for allocation purposes. EMCa states that its figure of \$45.6 million was based on a total APA Corporate Costs value of \$50.1 million with a number of line item exclusions, as advised by GGT. EMCa considers that the Epic Energy costs were already excluded from the \$50.1 million. Therefore, EMCa does not agree with GGT's claim that the exclusion of Epic Energy costs has been double counted in its cost allocation assessment.
467. EMCa has modelled two approaches to estimate the amount of APA Group Corporate Costs that should be allocated to GGT. Both approaches ensure that Epic Energy is treated consistently in the revenue and costs. The first approach considers including Epic Energy from the allocation calculation and the second approach considers excluding Epic Energy in the allocation calculation. The first approach results in \$6.84 million per year or 13.3 per cent of APA Group Corporate Costs allocated to GGT, whilst the second approach results in \$7.30 million per year or 16 per cent of APA Group Corporate Costs allocated to the GGT. EMCa's assessment demonstrates that none of the approaches produce estimates in the region of \$8.48 million per annum (before allocation to covered services) as proposed by GGT in its Initial Proposal.¹⁶³ EMCa find that GGT has not demonstrated the validity of the corporate cost amount that it proposes should be allocated to GGT.
468. EMCa calculated that allocating 54.5 per cent of the costs outlined in paragraph 467 to the covered pipeline based on relative capacity utilisation (i.e. the percentage of covered pipeline capacity against total capacity) would result in \$3.72 million per annum for the approach including Epic Energy and \$3.97 million per annum for the approach excluding Epic Energy.
469. In its initial report, EMCa reviewed KPMG's report on bottom-up benchmark Corporate Costs, which was submitted by GGT in order to validate its proposed Corporate Costs. In its initial report, EMCa determined that the relevant benchmarked value should be \$3.8 million per annum not \$6.506 million per annum as provided by KPMG. In its Addendum Report, EMCa highlights that GGT has not provided any further information to challenge its benchmarked value of \$3.8 million per annum for the standalone Corporate Costs.
470. EMCa states that as it cannot rely on GGT's proposed data and calculations, it has had to rely on its opinion on the cost build-up information from the KPMG report and on the revenue allocation-based cross checks, as described in its initial report. In regards to revenue-based allocation, EMCa considers that a range of assumptions are possible regarding the inclusion or exclusion of Epic Energy (in regards to revenue and, consistently, in regards to Corporate Costs) and the inclusion or exclusion (in the denominator) of revenues for businesses including asset management services and other business ventures. EMCa concludes that taking all of these factors into account it considers that its initial recommended value of \$3.3 million per annum is a reasonable allowance.

¹⁶³ Energy Market Consulting associates, *Goldfields Gas Transmission's Proposed Revised Access Arrangement for the Goldfields Gas Pipeline Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, p.43.

471. The Authority has assessed EMCa's findings for GGT's Corporate Costs and agrees that GGT has not demonstrated the validity of the Corporate Cost amount that it proposed should be allocated to the GGT.
472. As stated in paragraph 457, the Authority shares EMCa's view that the standalone cost of providing Corporate Costs should be based on the relative capacity of the GGP to deliver those services. Therefore, the Authority considers that EMCa are correct in its calculation that 54.5 per cent of Corporate Costs allocated to GGT meet rule 91 of the NGR, as that is the expenditure that reflects the standalone costs that a prudent and efficient service provider would have incurred when providing the covered service.
473. The Authority also shares EMCa's concern that a range of assumptions are possible in GGT's proposed reasonableness test and notes EMCa's assessment that neither of the two Epic Energy approaches produce an estimate in the region of \$8.48 million per annum (before allocation to covered services) as proposed by GGT. The Authority notes that GGT's actual corporate costs for the covered service, based on an allocation of 54.5 per cent based on relative capacity, may be somewhere between the two "Epic Energy" approaches noted above (\$3.72 million per annum and \$3.97 million per annum). However, as noted at paragraph 474, the Authority considers that GGT has not adequately demonstrated the validity of the Corporate Cost amount that it proposed should be allocated to the GGP. The Authority also notes the advice from EMCa that \$3.3 million per annum is a reasonable allowance for Corporate Costs.
474. Given these circumstances, the Authority considers that the reasonable efficient forecast of Corporate Costs on a standalone basis for the covered pipeline should be based on the EMCa determined benchmarked Corporate Costs for a standalone business based on the KPMG report.
475. As a result, the Authority has decided that \$3.8 million per annum of GGT's proposed Corporate Costs for the third access arrangement period satisfies rules 91 and 74 of the NGR as this amount reflects the Corporate Cost that is commensurate with the efficient Corporate Costs of a benchmark efficient entity.

Table 21 Authority Approved Corporate cost Expenditure Forecast (AA3) under rules 91 and 74 of the NGR

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	Total
GGT Proposed	6.155	6.222	6.289	6.357	6.425	31.448
Inflation correction	(0.131)	(0.197)	(0.264)	(0.332)	(0.401)	(1.326)
Corporate Costs	(2.225)	(2.225)	(2.225)	(2.225)	(2.225)	(11.126)
Total reductions	(2.356)	(2.422)	(2.490)	(2.558)	(2.626)	(12.452)
Authority Approved	3.799	3.799	3.799	3.799	3.799	18.997

Source: ERA Analysis, June 2016.

Final Decision

476. For the reasons given above the Authority has decided that \$94.079 million of GGT's proposed revised forecast for operating expenditure for the third access arrangement period satisfies rules 91 and 74 of the NGR as shown in Table 22.

Table 22 Authority's Final Decision Approved Operating Expenditure (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	Total
APA Operations	9.524	9.926	10.319	9.888	9.580	49.237
GGT Operations	3.042	3.079	3.082	3.082	3.082	15.366
APA Commercial Operations	2.249	2.005	1.752	1.980	2.492	10.479
Corporate Costs	3.799	3.799	3.799	3.799	3.799	18.997
Total	18.615	18.809	18.953	18.749	18.953	94.079

Source: ERA Analysis, June 2016.

477. Table 23 shows the Authority's approved operating expenditure in Nominal dollars using GGT's proposed model categories.

Table 23 Authority's Final Decision Approved Operating Expenditure (AA3)

	2015	2016	2017	2018	2019	Total
Pipeline operations	11.121	11.704	12.292	12.006	11.845	58.968
Commercial operations	2.515	2.590	2.631	2.670	2.709	13.115
Regulatory Costs	1.132	0.893	0.637	0.893	1.466	5.021
Insurance	0.522	0.530	0.538	0.545	0.553	2.688
Corporate Overheads	3.921	3.978	4.036	4.095	4.155	20.186
Total	19.211	19.695	20.135	20.210	20.728	99.978

Source: ERA Analysis, June 2016.

Required Amendment 6

Forecast operating expenditure must be amended to reflect Table 23 of this Final Decision.

Opening Capital Base

Regulatory Requirements

478. The capital base is the capital value attributed to the pipeline assets that are used to provide regulated services. The capital base is used to calculate the return on capital and depreciation (return of capital).
479. Rule 77(2) of the NGR establishes the approach to determining the opening capital base for an access arrangement period that follows immediately on the conclusion of a preceding access arrangement period.
480. The Authority notes that the AEMC published an updated version of the NGR on 2 October 2014, which added text to rule 77(2)(a).
481. Rule 77(2) of the NGR states:
- 77 Opening capital base
- ...
- (2) If an *access arrangement period* follows immediately on the conclusion of a preceding *access arrangement period*, the opening capital base for the later *access arrangement period* is to be:
- (a) the opening capital base as at the commencement of the earlier *access arrangement period* adjusted for any difference between estimated and actual capital expenditure included in that opening capital base. This adjustment must also remove any benefit or penalty associated with any difference between the estimated and actual capital expenditure;
- plus
- (b) conforming capital expenditure made, or to be made, during the earlier *access arrangement period*;
- plus
- (c) any amounts to be added to the capital base under rule 82 [capital contributions by users to new capital expenditure], rule 84 [speculative capital expenditure account] or rule 86 [re-use of redundant assets];
- less
- (d) depreciation over the earlier *access arrangement period* (to be calculated in accordance with any relevant provisions of the access arrangement governing the calculation of depreciation for the purpose of establishing the opening capital base); and
- (e) redundant assets identified during the course of the earlier *access arrangement period*; and
- (f) the value of pipeline assets disposed of during the earlier *access arrangement period*.
482. Rule 79 of the NGR sets out the criteria for new capital expenditure. Rule 79 of the NGR states:
- 79 New capital expenditure criteria
- (1) Conforming capital expenditure is capital expenditure that conforms with the following criteria:

- (a) the capital expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services;
 - (b) the capital expenditure must be justifiable on a ground stated in subrule (2).
- (2) Capital expenditure is justifiable if:
- (a) the overall economic value of the expenditure is positive; or
 - (b) the present value of the expected incremental revenue to be generated as a result of the expenditure exceeds the present value of the capital expenditure; or
 - (c) the capital expenditure is necessary:
 - (i) to maintain and improve the safety of services; or
 - (ii) to maintain the integrity of services; or
 - (iii) to comply with a regulatory obligation or requirement; or
 - (iv) to maintain the service provider's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred (as distinct from projected demand that is dependent on an expansion of pipeline capacity); or
 - (d) the capital expenditure is an aggregate amount divisible into 2 parts, one referable to incremental services and the other referable to a purpose referred to in paragraph (c), and the former is justifiable under paragraph (b) and the latter under paragraph (c).
- (3) In deciding whether the overall economic value of capital expenditure is positive, consideration is to be given only to economic value directly accruing to the service provider, gas producers, users and end users.
- (4) In determining the present value of expected incremental revenue:
- (a) a tariff will be assumed for incremental services based on (or extrapolated from) prevailing reference tariffs or an estimate of the reference tariffs that would have been set for comparable services if those services had been reference services;
 - (b) incremental revenue will be taken to be the gross revenue to be derived from the incremental services less incremental operating expenditure for the incremental services; and
 - (c) a discount rate is to be used equal to the rate of return implicit in the reference tariff.
- (5) If capital expenditure made during an access arrangement period conforms, in part, with the criteria laid down in this rule, the capital expenditure is, to that extent, to be regarded as conforming capital expenditure.
- (6) The [Authority's] discretion under this rule is limited.
483. Rule 82(1) of the NGR provides that a user may make a capital contribution towards a service provider's capital expenditure. Any capital contributions by a user may, with the approval of the Authority, be rolled into the capital base for a pipeline on condition that the service provider does not benefit through increased revenue from the user's contribution to the capital base.
484. Rules 88, 89 and 90 of the NGR specify particular requirements for the depreciation of pipeline assets in the Regulatory Asset Base (**RAB**).
485. Rule 88(2) of the NGR states that the depreciation schedule may consist of a number of separate schedules, each relating to a particular asset or asset class.

486. Rule 89(1) of the NGR states that the depreciation schedule should be designed:
- so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services;
 - so that each asset or group of assets (asset class) is depreciated over the economic life of that asset or group of assets (asset class);
 - so as to allow, as far as reasonably practicable, for adjustment reflecting changes in the expected economic life of a particular asset or a particular group of assets (asset class);
 - so that (subject to the rules about capital redundancy in rule 85 of the NGR), an asset is depreciated only once (i.e. the amount by which the asset is depreciated over its economic life does not exceed the value of the asset at the time of its inclusion in the capital base (adjusted, if the accounting method approved by the Authority permits, for inflation); and
 - so as to allow the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs.
487. Rule 90(1) of the NGR specifies that a full access arrangement must contain provisions governing the calculation of depreciation for establishing the opening capital base for the next access arrangement period. Rule 91(2) of the NGR states that those provisions must resolve whether depreciation of the capital base is to be based on forecast or actual capital expenditure.
488. Rule 69 of the NGR defines capital expenditure for the purposes of Part 9 of the NGR as follows:
- capital expenditure** means costs and expenditure of a capital nature incurred to provide, or in providing, pipeline services.

GGT's Initial Proposal

489. The opening capital base for the second access arrangement period was set at \$436.258 million (in nominal terms) at 20 August 2010. For its initial proposal, GGT derived the opening capital base for the third access arrangement period by adding to the opening capital base, proposed conforming capital expenditure for the period 20 August 2010 to 31 December 2014, and subtracting depreciation for the period. GGT stated that no redundant assets were identified/removed from the capital base, and no asset disposals were deducted from the capital base, over the second access arrangement period.¹⁶⁴ GGT proposed an opening capital base for the third access arrangement period of \$393.341 million (in nominal terms). Table 24 shows GGT's derivation of the opening capital base for the third access arrangement period from its initial proposal.

¹⁶⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Information*, 15 August 2014, p. 6.

Table 24 GGT's Initial Proposal Proposed Opening Capital Base for AA3

Nominal \$ million	2010	2011	2012	2013	2014
Opening capital base	436.258	432.602	421.878	411.191	402.379
Proposed conforming capital expenditure	0.244	0.435	1.021	3.101	2.991
Proposed depreciation	3.901	11.159	11.699	11.913	12.029
GGT's Proposed Opening Capital Base for AA3					393.341

Source: GGT, Access Arrangement Information, 15 August 2014, Table 6, p. 10.

490. GGT spent \$8.219 million (in real dollars million at 31 December 2013) on sustaining/Stay in Business (**SIB**) capital expenditure on the covered pipeline during the 2010-2014 period. SIB capital expenditure covers projects that are required to maintain and improve the safety or integrity of services and/or comply with a regulatory obligation or requirement. GGT did not spend any growth capital expenditure on the covered pipeline, which includes projects that are carried out to extend or expand the network to accommodate new/increased demand.
491. Over the course of the second access arrangement period, GGT directed the majority of its capital expenditure to compressor stations and SCADA and communications. In 2013, GGT directed the majority of its capital expenditure to rebuilding three maintenance bases/depots. Table 25 below shows GGT's initial proposal conforming capital expenditure for the period 2010-2014 by asset class.

Table 25 GGT's Initial Proposal Proposed Conforming Capital Expenditure 2010-2014

Real \$ million at 31 December 2013	2010 ¹⁶⁵	2011	2012	2013	2014	AA2
Pipeline and laterals	(0.090)	0.000	0.000	0.026	0.000	(0.064)
Main line valve and scraper stations	0.000	0.000	0.000	0.000	0.000	0.000
Compressor stations	0.466	0.050	0.266	0.580	0.882	2.243
Receipt and delivery point facilities	0.000	0.000	0.000	0.136	0.169	0.305
SCADA and communications	0.197	0.383	0.747	0.473	0.841	2.640
Cathodic protection	0.000	0.000	0.000	0.000	0.000	0.000
Maintenance bases and depots	0.096	0.000	0.000	1.320	0.089	1.505
Other (depreciable) assets	0.048	0.024	0.026	0.567	0.924	1.590
Non-depreciable assets	0.000	0.000	0.000	0.000	0.000	0.000
GGT Proposed Conforming Capital Expenditure (AA2)	0.717	0.457	1.039	3.102	2.905	8.219

Source: GGT, Access Arrangement Supporting Information, 15 August 2014 (figures converted to real dollars as per ERA analysis).

492. Apart from reversal corrections, GGT sought to justify all of its initial proposed conforming capital expenditure for the second access arrangement under one or

¹⁶⁵ In the tables included as part of GGT's initial proposal for proposed conforming capital expenditure for the second access arrangement period, GGT included a full year's worth of capital expenditure for 2010. The

more of the grounds in rule 79(2)(c) of the NGR (i.e. safety, integrity, compliance, and/or maintaining capacity to meet existing levels of demand). GGT also claimed that all of the expenditure satisfied the prudent service provider test as per rule 79(1)(a) of the NGR.

493. GGT's initial proposal, proposed depreciation at \$50.698 million (in nominal terms) for the second access arrangement period from 20 August 2010 to 31 December 2014.

Draft Decision

494. In its Draft Decision, the Authority determined different values of the opening capital base than proposed by GGT reflecting:
- amendments to values of conforming capital expenditure over the duration of the second access arrangement period that may be added to the capital base; and
 - corrections to the depreciation for the second access arrangement period.
495. The Authority noted various discrepancies in GGT's regulatory financial accounts when verifying GGT's capital expenditure over the second access arrangement. Upon seeking clarification from GGT and requesting reconciliations, the Authority considered that GGT's responses and reconciliations adequately explained the differences that arose between the regulatory financial accounts and access arrangement information. However, the Authority did express concern with the process and approach in which expenditure figures were recorded by GGT and provided to Deloitte for review.
496. Notwithstanding the discrepancies, the Authority considered that the regulatory financial accounts for the years ending 31 December 2010, 31 December 2011, 31 December 2012 and 31 December 2013 were free from material misstatement. The Authority requested that GGT provide the reviewed regulatory financial accounts for the year ending 31 December 2014 as part of its revised proposal.
497. The Authority engaged Energy Market Consulting associates (**EMCa**) to assess GGT's proposed capital expenditure.
498. In the Draft Decision, the Authority decided that:
- \$6.492 million of GGT's proposed capital expenditure for the 2010-2014 period complied with the criteria set out in the NGR, with \$6.150 million relating to the second access arrangement period:¹⁶⁶ and
 - \$1.727 million of GGT's proposed capital expenditure did not comply with the criteria set out in the NGR.
499. Table 26 below shows the Authority's Draft Decision approved capital expenditure for the period 2010-2014 under the NGR.

Authority notes that the second access arrangement period began on 20 August 2014 and not 1 January 2014. As such, the total capital expenditure figure for the 2010 includes amounts outside of the second access arrangement period.

¹⁶⁶ The second access arrangement period commenced on 20 August 2010, which required an apportionment based on days of 2010 proposed capital expenditure in that access arrangement period.

Table 26 Authority's Draft Decision Approved Conforming Capital Expenditure 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	AA2
Pipeline and laterals	(0.090)	0.000	0.000	0.000	0.000	(0.090)
Compressor stations	0.397	0.040	0.122	0.466	0.679	1.703
Receipt and delivery point facilities	0.000	0.000	0.000	0.136	0.169	0.305
SCADA and communications	0.157	0.306	0.598	0.369	0.615	2.045
Maintenance bases and depots	0.077	0.000	0.000	1.056	0.071	1.204
Other (depreciable) assets	(0.002)	(0.012)	0.000	0.455	0.884	1.325
Authority Approved Capital Expenditure (AA2)	0.539	0.334	0.720	2.482	2.418	6.492

Source: ERA, GGP Tariff Model, December 2015.

500. Table 27 shows the Authority's Draft Decision required amended values for calculating the opening capital base for the purposes of determining the return on and return of assets to be recovered from users of reference services for the third access arrangement period. These values differed from the Authority's determination for calculating the opening capital base under rule 77 of the NGR,¹⁶⁷ due to the Authority's application of its cost allocation methodology in its Draft Decision.

Table 27 Authority's Draft Decision Approved Opening Capital Base at 1 January 2015 for reference services only

Nominal \$ million	2010	2011	2012	2013	2014
Opening capital base (AA2)	436.042	432.304	421.327	410.136	400.458
Plus: capital expenditure	0.182	0.318	0.701	2.482	2.464
Less: depreciation	3.920	11.294	11.892	12.160	12.262
Plus: non-depreciable variation	0.000				
Closing capital base (AA2)	432.304	421.327	410.136	400.458	390.661
Authority Approved opening capital base at 1 January 2015					228.514

Source: ERA, GGP Tariff Model, December 2015.

GGT's Revised Proposal

501. GGT states that it has addressed the issues raised in the Authority's Draft Decision, and has amended the capital expenditure to be added to the capital base during the period from 1 January 2010 to 31 December 2014.¹⁶⁸ The Authority notes that the second access arrangement period commenced on 20 August 2010, and that while GGT stated 1 January 2010 in its response document, it meant 20 August 2010 as provided in its access arrangement information.

¹⁶⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, Table 26, p. 83.

¹⁶⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, p. 42.

502. The Authority notes that while GGT has stated it has addressed the issues raised, it has not accepted Required Amendment 6 from the Draft Decision to amend the opening capital base for 1 January 2015 as required.
503. GGT contends that the capital base must be rolled forward to the commencement of the revised access arrangement, which GGT considers to be 1 July 2016.¹⁶⁹ This is further discussed in the interval of delay section of the Reference Tariffs chapter of this Final Decision.
504. GGT notes that the capital expenditure it proposes to add to the capital base for the year ended 31 December 2014, and the Authority's Draft Decision approved conforming capital expenditure for the same year, were based on a forecast for that year. GGT states that it has taken into account the actual capital expenditure for the year ended 31 December 2014 in addressing Required Amendment 6 of the Draft Decision.¹⁷⁰ In addition, GGT notes that the actual capital expenditure for the year ended 31 December 2014 has been reviewed by GGT's auditor, Deloitte. This is further discussed in the verification of capital expenditure section below.
505. Table 28 summarises GGT's revised proposed conforming capital expenditure for the 2010-2014 period.

Table 28 GGT's Revised Proposal Proposed Conforming Capital Expenditure 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
Pipeline and laterals	(0.090)	0.000	0.000	0.026	0.000	(0.064)
Main line valve and scraper stations	0.000	0.000	0.000	0.000	0.000	0.000
Compressor stations	0.466	0.050	0.266	0.580	0.945	2.306
Receipt and delivery point facilities	0.000	0.000	0.000	0.136	0.184	0.320
SCADA and communications	0.197	0.383	0.747	0.473	1.500	3.299
Cathodic protection	0.000	0.000	0.000	0.000	0.000	0.000
Maintenance bases and depots	0.096	0.000	0.000	1.320	0.021	1.438
Other assets	0.048	0.024	0.026	0.567	0.067	0.733
GGT Proposed Conforming Capital Expenditure (AA2)	0.718	0.457	1.039	3.101	2.718	8.033

Source: Goldfields Gas Transmission Pty Ltd, *Access Arrangement Supporting Information*, January 2016, Table 3, pp. 46-47.

506. In response to the Authority's Draft Decision on GGT's initial proposal, GGT has provided further supporting information for the pipelines and laterals, compressor stations and other assets categories.
507. As stated above in paragraph 503, GGT contends that the capital base must be rolled forward to the commencement of the revised access arrangement, which it considers

¹⁶⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, p. 42.

¹⁷⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, p. 42.
Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 84.

to be 1 July 2016. Table 29 presents GGT's revised proposal derivation of the opening capital base.

Table 29 GGT's Revised Proposal Opening Capital Base

Nominal \$ million	2010 ¹⁷¹	2011	2012	2013	2014	2015	2016 ¹⁷²
Opening capital base	442.562	432.469	421.610	410.729	401.671	392.178	390.502
Capital expenditure	0.664	0.435	1.012	3.101	2.769	5.708	1.879
Depreciation	10.757	11.294	11.892	12.160	12.262	7.384	5.462
Closing capital base	432.469	421.610	410.729	401.671	392.178	390.502	386.919

Source: Goldfields Gas Transmission Pty Ltd, Proposed Revised Access Arrangement Information, 29 January 2016, Table 6, p.11.

Submissions

508. The Authority did not receive any submissions on GGT's initial proposal with respect to the opening capital base. GGT submitted a supplementary submission in response to the Draft Decision.
509. In its supplementary submission, GGT addresses the Authority's treatment of the initial capital base, the opening capital base for the second access arrangement period and the opening capital base for the third access arrangement period. GGT submits that the Authority's treatment of cost allocation in the Draft Decision is akin to a reestablishment of the initial capital base and the opening capital base for the second access arrangement period.¹⁷³
510. With respect to the Authority's Draft Decision on the opening capital base for the third access arrangement period, GGT submits that rule 93(2) of the NGR has no role in the assessment of whether capital expenditure incurred during the second access arrangement period, and forecast to be incurred during the third access arrangement period, is or is not conforming capital expenditure. The Authority addresses GGT's submission in the Allocation of Total Revenue between Reference Services and Other Services chapter of this Final Decision.
511. Submissions relating to the interval of delay, which has implications for the access arrangement period, are discussed in the interval of delay section of the Reference Tariff chapter of this Final Decision.

¹⁷¹ The Authority notes that the second access arrangement period began on 20 August 2014 and not 1 January 2014. As such, the total capital expenditure figure for the 2010 includes amounts outside of the second access arrangement period.

¹⁷² For the period 1 January 2016 to 30 June 2016.

¹⁷³ The Authority notes that it is no longer proposing to adopt this approach in its Final Decision.

Considerations of the Authority

Access Arrangement Period

512. The Authority does not accept GGT's view that the capital base must be rolled forward to the commencement of a revised start date of 1 July 2016 for the third access arrangement period. The Authority has determined that the commencement of the third access arrangement period begins on 1 January 2015. Hence, the Authority has not assessed GGT's capital expenditure and depreciation forecasts for the period 1 January 2015 to 30 June 2016 in deriving the opening capital base for the third access arrangement period. However, the Authority has made its assessment of those forecasts in its determination of the projected capital base for the third access arrangement period. The Authority's consideration of the access arrangement periods are further discussed in the interval of delay section of the Reference Tariff chapter of this Final Decision.

Verification of Capital Expenditure

513. GGT has provided the Authority with a copy of its regulatory financial account for the year ended 31 December 2014 as part of its revised proposal. The Authority notes that GGT's regulatory financial accounts for the years ended 31 December 2010, 31 December 2011, 31 December 2012 and 31 December 2013 were reviewed in the opening capital base chapter of the Draft Decision.

514. GGT engaged Deloitte to conduct a non-statutory review of the financial information relating to the schedule of regulatory revenue, operating expenditure and capital expenditure for the regulatory financial accounts provided to the Authority.

515. Deloitte stated that for the year ended 31 December 2014, based on its review, which was not an audit, nothing came to its attention that caused it to believe that the Schedule does not present fairly, in all material respects, the Operating and Capital Expenditure of GGTJV in accordance with the accounting policies described in Note 1 to the Schedules.¹⁷⁴

516. The Authority has undertaken its own review of GGT's regulatory accounts. The Authority has sought to ensure that the expenditures recorded in the financial accounts are consistent with GGT's proposal, specifically the access arrangement supporting information and tariff model.

517. Notwithstanding the discrepancies in proposed conforming capital expenditure, as noted in paragraph 495 and in the Draft Decision, the Authority considers that the regulatory accounts for the year ending 31 December 2014 are free from material misstatement.

518. However, as noted in this Chapter of the Final Decision, the Authority does not accept all of GGT's derived values for capital (and operating expenditure) using GGT's cost allocation methodology under rule 79 (rule 91 for operating expenditure).

¹⁷⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision – Attachment 2 – Schedules of Operating Expenditure and Capital Expenditure for 2014, and Deloitte's review report*, January 2016.

Standalone Cost Assessment

519. In its Draft Decision, the Authority determined that a number of capital expenditure projects were not directly attributable to covered services and hence should be adjusted. As discussed in the section on Allocation of Total Revenue between Reference Services and Other Services, for expenditure on these projects, the Authority determined under rule 93(2)(c) in its Draft Decision, that it had the discretion to apportion to covered services only a share of the joint costs included in the total revenue calculation under rule 76 of the NGR.
520. However in this Final Decision, the Authority has determined that there is no allowance under rule 93 of the NGR for it to adopt an interpretation or to exercise its discretion for a part allocation of the total revenue calculated under rule 76 of the NGR to improve the compliance of the associated reference tariff with the RPP and the promotion of the NGO. The basis of the Authority's determination on this matter is provided in the section on Allocation of Total Revenue between Reference Services and Other Services. Hence, under rule 79 of the NGR, the Authority determines that conforming capital expenditure must reflect only those standalone costs for covered services that are:
- "such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services."
521. The Authority is of the view that, as used in rule 79 of the NGR and in the definition of "capital expenditure" in rule 69 of the NGR, "pipeline services" means "pipeline services provided by means of the covered pipeline" (and therefore does not include pipeline services provided by means of uncovered pipeline assets). This interpretation of rules 69 and 91 of the NGR (which are located in Part 9 of the NGR) is supported by GGT in its Response to the Draft Decision, where GGT submits that:¹⁷⁵
- "... the qualifier "provided by means of the covered pipeline" is not found in Part 9 of the NGR because it is redundant. It is clear from the text of the NGL and the NGR that **references to pipeline services, or services, in Part 9 of the NGR is to "services provided by means of the covered pipeline"**, because it is precisely these services to which the access arrangement applies." (**Emphasis added.**)
522. The Authority therefore considers that where any costs of a capital nature are incurred to deliver pipeline services that are provided by means of the uncovered portion of the GGP, those costs are either:
- not "capital expenditure" within the definition in rule 69 (i.e. they are not incurred to provide, or in providing, pipeline services provided by means of the covered pipeline) and therefore, by that fact alone, are not to be included as conforming capital expenditure in determining the total revenue under rule 76 of the NGR; or
 - if they are "capital expenditure" within the definition in rule 69, then they cannot be included in total revenue unless they are also such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services provided by means of the covered pipeline (as required by rule 79(1) of the NGR) and justifiable on a ground stated in rule 79(2).

¹⁷⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 153.

Assessment of Capital Expenditure

523. The Authority's technical advisor for the initial proposal, EMCa, was requested to review and assess GGT's revised proposal forecast conforming capital expenditure for the second access arrangement period.¹⁷⁶ EMCa notes that GGT has not changed its total conforming capital expenditure amount for the second access arrangement period, other than to provide actual expenditure data for the year ended 31 December 2014 in place of the forecasts it provided in the initial proposal.
524. The Authority notes that GGT did not provide specific responses on projects which the Authority adjusted in its Draft Decision, based on EMCa's assessment in relation to apportionment of expenditure on assets between the covered and uncovered services. EMCa notes that it has reapportioned conforming capital expenditure for the second access arrangement period between covered and uncovered assets, where GGT did not specify that the nominated expenditure was directly attributable only to covered assets. The Authority, based on GGT's revised proposal, has revised its cost allocation approach, which is discussed in the Allocation of Total Revenue between Reference and Other Services chapter of this Final Decision. The implications of this revision are noted below in the relevant capital expenditure categories.

Pipelines and laterals

525. GGT proposed two projects under the pipelines and laterals asset category in its initial proposal for the Gorgon: GGP interconnection; and a reversal of costs for work near easement. The Authority in its Draft Decision agreed with EMCa's recommendation not to accept an expenditure of \$0.026 million for the Gorgon-GGP interconnection as it considered that the work had been based on a speculative requirement upon the request of one major user. In its Draft Decision, the Authority accepted GGT's proposal to reverse costs of \$0.090 million for work near easement, which was incurred by GGT prior to 2010 and that was subsequently reimbursed by a third party in 2010.¹⁷⁷
526. GGT responded in its revised proposal that it disagrees with EMCa's recommendation. GGT states that Gorgon is a major addition to domestic gas supplies and that its importance will increase in the future as North West Shelf gas supplies decline. GGT notes that it was of the view that all users of the GGP were likely to be interested in accessing Gorgon gas and, in these circumstances, GGT's undertaking of an investigation of a pipeline interconnection was entirely reasonable. GGT considers that the investigation into the development was important to ensure the long term maintenance of the integrity of services.¹⁷⁸
527. EMCa now considers that the expenditure on the Gorgon-GGP interconnection is for the potential benefit of all shippers, having considered the new and updated information provided by GGP. EMCa notes that the relatively small amount of expenditure was due to the research being discontinued.

¹⁷⁶ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, p. 9.

¹⁷⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 77.

¹⁷⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, pp. 48-49.

528. The Authority has evaluated the Gorgon-GGP interconnection to assess the standalone costs associated with the covered services and considers that the expenditure for the Gorgon-GGP interconnection satisfies the requirements of rule 74 and 79 of the NGR.¹⁷⁹

Table 30 Authority's Final Decision Approved Conforming Capital Expenditure on Pipeline and Laterals 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
Pipeline and laterals – proposed by GGT	(0.090)	0.000	0.000	0.026	0.000	(0.064)
Authority's Approved Pipeline and Laterals	(0.090)	0.000	0.000	0.000	0.000	(0.064)

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision, January 2016*, Table 3, pp. 46-47 and EMCa, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement, May 2016*, p. 10, ERA, *GGP Tariff Model, June 2016*.

Compressor stations

529. GGT proposed 16 projects for the compressor stations asset category in its initial proposal. The Authority determined in its Draft Decision that seven of the projects proposed by GGT satisfied the requirements of rules 74 and 79 of the NGR.¹⁸⁰ The Authority also determined that a number of capital expenditure projects were not directly attributable to covered services and hence should be adjusted.¹⁸¹ The Authority did not allow GGT's proposed expenditure for PLC support software as it did not consider that the purchase satisfied the requirements of the NGR. The Authority, in its Draft Decision, approved an amount of \$1.703 million compared to GGT's initial proposal amount of \$2.243 million.

530. As stated in paragraph 524, GGT has not provided project specific responses on projects that the Authority, in its Draft Decision, adjusted in relation to expenditure on assets used for covered and uncovered services. For the compressor stations category, GGT only responded in relation to the PLC support software project and not the other eight projects the Authority had adjusted on the basis that some of the expenditure incurred was for the purpose of delivering uncovered services. GGT's revised proposal capital expenditure on compressor stations for the 2010-2014 period is shown in Table 31.

¹⁷⁹ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, p. 10.

¹⁸⁰ Yarraloola engine rebuild at 48000 hours, Wiluna compressor station GEA, Paraburdoo replacement pressure safety valves, hazardous area remediation, Ilgarari hazardous area reclassification, Yarraloola controls upgrade and reference meter replacement.

¹⁸¹ Purchase of borescope, Yarraloola replacement ESD fire and gas systems, Yarraloola lightning protection upgrade, Yarraloola hazardous area compliance, GGP hazardous area upgrade, Yarraloola hazardous area reclassification, Yarraloola capital spares and Yarraloola spare parts storage. Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 322-323.

Table 31 GGT's Revised Proposal Capital Expenditure on Compressor Stations 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
Yarraloola compressor hazardous area declassification	0.000	0.000	0.000	0.011	0.304	0.315
Yarraloola ESD/fire and gas system replacement	0.000	0.000	0.000	0.164	0.452	0.616
Ilgarari compressor hazardous area declassification	0.000	0.000	0.000	0.001	0.254	0.255
Paraburdoo replacement pressure safety valves	0.018	0.000	0.000	0.000	0.000	0.018
Yarraloola spare parts storage	0.018	0.000	0.000	0.000	0.000	0.018
Yarraloola capital spares	0.127	0.000	0.000	0.000	0.000	0.127
Yarraloola engine rebuild	0.239	0.000	0.000	0.000	0.000	0.239
Borescope purchase	0.000	0.050	0.000	0.000	0.000	0.050
Stay in business compressor station CAPEX	0.065	0.000	0.266	0.403	(0.065)	0.669
Compressor stations – proposed by GGT	0.466	0.050	0.266	0.580	0.945	2.306

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, Table 3, pp. 46-47.

531. The Authority notes that GGT in its revised proposal has aggregated several of its existing projects from the initial proposal into an aggregated project titled, stay in business compressor station CAPEX, which consists of the following projects:

- GGT Reference Meter Replacement
- Wiluna Compressor Station GEA
- Yarraloola Lightning Protection Upgrade
- Yarraloola Hazardous Area Compliance
- Hazardous Area Remediation
- GGP Hazardous Area Upgrade
- Yarraloola Controls Upgrade
- PLC Support Software.¹⁸²

532. GGT states that the PLC support software provides remote access to the control systems of compressor units and gas engine alternators at compressor stations.¹⁸³ EMCa considered in its Technical Report that the expenditure should be disallowed as, based upon the information provided by GGT in its initial proposal, this project should have been self-funding.¹⁸⁴ EMCa, having considered the new information provided by GGT in its revised proposal, notes in its Addendum Report that the expenditure will ensure that the integrity of the pipeline services is maintained. However, EMCa notes that GGT has not explicitly confirmed whether the revised

¹⁸² Goldfields Gas Transmission Pty Ltd, *Response to ERA26*, 15 March 2016.

¹⁸³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to the ERA Draft Decision*, January 2016, pp. 49-50.

¹⁸⁴ Energy Market Consulting associates, *Review of Technical Aspects of the Proposed Access Arrangement*, December 2014, Table 8, pp. 36-37.

proposal amount of PLC software expenditure for compressors is associated only with delivering covered services. In the absence of such confirmation, EMCa recommends that only \$0.045 million of the proposed \$0.098 million be apportioned to covered services.¹⁸⁵

533. The Authority has assessed the PLC support software project under rule 79 of the NGR, consistent with paragraph 520. The Authority considers that only \$0.045 million of the proposed \$0.098 million for PLC support software is conforming capital expenditure on a standalone basis. The Authority considers that GGT has not adequately explained that its proposed expenditure is only for the covered compressor assets and, as a result, the incremental cost for the uncovered compressor assets should be excluded. The Authority has determined the incremental costs for the uncovered compressor assets to be excluded based on the ratio of uncovered compressor units to covered compressor units as being a better indicator of what a prudent service provider would incur to deliver the covered services on a standalone basis. .
534. Whilst GGT has only provided responses on the PLC Support Software project in its revised proposal, the Authority has evaluated each of the remaining eight projects to assess the standalone costs associated with the covered services, as stated in paragraph 520. The Authority considers that the compressor station projects listed below should be adjusted in accordance with the compressor asset ratio of 67 per cent¹⁸⁶ to reflect the expenditure that would be incurred by a prudent service provider delivering covered services on a standalone basis:
- Yarraloola replacement ESD, fire and gas systems
 - Yarraloola hazardous area reclassification
 - Yarraloola spare parts storage
 - Yarraloola capital spares
 - Yarraloola lightning protection upgrade
 - Yarraloola hazardous area compliance
 - GGP hazardous area upgrade
535. For the purchase of borescope project, the Authority accepts that GGT's revised proposal expenditure of \$0.050 million is the amount that would be incurred by a prudent service provider to deliver covered services on a standalone basis. Table 32 below shows the Authority's Final Decision approved conforming capital expenditure for compressor stations for the 2010-2014 period.

¹⁸⁵ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, pp. 11-12. .

¹⁸⁶ Being the ratio of covered compressor assets to the other compressor assets at the designated compressor station.

Table 32 Authority's Final Decision Approved Capital Conforming Capital Expenditure on Compressor Stations 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
Compressor stations – proposed by GGT	0.466	0.050	0.266	0.580	0.945	2.306
Yarraloola ESD/fire and gas system replacement				(0.054)	(0.149)	(0.203)
Yarraloola compressor hazardous area declassification				(0.004)	(0.100)	(0.104)
Yarraloola spare parts storage	(0.006)					(0.006)
Yarraloola capital spares	(0.042)					(0.042)
Yarraloola lightning protection upgrade					(0.004)	(0.004)
Yarraloola hazardous area compliance	(0.021)					(0.021)
GGP hazardous area upgrade			(0.072)	(0.029)		(0.102)
PLC support software: service and upgrade			(0.039)	(0.014)		(0.053)
Authority Approved Compressor Stations	0.397	0.050	0.155	0.478	0.691	1.771

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, Table 3, pp. 46-47, GGT, *Response to ERA 26, EMCa, Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, ERA, *GGP Tariff Model*, June 2016.

Receipt and delivery point facilities

536. In its initial proposal, GGT proposed two projects under the receipt and delivery point facilities asset category being the Yarraloola station flow meter upgrade and the DBNGP inlet filter upgrade. The Authority, in its Draft Decision, approved all of GGT's initial proposal expenditure (\$0.305 million) for this asset category, having noted EMCa's assessment from its Technical Report.
537. In its revised proposal, GGT has advised that the expenditure was for hydrocarbon dewpoint monitoring and has submitted a slightly increased overall expenditure for the asset category of \$0.320 million.¹⁸⁷ The Authority notes that GGT has not provided any explanation for the change in project. EMCa has assessed GGT's revised project and considers that the amount GGT reports to be spending on hydrocarbon dewpoint monitoring to be likely justified under rule 79 of the NGR as it provides operational information for the provision of covered services.¹⁸⁸
538. The Authority has evaluated GGT's revised proposal project for hydrocarbon dewpoint monitoring to assess the standalone costs associated with the covered services and considers that the expenditure for this project satisfies the requirements of rule 74 and 79 of the NGR. Table 33 shows the Authority's Final Decision approved conforming capital expenditure for receipt and delivery points for the 2010-2014 period.

¹⁸⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, Table 3, pp. 46-47.

¹⁸⁸ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, pp. 12-13.

Table 33 Authority's Final Decision Approved Conforming Capital Expenditure for Receipt and Delivery Points 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
Receipt and Delivery Points – proposed by GGT	0.000	0.000	0.000	0.136	0.185	0.320
Authority Approved Receipt and Delivery Points	0.000	0.000	0.000	0.136	0.185	0.320

Source: GGT, Access Arrangement Revision Proposal Response to the ERA Draft Decision, January 2016, Table 3, pp. 46-47, EMCa, Addendum to Review of Technical Aspects of the Proposed Access Arrangement, May 2016, ERA, GGP Tariff Model, June 2016.

SCADA and communications

539. In its initial proposal GGT proposed five projects under the SCADA and communications asset category for GGP satellite communications upgrade, replacement of GGP SCADA system master station, GGP UPS upgrade, Yarraloola SCADA communications upgrade and Paraburdoo Clear SCADA. In its Draft Decision, the Authority made adjustments to GGT's initial proposal expenditure on the basis that some of the expenditure incurred was for the purpose of delivering uncovered services. The Authority's Draft Decision approved an amount of \$2.045 million compared to GGT's initial proposal amount of \$2.640 million.

540. In its revised proposal, GGT has not responded specifically to any of the Authority's adjustments in this asset category, but instead has seemingly deleted GGP UPS upgrade project and aggregated and or renamed the remaining projects, in addition to incorporating actual 2014 expenditure. GGT's revised proposal capital expenditure for SCADA and communications for the 2010-2014 period is shown in Table 34.

Table 34 GGT's Revised Proposal Capital Expenditure on SCADA and Communications 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
Yarraloola Quantum RTU upgrade	0.000	0.383	0.747	0.331	1.070	2.531
Paraburdoo compressor station Quantum RTU upgrade	0.197	0.000	0.000	0.000	0.000	0.197
Newman scraper station Quantum RTU upgrade	0.000	0.000	0.000	0.142	0.430	0.572
SCADA and communications – proposed by GGT	0.197	0.383	0.747	0.473	1.500	3.299

Source: GGT, Access Arrangement Revision Proposal Response to the ERA Draft Decision, January 2016, Table 3, pp. 46-47.

541. EMCa notes that the three renamed projects relate directly to the Paraburdoo and Yarraloola compressor stations and the Newman scraper station. EMCa considers that GGT has not provided sufficient evidence that it has apportioned the expenditure to the covered assets and recommends that 33 per cent of the nominated expenditure at Paraburdoo compressor station, 67 per cent of the nominated expenditure at the

Yarraloola compressor station and 100 per cent of the nominated expenditure at Newman scraper station be apportioned to covered services.¹⁸⁹

542. Despite the lack of project specific responses from GGT on the SCADA and communications asset category, the Authority has evaluated each of the three renamed projects to assess the standalone costs associated with the covered services, as stated in paragraph 520. In the absence of any information, the Authority considers that GGT has not adequately explained that its proposed expenditure for the Yarraloola and Paraburdoo Quantum RTU upgrade projects are only for covered SCADA and communication assets. The Authority considers that the two projects should be adjusted in accordance with compressor station asset ratios of 67 per cent and 33 per cent between covered and uncovered compressor units respectively, to reflect the expenditure that would be incurred by a prudent service provider delivering covered services on a standalone basis. The Authority considers that GGT's proposed expenditure on the Newman scraper station Quantum RTU upgrade represents the standalone cost and has not adjusted that amount. Table 35 shows the Authority's Final Decision approved conforming capital expenditure for SCADA and communications for the 2010-2014 period.

Table 35 Authority's Final Decision Approved Conforming Capital Expenditure for SCADA and Communications 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
SCADA and communications – proposed by GGT	0.197	0.383	0.747	0.473	1.500	3.299
Paraburdoo compressor station Quantum RTU upgrade	(0.132)					(0.132)
Yarraloola Quantum RTU upgrade		(0.126)	(0.247)	(0.109)	(0.353)	(0.835)
Authority Approved SCADA and Communications	0.065	0.256	0.501	0.364	1.147	2.333

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, Table 3, pp. 46-47, EMCa, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, ERA, *GGP Tariff Model*, June 2016.

Maintenance bases and depots

543. In its initial proposal, GGT proposed four projects under the maintenance bases and depots asset category for Karratha maintenance base repairs, Karratha spare parts storage, Yarraloola accommodation and accommodation units (Paraburdoo, Leinster). In its Draft Decision, Authority made adjustments to GGT's initial proposal expenditure on the basis that some of the expenditure incurred was for the purpose of delivering uncovered services. The Authority's Draft Decision approved an amount of \$1.204 million for the four projects compared to GGT's initial proposal amount of \$1.505 million.
544. In its revised proposal, GGT has not responded specifically to any of the Authority's adjustments, but instead has seemingly aggregated the expenditure from Karratha maintenance base repairs and Yarraloola accommodation into one project, incorporated actual 2014 expenditure and proposed a slight reduction in total

¹⁸⁹ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, pp. 13-14.

expenditure across the asset category to \$1.438 million.¹⁹⁰ GGT's revised proposal capital expenditure for maintenance bases and depots for the second access arrangement is shown in Table 36.

Table 36 GGT's Revised Proposal Capital Expenditure on Maintenance Bases and Depots for 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
Karratha spare parts storage	0.015	0.000	0.000	0.000	0.000	0.015
Stay in business maintenance bases CAPEX ¹⁹¹	0.000	0.000	0.000	1.320	0.030	1.350
Accommodation units (Paraburdoo, Leinster)	0.081	0.000	0.000	0.000	(0.009)	0.072
Maintenance bases and depots proposed by GGT	0.096	0.000	0.000	1.320	0.021	1.438

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, Table 3, pp. 46-47

545. EMCa does not consider that GGT has provided sufficient evidence that it has appropriately apportioned the expenditure of maintenance bases and depots expenditure to the covered assets and recommends that only 80 per cent of the proposed expenditure be apportioned to covered assets.¹⁹²
546. Despite the lack of project specific responses from GGT on maintenance bases and depots, the Authority has evaluated each of the projects to assess standalone costs associated with the covered services, as stated in paragraph 520. In the absence of any information, the Authority considers that GGT has not adequately explained that its proposed expenditure for the three projects is only for delivering covered services. The Authority considers that the Karratha spare parts storage, Karratha maintenance base repairs and Yarraloola accommodation projects should be adjusted in accordance with the TJ.Km per day ratio between covered and uncovered capacity for the second access arrangement period, to reflect the expenditure that would be incurred by a prudent service provider delivering covered services on a standalone basis. For the accommodation units (Paraburdoo and Leinster) project, the Authority considers that this should be adjusted in accordance with the 2015 field services ratio established in the operating expenditure chapter, to reflect the expenditure that would be incurred by a prudent service provider delivering covered services on a standalone basis. Table 37 shows the Authority's Final Decision approved conforming capital expenditure for maintenance bases and depots for the 2010-2014 period.

¹⁹⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, Table 3, pp. 46-47.

¹⁹¹ Karratha maintenance base repairs and Yarraloola accommodation.

¹⁹² Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, pp. 14-15.

Table 37 Authority's Final Decision Approved Conforming Capital Expenditure for Maintenance Bases and Depots 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
Maintenance bases and depots - proposed by GGT	0.096			1.320	0.021	1.438
Karratha maintenance base repairs					(0.006)	(0.006)
Karratha spare parts storage	(0.003)					(0.003)
Accommodation units (Paraburdoo, Leinster)	(0.020)				0.002	(0.017)
Yarraloola accommodation				(0.264)		(0.264)
Authority Approved Maintenance bases and depots	0.074			1.056	0.018	1.147

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, Table 3, pp. 46-47, EMCa, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, ERA, *GGP Tariff Model*, June 2016.

Other assets

547. In its initial proposal, GGT proposed 13 projects under the other assets category. In its Draft Decision, the Authority noted EMCa's advice and approved expenditure for three of the projects that satisfied the requirements of the NGR.¹⁹³ The Authority did not consider at the time that adequate justification was provided for the tools and gas detectors project, purchase of test instruments project, fluke process calibrator project and E&I Field Response Equipment project. The Authority did not approve any of the proposed expenditure for these four projects. For the remaining six projects, the Authority made adjustments to GGT's initial proposal expenditure on the basis that some of the expenditure incurred was for the purpose of delivering uncovered services.¹⁹⁴ The Authority's Draft Decision approved an amount of \$1.325 million compared to GGT's initial proposal amount of \$1.590 million.
548. As stated in paragraph 524, GGT has not provided project specific responses on projects that the Authority in its Draft Decision adjusted in relation to expenditure incurred partly for the purposes of delivering uncovered services. For the other assets category, GGT has only provided responses to the four projects that were fully rejected due to inadequate justification being provided.¹⁹⁵ GGT's revised proposal capital expenditure on other assets for the 2010-2014 period is shown in Table 38.

¹⁹³ Reversal of accounting errors, Enterprise Asset Management system and Kal West Battery Charger. For office furniture, EMCa recommended an adjustment for this project, but the net result was immaterial and was thus approved.

¹⁹⁴ Office furniture (see footnote above), IT equipment, GGT BM85 replacement program, IDMT phase II, hut LED lighting and miscellaneous capital.

¹⁹⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 51.

Table 38 GGT's Revised Proposal Capital Expenditure on Other Assets 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
Miscellaneous tools	0.046	0.008	0.026	0.079	0.028	0.187
Office furniture	0.002	0.000	0.000	0.000	0.000	0.002
Asset and document management systems	0.000	0.000	0.000	0.286	0.000	0.286
Stay-in-business other assets CAPEX	0.000	0.017	0.000	0.203	0.039	0.258
Other assets – proposed by GGT	0.048	0.024	0.026	0.567	0.067	0.733

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision, January 2016, Table 3, pp. 46-47.*

549. The Authority notes that GGT in its revised proposal has aggregated several of its existing projects from its initial proposal into an aggregated project titled “Stay in business other assets CAPEX”, which consists of the following projects.

- Reversal of accounting errors
- Fluke process calibrator
- IT equipment
- Kal West Battery Charger
- GGT BM85 Replacement Program
- IDMT Phase II
- Hut LED lighting
- Yarraloola Unit PLC Back Plane¹⁹⁶

550. Additionally, it appears that GGT has aggregated the expenditure from tools and gas detectors, purchase of test instruments and E&I field response equipment into the retitled project, Miscellaneous tools.

551. GGT states that the expenditure for the four projects rejected in full in the Authority's Draft Decision were for tools, instruments and small items of equipment that were considered necessary for the maintenance and safe operation of the GGP. GGT notes that routine testing and calibration, using the fluke process calibrator, is essential to protect expensive items of equipment in order to maintain the integrity of services and to ensure safe operation.¹⁹⁷

552. EMCa notes that GGT has provided additional information for these four projects which, in combination with the explanations of the need to replace other obsolete and unserviceable assets in the category, is sufficient justification. However, EMCa notes that the tools, instruments and other similar equipment that GGT has proposed are equally able to be directed towards maintaining the integrity of uncovered pipeline

¹⁹⁶ Goldfields Gas Transmission Pty Ltd, *Response to ERA26*, 15 March 2016.

¹⁹⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 51.

assets. EMCa notes that GGT has not provided evidence in its revised proposal as to whether the tools are only used to deliver covered services. In the absence of confirmation, EMCa recommends that only 80 per cent of the expenditure be apportioned to covered assets, in accordance with the TJ.Km per day ratio for the second access arrangement period.¹⁹⁸

553. The Authority has assessed the four projects that GGT has provided additional information on in its revised proposal. The Authority considers that the revised proposal expenditure for tools and gas detectors, purchase of test instruments, E&I field response equipment and the fluke process calibrator are the amounts that would be incurred by a prudent service provider to deliver covered services on a standalone basis
554. Whilst GGT has only provided responses for the four projects which were initially rejected in full, the Authority has evaluated each of the remaining projects in the other assets category to assess the standalone costs associated with the covered services, as stated in paragraph 520. The Authority considers that the other asset projects listed below should be adjusted in accordance with the TJ.Km per day ratio between covered and uncovered capacity for the second access arrangement, to reflect the expenditure that would be incurred by a prudent service provider delivering covered services on standalone basis:
- IT equipment
 - GGT BM85 Replacement Program
 - IDMT Phase II
 - Hut Led lighting
555. Consistent with its Draft Decision, the Authority accepts the revised proposal amounts for reversal of accounting processors, Enterprise Asset Management system (retitled as asset and document management systems), Kal West Battery Charger and office furniture due to materiality of the adjustment. Table 39 shows the Authority's Final Decision approved conforming capital expenditure for other assets for the 2010-2014 period.

Table 39 Authority's Final Decision Approved Conforming Capital Expenditure for Other Assets 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	Total
Other assets - proposed by GGT	0.048	0.024	0.026	0.567	0.067	0.733
IT equipment				(0.002)		(0.002)
GGT BM85 Replacement Program				(0.004)		(0.004)
IDMT Phase II				(0.028)		(0.028)
Hut LED lighting					(0.007)	(0.007)
Authority Approved - Other assets	0.048	0.024	0.026	0.534	0.060	0.693

Source: GGT, Access Arrangement Revision Proposal Response to the ERA Draft Decision, January 2016, Table 3, pp. 46-47, EMCa, Addendum to Review of Technical Aspects of the Proposed Access Arrangement, May 2016, ERA, GGP Tariff Model, June 2016.

¹⁹⁸ Energy Market Consulting associates, Addendum to Review of Technical Aspects of the Proposed Access Arrangement, May 2016, pp. 15-16.

Cathodic Protection

556. GGT did not propose any capital expenditure under this asset category for the second access arrangement period.

Main line valve and scraper stations

557. GGT did not propose any capital expenditure under this asset category for the second access arrangement period.

Non-depreciable assets

558. GGT did not propose any capital expenditure under this asset category for the second access arrangement period.

Assessment of Depreciation

559. GGT has proposed to include an amount of depreciation in the opening capital base for the third access arrangement, as set out in Table 40 below.

Table 40 GGT's Revised Proposal Depreciation 2010-2014

Nominal \$ million	2010	2011	2012	2013	2014
Proposed depreciation	10.757	11.294	11.892	12.160	12.262

Source: GGT, *Access Arrangement Supporting Information*, January 2016, AAI Table 6, p.52.

560. The Authority notes that GGT's proposed depreciation amounts are more than the Authority's approved depreciation forecast for the second access arrangement period, as shown in Table 41. The difference between the Authority's approved and GGT's proposed depreciation in the opening capital base for the third access arrangement, reflects GGT's use of a full year of depreciation for 2010 compared to just the depreciation between 20 August 2010 to 31 December 2010. The Depreciation chapter of this Final Decision discusses depreciation further.

Table 41 Authority Approved Depreciation (AA2)

Nominal \$ million	2010	2011	2012	2013	2014
Authority Approved Depreciation (AA2)	3.920	11.294	11.892	12.160	12.262

Source: GGT, *Proposed Revisions to Access Arrangement Information – As Amended by the Western Australian Electricity Review Board*, 30 March 2012, Table 7, p. 9 *Opening Capital Base and ERA, GGP Tariff Model*, June 2016.

Final Decision

561. For the reasons given above, the Authority does not approve GGT's revised proposal capital expenditure for the second access arrangement period as submitted.

562. For the reasons given above, the Authority has decided that:

- \$6.200 million of GGT's proposed capital expenditure complies with the criteria set out in rules 74 and 79 of the NGR, with \$5.886 million relating to the second access arrangement period;¹⁹⁹ and
- \$1.833 million of GGT's proposed capital expenditure does not comply with the criteria set out in rules 74 and 79 of the NGR and should not be included in the opening value of the assets for the third access arrangement period.

563. Table 42 shows the Authority's adjusted conforming capital expenditure as per rules 74 and 79 of the NGR for the second access arrangement period.

Table 42 Authority's Final Decision Approved Conforming Capital Expenditure 2010-2014

Real \$ million at 31 December 2013	2010	2011	2012	2013	2014	AA2
Pipeline and laterals	(0.090)	0.000	0.000	0.026	0.000	(0.064)
Main line valve and scraper stations	0.000	0.000	0.000	0.000	0.000	0.000
Compressor stations	0.397	0.050	0.155	0.478	0.691	1.771
Receipt and delivery point facilities	0.000	0.000	0.000	0.136	0.185	0.320
SCADA and communications	0.065	0.256	0.501	0.364	1.147	2.333
Cathodic protection	0.000	0.000	0.000	0.000	0.000	0.000
Maintenance bases and depots	0.074	0.000	0.000	1.056	0.018	1.147
Other assets	0.048	0.024	0.026	0.534	0.060	0.693
Authority Approved Capital Expenditure (AA2)	0.495	0.330	0.682	2.593	2.100	6.200

Source: EMCa, Addendum to Review of Technical Aspects of the Proposed Access Arrangement, May 2016, ERA, GGP Tariff Model, June 2016.

564. Table 43 shows the Authority's required amended values for calculating the opening capital base under rule 77 of the NGR, taking into account the required amendments for conforming capital expenditure and depreciation for the second access arrangement period as set out in Table 42 and Table 41 respectively.

¹⁹⁹ The second access arrangement period commenced on 20 August 2010 which required an apportionment based on days of 2010 proposed capital expenditure in that access arrangement period.

Table 43 Authority's Final Decision Approved Opening Capital Base at 1 January 2015

Nominal \$ million	2010	2011	2012	2013	2014
Opening Capital Base (AA2)	436.016	432.263	421.283	410.055	400.488
Plus: Capital Expenditure	0.167	0.315	0.664	2.593	2.136
Less: Depreciation	(3.920)	(11.294)	(11.892)	(12.160)	(12.262)
Plus: Non-Depreciable Variation	0.000				
Closing Capital Base (AA2)	432.263	421.283	410.055	400.488	390.362
Authority Approved opening capital Base at 1 January 2015					390.362

Source: ERA, GGP Tariff Model, June 2016

Required Amendment 7

The opening capital base for 1 January 2015 used in the revised access arrangement must be amended to reflect the values in Table 43 of this Final Decision.

Projected Capital Base

Regulatory Requirements

565. Rule 78 of the NGR establishes the approach to determine the projected capital base for an access arrangement period.
566. Rule 78 of the NGR states that the projected capital base for a particular period is:
- 78 Projected capital base
- The projected capital base for a particular period is:
- (a) The opening capital base;
- plus:
- (b) forecast conforming capital expenditure for the period;
- less:
- (c) forecast depreciation for the period; and
 - (d) the forecast value of pipeline assets to be disposed of in the course of the period.
567. Rule 79 of the NGR sets out the criteria that capital expenditure must meet to be considered conforming capital expenditure. As discussed previously in the opening capital base section, capital expenditure must be incurred by a prudent service provider acting efficiently, and the expenditure must be justifiable on economic, safety or regulatory grounds.
568. The Authority's discretion is limited under rule 79 of the NGR. Rule 40(2) of the NGR sets out the Authority's limited discretion powers. Rule 40(2) states that the regulator must not withhold its approval of an element of an access arrangement proposal if it is satisfied that the element complies with the applicable requirements of the

NGL(WA) and is consistent with any applicable criteria (if any) prescribed by the NGL(WA).

569. Rule 74 of the NGR provides that information in the nature of a forecast or estimate must be supported by a statement of its basis, and must be arrived at on a reasonable basis, and must represent the best forecast or estimate possible in the circumstances.
570. Rule 71 of the NGR is relevant to the Authority's consideration of actual and forecast capital expenditure against the requirements of rule 79 of the NGR, and states that:
- 71 Assessment of compliance
- (1) In determining whether capital or operating expenditure is efficient and complies with other criteria prescribed by these rules, the [Authority] may, without embarking on a detailed investigation, infer compliance from the operation of an incentive mechanism or on any other basis the [Authority] considers appropriate.
 - (2) The [Authority] must, however, consider and give appropriate weight to, submissions and comments received when the question whether a relevant access arrangement proposal should be approved is submitted for public consultation.
571. Rule 88 of the NGR provides that the forecast depreciation of the capital base for the purpose of determining a reference tariff is to be calculated for each year of the access arrangement period on the basis set out in the depreciation schedule(s). The requirements in relation to forecast depreciation are set out in rule 89 of the NGR.
572. Rule 69 of the NGR defines capital expenditure for the purposes of Part 9 of the NGR as follows:
- capital expenditure** means costs and expenditure of a capital nature incurred to provide, or in providing, pipeline services.

GGT's Initial Proposal

573. GGT's initial proposal included an amount of \$12.857 million for sustaining/SIB capital expenditure on the covered pipeline over the third access arrangement period. Some of the proposed expenditure covered projects that continue work that started in the second access arrangement period. GGT did not propose any growth capital expenditure for the third access arrangement period.
574. Table 44 below summarises GGT's initial proposal conforming capital expenditure for the third access arrangement period.

Table 44 GGT's Initial Proposal Proposed Conforming Capital Expenditure (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	AA3
Pipeline and laterals	3.192	1.830	0.278	0.000	0.214	5.514
Main line valve and scraper stations	0.000	0.641	0.000	0.000	0.000	0.641
Compressor stations	1.009	0.822	0.000	0.209	0.288	2.328
Receipt and delivery point facilities	0.384	0.000	0.641	0.363	0.000	1.388
SCADA and communications	0.534	0.456	0.192	0.043	0.043	1.268
Cathodic protection	0.096	0.033	0.083	0.025	0.025	0.262
Maintenance bases and depots	0.620	0.000	0.000	0.000	0.000	0.620
Other assets	0.559	0.096	0.075	0.053	0.053	0.836
Non-depreciable assets	0.000	0.000	0.000	0.000	0.000	0.000
GGT Proposed Conforming Capital Expenditure (AA3)	6.394	3.878	1.269	0.693	0.623	12.857

Source: Goldfields Gas Transmission Pty Ltd, Access Arrangement Supporting Information, 15 August 2014 (figures converted to real dollars as per ERA analysis)

575. In support of its initial proposal for the third access arrangement period, GGT provided 18 business cases that totalled \$11.704 million or 91 per cent of GGT's initial proposal conforming capital expenditure. The Authority's technical advisor for the Draft Decision, EMCa, noted that the business cases for the projects that cost less than \$2 million were developed specifically for the initial proposal, and not for internal use.
576. GGT's Asset Management Plan listed capital expenditure project costs that excluded a [REDACTED] for project management and overheads that are applicable under the Operating Agreement.²⁰⁰ That margin was included in business cases and the initial proposal.
577. GGT sought to justify its proposed expenditure on sustaining capital expenditure under one or more of the grounds in rule 79(2)(c) of the NGR (i.e. safety, integrity or compliance). Maintaining system integrity was the basis for justifying 92 per cent of the expenditure, three business cases covering the balance of the expenditure were justified solely on safety grounds.

Draft Decision

578. In the Draft Decision the Authority determined different values of the projected capital base than proposed by GGT, reflecting:
- amendments to values of conforming capital expenditure in the 2015-2019 access arrangement period that may be added to the capital base; and
 - amendments to GGT's proposed depreciation approach.
579. In the Draft Decision the Authority decided that:
- \$8.789 million complied with the criteria set out in the NGR;

²⁰⁰ Operating Agreement between Goldfields Gas Transmission, Southern Cross Pipelines Australia and Southern Cross Pipelines (NPL) Australia and Duke Energy WA, APT Pipelines and APT Pipelines (WA).

- \$4.068 million did not comply with the criteria set out in the NGR; and
- the CCA approach for depreciation should be used instead of GGT's proposed HCA approach.

580. Table 45 shows the Authority's Draft Decision approved capital expenditure over the third access arrangement period as per the NGR.

Table 45 Authority's Draft Decision Approved Capital Expenditure (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	AA3
Pipeline and laterals	2.554	1.464	0.085	0.000	0.085	4.188
Main line valve and scraper station	0.000	0.513	0.000	0.000	0.000	0.513
Compressor stations	0.595	0.673	0.000	0.155	0.218	1.641
Receipt and delivery point facilities	0.230	0.000	0.417	0.000	0.000	0.647
SCADA and communications	0.330	0.349	0.125	0.028	0.028	0.860
Cathodic protection	0.000	0.000	0.000	0.000	0.000	0.000
Maintenance bases and depots	0.343	0.000	0.000	0.000	0.000	0.343
Other assets	0.450	0.067	0.034	0.024	0.024	0.597
Authority Approved Capital Expenditure (AA3)	4.502	3.066	0.661	0.207	0.355	8.789

Source: ERA, GGP Tariff Model, December 2015

581. Table 46 shows the Authority's Draft Decision required amended values for calculating the projected capital base for the purposes of determining the return on and return of assets to be recovered from users of reference services for the third access arrangement period. These values differed from the Authority's determination for calculating the projected capital base under rule 77 of the NGR,²⁰¹ due to the Authority's application of its cost allocation methodology in its Draft Decision.

Table 46 Authority's Draft Decision Approved Projected Capital Base (AA3)

Nominal \$ million	2015	2016	2017	2018	2019
Opening Capital Value (start of period)	228.514	230.607	227.220	220.954	213.864
Inflation	4.342	4.382	4.317	4.198	4.063
Opening Capital Value (end of period)	232.856	234.989	231.537	225.153	217.927
Plus: Capital Expenditure	4.674	3.244	0.713	0.227	0.397
Less: Straight line CCA Depreciation	(6.923)	(11.012)	(11.295)	(11.516)	(11.660)
Authority Approved Closing Capital Value	230.607	227.220	220.954	213.864	206.664

Source: ERA, GGP Tariff Model, December 2015.

²⁰¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, Table 39, p 101.

GGT's Revised Proposal

582. GGT has not accepted the Authority's required amendments 7 and 8 from the Draft Decision relating to conforming capital expenditure for 2015 to 2019 and the projected capital base.
583. GGT did not accept the Authority's view that \$4.068 million does not conform to the requirements of the NGR.
584. GGT did not accept the Authority's requirement to adopt the CCA approach for depreciation. GGT remains of the view that the HCA approach is the preferred depreciation approach and has submitted its revised proposal accordingly.
585. The Authority notes that GGT has not responded to the Draft Decision's cost allocation required amendment 13 for adjusted forecast conforming capital expenditure over the third access arrangement period.
586. As discussed in paragraph 503 in the opening capital base chapter of this Final Decision, GGT contends that the commencement date of the third access arrangement period is to be 1 July 2016. Accordingly, GGT's revised proposal forecast conforming capital expenditure for the third access arrangement period begins on 1 July 2016.

Capital Expenditure

587. Table 47 shows GGT's revised proposed conforming capital expenditure for the period 1 July 2016 to 31 December 2019.

Table 47 GGT's Revised Proposal Proposed Conforming Capital Expenditure (AA3)²⁰²

Real \$ million at 31 December 2013	2016	2017	2018	2019	AA3
Pipeline and laterals	1.830	0.278	0.000	0.214	2.322
Mainline valve and scraper stations	0.641	0.000	0.000	0.000	0.641
Compressor stations	0.801	0.000	0.209	0.288	1.299
Receipt and delivery point facilities	0.000	0.641	0.299	0.000	0.940
SCADA and communications	0.147	0.090	0.021	0.022	0.280
Cathodic protection	0.036	0.034	0.029	0.030	0.129
Maintenance bases and depots	0.000	0.000	0.000	0.000	0.000
Other depreciable assets	0.096	0.075	0.053	0.053	0.278
GGT Proposed Conforming Capital Expenditure (AA3)	3.552	1.117	0.611	0.607	5.888

Source: Goldfields Gas Transmission Pty Ltd, Access Arrangement Information, January 2016, Table 7, p. 12.

²⁰² As stated in the opening capital base chapter, GGT contends that the third access arrangement period begins on 1 July 2016. Accordingly, GGT's forecast conforming capital expenditure for the third access arrangement period only includes expenditure from 1 July 2016 to 31 December 2019.

Pipeline and laterals

588. GGT has not accepted the Authority's adjustments to the pipeline and laterals asset category.²⁰³ It has provided further evidence in support of the following projects:
- easement erosion repair;
 - in-line inspection verification digs; and
 - pipeline protection repair.

Mainline valve and scraper stations

589. GGT has not accepted the Authority's adjustments to the mainline valve and scraper stations asset category for the installation of scraper station facilities on the DBNGP-GGP interconnect and the installation of scraper station facilities on the Apache-GGP interconnect.

Compressor Stations

590. GGT has not accepted all of the Authority's adjustments to the compressor stations category. GGT states that it will no longer pursue the following two projects:
- Paraburdoo unit 1 human-machine interface upgrade; and
 - Paraburdoo accommodation upgrade.
591. In support of its revised proposal, GGT has submitted further evidence for the following projects:
- Yarraloola fire protection;
 - Ilgarari unit PLC backplane upgrade;
 - four hazardous area upgrades;
 - Yarraloola GEA PLC upgrade;
 - Yarraloola accommodation to workshop conversion;
 - Ilgarari GEA PLC upgrade; and
 - rotational spare DN 300 RA valve.

Receipt and delivery point facilities

592. GGT has not accepted the Authority's adjustments to the receipt and delivery point facilities category. GGT has provided further evidence in support of the following projects:
- Leonora offtake battery upgrade;
 - DBNGP-GGP interconnect C9 gas chromatograph installation; and
 - Apache-GGP interconnect C9 gas chromatograph installation.

²⁰³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, Table 5, p. 65.

SCADA and communications

593. GGT has not accepted the Authority's adjustments to the SCADA and communications category. GGT states that it has decided to not proceed with the Engineering PC in Gas Control Centre project.
594. GGT has provided further evidence in support of the Wiluna compressor station AB PLC5 upgrade project.

Cathodic protection

595. GGT has not accepted the Authority's adjustments to the cathodic protection category. GGT states that the wireless system interface for non-critical control project will not be undertaken during the third access arrangement period.
596. GGT has provided further evidence in support of the following projects:
- CP insulation joint surge protection upgrade;
 - CP surge diverter upgrades;
 - CP telemetry for KP670; and
 - CP power supply replacements.

Maintenance bases and depots

597. GGT has reduced its revised proposal amount for maintenance bases and depots substantially lower than required by the Authority's Draft Decision.

Other assets

598. GGT has not accepted all of the Authority's adjustments to the other assets category. GGT states that the hazardous area management software investigation and design project will not be undertaken during the third access arrangement period.

Submissions

599. The Authority did not receive any submissions on GGT's initial proposal with respect to the projected capital base. GGT submitted a supplementary submission in response to the Draft Decision.
600. In its supplementary submission, GGT addresses the Authority's treatment of the initial capital base, the opening capital base for the second access arrangement period and the opening capital base for the third access arrangement period. With respect to the Authority's Draft Decision on the opening capital base for the third access arrangement period, GGT submits that rule 93(2) of the NGR has no role in the assessment of whether capital expenditure incurred during the second access arrangement period, and forecast to be incurred during the third access arrangement period, is or is not conforming capital expenditure. The Authority addresses GGT's submission in the Allocation of Total Revenue between Reference Services and Other Services chapter of this Final Decision.
601. Submissions relating to the interval of delay, which has implications for the access arrangement period, are discussed in the interval of delay section of the Reference Tariff chapter of this Final Decision.

Considerations of the Authority

Access Arrangement Period

602. The Authority does not accept GGT's view that the capital base must be rolled forward to the commencement of a revised start date of 1 July 2016 for the third access arrangement period. The Authority has determined that the commencement of the third access arrangement period begins on 1 January 2015. Hence, the Authority has not assessed GGT's capital expenditure and depreciation forecasts for the period 1 January 2015 to 30 June 2016 in deriving the opening capital base for the third access arrangement period. However, the Authority has made its assessment of those forecasts in its determination of the projected capital base for the third access arrangement period. The access arrangement periods are further discussed in the interval of delay section of the Reference Tariff chapter of this Final Decision.^{204 205}

Conversion between real and nominal terms

603. As stated in paragraphs 407 to 414, the Authority agrees with EMCa's assessment that it is not valid for GGT to initially escalate costs to nominal terms using an inflator of three per cent for the initial proposal, but then to deflate at a lower rate to express them in real terms in its revised proposal. The Authority considers that in real terms, GGT's revised proposal forecast conforming capital expenditure for the third access arrangement period should not change for reasons other than the projects being no longer pursued or forecasts being amended by GGT.

604. EMCa notes that GGT, in preparing its revised proposal, has unintentionally presented its capital expenditure figures correctly in real terms, using an effective deflator of three per cent, as opposed to the method it states it has adopted in preparing the operating expenditure forecasts, as per paragraph 408.²⁰⁶

605. Consistent with its determination in the Operating Expenditure chapter of this Final Decision, the Authority does not accept the approach adopted by GGT whereby it initially escalated costs to nominal terms using an inflator of three per cent for the initial proposal, but then deflates those costs at a lower rate to express them in real terms in its revised proposal. As GGT has submitted its real capital expenditure revised forecasts using a deflator of three per cent, the Authority has not made any further adjustments for inflation in this chapter.

Assessment of Capital Expenditure

606. The Authority's technical advisor for the initial proposal, EMCa, reviewed and assessed GGT's revised proposal forecast conforming capital expenditure for the third access arrangement period. EMCa notes that GGT has provided new and updated information for some of the proposed projects, which EMCa raised specific

²⁰⁴ The Authority notes that GGT provided its regulatory financial accounts, in response to information request ERA 28, for the year ended 31 December 2015. The Authority has only used this information to inform its analysis of GGT's revised proposal capital expenditure for the third access arrangement period. The Authority has not used the actual capital expenditure for the purposes of determining forecast conforming capital expenditure for the third access arrangement period or setting the projected capital base at 31 December 2019.

²⁰⁵ Goldfields Gas Transmission Pty Ltd, *Email Response to ERA 28*, 20 April 2016.

²⁰⁶ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, p. 31.

issues with in its Technical Report. Additionally, the Authority notes that GGT has decided to no longer pursue a number of projects.

EMCa's expenditure forecast adjustment methodology

607. EMCa notes that in its assessment of GGT's revised proposal, its updated expenditure forecast adjustments, where required, range from -20 per cent to -35 per cent depending on the level of information provided by GGT to support its estimates. EMCa notes that it has, in some instances, not made an expenditure forecast adjustment as GGT has provided sufficient information in its revised proposal to satisfy EMCa's assessment criteria or GGT has itself reduced the proposed expenditure below the level EMCa initially recommended in its Technical Report. EMCa states that the size of its adjustments are commensurate with:
- EMCa's experience of the sort of cost reduction that can be achieved through competitive tendering combined with efficiency measures in maintenance practices when starting with cost estimates that, in the absence of sufficient evidence to the contrary, are based on high level assumptions; and
 - the change in scope and timing that GGT has demonstrated that it makes to its initial five year regulatory forecasts.
608. EMCa notes that both its adjustment levels are significantly less than the 70 per cent reduction in approved capital expenditure that GGT achieved over the course of the second access arrangement period. EMCa considers that GGT has provided recent evidence of its ongoing ability to refine the scope, timing and cost of its portfolio of projects, such as through project cancellations and reduced forecast expenditures. EMCa considers that its adjustment methodology for expenditure forecasts is fair and based on sound principles, which are consistent with the requirements of the NGL and NGR.²⁰⁷

Pipelines and laterals

609. In its initial proposal, GGT proposed nine projects under the pipeline and laterals asset class. In its Draft Decision, the Authority considered that GGT provided inadequate justification for the pipeline protection repair project as no business case was provided initially. For the easement erosion repair project, the Authority considered, at the time, that GGT's cost estimates were preliminary in nature and could be reduced by 35 per cent. Additionally, the Authority considered that the number of digs GGT proposed could be reduced from 72 to 60 for in-line inspection verification dig-ups. The Authority also considered that the cost estimates for in-line inspection and verification dig-ups and the remaining projects could be reduced by 20 per cent to account for the forecasting gap between approved estimates and the actual spend on capital expenditure during the second access arrangement period. In the Draft Decision, the Authority approved an amount of \$4.188 million compared to GGT's revised proposal amount of \$5.514 million for pipelines and laterals.
610. Similar to GGT's revised proposal for capital expenditure incurred in the second access arrangement period, GGT has only responded with further information for certain capital expenditure projects for the third access arrangement period. For pipelines and laterals, GGT has provided further information in support of the pipeline

²⁰⁷ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, pp. 29-30.

protection repair project, easement erosion repair project and the in-line inspection verification digs project.

611. For the pipeline protection repair project, EMCa considers that GGT has now provided sufficient justification of the business need and the basis of the cost estimate. EMCa considers that the proposed expenditure satisfies the requirements of the NGR. The Authority notes EMCa's assessment and considers that the revised proposal amount of [REDACTED] meets the requirement of rule 79 of the NGR.
612. In its revised proposal, GGT confirms that the northern part of the GGP is within a cyclonic zone and subject to heavy rainfalls, which can scour the pipeline easement and would require repairs. GGT provided a photograph of scouring damage in its revised proposal.²⁰⁸ EMCa maintains its view from its Technical Report that there is a business need for some expenditure in relation to this project. However, EMCa is of the view that GGT still has not provided sufficient/satisfactory information to demonstrate the easement erosion beyond the single event that it recommended in its Technical Report. Additionally, EMCa notes that no statistical evidence has been provided. EMCa states that it is not apparent from the second access arrangement period actual expenditure whether GGT has incurred capital expenditure on easement repair over the prior period. EMCa notes that GGT could be managing minor erosion repair under its reactive maintenance budget. Lastly, EMCa notes that GGT has provided no information in support of how it derived the cost estimate, such as by providing historical expenditure amounts. EMCa recommends that only [REDACTED] be approved.²⁰⁹
613. The Authority notes EMCa's assessment of the easement erosion repair project and considers that GGT has not provided sufficient information as to how it has derived the cost estimate. Additionally, the Authority notes that it is not apparent whether GGT has incurred capital expenditure for this purpose over the previous access arrangement period. The Authority considers that only [REDACTED] of the revised proposal amount of [REDACTED] be approved as per rules 74 and 79 of the NGR.
614. For in-line inspection verification digs, GGT states that the purpose of the digs is the physical verification of the results of in-line inspection (intelligent pigging). GGT states that the number of digs is not arbitrary and is determined using standard principles of statistical sampling. GGT notes that periodic in-line inspection is a condition of Pipeline Licence 24 and the forecast capital expenditure is for work essential to maintaining the safety and integrity of services.²¹⁰
615. EMCa notes that in its Technical Report, it accepted GGT's assessment that the mainline sections would require six digs on average. However, because at a length of 48km, the Newman lateral is three times shorter than the average length of the nine mainline sections and because the interconnection pipeline sections are also relatively short, it determined that an average of two digs for the shorter sections would be sufficient. Additionally, EMCa did not consider, at the time, that GGT's initial proposal amount per dig of [REDACTED] was reasonably estimated. It therefore recommended a reduction of 20 per cent, after reducing the number of required digs.

²⁰⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, pp. 54-55.

²⁰⁹ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, p. 20.

²¹⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, pp. 55-56.

EMCa notes in its Addendum Report that GGT still has not substantiated the estimated cost per dig, nor explained why the number of digs on the shorter pipeline sections is the same as the longer mainline sections. For these reasons, EMCa considers that there is no basis to change its original assessment.

616. The Authority notes EMCa's assessment of the in-line inspection verification digs and considers that GGT has not provided sufficient evidence to substantiate its cost estimates per dig, nor has it provided sufficient justification as to why the shorter lengths of the pipeline would require the same number of digs as the longer mainline sections. The Authority considers that only [REDACTED] of the revised proposal amount be approved as per rules 74 and 79 of the NGR.
617. As stated in paragraph 610, GGT has only responded to the Authority's Draft Decision on certain projects. However, as per paragraph 520, the Authority has evaluated each of the remaining projects to determine the standalone costs associated with providing covered services and considers that only \$4.048 million of the revised proposal amount for pipeline and laterals satisfies the requirements of rules 74 and 79 of the NGR. The Authority notes that the amount for in-line inspection verification digs has also been corrected from the Draft Decision due to a correction in the Authority's modelling. Table 48 shows the Authority's Final Decision approved conforming capital expenditure for pipelines and laterals.

Table 48 Authority's Approved Final Decision Conforming Capital Expenditure for Pipelines and Laterals (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	AA3
Pipelines and laterals – proposed by GGT	3.192	1.830	0.278	0.000	0.214	5.514
Easement repair for in-line inspection	(0.043)	0.000	0.000	0.000	0.000	(0.043)
16" Mainline in-line inspection	(0.216)	0.000	0.000	0.000	0.000	(0.216)
14" Mainline in-line inspection	(0.339)	0.000	0.000	0.000	0.000	(0.339)
Newman Lateral in-line inspection	(0.041)	0.000	0.000	0.000	0.000	(0.041)
In-line inspection verification digs	0.000	(0.513)	0.000	0.000	0.000	(0.513)
In-line inspection of DBNGP interconnect pipeline	0.000	(0.029)	0.000	0.000	0.000	(0.029)
In-line inspection of Apache interconnect pipeline	0.000	(0.029)	0.000	0.000	0.000	(0.029)
Easement erosion repair	0.000	0.000	(0.128)	0.000	(0.128)	(0.256)
Authority Approved Pipelines and laterals	2.554	1.259	0.150	0.000	0.085	4.048

Source: GGT, Access Arrangement Revision Proposal Response to the ERA Draft Decision, January 2016, Table 3, pp. 65-67, EMCa, Addendum to Review of Technical Aspects of the Proposed Access Arrangement, May 2016, ERA, GGP Tariff Model, June 2016.

Main line valve and scraper stations

618. In its initial proposal, GGT proposed two projects under the main line valve and scraper stations asset class. In the Draft Decision, the Authority reduced GGT's proposed expenditure by 20 per cent to account for GGT's proven ability to deliver projects for much less than its preliminary estimated amounts, as evidenced by the

70 per cent underspend of the Authority's approved capital expenditure allowance for the second access arrangement period review.

619. GGT has provided no new information in relation to the two projects in this category for the install scraper station DBNGP-GGP interconnect and the install scraper station Apache-GGP interconnect projects. In the absence of any new information, EMCa does not consider it necessary to change its initial assessment.²¹¹ EMCa recommends that only \$0.513 million be approved as per rule 74 of the NGR.
620. The Authority notes that GGT has not provided any project specific response for this asset category. However, as per paragraph 520, the Authority has evaluated both projects to determine the standalone costs associated with providing covered services. The Authority considers that no adjustment is necessary under rule 79 of the NGR for either project due to standalone costs, but considers that there should be a reduction of 20 per cent due to GGT's proven ability to deliver projects for much less than forecast, as noted in paragraphs 607 and 608. The Authority approves an amount of \$0.513 million as per rule 74 of the NGR. Table 49 below shows the Authority's Final Decision approved conforming capital expenditure for main line valve and scraper stations.

Table 49 Authority's Approved Final Decision Conforming Capital Expenditure for Main Line Valve and Scraper Stations (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	AA3
Main line valve and scraper stations –proposed by GGT	0.000	0.641	0.000	0.000	0.000	0.641
Install scraper station DBNGP-GGP interconnect	-	(0.064)	-	-	-	(0.064)
Install scraper station Apache-GGP interconnect	-	(0.064)	-	-	-	(0.064)
Authority Approved Main Line Valve and Scraper Stations	0.000	0.513	0.000	0.000	0.000	0.513

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, Table 3, pp. 65-67, EMCa, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, ERA, *GGP Tariff Model*, June 2016.

Compressor stations

621. In its initial proposal, GGT proposed 18 projects under the compressor stations asset category. In its Draft Decision, the Authority did not approve any expenditure for six projects on the basis that no justification was provided and therefore the proposed expenditure did not satisfy rule 79 of the NGR.²¹² The Authority approved expenditure for the Paraburdoo Unit 1 turbine exchange project as it considered that it satisfied the requirements of rules 74 and 79 of the NGR. The Authority made adjustments of 35 per cent for the Yarraloola and Ilgarari lighting towers replacement, Yarraloola GEA 2 major overhaul and the Ilgarari GEA1 major overhaul projects on the basis that the cost estimates were preliminary. The Authority also reduced expenditure by 20 per cent across six other compressor station projects (Yarraloola fire protection

²¹¹ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, p. 21.

²¹² Yarraloola GEA PLC upgrade, Yarraloola accommodation to workshop conversion, Paraburdoo unit 1 human-machine interface upgrade, Paraburdoo accommodation upgrade, Ilgarari GEA PLC upgrade and Rotational spare DN 300 RA valve.

system upgrade, Yarraloola hazardous area upgrade, Paraburdoo hazardous area upgrade, Ilgarari unit PLC backplane upgrade, Ilgarari hazardous area upgrade, Wiluna hazardous area upgrade) as the Authority considered that it was unreasonable to assume that the cost at each site would be equivalent to the cost GGT incurred in the second access arrangement period. The Authority also excluded in full the expenditure for Paraburdoo GEA 2 major overhaul as it considered that the expenditure would be incurred for uncovered assets to deliver uncovered services.

622. In its revised proposal, GGT has provided background information for the six projects it initially submitted with no justification, noting that two of those projects (Paraburdoo Unit 1 human interface upgrade and Paraburdoo accommodation upgrade) are no longer required.²¹³ EMCa considers that the proposed \$0.182 million for the other four projects (Yarraloola GEA PLC upgrade, Yarraloola accommodation to workshop conversion, Ilgarari GEA PLC upgrade and Rotational spare DN 300 RA valve) satisfies the requirements of rule 74 of the NGR. The Authority considers that GGT has now provided sufficient information for those six projects it originally rejected. The Authority considers that the revised proposal amount of \$0.182 million satisfies the requirements of rules 74 and 79 of the NGR.
623. In its revised proposal, GGT has provided additional information for the Yarraloola fire protection system project. GGT notes that the fire protection system is an integral part of the safety system for Yarraloola and needs to be maintained at a high standard to ensure both worker safety and the safety of the pipeline. EMCa notes the nature of the work in its Addendum Report, but considers that GGT has not provided any information to offset its concerns regarding GGT's expenditure forecasting. EMCa considers that there is no basis to deviate from its original view that only [REDACTED] of the revised proposal expenditure of [REDACTED] satisfies rule 74 of the NGR.²¹⁴ Consistent with its view in the Draft Decision, the Authority does not consider that GGT has provided sufficient information in its revised proposal to alleviate the Authority's concerns regarding its expenditure forecasting ability. The Authority considers that only [REDACTED] of the revised proposal expenditure should be approved as per rules 74 and 79 of the NGR.
624. EMCa notes in its Technical Report, it accepted the business need for the PLC backplane projects²¹⁵ as per rule 79 of the NGR, but its adjustments were because the information provided by GGT was not sufficient to offset its concerns regarding GGT's expenditure forecasting. EMCa notes in its Addendum Report that the expenditure is for work to replace the obsolete PLC backplanes. However it does not consider that GGT has provided sufficient information to offset its concerns regarding its expenditure forecasting. EMCa considers that there is no basis to deviate from its original view that only [REDACTED] satisfies rule 74 of the NGR. Consistent with its view from the Draft Decision, the Authority does not consider that GGT has provided sufficient information in its revised proposal to alleviate the Authority's concerns regarding its expenditure forecasting ability. The Authority considers that only [REDACTED] satisfies rules 74 and 79 of the NGR for the PLC backplane projects.

²¹³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision – Attachment 4*, January 2016.

²¹⁴ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, p. 23.

²¹⁵ Yarraloola unit PLC backplane upgrade and Ilgarari Unit PLC backplane upgrade.

625. For the hazardous area upgrade projects,²¹⁶ EMCa notes that GGT has provided additional information which confirms its expectations that costs could be progressively reduced. EMCa considers that the proposed expenditure of [REDACTED] is now likely to satisfy rule 74 of the NGR as GGT has based its expenditure forecasts on relatively recent upgrade projects and has an experienced vendor for the work. The Authority notes EMCa's assessment and considers that GGT's revised proposal forecast of [REDACTED] to satisfy rules 74 and 79 of the NGR.
626. For the remaining projects under the compressor station category, GGT has not provided any project specific responses. The Authority has evaluated the remaining projects to assess the standalone costs associated with covered services, as stated in paragraph 520. The Authority considers that expenditure for the Paraburdoo GEA 2 major overhaul project should be fully excluded as this proposed expenditure would be for uncovered assets used to deliver uncovered services. The Authority considers that this is not expenditure that would be incurred by a prudent service provider delivering covered services on standalone basis. For the Ilgarari GEA 1 major overhaul, Yarraloola GEA 2 major overhaul and Yarraloola and Ilgarari lighting towers replacement projects, the Authority maintains its position from the Draft Decision that these are preliminary estimates and are likely to be delivered for much less than initially forecast. The Authority considers that an adjustment of 35 per cent would satisfy rules 74 and 79 of the NGR. Table 50 shows the Authority's Final Decision approved conforming capital expenditure.

Table 50 Authority's Final Decision Approved Conforming Capital Expenditure for Compressor Stations (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	AA3
Compressor stations - proposed by GGT	0.966	0.801	0.000	0.209	0.288	2.264
Yarraloola and Ilgarari lighting towers replacement	(0.075)	0.000	0.000	0.000	0.000	(0.075)
Yarraloola unit PLC backplane upgrade	(0.021)	0.000	0.000	0.000	0.000	(0.021)
Yarraloola fire protection system upgrade	(0.020)	0.000	0.000	0.000	0.000	(0.020)
Yarraloola GEA 2 major overhaul	0.000	0.000	0.000	0.000	(0.028)	(0.028)
Paraburdoo GEA 2 major overhaul	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Ilgarari unit PLC backplane upgrade	(0.021)	0.000	0.000	0.000	0.000	(0.021)
Ilgarari GEA 1 major overhaul	0.000	0.000	0.000	(0.028)	0.000	(0.028)
Authority Approved Compressor Stations	0.828	0.721	0.000	0.181	0.260	1.990

Source: GGT, Access Arrangement Revision Proposal Response to the ERA Draft Decision, January 2016, Table 3, pp. 65-67, EMCa, Addendum to Review of Technical Aspects of the Proposed Access Arrangement, May 2016, ERA, GGP Tariff Model, June 2016.

²¹⁶ Yarraloola hazardous area upgrade, Paraburdoo hazardous area upgrade, Ilgarari hazardous area upgrade and Wiluna hazardous area upgrade.

Receipt and Delivery Points

627. In its initial proposal, GGT proposed 11 projects under the receipt and delivery points asset class. In its Draft Decision, the Authority rejected the expenditure of three small projects on the basis that no justification was provided by GGT to satisfy rules 74 and 79 of the NGR.²¹⁷ The Authority noted recommendations from EMCa's Technical Report and made adjustments to the remaining eight projects as per rule 74 of the NGR on the basis that some of the estimates were preliminary in nature or could be reduced due to the gap between the approved estimates and actual spend demonstrated by GGT during the second access arrangement period.
628. In its revised proposal, GGT has provided information in support of the three projects initially rejected by the Authority. GGT has explained the business need and the basis of the cost estimate for each of the three projects. Additionally, it has proposed to reduce the expenditure of the DBNGP C9 gas chromatograph installation.²¹⁸ EMCa considers that there is now sufficient basis for the revised proposed [REDACTED] for these three projects to satisfy rules 74 and 79 of the NGR.²¹⁹ The Authority notes EMCa's assessment and considers that GGT has now explained the business need and basis on which it estimated the cost of each of the projects. The Authority considers that [REDACTED] of the proposed expenditure for the three projects satisfies rules 74 and 79 of the NGR.
629. The Authority notes that GGT has not provided any project specific responses for the remaining projects in this asset category. However, as per paragraph 520, the Authority has evaluated the projects to determine the standalone costs associated with the covered services. The Authority considers that no adjustment is necessary under rule 79 of the NGR for the remaining projects. The Authority notes that in the absence of any information from GGT, it maintains its position from the Draft Decision that the remaining projects should be reduced by 35 per cent under rule 74 of the NGR, due to GGT's proven ability to deliver projects for much less than forecast, as noted in paragraphs 607 and 608. For the asset category, receipt and delivery points, the Authority approves an amount of \$0.977 million as per rules 74 and 79 of the NGR. Table 51 shows the Authority's Final Decision approved conforming capital expenditure for receipt and delivery points.

²¹⁷ Leonora offtake battery upgrade, DBNGP-GGP interconnect C9 gas chromatograph installation, Apache-GGP interconnect C9 gas chromatograph installation.

²¹⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, pp. 58-59.

²¹⁹ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, pp. 24-25.

Table 51 Authority's Final Decision Approved Conforming Capital Expenditure for Receipt and Delivery Points (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	AA3
Receipt and delivery points – proposed by GGT	0.384	0.000	0.641	0.299	0.000	1.324
Hydrocarbon dewpoint monitoring	(0.011)	-	-	-	-	(0.011)
Leonora offtake flow computer upgrade	(0.056)	-	-	-	-	(0.056)
Murrin Murrin inlet flow computer upgrade	(0.056)	-	-	-	-	(0.056)
Paraburdoo flow computer 1 (fuel gas) upgrade	-	-	(0.056)	-	-	(0.056)
Ilgarari flow computer 1 (fuel gas) upgrade	-	-	(0.056)	-	-	(0.056)
Wiluna flow computer 1 (fuel gas) upgrade	-	-	(0.056)	-	-	(0.056)
Jeedamya scraper station flow computer 1 upgrade	-	-	(0.056)	-	-	(0.056)
Authority Approved Receipt and delivery points	0.261	0.000	0.417	0.299	0.000	0.977

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision, January 2016*, Table 3, pp. 65-67, EMCa, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement, May 2016*, ERA, *GGP Tariff Model, June 2016*.

SCADA and communications

630. In its initial proposal, GGT proposed 19 projects under the SCADA and communications asset category. In the Draft Decision, the Authority rejected two of the projects (Wiluna compressor station AB PLC5 upgrade and engineering PC in gas control centre) on the basis that no justification was provided by GGT. For 16 of the projects (quantum RTU upgrades at Yarraloola, Paraburdoo, Newman, Ilgarari, Three Rivers, Wiluna, Mount Keith, Leinster, Thunderbox, Leonora, Gwalia, Jeedamya, Kalgoorlie North, Kalgoorlie West, and BM 85 replacement program phase 2), the Authority reduced the expenditure by 35 per cent on the basis that the estimates provided by GGT were of a preliminary nature. For the national satellite SCADA project, the Authority reduced expenditure by 20 per cent to account for the gap between approved estimates and the actual capital expenditure incurred by GGT during the second access arrangement period.
631. In its revised proposal, GGT has provided information on the business need and the cost estimate for the Wiluna compressor station AB PLC5 upgrade project.²²⁰ EMCa considers that there is sufficient basis for the revised proposal amount of \$0.090 million to satisfy the requirements of rule 74 and 79 of the NGR. GGT has advised that it no longer intends on pursuing the engineering PCs in gas control centre project.²²¹ The Authority notes EMCa's recommendation on the Wiluna

²²⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, pp. 59-60.

²²¹ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, pp. 26-27.

compressor station AB PLC5 upgrade project and considers that GGT has provided sufficient information to demonstrate how it estimated the cost of the project and the justification for the project. The Authority considers that \$0.090 million for the Wiluna compressor station AB PLC5 upgrade satisfies rules 74 and 79 of the NGR.

632. For the remaining projects, EMCa notes that GGT has not provided new information in support of its revised proposal expenditure. However, EMCa notes that GGT has, as an asset category, reduced the proposed total by over 60 per cent. EMCa considers that GGT's reductions supports its initial assessment that GGT progressively refines its work program, reducing the required expenditure from a relatively high preliminary estimate starting point. For projects that GGT has adjusted expenditure to below EMCa's Technical Report recommendations, EMCa considers that it is reasonable to assume the revised expenditure satisfies the requirements of rules 74 and 79 of the NGR.
633. The Authority notes EMCa's assessment of GGT's revised proposal SCADA and communications forecasts. The Authority notes that GGT has adjusted its forecasts down by over 60 per cent and considers that it represents a reasonable forecast as per the requirements of rules 74 and 79 of the NGR. The Authority does not propose to further adjust the projects. Furthermore, the Authority has evaluated each of the remaining projects to assess the standalone costs associated with the covered services, as stated in paragraph 520. The Authority considers that GGT's revised proposal expenditures for SCADA and communications to be amounts that would be incurred by a prudent service provider to deliver covered services on a standalone basis. Table 52 shows the Authority's Final Decision approved conforming capital expenditure.

Table 52 Authority's Approved Final Decision Conforming Capital Expenditure for SCADA and Communications (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	AA3
SCADA and communications – proposed by GGT	0.213	0.147	0.090	0.021	0.022	0.493
Authority Approved SCADA and communications	0.213	0.147	0.090	0.021	0.022	0.493

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision, January 2016*, Table 3, pp. 65-67, EMCa, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement, May 2016*, ERA, *GGP Tariff Model, June 2016*.

Cathodic Protection

634. In its initial proposal, GGT proposed five projects under the Cathodic Protection asset category. In its Draft Decision, the Authority did not approve any expenditure for Cathodic Protection as GGT did not provide any information in support of the proposed expenditure. In the absence of any information at the time, the Authority considered that it did not satisfy the requirements of rules 74 and 79 of the NGR.
635. In its revised proposal, GGT has explained the business need and the basis for its cost estimates for four of the five projects. GGT advises that it no longer intends on proceeding with the wireless system interface for non-critical control project.²²² EMCa

²²² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, p. 60.

considers that there is now sufficient basis to approve the revised proposal amount of \$0.231 million under rules 74 and 79 of the NGR.²²³ The Authority notes EMCA's assessment and considers that GGT has provided sufficient information to demonstrate how it estimated the expenditure for the four projects. The Authority considers that \$0.231 million is the amount that would be incurred by a prudent service provider to deliver covered services on a standalone basis. Table 53 shows the Authority's Final Decision approved conforming capital expenditure.

Table 53 Authority's Approved Final Decision Conforming Capital Expenditure for Cathodic Protection (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	AA3
Cathodic Protection – proposed by GGT	0.102	0.036	0.034	0.029	0.030	0.231
Authority Approved Cathodic Protection	0.102	0.036	0.034	0.029	0.030	0.231

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, Table 3, pp. 65-67, EMCA, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, ERA, *GGP Tariff Model*, June 2016.

Maintenance Bases and Depots

636. In its initial proposal, GGT proposed one project under the maintenance bases and depots asset category. In its Draft Decision, the Authority made an adjustment to this project on the basis that some of the expenditure was incurred for the purpose of delivering uncovered services. Additionally, the Authority noted that the cost estimate for this project could be reduced by 20 per cent to account for the gap between approved estimates and actual spend on capital expenditure by GGT during the second access arrangement period.
637. In its revised proposal, GGT has reduced its proposed expenditure on the project by over 75 per cent without any reasoning.²²⁴ EMCA considers that no further adjustment is required for this project.²²⁵ The Authority notes that GGT has reduced its forecast considerably and notes EMCA's recommendations. The Authority does not propose to adjust the forecasts for this project and considers that this amount would be incurred by a prudent service provider to deliver covered services on a standalone basis consistent with the requirements of rules 74 and 79 of the NGR. Table 54 shows the Authority's Final Decision approved conforming capital expenditure.

²²³ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, pp. 27-28.

²²⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, Table 5, pp. 65-67.

²²⁵ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, p. 28.

Table 54 Authority's Approved Final Decision Conforming Capital Expenditure for Maintenance Bases and Depots (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	AA3
Maintenance bases and depots – proposed by GGT	██████	██████	██████	██████	██████	██████
Authority Approved Maintenance bases and depots	██████	██████	██████	██████	██████	██████

Source: GGT, *Access Arrangement Revision Proposal Response to the ERA Draft Decision*, January 2016, Table 3, pp. 65-67, EMCa, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, ERA, *GGP Tariff Model*, June 2016.

Other assets

638. In its initial proposal, GGT proposed two projects and an amount for minor capital items. In its Draft Decision, the Authority approved all the expenditure for the Enterprise Asset Management (EAM) system project. The Authority rejected the full amount of expenditure for hazardous area management software investigation and design as no justification was provided by GGT and thus did not satisfy the requirements of rules 74 and 79 of the NGR. The Authority made an adjustment for the minor capital items on the basis that some of the expenditure incurred would be incurred for the purposes of delivering uncovered services.
639. In its revised proposal, GGT has indicated that the proposed amounts for the hazardous area management software investigation and design project are no longer required.²²⁶ For the minor capital items, GGT has provided no further information in response to the Authority's Draft Decision. EMCa recommends that the same adjustments be applied to minor capital items on the basis that no new information has been provided to assess whether the cost estimate satisfies the requirements of rules 74 and 79 of the NGR. Additionally, EMCa considered in its Technical Report that GGT had not correctly apportioned the expenditure for this project to covered assets only. EMCa recommends that only \$0.130 million of the revised proposal amount be approved.²²⁷
640. The Authority notes that GGT has not provided project specific responses for minor capital items. However, the Authority has evaluated the project to assess the standalone costs associated with the covered services, as stated in paragraph 520. The Authority considers that minor capital items should be adjusted in accordance with the TJ.Km per day ratio between covered and uncovered capacity for the third access arrangement period to reflect the expenditure that would be incurred by a prudent service provider delivering covered services on a standalone basis. Additionally, the Authority notes EMCa's assessment with respect to the cost estimates and considers that an additional adjustment is required to satisfy the requirements of rule 74 of the NGR. The Authority considers that only \$0.598 million of the revised proposal expenditure be accepted as conforming capital expenditure.

²²⁶ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, pp. 60-61.

²²⁷ Energy Market Consulting associates, *Addendum to Review of Technical Aspects of the Proposed Access Arrangement*, May 2016, pp. 28-29.

Table 55 Authority's Approved Final Decision Conforming Capital Expenditure for Other Assets (AA3)

Real \$ million at 31 December 2013	2015	2016	2017	2018	2019	AA3
Other assets – proposed by GGT	0.479	0.096	0.075	0.053	0.053	0.756
Minor capital items	(0.029)	(0.029)	(0.041)	(0.029)	(0.029)	(0.159)
Authority Approved Other assets	0.450	0.067	0.034	0.024	0.024	0.598

Source: GGT, Access Arrangement Revision Proposal Response to the ERA Draft Decision, January 2016, Table 3, pp. 65-67, EMCa, Addendum to Review of Technical Aspects of the Proposed Access Arrangement, May 2016, ERA, GGP Tariff Model, June 2016.

Non-Depreciable Assets

641. GGT has not proposed any capital expenditure under the non-depreciable assets category.

Final Decision

642. For the reasons given above, the Authority does not approve GGT's revised proposal capital expenditure for the third access arrangement period as submitted.

643. For the reasons given above, the Authority has decided that:

- \$9.011 million of GGT's proposed forecast capital expenditure complies with the criteria set out in rules 74 and 79 of the NGR; and
- \$2.374 million of GGT's proposed forecast capital expenditure does not comply with the criteria set out in rules 74 and 79 of the NGR and should not be included in the opening value of the assets for the third access arrangement period.

644. Table 56 shows the Authority's adjusted forecast conforming capital expenditure as per rules 74 and 79 of the NGR for the third access arrangement period in real terms. Table 57 shows the Authority's adjusted forecast conforming capital expenditure as per rules 74 and 79 of the NGR for the third access arrangement period in nominal terms.

Table 56 Authority's Final Decision Approved Real Forecast Conforming Capital Expenditure (AA3)

Real \$ million at 31 December 2014	2015	2016	2017	2018	2019	AA3
Pipeline and laterals	2.554	1.259	0.150	0.000	0.085	4.048
Main line valve and scraper stations	0.000	0.513	0.000	0.000	0.000	0.513
Compressor stations	0.828	0.721	0.000	0.181	0.260	1.990
Receipt and delivery point facilities	0.261	0.000	0.417	0.299	0.000	0.977
SCADA and communications	0.213	0.147	0.090	0.021	0.022	0.493
Cathodic protection	0.102	0.036	0.034	0.029	0.030	0.231
Maintenance bases and depots	0.162	0.000	0.000	0.000	0.000	0.162
Other assets	0.449	0.067	0.034	0.024	0.024	0.598
Non-depreciable assets	0.000	0.000	0.000	0.000	0.000	0.000
Authority Approved Capital Expenditure (AA3)	4.568	2.743	0.724	0.554	0.422	9.011

Source: ERA, GGP Tariff Model, June 2016.

Table 57 Authority's Final Decision Approved Nominal Forecast Conforming Capital Expenditure (AA3)

Nominal \$ million	2015	2016	2017	2018	2019	AA3
Pipeline and laterals	2.635	1.319	0.159	0.000	0.093	4.206
Main line valve and scraper stations	0.000	0.537	0.000	0.000	0.000	0.537
Compressor stations	0.855	0.755	0.000	0.195	0.285	2.089
Receipt and delivery point facilities	0.269	0.000	0.442	0.322	0.000	1.034
SCADA and communications	0.219	0.154	0.096	0.022	0.024	0.516
Cathodic protection	0.105	0.038	0.036	0.031	0.033	0.243
Maintenance bases and depots	0.167	0.000	0.000	0.000	0.000	0.167
Other assets	0.464	0.070	0.036	0.026	0.026	0.622
Non-depreciable assets	0.000	0.000	0.000	0.000	0.000	0.000
Authority Approved Capital Expenditure (AA3)	4.715	2.872	0.769	0.597	0.461	9.414

Source: ERA, GGP Tariff Model, June 2016.

Required Amendment 8

The value of forecast conforming capital expenditure for the 2015 to 2019 access arrangement period must be amended to reflect the values shown in Table 57 of this Final Decision.

Assessment of Depreciation

645. In its revised proposal, GGT has not accepted the Authority's Draft Decision to update the calculation of depreciation and the forecast capital base for the third access arrangement by applying the CCA approach to the regulatory asset base. Table 58 shows GGT's revised proposal annual depreciation for each asset category over the third access arrangement period. The Authority notes that GGT does not consider there to be an interval of delay, as discussed in the Reference Tariff chapter of this Final Decision. Accordingly, GGT has submitted a revised proposal access arrangement information showing the period between 1 July 2016 and 31 December 2019.²²⁸

Table 58 GGT's Revised Proposal Depreciation (AA3)

Nominal \$ million	2016	2017	2018	2019
Pipeline and laterals	3.429	6.886	6.891	6.891
Main line valve and scraper stations	0.103	0.220	0.220	0.220
Compressor stations	1.357	2.743	2.743	2.750
Receipt and delivery point facilities	0.067	0.133	0.156	0.167
SCADA and communications	0.227	0.443	0.435	0.325
Cathodic protection	0.063	0.129	0.131	0.132
Maintenance bases and depots	0.105	0.211	0.211	0.211
Other assets	0.110	0.207	0.186	0.160
GGT's Total Depreciation (AA3)	5.462	10.972	10.972	10.857

Source: Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information*, January 2016, Table 8, p. 12.

646. For the reasons discussed in the Depreciation chapter of this Final Decision, the Authority does not accept GGT's revised proposal to continue applying the HCA approach to the regulatory asset base. The Authority requires that GGT amend its proposed approach to adopt the CCA method of depreciation.
647. The Authority notes that GGT has accepted the Authority's Draft Decision with respect to correcting for over-depreciation from the calculation of revenue.²²⁹ The Authority notes that GGT has applied this required 'write up' through a 'positive' depreciation amount in the first year for the over-depreciated assets in its revised proposal revenue modelling.
648. Table 59 shows the Authority's calculated annual depreciation for each asset category over the third access arrangement period, taking into account its decision in the Depreciation chapter of this Final Decision.

²²⁸ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information*, January 2016, Table 8, p. 12.

²²⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 117.

Table 59 Authority's Final Decision Approved Depreciation (AA3)

Nominal \$ million	2015	2016	2017	2018	2019
Pipeline and laterals	6.827	7.050	7.172	7.279	7.385
Main line valve and scraper stations	0.204	0.213	0.227	0.230	0.234
Compressor stations	2.317	2.772	2.838	2.880	2.928
Receipt and delivery point facilities	0.100	0.133	0.135	0.152	0.165
SCADA and communications	(0.065)	0.384	0.378	0.374	0.262
Cathodic protection	(0.520)	0.130	0.134	0.138	0.141
Maintenance bases and depots	0.202	0.211	0.214	0.217	0.220
Other assets	(1.982)	0.218	0.204	0.179	0.151
Authority Approved Depreciation (AA3)	7.084	11.110	11.301	11.449	11.486

Source: ERA, GGP Tariff Model, June 2016.

Assessment of Overall Method for Calculating Projected Capital Base

649. As discussed in the Opening Capital Base chapter of this Final Decision, the Authority has amended the opening capital base consistent with rules 74, 77 and 79 of the NGR.
650. Table 60 shows the Authority's required amended values for the projected capital base as at 31 December 2019 as per rule 78 of the NGR. This takes into account the Authority's required amendments for rules 74 and 79 of the NGR, the required amendments as set out in the Depreciation chapter of this Final Decision and the Authority's decision on the interval of delay as set out in the Reference Tariff chapter of this Final Decision.

Table 60 Authority's Final Decision Approved Projected Capital Base (AA3)

Nominal \$ million	2015	2016	2017	2018	2019
Opening Capital Base (start of period)	390.362	393.693	391.203	386.382	381.172
Inflation	5.699	5.748	5.712	5.641	5.565
Opening Capital Base (end of period)	396.062	399.441	396.915	392.024	386.737
Plus: Capital Expenditure	4.715	2.872	0.769	0.597	0.461
Less: Straight Line CCA Depreciation	(7.084)	(11.110)	(11.301)	(11.449)	(11.486)
Authority Approved Closing Capital Base (AA3)	393.693	391.203	386.382	381.172	375.712

Source: ERA, GGP Tariff Model, June 2016.

Required Amendment 9

The projected capital base used in the revised access arrangement must be amended to reflect the values in Table 60 of this Final Decision.

Rate of Return

651. This section considers GGT's proposal for estimating the rate of return.
652. It draws on the approach for estimating the rate of return, which was outlined in the Authority's Rate of Return Guidelines.²³⁰ However, there are a number of key modifications to that approach, which are set out below. The Authority considers that its revised approach is aligned with the regulatory requirements for the rate of return as specified in the National Gas Rules (**NGR**).²³¹

Regulatory Requirements

653. Rule 87 in the NGR sets out the requirements for the rate of return.
654. The overarching objective for the Authority's consideration of the rate of return is provided by rule 87(3) of the NGR:

The allowed rate of return objective is that the rate of return for a service provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.

655. Rule 87 includes a number of sub-rules that refer to matters the regulator is to have 'regard' to when determining the allowed rate of return, including:

87. Rate of return

...

- (5) In determining the allowed rate of return, regard must be had to:
- (a) relevant estimation methods, financial models, market data and other evidence;
 - (b) the desirability of using an approach that leads to the consistent application of any estimates of financial parameters that are relevant to the estimates of, and that are common to, the return on equity and the return on debt; and
 - (c) any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.

...

- (7) In estimating the return on equity under subrule (6), regard must be had to the prevailing conditions in the market for equity funds.

...

- (11) In estimating the return on debt under subrule (8), regard must be had to the following factors:
- (a) the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the allowed rate of return objective;
 - (b) the interrelationship between the return on equity and the return on debt;

²³⁰ Economic Regulation Authority, *Rate of Return Guidelines*, 16 December 2013.

²³¹ Economic Regulatory Authority, *Final Decision on Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, 10 September 2015.

- (c) the incentives that the return on debt may provide in relation to capital expenditure over the access arrangement period, including as to the timing of any capital expenditure; and
 - (d) any impacts (including in relation to the costs of servicing debt across access arrangement periods) on a benchmark efficient entity referred to in the allowed rate of return objective that could arise as a result of changing the methodology that is used to estimate the return on debt from one access arrangement period to the next.
656. In addition, rule 87 of the NGR sets out a number of additional requirements for the allowed rate of return, including that it:
- is to be determined such that it achieves the allowed rate of return objective (NGR 87(2));
 - subject to NGR 87(2) and therefore also NGR 87(3), the allowed rate of return for a regulatory year is to be:
 - a weighted average of the return on equity for the access arrangement period in which the regulatory year occurs and the return on debt for that regulatory year (new NGR 87(4)(a));
 - determined on a nominal vanilla rate of return that is consistent with the estimate of the value of imputation credits (new NGR 87(4)(b));
 - results in a return on debt for a regulatory year which contributes to the achievement of the allowed rate of return objective (NGR 87(8)) which is either the same in each year of the access arrangement period or which varies in each year through the application of an automatic formula (NGR 87(9) and NGR 87(12)); and
 - incorporates a return on debt that would be required by debt investors over a relevant time period (whether shortly before the access arrangement decision, or on average over an historical period, or some combination of the two approaches) (NGR 87(10)).

GGT's Initial Proposal

657. GGT's approach to estimating the rate of return was provided in the Supporting Information to the Goldfields Gas Pipeline Access Arrangement Revision Proposal that was submitted by GGT to the Authority on 15 August 2014.²³²
658. GGT followed the Authority's Rate of Return Guidelines by:
- adopting gearing of 60 per cent for the benchmark efficient entity and employing this in its calculation of the allowed rate of return as the nominal vanilla weighted average of returns on equity and debt; and
 - utilising Commonwealth Government Securities (**CGS**) as the proxy for the risk free rate;
 - estimating the return on equity utilising the Sharpe Lintner Capital Asset Pricing Model (**SL-CAPM**);
 - estimating the return on debt as the sum of the risk free rate, debt risk premium (**DRP**) and debt raising costs;

²³² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revisions Proposal Supporting Information*, 15 August 2014.

- estimating the debt risk premium based on a benchmark sample of bonds issued by similar service providers that have a credit rating in the BBB-/BBB/BBB+ bands, as rated by Standard and Poor's.
659. However, GGT has diverged from the Authority's Rate of Return Guidelines by:
- calculating the risk free rate based on yields of CGS with a term to maturity of 10 years;
 - estimating the return on equity utilising calculations of an equity beta for the Covered Pipeline that does not rely on an assumed similarity with the Authority's benchmark efficient sample that was set out in the Rate of Return Guidelines; and
 - estimating the rate of return on debt using a 10 year trailing average approach for both the risk free rate and DRP.

Return on equity

660. GGT followed the broad outline of the five step approach – from the Authority's Rate of Return Guidelines – in developing its estimate of the proposed return on equity for the GGP benchmark efficient entity.²³³ Further, GGT adopted the SL-CAPM as its model for the return on equity, aligning the result with a direct calculation of the return on equity derived, purportedly, using options pricing theory.
661. In relation to the estimate of the risk free rate for the return on equity, GGT submitted that the practice of using of Commonwealth Government bonds with term to maturity of 10 years as the proxy for the risk free asset is supported by theoretical economic arguments. Therefore, GGT submitted its estimate of the risk free rate of return using yields on Commonwealth Government bonds with terms to maturity of 10 years.
662. For equity beta, GGT submitted that it used an estimate of 1.10 for the equity beta in the SL-CAPM. This equity beta of 1.10 is drawn from SFG Consulting's (**SFG**) option pricing analysis for GGT. In its analysis, SFG concluded that, for total revenue and reference tariff determination, the best estimate of the return on equity for a benchmark gas pipeline with similar risk to the GGP is 11.24 per cent. This rate of return implies an equity beta of 1.10 in the Sharpe-Lintner CAPM.²³⁴ SFG's proposed approach, and the Authority's responses, were included in Appendix 3 of the Draft Decision.
663. GGT considered that a conservative view for the expected return on the market is 11.5 per cent.²³⁵ With an estimate of the 10-year risk free rate of return of 3.73 per cent, the implied market risk premium used by GGT in the Sharpe-Lintner CAPM was 7.77 per cent (that is, 11.5 minus 3.73 per cent).²³⁶

²³³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 85.

²³⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 106.

²³⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 118.

²³⁶ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 118.

Return on debt

664. GGT initially proposed a trailing average for estimating the return on debt:

The return on debt was estimated using a trailing average method. It was not estimated using the “on the day” method of the Rate of Return Guidelines.

...Use of the trailing average method yields a return on debt which should provide the opportunity to recover the efficiently incurred costs of providing the reference service. The ability to recover efficiently incurred costs provides, in turn, incentives for further efficient investment in the pipeline, and for the efficient provision of pipeline services. This is in the long term interests of consumers of natural gas, and will contribute to achievement of the national gas objective.²³⁷

665. Each term of the trailing average used to estimate the return on debt was, in turn, estimated as the sum of the:

- risk free rate of return;
- debt risk premium; and
- allowances for debt raising and hedging costs.

666. GGT’s initially proposed estimate for the return on debt was 7.89 per cent.²³⁸

Risk free rate of return

667. GGT submitted its estimate of the risk free rate of return using yields observed on Commonwealth Government bonds reported by the Reserve Bank of Australia over a period of 40 trading days based on a term to maturity of 10 years.

668. In estimating the return on debt, GGT proposed a trailing average approach to estimating the return on debt that used a risk free rate component comprised of 10 equally weighted estimates of the 10 year term risk free rate for each year. Each year’s estimate was based on 40 trading day observations of the 10 year risk free rate preceding 30 June.

669. GGT reasoned that the use of the 10 year risk free rate in its return on debt is consistent with a simple implementation of the Sharpe-Lintner CAPM (applied here in the context of estimating the return on debt).²³⁹

Debt Risk Premium

670. GGT proposed that the debt risk premium be based on an average of credit spreads reported by the Reserve Bank of Australia – for non-financial corporations with a credit rating in the BBB band and a term to maturity of 10 years – for the three months from April to June in each year of the 10 year trailing average.²⁴⁰ This was combined

²³⁷ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information*, 15 August 2014, p. 18.

²³⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, p.135.

²³⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, pp. 124, 137.

²⁴⁰ The Authority accepted that the appropriate term for the debt risk premium is 10 years (see Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 14 October 2014, pp. 188-189).

with an on the day estimate of the 10 year risk free rate, based on the 40 day average to 30 June in each relevant year of the trailing average. A margin of 0.15 per cent was added to cover debt raising and hedging costs in each year.²⁴¹

671. GGT also proposed that the resulting 10 year trailing average estimate of the return on debt would be updated annually during the access arrangement period. At each update, the earliest annual estimate would be dropped from the trailing average, and an estimate for the current year added. No transitional arrangement was proposed.²⁴²

Draft Decision

672. In the Draft Decision, the Authority did not accept GGT's proposal. The Authority determined that GGT:²⁴³

- first, estimate the rate of return based on a debt proportion of total capital for the benchmark efficient entity – that is, gearing of 60 per cent;
- second, estimate the return on equity by:
 - retaining the Sharpe Lintner Capital Asset Pricing Model (**SL CAPM**) as the primary method for estimating the return on equity;
 - utilising information from other relevant models – including the Black CAPM and the Dividend Growth Model (**DGM**) – to establish the value of parameters in the Sharpe Lintner CAPM;
 - estimating the risk free rate parameter for input to the Sharpe Lintner CAPM from Commonwealth Government Securities with a 5 year term to maturity;
 - estimating a range for the 5 year forward looking market risk premium (**MRP**) based on historic excess return data and the DGM, in recognition that it fluctuates in response to prevailing conditions;
 - drawing on a range of forward looking information to establish the point value of the MRP; and
 - estimating the beta parameter based on first, a sample of Australian firms with similar characteristics to the benchmark efficient entity, and second, an analysis of the likely risk characteristics of the benchmark efficient entity.
- third, with regard to the estimate of the return on debt:
 - estimate the cost of debt as the sum of the risk free rate, relevant DRP, and relevant debt raising and hedging transactions costs;
 - estimate the risk free rate from the bank bill swap rate with the same term as the regulatory period, that is, 5 years;
 - adopt a hybrid trailing average approach to estimating the return on debt, with the risk free rate estimated once, just prior to the regulatory period, and the DRP estimated using an equally weighted 10 year trailing average;

²⁴¹ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information*, 15 August 2014, p. 135.

²⁴² Ibid

²⁴³ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015.

- estimate the DRP based on a BBB band credit rating, for a term of 10 years, using the Authority's enhanced bond yield approach that includes international bonds issued by domestic entities (and for estimates of the DRP prior to the averaging period, the Authority will utilise the Reserve Bank of Australia's credit spread data for the BBB band);
- include an allowance for debt issuing costs of 0.125 per cent and hedging costs of 0.114 per cent; and
- annually update the estimate of the DRP.

GGT's Revised Proposal

Risk free rate of return

673. GGT does not accept the Authority's requirement for setting the risk free rate with reference to the term of the regulatory period, which is 5 years.²⁴⁴ GGT contends that the reliance of the Authority on the present value principle is misguided, as it considers that there is no explicit requirement for NPV=0 in the access regulatory regime of the NGL and the NGR.²⁴⁵ Rather, it is the requirements of investors which set commensurate efficient financing costs. According to GGT, there is no over-riding requirement – explicit or inferred – for the NPV to equal zero.²⁴⁶
674. GGT asserts that the 'regulator is not free to choose the risk free rate and the term to maturity of the security which is to proxy for the risk free asset', since the return must be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.²⁴⁷ GGT makes reference in this context to economic theory as pointing to a long term financial asset as being the best proxy for the risk free asset.
675. GGT considers that the Authority has therefore erred, as the term equal to the duration of the regulatory period will result in a rate of return that does not satisfy the allowed rate of return objective of NGR 87(3). GGT has therefore continued to propose a term for the risk free rate of 10 years.

Return on equity

Equity beta

Estimate does not contribute to Allowed Rate of Return Objective (**ARORO**)

676. GGT submits that the Authority's estimate of equity beta in the Draft Decision is not an estimate arrived at on a reasonable basis and does not represent the best estimate possible in the circumstances. It is of the view that such an estimate cannot lead to

²⁴⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 71.

²⁴⁵ Ibid.

²⁴⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 73.

²⁴⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 72.

an estimate of the return on equity that contributes to the allowed rate of return objective of rule 87(3).²⁴⁸

Arbitrage free pricing equity beta estimate

677. SFG, on behalf GGT, developed an alternative method of arriving at an estimate of equity beta using the methods of absence of arbitrage, which provided a 'direct estimate' of the return on equity.²⁴⁹

678. GGT quoted the Authority's response to the proposed direct estimate in the Draft Decision:²⁵⁰

The Authority is of the view that SFG's proposed approach to directly estimate the return on equity is not driven by economic principles. The Authority considers that SFG's proposed approach does not follow any standard finance theory. In addition, the Authority considers that SFG's proposed approach to estimating the return on equity for GGT is fundamentally flawed and as a result, this approach should not be adopted. The approach is not well established and is untested.

679. GGT submits that the Authority's view on SFG's proposed approach is without foundation. GGT considers that the Authority appears not to have informed itself about the standard methods of modern financial economics, and how these methods might be used.²⁵¹ GGT engaged Frontier Economics (thereby engaging the same SFG personnel) to consider the Authority's response. Frontier contend that, concerning GGT's proposed 'direct estimate of the return on equity', the estimates are:²⁵²

- consistent with standard finance theory; and
- based on reasonable assumptions.²⁵³

Incomplete assessment of risk

680. GGT contends that the accounting metrics utilised by the Authority in the Draft Decision to estimate equity beta do not provide a complete assessment of risk.²⁵⁴ It reasoned that such an assessment must encompass more than profit movements in past years. Additionally, it stated that annual profit movements are not the risks about which GGT is concerned, but rather, it is the loss of contracts for capacity for a sustained period that is the risk to equity holders.

²⁴⁸ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: Submission*, January 2016, p. 75.

²⁴⁹ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: Submission*, January 2016, p. 76.

²⁵⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 129.

²⁵¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 76.

²⁵² The proposed a 'direct estimate of the return on equity' is based on expected outcomes for the required return to equity holders given assumptions about the risk-free rate, yield on debt, market risk premium and equity market volatility. SFG contended that method is based on the finance theory underpinning the pricing of options.

²⁵³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, pp. 4-5.

²⁵⁴ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: Submission*, January 2016, p. 76.

681. GGT's consultant, Frontier Economics, considers that 'the historical returns rationale adopted by the Authority is not a reasonable justification for not considering the challenges of replacing demand'.²⁵⁵ It is the challenge of potentially losing volume for a sustained period that represents the risk exposure, and this risk flows through to the equity holders because of the operating and financial leverage.²⁵⁶ Frontier Economics considers that GGT has 'put forward information to suggest that it faces a risk that is not purely hypothetical, but is actually impacting on demand projections. It does appear to be a systematic risk because the reduction in demand has coincided with the fall in commodity prices'.²⁵⁷ Also on the subject of systematic risk (or equity beta), it stated that; 'there is no requirement in the CAPM for beta to only be estimated using past returns, and the Authority is not bound to only use historical stock returns because it adopted a particular estimation procedure in the past'.²⁵⁸
682. Frontier Economics considers that the coefficient of variation in operating margin and return on equity suggest low risk because from 2009 to 2013 there was no sharp variation in annual profits:²⁵⁹
- ...the coefficient of variation measures do not convey a full appreciation of risks faced by GGP because there happened to be a sustained mining boom which has now come to an end. The coefficient of variation figures will only pick up a risk exposure if there are events which happened to have affected profits from one year to the next over the measurement period.
683. The Frontier report reiterates material presented by GGP in the initial third Access Arrangement proposal as relevant, including information:
- relating to volumes falling below projections in the previous regulatory period, in particular in the year 2014;
 - about challenges in re-contracting for the next regulatory period;
 - about the specific risks faced with the more marginal profit customers of the GGP; and
 - about the concentration of customers to commodities, in particular, to nickel.²⁶⁰

Estimate set within a predetermined range

684. Frontier Economics' report notes the Authority's approach as assessing, on a ranking basis, how risky the GGP is compared to other utilities for which accounting benchmarks can be compiled. It considered the rationale behind the approach as

²⁵⁵ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: Submission*, January 2016, Attachment 5, p. 2.

²⁵⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 5, p. 5.

²⁵⁷ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: Submission*, January 2016, Attachment 5, p. 3.

²⁵⁸ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: Submission*, January 2016, Attachment 5, p. 3.

²⁵⁹ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: Submission*, January 2016, Attachment 5, p. 4.

²⁶⁰ Frontier Economics, *Response to the Economic Regulation Authority on accounting benchmarks: Report for Goldfields Gas Transmission Pty Ltd*, January 2016, p. 5.

being an attempt to determine GGP's relative risk according to the set of accounting benchmarks so that the beta estimate could be set within a range of 0.3 to 0.8.²⁶¹

Market risk premium

685. GGT considers that the Authority's approach to estimating the MRP is incorrect.²⁶²
686. GGT argues that the SL CAPM is derived from the decision making of individual investors choosing, at a point in time, portfolios of N risky assets in combination with the risk free asset that is available at that time.²⁶³ This leads GGT to argue that, contrary to the view of the Authority, there is no single composite construct $[E(r_m) - r_f]$ in the SL CAPM.²⁶⁴ GGT submits that:²⁶⁵
- The term $[E(r_m) - r_f]$ as it appears in the SL CAPM is not a composite; it is simply the difference between the conceptually distinct r_f and $E(r_m)$ assumed for model derivation. It must be treated as such when applying the model.
687. GGT considers that estimates must be made independently – at the time the SL CAPM is applied – of:
- (a) the rate of return on the risk free asset assumed to be available to investors at that time; and
 - (b) the return those investors expect, at that time, to earn on the market portfolio.²⁶⁶
688. As such, GGT considers that the Authority's use of a long term (Ibbotson) average of historical MRPs to estimate $[E(r_m) - r_f]$ as a single construct for the purpose of applying the SL CAPM is conceptually incorrect.²⁶⁷ GGT further argues that:²⁶⁸

Moreover, the use of a long term average of historical risk premiums to estimate $[E(r_m) - r_f]$ has the effect of replacing the risk free rate of return at the time of portfolio choice with a long term average of risk free rates of returns. But a long term average of risk free rates has no role in the derivation of the SL CAPM, and no role in the application of the model. In the derivation of the SL CAPM, there is no consideration of how expectations are formed about an uncertain future risk free rate of return. There does not need to be. The risk free rate is known with certainty at the time of portfolio choice: it is the known rate of return on the risk free asset which is available to investors at that time.

²⁶¹ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: Submission*, January 2016, Attachment 5, p. 3.

²⁶² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 77.

²⁶³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 83.

²⁶⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 83.

²⁶⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 84.

²⁶⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 84.

²⁶⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 84.

²⁶⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 84.

689. GGT also considers that its argument does not mean that the MRP, a long term average of differences between the return on the market portfolio and the risk free rate, is not relevant in other contexts. GGT is of the view that when considered independently of the SL CAPM, the MRP has been, and continues to be, of great interest to investors and to financial economists.²⁶⁹
690. GGT concludes that:²⁷⁰
- The irrelevance of the MRP, interpreted as a long term average of differences between the return on the market portfolio and the risk free rate, in the application of the SL CAPM means that survey and other evidence which supposedly directly inform estimates of the MRP, are irrelevant. They have no role in the application of the SL CAPM.
691. GGT is also of the view that the assumption that the market return on equity is relatively stable – the Wright approach – with the implication that the risk free rate and the MRP are perfectly negatively correlated, is extraneous to the derivation and application of the SL CAPM. GGT argues that it makes no assumption in its derivation of the SL CAPM about the relationship between the risk free rate and the MRP, or to the effect that the real market return on equity is constant.²⁷¹
692. GGT reasserts its view that it does not (nor did not, in its revision proposal for the GGP Access Arrangement) propose use of the Wright approach.²⁷²
693. GGT concludes that:²⁷³
- The ERA’s approach to estimating the risk free rate and the MRP is inconsistent with the assumptions from which SL CAPM is derived. The ERA’s approach of separately and independently estimating the risk free rate and the MRP is conceptually incorrect, and therefore leads to an estimate of the return on equity which cannot, except by chance, be an estimate which contributes to the achievement of the allowed rate of return objective.
694. In addition, GGT considers that given prevailing conditions in financial markets, with the Commonwealth Government Security yields which proxy for the risk free rate close to their historic lows, use of the “standard approach” – that is, use of a long term average of the risk free rate proxy in place of the current value of that proxy – imparts a downward bias to estimates of equity returns obtained by applying the SL CAPM.²⁷⁴
695. GGT submits that it applies the SL CAPM, but not using the Authority’s approach. GGT applies the model by making estimates of the expected return on the market,

²⁶⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 84.

²⁷⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 84.

²⁷¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 85.

²⁷² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 85.

²⁷³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 85.

²⁷⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 85.

and of the risk free rate, and by estimating the market risk premium as the difference between the two.²⁷⁵

GGT's estimates of the return on equity

696. GGT engaged Frontier Economics to provide expert advice in response to the Authority's Draft Decision in relation to estimating a return on equity for GGP using option pricing.
697. Frontier Economics notes that, in the Authority's Draft Decision, the Authority elected to have no regard to GGT's view, which was based on SFG's analysis in relation to estimating a return on equity using option pricing.²⁷⁶ GGT notes the Authority's assessment is that: (i) on a theoretical basis, SFG's report is fundamentally flawed because it is not driven by economic principles and does not follow standard finance theory; and (ii) on a practical level the Authority considers that SFG's approach is not well established, is untested and is unduly sensitive to input parameters.²⁷⁷
698. Frontier Economics responds to the Authority's Draft Decision in relation to SFG's estimates of a return on equity for GGP using option pricing in terms of the following three key themes. Each of these is summarised below.

What is embedded within the regulatory model for GGP?

699. Frontier Economics is of the view that the cost of equity input into the regulatory model is understated – in the case of the GGP – because there is greater potential for adverse impacts, leading to below-normal equity returns, compared to events leading to above-normal returns. Frontier Economics considers that this asymmetry is because the projected pipeline volume is close to capacity, there is a small number of customers, and because those customers are concentrated in mining. Some customers' profitability is marginal and commodity prices have fallen.²⁷⁸
700. Frontier Economics submits that the model approach adopted in practice, including by the Authority, is a hybrid returns model that incorporates the yield to maturity on debt and the expected return on equity.²⁷⁹
701. Frontier Economics then argues that:²⁸⁰
- In the hybrid returns model the regulator estimates a series of cash flows and revenue that, if the volume and cost assumptions in the model turn out as projected, allow the equity holders to earn the expected return. This means that, if there was equal upside potential and downside risk for equity holders then the revenue stream is appropriate.

²⁷⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 85.

²⁷⁶ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Attachment 7.

²⁷⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 3.

²⁷⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 7.

²⁷⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 8.

²⁸⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 8.

The equity holders would have a projected revenue stream in a normal situation that, on average, allows the shareholders to earn the expected return

and that:²⁸¹

The problem is that the hybrid model also doesn't, by itself, lead to the appropriate revenue stream in a normal situation if there is relatively more potential for equity holders to earn below-average returns. In this instance the average return across all possible outcomes would lie below the expected return estimate that is input into the model.

702. Frontier Economics asserts that Lally, the Authority's expert on the issue, is of the view that no one knows for sure what the regulatory model represents. Frontier Economics further claims that Lally's view is that returns to equity holders might be symmetrically distributed or that, if adverse events occur, the regulator might provide compensation for those events.²⁸² Frontier Economics does not consider that it is reasonable for its analysis to be dismissed simply on the basis that something else might be represented by the regulatory model, contending that neither Lally, nor the ERA (2015), forms a view on the issue.²⁸³

703. Frontier Economics argues that:²⁸⁴

We put forward a business case in relation to the GGP which was that there was limited upside potential for equity holders due to capacity constraints, but more downside risk because of a concentration of mining customers, lack of alternative customers and potential for default. It is not reasonable to simply say that returns might be symmetrically distributed, or that the regulator can make the returns symmetrically distributed by providing ex-post compensation. If the ERA planned to provide such compensation in the event of severe adverse events, and was legally able to make such an allowance, then the ERA could write this in the draft decision.

704. Frontier Economics also disagrees with Lally's view that a strong assumption about regulatory behaviour, without supporting evidence, is made in SFG's analysis.²⁸⁵ Frontier Economics is of the view that this characterisation of its analysis is unreasonable and that an educated assessment of the model's implications – which are based upon the way the projections are used – is needed.²⁸⁶

705. Frontier Economics concludes that:²⁸⁷

...we consider that regulatory models need interpretation, the most likely interpretation of the model used by the ERA (2015) is an average across no default scenarios (which allows debt holders to earn the yield across those scenarios), and that there is an asymmetry in equity holders' returns. This leads to an input to the regulatory model for

²⁸¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 8.

²⁸² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 9.

²⁸³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 8.

²⁸⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 8.

²⁸⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 10.

²⁸⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 10.

²⁸⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 10.

the cost of equity which is above the expected return. Our quantitative analysis allows this cost of equity input to be measured.

Frontier Economics' responses to issues regarding theory

706. Frontier Economics argues that the Authority's assessment of the theoretical grounds for its work is a mischaracterisation. Frontier Economics considers that there are two standard finance theories that underpin its analysis:²⁸⁸
- (i) the equity in a business can be valued as a call option on the assets of the firm; and
 - (ii) the value of the firm is affected by market returns – the concept of systematic risk, which is the source of risk incorporated into the CAPM.
707. Frontier Economics considers that the assessment by Lally (2015) is not a reasoned assessment of the theoretical validity of the analysis. Frontier Economics contends it is not reasonable because it relies upon debate over labels, rather than the actual analysis done (namely, to model movements in asset value and then the value of an option to retain ownership by repaying debt). Frontier Economics argues that it performed an application of option pricing analysis to a real situation and that this is a central motivation underlying the publication of papers like Brennan and Schwarz (1985) and Paddock, Siegel and Smith (1988), to actually use corporate finance theory in practice so as to make better investment choices.²⁸⁹
708. Frontier Economics disagrees with the Authority's assessment that its approach does not follow the popular binomial option pricing model. Frontier Economics argues that there is no one particular binomial option pricing model and that this approach can be used to value call options, equity, and individual projects. Frontier Economics considers that all it has done in the current application is construct a model for a pipeline which faces risks associated with market movements and a small customer base in mining.²⁹⁰
709. Frontier Economics also considers that the Authority's concern that its analysis might not necessarily converge to a specific answer if it moves closer to continuous time is overstated. Frontier Economics argues that 60 months of returns, leading to 61 possible asset values at the end of five years, is a reasonable basis for drawing conclusions.²⁹¹

Frontier Economics' responses to issues regarding implementation in practice

710. Frontier Economics considers that the Authority's assessment of the sensitivity of its analysis to assumptions is unreasonable because its results have been either

²⁸⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 11.

²⁸⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 11.

²⁹⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 13.

²⁹¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 13.

misunderstood (so that sensitivity appears higher than it is) or the actual sensitivity has not been considered.²⁹²

711. Frontier Economics argues that:²⁹³

We do not consider the ERA's (2015) [analysis] of this sensitivity to be reasonable. The ERA presents these changes as very large compared to what can be relied upon. Yet the changes are not materially different to variations in cost of equity estimates that have been made in the past, or in comparison to the parameter ranges adopted by the ERA. Changes in the cost of equity estimates are not an artificial result of an unstable estimation method. The cost of equity estimates move because economic events affect equity holders' returns.

and that:²⁹⁴

The ERA's own assessment of beta estimates over time, and at each point in time, is wide because of imprecision in measurements of risk. Yet the wording of the assessment by the ERA (2015) and Lally (2015) implies that regression based estimates of beta give reliable cost of equity estimates, and modelling in which risks are accounted for explicitly are entirely unreliable. In our view the modelling presented provides useful information to the ERA for assessing the risk of the GGP.

Frontier Economics' conclusion

712. Frontier Economics submits, as an overall response to the Authority (2015) and Lally (2015), that there has not been a reasonable assessment of the theory and practical work submitted. Frontier Economics argues that its analysis relies upon the idea that a regulatory model needs an interpretation and that the interpretation fundamentally affects what inputs are embedded in the model.²⁹⁵

713. Frontier Economics is of the view that:²⁹⁶

This over-riding objective is not the central question addressed in the assessment of our work by the ERA (2015). The ERA does not address the question of what is embedded in a regulatory model, and does not consider whether our overall premise makes sense – that defaults on the pipeline are more likely in a downturn and what this means for equity beta. The ERA performs a benchmarking exercise to see whether, based upon past accounting metrics, the GGP appears more risky. But this is incomplete because the risk faced by the GGP will not show up in a period of relatively good times for mining companies.

714. Frontier Economics concludes that its analysis has merit and provides an estimate of systematic risk that addresses the risks faced by the GGP.²⁹⁷

²⁹² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 13.

²⁹³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 18.

²⁹⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 19.

²⁹⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 24.

²⁹⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 24.

²⁹⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 24.

Return on debt

715. GGT considers that the analysis of the Authority in the Draft Decision – supporting the use of a hybrid trailing average method for estimating the return on debt – hinges on the assumption that the benchmark efficient entity of NGR 87(3) is a regulated entity.²⁹⁸ GGT then contends that ‘if the benchmark efficient entity were not regulated, the rationale for the hybrid trailing average would fall away’.²⁹⁹ Such an entity would not have a 5 yearly regulatory reset, so would not seek to hedge to the 5 year risk free rate.
716. GGT offers support for the notion that the benchmark efficient entity is not a regulated entity by citing a range of supporting material, including rule change material from the Australian Energy Market Commission, decision material from the Western Australian Supreme Court, regulatory policy material from the Expert Panel on Energy Access Pricing and views from the Australian Competition and Consumer Commission’s Regulatory Development Branch.³⁰⁰
717. GGT therefore proposes to use the full trailing average method for estimating the return on debt. GGT considers that the method is consistent with estimating the return on debt for an entity that operates in a workably competitive market. GGT suggests that such an entity would manage its finance risk by rolling over 10 year debt on a regular basis. The resulting cost of debt could be proxied by the full trailing average.³⁰¹
718. GGT then notes that the AER proposes to adopt a full trailing average. GGT considers that the AER’s decision to adopt a transition is unwarranted, as:
- there is no basis for the (AER) contention that use of historical data, after the results of the historical data are already known, would introduce bias – if anything, it is the AER’s transition method which introduces bias;³⁰²
 - there are issues related to NPV=0. GGT considers that ‘applying NPV = 0 over the life of assets, as the AER advises it has done in supporting its transition to a trailing average, is essentially meaningless’.³⁰³
719. GGT concludes:³⁰⁴
- In summary, to have assumed that the benchmark efficient entity was a regulated entity which would have hedged its debt in a particular way in response to the prevailing regulatory regime was incorrect. The ERA should have assumed that the benchmark efficient entity was a firm of similar scale to the service provider which operated in a workably competitive market. Such a firm could be expected to issue debt with a term to maturity of 10 years, and to stagger its debt issues to minimise refinancing risk, in the

²⁹⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 90.

²⁹⁹ Ibid.

³⁰⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, pp. 90 – 91.

³⁰¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 94.

³⁰² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 93.

³⁰³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 94.

³⁰⁴ Ibid.

way the ERA proposes, without any need for concern about financing arrangements which have to be “unwound”. If this were the case, the ERA could have immediately implemented a trailing average approach to estimation of the return on debt. This may have left some service providers with gains arising from mismatch between allowed return on debt for the benchmark efficient entity and the actual returns on debt of the benchmark. However, such gains and, in other circumstances, losses, are an outworking of the normal operation of a scheme of incentive regulation. The scheme of the NGL and the NGR would preclude the ERA from “clawback” of any gains it perceived were being left with service providers.

Term of the risk free rate

720. GGT submits that the risk free rate of return should be estimated as an average of yields on CGS with terms to maturity of 10 years.³⁰⁵ The Authority did not accept the use of a 10 year term in the cost of debt on the basis that, in order for the condition $NPV = 0$ to be satisfied, the appropriate term for the risk free rate in the current regulatory setting should be 5 years.

721. In its response to the Draft Decision GGT has made reference to the following legislation and rules:³⁰⁶

- NGL 24(2): A service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in—
 - (a) providing reference services; and
 - (b) complying with a regulatory obligation or requirement or making a regulatory payment.
- NGL 24(3): A service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides. The economic efficiency that should be promoted includes—
 - (a) efficient investment in, or in connection with, a pipeline with which the service provider provides reference services; and
 - (b) the efficient provision of pipeline services; and
 - (c) the efficient use of the pipeline.
- NGR 87(3): The allowed rate of return objective is that the rate of return for a service provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services (the allowed rate of return objective).

722. In light of these rules and legislation, GGT raises the following issues:

Rate of Return cannot satisfy Allowed Rate of Return Objective

723. GGT is of the view that, by requiring that the rate of return be determined using a proxy for the risk free asset, which has a term to maturity equal to the duration of the

³⁰⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 71.

³⁰⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 71.

regulatory period, the Authority precludes a rate of return that satisfies the allowed rate of return objective (**ARORO**) of NGR 87(3).

NGL and NGR does not require NPV = 0

724. GGT submits that NGL 24(2) requires that a service provider be provided with a reasonable opportunity to recover at least the efficient costs incurred in providing reference services. It noted that in Appendix 2 to the Explanatory Statement for the Rate of Return Guidelines the Authority advised that stakeholders' interpretation of section 24(2) of the NGL as a requirement for NPV ≥ 0 was reasonable.
725. One of GGT's points of contention is that in Appendix 2 to the Explanatory Statement for the Rate of Return Guidelines the Authority saw NPV = 0 as 'the efficient condition' consistent with the requirement of NGL 24(3). GGT submits that there is no explicit requirement for NPV = 0 in the access regulatory regime of the NGL and the NGR and that the NGL 24(3) does not have this level of precision.³⁰⁷ It highlights that NGL 24(3) makes reference to efficiency across a number of aspects of the supply of natural gas (investment, provision of service and use) and that the assessment of efficiency across these aspects may not be easily reduced to a formula. GGT states that NGL 24(3) does not require precise balancing of efficiency across the aspects covered in NGL 24(3) to achieve the specific financial result of NPV = 0.³⁰⁸ It concludes that there is no overriding requirement in the NGL or NGR, explicit or inferred, for NPV = 0.

Regulator's choice of term constrained by ARORO

726. GGT contends that the regulator is not free to choose the term to maturity of the security that is to proxy for the risk free asset.³⁰⁹ It highlights that the risk free rate is a time value of money parameter and it is not free to be chosen by the regulator or supplier of financial assets (such as the NSP) even if they have explicit guidance in the form of NPV = 0. From the perspective of the service provider, it argues that this is because the regulated firms are 'price takers' that take the market price of debt of a particular maturity as given. It submits that the regulator is constrained by an explicit requirement that the rate of return be set with reference to the financing costs of a benchmark efficient entity as per NGR 87(3).

Authority in error matching term to regulatory period

727. GGT goes on to argue that the risk free rate of return enters into estimation of the market price of debt through the way in which the portfolio decisions are modelled and that the regulatory period is not a factor considered in the portfolio decisions of investors. It argues that in these circumstances, the term to maturity of the proxy for the risk free asset must be determined by reference to the behaviour of investors. In this case NPV may not necessarily be zero, however, as discussed above, GGT submits that there is no requirement for this. Again, it emphasises that the rate of return must be the rate that is commensurate with the efficient financing costs of the benchmark efficient entity, which provides the firm with the opportunity to earn the

³⁰⁷ Goldfields Gas Transmission Pty Ltd, Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission, January 2016, pp. 71-72.

³⁰⁸ Goldfields Gas Transmission Pty Ltd, Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission, January 2016, p. 72.

³⁰⁹ Goldfields Gas Transmission Pty Ltd, Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission, January 2016, p. 72.

return that investors require if they are to finance investment in the assets of the benchmark efficient entity. GGT therefore considers the Authority to be in error in requiring that the term to maturity of the proxy for the risk free asset to be five years, which is the duration of the regulatory period.

728. GGT references a number of journal articles to support its view that economic theory points to a long term financial asset as being the best proxy for the risk free asset.³¹⁰ Modigliani and Sutch argued that investors with a long term 'preferred habitat' might have a preference for long-term bonds based on the assumption that some investors prefer less variability in wealth over longer, as opposed to shorter, horizons. Stiglitz provided an alternative theory to the commonly accepted idea in economics (at the time) that long-term bonds are riskier than short-term bonds. Campbell and Viceira defined the 'riskless' asset as the optimal portfolio for an infinitely conservative investor. They showed that an infinite lived investor who is infinitely risk averse and infinitely reluctant to substitute consumption intertemporally chooses a portfolio of indexed bonds that is equivalent to an indexed perpetuity. The implication is that long term investors may hold long-term bonds. Wachter formalised the 'preferred habitat' intuition of Modigliani and Sutch showing that the portfolio of a highly risk-averse investor with horizon T would consist entirely of a bond maturing at time T.

Debt Risk Premium

729. GGT considers the use of RBA credit spreads – extrapolated or interpolated where necessary – more appropriate than applying the revised bond yield approach. It is of the view that the Authority's reasons for not using the RBA credits spreads are 'insubstantial, and do no warrant the regulator proposing its own ad hoc and untested method of making yield estimates'.³¹¹ Specifically, issues GGT raises are:
- the source data are not of a tenor of 10 years, so adjustments for tenor are required irrespective of whether RBA data are used, or some other method of yield estimation;³¹²
 - RBA data are available for the BBB band;³¹³ and
 - interpolation methods to convert end of month data to daily estimates can be applied.³¹⁴
730. GGT concludes that 'in the absence of any thorough and critical assessment, there is no basis for concluding that the Nelson-Siegel and Nelson-Siegel-Svensson methods can assist the making of estimates of the return on debt that can contribute to achievement of the allowed rate of return objective'.³¹⁵
731. GGT therefore considers that the return on debt should be estimated using the RBA data, noting that:

³¹⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 73.

³¹¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 94.

³¹² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 95.

³¹³ *Ibid.*

³¹⁴ *Ibid.*

³¹⁵ *Ibid.*

- those data are from a reliable and independent source;³¹⁶
- the RBA considers that its method has advantages over alternatives:³¹⁷
 - the method of construction is more transparent;
 - the samples are larger; and
 - the method is relatively robust, allowing for the estimation of spreads at longer maturities than are available elsewhere.

Debt raising and hedging costs

732. GGT proposes an allowance of 0.125 per cent for debt issuance costs. No allowance has been proposed for hedging costs.

Estimate of the return on debt

733. GGT therefore proposes to estimate the return on debt using a simple trailing average, comprising the sum of the risk free rate of return and the debt risk premium. Data for the debt risk premium would be sourced from the RBA, extrapolated or interpolated as necessary.³¹⁸

734. The allowance of 0.125 per cent for debt issuance costs would be added to the return on debt total.

735. In its most recent revised proposal in January 2016, GGT proposed that the last, and most recent, observation in the 10 year trailing average would be an estimate of the return on debt made for an averaging period of 40 trading days immediately preceding the issue of the Authority's final decision.³¹⁹ Since the submission of this proposal GGT has notified the Authority that it has opted to use an average over 20 trading days instead of the 40 initially proposed. The earlier terms of the average would be estimated as a simple average of RBA estimates over the relevant year.

736. GGT proposes that the resulting trailing average estimate be updated annually, by deleting its earliest term, and adding a new term calculated for the current year. The equal weighting of the terms in the trailing average would be retained in the updating process.

737. This methodology resulted in an estimate for the return on debt of 7.95 per cent.³²⁰

³¹⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 96.

³¹⁷ Ibid.

³¹⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 96.

³¹⁹ Ibid.

³²⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 97.

Submissions

Return on equity

738. The Authority did not receive any submissions in relation to the estimate of the return on equity.

Return on debt

The proposed 10 year trailing average of the risk free rate

739. BHP Billiton submits that it supports a full trailing average for the return on debt conditional on it being implemented in a manner where neither customers nor the regulated business are better or worse off simply as a result of the change to the full trailing average. It submits that under the approach to implementation that GGT proposes, GGT will be unambiguously better off and customers will be unambiguously worse off. BHP Billiton recognised that over time GGT's proposed approach will offer benefits to customers in the form of greater tariff stability while offering benefits to regulated businesses in the form of enhanced risk management options. However, BHP Billiton made it clear that if the transition approach that GGT proposes is the only option for adopting the full trailing average then the current method for setting the regulatory allowance should be maintained. It concluded by proposing that the Authority should adopt a transition to the full trailing average that avoids windfall gains or losses to regulated businesses or consumers.³²¹

Considerations of the Authority

Risk free rate

740. The key issues for the estimate of the risk free rate are:

- the term of the estimate;
- the method of estimating the risk free rate; and
- the averaging period.

The term of the risk free rate

741. GGT does not accept the Authority's requirement in the Draft Decision for the setting of the risk free rate with reference to the term of the regulatory period, which is 5 years.³²²

742. GGT is of the view that, by requiring that the rate of return be determined using a proxy for the risk free asset that has a term to maturity equal to the duration of the regulatory period, the Authority precludes a rate of return that satisfies the ARORO of NGR 87(3).³²³ GGT argues that:

³²¹ BHP Billiton, Public submission by *BHP Billiton in response to revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 5.

³²² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 71.

³²³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 73.

- the term to maturity of the proxy for the risk free asset must be determined by reference to the behaviour of investor;
- the regulator is not free to choose the term to maturity of the security that is to proxy for the risk free asset; and
- there is no overriding requirement in the NGL or NGR, explicit or inferred, for NPV = 0.

743. These issues are considered in what follows. The evaluation commences with a summary of GGT's response to the Authority's considerations of the work of Lally and Davis, which are fundamental to its view relating to the term issue.

GGT's further response to the perspective of Lally and Davis

744. The Authority is faced with the task of determining the term for the risk free asset and does so based on relevant economic and financial principles. The Authority's choice of term has been guided by the NPV = 0 (or **present value**) principle. The relevance of this is elaborated in detail further below in the evaluation of GGT's position.

745. In its Rate of Return Guidelines, the Authority concluded that a 5 year term was appropriate. This conclusion was informed by the work of Lally and Davis exploring the implications of the present value principle.³²⁴ The Guidelines took account of GGT's critique of both this material and the Authority's interpretation of it.³²⁵

746. However, GGT in its access arrangement proposal took further issue with the *same* material from Lally and Davis:³²⁶

...the studies by Associate Professor Lally, and by Professor Davis, to which the Explanatory Statement refers, do not provide support for a view that the term to maturity of the proxy for the risk free asset should be equal to the length of the access arrangement period so that the present value principle is satisfied.

747. GGT took a different approach to its assessment of Lally's work, submitting that Lally was not concerned with the term of the risk free rate:³²⁷

Associate Professor Lally is not concerned with the term to maturity of the proxy for the risk free asset which might be used in estimating the rate of return on that debt, or which might be used in estimating the rate of return on equity...

In each of the analyses in his 2007 paper, Associate Professor Lally is concerned, not with the term of the proxy used to estimate the risk free rate of return, but with the question of whether the term to maturity of the debt issued by the regulated firm should be the same as the length of the regulatory period...

The 2010 report summarises, rather than repeats, the argument of Associate Professor Lally's earlier papers. It also extends his earlier analysis to take into account refinancing risk. Associate Professor Lally's extension of his earlier analysis, through an examination of five options which might be available to a regulated firm, makes no reference to the term to maturity of the proxy for the risk free asset. He is concerned,

³²⁴ Ibid.

³²⁵ Goldfields Gas Transmission 2013, *Submission on the Economic Regulation Authority's Draft Rate of Return Guidelines*, 19 September, pp. 28 - 33.

³²⁶ Goldfields Gas Transmission, *Goldfields Gas Pipeline: Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, p. 72.

³²⁷ Goldfields Gas Transmission, *Goldfields Gas Pipeline: Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, pp. 73 - 74.

again, with the implications of the regulated firm choosing a term to maturity for the debt it issues which diverges from the length of the regulatory period, and assesses those implications using the present value principle...

748. GGT also made the following claim with regard to the process of the setting of the regulated rate of return:³²⁸

Contrary to the assumption made by Associate Professor Lally, the risk free rate of return and the debt margin are not free to be chosen by the regulated firm or the regulator. In particular, the regulated firm and the regulator are not free to choose the term to maturity of the proxy for the risk free asset so that it is equal to the length of the regulatory period. Moreover, the present value principle does not require that the term to maturity of the proxy be the same as the regulatory period. Any choice of the proxy for the risk free asset, and any choice of the debt margin, used in the asset pricing models which the regulated firm and the regulator employ to estimate the return on equity and the return on debt will lead to a rate of return which, provided it is used to calculate the financing costs included in the present value of the firm's efficiently incurred costs, and to calculate the present value of the forecast revenue which recovers those costs, will satisfy the present value principle.

749. GGT concluded with regard to the cited work of Davis that:³²⁹

Professor Davis assumes that the regulator is able to implement the correct rate of return on equity through its choice of the term to maturity of the proxy for the risk free asset. However, as we explained above, the regulator does not have freedom of choice in respect of the term to maturity of the proxy for the risk free asset. The proxy for the risk free asset must be chosen so that the rate of return is the market rate of return sought by investors. It must be the proxy relevant to those investors, and there is no reason to expect that its term to maturity should be equal to the length of the regulatory period. In making an allowance for the return on equity, the regulator must take as given the market rate of return on equity. If that market rate of return is estimated using the Sharpe-Lintner CAPM, the model must incorporate an investor – and not a regulator – view of the risk free asset.

750. Now, in its response to the Draft Decision, GGT continues to maintain that the reliance of the Authority on the present value principle is misguided, as it considers that there is no explicit requirement for NPV=0 in the access regulatory regime of the NGL and the NGR.³³⁰ Rather, it is the requirements of investors which set commensurate efficient financing costs. The NPV may not in that case equal zero.³³¹

751. Second, GGT maintains that the 'regulator is not free to choose the risk free rate and the term to maturity of the security which is to proxy for the risk free asset', since the return must be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.³³² GGT makes reference in this context to economic theory as pointing to a long term financial asset as being the best

³²⁸ Goldfields Gas Transmission, *Goldfields Gas Pipeline: Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, p. 75.

³²⁹ Goldfields Gas Transmission, *Goldfields Gas Pipeline: Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, p. 79.

³³⁰ Ibid.

³³¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 73.

³³² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 72.

proxy for the risk free asset.³³³ GGT also notes that the AER considers the 10 year term to be appropriate, and that 85 per cent of survey respondents to the KPMG Valuation Practices Survey 2013³³⁴ used the yield on 10 year government bonds as a proxy for the risk free rate in Australia.³³⁵

752. GGT considers that the Authority has therefore erred, as the term equal to the duration of the regulatory period will result in a rate of return that does not satisfy the allowed rate of return objective of NGR 87(3). GGT has therefore continued to propose a term for the risk free rate of 10 years.

Evaluation of GGT's position

753. Prior to the Draft Decision, the Authority engaged Lally to undertake a review of its conclusions in the Rate of Return Guidelines and also to review GGT's new arguments. With regard to the Guidelines material, Lally noted a small number of relatively minor points with regard to interpretation, but otherwise concurred with the Authority's analysis and conclusions. That analysis included the response by the Authority to the submitted views of GGT with regard to the Lally and Davis material.³³⁶
754. In response, first, with regard to the work of Lally, contrary to GGT's assertions noted above, the Authority considered in the Draft Decision that it is clear that both Lally's 2007 and 2010 papers address the appropriate regulatory term of the risk free rate:
- Lally summarises his 2007 paper in its Abstract as follows:³³⁷

If the regulator seeks to ensure that the present value of the future cash flows to equity holders equals their initial investment then the only choice of term for the risk free rate that can achieve this is that matching the regulatory cycle, but it also requires that the firm match its debt duration to the regulatory cycle.
 - Furthermore, Lally's 2010 paper is titled *The Appropriate Term for the Risk Free Rate and the Debt Margin*. This title suggests – and the contained material bears out – that he is concerned with the term of the risk free rate.
755. Second, it is a fact that a key consideration for the Authority in determining the 5 year term relates to the NPV=0. The Authority had noted in the Draft Decision that, in order to ensure NPV = 0, the appropriate term for the risk free rate in the current regulatory setting should be 5 years. This follows because the rate of return is reset

³³³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 73. GGT submit:

That long term bonds rather than short term bonds are relevant to consideration of the risk free asset appears to have been first raised by Modigliani and Sutch: Franco Modigliani and Richard Sutch (1966), "Innovations in Interest Rate Policy, *American Economic Review*, 56(1/2), pp. 178-197. The theory was subsequently developed by, among others, Joseph E. Stiglitz (1970), "A Consumption-Oriented Theory of the Demand for Financial Assets and the Term Structure of Interest Rates", *Review of Economic Studies*, 37(3), pp. 321-351; John Y Campbell and Luis M. Viceira (2001), "Who Should Buy Long-Term Bonds?", *American Economic Review*, 91(1), pages 99-127; and Jessica A. Wachter (2003), "Risk aversion and allocation to long-term bonds", *Journal of Economic Theory*, 112, pp. 325-333.

³³⁴ KPMG, *Valuation Practices Survey 2013*, 2013.

³³⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 73

³³⁶ M. Lally, *Review of arguments on the term of the risk free rate*, 20 November 2015, p. 3.

³³⁷ M. Lally, *Regulation and the Term of the Risk Free Rate: Implications of Corporate Debt*, *Accounting Research Journal*, Volume 20, No.2, 2007, p. 74.

every 5 years, concomitant with the term of the access arrangement. The Authority considers that ensures that the requirements of the NGL and NGR are met, as:

- consumers are not paying more for pipeline services than are necessary, which is in their long term interests, consistent with the requirements of the NGO;
- gas pipeline service providers have reasonable opportunity to recover their efficient costs, which is consistent with the requirements of the Revenue and Pricing Principles; and
- the rate of return will be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services, which is consistent with the requirements of the allowed rate of return objective.³³⁸

756. GGT submits that there is no overriding requirement in the NGL or NGR, explicit or inferred, for $NPV = 0$.³³⁹
757. The Authority considers that the requirement for $NPV = 0$ to hold with *strict equality* provides a pragmatic objective. In other words, the Authority is of the view that there is an implicit requirement or objective *to aim for $NPV = 0$* over the long run because this is consistent with the aim of the NGO, as outlined above. Aiming for $NPV \geq 0$ over the long run simply to ensure sustainability of the service provider is not an objective constraint or ‘goal’ to aim for and is inconsistent with the aim of the NGO – it can be achieved simply by increasing prices infinitely. This is certainly not in the long term interests of consumers. This is not to say that over the short run $NPV \geq 0$ is precluded – aiming for $NPV = 0$ is simply an objective to ensure no systematic economic profits.
758. Conversely $NPV \leq 0$ is also inconsistent with the NGO as a goal – decreasing prices infinitely is not in the long term interests of consumers as it would compromise the quality, safety, reliability and security of supply. The objective to aim for $NPV = 0$ over the long run is therefore consistent with the NGO and can adequately summarise the balancing of factors described by the South Australian Parliament (see paragraph 774 below). Assuming all costs (including the cost of capital) of providing the reference service are accurately, completely and fairly measured, an efficiently *priced* service provider will set prices so that the NPV of expected revenues recover only these costs over the long run.
759. Accordingly, the objective to aim for $NPV = 0$ acts as a surrogate for competitive pressure to price at cost and efficiency in the provision of the minimum standards of service. This is in the long term interests of consumers, which is ultimately the aim of the NGO. The Authority therefore views the $NPV = 0$ principle as being implicit in the NGL and NGR, consistent with the NGO.
760. To understand these points about the present value principle in the context of the term of the risk free rate, it is useful to consider a bond that has periodic ‘resets’ in the cash flows it pays to reflect movements in the risk free rate. The coupon or ‘interest payments’ are adjusted at each period so that if the risk free rate falls the coupon payment will fall and vice versa. The face value is repaid upon maturity. Compared to a bond that does not periodically reset its coupon payments (fixed coupons), the bond holder is protected from the risk that risk free rate changes will

³³⁸ NGR 87.

³³⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 72.

affect the market price (or value) of the bond. This is because a higher (lower) risk free rate will more (less) heavily discount the fixed cash flows of a fixed bond, while for a bond that periodically resets, this effect is offset by the increase (decrease) in cash flows that are based on the change in the risk free rate. The value of the bond however, is still exposed to movement in the risk free rate between the resets. The term of the risk free rate in the bond therefore need only be set commensurate with the length of the period between resets. This is observed in practice for floating rate notes that often have 3 or 6 monthly resets and are issued in a variety of terms, including perpetual. However these typically use a base rate such as the bank bill swap rate instead of the 'risk free rate' observed on Commonwealth Government Securities.

761. The 5 year risk free rate in the regulated return for a 10 year investment in the RAB is analogous to the 3 month base rate in a 1 year floating rate debt instrument. For such an instrument a 3 month base rate, such as the 3 month bank bill swap rate, is used as a reference to reset the 'risk free' component or 'base rate' of the coupon rate every quarter.³⁴⁰ The yield to maturity of the base rate reflects a 3 month tenor, *not a 1 year tenor*, due to exposure to changes in the base rate **within the 1 year term** being limited to 3 months at a time by virtue of quarterly resets in the base rate to match the prevailing rate.
762. By the same reasoning, a 10 year debt instrument with 5 yearly resets would use an index with a 5 year yield to maturity as the interest rate risk exposure is limited to 5 years at a time, on account of the base rate being reset every 5 years to match the prevailing market yield. Similarly, equity holders' exposure to base risk is limited to five years at a time due to the 5 yearly regulatory reset.
763. Lally previously has made exactly this point in a worked example:³⁴¹
- The scenario examined here is conceptually identical to that of a floating rate bond, and the same recursive valuation process applies. For such bonds, the interest rate used at each reset point must be for a term matching the reset frequency (Jarrow and Turnbull, section 13.2.4).
764. Lally summarised this insight in his 2015 report for the Authority:³⁴²
- Since regulated businesses subject to five-yearly price resets are similar to a very long-term bond with its coupon reset every five years...
765. On that basis, the Authority considers that the present value principle is an important consideration for the term of the risk free rate, and that it points to a five year term for the risk free rate as being consistent with the requirements of the NGR.
766. Third, and equally important, the Authority considers that GGT's claim that the regulator is not required to 'choose' an appropriate term is misplaced. Specifically, when determining the rate of return the Authority is required to identify the efficient

³⁴⁰ Ignoring interest rate swap spreads to Commonwealth Government Securities for illustration sake.

³⁴¹ SFG claim that Lally in 'his most recent contribution on this issue, Lally (2012 QCA) is very clear about the assumption that serves as the foundation for all of his derivations. He assumes that the regulatory process is such that the market value of the regulated assets at the end of each regulatory period is not subject to any risk' (DBNGP Transmission Pty Ltd, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020, Rate of Return - Supporting Submission: 12*, 31 December 2015, Appendix B, p. 6). However, Lally's numerical example refers to 'assets costing \$100m' (M. Lally, *Response to submissions on the risk free rate and the MRP*, 22 October 2013, p. 46). This is a RAB value, not a market value.

³⁴² M. Lally, *Review of arguments on the term of the risk free rate*, 20 November 2015, p. 18.

financing costs associated with the degree of risk in delivering the reference services. Those efficient financing costs will contribute to investors having ‘reasonable opportunity’ to recover at least the efficient costs of providing the reference services, including through the setting of the rate of return.³⁴³ As noted by Lally:³⁴⁴

GGT attributes to Lally (2010) the claim that the regulator is free to choose the allowed rate of return, and implies that this allows the regulator to “arbitrarily” choose the parameter values in these asset pricing models. The last claim is false and GGT are manufacturing an inconsistency where none exists. It is an administrative fact that the regulator chooses the allowed rate of return and therefore has the power to choose. Naturally, some choices are better than others. The choice should satisfy the Present Value Principle, which implies that the appropriate choice for the risk-free rate is the market rate for a term matching the regulatory period, but the principle does not dictate how the risk premium should be determined; the latter requires an asset pricing model, and such models do reflect investor behaviour.

767. With regard to the work of Davis, GGT makes similar arguments. For example, with regard to Davis’ 2003 paper for the ACCC, GGT suggested that:³⁴⁵

Professor Davis’s use of a tracking portfolio is an interesting application of the Sharpe- Lintner CAPM. Unfortunately, his analysis is incomplete and, therefore, does not lead to a correct conclusion.

Professor Davis assumes that the regulator is able to implement the correct rate of return on equity through its choice of the term to maturity of the proxy for the risk free asset. However, as we explained above, the regulator does not have freedom of choice in respect of the term to maturity of the proxy for the risk free asset. The proxy for the risk free asset must be chosen so that the rate of return is the market rate of return sought by investors. It must be the proxy relevant to those investors, and there is no reason to expect that its term to maturity should be equal to the length of the regulatory period.

In making an allowance for the return on equity, the regulator must take as given the market rate of return on equity. If that market rate of return is estimated using the Sharpe-Lintner CAPM, the model must incorporate an investor – and not a regulator – view of the risk free asset.

768. The Authority rejects these arguments based on the reasoning discussed above.³⁴⁶

Implications for the return on debt

769. The Authority notes that GGT in its critique appears to be interpreting the ARORO in isolation of the National Gas Objective (**NGO**) and the associated overall aim of the NGL and NGR. The Authority notes in this context that the *Acts Interpretation Act 1901* provides for the consideration of extrinsic material:

- to confirm that the meaning of the provision is the ordinary meaning conveyed by the text of the provision taking into account its *context* in the Act and the *purpose or object* underlying the Act;
- to determine the meaning of the provision when the provision is ambiguous or obscure; or

³⁴³ National Gas Law, Part 3 – National Gas Objective and Principles.

³⁴⁴ M. Lally, *Review of arguments on the term of the risk free rate*, forthcoming, p. 9.

³⁴⁵ Goldfields Gas Transmission, *Goldfields Gas Pipeline: Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, p. 79.

³⁴⁶ M. Lally, *Review of arguments on the term of the risk free rate*, forthcoming, p. 11.

- the ordinary meaning conveyed by the text of the provision taking into account its context in the Act and the purpose or object underlying the Act *leads to a result that is manifestly absurd or is unreasonable*; and
- includes the speech made to a House of the Parliament by a Minister on the occasion of the moving by that Minister of a motion that the Bill containing the provision be read a second time in that House (Second Reading Speech).³⁴⁷

770. The NGO states that:

The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.³⁴⁸

771. The NGO is a specific result (efficient investment in, efficient operation and use of, natural gas services) *for* the long term interests of consumers.³⁴⁹ The Second Reading Speech for the 2013 amendments to the NGL aids in clarifying this point:

This Bill will make it clear that achieving the preferable decision in the long term interests of consumers as set out in the national electricity objective and the national gas objective is the aim of the Australian Energy Regulator.

772. The Parliament of South Australia emphasised that the long term interests of consumers is the key consideration in making changes to decisions under review:

Due to its role of assessing the merits of the original decision, the Bill will also make it clear that achieving the materially preferable decision in the long term interests of consumers as set out in the national electricity objective and the national gas objective for the Australian Energy Regulator's decision is the aim of the Australian Competition Tribunal.

773. The Parliament noted that there may be several possible economically efficient decisions each with different implications for the long term interests of consumers:

The national electricity objective and national gas objective explicitly target economically efficient outcomes that are in the long term interests of consumers, but the nature of decisions in the energy sector are such that there may be several possible economically efficient decisions, with different implications for the long term interests of consumers.

774. Later in the proceedings, Parliament considered that the long term interests of consumers are delivered by a balancing of the factors in the objective:

In establishing the national electricity objective and the national gas objective, it was recognised that the long term interests of consumers are not delivered by any one of its factors in isolation, but rather require a balancing of the range of factors.

775. The Authority considers the factors referenced by Parliament to be the outputs stated in the NGO that impact consumers. These are price, quality, safety, reliability and security of supply of natural gas. Parliament explicitly stated that ensuring customers do not pay more than necessary for the reference service should be an outcome of the amendment to the NGL.³⁵⁰

³⁴⁷ *Acts Interpretation Act 1901* (Cth) s15AB.

³⁴⁸ *National Gas Act (SA) 2008* s23.

³⁴⁹ Indeed, the NGO shares this in common with the National Electricity Objective see *National Electricity Act 1996* (SA) sch (National Electricity Law) s7.

³⁵⁰ The reference service 'holds constant' or sets the standard, quality, safety, reliability and security of supply of natural gas under the national energy laws through the terms and conditions set out in the Access Arrangement.

The changes to the National Electricity Law and National Gas Law that will be introduced with the passing of this Bill will be key in ensuring consumers do not pay more than necessary for the quality, safety, reliability and security of supply of electricity and natural gas under the national energy laws.

776. The Authority derives the following points from this material. *First*, that decisions made that are in the long term interests of consumers is the overarching aim of the NGO, NGL, NGR and ARORO. *Second*, competition and the efficiencies that result are the *means* to achieving this end, *but not the end* itself. *Third*, there may be several economically efficient decisions, each with different implications for the long term interests of consumers. *Fourth*, decisions that balance price, quality, safety, reliability and security of supply are in the long run interests of consumers. *Lastly*, ensuring that consumers do not pay more than necessary for the agreed balance of quality, safety, reliability and security of supply is an explicit consideration.
777. The Authority is faced with two approaches: GGT's full trailing average approach, which utilises a 10 year risk free rate; and the hybrid trailing average approach, which incorporates an on-the-day risk free rate component based on a 5 year term. (For further detail on the Authority's considerations of the merits of these approaches, refer to the 'Return on debt' section below.)
778. Both approaches have economically efficient aspects and provide the agreed balance of quality, safety, reliability and security of supply fixed in the terms and conditions for the reference service. For example, issuing longer term fixed debt (around 10 years) has been the observed practice of regulated firms and so GGT's approach could be considered economically efficient from the perspective of being consistent with the practice of the average regulated firm and thus sustainable. This of course assumes that the average regulated firm is efficient.³⁵¹
779. The Authority's hybrid trailing average approach has similar characteristics. Regulated firms can still issue 10 year debt, as has been observed by the AER, but can use interest rate swaps to hedge its exposure to movements in the risk free rate over the five year period.³⁵²
780. This is better understood through a simplified illustration outlined in Box 1 below.

³⁵¹ Australian Energy Regulator, *Explanatory Statement: Rate of Return Guidelines*, December 2013, p.144.

³⁵² Australian Energy Regulator, *Explanatory Statement: Rate of Return Guidelines*, December 2013, p. 144.

Box 1 The Efficiency of using Interest Rate Swaps

The service provider's interest payments on the 10 year debt can be viewed as a cash outflow and the regulated revenues as a cash inflow. The cash outflows are based on a 10 year term and are fixed for 10 years, while the revenue inflow used to service the outflows are fixed for five years.

Given that the yield curve is generally upward sloping, the cash outflows associated with a 10 year term will be higher than that associated with a 5 year term. The difference between 10 and 5 year yields is known as the term spread.

Interest rate swaps can be established with a third party so that the service provider effectively swaps (pays) its cash inflows (used to service the debt) which are reset every 5 years (floating leg) in exchange for a fixed payment based on the 10 year term (fixed leg). As discussed in paragraph 760 the payments on the floating leg need only be based on a term of 5 years, which means they are less than would be the case if they were based on a term of 10 years on an upward sloping yield curve (at a given point in time).

While it may seem illogical for the third party to swap a 'lower' 5 year term based payment for a 'higher' 10 year term payment, it must be kept in mind that the service provider is assuming the risk that the 5 year based rate may rise (or fall) in 5 years' time. However, this is not a concern for the service provider because it is immunised from this risk by virtue of a regulatory reset – if interest rates rise in 5 years' time so will its cash inflows (revenue), which can be used to cover the higher floating payments it now must make in exchange for the 10 year fixed rate that prevailed at the last reset.

It must be kept in mind that interest rate swaps have associated costs. If the expected costs are greater than the expected term spread it would be inefficient to hedge. Conversely, if the expected costs are lower than the expected term spread it would be efficient to hedge.

781. The Authority examined the issue of hedging costs vis-à-vis the term spread in the ATCO Final Decision and notes that the same issue was examined by Professor Martin Lally.³⁵³ The Authority remains of the view that the expected hedging cost is lower than the expected term spread between 10 and 5 year CGS. This expectation is formed in light of the liquidity of Australian interest rate swaps markets and the term spread typically observed between 5 and 10 year CGS.³⁵⁴
782. The hybrid trailing average approach is thus sustainable and produces a lower expected cost over the long run than the full 10 year trailing average approach. The relatively lower expected cost of the hybrid approach, over the long run, is consistent with the aim of the NGO, NGL, NGR and thus ARORO. The sustainability of the approach is consistent with the Revenue and Pricing Principles of the NGL.

³⁵³ Economic Regulatory Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, 10 September 2015, pp. 365-369. Also see M. Lally, *Transitional Arrangements for the Cost of Debt*, 24 November 2014, p. 27.

³⁵⁴ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2016, p. 68

783. The Authority's hybrid trailing average approach using the five year term is economically efficient and provides the agreed balance of quality, safety, reliability and security of supply. It is economically efficient to the extent that the five year term better matches the efficient financing costs of a competitive entity facing the same interest rate risk exposure. From this perspective it reduces risk and finances in an efficient manner. This idea is aptly summarised in Competition Economists Group's submission considered as part of the Authority's recent ATCO decision:³⁵⁵

To the extent that it is within the ERA's power to lower the risks, and therefore the costs, of service providers then the ERA should adopt that practice and, in doing so, it would promote economic efficiency. This would result in a cost reduction due to regulatory innovation that is just as valuable to society as a technological innovation of another kind. No economist would argue against the introduction of a technological innovation that lowered costs for industry "X" just because this would lower their costs relative to other industries who cannot have this technological innovation applied to them. Such a cost reduction does not involve a 'subsidy' nor does it create a 'distortion'. Such a cost reduction is clearly welfare enhancing 'progress' and is the primary engine of economic growth in the economy.

784. The hybrid trailing average is replicable and sustainable. GGT has not submitted any evidence to the contrary. Accordingly, the Authority has no reason to believe that the approach is not consistent with the NGL's Revenue and Pricing Principles.

785. For these reasons, the Authority views its approach based on the five year term for the risk free rate component as being in the long term interests of consumers as set out in the national gas objective and therefore preferable to GGT's full trailing average approach based on a 10 year term.

786. GGT argues that the term to maturity of the proxy for the risk free asset must be determined by reference to the behaviour of investors. GGT therefore considers the Authority to be in error in requiring that the term to maturity of the proxy for the risk free asset to be five years, which is the duration of the regulatory period.³⁵⁶ On this issue, the Authority notes that the literature referenced by GGT – involving the evolution of the 'preferred habitat' theory – culminates in Wachter formalising the 'preferred habitat' intuition of Modigliani and Sutch. Wachter shows that the portfolio of a highly risk-averse investor with horizon T would consist entirely of a bond maturing at time T . While this theory is informative for selecting the term of a risk free investment for an infinitely risk averse investor or the risk free rate for valuing a perpetuity, it is not useful for selecting the term to maturity of the proxy for the risk free asset in the return on debt that meets the aim of the NGL and NGR.

787. The firm's debt financing decisions are driven by the business environment in which the firm operates – not by some notion of investor's investment horizons. Modern financial markets have many channels that enable firms to isolate and optimise decisions in relation to the various factors to be considered in debt financing such as term, base rates, credit rating and inflation. The term of debt issued therefore, need not match the term of the risk free rate, particularly if the optimal decision given the business environment (which includes the framework legislation) does not require it.

³⁵⁵ ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 31.

³⁵⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 73.

788. GGT contends that the regulator is not free to choose the term to maturity of the security that is to proxy for the risk free asset. It submits that the regulator is constrained by an explicit requirement that the rate of return be set with reference to the financing costs of a benchmark efficient entity as per NGR 87(3).³⁵⁷
789. The Authority disagrees with this statement in-so-far as the regulator seeks to determine a term to maturity on the proxy for the risk free asset that best achieves the objectives of the NGL and NGR. In particular, the Authority considers that it has full discretion to withhold its approval of the term to maturity for the risk free rate proposed by GGT under NGR 40 (3). While the Authority agrees that the rate of return should be set with reference to the financing costs of a benchmark efficient entity as per NGR 87(3) – as discussed in paragraph 776 – the Authority is of the view that this reference must be interpreted in light of the aim of the NGO.

Implications for the return on equity

790. With regard to investor expectations as they relate to the return on equity, the Authority noted in the Rate of Return Guidelines that:³⁵⁸
- The question as to investors' horizons for investment is therefore an important consideration...
- The Authority considers that evidence for investors' horizons is inconclusive. Market practitioners often have an interest in 'talking up' investments, and market practitioners are not investors. Many investors only hold stocks for a much shorter period – as little as a year or two – consistent with the evidence provided by Lally. On this basis, a five year term would be consistent with a weighted average of investors' horizons.
791. In contrast to the Authority, the AER has the firm view that *investment horizons* are 10 years:³⁵⁹
- Prevailing 10 year CGS yields reflect expectations of the risk free rate over the appropriate forward looking investment horizon (which is 10 years).
792. The Authority recognises that many market practitioners – particularly those subject to legal requirements – are not in the business of 'talking up' investments. However, market practitioners – including those in the KPMG *Valuation Practices Survey* – generally are seeking to value the firm, which requires a discount rate to perpetuity.³⁶⁰ That is a different exercise to the one undertaken by the Authority in setting the regulated rate of return.
793. In order to value the firm, equity analysts are seeking a discount rate to perpetuity, which is then applied to determine the present value of the expected cash flows over the life of the assets. In this context, there is evidence that the dominant commercial practice is to use the 10 year rate when *valuing* regulatory businesses.³⁶¹

³⁵⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 72.

³⁵⁸ Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2016, Appendix 2, p. 29.

³⁵⁹ Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline*, December 2013, p. 108.

³⁶⁰ KPMG, *Valuation Practices Survey 2013*, 2013.

³⁶¹ Incenta Economic Consulting, *Term of the risk free rate for the cost of equity*, June 2013, p. 26.

794. Lally's view is that even when analysts use the prevailing 10 year rate for valuation purposes, it would not follow that they favoured use of the same rate by a regulator for setting output prices:

If regulators set output prices correctly (so that the present value of future cash flows matched the contemporaneous RAV), regulated businesses were not expected to over or under perform the opex assumptions used by regulators, regulatory policy was not expected to change without appropriate compensation, and these businesses did not have any growth options, the valuation of a regulated businesses at any point in time would simply be the contemporaneous RAV.⁶ Thus the value of a regulated business would be its RAV subject to correction for these additional issues. For example, if a regulated business was expected to have lower opex than that reflected in the prices allowed by the regulator, the value of the business would be its RAV plus the present value of this lower opex. Thus, when the analysts refer to using a ten-year risk free rate in the discounting process, they may be referring to the discounting for these additional issues. If so, this discount rate would have no relevance to the appropriate regulatory reset rate because the latter is reflected in the RAV component, i.e., in the WACC allowed by the regulator and applied to the RAV. Alternatively, if analysts are not acting in this way and are present valuing all cash flows (including those reflected in the RAV), then the use of the ten-year risk free rate within the discount rate would represent some sort of average over the rate that is relevant to the RAV (the five-year rate) and the rate that is relevant to the additional cash flows, and this average rate does not indicate the appropriate rate for the RAV component.

795. In summary, the Authority considers that it needs to establish the rate of return that meets the allowed rate of return objective. That does not involve valuation of the regulatory business; rather, the requirement is to set a rate of return that is consistent with efficient financing costs of the benchmark efficient entity and which reflects the prevailing conditions in the market.
796. To that end, the Authority remains of the view that it is appropriate to apply a 5 year term for the risk free rate, as to do otherwise would be inconsistent with the objective of aiming for NPV=0.
797. The Authority therefore rejects GGT's view that the term of the risk free rate should be set at 10 years. The Authority maintains its view – clearly set out in the Rate of Return Guidelines – that the appropriate term should be commensurate with the term of the regulatory period. That term is 5 years.

Proxy for the risk free rate

798. GGT considers that the return on CGS provides an acceptable proxy for the risk free rate:³⁶²

This practice of using of Commonwealth Government bonds... as the proxy for the risk free asset is, as we noted above, supported by economic theoretical arguments... GGT has therefore estimated the risk free rate of return using yields on Commonwealth Government bonds...

799. GGT then uses this proxy for estimating both the return on debt and the return on equity.

³⁶² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 84.

800. The Authority considers that the return on CGS does provide a reasonable proxy for the risk free rate. The Authority therefore agrees that CGS may be used to estimate the risk free rate for the return on equity.
801. For the return on debt, the Authority will use estimates of the prevailing interest rate swap of the appropriate term for estimating the return on debt. The swap rate incorporates a spread to the rate on CGS. Use of the swap rate is a convenience that simplifies the calculation of the DRP (the alternative would be to use the CGS and incorporate the spread to swap in the DRP). On that basis, the Authority considers that use of the swap rate is not inconsistent with the use of the CGS as the proxy for the risk free rate.

Averaging period

802. In the Rate of Return Guidelines, the Authority determined that the averaging period should be a 40 day period, consistent with the position set out in the Guidelines.³⁶³
803. GGT initially proposed a 40 day averaging period. The Authority accepted 40 days in the Draft Decision, but acknowledged that a period between 20 and 60 days could be adopted with little loss of predictive power.³⁶⁴
804. However, GGT now proposes the following averaging periods:
- 20 trading days to 31 May 2016 for its access arrangement revisions, including for the risk free rate;³⁶⁵ and
 - for the annual update of the return on debt, a 20 trading days averaging period consistent with the 'window' requirements of the Authority set out in the Draft Decision – that is, within the window 1 June to 31 October in the year prior to the relevant tariff variation (that is, prior to the year starting 1 January in 2017, 2018 and 2019).³⁶⁶
805. The Authority has no issue with GGT's proposed 20 day period for the purposes of removing day to day variation in the estimates.
806. GGT submits that the Authority's purported application of rule 92(3) is inconsistent with other relevant provisions of the NGR that provide for the rate of return to be calculated on a forward-looking basis. The implications of this are that the rate of return calculated over the 20 trading days to 31 May 2016 only applies prospectively.
807. It submits that any interval between a revision commencement date and the date that revisions actually commence to an access arrangement does not form part of the access arrangement period in respect of which the relevant rate of return is being determined. It is of the view that this would be inconsistent with the operation of the rules and the underlying incentive framework to make an adjustment to the forward-looking assessment of total revenue by reference to a perceived under- or over-recovery in a prior period.

³⁶³ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2016, p. 86.

³⁶⁴ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 125.

³⁶⁵ GGT advised the Authority of its preference for a 20 day averaging period instead of a 40 day averaging period subsequent to submitting its revised proposal.

³⁶⁶ *Ibid.*

808. As discussed in the Interval of Delay section, paragraphs 2067 to 2101, the Authority notes that GGT first raised an issue with the application of rule 92(3) of the NGR in its revised proposal. The issue was not raised earlier in its initial proposal or in response to the Authority's Issue Paper. GGT did not provide any indication that it intended on proposing an average period with the last trading day falling before 1 January 2015. This is the only means through which a rate of return could be calculated on a forward-looking basis such that no part of the third access arrangement period, from 1 January 2015 to 31 December 2019, would be covered retrospectively by the rate of return calculation.
809. Allowing GGT to now opt for a rate of return that differs to that prevailing on its nominated calculation date gives it the option to take advantage of differences between the rate of return prevailing on the day and that prevailing prior to 1 January 2015 by selecting the most advantageous rate. This raises concerns over the potential for gaming of the regulatory regime by service providers and failure to meet the NGO.
810. With the exception of the DRP, the Authority will therefore apply the rate of return calculated on GGT's nominated date to the entire period between 1 January 2015 and 31 December 2019. The DRP is calculated retrospectively, because the Authority uses the trailing average approach to allow the regulated firm to recover the benchmark efficient legacy cost of debt.³⁶⁷

The estimate of the risk free rate

811. The average of the observed 20 days of the 5-year CGS risk-free rate as at 31 May 2016 was 1.82 per cent. This provides the point estimate for the risk free rate for the return on equity set out in this Final Decision.
812. The average of the observed 20 days of the 5-year swap rate (**BBSW**) as at 31 May 2016 was 2.116 per cent. This provides the point estimate for the 2016 risk free rate for the return on debt for this Final Decision.

Inflation

813. The expected rate of inflation for the coming 5 year regulatory period is estimated using the procedure outlined in the Rate of Return Guidelines over the nominated averaging period.³⁶⁸
814. The resulting estimate of the inflation expected over the course of the regulatory period for this Final Decision is 1.46 per cent per annum.

Return on equity

815. In line with the requirements of NGR 87(5), the Authority considers that it evaluated the relevance of a broad range of material for estimating the return on equity in the

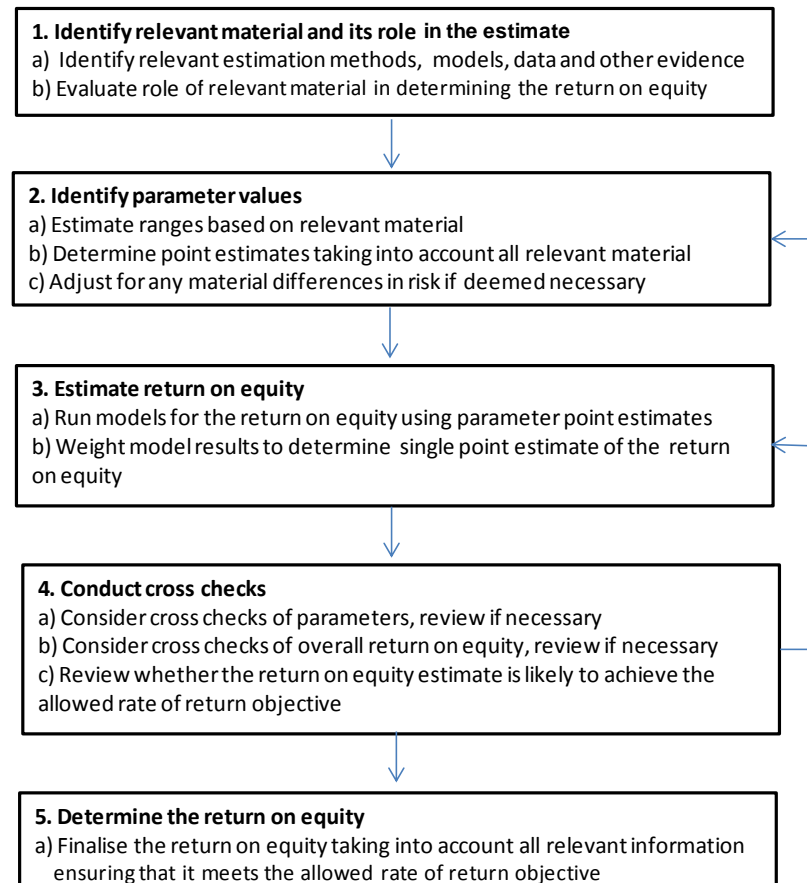
³⁶⁷ The trailing average can allow the firm's return on debt to be replicated exactly by the benchmark efficient entity, such that it would be able to meet exactly the present value principle at any point in time. This approach is adopted due to the absence of a liquid market in suitable credit default swaps in Australia which limits the benchmark efficient firm's ability to hedge the DRP. For further details see: Economic Regulatory Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, 10 September 2015, pp. 309-311.

³⁶⁸ Economic Regulation Authority, *Rate of Return Guidelines*, 16 December 2013, pp. 32-33.

Rate of Return Guidelines, covering relevant estimation methods, financial models, market data and other evidence.³⁶⁹

816. The Rate of Return Guidelines set out that the Authority will utilise a five step approach for estimating the return on equity.³⁷⁰ The five steps are summarised in Figure 5.

Figure 5 Approach to estimating the return on equity³⁷¹



Source: Economic Regulation Authority, *Rate of Return Guidelines*, 16 December 2013, p. 23.

817. Through this approach, the Authority has assessed a wide range of material, and identified relevant models for the return on equity, as well as a range of other relevant information. For this Final Decision, the Authority has given weight to relevant

³⁶⁹ Australian Energy Market Commission, *Rule Determination: National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, 29 November 2013, p. 36.

³⁷⁰ Economic Regulation Authority, *Rate of Return Guidelines: Meeting the requirements of the National Gas Rules*, 16 December 2013, p. 22.

³⁷¹ The Authority considers that the term:

- 'approach' refers to the overall framework or method for estimating the return on equity, which combines the relevant estimation methods, financial models, market data and other evidence;
- 'estimation material' refers to any of the relevant estimation methods, financial models, market data and other evidence that contribute the 'approach'; and
- 'estimation method' relates primarily to the estimation of the parameters of financial models, or to the technique employed within that model to deliver an output.

material, according to its merits at the current time, seeking to achieve fully the requirements of the allowed rate of return objective.³⁷²

818. The Authority in the Rate of Return Guidelines determined that only a subset of the evaluated material could be considered relevant in the Australian context, so as to best achieve the allowed rate of return objective. The Authority is of the view that:

Rate of return estimate materials – the estimation methods, financial models, market data and other evidence – would need to be broadly consistent with the requirements of the NGL, the NGO, the NGR and the allowed rate of return objective to be considered relevant. Some estimation materials may perform better on some requirements and less well on others, and yet may still be considered relevant. Accordingly, the assessment is whether, on balance, estimation materials are consistent with the requirements of the NGL, the NGO, the NGR and the allowed rate of return objective.

Nevertheless, estimation materials would need to pass a threshold of adequacy to be considered relevant. To the extent that estimation materials failed the adequacy threshold, then they would be rejected. This rejection would be consistent with the AEMC's purpose for the guidelines:³⁷³

In order for the guidelines to have some purpose and value at the time of the regulatory determination or access arrangement process, they must have some weight to narrow the debate.

Once over the threshold for adequacy, then, as noted, any particular estimation material may meet the requirements of the NGL, the NGO, the NGR and the allowed rate of return objective to a greater or lesser degree. With this in mind, the criteria would then be used as a means to articulate the Authority's evaluation of the estimation materials, in terms of how they performed in meeting the requirements of the NGL, the NGO, the NGR and the allowed rate of return objective. In this way, the criteria are intended to assist transparency around its exercise of judgement.³⁷⁴

819. In that context, the following analysis provides the Authority's determination for this Final Decision of the return on equity for the GGP benchmark efficient entity. The Authority considers that the estimate is consistent with delivering an outcome that meets the allowed rate of return objective, as well as the NGL and NGR more broadly.³⁷⁵

Step 1: Identifying relevant material and its role in the estimate

820. The Authority in its 2010 GGP Final Decision noted that there were no direct comparators for the GGP benchmark entity:³⁷⁶

³⁷² The allowed rate of return objective is set out at NGR 87(3):

The allowed rate of return objective is that the rate of return for a service provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.

³⁷³ Australian Energy Market Commission, *Rule Determination, National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, 29 November, p. 58.

³⁷⁴ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, p. 12.

³⁷⁵ The allowed rate of return objective is set out at NGR 87(3):

The allowed rate of return objective is that the rate of return for a service provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.

³⁷⁶ Economic Regulation Authority, *Final Decision on GGT's Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline Submitted by Goldfields Gas Transmission Pty Ltd*, 13 May 2010, p. 50.

For the purpose of this Final Decision, the equity beta could be derived from the calculated average asset betas of suitable comparators or from an asset beta value in the range associated with comparator businesses. The closest comparators would appear to be two Australian-operated companies, APA Group and Envestra, whose assets included transmission assets. The Authority was unable to identify any direct comparators for GGT.

The Authority could also adopt an equity beta value, taking into account the particular characteristics of the GGP and the associated level of risk. This ‘first principles’ approach requires judgement on the sensitivity of GGT’s returns to movements in the economy/market.

821. The Authority concluded in its 2010 GGP Final Decision that a reasonable range for the equity beta of the GGP was 0.8 to 1.0. This was a downward revision to the range adopted for the previous first access arrangement, which was for an equity beta in the range of 0.8 to 1.33.³⁷⁷ The lower bound was based on evidence from the benchmark sample, while the upper bound was based on a qualitative assessment of the risks for the GGP. The Authority summarised its reasoning as follows:³⁷⁸

The Authority confirms its view, as set out in the Draft Decision, that a reasonable value for the lower bound of the equity beta range is 0.8.

The Authority has further considered the reasonable value for the upper bound of equity beta.

The Authority notes that the GGP pipeline has a small number of users, whose operations are primarily in the mining industry. In the Draft Decision, the Authority accepted that the average daily and total throughputs on the GGP were expected to remain constant during the forthcoming Access Arrangement Period. In response to the Draft Decision, BHPB noted in its submission that a number of expansion projects have been publicly announced by companies operating in the region serviced by the GGP.

The Final Decision only pertains to the covered portion of the GGP capacity rather than the total capacity of this pipeline, which includes the uncovered throughput. The majority of the covered capacity involves long-term take-or-pay contracts (including pre-2005 contracts) that substantially reduce the volume or price risk on the covered capacity.

The Authority considers that, with any expiration of customer contracts on the covered portion of the capacity on the GGP, it is reasonable to assume that existing customers (currently taking gas from the covered or uncovered capacity) and/or new customers, would provide continued demand for the covered capacity. Given the above, the Authority considers it reasonable to assume that there is limited volume or price risk for the covered portion of the GGP capacity. Given an assessment of the latest available information and on the basis of the above, the Authority has revised its view on the upper bound of the equity beta range. The Authority considers that a reasonable value for this upper bound is 1.0.

Therefore, the Authority considers that a reasonable range of values for equity beta is 0.8 to 1.0, at a gearing level of 60 per cent debt to total assets.

822. The Authority’s decision on beta for the 2010 GGP Final Decision was thus based on both capital market evidence and qualitative evaluation.
823. For the Draft Decision for GGP released in December 2015, the Authority did not automatically assume that the GGP has an equity beta similar to the average of the benchmark sample established in the Rate of Return Guidelines. Given that GGT

³⁷⁷ Economic Regulation Authority, *Final Decision on the Proposed Access Arrangement for the Goldfields Gas Pipeline*, 17 May 2005, p. 64.

³⁷⁸ Economic Regulation Authority, *Final Decision on GGT’s Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline Submitted by Goldfields Gas Transmission Pty Ltd*, 13 May 2010, p. 51.

submitted that the GGP was significantly different to typical gas pipelines in Australia (see paragraph 897 below), the Authority was of the view that additional evidence needs to be adduced.

Evaluation of GGT's approach

824. GGT has also recognised the issue of comparability to the benchmark sample. To address the issue, GGT sought alternative means to establish the rate of return (and by corollary, the implied value of the equity beta within the Sharpe Lintner CAPM framework).
825. Specifically, GGT engaged SFG Consulting to estimate the return on equity for the GGP.³⁷⁹ SFG's approach is to determine a direct estimate of the return on equity for the benchmark entity. This contrasts with the indirect estimate of return on equity for the GGP benchmark efficient entity, which utilises the SL-CAPM, drawing on information from the benchmark sample to estimate the equity beta; and utilising available relevant information to estimate the market risk premium.
826. SFG conducted its analysis of return on equity by estimating the expected return outcomes for the benchmark entity in different market situations, drawing on insights from what it says is standard finance theory.
827. SFG argued that GGP's systematic risk is higher than for typical pipeline businesses in Australia and that the comparators included in the Authority's benchmark sample for estimating GGP's beta are unsuitable. Therefore, SFG was of the view that a different approach is required. SFG's proposed approach purports the use of a binomial option pricing framework and provides an estimated cost of equity for GGP conditional upon no default occurring. SFG argued that this approach is appropriate for regulatory purposes.
828. The Authority considered SFG's proposed approach to estimating the return on equity/equity beta for GGT in its Draft Decision.³⁸⁰ Based on its review, and informed by advice from Lally, the Authority was of the view that SFG's proposed approach to directly estimate the return on equity is not driven by economic principles or based on a strong theoretical foundation.³⁸¹ In particular, the Authority considered that SFG's proposed approach to estimating the return on equity for GGT does not follow any standard finance theory.
829. In its Draft Decision, the Authority agreed with Lally's advice that SFG's proposed approach to estimating the return on equity for GGT is fundamentally flawed, and, as a result, this approach should not be adopted.³⁸² The approach is not well established and is untested. In addition, as evidenced in Lally's report, there are fundamental problems associated with SFG's proposed approach, setting aside its failure on theoretical grounds.

³⁷⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Attachment 7.

³⁸⁰ For a detailed summary and evaluation of SFG's direct estimate approach, see the Draft Decision (Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, Appendix 3).

³⁸¹ The Authority engaged Associated Professor Lally from Capital Financial Consultants Ltd to provide expert advice in relation to SFG's proposed approach to determine the return on equity for GGT.

³⁸² Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 133.

830. In addition, the Authority was of the view that evidence presented in the SFG analysis to support the spread between the cost of debt and return on equity is inconclusive. The Authority acknowledged that there may be a link between the cost of debt and the return on equity and that regulators are required to take into account the observed cost of debt when the return on equity is determined. However, the Authority considered that SFG's proposed approach to estimating the return on equity for GGP did not robustly establish a quantitative link between the two markets, as claimed by SFG. As a result, in the Draft Decision, the Authority was of the view that SFG's analysis was not relevant for the purpose of estimating the return on equity for GGT and should not be used.
831. In its Draft Decision, the Authority also conducted a sensitivity analysis of SFG's proposed approach to estimating the return on equity for GGP. The Authority was convinced that the equity beta produced from SFG's proposed approach relies significantly on the assumed inputs utilised in the analysis. When one of many inputs changes, the final estimate of the return on equity for GGT changes significantly.
832. In this context, the Authority noted Lally's advice that SFG's approach is very sensitive to estimates of several unobservable parameters, most particularly the market standard deviation, the recovery rate on defaulting bonds, the range in the firm's payoff from the best to worst market states sans default, and the expected default rate. These sensitivities must be compared with those from the CAPM, whose estimate for the cost of equity is sensitive only to the uncertainty in the estimates for the MRP and the equity beta. Lally was of the view that prima facie, with twice as many parameters to estimate, SFG's approach is much more sensitive to errors.
833. Lally also considered that while there is a considerable body of empirical literature on estimating the CAPM parameters, there is much less evidence on the extent of estimation error in most of the parameters used in SFG's approach.
834. Based on the above considerations, the Authority considered that SFG's estimates of the market return/equity beta for GGP are not robust because SFG's proposed approach is not well established and untested.
835. Subsequently, as part of its response to the Draft Decision, GGT engaged Frontier Economics (and thereby the former SFG Consulting personnel) to review the Authority's and Lally's response in the Draft Decision.³⁸³
836. The Authority engaged Associate Professor Lally to respond to the views raised by GGT and its consultant, Frontier Economics, set out in its responses to the Authority's Draft Decision. Each of the key issues raised is discussed in turn below.

What is embedded within the regulatory model for GGP?

837. The Authority notes Frontier Economics' argument that the cost of equity input into the regulatory model is understated, in the case of the GGP, because there is more potential for adverse impacts on the equity returns compared to events leading to above-normal returns.
838. However, as discussed in detail in its Rate of Return Guidelines, and further outlined above, the Authority considers that the 'NPV = 0' (or present value) principle is a

³⁸³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6.

fundamental test that any approach to setting regulatory prices should follow. The present value principle, as illustrated by Lally in his various studies, indicates that the present value of expected revenues net of opex and capex for a regulated business must equal the initial investment.

839. In his report to the Authority (2016), Lally demonstrates that the standard regulatory practice of using the promised yield on debt rather than the expected rate of return on debt violates the present value principle in favour of regulated businesses. However, Lally (2016) considers that this violation could be justified on the grounds that the expected rate of return on debt is not observable and use of the promised yield is simply an imperfect proxy.³⁸⁴
840. SFG's analysis using option pricing to estimate the return on equity for GGT is predicated on the view that the use of an increased 'cost of equity', coupled with the promised yield on debt, offsets the assumed failure by regulators to recognise the default scenario in their estimate of the expected output level. In particular, it is contended that regulators form an expectation about future outcomes whereby the extreme cases that involve default are disregarded. However, the Authority agrees with Lally that SFG's assumption is too strong to be realistic and that SFG fails to provide any evidence to support its view. In support, Lally provides evidence that, using the WACC proposed by SFG, the output price set by the Authority would be too high.³⁸⁵
841. In his report prepared for the Authority, Lally considers that no response by Frontier Economics is offered to the specific points made by Lally (2015), as discussed above. Lally then considers that the reasonable conclusion to draw is that no defence to these points is available.³⁸⁶

Frontier Economics' responses to issues regarding theory.

842. The Authority notes that Frontier Economics is of the view that the option pricing analysis is applied to a real situation, with a similar central motivation to that underlying the publication of papers like Brennan and Schwarz (1985) and Paddock, Siegel and Smith (1988). Frontier considers this an example of the practical use of corporate finance theory to make better investment choices.³⁸⁷
843. In his reports prepared for the Authority, Lally (2015, 2016) argues that SFG's approach instead involves 'state pricing', deriving from Arrow (1964) and Debreu (1959), with application to capital budgeting/firm valuation by Banz and Miller (1978) and Breeden and Litzenberger (1978). Lally is of the view that:³⁸⁸

This state pricing framework can be applied to situations in which the asset payoff is determined by an underlying asset, and therefore option pricing could be viewed as a special case of state pricing when the underlying asset determines the payoff on the asset of interest rather than being merely correlated with it. Since the special case does not hold here, SFG's analysis is therefore state pricing rather than option pricing.

³⁸⁴ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 10.

³⁸⁵ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 12.

³⁸⁶ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 12.

³⁸⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 6, p. 12.

³⁸⁸ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 4.

844. Lally considers that within this state pricing framework, variations in outcomes around the expected payoffs on the firm for a given market state (good or bad) are treated as unpriced risk. However this state pricing approach to firm or project valuation is not “standard finance theory”.³⁸⁹ Lally also notes that SFG’s addition of default and no default cases to each market outcome places them even further away from standard finance theory.
845. In response to the Authority’s Draft Decision position that SFG’s proposed approach does not follow standard finance theory, Frontier Economics argues that SFG’s approach is similar to these two papers by Brennan and Schwartz (1985); and Paddock et al, (1988) which are applications of option pricing theory. However, the Authority notes Lally’s view that:³⁹⁰
- However, in both papers, the underlying asset is a commodity whose price exerts a causal effect on the value of a project whereas the analysis in SFG (2014) uses a portfolio (the market portfolio) that is merely correlated with the value of the project. Furthermore, Frontier does not attempt to explain how SFG’s (2014) analysis differs from the papers cited in Lally (2015) as examples of state pricing theory and described above: Banz and Miller (1978) and Breeden and Litzenberger (1978).
846. Based on Lally’s advice, the Authority remains of the view that SFG’s proposed approach to estimating the return on equity for the GGP does not follow standard finance theory. In this context, the Authority notes that neither SFG nor Frontier provide a single relevant reference to the academic literature in support of the specific approach proposed by SFG and adopted by GGT.

Frontier Economics’ responses to issues regarding implementation in practice

847. The Authority noted, in its Draft Decision, that an assessment of the sensitivity of SFG’s analysis to assumptions shows the method to be not robust.³⁹¹ In response, Frontier Economics argues that the Authority overstates this sensitivity. Frontier Economics contends that the changes are not materially different to variations in cost of equity estimates that have been made in the past, or in comparison to the more standard SL-CAPM parameter ranges adopted by the Authority.
848. The Authority does not agree with Frontier Economics on this issue. The cost of equity in the Authority’s regulatory decisions would certainly vary across decisions. This variation is due to the consideration that the cost of equity should reflect the prevailing conditions in the market for funds. As such, the Authority is satisfied that it is reasonable for the cost of equity adopted in its regulatory decisions to vary across time as each decision is made. The Authority notes that estimates of the cost of equity using SFG’s proposed approach vary substantially depending on the assumed inputs.
849. The Authority also notes Lally’s concerns in this context. For example, in respect of the market standard deviation, Lally considers that regardless of which estimate for this parameter is used, the process of estimating it raises the question of its statistical reliability:³⁹²

³⁸⁹ Lally, M., *SFG’s approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 4.

³⁹⁰ Lally, M., *SFG’s approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 5.

³⁹¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 134.

³⁹² Lally, M., *SFG’s approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 12.

SFG's (2014) analysis requires estimates of a number of parameters, and Lally (2015, section 3) raises numerous concerns about these estimates. In respect of the market standard deviation, SFG (2014, page 7) estimate this at 16.64% per year based upon Australian market returns from 1883-2013, and then they reduce it to 14.89% for reasons of presentational convenience (SFG, 2014, para 127). They then show that a 1% change in the estimate changes the expected rate of return on equity sans default by 0.23%. Regardless of which estimate for this parameter is used, the process of estimating it raises the question of its statistical reliability. A possible response to this would be to argue that estimating it from historical returns data is comparable to estimating the MRP on the Australian market from the same period. However, I am not aware of any regulator who does so; all of them estimate the MRP from a variety of sources so as to improve the reliability of the estimate. An alternative approach to estimating the market volatility over five years is the volatility implicit in the prices of options written on the market index ("implied volatilities"), for which there is a considerable academic literature (Hull, 1997, section 11.10). SFG do not refer to this.

850. Lally (2016) also notes that Frontier Economics does not provide any response to this issue, raised by him in his 2015 report, which implies that no defence to those points is available.³⁹³
851. In relation to the recovery rate, Lally notes SFG's view that similar default rates on the two categories of bonds, being Baa and Ba bonds, suggests that the estimate is reliable. However, Lally argues that within each such category there will be wide variation in recovery rates across firms depending upon the alternative uses for the assets and the scenarios inducing default.³⁹⁴ Lally considers that:
- Not only is there considerable uncertainty about the appropriate recovery rate in default for GGP and therefore considerable uncertainty about the cost of equity when using SFG's approach but SFG's use of the market average recovery rate is likely to have overestimated the recovery rate for GGP and therefore overestimated its cost of equity.
852. Lally notes that Frontier Economics (2016) offers no response to these points. Lally (2016) concludes that the reasonable conclusion to draw is that no defence is available.
853. There are many other issues in relation to parameters estimates adopted in the SFG's proposed approach noted by Lally (2015). In conclusion, Lally considers that the sensitivity of SFG's WACC estimate to various parameter values must be compared with those from the CAPM, in which the estimate for the cost of equity is sensitive to only estimates for the MRP and the equity beta. The Authority agrees with Lally that, as a result, SFG's approach would seem to be more sensitive to estimation error and there is considerably less evidence about possible estimation errors. SFG's approach is therefore not a robust approach.³⁹⁵

Other fundamental concerns with SFG's proposed approach

854. In his reports prepared for the Authority, Lally (2015, 2016) notes the following issues in relation to the assumed inputs adopted in the SFG's proposed approach to estimating the cost of equity for GGP.

³⁹³ Ibid.

³⁹⁴ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, pp.12-13.

³⁹⁵ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 16.

855. *First*, there is an issue related to discrete versus continuous time. Lally argues that all of the returns data used by SFG are discrete time data. However, Lally considers that SFG's formula for converting the standard deviation for annual returns is only valid if these standard deviations are over returns expressed in continuously compounded terms. Lally notes that SFG has confused the two types of returns and that Frontier Economics fails to provide any response to this criticism.³⁹⁶
856. *Second*, in relation to the choice of Up and Down factors, Lally considers that SFG avoids any error in the mean at the potential expense of error in the standard deviation. Lally also notes that as there is no response made by Frontier Economics to this point, no defence is available.³⁹⁷
857. *Third*, crucially, in relation to the underpinning direct estimate, Lally observes that in order to determine the default rate using the DRP, the relative illiquidity of corporate bonds must be taken into account, which is separate to the underlying risk of default. SFG fails to account for this element, and therefore its analysis is deficient. SFG also does not use the appropriate credit rating when deriving the probability of default.³⁹⁸

As argued in Lally (2015, section 2.2), it is implicit in SFG's (2014) analysis that the DRP estimate used by them (6.23% - 3.87%) is due entirely to the possibility of default. However there is a considerable body of literature on the DRP impact arising from the inferior liquidity of corporate bonds relative to the risk-free asset (government bonds), with Amihud et al (2005, section 3.3.2) providing a comprehensive survey. More recently, Almeida and Philippon (2007, Table II) summarise results from a number of papers, in which the proportion of the DRP due to default ranges from 34% to 71% for BBB bonds (and the rest due to illiquidity). Furthermore, like SFG, Almeida and Philippon sought to estimate the probability of default from the DRP but (unlike SFG) they deducted out an estimate of the illiquidity premium. Furthermore, in view of their failure to account for illiquidity, SFG (2014, page 13) obtain an estimate of the default probability from their analysis that is significantly more (over four times) than that of the average default rate in Moody's data for Baa bonds (8.53% in the analysis above and 9.65% in their multi-period extension, versus 1.97% in the Moody's data). Remarkably, SFG (2014, paras 62-63) seem to recognise that there is a problem here but brush it off, presumably because they did not appreciate that the discrepancy could be explained by an illiquidity premium. Equally remarkably, SFG (2014, para 77) critique the standard regulatory approach as potentially leading to inconsistencies between the observed cost of debt and the estimated cost of equity, but have committed a more egregious mistake themselves. Given that SFG invoke Moody's data to estimate the expected recovery rate in default (43%), this suggests choosing an expected default rate in their model equal to the average historical rate in the Moody's data (1.97%). Using this default rate, and therefore allowing for an illiquidity premium, Lally (2015, section 2.2) shows that the expected rate of return on debt and the expected rate conditional on no default arising from SFG's approach equate to 7.60% and 8.03% per year respectively. Both rates are significantly less than SFG's results (8.97% and 10.93%) and the difference between these two rates (8.03% - 7.60% = 0.43%) is only 20% of that obtained by SFG (10.93% - 8.97% = 1.96%) merely through recognising the existence of an illiquidity premium in corporate bonds. Furthermore the beta estimate that would have yielded an expected return of 8.03% would have been 0.62, which is now below the ERAWA's estimate of 0.70. So, this allowance for the illiquidity premium completely overturns SFG's conclusion that a beta of 0.70 is too low for GGP. This deficiency in SFG's approach can be remedied, by simply allowing for an illiquidity premium, but it will add to the number of parameters that require estimation and therefore add to the potential for error in SFG's approach.

³⁹⁶ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 6.

³⁹⁷ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 6.

³⁹⁸ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 7.

In response, Frontier (2016, para 85) claims that “..if there are no defaults and the debt is held till maturity the debt holders are likely to earn the yield over the life of the asset.” However, nothing in this (uncontroversial) claim contradicts anything in the analysis in Lally (2015, section 2.2), as described in the previous paragraph. The reasonable conclusion to draw is that Frontier is conceding the point that the cost of debt contains an illiquidity allowance, and recognition of it would materially lower the cost of equity under SFG’s approach.

Frontier (2016, para 86) also claims that the default rate used in SFG’s analysis lies between that of Baa and Ba debt. However, as acknowledged by SFG (2014, para 29), the debt in question is rated Baa and therefore the relevant default rate is that for Baa debt rather than something between Baa and Ba. Frontier (2016, para 86) also claims that debt risk premiums are currently high, and therefore default rates are above average. However, SFG has used a default rate over four times the historical average for Baa debt (8.53% versus 1.97%) and Frontier provides no justification for this particular multiple. Furthermore, regardless of how one determines the default rate, the DRP must still contain an allowance for the relative illiquidity of corporate bonds, SFG fails to do so, and therefore their analysis is deficient.

858. *Fourth*, in SFG’s proposed approach, all payoffs are assumed to occur in five years and therefore firms retain all cash flows from operations over the course of five years (rather than paying dividends) and debt holders do not receive any interest for five years. Lally argues that this assumption is well outside the bounds of standard financial analysis, which assumes payment intervals no less frequently than annual. It is also far removed from the reality of business operations and is likely to have affected SFG’s estimate of the cost of equity.³⁹⁹

Lally’s views on issues raised by the Authority in the Draft Decision

859. In his report prepared for the Authority (2016), Lally provided views on the issues raised by the Authority in its Draft Decision in relation to SFG’s proposed approach. These issues include:
- (i) SFG’s approach not involving the application of the Black-Scholes-Merton model;⁴⁰⁰
 - (ii) the convergence of SFG’s estimates;⁴⁰¹
 - (iii) the wide range of estimates of cost of equity;⁴⁰² and
 - (iv) the implied equity beta of 1.10 is above the market average and differs from other regulated utilities.⁴⁰³
860. *First*, Lally is of the view that the usual practice among those involved in writing expert opinions is to cite relevant academic work when invoking an existing model. Lally notes that it is uncontroversial that SFG did not use the analysis in Black and Scholes

³⁹⁹ Lally, M., *SFG’s approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 8.

⁴⁰⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, Appendix 3, p. 432.

⁴⁰¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, Appendix 3, p. 434.

⁴⁰² Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, Appendix 3, p. 439.

⁴⁰³ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, Appendix 3, pp. 437-8.

(1973), or Merton (1973). However, on the question of whether SFG claimed or implied that its analysis was 'consistent' with Black and Scholes (1973) and Merton (1973), Lally notes:

...SFG's analysis is not an application of Black and Scholes (1973) or Merton (1973). SFG do not refer to any other papers in the option pricing literature.... SFG's analysis is therefore state pricing rather than option pricing.... state pricing approach to firm or project valuation is not "standard finance theory".⁴⁰⁴

861. *Second*, Lally considers that Frontier Economics did not respond to the Authority's claim in its Draft Decision that SFG's analysis does not converge as one moves closer to continuous time. Lally is of the view that an appropriate response would be to shorten the binomial interval and assess how the estimated cost of equity changes.⁴⁰⁵
862. *Third*, Lally considers that Frontier Economics' claims that the ranges of equity beta estimates from SFG's approach are similar to those arising from the Authority's approach to estimating the cost of equity are not sensible.⁴⁰⁶ This is because all the estimates involve comparison of the effect of changing only one of the (many) parameter values in SFG's analysis with one or both of the parameters in the Authority's approach. Lally is of the view that the sensible comparison would be in respect of the standard deviation in the cost of equity from SFG's approach and from the Authority's approach. However, Lally considers that this is not possible for SFG's approach because the standard deviations of most of the underlying parameters cannot be estimated.⁴⁰⁷
863. *Fourth*, the Authority noted Lally's view that there is little merit in comparing SFG's implied equity beta estimate with the market average. In this context, Lally observes it is uncontroversial that an equity beta reflects the associated asset beta and leverage, that leverage for the GGP (at 60%) is unusually high, and therefore that it might warrant an equity beta above 1 even if the inherent risk (asset beta) was low. So, as argued by Frontier, SFG's estimate of GGP's beta is not flawed merely because it exceeds the market average.⁴⁰⁸
864. The Authority also notes Lally's agreement with Frontier that its approach could produce different beta estimates for other regulated utilities, because the value for the firm's payoff sensitivity parameter (the range in the firm's payoff from the best to worst market states sans default), might differ across regulated businesses.

Conclusion with regard to the SFG direct estimate approach

865. On balance, based on the above considerations, the Authority maintains its position in the Draft Decision in relation to SFG's proposed direct estimate approach to estimating the return on equity for GGT. The Authority is of the view that SFG's resulting estimates of the market return/equity beta for GGT are not consistent with standard finance theory and are not robust, being unduly sensitive to uncertainty in the input parameters. The estimates are also in error in terms of the credit rating adopted, and the failure to account for the liquidity premium component of the debt risk premium.

⁴⁰⁴ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 10.

⁴⁰⁵ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 17.

⁴⁰⁶ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 18.

⁴⁰⁷ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 18.

⁴⁰⁸ Lally, M., *SFG's approach to estimating the cost of equity: Further analysis*, 11 March 2016, p. 20.

866. Accordingly, the Authority considers that the estimate of equity beta from SFG's proposed approach is not commensurate with the efficient equity financing costs of the benchmark efficient entity with a similar degree of risk as that which applies to the Service Provider in respect of the provision of Reference Services prevailing at this time. On this basis, the Authority does not consider that the estimate provided by GGT based on SFG's advice meets the allowed rate of return objective and the requirements of the NGR and NGL. It is also inconsistent with the NPV = 0 principle, which the Authority views as being consistent with the Revenue and Pricing Principles.
867. Consistent with its position set out in the Draft Decision, the Authority is of the view that the following approach is appropriate and relevant for the purpose of estimating the return on equity for GGT in this Final Decision. The Authority determines that GGT:
- utilise the Sharpe Lintner Capital Asset Pricing Model (**SL CAPM**) as the primary method for estimating the return on equity;
 - utilise information from other relevant models – including the Dividend Growth Model (**DGM**) – to establish the value of parameters in the Sharpe Lintner CAPM;
 - estimate the risk free rate parameter for input to the Sharpe Lintner CAPM from Commonwealth Government Securities with a 5 year term to maturity;
 - estimate a range for the 5 year forward looking market risk premium (**MRP**) based on historic excess return data and the DGM, in recognition that it fluctuates in response to prevailing conditions;
 - draw on a range of forward looking information to establish the point value of the MRP; and
 - estimate the beta parameter based on first, a sample of Australian firms with similar characteristics to the benchmark efficient entity, and second, an analysis of the likely risk characteristics of the benchmark efficient entity.

Step 2 Estimating parameters for the relevant models

868. The second step involves estimating parameters for relevant models. The Authority considers the Sharpe Lintner CAPM to be the only relevant model for directly estimating the return on equity for an efficient benchmark entity in the Australian context.
869. In the application of the Sharpe Lintner CAPM, the estimates of the following inputs are required: (i) the risk free rate; (ii) the equity beta; and (iii) the MRP. The estimate of each of these inputs is discussed in turn below.

Estimate of the risk free rate

870. As noted above, the risk free rate will be based on a 5 year term to maturity, determined as the average of the observed yields of the 5-year Commonwealth Government Securities over the nominated 20 business day averaging period that is just prior to the start of the regulatory period.
871. The Authority notes GGT's nomination that for the reference tariff proposed to apply from 1 July 2016, the period of 20 trading days ending on 31 May 2016. As a result, the risk free rate for this Final Decision is 1.82 per cent.

Estimate of the equity beta

872. The Authority adopted an equity beta of 0.8 in the Draft Decision and applied that estimate in the return on equity.
873. This estimate was arrived at based on an analysis of financial statement-based measures of systematic risk. This analysis was undertaken on the basis of GGT's submission in its original proposal highlighting that the customer bases of the benchmark sample entities are distributed across a broader range of sectors than the customer base of GGT. The Authority recognised that GGT's customer base is significantly different to the benchmark sample of firms that the Authority uses to calculate equity beta, such that it could not be relied upon.

Estimate does not contribute to ARORO

874. In response, GGT submits the Authority's benchmark estimate of the equity beta is not an estimate arrived at on a reasonable basis and does not represent the best estimate possible in the circumstances and that such an estimate cannot lead to an estimate of the return on equity that contributes to the allowed rate of return objective of rule 87(3).⁴⁰⁹
875. GGT engaged Frontier Economics to conduct an assessment of the financial statement based measures of systematic risk that the Authority used to arrive at the estimate of 0.8.⁴¹⁰ Frontier Economics' main contention was that the analysis in the Draft Decision was an incomplete assessment of risk, but Frontier also appears to have interpreted the Draft Decision as selecting an equity beta estimate from a pre-determined range.

Incomplete assessment of risk

876. GGT views the accounting metrics considered by the Authority in the Draft Decision to estimate equity beta as not providing a complete assessment of risk. It reasoned that such an assessment must encompass more than profit movements in past years.
877. Its consultant, Frontier Economics stated that:
- ...there is no requirement in the CAPM for beta to only be estimated using past returns, and the ERA is not bound to only use historical stock returns because it adopted a particular estimation procedure in the past.⁴¹¹
878. The Authority agrees with this statement in principle. However, it is reasonable that investors rely on information from the past when forming expectations of future earnings and dividends, whether this be financial statement based information and/or quantities sold. This historical information is incorporated in stock prices, returns and ultimately in empirical equity beta estimates. Accordingly, the Draft Decision relied on movements in *past* operating income (EBIT) and book value return on common equity.

⁴⁰⁹ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: Submission*, January 2016, p. 75.

⁴¹⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 5.

⁴¹¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 5, p. 3.

879. The main issue of relevance here is the quantification of systematic risk, as opposed to total risk. Empirically estimating equity beta requires the quantification of systematic risk, which conventionally relies on past returns and stock prices. The latter, in turn, incorporate future expectations of earnings growth based on historical data such as financial statement information and/or quantities sold. While some novel approaches to quantifying future systematic risk may exist, it is not unreasonable to apply 'conventional' approaches, such as the SL-CAPM and financial statement analysis, consistent with the approach employed in the investment management industry. It also is not unreasonable to use historical data in these conventional analytical methods, on the basis that it has more substance than subjective opinions on future systematic risk, or novel unconventional approaches.
880. Frontier Economics highlighted GGT's original submission that it has had difficulty in re-contracting replacement demand.⁴¹² This point confuses the concept of *total risk* and *systematic risk*. Equity beta reflects compensation for systematic risk that is not firm specific, but reflected in the market as a whole. A firm may experience declining demand, operating income and earnings, but this will not necessarily follow the same pattern of variation (covariance) as exhibited in the market as a whole. The market may experience a downturn for a shorter or longer period of time, the downturn may begin at a different time, not occur within the period at all or be interspersed with reversals in the trend. Therefore, it does not automatically follow that a firm expecting a decline in quantities sold or demand faces a higher level of systematic risk. Demand forecasts are subject to prediction error but more importantly, even if forecasts are correct, there is no reason to expect future earnings forecasts of the firm to be correlated with future earnings in the market more broadly, particularly if this has not been the case in the past. When examining the way a firm's operating income, earnings and returns vary with the market, past co-movement is the most conventional predictor of future co-movement.
881. With respect to information presented by GGT in the initial third Access Arrangement proposal, the Draft Decision did, in fact, encompass more than just profit movements in past years in its assessment of systematic risk. Evidence was accepted that shows GGT's customer base is significantly different to the benchmark sample of firms that the Authority uses to calculate equity beta.⁴¹³ It was recognised that a large proportion of the GGP's end user demand is related to nickel and iron industries while a low proportion is related to residential end user demand. This assessment resulted in a different approach being applied in the estimation of systematic risk for GGT than that which is usually applied to Western Australian network service providers. The resultant equity beta was higher than that recently applied to other Western Australian regulated gas pipelines.⁴¹⁴
882. Frontier Economics considers that the coefficient of variation in operating margin and return on equity suggests low risk because from 2009 to 2013 there was no sharp variation in annual profits. It states that:
- ...the coefficient of variation measures do not convey a full appreciation of risks faced by GGP because there happened to be a sustained mining boom which has now come

⁴¹² Goldfields Gas Transmission Pty Ltd, Goldfields Gas Pipeline, *Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 5, p. 2.

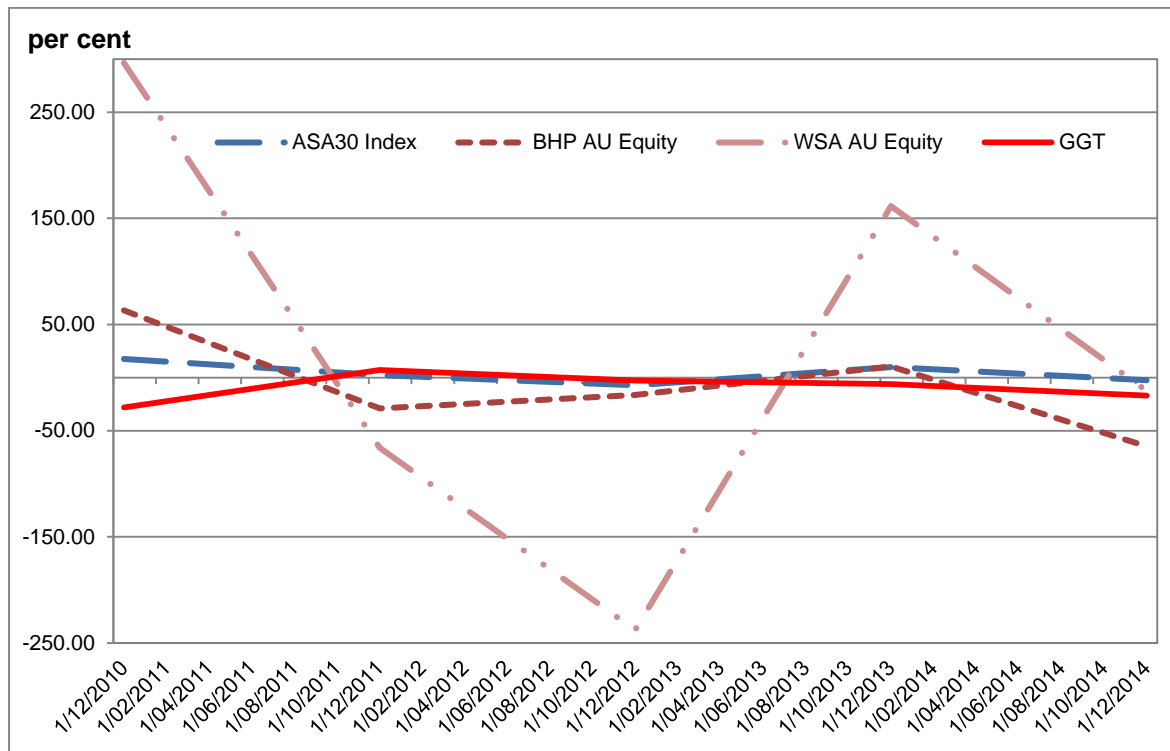
⁴¹³ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 135.

⁴¹⁴ Economic Regulatory Authority, *Final Decision on Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, 10 September 2015, p. 278.

to an end. The coefficient of variation figures will only pick up a risk exposure if there are events which happened to have affected profits from one year to the next over the measurement period.⁴¹⁵

883. Frontier Economics' statement appears to be implying that the variability in GGT's operating income (or EBIT) is correlated with that of the mining industry or is forecast to become correlated with that of the mining industry over the next five year period as a result of a sustained boom in mining coming to an end. Two assumptions underlie this statement. The first is that there is some evidence that GGT's EBIT variability correlates fairly well to that of the mining industry. The second is that EBIT variation in the mining sector over the next five years will be sufficiently different from the past five years to cause GGT's EBIT variability to become correlated with that of the mining industry.
884. For the purpose of gaining an indication of the correlation between GGT's EBIT variability and that of the mining industry, Figure 6 plots GGT's EBIT growth across the prior 5 year period against the EBIT growth for two mining companies. In the Draft Decision the Authority assessed whether GGT's systematic risk was differentiated from the benchmark sample, purely on the grounds that a large proportion of its end user demand is related to nickel and iron industries, noting that it is unusual for a utility to have such a low proportion of residential end user demand. BHP Billiton was selected as a mining comparator because it has nickel and iron ore operations in the Goldfields-Esperance region while Western Areas was selected because it has substantial nickel operations in the same region. Market EBIT growth is also included in Figure 6 for a base line comparison of EBIT growth volatility and correlation.
885. Relative to the market, Western Area's EBIT growth is highly volatile, BHP Billiton's EBIT growth is slightly more volatile than the market, and GGT's growth is less volatile than BHP Billiton's.

⁴¹⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 5, p. 4.

Figure 6 GGT EBIT Growth versus Market and Mining EBIT Growth

Source: ERA analysis, Bloomberg, March 2016.

886. The standard deviation figures in Table 61 below confirm that while GGT's EBIT growth variability is higher than the market (12.93 versus 9.88), it is substantially below that of the two mining companies. The correlation between the EBIT growth of the two mining companies and the market appear to be fairly strong (0.83 and 0.96), while the correlation between the market and GGT appears to be, if anything, negative (-0.67).

Table 61 Market EBIT Growth and Correlation with GGT/Mining EBIT

EBIT Growth %	ASA30 Index	BHP AU Equity	WSA AU Equity	GGT
31/12/2010	17.57	63.35	296.56	-27.28
30/12/2011	2.23	-28.91	-66.07	8.35
31/12/2012	-7.23	-16.31	-237.75	-2.62
31/12/2013	9.95	10.52	161.58	-7.86
31/12/2014	-2.46	-64.68	-12.31	-9.15
Standard Deviation	9.88	47.83	206.80	12.93
Correlation with Market	1.00	0.83	0.96	-0.67

Source: ERA Analysis, Bloomberg

887. Table 62 shows the correlation between the EBIT growth for the mining companies and GGT. Similar to the correlation between GGT and the market, if anything, GGT's EBIT growth is negatively correlated to the two mining companies exhibiting a coefficient of -0.69 with BHP Billiton and -0.76 with Western Areas.

Table 62 Growth GGT EBIT Growth and Correlation with Mining EBIT Growth

EBIT Growth %	GGT	BHP AU Equity	WSA AU Equity
31/12/2010	-27.28	63.35	296.56
30/12/2011	8.35	-28.91	-66.07
31/12/2012	-2.62	-16.31	-237.75
31/12/2013	-7.86	10.52	161.58
31/12/2014	-9.15	-64.68	-12.31
Correlation with GGT	1.00	-0.69	-0.76

Source: ERA Analysis, Bloomberg

888. Any suggestion that GGT's operating income or EBIT growth is correlated to, or as volatile as that of the nickel and iron industries it serves is not supported by the data.
889. The Authority notes that when it engaged Frontier Economics to review the WACC estimate proposed by GGT in the prior Access Arrangement in 2010, Frontier Economics themselves noted the lack of substantial withdrawal of volume during the economic downturn at the time.⁴¹⁶ Although this assessment occurred outside the last 5 year period, it highlights that, even during economic downturns, GGT's demand does not fall significantly.
890. The Authority is therefore of the view that there is little or no evidence to suggest that GGT's EBIT variability correlates fairly well to that of the mining industry. The corollary of this is that there is no evidence to support *returns correlation (or covariance) with the market* (in other words equity beta) that is greater than that of other Western Australian gas NSPs. The firm may service customers that face a high level of risk, but it does not automatically follow that the firm itself faces a high level of systematic risk. The fluctuations in the operating income and profitability of the firm resulting from falling demand may possibly be limited through contracts or offset by demand from other types of users.
891. Frontier Economics' statement in paragraph 882 could also be interpreted as a suggestion that the observation period be altered to a period where events have occurred that affect profits from one year to the next. Using a period other than the last 5 years in order to detect a higher coefficient of variation in operating margin and/or return on equity would be inconsistent with the Guidelines, but more importantly, inconsistent with the approach applied to other regulated NSPs.⁴¹⁷ Extending the length of the observation period also effectively endorses data mining by allowing regulated entities to select the length of the period over which systematic risk is assessed.

Estimate set within a range

892. GGT's consultant Frontier Economics appears to interpret the Authority's analysis of accounting benchmarks as an attempt to classify GGP's systematic risk within an equity beta range of 0.3 to 0.8 and that the upper bound of the range was used based on this analysis.

⁴¹⁶ Economic Regulation Authority, *Final Decision on GGT's Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline Submitted by Goldfields Gas Transmission Pty Ltd*, 13 May 2010, p. 47.

⁴¹⁷ Economic Regulatory Authority, *Final Decision on Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, as amended 10 September 2015, pp. 269-280.

893. This interpretation of the rationale behind the methodology implies that the Authority pre-determined the equity beta estimate for GGT to be constrained between 0.3 and 0.8. That is not the case. The Authority noted that the only justifications for GGT's proposed equity beta had no quantitative basis. It also recognised that in lieu of any quantitative evidence any number of counter-arguments could be made for GGT having a higher or lower level of systematic risk than the benchmark efficient entity. For these reasons the Authority sought metrics that are accepted as being related to systematic risk to determine whether GGT exhibited any extraordinary risk characteristics.
894. For the Draft Decision, the Authority selected a point estimate of beta (0.63) within the 'medium and high' range of beta estimates for listed NSP's shown in Table 63 below. This choice was on account of GGT not only falling within the range of risk of most of the metrics calculated for Australian NSPs, but also ranking unusually low on some of the metrics.

Table 63 Equity Beta Estimates over 5 years to 2014

Company Ticker – highest to lowest risk	2014 Equity Beta ⁴¹⁸
SKI AU Equity	0.73
APA AU Equity	0.67
ENV AU Equity	0.59
SPN AU Equity	0.48
DUE AU Equity	0.32

Source: ERA Analysis, Bloomberg

895. This estimate was then revised upward – consistent with the scale of the adjustment made in its previous decisions – as a means of accounting for potential downward bias in equity beta estimates.⁴¹⁹ At no time did the Authority start out with the intention to select a point within a pre-determined range of 0.3 to 0.8.
896. As demonstrated in the Draft Decision, GGT is comparable on all of the risk metrics examined for other utilities.

The benchmark efficient entity and similar risk

897. GGT submitted that none of the entities in the benchmark sample used in the Authority's beta estimations is similar to the Covered Pipeline with respect to factors that affect its throughput and thus revenue stream. The factors cited were as follows:
- small numbers of customers concentrated in mining and mineral processing;
 - customers reducing contracted capacity when commodity prices are low;
 - termination contracts under the same circumstances; or
 - default in circumstances where customer's production operations become uneconomic.⁴²⁰

⁴¹⁸ These equity beta estimates were made on data over the 5 years from September 2009 to September 2014 using the method outlined in the December 2013 Rate of Return Guidelines.

⁴¹⁹ Economic Regulatory Authority, *Final Decision on Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, as amended 10 September 2015, p. 280.

⁴²⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 94.

898. GGT argued that if there were material and substantiated risk differences between the companies for which data were obtained for the purpose of estimating beta and the service provider that was the subject of a particular regulatory decision, then a further adjustment to beta may be considered.
899. The Authority acknowledges evidence that GGT has submitted, showing that:
1. there has been delay and difficulties in contracting replacement demand on the GGP, for out of contract tranches of capacity, which has been taken into account in the demand forecasts from 2015;⁴²¹
 2. the customer bases of the benchmark sample entities are much larger, both in terms of connections and volume, than that of the GGP; and
 3. the customer bases of the benchmark sample entities are distributed across a broader range of sectors than the customer base of GGT.
900. GGT has withdrawn from the claim relating to difficulties in contracted replacement demand that were set out in the initial proposal. Specifically:⁴²²
- In the circumstances of the GGP, there is no evidence to suggest that reference tariffs arising from GGT's proposed cost allocation methodology creates a risk the use of covered services could be dissuaded. For all relevant purposes, the capacity of the covered pipeline is fully contracted. GGT does not anticipate any material tranches of capacity on the covered pipeline to be uncontracted before 2029. To the extent small tranches of capacity on the covered pipeline have become available over the current access arrangement period, GGT has been able to successfully recontract that capacity.
901. That said, the Authority addresses the first point above by referring to its Rate of Return Guidelines method for estimating equity beta. In the Guidelines, systematic risk is measured by empirical estimates of equity beta. The empirical estimates are based on the last 5 years of historic data.⁴²³ The empirical estimates of equity beta based on the last 5 years of historic data effectively constitutes the forecast of systematic risk for the next 5 years. The first point above makes reference to forecast demand data from 2015 onward in support of GGT's claims that its systematic risk is differentiated from the benchmark. The Authority considers using forecast data inappropriate and inconsistent with the Rate of Return Guidelines, because the Guidelines specifically use the last 5 years of historic or realised data for assessing systematic risk. The Authority, therefore, considers the forecast data based on qualitative evidence, outlined in the first point above, irrelevant to the analysis of systematic risk.
902. With respect to the second and third points above, the Authority accepts the evidence that shows GGT's customer base is significantly different to the benchmark sample of firms that the Authority uses to calculate equity beta. In this context, the Authority has assessed whether GGT's systematic risk is differentiated from the benchmark sample, purely on the grounds that a large proportion of its end user demand is related to nickel and iron industries, as shown in Table 64. This recognises that it is unusual for a utility to have such a low proportion of residential end user demand while having a high proportion of resource based end user demand.

⁴²¹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, pp. 95-97.

⁴²² Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Response to ERA Draft Decision: Submission*, January 2016, p. 160.

⁴²³ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, p. 171.

Table 64 Relative shares of GGT end user demand

Nickel	Gold	Iron ore	Distribution
53%	27%	16%	4%

Source ERA analysis, June 2016.

903. However, as outlined in paragraph 890, it does not automatically follow that the GGP's customer base results in it facing higher systematic risk than the entities in the benchmark sample. GGT has not submitted any robust evidence linking the characteristics of their customer base to higher systematic risk.
904. The Authority further considers that GGT has not submitted any substantial evidence of systematic risk or substantial evidence of operational or financial risks being *significantly* higher than that of other Australian network service providers. For this reason the Authority remains of the view that the equity beta estimate of 0.8, as determined in the Draft Decision, is appropriate.
905. In particular, the Authority notes that GGT's arguments:
- are exclusively focussed on revenue, thus ignoring expenses;
 - do not account for possible countercyclical elements in its risk profile such as gold prices or input costs; and
 - potentially classify non-systematic risk factors as systematic risk factors, for example, decisions on contracting and hedging.
906. Any number of qualitative justifications can be proposed as theoretical reasons why a network service provider should face a *higher or lower* level of systematic risk. For example, it could be theoretically argued that:
- the gold producing operation's demand is uncorrelated to the cyclical demand for nickel and iron ore and so reduces systematic risk;
 - during downturns GGT may experience declining input costs which may, to some extent, offset cyclical reductions in revenue, thereby, reducing systematic risk; or
 - the efficient benchmark firm in GGT's situation would contract efficiently such that systematic risks are mitigated.
907. While the Authority does not pursue these arguments, they highlight that qualitative arguments informing the level of systematic risk are inferior to inferences made on observable evidence. This point was previously made in the Authority's Final Decision in 2010, where it considered that primary reliance should be placed on capital market evidence and statistical estimates of beta values, where these are available for comparable businesses.⁴²⁴
908. The Authority considers statistical estimates of equity beta using a sample of comparable exchange listed Australian firms (as was done in the Rate of Return Guidelines) to be the preferred method of estimating systematic risk for the benchmark firm.

⁴²⁴ Economic Regulation Authority, *Final Decision on GGT's Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline Submitted by Goldfields Gas Transmission Pty Ltd*, 13 May 2010, p. 47.

909. Where exchange listed Australian comparators cannot be found, the next most preferred method is to estimate asset and equity beta using comparable international firms (as was done in the 2015 Weighted Average Cost of Capital for Railway Networks).⁴²⁵ However, the Authority is not aware of any listed network utility that is comparable to GGT's covered pipeline in terms of having a comparable customer base. That is, the Authority could not find a network utility listed on any stock exchange (reported on Bloomberg) that has a small number of customers, concentrated in the mining and mineral processing sector.
910. Where neither of these approaches are possible, then alternative approaches can be considered. Given the lack of similar comparators, the Authority is of the view that 'conventional' practices from the investment management industry – used to assess the potential risks associated with a firm – can be applied in the regulatory context, and are appropriate for estimating the equity beta of the GGP.
911. The Authority's estimate of beta is set out in what follows. Given the above, this analysis is unchanged from that set out in the Draft Decision.

Evidence based on financial statement analysis

912. Financial statement analysis is both a fundamental and well-accepted means of assessing the performance of an investment in terms of future net income and cash flow. It is the Authority's view that financial statements are logically the next best source of empirical evidence for assessing systematic risk in lieu of an exchange listed comparator being available because a firm's actual and expected financial performance determines its stock price, which in turn, determines the firm's empirically observed equity beta. The extent to which the arguments outlined by GGT are justified will be manifest in the benchmark firm's financial performance.⁴²⁶
913. Since the Authority cannot readily determine if GGT's systematic risk is differentiated from the benchmark sample using empirical estimates for a comparable benchmark, the Authority has opted to use financial statement based metrics for GGT that are commonly accepted as being linked to systematic risk. This is carried out over the same period the Authority empirically observes equity beta (the last 5 years) for consistency with the Rate of Return Guidelines method. While the Authority considers this approach inferior to statistically derived empirical estimates of equity beta, it considers this approach superior to unsubstantiated qualitative arguments.
914. The financial statement based analysis has been undertaken as follows:
- *First*, a number of well-accepted financial statement based measures of systematic risk (metrics) are identified. This is done with reference to academic and investment management industry literature to ensure the selection of these measures is guided by accepted practice in finance.
 - *Second*, a sample of Australian network utilities that have been profitable over the last 5 years is identified.⁴²⁷ Each of the metrics is calculated for each company in the sample. The observations for each metric are then ranked from

⁴²⁵ Economic Regulation Authority, *Final Determination relating to the 2015 Weighted Average Cost of Capital for Railway Networks*, 18 September 2015.

⁴²⁶ W. Beaver, P. Kettler and M. Scholes, 'The Association between Market Determined and Accounting Determined Risk Measures', *The Accounting Review*, vol.15, no.4, 1970, p. 679.

⁴²⁷ Grabowski and King used a track record of profitability as a criterion for selecting companies in their risk study. See S. Pratt and R. Grabowski, *Cost of Capital: Applications and Examples*, 4th edn, Hoboken, NJ, John Wiley & Sons, 2010, p. 289. for more details.

highest to lowest in terms of the systematic risk they reflect. This creates a 'risk gauge' for each metric, which allows the Authority to determine if GGT is significantly different to other Australian network utilities in terms of risk.

- *Third*, the same metrics are calculated for GGT using the Further Final Decision AA2 model, reference tariffs and actual demand realised. GGT's metrics are compared to the table to assess whether its systematic risk is high or low (relative to the sample range of metrics) based on each measure.

Financial statement-based measures of systematic risk

915. Beaver, Kettler and Scholes produced one of the earlier papers that investigated the association between market-determined and financial statement based measures of systematic risk. They recognised that, although accounting measures of risk are not explicitly defined in terms of covariance of returns, they can be viewed as surrogates for the total variance of returns. They found evidence to support the hypothesis that accounting data reflect underlying events that differentiate the risk of securities and that these events are reflected in market prices.⁴²⁸ They also found evidence that indicated positive correlation between diversifiable and non-diversifiable risk.⁴²⁹ This suggests that other measures of total risk should be considered, but not relied on in isolation, in assessing systematic risk from an accounting perspective.
916. Hamada investigated the effect of a firm's capital structure on systematic risk. He found that around 21 per cent to 24 per cent of observed systematic risk can be explained by a firm's capital structure.⁴³⁰
917. Lev associated risk differentials between firms with differences in the production process that affect the relative shares of fixed and variable costs (operating leverage). Higher operating leverage was associated with higher systematic risk and characterised as a real determinant of systematic risk.⁴³¹
918. Gahlon and Gentry provide a simple conceptualisation of the sources of systematic risk including revenue variability, its magnification through operating and financial leverage and the degree of the sensitivity to the firm's cash flow to broader economic factors. They emphasise the link between systematic risk, the Degree of Operating Leverage (**DOL**) and Degree of Financial Leverage (**DFL**).⁴³²
919. Mandelker and Rhee undertook an empirical study investigating the joint impact of both the DOL and DFL on the systematic risk of common stock. They found that both of these measures of leverage explain a large proportion of the variation in beta.⁴³³

⁴²⁸ W. Beaver, P. Kettler and M. Scholes, 'The Association between Market Determined and Accounting Determined Risk Measures', *The Accounting Review*, vol.15, no.4, 1970, pp. 654-682.

⁴²⁹ W. Beaver, P. Kettler and M. Scholes, 'The Association between Market Determined and Accounting Determined Risk Measures', *The Accounting Review*, vol.15, no.4, 1970, p. 659.

⁴³⁰ R. Hamada, 'The effects of the firm's capital structure on the systematic risk of common stocks', *Journal of Finance*, vol.27, no.2, 1972, pp. 435-452.

⁴³¹ B. Lev, 'On the Association between Operating Leverage and Risk', *The Journal of Financial and Quantitative Analysis*, vol.9, no.4, 1974, p. 638.

⁴³² J. Gahlon and J Gentry, 'On the Relationship between Systematic Risk and the Degrees of Operating and Financial Leverage', *Financial Management*, vol.11, no.2, 1982, pp. 15-23.

⁴³³ G. Mandelker and S. Rhee, 'The Impact of the Degrees of Operating and Financial Leverage on Systematic Risk of Common Stock', *The Journal of Financial and Quantitative Analysis*, vol.19, no.1, 1984, p. 56.

920. In light of Beaver, Kettler and Scholes evidence indicating that there is positive correlation between diversifiable and non-diversifiable risk, some key measures of total risk are also identified. The Duff & Phelps *Risk Premium Report – Risk Study* uses three alternative measures of company specific total risk:⁴³⁴
- Operating margin;
 - Coefficient of Variation (**CV**) in operating margin;
 - CV in return on equity.
921. Their data showed a significant empirical relationship between these measures of risk and historical rates of return and realised premiums for profitable companies.⁴³⁵
922. Each of the measures identified in the literature above is defined below.
923. The operating margin measures operating income as a proportion of net sales.

$$\text{Operating Margin} = \frac{\text{Operating Income}}{\text{Net Sales}} \quad (1)$$

Where:

Operating Income is annual revenue less operating expenses, depreciation and amortisation and is synonymous with Earnings Before Interest & Tax (**EBIT**); and

Net Sales is annual revenue less discounts and other allowances (revenue in the context of network service providers).

924. GGT's first principles based arguments only related to revenue and ignored those relating to benchmark costs. Observing operating income 'nets off' the variations in cost (ignoring financing and tax for the time being) from the variations in revenue. Generally speaking, the lower the operating margin the higher the total risk; however, it is the year to year variations in this operating margin (that also consider costs) that are more relevant to total risk. The higher the operating margin, the lower the total risk (as per Duff & Phelps).⁴³⁶
925. The coefficient of variation in operating margin is a measure of the year-to-year variation in the operating income.

$$\text{Coefficient of variation in operating margin} = \frac{\sigma_{\text{Operating Margin}}}{\text{Operating Margin}} \quad (2)$$

Where:

⁴³⁴ S. Pratt and R. Grabowski, *Cost of Capital: Applications and Examples*, 4th edn, Hoboken, NJ, John Wiley & Sons, 2010, p. 289.

⁴³⁵ S. Pratt and R. Grabowski, *Cost of Capital: Applications and Examples*, 4th edn, Hoboken, NJ, John Wiley & Sons, 2010, pp. 289-291.

⁴³⁶ S. Pratt and R. Grabowski, *Cost of Capital: Applications and Examples*, 4th edn, Hoboken, NJ, John Wiley & Sons, 2010, p. 289.

$\sigma_{\text{Operating Margin}}$ is the annual standard deviation in the operating margin over the last 5 years; and

Operating Margin is the average annual operating margin over the last 5 years.

926. This metric is a measure of total risk from operations independent of risk stemming from financing decisions and taxation arrangements. The higher the coefficient of variation in operating margin the higher the total risk (as per Duff & Phelps).
927. The degree of operating leverage measures how sensitive a firm's operating income (which is synonymous with EBIT in the regulatory context) is to changes in revenue.

$$\text{DOL} = \frac{\% \Delta \text{ EBIT}}{\% \Delta \text{ Revenue}} \quad (3)$$

where:

$\% \Delta \text{ EBIT}$ is the Compound Annual Growth Rate (**CAGR**) in EBIT over 5 years; and

$\% \Delta \text{ Revenue}$ is the CAGR in revenue over 5 years.⁴³⁷

928. This metric reflects the relative shares of fixed and variable costs chosen for the production process. When revenue increases strongly, a profitable firm with a relatively high proportion of fixed costs will meet these costs and benefit from each unit sale contributing a relatively large amount to operating income. A profitable firm with a lower proportion of fixed costs will find each unit sales contributes relatively little to operating income because a large proportion of revenue will always be consumed by variable costs. This was measured over a 5 year horizon using CAGRs to ensure a stable estimate. The higher the DOL the higher the systematic risk (as per Lev, Gahlon & Gentry, Mandelker and Rhee).
929. The degree of financial leverage (**DFL**) reflects the effect of the firm's financing decisions on net income or the 'bottom line'.

$$\text{DFL} = \frac{\text{EBIT}}{\text{EBIT-Interest}} \quad (4)$$

where:

EBIT is the compound annual growth rate (CAGR) in EBIT over 5 years; and

Interest is the annual interest expense on debt financing.

930. While affected by gearing, this metric considers the 'magnification' effect that gearing has on the cash flows available to pay shareholders by also considering operating income or EBIT. This metric therefore takes a revenue *and* cost perspective. The

⁴³⁷ The 5 year CAGR is calculated as $\left(\frac{X_{\text{year 5}}}{X_{\text{year 1}}} \right)^{1/5} - 1$

higher the DFL the higher the systematic risk (as per Hamada, Gahlon & Gentry, Mandelker and Rhee).

931. The coefficient of variation in return on equity is a measure of the year-to-year variation in the return on equity.

$$\text{Coefficient of variation in return on equity} = \frac{\sigma_{\text{Return on Equity}}}{\text{Return on Equity}} \quad (5)$$

where:

$\sigma_{\text{Return on Equity}}$ is the annual standard deviation in the return on equity over the last 5 years;

Return on Equity is the average annual return on equity over the last 5 years, where the return on equity is defined by the net income available to common equity as a proportion of common equity.

932. This metric is a measure of the total risk, in terms of the historic variability, that shareholders (common equity) received. The greater the CV in return on equity, the higher the total risk (as per Duff & Phelps).

Gauging systematic risk using a sample of Australian utilities

933. Australian utilities are used as the 'yardstick' to gauge whether GGT's financial based measures of systematic risk are abnormally high compared to other Australian network utilities. The Bloomberg equity screening function was used to search for listed firms that met the following criteria:⁴³⁸
- **Country of listing:** Australia
 - **Global Industry Classification Sector Name:** Utilities
 - **Industry Subgroup:** Electric-Integrated, Gas-Distribution, Electric-Distribution, Gas-Transportation, Electric-Transmission, Pipelines
934. This returned five listed Australian companies. Their descriptions retrieved from Bloomberg are shown below (Table 65).

⁴³⁸ This sample was downloaded on 21 October 2015.

Table 65 Companies matching equity screen with relevant data

Ticker	Bloomberg Description
AGL AU Equity	AGL Energy Limited sells and distributes gas and electricity. The Company retails and wholesales energy and fuel products to customers throughout Australia.
APA AU Equity	APA Group is a natural gas infrastructure company. The Company owns and or operates gas transmission and distribution assets whose pipelines span every state and territory in mainland Australia. APA Group also holds minority interests in energy infrastructure enterprises.
DUE AU Equity	DUET Group invests in energy utility assets located in Australia and New Zealand. The Group's investment assets include gas pipelines and electricity distribution networks.
SKI AU Equity	Spark Infrastructure Group invests in utility infrastructure assets in Australia.
EPX AU Equity ⁴³⁹	Ethane Pipeline Income Fund is a fund established to provide cash flows. The fund, through its subsidiary, operates a natural gas pipeline.

Source: Bloomberg LP, Bloomberg, up to date as at November.

935. The metrics outlined above were calculated for each company and then the results for each company were ranked from highest to lowest systematic risk for each metric. This ranking is based on views in the literature of the relationship between market-determined and financial statement based measures of systematic risk.⁴⁴⁰

GGT's systematic risk metrics

936. GGT has submitted that its customer base, and thus end user demand and revenues, differentiate its systematic risk from the benchmark network service provider. To assess the extent to which its actual end user demand and revenue differentiates its systematic risk from the hypothetical benchmark firm, the actual demand realised over the last 5 years was input into the AA2 model to estimate the five accounting metrics outlined from paragraphs 922 to 932 above.

937. To calculate the actual revenues in the AA2 model a 'revenue adjustment factor' was computed by dividing actual demand by the forecast demand in the model. The reserved capacity adjustment factors were then multiplied by the toll charge and multiplied by the reservation charge revenue to arrive at actual annual revenue for these revenue items. The throughput adjustment factor was applied to the throughput charge revenue to arrive at actual annual revenue for this revenue item.⁴⁴¹ The revenue adjustment factors calculated are shown in Table 66.

⁴³⁹ Although Ethane Pipeline Income Fund was not in the equity beta sample outlined in the Rate of Return Guidelines it is considered to be an appropriate comparator because it is a gas pipeline that services industrial end users.

⁴⁴⁰ Spark Infrastructure only returned adequate data for the coefficient of variation of return on equity and so was not included in the sample for the other metrics.

⁴⁴¹ With respect to revenue, 'Actual' means from a benchmark efficient entity perspective as constructed by the financial model.

Table 66 GGT Actual versus Forecast AA2 Demand and Revenue Adjustment Factors

Load	2010	2011	2012	2013	2014
Reserved Capacity					
Actual ⁴⁴²	105.7	105.2	105.2	104.5	97.7
Forecast (Annual Average)	109.9	108.6	108.5	108.9	109.0
Revenue Adjustment Factor	0.9614	0.9686	0.9692	0.9595	0.8966
Throughput					
Forecast (Annual Average)	90.7	89.5	89.4	89.7	89.7
Actual ⁴⁴³	85.6	82.4	82.5	83.5	81.1
Revenue Adjustment Factor	0.9441	0.9209	0.9229	0.9308	0.9038

938. The total actual revenue calculated in the AA2 model (after these adjustments were applied) is shown in the first line of Table 67, which outlines GGT's benchmark AA2 accounts.

Table 67 GGT AA2 Further Final Decision Accounts

\$m	2010	2011	2012	2013	2014
Adjusted Revenue	82.07	82.22	82.43	81.97	77.12
Operating Expenditure	-29.97	-26.13	-27.00	-28.86	-30.80
Depreciation	-10.62	-11.16	-11.70	-11.91	-12.03
EBIT (Operating Income)	41.48	44.94	43.73	41.20	34.29
Interest	-23.22	-23.22	-23.09	-22.63	-22.13
Tax	-5.48	-6.51	-6.19	-5.57	-3.65
Net Income	12.78	15.20	14.45	13.00	8.51
Equity	177.02	177.04	176.00	172.49	168.74
Return on Equity	7.22%	8.59%	8.21%	7.54%	5.04%
DFL	2.27	2.07	2.12	2.22	2.82
Operating Margin	50.54%	54.65%	53.06%	50.26%	44.47%

939. The relevant cost of service building blocks (operating expenditure and depreciation) are deducted from revenue to arrive at operating income, which, in the context of the building block approach, is analogous to EBIT. Depreciation is derived from the third access arrangement period financial model using actual approved capex over the second access arrangement period to reflect any cost savings or cost over-runs that may have materialised under the economic conditions that prevailed. Interest and tax are then deducted to arrive at net income. Equity was arrived at by multiplying 40 per cent (1 minus the benchmark gearing) by the opening regulated asset base in each year. Return on equity is the net income, in each year, as a proportion of equity.

940. The line items outlined in Table 67 were used to calculate the systematic risk metrics defined above. The results are shown in Table 68.

Table 68 GGT Determinants of Systematic Risk

Systematic Risk	Average Operating Margin	CV Operating Margin	5 Year DOL (absolute value)	Average DFL	CV Return on Equity
Value of Metric	50.47%	0.08	3.23	2.31	0.19

⁴⁴² 2014 actuals are, at this stage and updated forecast and will be updated, when the figure is received.

⁴⁴³ 2014 actuals are, at this stage and updated forecast and will be updated, when the figure is received.

941. A comparison of these results to the metrics calculated for the other Australian network service providers in the sample described above follows. The metrics are ranked by value from high risk to low risk.

Table 69 Average Operating Margin

Company Ticker – highest to lowest risk	Metric Value (%) ⁴⁴⁴
AGL AU Equity	9.28
EPX AU Equity	41.22
DUE AU Equity	41.85
GGT Benchmark	50.47
APA AU Equity	55.57

942. The average operating margin over the last 5 years is the second highest in the sample. This indicates that the GGT benchmark has been particularly solvent prior to financing and tax considerations.

Table 70 Coefficient of Variation in Operating Margin

Company Ticker – highest to lowest risk	Metric Value
APA AU Equity	0.50
AGL AU Equity	0.31
DUE AU Equity	0.16
EPX AU Equity	0.09
GGT Benchmark	0.08

943. The GGT benchmark's coefficient of variation in operating margin is lower than all of the other Australian network utilities indicating that there is very little fluctuation in its year to year profitability in its operations. This could possibly reflect efficient contracting practices, low correlation between the demand of the various end users or even stable demand from all existing users. From this perspective the GGT benchmark is very low risk.⁴⁴⁵

Table 71 5 Year Degree of Operating Leverage (Absolute Value)

Company Ticker – highest to lowest risk	Metric Value
APA AU Equity	3.67
GGT Benchmark	3.23
EPX AU Equity	2.61
AGL AU Equity	1.52
DUE AU Equity	1.30

944. While not the highest, the GGT benchmark has a fairly high degree of operating leverage. This indicates that relative to other Australian network utilities, GGT has a high proportion of fixed costs per unit of output, which would tend to exacerbate any systematic risk it faces. From this perspective the GGT benchmark has a higher level of systematic risk.

⁴⁴⁴ Note, for this metric, a lower value is associated with a higher systematic risk.

⁴⁴⁵ In the 2010 Final Decision for GGT's second Access Arrangement, Frontier Economics noted the lack of substantial withdrawal of volume during the economic downturn. See Economic Regulation Authority, *Final Decision on GGT's Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline Submitted by Goldfields Gas Transmission Pty Ltd*, 13 May 2010, p. 47.

Table 72 5 Year Average Degree of Financial Leverage

Company Ticker – highest to lowest risk	Metric Value
DUE AU Equity	6.44
GGT Benchmark	2.31
APA AU Equity	2.30
AGL AU Equity	1.20
EPX AU Equity	1.07

945. The GGT benchmark's degree of financial leverage is the second highest in the sample. This indicates a high degree of debt repayment vis-à-vis operating income used to pay debt. Like the DOL, this would tend to exacerbate any systematic risk faced by the GGT benchmark and so from this perspective it also has a higher level of systematic risk.

Table 73 Degree of Total Leverage

Company Ticker – highest to lowest risk	Metric Value
APA AU Equity	8.46
DUE AU Equity	8.37
GGT Benchmark	7.47
EPX AU Equity	2.79
AGL AU Equity	1.83

946. The DOL and DFL operate together multiplicatively to 'amplify' any systematic risk faced by the firm. The Degree of Total Leverage (**DTL**) reflects this and is simply equal to DOL multiplied by DFL. By this measure it appears that GGT has less systematic risk than APA Group and the DUET Group, but is significantly riskier than AGL and Ethane Pipeline Income Trust.

Table 74 Coefficient of Variation in Return on Equity

Company Ticker – highest to lowest risk	Metric Value
DUE AU Equity	1.71
APA AU Equity	0.55
SKI AU Equity	0.28
EPX AU Equity	0.26
AGL AU Equity	0.26
GGT Benchmark	0.19

947. The coefficient of variation in the return on equity for the GGT benchmark, is the lowest of all of the Australian network utilities. This can be viewed as a summary measure because it reflects all of the measures above and indicates that the GGT benchmark is much lower risk than the other Australian network utilities.⁴⁴⁶ This possibly reflects the very low variation in the GGT benchmark's operating margin. Even when the variation in the GGT benchmark's operating margin is amplified by its high DTL the resultant variation, reflected in the CV of return on equity is still very low.

948. GGT falls within the spectrum of risk for four of the metrics and is the lowest risk Australian network utility for two of the metrics. None of these indicators suggest that GGT faces a level of systematic risk that is significantly higher than other network

⁴⁴⁶ This is a summary measure in the sense that the return on equity can be decomposed using the 'Dupont System' and is also a measure of variation. See R. Brealey, S. Myers and F. Allen, *Corporate Finance*, 8th edn. New York, McGraw-Hill Irwin, 2006, p. 796.

utilities in Australia. However, the leverage indicators suggest that if GGT were to experience increased volatility in revenues, then the risk to common stock would be magnified by a factor that is higher, but not much higher, compared to other utilities. This indicates that the cash flows to the shareholders are relatively more sensitive as compared to the other utilities to fluctuations in operating income (or EBIT), given its level of EBIT and financial leverage. That said, the CV in the operating margin has been very low (0.08) compared to the other Australian network utilities, so this sensitivity has not been a factor over the past five years. This concurs with Frontier Economics' observation that there was a lack of 'substantial withdrawal' of volume during the 2008 economic downturn.⁴⁴⁷

949. Based on the above, the Authority is unwilling to consider a range of equity betas outside those empirically observed for the other Australian network utilities over the 5 year period prior to 2015. The total variation in operating margin and return on equity for the GGT benchmark is remarkably low and appears to be fairly immune to an economic downturn.
950. The Authority acknowledges that none of the above metrics quantitatively measure covariance with equity market returns. The evidence from Frontier Economics suggests that GGT's volumes, and therefore revenue streams based on benchmark tariffs, have been fairly insensitive to economic conditions. If the low variability in the benchmark operating margin was shown to be strongly and robustly correlated to stock market returns over the past five year period an argument for GGT facing a higher systematic risk than the benchmark utility may exist. The Authority, to date, has received no evidence that indicates this is the case.

Table 75 Equity Beta Estimates over five years to 2016

Company Ticker – highest to lowest risk	2016 Equity Beta ⁴⁴⁸
SKI AU Equity	0.732
AST AU Equity	0.678
APA AU Equity	0.664
DUE AU Equity	0.236

951. Although the CV of operating margin was very low over the 5 year period observed, the combination of the DOL and DFL indicate that the GGT benchmark is 'finely poised' in terms of being a profitable investment to shareholders. In light of the low observed risk in the operating margin and the medium to high observed risk in the degree of total leverage (DFL x DOL), the Authority is of the view that the upper bound of systematic risk faced by the GGT benchmark is in the 'medium' and 'high' range compared to the other utilities in the benchmark sample. Accordingly, the Authority views GGT as ranking in line with AustNet Services (AST AU Equity) in Table 75 which represents the 'medium' to 'high' ranked equity beta respectively. This leads to a point estimate of 0.678 or 0.70 when rounding to the nearest 0.05 is taken into account.

⁴⁴⁷ Economic Regulation Authority, *Final Decision on GGT's Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline Submitted by Goldfields Gas Transmission Pty Ltd*, 13 May 2010, p. 47.

⁴⁴⁸ These equity beta estimates were made on data over the 5 years from June 2011 to May 2016 using the method outlined in the December 2013 Rate of Return Guidelines (see Economic Regulation Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline 2016 – 2020*, 30 June 2016, Appendix 4).

952. This reflects a reduction from the mid-point of the 2010 GGP Final Decision range, which is consistent with the downward trend in equity beta estimates in regulatory decisions in recent times.
953. In the Draft Decision the Authority applied an adjustment to account for potential downward bias in equity beta estimates. The rationale for such an adjustment was set out in the Rate of Return Guidelines.⁴⁴⁹ In light of recent analysis examining the issue of potential downward bias in NSP equity betas, the Authority will no longer make any adjustments to the SL-CAPM that were previously applied to account for this perceived issue.
954. Specifically, the Authority examined this issue of beta bias in great detail in its concurrent Final Decision for the Dampier Bunbury Natural Gas Pipeline (**DBNGP**).⁴⁵⁰ Readers are referred to that material for the Authority's full reasoning on the issue.
955. The Authority concludes there that it is clear there is little evidence that the Authority's estimates of beta used in the SL-CAPM are biased.⁴⁵¹ The Authority is now satisfied that once the 'low beta' bias issue is properly framed, there is no evidence to justify any adjustment to the Authority's estimates of the beta term for use in the SL-CAPM.
956. The Authority has concluded that, if any adjustment could be justified, it should apply to the intercept term in the SL-CAPM, thereby taking account of the alpha term arising in ex post tests of the model. However, the Authority is not convinced there is adequate evidence, at the current time, to justify making such an adjustment. The theory supports the view that no adjustment should be contemplated. Further, there is empirical support for the 'vanilla SL-CAPM' in the 'industry portfolio sort' tests undertaken by Dampier Bunbury Pipeline.^{452,453}
957. The Authority acknowledges that there is much debate about whether an adjustment needs to be made to the SL-CAPM. This was recognised by the Authority in the Guidelines and Draft Decision, with reference to the theoretical properties of Black CAPM. However, analysis since, by the Authority and its consultants, in response to Dampier Bunbury Pipeline's submissions for the revised DBNGP access arrangement, has made the Authority concerned that it would likely be making an error by making an adjustment to the SL-CAPM – through alpha – as compared to making no adjustment. The Authority is not convinced such an adjustment would meet the allowed rate of return objective, or the requirements of the NGO or the RPP.
958. Accordingly, the Authority has determined to retain the use of the 'vanilla' SL-CAPM for this Final Decision, with no adjustment made to the beta parameter to account for purported 'low beta' bias.
959. The Authority maintains its view that GGT has not submitted any substantial evidence of systematic risk or substantial evidence of operational or financial risks being

⁴⁴⁹ Economic Regulation Authority, *Rate of Return Guidelines*, 16 December 2013, p. 27.

⁴⁵⁰ Economic Regulation Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline 2016 – 2020*, 30 June 2016, Appendix 4

⁴⁵¹ Economic Regulation Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline 2016 – 2020*, 30 June 2016, Appendix 4, pp. 92 – 95.

⁴⁵² DBP, *Proposed Revisions DBNGP Access Arrangement, 2016 – 2020 Regulatory Period, Rate of Return, Supporting Submission: 12*, 31 December 2014, Appendix D.

⁴⁵³ See also Partington, G. and Satchell, S., *Report to the ERA: The Cost of Equity and Asset Pricing Models*, May 2016, p. 18 for an interpretation of the DBP industry portfolio sort data.

significantly higher than that of other Australian network service providers. For these reasons, the equity beta estimate of 0.7 will be adopted in the Final Decision.

Estimate of the Market Risk Premium

960. To inform its analysis of the MRP, the Authority gained access to the Brailsford, Handley and Maheswaran (**BHM**) data during the development of the 2013 Rate of Return Guidelines.⁴⁵⁴ That long historic sweep of market returns data (since 1883) allowed the Authority to undertake statistical analysis of the long run average market return on equity and the MRP, in order to ascertain whether each series was stationary (in the sense of being mean reverting). Stationarity is an important property of a data set if historic averages are to be used as a predictor for outcomes likely to prevail over future periods.
961. The results indicated the market return on equity was stationary.⁴⁵⁵
962. However, the results produced mixed evidence on the stationarity of the MRP, with the analysis supporting a conclusion that the MRP is likely non-stationary.^{456,457} This finding led the Authority to the important conclusion that the long run historical estimate of the MRP – around 6 per cent – could be a poor predictor of the MRP prevailing in future regulatory periods. The Authority therefore ceased to rely solely on the long run average MRP. Instead, it established a range of possible future outcomes for the MRP, informed by information that a rational market participant would use in making investment decisions.
963. This approach to establishing the forward looking MRP involves the following steps.
964. *First*, the Authority adopts the Ibbotson approach to estimating the MRP from the historic data. The ‘Ibbotson’ approach to interpreting the historic evidence is consistent with the view that the *MRP* is stationary and therefore will return to some constant long run average that is a good predictor for the MRP in future. The Ibbotson method involves subtracting the average of the historic risk free rates from the average of the historic return on the market.
965. If the stationarity of the MRP is borne out in reality, then the Ibbotson approach, despite being based on the average of the historical data, could be used as a reasonable ‘on-the-day’ prediction of the MRP over a future period. The resulting Ibbotson MRP can then be combined with the on-the-day estimate of the risk free rate in the SL-CAPM (which is considered the best predictor of future rates in light of the efficient market hypothesis), in order to determine the expected return on equity.

⁴⁵⁴ T.Brailsford, J.Handley and K.Maheswaran, Re-examination of the Historical Equity Risk Premium in Australia, *Accounting and Finance*, vol. 48, 2008, pp. 81 – 83.

⁴⁵⁵ Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, Appendix 8, p. 63 and Appendix 16.

⁴⁵⁶ Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, Appendix 8, p. 63 and Appendix 16.

⁴⁵⁷ Further support for the non-stationarity of the MRP is given by the finding that the risk free rate is non-stationary (Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, Appendix 16). As the market return on equity is comprised of the risk free rate and the MRP, it follows that then that MRP must be non-stationary, by construction.

966. The use of the Ibbotson approach to inform the lower bound of the MRP bound does not mean the Authority ascribes to the view that the MRP in Australia is stationary.⁴⁵⁸ The Authority remains of the view that evidence on mean reversion of the MRP in Australia is inconclusive as outlined in the Guidelines based on empirical tests on the Australian data.
967. The Authority also notes that any empirical testing may be subject to shortcomings such as those relating to the data itself, its span or in the methods applied. Empirical evidence may provide information that assists in understanding economic and financial relationships, but should be grounded in theory. For this reason the Authority considers it reasonable that investors may give credence to historical averages of the MRP in forming their views for the future.⁴⁵⁹ Therefore, the Authority considers that the two opposing theoretical interpretations for estimating the MRP (Ibbotson and Wright) cannot be dismissed.⁴⁶⁰
968. *Second*, because of the uncertainty as to whether the MRP in Australia is stationary or non-stationary, the Authority also references the Wright approach, which assumes that the MRP and risk free rate are negatively correlated one for one. The Wright estimate is the difference between the long run historic return on the market (in real terms, but then converted to nominal terms using the forward looking expected rate of inflation) and the current risk free rate. The Wright approach provides another predictor for the MRP.
969. The Wright approach to interpreting the historic data concludes that the MRP is not mean reverting, rather it is the long run real historical *market return on equity* that is mean reverting. With the Wright interpretation – at any point in time – the real average market return on equity may be combined with the estimate of the long run *expected* inflation rate, using the Fisher equation, to provide a best estimate of the expected nominal future average value of the *return on the market*. It follows then that deducting the on the day estimate of the risk free rate from that nominal estimate will provide the contemporaneous on the day forward looking estimate of the MRP.
970. *Third*, in order to determine a point estimate of the MRP from within the range of historic estimates derived using the approaches in the first two steps, the Authority adopts four forward looking conditioning variables including:
- (i) dividend yields;
 - (ii) interest rate swap rate;
 - (iii) credit default rates; and
 - (iv) stock market volatility index.
971. These forward looking indicators provide additional evidence as to the forward looking MRP in the prevailing market conditions. The current indicator is compared to historic

⁴⁵⁸ Equally, the Authority does not accept the Wright approach as being the sole guide for the estimate. The 'Wright' view on the stationarity of the market return on equity was considered in the Guidelines. However, the Guidelines rejected the view that the MRP and risk free rate are negatively correlated one for one. The Authority remains of the view that while being an acceptable theoretical foundation, sole reliance on the one for one correlation over anything but the very long run is not likely to be helpful in practice.

⁴⁵⁹ For example, many private sector equity analysts, such as Grant Samuel, utilise a historic estimate of the MRP when undertaking valuations.

⁴⁶⁰ For the risk free rate, the efficient market hypothesis provides a theoretical foundation, which is therefore supported by empirics.

outcomes for the indicator to give an indication of the relative state of prevailing forward looking expectations. The Authority also takes account of broader economic market conditions, utilising commentary from the Reserve Bank of Australia.

972. *Fourth*, the Authority also accounts for the implied forward looking MRP from various DGM studies. An expected return on equity is first estimated using the various forward looking inputs, before the 5 year current risk free rate is subtracted off to give the expected 5 year forward looking estimate of the MRP.
973. The Authority is of the view that its approach to estimating the MRP is well established and reasonable.
974. The resultant range for the MRP in the Rate of Return Guidelines was 5 to 7.5 per cent, with the lower bound informed by the historic data and the upper bound informed by recent DGM estimates.⁴⁶¹
975. With respect to this range, the Authority subsequently acknowledged that the range of 5 to 7.5 per cent may lead to outcomes that are too low.⁴⁶² In particular, it is clear that using a range with an inappropriately constrained upper bound could result in downward bias in the Authority's forward looking MRP estimates. The Authority therefore reviewed its approach to establishing a range for the forward looking MRP.
976. Most significantly, the Authority has concluded that it is not reasonable to constrain the MRP to a fixed range over time. The erratic behaviour of the risk free rate in Australia to date, and more particularly, its pronounced decline in the current economic environment, leads to a situation where the combination of a fixed range for the MRP and prevailing risk free rate may not result in an outcome which is consistent with the achievement of the average market return on equity over the long run.
977. Specifically, the estimate of the upper bound for the forward looking MRP of 7.5 per cent, based on the DGM, should fluctuate in line with expectations of yield, and with the prevailing risk free rate. So for example, at times when the risk free rate is low, as it currently is, the upper bound for the MRP should be higher. There will be times – such as during the Global Financial Crisis – when the Authority would be more likely to select a point estimate of the MRP that is close to the upper bound. The resulting required return on the market in that type of situation could possibly exceed the long run average return on equity indicated by the historical data.
978. For this reason the Authority considers it appropriate to determine a range for the MRP at the time of each decision.

The interpretation of the MRP in the SL CAPM

979. The Ibbotson construct of the SL-CAPM, where historic data is used to inform the MRP, is utilised as follows:

$$R_i = RF_{current} + \beta_i (RM_{historic} - RF_{historic}) \quad (6)$$

⁴⁶¹ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, p. 137.

⁴⁶² ATCO Gas Australia, *ATCO Gas Australia's Response to the ERA's Draft Decision*, 22 December 2014, p. 190.

980. The Authority notes GGT's argument in response to the Draft Decision that the term $[E(r_m) - r_f]$ in the SL CAPM is not a composite; that it is simply the difference between the conceptually distinct r_f and $E(r_m)$.⁴⁶³ GGT infers then that both components in the term, being the risk free rate r_f and the expected return on the equity market $E(r_m)$, must be treated separately when applying the SL CAPM model. It follows that GGT does not accept the Ibbotson interpretation of the historic evidence.
981. In contrast, GGT first establishes an estimate of the return on the market:⁴⁶⁴
- GGT's estimate of the return on the market, 11.40%, is consistent with the estimate of 10.5% (unadjusted for the value of imputation credits) used by Frontier Economics. It is also consistent with the average of the long series of market returns compiled by Brailsford, Handley and Maheswaran, and with estimates of the return on the market made by both the ERA and the AER.⁴⁶⁵
982. As an aside, the Authority notes that SFG's estimate of 10.5 per cent for the return on the market is derived from 'a weighted average of outcomes from four estimation approaches':⁴⁶⁶
- Excluding consideration of imputation credits, the market return estimates and assigned weights are as follows:
- (1) analysis of historical average excess returns (20% weight) implies $r_m = 10.38\%$, based upon a 6.51% premium to the risk-free rate;²⁸
 - (2) analysis of historical average real returns adjusted for current inflation expectations, also termed the Wright approach (20% weight), implies $r_m = 11.58\%$, based upon historical average real returns of 8.86% and inflation expectations of 2.50%.²⁹;
 - (3) dividend discount model analysis (50% weight) implies $r_m = 10.32\%$ (SFG Consulting: Dividend discount model, 2014); and
 - (4) assumptions used in independent expert reports (10% weight) imply $r_m = 9.87\%$ based upon a 6.00% market risk premium (SFG Consulting: Cost of equity, 2014, Section 3).
983. GGT then subtracts the current risk free rate from its estimate of the return on the market, to arrive at the term in brackets on the right hand side in the SL-CAPM. The Authority considers that this approach is *consistent with* the Wright interpretation of the historic data, albeit in this case based on a somewhat broader set of information (that includes the Wright method of interpreting the historic data, among others).
984. The Authority does not accept this 'Wright style' approach is the only interpretation possible for interpreting the MRP, or the historic data. The Authority is of the view that the term $[E(r_m) - r_f]$ has generally been considered as the MRP in the finance literature. The MRP is a well-established concept and GGT appears to agree on this

⁴⁶³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 84.

⁴⁶⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 86.

⁴⁶⁵ [GGT's footnote] See Draft Decision, Tables 53 and 54, and AER, *Draft Decision Amadeus Gas Pipeline Access Arrangement, Attachment 3 – Rate of return*, November 2015.

⁴⁶⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Supporting Information*, 15 August 2015, Attachment 7, p. 6.

view.⁴⁶⁷ The Ibbotson method reflects this alternative view. The Authority takes account of both interpretations in utilising the historic estimates in order to inform the forward looking MRP, as well as information from the DGM.

The Wright approach

985. The Authority notes GGT's argument that:⁴⁶⁸

The Wright approach is an alternative – “non-standard” – implementation of the SL CAPM in which the market portfolio and the risk free rate are estimated as separate components of the MRP. It is seen as having a number of limitations. In particular, it assumes that the relationship between the risk free rate and the MRP is perfectly negatively correlated, and the return on equity is relatively stable over time.

The assumption that the market return on equity is relatively stable, and its implication that the risk free rate and the MRP are perfectly negatively correlated, are extraneous to the derivation and application of the SL CAPM. No assumption is made about the relationship between the risk free rate and the MRP, or to the effect that the real market return on equity is constant, for derivation of the SL CAPM. GGT does not (and did not, in its revision proposal for the GGP Access Arrangement) propose use of the Wright approach. GGT does not (and did not) make any assumptions about whether the real return on the market is constant, or about the correlation between the risk free rate and the MRP.

The ERA's approach to estimating the risk free rate and the MRP is inconsistent with the assumptions from which SL CAPM is derived. The ERA's approach of separately and independently estimating the risk free rate and the MRP is conceptually incorrect, and therefore leads to an estimate of the return on equity which cannot, except by chance, be an estimate which contributes to the achievement of the allowed rate of return objective.

986. GGT argues that it makes no assumption about the relationship between the risk free rate and the MRP, or to the effect that the real market return on equity is constant, for its derivation of the SL-CAPM.

987. The Authority notes that studies based on overseas data such as Siegel (1998), Smithers and Co (2003) and Wright (2012) present evidence to suggest that the return on equity is more stable than the MRP, which implies a negative relationship between the MRP and risk free rate.⁴⁶⁹ However, the Authority also notes that a wide range of other studies present evidence to the contrary.

988. On balance, as presented in its Rate of Return Guidelines, the Authority is of the view that it is entirely possible that the relationship between the risk-free rate and MRP could be either pro- or counter-cyclical. There may be no consistent relationship through time, with the MRP variously exhibiting either Ibbotson or Wright style tendencies at specific times.

989. In response, in the Guidelines and in its Draft Decision for GGP, the Authority considered that it is not reasonable to constrain the MRP to a fixed range over time.

⁴⁶⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 84.

⁴⁶⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 85.

⁴⁶⁹ Smithers and Co (2003) *A Study into Certain Aspects of the Cost of Capital for Regulated Utilities in the UK*, February, p.v49; Siegel, J (1998) *Stocks for the Long Run*, McGraw-Hill Second Edition; and Wright S (2012) *Review of Risk Free Rate and Cost of Equity Estimates: A Comparison of UK Approaches with the AER*, University of London.

The Authority considered that the erratic behaviour of the risk free rate in Australia to date, and more particularly, its pronounced decline in the current economic environment, leads to a situation where the combination of a fixed range for the MRP and prevailing risk free rate may not result in an outcome that is consistent with the achievement of the average market return on equity over the long run.

990. As a consequence, the Authority estimated a range for the forward looking MRP for the Draft Decision. A range of 5.5 to 9.7 per cent was adopted as an indicative range for the 5 year forward looking MRP. The lower bound of the range was informed by the Ibbotson average excess premium whereas the upper bound of the range was informed by the upper bound of recent DGM estimates. The Authority noted that estimates of the forward looking MRP using Wright's approach falls in this range.
991. In addition, the Authority concluded that various forward looking indicators should be used, together with the Authority's judgment, to assist in determining a point estimate for the MRP from within this historic range for input to the Sharpe Lintner CAPM.
992. For this Final Decision, the Authority considers that GGT has not presented any convincing evidence to support its view that the Wright approach should not be used. The Authority notes that the Wright approach is only one of various approaches used by the Authority in estimating the forward looking MRP. The Authority is of the view that its approach to estimate the forward looking MRP is robust. Because the MRP is unobservable, it is appropriate to utilise various sources of evidence when estimating the MRP.
993. The Authority considers, as outlined above, that GGT's own method is very close to a Wright style method, albeit based on a broader set of indicators for the expected return on the market.

The historic data

994. For the Final Decision, the Authority accounts for the Ibbotson approach in its process for establishing the lower bound of a range for the forward looking MRP.
995. Turning now to the estimates themselves, the Authority first evaluated the long run average market return observed from the Brailsford, Handley and Maheswaran (**BHM**) series in the Rate of Return Guidelines.⁴⁷⁰ The BHM (2012) series spanned 128 years and so was considered the most appropriate data set for determining the long run average market return on equity and the related MRP.⁴⁷¹
996. However, concerns have been raised relating to the quality of the BHM data. Additionally, the series covers a pre- and post-imputation credit regime and so requires adjustment from 1987 onward to ensure returns are estimated on a consistent basis over the whole series.
997. With regard to data quality, the BHM historic series are claimed to be downwardly biased on account of an inadequate adjustment made to the dividend yields employed

⁴⁷⁰ T.Brailsford, J.Handley and K.Maheswaran, Re-examination of the Historical Equity Risk Premium in Australia, *Accounting and Finance*, vol. 48, 2008, pp. 81 – 83.

⁴⁷¹ T.J. Brailsford, J.C. Handley and K. Maheswaran, , The Historical Equity Risk Premium in Australia: Post-GFC and 128 Years of Data, *Accounting and Finance*, 52, 2012, p. 241.

in the data. To address this perceived issue, in 2013 NERA produced an Australian stock market total return series that readjusted the dividend yields prior to 1957.⁴⁷²

998. For the purpose of this Final Decision, the Authority has extended the BHM and NERA series through to 2015, based on the most recent data.⁴⁷³

999. The difference between the long run average (nominal) market return on equity based on the BHM and NERA series is 36 basis points (Table 76).

Table 76 BHM and NERA long-run historic nominal and real annual average market returns for 1883 to 2015 (excluding imputation credits)

	NERA approach	BHM approach	Difference
Nominal return	11.93%	11.58%	0.36%
Real return	8.89%	8.53%	0.36%

Source: NERA (2013), Brailsford, Handley and Maheswaran (2012) and ERA Analysis, June 2016.

1000. Handley's advice to the AER prepared in October 2014 raised a number of concerns regarding the analysis underlying the NERA (2013) data. In particular, he highlighted a lack of consistency between NERA's source of dividend yields and those employed by Lamberton on which the BHM series was based.⁴⁷⁴ Additionally, he highlighted that NERA had not reconciled their adjusted yields with those of Lamberton. The Authority therefore is of the view that the analysis underlying the NERA (2013) data is insufficient grounds to justify the full upward adjustment to the BHM series performed by NERA.

1001. Given the uncertainty surrounding the most appropriate adjustment to the market return series, the Authority has used an average of the two series to minimise any potential error with use of either series alone. The real returns of both series are used (Table 76), removing inflation on a consistent basis (informed by the estimates of historic inflation set out in the BHM data).⁴⁷⁵

Imputation Gross-Up Adjustment

1002. The real long term average market return of the BHM and NERA series is estimated as the 'gross return' investors in equity would expect to receive on the market. That is, it is reported inclusive of yields from capital gains and dividends. The series do

⁴⁷² NERA Economic Consulting, *The Market Risk Premium: Analysis in Response to the AER's Draft Rate of Return Guideline*, A Report for the Energy Networks Association, October 2013.

⁴⁷³ Daily ASX All Ordinaries (AS30) and Accumulation (ASA3) indices were sourced from Bloomberg. Annual outcomes were calculated consistent with the method set out by BHM in their 2012 study (see T.J. Brailsford, J.C. Handley and K. Maheswaran, *The Historical Equity Risk Premium in Australia: Post-GFC and 128 Years of Data*, *Accounting and Finance*, 52, 2012, section 2, p. 238). Bond and bill yields were extended based on the Reserve Bank of Australia statistics (90 day Bank Accepted Bills were used for 2013 through 2015 as there is no 3 month Treasury bills data for those years). Gamma was assumed at 0.4 consistent with the Authority's estimate for this Final Decision.

⁴⁷⁴ J. Handley, *Advice on the Return on Equity*, A Report prepared for the Australian Energy Regulator, 16 October 2014, p. 19.

⁴⁷⁵ T.J. Brailsford, J.C. Handley and K. Maheswaran, , *The Historical Equity Risk Premium in Australia: Post-GFC and 128 Years of Data*, *Accounting and Finance*, 52, 2012, p. 241; NERA Economic Consulting, *The Market Risk Premium: Analysis in Response to the AER's Draft Rate of Return Guideline*, A Report for the Energy Networks Association, October 2013, Table 2.7, p. 28.

not account for the introduction of imputation after 1987, so need to be adjusted up from that point on to account for the imputation credit yields.⁴⁷⁶

1003. The post-tax financial model, which is a requirement under NGR 87, compensates for required returns lost to taxation by providing an explicit allowance in the model cash flows for the taxes payable, which are then recovered in regulated tariffs.⁴⁷⁷ At the same time, the reduction for the value of imputation credits is also explicitly accounted for in the cash flows, following the requirements of NGR 87A.
1004. Therefore, applying a return on equity in the post-tax model that was not 'grossed up' for imputation credits would result in under compensation for the investor. This would result because the value of imputation credits would be removed twice, first from the rate of return, and second from the revenue cash flows.
1005. It follows that the Authority needs to 'gross up' the observed post 1987 market returns in the BHM data for the estimated value of imputation credits. Applying this in the post-tax revenue model will then ensure that the investor receives an 'after company tax, after some personal tax' return.⁴⁷⁸ The final component of the required return on equity is then received through the investor's tax return.
1006. To calculate the value of imputation credit yields in each year from 1988 (inclusive) onwards, equation (7) based on that set out by Handley (2008), accounting for theta directly, is used.^{479,480}

$$c_t = F \times d_t \left(\frac{T_t}{1 - T_t} \right) \times \theta \quad (7)$$

Where:

- θ is the value of distributed imputation credits consistent with the Authority's estimate of gamma;
- d_t is the dividend yield in year t ;
- F is the proportion of dividends that are franked; and
- T_t is the corporate tax prevailing in that year.

1007. The yield is then added on to the total return in each year 1988 through to 2014. The results for both series for the period following the introduction of imputation are the same, as the NERA and BHM total return series do not differ over this period. The average yield value of imputation credits to investors from 1988 to 2014 based on these assumptions and the real return data is an estimated 0.88 per cent.

⁴⁷⁶ T.J. Brailsford, J.C. Handley and K. Maheswaran, The Historical Equity Risk Premium in Australia: Post-GFC and 128 Years of Data, *Accounting and Finance*, 52, 2012, Table 2, pp. 237-247.

⁴⁷⁷ Gamma in the post-tax approach is factored in through a reduction in the compensation for company tax, reflecting the estimated cash flows received by investors from imputation credits through their personal tax.

⁴⁷⁸ J.C. Handley, *Further comments on the historical equity risk premium*, 14 April 2009, pp. 16-17.

⁴⁷⁹ T.Brailsford, J.Handley and K.Maheswaran, *Re-examination of the Historical Equity Risk Premium in Australia*, *Accounting and Finance*, vol. 48, 2008, p. 85. The F in equation 4 is taken to be 0.75, hence a value for theta of 0.53 corresponds to an estimate of gamma of 0.4.

⁴⁸⁰ The imputation credit regime commenced from 1 July 1987.

1008. The imputation credit yields for each year are then added to the real total returns for both the BHM and NERA series from 1988 on and the two series are then averaged (Table 77).

Table 77 Average annual imputation credit yields and grossed up arithmetic average returns (nominal, consistent with the estimate of gamma of 0.4)

	NERA	BHM	Average
Nominal returns excluding imputation yield (1883-2014)	11.93%	11.58%	11.76%
Grossed up nominal returns (1883-2014)	12.12%	11.77%	11.95%
Grossed up real returns (1883-2014)	8.89%	8.53%	8.71%
Expected inflation for AA4	1.46%	1.46%	1.46%
Grossed up nominal return commensurate with current inflation expectations	10.48%	10.12%	10.30%

Source: ERA Analysis December 2015, NERA (2013), Brailsford, Handley and Maheswaran (2012).

1009. As a final step, the grossed up expected return on equity for the market may be developed consistent with the inflation outlook for the next 5 years. The estimate of inflation for the next 5 years used in this Final Decision is 1.46 per cent. This estimate is used to inflate the resulting average real return geometrically (based on the Fisher equation). This produces a nominal estimate for the average return on the market of 10.48 per cent for the NERA based data and 10.12 per cent for the BHM based data.

1010. The average of the two series is 10.3 per cent. The Authority considers that this estimate provides the estimate for the nominal average market return on equity that is consistent with Wright's interpretation of the historic data and the current inflation outlook.

1011. This is an important marker for the market return on equity. As the available evidence supports the hypothesis that the market return on equity is mean reverting, this historic outcome from a long span of data may be used as a cross check for the long run average of the forward looking market return on equity from each regulatory period.

1012. The Authority also notes that with the current risk free rate at 1.82 per cent, the MRP that is consistent with the Wright interpretation of the data is $(10.30 - 1.82 =) 8.48$ per cent.

Upper bound of the MRP range

1013. The Authority notes GGT's position that estimates made using the DGM indicate that the expected return on the market portfolio may lie between 8.6 per cent and 13.3 per cent.⁴⁸¹ This range is derived based on various studies that have been used by the Authority in its Rate of Return Guidelines. However, the Authority notes that the Authority's own study, which provides the estimated equity market return of 8.60 per cent to 9.41 per cent, was not considered by GGT in its assessments in relation to the DGM. GGT concluded that it had taken a conservative view, and used an estimate of 11.5 per cent for the expected return on the market.⁴⁸²

⁴⁸¹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 111.

⁴⁸² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 118.

1014. The Authority disagrees with GGT's view in relation to the expected return on the market of 11.5 per cent. Given inherent instability in the estimates of the MRP or the market return on equity, the Authority is of the view that various studies should be considered to form a possible range of the MRP or the market return on equity.
1015. The upper bound of the MRP range in the Rate of Return Guidelines in 2013 was set at 7.5 per cent, based on the range for the return on the market from a range of DGMs evaluated for the Rate of Return Guidelines.
1016. As noted above, the Authority considers that this bound is not high enough given prevailing market conditions. There are two potential issues with the range for the market return on equity estimates derived from the DGM:
- first, there is a need to ensure that returns from all estimates are grossed up, so as to be on a consistent basis for input to the Authority's estimate; and
 - second, the Authority should account for the range of outcomes based on the credible DGM estimates.
1017. The Authority has revisited the DGM estimates, gathering a range of grossed up market return on equity estimates from the more recent DGM models (Table 78). Dividend growth expectations are extremely variable due to the continuous arrival of new information in the market. The latest information is therefore the most relevant to the expected return and accordingly the Authority has included estimates that are one year old at most.

Table 78 Recent estimates of the MRP using the DGM

Study/Author	Date	Dividend yield source	Theta	Risk free rate (%)	Implied MRP (%)
Frontier Economics	Jul-15	Thomson Reuters I/B/E/S	0.35	2.85	8.35
SFG	May-15	Thomson Reuters I/B/E/S	0.35	2.55	8.82
AER	May-16	Bloomberg	0.6	2.93	7.57 – 8.84
ERA	May-16	Bloomberg	0.6	1.82	8.12
Estimated range of the MRP consistent with gamma of 0.4			0.55		7.6 - 8.8

Sources:

Frontier Economics, *An updated estimate of the required return on equity*, Report prepared for Ergon Energy, July 2015, p. 6.

SFG Consulting, *Updated estimate of the required return on equity*, Report for SA Power Networks, May 2015, p. 4.

Australian Energy Regulator, *Final decision: AusNet Services distribution determination 2016 to 2020*, Attachment 3: Rate of return, May 2016.

Economic Regulation Authority estimate for this Final Decision, 31 May 2016.

1018. Many of studies in Table 78 use a franking proportion of 0.75 to gross up returns. The commensurate estimate of theta for that franking proportion, which delivers a gamma of 0.4, is just under 0.55. Based on these results, the Authority judges that a

range for the MRP commensurate with a gamma of 0.4 is 7.6 to 8.8 per cent. The lower bound is established by the AER's May 2016 lower bound estimate for a theta of 0.55, while the upper bound of 8.8 per cent also is supported by the AER's most recent studies. The lower bound has increased compared to that adopted in the Draft Decision. This is due to removal of the Authority's 2013 estimate. On the other hand, the upper bound has declined with the removal of the earlier 2012 Capital Research estimate, which is considered no longer current.

1019. In addition, the Authority updated its two stage DGM estimate (Box 2), to be current as at May 2016 (which is the date of the estimates for this Final Decision). The model was used to develop the range for the MRP in the Rate of Return Guidelines.⁴⁸³

Source: Australian Energy Regulator and ERA Analysis, December 2015.

Box 2 The two stage DGM

The return implied by the Gordon DGM is based on a forecast dividend based on a forecast dividend growth rate to calculate a forecast dividend yield and then augments this yield with the growth forecast itself. This is shown in equation (8).

$$r_e = \left(\frac{E(D_1)}{P_0} \right) + g \quad (8)$$

Where $E(D_1) = D_0(1 + g)$ and is the last dividend per share paid.

The Authority's current estimate of the DGM is based on a simple two stage approach as outlined in equation (9).

$$P_0 = \frac{m \times E(D_0)}{(1+k)^{m/2}} + \sum_{t=1}^N \frac{E(D_t)}{(1+k)^{m+t-0.5}} + \frac{E(D_N)(1+g)}{(1+k)^{m+N-0.5}} \quad (9)$$

Where:

D_t is current price the of the equity index;

m is the fraction of the current year remaining;

t is the dividend per share expected in the current year;

$E(D_t)$ is the dividend per share expected years into the future;

k is the return on equity implied by the model;

N is the year of the furthest out dividend forecast; and

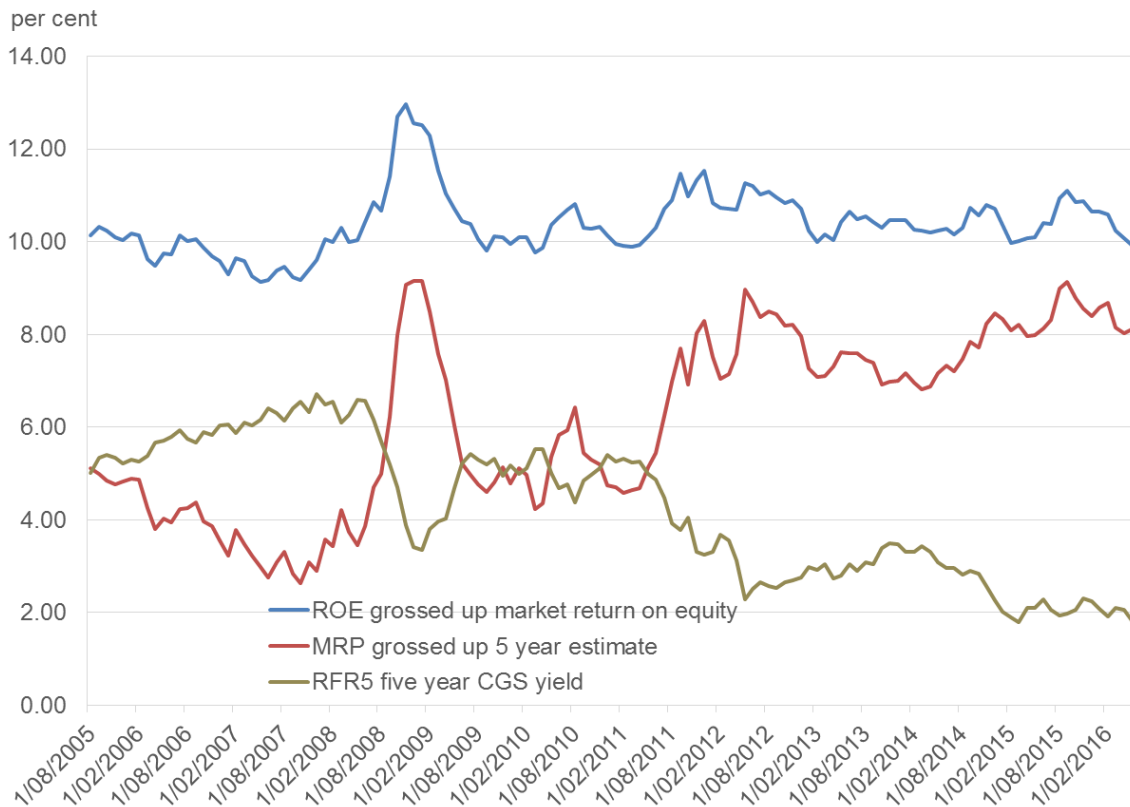
g is the long run dividend growth rate.

Monthly net dividend per share forecasts for the All Ordinaries Index were sourced from Bloomberg for the current year, the next year and the year after. The monthly closing price for the All Ordinaries index was also sourced from Bloomberg.

⁴⁸³ Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, p. 122.

1020. The assumption for the long run dividend growth rate in the updated DGM model, g , at 4.6 per cent, is consistent with the analysis in Lally's 2013 study.⁴⁸⁴ This equates g to the estimated long run nominal GDP growth, of 5.6 per cent, less 1.0 per cent to account for new share issues and new companies. The resulting grossed up DGM estimate of the required return on the market is 9.94 per cent as at 31 May 2016.
1021. The corresponding results for g of 4.6 per cent – when combined with the historic consensus dividend forecasts and share prices from Bloomberg going back to 2005 – are shown in Figure 7.

Figure 7 Dividend Growth Model implied return on equity: All Ordinaries Index (monthly, grossed up)



Source: Bloomberg and ERA analysis, June 2016.

1022. The implied expected market return on equity (grossed up for imputation credit yields) typically fluctuates, in this case between 9 and 11 per cent, only breaking higher in periods of perceived heightened risk, such as from 2008 to 2009 and from 2011 to 2012. The model indicates that, from the third quarter of 2015 through to May 2016, expected returns declined somewhat marginally.
1023. From a Gordon growth model perspective expected returns are driven by current dividend yields and growth expectations. Figure 8 shows that dividend yields were at a relatively high level for a period before falling since the third quarter of 2015. Given that long run growth expectations are fixed at 4.60 per cent and that the stock market has been fairly volatile whilst exhibiting no clear growth trend over this period, it appears that a combination of a fall in earnings growth expectations over the

⁴⁸⁴ M. Lally, *The Dividend Growth Model*, 4 March, 2013, p. 17.

medium term, and falling dividends payments are the main driver of the decline. In turn, this suggests that uncertainty surrounding growth prospects is elevated.

1024. The monthly observation for 31 May 2016 at 9.94 per cent is below the middle of the 'more typical' range for the return on equity (that is, excluding the Global Financial Crisis (**GFC**) type periods). It is at the 20th percentile of the observations reported in Figure 7. It is also 0.1 per cent down on the Authority's 31 March 2015 estimate undertaken for its ATCO Final Decision.
1025. Deducting the Authority's on-the-day estimate of the 5 year risk free rate, of 1.82 per cent, from the return on the market for the end of May 2016, gives a forward looking 5 year MRP of 8.12 per cent, which also may be observed in Figure 7.⁴⁸⁵ It can also be seen, that more recently, the decline in the risk free rate has no longer been able to offset the fall in expected returns and the MRP on this measure has begun to retreat from its peak in October 2015. Despite this, the MRP series suggests that the current forward looking estimate is towards the top end of its typical range, significantly exceeded only by estimates at the height of the GFC. The major difference between the current MRP and that in the GFC period is that more recently low risk free rates are driving the premium.
1026. The estimates from the DGM are sensitive to input assumptions, particularly the long run growth rate. Varying the long run growth rate, g , from 4.0 to 5.1 per cent leads to a range for the MRP estimate at an *indicative* May 2016 of 7.55 to 8.59 per cent.
1027. The Authority notes that DGM estimates are recognised to have shortcomings, including that:⁴⁸⁶
- analyst forecasts (which underpin some of the studies reported in Table 78 and which will often be incorporated in the 'consensus' estimates) have a tendency to be upwardly biased, as they are often based on over-optimistic expectations for target prices and earnings;
 - DGMs may not fully reflect market conditions if firms follow a stable dividend policy;
 - DGMs do not capture non-dividend cash flows, such as share repurchases or dividend re-investment plans.
1028. The Authority notes that there is no clear agreement among experts as to the best form for the DGM, or its input assumptions. For that reason, the Authority has regard to a spectrum of recent studies.
1029. Ideally, DGM return on equity estimates should be based on the most current on-the-day dividend forecasts. However, the Authority notes that the number of studies estimating return on equity using the DGM in Australia is limited and that it is not possible to update all of the various estimates available. Therefore, to allow for a

⁴⁸⁵ Lally considers that deducting the risk free rate with a term of 5 years from a DGM estimate will tend to over-estimate the MRP (see M. Lally, *Review of arguments on the term of the risk free rate*, 20 November 2015, p. 21). This is based on the view that consistency between the perpetuity nature of the DGM and the associated estimate of the MRP requires a deduction of the 10 year risk free rate, rather than a 5 year risk free rate. The Authority notes that the majority of estimates in Table 78 deduct a 10 year risk free rate in that way. However, the Authority considers that expectations for the 5 year and 10 year MRP can diverge at any point in time. For that reason, the Authority retains the estimate of the MRP reported here as being one of the estimates made using the DGM.

⁴⁸⁶ See for example M. McKenzie and G. Partington, *Report to the AER, Part A: Return on equity*, October 2014, pp. 26-31.

broad range of information, DGM return on equity estimates since 2015 have been accounted for. The Authority is of the view that it is appropriate that the most recent estimates (since mid-2015) provide the more relevant and up-to-date information as presented in Table 78.

1030. Overall, the Authority infers from the DGM MRP information before it that the market expectation is that the MRP has moved upwards after 2011 due to declines in the risk free rate as discussed in paragraph 1025.
1031. Figure 7 suggests that the assumed range for the estimate of the grossed up MRP from the DGM, consistent with the estimate of gamma of 0.4 adopted for this Final Decision, of 7.6 to 8.8 per cent, is not unreasonable.
1032. The Authority adopts this range for the DGM estimate for this Final Decision. The upper bound of the DGM range – 8.8 per cent – provides the upper bound of the Authority’s overall range for the MRP. However, as indicated, the Authority considers that this estimate of 8.8 per cent is a less relevant estimate in comparison with all other estimates as presented in Table 78 for reasons outlined in paragraphs 1027 to 1028.

Lower bound of the MRP range

1033. As noted above, for this Final Decision, the Authority has utilised the ‘Ibbotson’ approach to inform its estimate for the lower bound for the range of the forward looking MRP. The Ibbotson approach uses the concept of a long run average MRP as today’s best estimate of the MRP in future and combines this with an on the day risk free rate to arrive at an on the day estimate of the market return on equity.
1034. For consistency, the estimate of the long run average MRP must reflect the term of the risk free rate used in the Sharpe Lintner CAPM, which is 5 years for this Final Decision. For this purpose the Authority has made an estimate of the historic average MRP with reference to 5 year bonds, by taking an average of the historic MRP annual estimates referenced to bonds and bills.⁴⁸⁷
1035. The nominal 5 year MRP estimates (grossed up for imputation credit yields) were calculated on both the NERA and BHM data by subtracting relevant bond and bill yields from the nominal NERA and BHM annual grossed up returns. The average arithmetic and geometric means of the resulting four series were then calculated (Table 79). Averaging the bill and bond MRPs for both NERA and BHM produces 5 year MRP estimates that range between 5.6 and 6.5 per cent for the arithmetic means and 3.7 and 5.2 per cent for the geometric means.
1036. The Authority notes that there are mixed views as to the best estimator of historic returns. Arithmetic average returns will tend to overstate returns, whereas geometric

⁴⁸⁷ In the BHM data, bills are around 3 months and bonds are around 10 years, thus the average term of the two estimates is approximately 5 years (see T.Brailsford, J.Handley and K.Maheswaran, Re-examination of the Historical Equity Risk Premium in Australia, *Accounting and Finance*, vol. 48, 2008, pp. 81 - 83). Taking the average of the historic annual MRPs with respect to bonds and bills will give an estimate of the annual MRP that is close to a 5 year term. The Authority notes Lally’s observation that this is likely to underestimate the 5 year risk free rate due to the concavity of the typical yield curve (see M. Lally, *Review of Arguments for the Term of the Risk Free Rate*, 18 November 2015, p. 8). However, the effect is to slightly overstate the historic estimate of the MRP. Lally notes that there will only be a few basis points in it. Accordingly, the Authority considers that the resulting estimate remains reasonable, making use of the available information.

returns will tend to understate returns.⁴⁸⁸ An unbiased estimator is likely to lie somewhere between the two estimates. (That said, the Authority's view is that arithmetic means are preferred in most circumstances.)

Table 79 Estimates of bill and bond-based 5 year grossed up nominal average Market Risk Premiums

Period	BHM	NERA	Average	BHM	NERA	Average
	Arithmetic mean			Geometric mean		
1883-2015	6.72%	6.36%	6.54%	5.34%	4.99%	5.17%
1937-2015	6.06%	6.11%	6.08%	4.17%	4.22%	4.19%
1958 - 2015	6.52%	6.52%	6.52%	4.10%	4.10%	4.10%
1980 - 2015	6.14%	6.14%	6.14%	3.74%	3.74%	3.74%
1988 - 2015	5.58%	5.58%	5.58%	3.85%	3.85%	3.85%

Source: Brailsford, Handley, Maheswaran (2012), NERA (2013) and ERA Analysis, December 2015.

1037. The Authority in this instance is looking for a reasonable lower bound for its range. As noted, the Authority is inclined to the arithmetic mean as a preferred estimator. A lower bound informed by the lowest arithmetic mean estimate from Table 79 would be 5.6 per cent. Despite this, the geometric mean should be given some weight because it conveys the logic of reinvestment and compounding.

1038. The Authority considers that 5.4 per cent provides a reasonable lower bound, being the rounded average of the lowest arithmetic mean of 5.58 per cent and the highest geometric mean of 5.17 per cent.

Range for the MRP

1039. The Authority has adopted a range for the 5 year forward looking MRP for this Final Decision of 5.4 to 8.8 per cent. The:

- lower bound of the range is informed by the Ibbotson average excess premium; and
- upper bound of the range is informed by the upper bound of recent DGM estimates.

1040. This range is wider than that informed by the historic estimates alone (5.4 to 8.5 per cent based on Ibbotson and Wright respectively).⁴⁸⁹

1041. The Authority uses forward looking indicators and its judgment to assist in determining a point estimate for the MRP from within this historic range for input to the SL CAPM.

⁴⁸⁸ M. McKenzie and G. Partington, *Supplementary report on the equity MRP*, 22 February 2012, p. 5.

⁴⁸⁹ The upper bound for the historic range of the MRP is given by the Wright estimate, which is the 10.30 per cent nominal return from Table 21, minus the current estimate of the risk free rate, which is 1.82 per cent. The resulting upper bound for the historic estimates given the inflation outlook at the current time is 8.48 per cent, or 8.5 per cent rounded.

Forward looking indicators (conditioning variables)

1042. The Guidelines set out that forward looking indicators approach would be used to condition the point estimate of the MRP within the estimated range, for the five years of the access arrangement.⁴⁹⁰

The Authority considers that a range of other information is relevant for determining the point estimate of the MRP... this additional information will be considered as to whether it implies a revision, upwards or downwards, to the midpoint of the MRP range.

1043. In light of this the Authority considers it preferable to take a non-parametric approach, estimating an upper and lower bound at each determination and considering the position of the MRP relative to the mid-point. Mechanistic calculation and application of distributions may not be robust due to issues associated with non-stationary and unrepresentative data series. There are also qualitative issues as to how forward looking data is viewed and interpreted by market participants.

1044. For this Final Decision, four forward looking indicators of market conditions for the next 5 years – that are readily available and consistent with the date of the 31 May 2016 estimate for the rate of return – are adopted to inform the point estimate. These are:

- dividend yields on the All Ordinaries, a financial metric;
- interest rate swap spreads on 5 year bonds, which can be viewed as a type of term structure variable;
- default spreads, another term structure variable that makes forward looking expected returns explicit; and
- the Australian Stock Exchange (ASX) 200 Volatility Index (**VIX**) which measures investors' perceptions of equity market risk.⁴⁹¹

1045. In addition, the Authority considers the May 2016 outlook for economic conditions in the Reserve Bank of Australia's Statement of Monetary Policy to be useful.

Dividend yields

1046. Bloomberg's dividend yield series provide a forward looking indicator of returns from dividends (excluding growth).⁴⁹²

⁴⁹⁰ Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, p. 216. The Authority undertook that step in the indicative example in the Guidelines in Step 4, but now considers that it is better placed in Step 2. However, the use of forward looking indicators is not a 'new development' (ATCO Gas Australia, *ATCO Gas Australia's Response to the ERA's Draft Decision*, 22 December 2014, Appendix 9.1, p. 22).

⁴⁹¹ The default spread was calculated as the difference between the 5 year AA Australian corporate Bloomberg fair value curve and 5 year Commonwealth Government Bond index. These series are the most liquid, complete and up to date default spread measures available to the Authority and so are considered the most efficient reflection of market price movements.

⁴⁹² The Authority notes that dividend yields contribute to the DGM estimates for the expected return on the market. Their use here is intended to provide an indication of forward earnings relative to the past, and hence provide an indication of the forward looking MRP relative to the range derived from the historic estimates.

1047. The dividend yields referred to above are expressed as equation (10) below.

$$\text{Dividend Yields}_0 = \left(\frac{D_0}{P_0} \right) \quad (10)$$

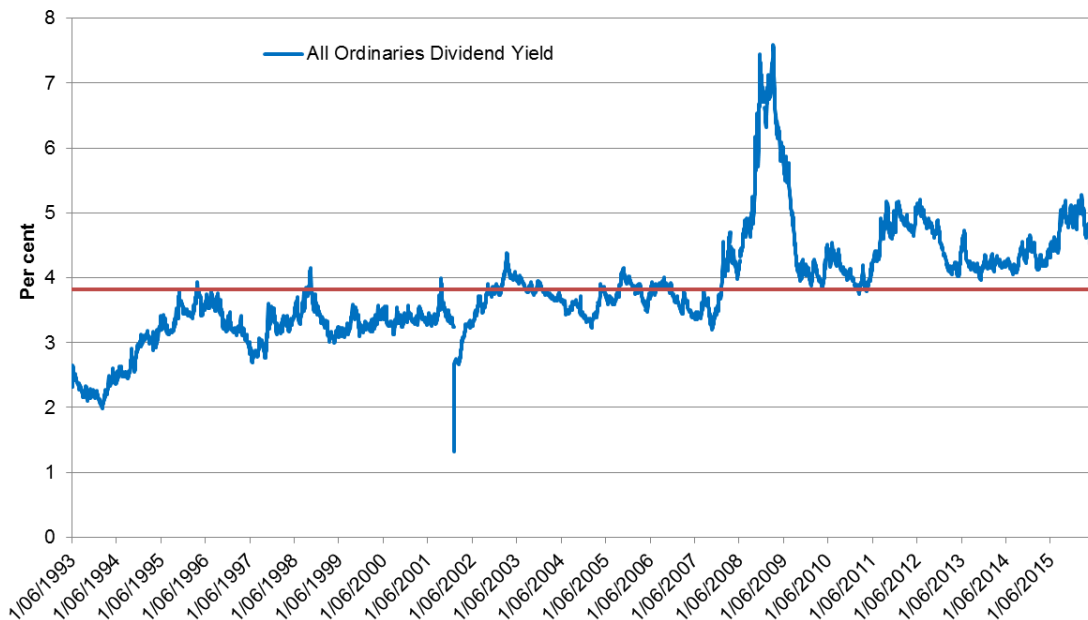
where:

- D_0 is the latest net dividend paid; and
- P_0 is the latest price of the equity in question.

1048. Recent dividend yields at the end of May 2016 were 4.46 per cent, above the longer term average of 4.1 per cent (since 1 January 2000 – see Figure 8 below).

1049. The Authority considers that dividend yields support an estimate for the forward looking 5 year MRP that is above the mid-point of its historic range.⁴⁹³

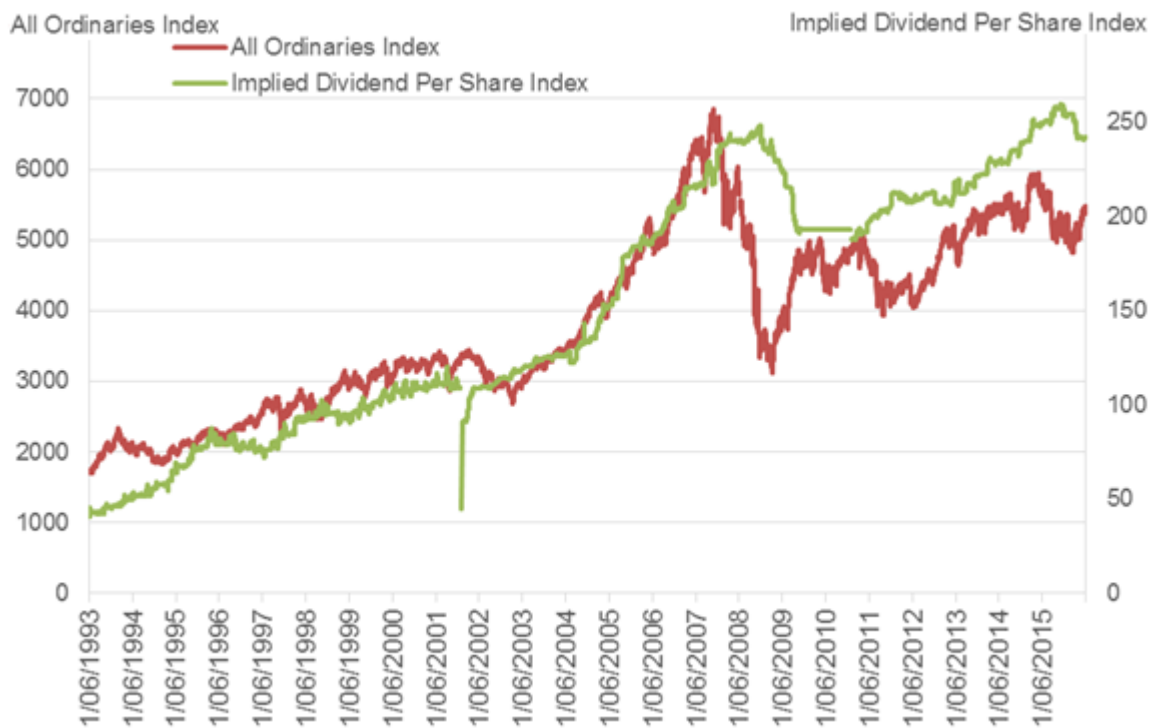
Figure 8 ASX All Ordinaries dividend yields



Source: Bloomberg EQY_DVD_YLD_12M, ERA Analysis, June 2016.

1050. As noted in paragraph 1023, Figure 8 shows that dividend yields were at a relatively high level for a period before falling since the third quarter of 2015. Given that the All Ordinaries index has been fairly volatile whilst exhibiting no clear growth trend over this short period (see Figure 9), it appears that the main driver of the decline is falling dividends per share. This supports the view that earnings growth is declining and that the growth outlook is low and uncertain. Again, from a Gordon growth model perspective, declining earnings growth has a negative effect on expected market returns and MRP, while increased uncertainty has a positive effect.

⁴⁹³ The current dividend yields are above the 60th percentile of the historic observations in Figure 8.

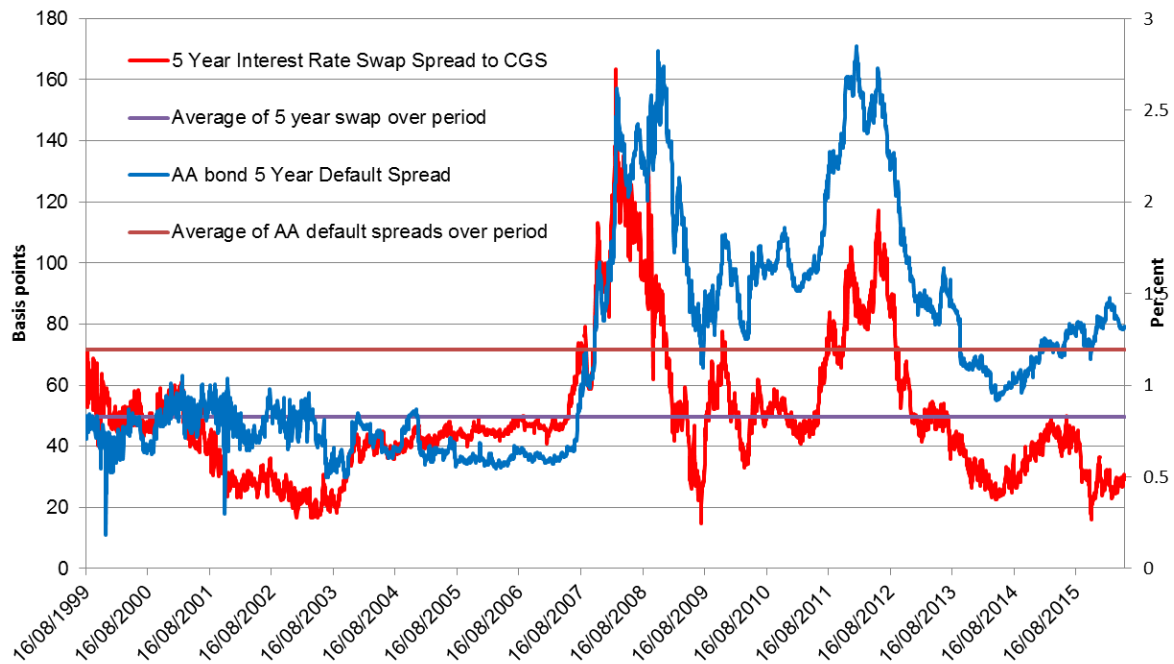
Figure 9 All Ordinaries Index and Implied Dividend

Source: ERA Analysis, Bloomberg 2016.

Default and Interest Rate Swap Spreads

1051. The 5 year interest rate swap spreads capture, among other things, the credit risk of financial institutions. The Interest Rate Swap (**IRS**) rate is the index rate at which financial institutions borrow and lend from each other. This rate is higher than the CGS yield of an equivalent term with the 'spread' over the CGS capturing the credit risk of financial institutions.
1052. Figure 10 below shows that the 5 year AA rated bond default and IRS spread move in a very similar fashion which tends to confirm that they are subject to similar market risk.⁴⁹⁴

⁴⁹⁴ The Authority notes that the majority of bonds that constitute the Bloomberg AA fair value curve are those issued by financial institutions. As at 18 March 2015, 89 per cent of the constituent bonds are issued by issuers classified as financials.

Figure 10 5 Year interest rate swap versus 5 year default spread

Source: Bloomberg and ERA Analysis, June 2016.

1053. The 5 year interest rate swap spread (Figure 10, LHS, basis points) appears to have returned below pre-2007 levels. The current spread suggests that levels of risk in the financial sector are fairly benign and thus there is no justification for a relatively high MRP on the basis of financial system risk.
1054. The default spread (Figure 10, RHS, per cent) has not returned to pre-crisis levels and also has been trending upward, diverging from the recent trend in the swap spread. This suggests that in the broader corporate sector (other than financials) levels of credit risk are still perceived to be relatively high, although still below the levels associated with 2008 to 2009 and 2011 to 2012. The current estimate – at 1.31 per cent – is above the mid-point of the range of more typical observations, which is 0.5 to 1.7 per cent.⁴⁹⁵ This supports the view that uncertainty and risk stemming from the corporate sector is above average levels warranting slightly elevated risk premiums.
1055. The Authority considers that default spreads therefore support an MRP estimate somewhat above the mid-point of the historic range.

Stock Market Volatility Index

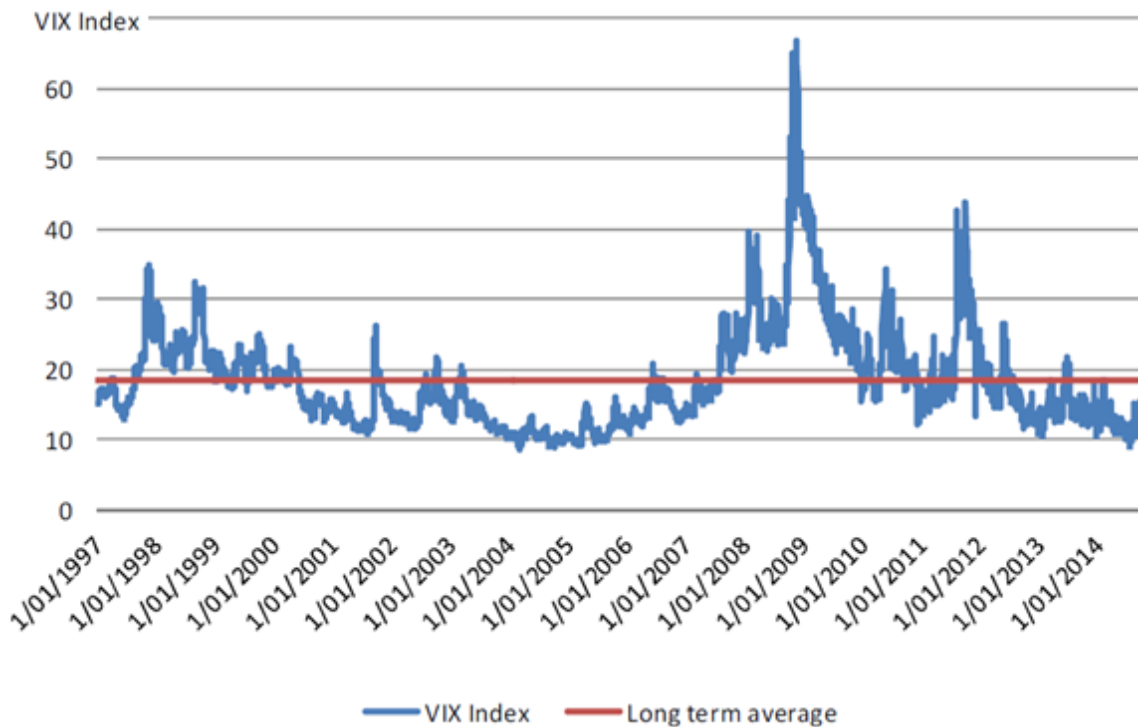
1056. The benefit of using stock market volatility indices is that it represents a different class of index to those discussed already. As outlined above, the IRS spreads and default spreads convey similar information while the DGM is an extension of dividend yields. Using different versions of similar indicators introduces the risk of double counting, or over-weighting measures that contain the same information. A volatility index of some variety provides a differentiated measure of risk as it is concerned with variance

⁴⁹⁵ The most recent estimate is at the 62nd percentile of all the observations in Figure 10.

(uncertainty around return outcomes) as opposed to levels of return or yields. The VIX therefore is used as measure of forward looking risk in this Final Decision.

1057. Although useful for gauging future perceptions of risk stemming from forecast variability in returns, the Authority has access to only a limited history, dating back only to 2008. However, the AER has sourced a longer term series of the ASX 200 VIX index which allows for more meaningful historical comparison between the most recent level of the VIX and previous levels back to 1997. This series is reproduced in Figure 11.⁴⁹⁶

Figure 11 Implied Volatility (ASX200 VIX) Over Time



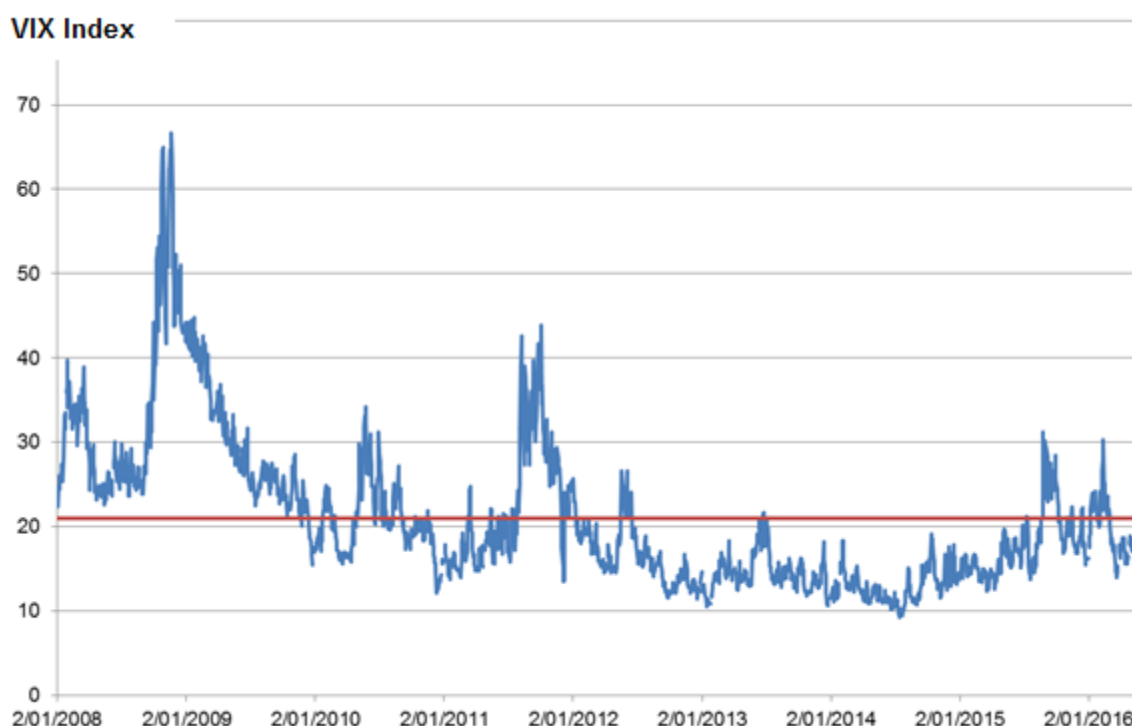
Source: Australian Energy Regulator⁴⁹⁷

1058. The series around 2014 reaches a level which is approximately on par with the low points observed over 2004 to 2005. More recently the series has begun to revert toward the long term average level observed. The series has been updated to 2 April 2015 in Figure 11 with data that is accessible to the Authority.⁴⁹⁸

⁴⁹⁶ Australian Energy Regulator, *Jemena Gas Networks (NSW) Ltd Access Arrangement 2015-2020: Draft Decision*, Attachment 3: Rate of Return, November 2014, p. 205. The Authority is not able to access this proprietary data as it is no longer available. The Authority has been advised by the Australian Energy Regulator that the series prior to 2008 was sourced from Bloomberg as the CITJAVIX Index, which is no longer provided by Bloomberg. The AER's chart of this data is therefore reproduced here.

⁴⁹⁷ The Authority has been advised by the Australian Energy Regulator that the series prior to 2008 was sourced from Bloomberg as the CITJAVIX Index, which is no longer provided by Bloomberg.

⁴⁹⁸ Without access to the underlying data for the full series, the Authority is unable to reproduce the exact percentile value for the most recent observation over the whole data range. However, close inspection of the combined series in Figure 11 and Figure 12 suggests that the 2 April 2015 outcome is somewhat below the 50th percentile.

Figure 12 Implied Volatility (ASX200 VIX): 2 January 2008 to 31 May 2016

Source: Bloomberg and ERA Analysis, June 2016.

1059. This series suggest that the VIX is below the long term median value in the observed data in Figure 11 and Figure 12. This supports the choice of an MRP that is below the mid-point of the historic MRP range.

The RBA's outlook

1060. The Authority notes that the Reserve Bank of Australia's May 2016 Statement on Monetary Policy (**SMP**) cites that economic conditions in Australia's major trading partners has eased of late with a particular emphasis on the moderation of growth in China. While the SMP notes China's stimulatory policy settings, it expressed concern relating to excess capacity in key sectors of the Chinese economy.⁴⁹⁹

1061. Concerning the domestic economy, employment indicators are mixed, while mining investment is expected to fall. However, project completions are expected to support further growth in exports along with contributions from the service exports sector. Wage growth is very low and there is evidence of spare capacity. This supports the uncertain outlook around future growth.⁵⁰⁰

1062. The uncertain growth will be a factor in market expectations, driving a somewhat higher MRP as compared to more normal conditions.

⁴⁹⁹ Reserve Bank of Australia, *Statement on Monetary Policy*, May 2016, pp. 5-6.

⁵⁰⁰ Reserve Bank of Australia, *Statement on Monetary Policy*, May 2016, p.27.

The point estimate of the MRP

1063. The forward looking MRP for input to the Sharpe Lintner CAPM is unobservable. The Authority has therefore accounted for a range of information in order to estimate the MRP. That information includes:
- a range for the MRP that reflects historic excess returns;
 - which is combined with conditioning variables which indicate expectations for relative risk over the regulatory period – interest rate spreads, market volatility, as well as current expectations for dividend yields; and
 - a range for the forward looking MRP that reflects the DGM model.
1064. In considering that information for this Final Decision, the Authority has concluded that the MRP can exhibit marked variation, depending on circumstances. Given that marked variation, the Authority considers that it should not unduly constrain the range for the MRP.
1065. The resulting estimated range for this Final Decision is 5.4 per cent to 8.8 per cent, which spans:
- the range of the MRP implied by the historic data, which is 5.4 per cent to 8.5 per cent;
 - the range for the MRP implied by recent estimates from the DGM, which is 7.6 per cent to 8.8 per cent.
1066. With the range established, the Authority then exercises its judgment, to determine a point estimate that is consistent with prevailing conditions in equity markets as at 31 May 2016 (which is the end of the averaging period for this Final Decision).
1067. With regard to the historic estimates, the Authority draws on a range of forward looking indicators to assist its determination of the most reasonable point estimate of the MRP from within the estimated range:
- The VIX data indicate that the 5 year post-tax nominal MRP is below the mid-point of the historic range.
 - The spread data for the corporate sector supports a forward looking estimate that is somewhat above the mid-point of the historic range (although it is clear that banking sector risk has declined significantly).
 - Dividend growth data also suggest an estimate that is above the mid-point of the range.
1068. The conditioning data, taken together, suggest that the forward looking MRP should be somewhat above the mid-point range for the MRP using historic data, which is 7.0 per cent. The Authority also notes the current outlook for market conditions more broadly also supports this view.
1069. In addition, the Authority notes that a forward looking MRP estimated using the DGM falls within a range of 7.6 per cent and 8.8 per cent. However, the Authority considers that it is widely accepted that an estimate of the market return on equity (and by extension the MRP) developed using the DGM tends to be over-estimated. In addition, at the same time, the Authority recognises that the DGM estimates need to be tempered to account for a range of issues which imply upward bias, as indicated above, in the resulting estimates of the MRP.

1070. On balance, taking all the above mentioned information into account, the Authority exercises its judgment to determine an estimate of the forward looking post-tax nominal MRP for this Final Decision of 7.4 per cent, as reflecting the expectations of the market as at 31 May 2016.

1071. With this estimate, the Authority has accounted for:

- the information provided by the forward looking indicators relative to their history, which suggest an MRP that is around the mid-point of the historic range;
- the implied MRP from a range of recent DGM estimates, which suggest that expected returns are between the mid-point and the upper bound of the overall range, noting:
 - that the DGM outcomes do not exactly match the 5 year outlook adopted for this Final Decision;
 - the recognised shortcomings of the DGM approaches which lead to upward bias in the estimates;
 - differences in approach and vintage, which render some estimates more relevant than others;
- the current outlook for market conditions more broadly.

1072. The Authority is satisfied that the resulting estimate meets the requirements of the NGL and NGR. In particular, the Authority is satisfied that the estimate for the MRP of 7.4 per cent reflects prevailing conditions in the market for equity funds and that it contributes to the achievement of the allowed rate of return objective, as required under NGR 87.

Step 3: Estimating the return on equity using the Sharpe-Lintner CAPM

1073. Utilising the Sharpe Lintner CAPM, informed by the point estimates for the parameters identified above, the Authority calculates that the estimated return on equity for the GGP benchmark efficient entity, consistent with the 31 May 2016 averaging period date, is:

$$\text{Estimated return on equity} = 1.82 \text{ per cent} + 0.7 \times (7.4 \text{ per cent}) = 7.00 \text{ per cent}$$

1074. The implied return on the market for the average firm with a beta of 1 is 9.22 per cent.

1075. The equity risk premium for the benchmark efficient entity is 5.18 per cent.

Step 4: Cross checking the estimate of return on equity

1076. The Authority notes GGT's view that an absence of comparators, which can be shown to have a degree of risk similar to that of GGT in its provision of the reference service using the Covered Pipeline, makes the task of cross checking the return on equity difficult.⁵⁰¹

1077. The Authority notes GGT's argument in the initial proposal that its estimated return on equity of 11.24 per cent is similar to the estimate of the return on equity for a listed

⁵⁰¹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 118.

networks business obtained using the DGM (11.0 per cent).⁵⁰² In addition, GGT considered that its proposed estimate of the return on equity is also consistent with SFG's recent estimate of the market return using the Fama French model, which produced the estimate of 10.9 per cent.

1078. The Authority is not convinced that GGT's crosschecks are supportable. All of the cross check studies were prepared by its consultant, SFG. The studies rely solely on that consultant's estimates. With regard to the DGM, the Authority notes that SFG's estimates are at the higher end of the range of recent DGM estimates (Table 78). The Authority does not consider that the Fama French model is a relevant model in the Australian context.⁵⁰³
1079. GGT does not examine cross check estimates from third parties which use the SL-CAPM. The Authority notes that the 2013 KPMG Valuation Practices Survey found that 82 per cent of respondents used the CAPM, noting that it 'is the most popular model being used to derive a cost of equity estimate, with all participants always or sometimes using this model'.⁵⁰⁴
1080. The Authority set out in the Rate of Return Guidelines that it would consider a range of other material as a test for reasonableness of the estimate derived in Step 3.⁵⁰⁵ That consideration follows.

Other evidence on the risk free rate

1081. The estimate of the risk free rate is the 20 day average of the 5 year yield on Commonwealth Government Securities. Similarly, the base rate for the return on debt is estimated from the 20 day average of the 5 year interest rate swap. As these estimates are observed from the market, the Authority considers that they are robust.
1082. The Authority notes that at 1.82 per cent, the CGS estimate is lower than the average of 5 year rates over recent decades, reflecting a concerted downward trend. The Authority considers that the prevailing 5 year CGS estimate is the best predictor for the next five years. On this basis, the Authority considers that 1.82 per cent as at 31 May 2016 is the best estimate for use in the Sharpe Lintner CAPM.

Other evidence on the market risk premium and the implied market return on equity

1083. For this Final Decision, the Authority has taken account of forward looking information to inform its estimate of the point MRP, including:
- a range for the MRP that reflects historic excess returns;
 - forward looking conditioning variables – measures of risk based on interest rate spreads and market volatility, as well as current expectations for dividend yields; and

⁵⁰² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 119.

⁵⁰³ For a detailed consideration of the relevance off the Fama French Model, refer to the Authority's 2015 decision on the ATCO Gas Distribution System (Economic Regulation Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, as amended 10 September 2015, p. 234).

⁵⁰⁴ KPMG, *Valuation Practices Survey 2013*, 2013, p. 7.

⁵⁰⁵ Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, Appendix 29 – Other relevant material.

- a range for the forward looking MRP that reflects the DGM model.
1084. The Guidelines noted that a range of other material is considered relevant which may provide a cross check for the estimate of the MRP and the resulting estimate of the return on equity:
- views of valuation experts and surveys;
 - decisions of other regulators; and
 - the relationship between the return on equity and the return on debt.
1085. A threshold issue in any comparison involves ensuring that estimates are on a consistent ‘apples with apples’ basis. Key issues in this context involve:
- the term of the estimates; and
 - the treatment of imputation.

Term of the estimates

1086. As noted above, the Authority is of the view that the term over which the rate of return expectations should be assessed is 5 years, so as to match the regulatory period. This is consistent with the Authority’s intention to account for the ‘present value’ principle.
1087. The 5 year forward looking horizon contrasts with that of independent analysts. Independent analysts tend to adopt a longer horizon for their discount rates because they are typically valuing assets on the basis of the cash flows to perpetuity. In Australian financial markets, 10 year government bonds are among the most common ‘long maturity’ bonds, and thus traditionally have been used as a proxy for the long term return on debt to perpetuity. Similarly, analysts estimate the equity premia component over a longer term horizon, involving 10 years or more.⁵⁰⁶
1088. A 10 year view tends to ‘smooth’ out the large, but infrequent spikes in expected risk premia that are more evident in shorter investment horizons. The implication is that risk premia under a 5 year approach are generally lower than the 10 year average, for much of the time. However, the 5 year estimates are more volatile than the 10 year estimates, as they are more sensitive to fluctuations in prevailing market conditions. Over time, the average of the many 5 year observations should converge toward the average risk premium observed under a longer perpetuity approach.
1089. The Authority’s 5 year estimates therefore are not directly comparable to the long run estimates commonly developed by independent analysts.
1090. Lally endorses exactly this view when he responds to similar arguments for the Queensland Competition Authority (**QCA**) in the context of the risk free rate:⁵⁰⁷

This line of argument presumes that the QCA is engaged in the same exercise as the valuers and therefore ought to be using the same parameter values. However the two exercises are fundamentally different, and this readily explains the difference in rates. The QCA resets the risk-free rate every few years (typically five years) and therefore need only be concerned with the prevailing risk-free rate for the next five years. By contrast these valuers are conducting DCFs for businesses with infinite-life cash flows

⁵⁰⁶ The DGM, for example, estimates the discount rate that equates the future stream of cash flows to the current share price.

⁵⁰⁷ M. Lally, *Response to submissions on the risk free rate and the MRP*, 22 October 2013, p. 24.

and therefore would be interested in the prevailing term structure of risk-free rates for terms out to infinity. Since observed rates exist only out to ten years, these valuers would have to speculate upon the rest of the term structure, and then invoke an average rate if they used only one rate (as they do). Since the term structure is currently markedly upward sloping, the term structure beyond the five year term invoked by the QCA will be in excess of this regulatory rate and therefore the average rate invoked by the valuers over the entire term structure would be in excess of the five-year rate invoked by the QCA.

1091. Seeking comparability, the Authority notes that the long term perpetuity estimate is similar in concept to the Wright estimate of the return on the market. To develop a Wright estimate the return on equity for the market to perpetuity, the Authority applies an estimate of inflation consistent with the mid-point of the Reserve Bank of Australia's target range, which is 2.5 per cent, to its Wright estimate of the long run real market return on equity, grossed up, which is 8.71 per cent.⁵⁰⁸ The resulting nominal estimate of the return on equity for the market to perpetuity is 11.43 per cent (grossed up – Table 80).

Table 80 Average annual imputation credit yields and grossed up arithmetic average returns (nominal, consistent with the estimate of gamma of 0.4)

	NERA	BHM	Average
Nominal returns excluding imputation yield (1883-2015)	11.93%	11.58%	11.76%
Grossed up nominal returns (1883-2015)	12.12%	11.77%	11.95%
Grossed up real returns (1883-2015)	8.89%	8.53%	8.71%
Expected inflation to perpetuity	2.50%	2.50%	2.50%
Grossed up forward looking return on the market to perpetuity	11.61%	11.25%	11.43%

Source: ERA Analysis, NERA (2013), Brailsford, Handley and Maheswaran (2012)⁵⁰⁹

1092. With a long enough span of data, however, the Authority expects that the average of the 5 year estimates of the market return will approach this long run average.
1093. Therefore, the Authority remains of the view that its 5 year forward looking estimate is not directly comparable to the perpetuity estimates developed by independent analysts for valuing firms. It is more appropriate to compare the long term average estimate of the return on equity – such as the Wright estimate underpinning the Authority's estimate – with those of independent analysts.

Adjustments for imputation credits

1094. A further consideration when comparing estimates relates to the treatment of imputation credits.

⁵⁰⁸ Note that this Table 80 is the same data as Table 77 above, apart from the forward looking inflation rate (2.5 per cent here to perpetuity, as opposed to the 1.46 per cent expectation for the next five years in Table 77).

⁵⁰⁹ T.J. Brailsford, J.C. Handley and K. Maheswaran, The Historical Equity Risk Premium in Australia: Post-GFC and 128 Years of Data, *Accounting and Finance*, 52, 2012, p. 241; NERA Economic Consulting, *The Market Risk Premium: Analysis in Response to the AER's Draft Rate of Return Guideline*, A Report for the Energy Networks Association, October 2013, Table 2.7, p. 28.

1095. Longer term average return on equity estimates which include data before 1987 – such as the long term 128 year average historic estimates of Brailsford et al will tend to overstate the average observed ‘market’ return on equity under the current imputation credit regime (that is, the return observed in the market arising from dividends and capital gains).⁵¹⁰
1096. This is because many investors in the post 1987 period receive a proportion of their required return on equity through imputation credits; yet this return is not observed in the market. Hence the pre 1987 observed return on equity is not comparable to the post 1987 observed return; the latter will be lower due to part of the required return coming from imputation credits which cannot be directly observed in the market.
1097. It is therefore important to ‘gross up’ any post 1987 observed market return to account for the impact of imputation credits, if the full return on equity is to be accounted for.
1098. The amount of the gross up will depend on the assumptions relating to the impact of imputation credits in the Australian capital market. The assumptions adopted in grossing up the historic estimates for this Final Decision are consistent with those used when estimating the gamma term.
1099. As noted by Handley:⁵¹¹
- The Officer model typically used to inform returns on equity in Australia under the CAPM has one before company tax and four after company tax WACCs. The four after tax company tax WACCs each differ, based on whether the interest tax shield and the value of imputation credits are included or otherwise in the definition of the corresponding after tax cash flows.
1100. Officer assumes the CAPM holds when returns are expressed on an ‘after company but before personal tax basis’. As shown in (11):

$$X_E = X_E' + \gamma T(X_O - X_D) \quad (11)$$

where:

X_O is the firm’s operating income (free cash flow) that is ultimately distributed to X_D (that is, to debt claimants), X_E (equity claimants) and X_G (government claimant through the tax rate T);

$X_E' = (1-T)(X_O - X_D)$ is the cash dividend distributed to equity investors;

$T(X_O - X_D)$ is the amount of franking credits distributed to investors;

$\gamma T(X_O - X_D)$ is the proportion of the franking credits distributed to investors.

⁵¹⁰ T.J. Brailsford, J.C. Handley and K. Maheswaran, The Historical Equity Risk Premium in Australia: Post-GFC and 128 Years of Data, *Accounting and Finance*, 52, 2012.

⁵¹¹ J.C. Handley, *Further comments on the historical equity risk premium*, Report for the Australian Energy Regulator, 14 April 2009, pp. 16-17.

1101. X_E is the ‘grossed up’ value of the returns to investors which includes the value of franking credits. It is consistent with the value on an ‘after company before personal tax basis’. On the other hand, X_E' is consistent with the value on an ‘after company after some personal tax’ basis.
1102. The conventional approach to describing a return as ‘after company tax’ is somewhat misleading in an imputation setting, as company tax paid $T(X_O - X_D)$ consists of a mixture of personal tax $\gamma T(X_O - X_D)$ – being the part rebated against personal taxes – and the effective company tax $T(X_O - X_D)(1 - \gamma)$ being the part that is not rebated against personal taxes.
1103. The Officer CAPM for the Australian imputation tax system is as shown in (12):

$$E(R_E) = R_F + \beta [E(R_M) - R_F] \quad (12)$$

Where:

- $E(R_E)$ is the expected grossed up return on equity;
 - R_F is the risk free rate of return;
 - β is the equity beta of the firm; and
 - $E(R_M)$ is the expected grossed up return on the market portfolio.
1104. Officer assumes the CAPM holds when expected returns are expressed on an ‘after company before personal tax basis’ that is consistent with X_E .
1105. The Authority’s starting estimate of the return on equity is the vanilla $E(R_E)$, which can be derived using Officer’s after tax case (iii).⁵¹² The $E(R_E)$ is consistent with X_E , being the return observed in the market inclusive of imputation credits. As noted above, the Authority’s longer term average of the estimates of $E(R_E)$ may be higher or lower than its current 5 year forward looking estimate, inclusive of imputation credits.
1106. In the post-tax revenue model building block approach adopted by the Authority, the return on equity included in the rate of return weighted average cost of capital will be k_E (that is, returns to investors which includes the value of franking credits). The PTRM then explicitly accounts for the return to investors $\gamma T(X_O - X_D)$ as an adjustment to the cash flow allowance for tax within the model.

⁵¹² J.C. Handley, *Further comments on the historical equity risk premium*, Report for the Australian Energy Regulator, 14 April 2009, pp. 16-17.

Views of valuation experts

1107. Evidence of market analysts' views suggest that their expectations for the forward average market returns on equity are consistent with the longer term average of the forward looking return on equity underpinning the Authority's estimates.
1108. An example is the WACC estimate by Grant Samuel used in discounting Envestra's cash flows, which was cited by SFG Consulting.⁵¹³
1109. Grant Samuel's estimate of the return on equity is informed by the SL-CAPM, with the risk premium and risk free rate then adjusted to have regard to a range of other evidence, including that from the Gordon DGM.⁵¹⁴
1110. Grant Samuel's initial estimate for the *market* return on equity derived using the SL-CAPM is 10.2 per cent. Grant Samuel states that:⁵¹⁵

The CAPM is probably the most widely accepted and used methodology for determining the cost of equity capital. There are more sophisticated multivariate models which utilise additional risk factors but these models have not achieved any significant degree of usage or acceptance in practice. However, while the theory underlying the CAPM is rigorous the practical application is subject to shortcomings and limitations and the results of applying the CAPM model should only be regarded as providing a general guide.

1111. This estimate is based on a long run historic MRP of 6 per cent, which is added to the prevailing 10 year risk free rate (at the time) of 4.2 per cent. Grant Samuel notes that it:⁵¹⁶
- ...has consistently adopted a market risk premium of 6% and believes that this continues to be a reasonable estimate. It:
- is not statistically significantly different to the premium suggested by long term historical data;
 - is similar to that used by a wide variety of analysts and practitioners (typically in the range 5-7%); and
 - makes no explicit allowance for the impact of Australia's dividend imputation system.
1112. The Grant Samuel estimate is defined as a 'classical', after tax rate that is based on the estimated nominal ungeared after tax cash flows.⁵¹⁷ On this basis, it is defined

⁵¹³ ATCO Gas Australia, *Access Arrangement Information: 1 July 2014 – 31 December 2019*, 3 April 2014, Appendix 19, p. 84.

⁵¹⁴ Grant Samuel, *Envestra: Financial Services Guide and Independent Expert's Report*, 3 March 2014, Appendix 3.

⁵¹⁵ Grant Samuel, *Envestra: Financial Services Guide and Independent Expert's Report*, 3 March 2014, Appendix 3, p. 1.

⁵¹⁶ Grant Samuel, *Envestra: Financial Services Guide and Independent Expert's Report*, 3 March 2014, Appendix 3, p. 6.

⁵¹⁷ The Authority notes that Grant Samuel's 'classical WACC' differs from the 'nominal vanilla WACC' estimate. The classical WACC reduces the cost of debt to account for the impact of the tax shield (that is, the cost of debt component is $D/V \cdot (1-T) \cdot R_d$), whereas the nominal vanilla WACC ignores the impact of the tax shield as this is accounted for in the cash flows. However, both approaches adopt the same estimate for the return on equity component (that is, $E/V \cdot k_E$ using Handley's terminology).

- consistent with Officer's after tax case (iv).⁵¹⁸ In this case, the k_E is identical to the k_E in case (iii), being the total return on equity from all sources.
1113. The Grant Samuel WACC CAPM estimate of 10.2 per cent ignores the impact of imputation credits.⁵¹⁹
1114. The Authority notes that the resulting estimate should be grossed up.
1115. Appropriately configured – assuming that dividends provide around 4.5 per cent of the total 10.2 per cent yield – the grossed up return would be 10.97 per cent (utilising the Authority's estimate of gamma of 0.4).
1116. The Grant Samuel estimate was made at a time when the 10 year risk free rate was 4.2 per cent. The prevailing rate is closer to 2.0 per cent. Adjusting the grossed up Grant Samuel for this change would yield an estimate of the grossed up market return on equity using the SL-CAPM of 8.8 per cent.
1117. Grant Samuel ultimately assesses an overall equity *market* return to be in the range of 10.7 to 15.2 per cent, an estimate that is higher than its CAPM-based estimate, which is 10.2 per cent, as noted above. The higher range accounts for:
- first, estimates from other return on equity models, such as the Gordon DGM;
 - second, for Grant Samuel's view that equity investors have re-priced risk since the global financial crisis (lifting the MRP above 6 per cent); and
 - third, that bond rates are at unsustainably low levels (which Grant Samuel therefore 'normalise' by increasing the risk free rate from the observed current value around 4 per cent to 5 per cent).⁵²⁰
1118. The resulting grossed up range is 11.47 to 15.97 per cent, using the Authority's assumptions on the dividend yield and on gamma, set out above.
1119. The Authority considers that a comparison estimate for the return on the market to perpetuity, such as that undertaken by Grant Samuel, is the long run average of its return on equity estimates, of around 11.43 per cent, reported at paragraph 1091 above (also Table 80).
1120. The Authority does not consider it appropriate to adjust up the risk free rate to a higher rate, as is done by Grant Samuel. Therefore, a more relevant lower bound for the Grant Samuel estimates is the Sharpe Lintner CAPM adjusted estimate of 8.8 per cent, with the range then 8.8 to 16.0 per cent (grossed up). The Authority considers that its comparable perpetuity estimate is then within the Grant Samuel range. To the extent that the average of the Authority's sequential estimates of the return on equity, for each 5 year regulatory period, converge – over the long term – to the

⁵¹⁸ J.C. Handley, *Further comments on the historical equity risk premium*, Report for the Australian Energy Regulator, 14 April 2009, pp. 16-17.

⁵¹⁹ Grant Samuel, *Envestra: Financial Services Guide and Independent Expert's Report*, 3 March 2014, Appendix 3, p. 9:

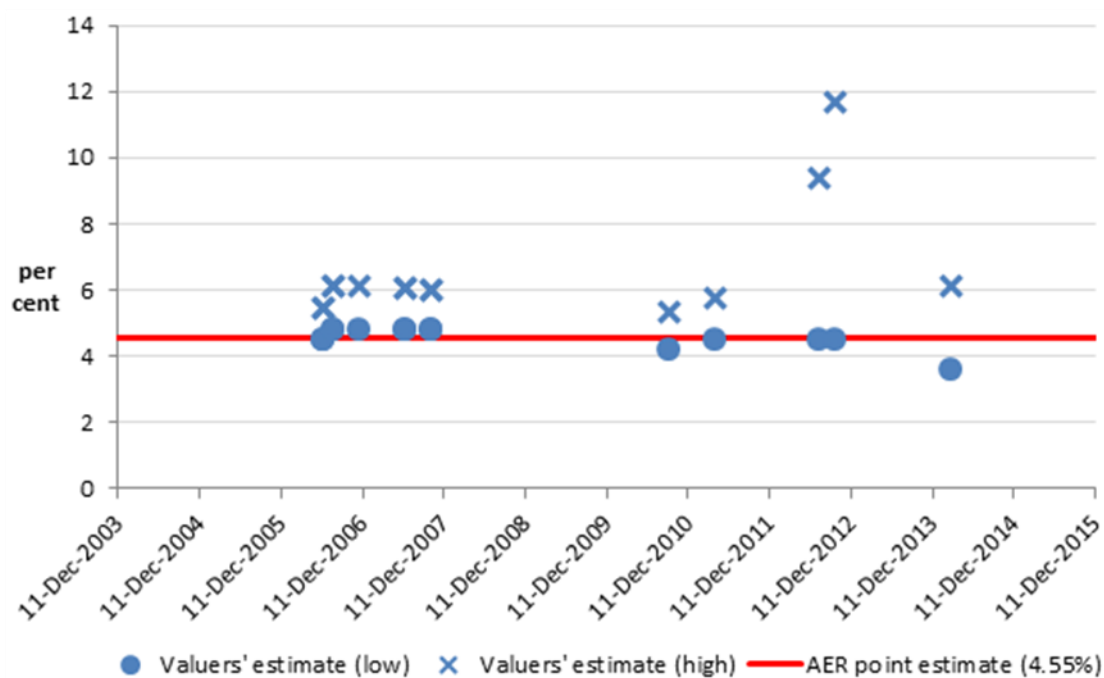
In Grant Samuel's view, however, the evidence gathered to date as to the value the market attributes to franking credits is insufficient to rely on for valuation purposes. More importantly, Grant Samuel does not believe that such adjustments are widely used by acquirers of assets at present... Accordingly, it is Grant Samuel's opinion, that it is not appropriate to make any adjustment.

⁵²⁰ Authority estimate based on Grant Samuel data, assuming a nominal risk free rate of 5.0 per cent.

perpetuity estimate of 11.43 per cent, then they would also be consistent with the Grant Samuel estimate. However, this cross-check would take a number of regulatory periods before it could be implemented.

1121. The Grant Samuel estimates therefore give the Authority no cause to revise its estimate of the return on equity, or its current estimates for the MRP.
1122. The survey by Ernst & Young of other analysts' estimates gives results that are broadly consistent with the Grant Samuel view. Ernst & Young notes that in 2012, independent market experts' market cost of equity estimates averaged 10.7 per cent. Ernst & Young also notes that independent experts typically do not assign a value to imputation credits, and that adjustment for this outcome would raise the estimate of independent brokers.^{521,522} Grossed up using the Authority's assumptions, the estimate would equate to 11.47 per cent, which is close to the Authority's perpetuity estimate. Again, this outcome would give the Authority no cause to revise its estimate of the return on equity, or its current estimates for the MRP.
1123. The AER reports a range of return on equity and equity risk premium estimates from relevant independent valuation reports (Figure 13). The Authority notes that its estimate of the equity risk premium (0.7 x 7.4 per cent or 5.18 per cent) sits within the band of typically observed equity risk premium estimates ranging from around 4 to 6 per cent as shown in Figure 13.

Figure 13 Equity risk premium from relevant valuation reports over time



Notes AER analysis based on reports from the Thomson Reuters Connect4 database. The AER has shown the equity risk premium based on a nominal vanilla WACC, expert reports using a

⁵²¹ ATCO Gas Australia, *Access Arrangement Information: 1 July 2014 – 31 December 2019*, 3 April 2014, Appendix 35, pp. 14-15.

⁵²² ATCO Gas Australia, *Access Arrangement Information: 1 July 2014 – 31 December 2019*, 3 April 2014, Appendix 35, p. 23.

different WACC form have been adjusted accordingly. This equity risk premium ('Valuers estimate-high') also reflects the impact of any discretionary uplifts applied by the independent valuer.

Source: Australian Energy Regulator, *AusNet Services distribution determination final decision 2016–20*, Attachment 3 – Rate of return, May 2016, p. 3-255.

1124. On this basis, the Authority is satisfied that its current estimate, albeit based on a different term, is reasonable.

Views of Australian regulators

1125. As noted in the Rate of Return Guidelines, the Authority will consider other regulators' estimates to check outcomes of its own decisions.

Australian Energy Regulator

1126. The AER's return on the market is derived using the Sharpe Lintner CAPM, with point estimates informed by a range of relevant information and models.

1127. The AER has the view that a longer term 10 year perspective is appropriate, based on the view that equity investors have long term investment horizons.⁵²³

1128. In line with this view, the AER adopts a different term for the risk free rate in the Sharpe Lintner CAPM. Specifically, in its recent Victorian DNSP decisions, the AER adopted:⁵²⁴

- a term for the return on equity of 10 years, with:
 - the risk free rate based on the estimated CGS yield, of 2.93 per cent;
 - a point estimate for the MRP of 6.5 per cent, from within an estimated range of 4.8 to 8.84 per cent; and
 - an equity beta of 0.7;
- giving a 7.5 per cent return on equity for the benchmark efficient entity; which is consistent with a resulting overall estimate of the return on the market of 9.43 per cent.

1129. While the AER's established range for the MRP is comparable to that of the Authority's, the overall point estimate is somewhat lower than the Authority's estimate.

1130. This can be reconciled through the Authority's use of a 5 year term for the risk free rate instead of a 10 year term. The comparable 10 year risk free rate on 31 May 2016 is calculated at 2.32 per cent; 50 basis points higher than that (1.82 per cent) used by the Authority to derive the MRP. This would bring the Authority's MRP estimate down to 6.9 per cent.

1131. The remaining 40 or so basis points appear to result from differences in information used by the AER and Authority to arrive at a point estimate within the established

⁵²³ S. Pratt and R. Grabowski, *Cost of Capital: Applications and Examples*, 4th edition, 2010, pp. 118–120; A. Damodaran, 'What is the risk free rate? A search for the basic building block', December 2008, pp. 9-10. Lally, M., The risk free rate and the present value principle, 22 August 2012. cited in Australian Energy Regulator, *Rate of Return Guidelines, Explanatory Statement*, December 2013, p. 49.

⁵²⁴ Australian Energy Regulator, *Final decision: Jemena Gas Networks (NSW) Ltd: Access arrangement 2015–20*, Attachment 3: Rate of return, May 2016, p. 44.

range. Differences include the Authority's reliance on forward looking indicators of risk and the economic outlook and the AER reliance on surveys and stakeholder submissions.⁵²⁵

1132. The Authority considers that the AER's estimate is comparable to this Final Decision, once differences in parameter estimates and judgment are accounted for.

IPART

1133. The Independent Pricing and Regulatory Tribunal (**IPART**) uses an average of a current 40 day and 10 year term for the risk free rate.
1134. IPART proposes to adopt an estimate of the MRP which is informed by the mid-point of historic estimates (estimated at 5.5 per cent to 6.5 per cent) and a range based on other current market data approaches – including using DGMs – which fall in the range 7.9 per cent to 8.7 per cent, giving an overall range for the MRP of 6.0 per cent to 8.5 per cent (as at February 2016). The mid-point of the assessed range – 7.3 per cent (as at February 2016) – may then be adjusted to account for strong contrary evidence.
1135. The fact that IPART combines long run historical estimates with current market data approaches and allows its point estimate to be above the upper bound of the long-run historical estimates (6.5 per cent) makes the IPART estimate comparable to that of the Authority's. That is, IPART's mid-point estimate more strongly reflects current market data than would be the case if long-run historical data were solely relied on.
1136. Given an estimated mid-point risk free rate as at February 2015 of 3.7 per cent, IPART's return on the market is estimated to be around 11.0 per cent.⁵²⁶
1137. The Authority considers that the IPART estimate is comparable to its own estimate because it incorporates current market data allowing deviation from long-term historical estimates, albeit based on a somewhat different method and judgements.

Other regulators' decisions

1138. As discussed in paragraphs 1086 to 1093 the Authority's estimates are forward looking over the next 5 years and hence can deviate from the long run historical averages implied by mean reversion or the 'Ibbotson' approach. As shown in Table 79 these estimates tend to be around the 6 to 6.5 per cent range. The Authority notes that this range of estimates coincides with those typically employed by other regulators.⁵²⁷ If the Authority were to adopt a longer term view it would be logical to adopt this range. However, the Authority adopts a 5 year risk free rate in the return on equity and correspondingly allows deviation in the MRP from the long run value typically employed by other regulators.
1139. Reconciliation with other regulators' estimates can be undertaken as follows using the examples in Table 81. The average term spread between the 5 and 10 year risk free rate is typically in the order of 50 basis points. From this perspective the QCA estimate requires no adjustment because it uses a 5 year term for the risk free rate.

⁵²⁵ Australian Energy Regulator, *Final decision: Jemena Gas Networks (NSW) Ltd: Access arrangement 2015–20*, Attachment 3: Rate of return, May 2016, pp. 57-62.

⁵²⁶ Authority analysis, based on IPART, *Fact sheet – WACC update*, February 2016.

⁵²⁷ For example see Australian Energy Regulator, *Final decision: Jemena Gas Networks (NSW) Ltd: Access arrangement 2015–20*, Attachment 3: Rate of return, May 2016, pp.399-400.

The ESCV/NTUC estimates would be increase to around 6.5 per cent to account for the deduction of a lower risk free rate if undertaken by the Authority.

Table 81 Other regulators' recent MRP decisions

Regulator	Decision date	Sector	MRP (%)
QCA	December 2015	Rail	6.5
ESCV	June 2014	Water	6.0
NTUC	April 2014	Electricity	6.0

Source *Australian Energy Regulator, Draft decision: Jemena Gas Networks (NSW) Ltd: Access arrangement 2015–20, Attachment 3: Rate of return, p. 3-205, ERA Analysis.*

1140. The Authority's estimates have been undertaken almost two years later than those of ESCV and NTUC. The period of April, May and June 2014 was a period of below average risk according to three of the four forward looking indicators used by the Authority (see Figure 10 and Figure 12). Dividend yields were the only indicator to show above average risk although this was very slight (see Figure 8). A low MRP implied by the DGM in Figure 7 also corroborates this. If the Authority made its estimate during this period it would likely select an estimate below the mid-point. This is likely to reconcile the remaining difference between the ESCV/NTUC's and the Authority's MRP estimates and so they appear to be consistent. In the case of the QCA estimate the Authority is likely to have applied a higher estimate than 6.5 per cent based on the four forward looking indicators because it allows itself to depart from the range produced by the long-run average if warranted by the indicators.

Cross-check that the return on equity exceeds the return on debt

1141. The estimated debt risk premium as at 31 May 2016 ('on the day', not the estimated average over calendar year 2016) is 2.474 per cent above swap. The margin of the 5 year swap rate to the 5 year Commonwealth Government Security (CGS) rate used for the return on debt is 0.296 per cent, implying a total risk premium for the return on debt above the CGS rate of 2.67 per cent.

1142. The Authority's estimate of the MRP is 7.4 per cent. With a beta of 0.7, the equity risk premium for the benchmark efficient entity in this Final Decision is therefore 5.18 per cent. The Authority considers that the resulting margin between the equity risk premium and the debt risk premium, of around 2.51 percentage points is reasonable. With hedging of the benchmark efficient entity's cost of debt, the corollary would be that the return on equity for the benchmark efficient entity would comfortably exceed its cost of debt.

Beta

1143. The Authority notes that GGT proposed its equity beta of 1.10 which is based on SFG's analysis on option pricing as a means to determine the return on equity for GGT.

1144. The Authority has estimated a beta of 0.7, derived from an Australian benchmark comparator sample. Since the Authority cannot readily determine if GGT's systematic risk is differentiated from the benchmark sample using empirical estimates for a comparable benchmark, this estimate is based on financial statement based metrics for GGT that are commonly accepted as being linked to systematic risk.

1145. This estimate sits within its most recently estimated – May 2016 – 95 per cent confidence interval range for the benchmark sample of Australian utilities, which is between 0.5 and 0.9 on the basis of portfolio estimates.⁵²⁸
1146. The Authority notes that the Australian Energy Regulator conducted its analysis informed by a range of international energy networks.⁵²⁹ The evidence from that analysis points to a wide range of empirical estimates, with estimates both below and above the Authority's point estimate. The AER reported estimates of equity beta from its analysis using international companies span a range of 0.45 to 1.3. In considering this information, the Authority notes there are issues with regard to re-levering international estimates, which may render them unreliable, given the underlying differences in conditions in the countries of origin.⁵³⁰ That said, its estimate for the GGP benchmark efficient entity sits in the middle of the resulting range.
1147. In conclusion, the Authority has considered the information on equity betas for utilities operating in overseas jurisdictions. The Authority has determined that these estimates are likely to provide a less reliable estimate of beta than that derived from the domestic comparator sample and the Authority's risk assessment of the GGP. The Authority therefore does not rely on the overseas estimates either for establishing the range, or for determining the point estimate of beta. Nevertheless, the Authority considers that its point estimate of beta is not inconsistent with the reported range. The Authority therefore is satisfied that the beta estimate it has determined is robust and fit for purpose, and will therefore contribute to the achievement of the allowed rate of return objective.

Conclusions with regard to cross checks

1148. The Authority has considered a range of other material as a test for reasonableness of the estimate of the return on equity for this Final Decision, derived in Step 3.⁵³¹
1149. None of the cross checks give the Authority concern that its estimate is anything other than robust, fit for purpose, and consistent with the requirements of the NGL and NGR.

Step 5: Determining the return on equity

1150. Taking into account all of the relevant information, the Authority is of the view that an expected return on equity of 7.00 per cent is appropriate as an estimate for the forward looking 5 year return on equity for the benchmark efficient entity, as at 31 May 2016:

$$\text{Estimated return on equity} = 1.82 \text{ per cent} + 0.7 \times (7.4 \text{ per cent}) = 7.00 \text{ per cent}$$

1151. This is based on the forward looking 5 year estimate from the SL-CAPM. The cross checks set out in Step 4 confirm that this estimate is reasonable.

⁵²⁸ Economic Regulation Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline 2016 – 2020*, 30 June 2016, Appendix 4A.

⁵²⁹ Australian Energy Regulator, *Draft Decision: Jemena Gas Networks (NSW) 2015-20*, November 2014, p. 3-263.

⁵³⁰ G. Partington, *Report to the AER: Return on equity (updated)*, April 2015, p. 74.

⁵³¹ Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, Appendix 29 – Other relevant material.

1152. The Authority considers that the estimate is commensurate with the efficient equity financing costs of the benchmark efficient entity with a similar degree of risk as that which applies to the Service Provider in respect of the provision of Reference Services prevailing at this time. On this basis, the Authority considers that the estimate meets the allowed rate of return objective and the requirements of the NGR and NGL more broadly.

Return on debt

1153. In the Draft Decision the Authority rejected GGT's full trailing average approach which utilises a trailing average for both the 10 year risk free rate and the DRP.

1154. The Authority determined that GGT, instead, use the hybrid trailing average approach, which incorporates a trailing average for the DRP component, based on a 10 year term, plus an on-the-day base, or swap rate component based on a 5 year term which is fixed for 5 years.⁵³²

1155. For the 10 year trailing average DRP component, the Authority used Australian non-financial corporation credit spreads to swap published by the Reserve Bank of Australia (**RBA**) prior to the latest on-the-day estimate extrapolated to a 10 year tenor. The on-the-day estimate was made using the Authority's revised bond yield approach to calculate a spread to swap for a 10 year tenor. The 10 year trailing average DRP component was to be annually updated.

1156. Instead of using the risk free rate the Authority used the on-the-day 5 year swap rate. This component would only be updated at each regulatory reset.

1157. Debt raising costs and hedging costs in the Draft Decision were 0.125 per cent and 0.114 per cent respectively.

1158. The Authority's position on the return on debt in the Draft Decision is summarised in the following equation (13):

$$\text{Return on Debt} = \text{Swap Rate} + \text{Debt Risk Premium} + \text{Debt raising costs} + \text{Hedging costs} \quad (13)$$

1159. GGT submits that the hybrid trailing average approach cannot provide an estimate of the return on debt which contributes to the allowed rate of return objective. GGT rejected the application of the Authority's revised bond yield approach to calculate a spread to swap for a 10 year tenor in favour of the exclusive use of RBA DRP data extrapolated or interpolated in the way proposed by the Authority in the Draft Decision. GGT proposed that the return on debt would be calculated as the sum of the DRP and risk free rate with a term to maturity of 10 years (the 'full' trailing average approach, rather than the 'hybrid' trailing average).

1160. GGT initially proposed that the latest return on debt estimate is to be averaged over 40 trading days. However, GGT has since advised that it wishes to use a 20 trading day estimate.⁵³³ Each of the nine previous years would use an average of the RBA data over the year and the simple trailing average is taken over a term of ten years.

⁵³² The base rate, or swap rate incorporates the risk free rate.

⁵³³

It proposed debt raising costs of 0.125 per cent with no allowance now made for hedging costs.

1161. Each aspect of the return on debt is discussed as follows.

The estimate of the risk free rate

1162. As concluded in the 'Risk free rate' section above, for the return on debt, the Authority will use estimates of the prevailing 5 year interest rate swap (**BBSW**) as the input for estimating the return on debt. The swap rate incorporates a spread to the rate on Commonwealth Government Securities. Use of the swap rate is a convenience which simplifies the calculation of the DRP (the alternative would be to use the CGS and incorporate the spread to swap in the DRP). On that basis, the Authority considers that use of the swap rate is not inconsistent with the use of the CGS as the proxy for the risk free rate.

1163. The Authority accepts GGT's proposed use of a 20 day averaging period.

1164. On that basis, the average of the observed 20 days of the 5-year swap rate as at 31 May 2016 was 2.116 per cent. This provides the point estimate for the 2016 risk free rate for the return on debt for this Final Decision.

The hybrid trailing average

1165. In the Draft Decision the Authority determined that the hybrid trailing average method should be used for estimating the return on debt. The hybrid trailing average approach fixes the risk free rate, incorporated in the base rate, at the start of the access arrangement period ('on-the-day'), while incorporating a trailing average for annual estimate of the DRP.

1166. The Authority considered the hybrid trailing average approach slightly preferable to its old approach utilising a 5 year on the day estimate of the DRP with no annual update – in terms of meeting the requirements of the NGL and NGR, including the allowed rate of return objective and the requirements of NGR 87 more generally. In coming to that conclusion, the Authority was mindful of the very limited evidence separating the approaches in terms of their outcomes for economic efficiency.

1167. The Authority considered that the hybrid trailing average offered advantages over the full trailing average, in that it:

- does not require the benchmark efficient entity to unwind previous hedging arrangements relating to the risk free rates, and hence avoids the need for the transition;
- does not require estimation of the risk free rate at each annual anniversary of the averaging period, for inclusion in the annual update of the trailing average;
- is consistent with the behaviour of a benchmark efficient entity over the regulatory period with similar risk exposure; and
- would meet the requirements of the NGL and the NGR, neither under- nor over-compensating the benchmark efficient entity.

1168. With regard to the need to unwind previous hedging arrangements, the Authority considered the evidence is that it has been common practice for regulated entities to hedge the risk free rate component of the return on debt at the start of each regulatory

period.⁵³⁴ The Authority's previous requirement for the 5 year term for the risk free rate was predicated on the understanding that the benchmark efficient entity will be able to hedge the risk free rate of any debt it raises. The Authority considered that the specified hybrid trailing average approach also provides for a 5 year term for the risk free rate. The benchmark efficient entity is able to continue to hedge its debt to the 5 year regulated rate. It follows that the present value condition is met under the hybrid trailing average, and differences between the return on debt and the cost of debt of the benchmark efficient entity are minimised.

1169. The Authority therefore considered that it should require the hybrid trailing average, as it meets the requirements of the NGL and NGR.

GGT's response to the Draft Decision

1170. GGT considers that the analysis of the Authority set out above, supporting the use of a hybrid trailing average method for estimating the return on debt, hinges on the assumption that the benchmark efficient entity of NGR 87(3) is a regulated entity.

1171. In this context, GGT appears not to dispute that where a regulated entity has a 5 yearly regulatory reset, it would be able to hedge to the 5 year risk free rate. The implication is that if the benchmark efficient entity were regulated, then such a rationale (for the hybrid trailing average) would be accepted.⁵³⁵

Only a regulated entity would have to contend with on-the-day estimation of the return on debt, and would have to hedge in response to on-the-day estimation of the return on debt. The ERA's benchmark efficient entity is, therefore, a regulated entity.

1172. In opposing the hybrid trailing average method, GGT's key contention is that the benchmark efficient entity is *not* a regulated entity.⁵³⁶

To require that the benchmark efficient entity of rule 87 be a regulated entity is both conceptually incorrect and not in accordance with the proper construction of the NGR.

1173. This issue leads the Authority to the Australian Competition Tribunal's 2016 Ausgrid decision.⁵³⁷

The ACT's 2016 Ausgrid decision

1174. Most recently, in its Ausgrid determination, the Australian Competition Tribunal (**ACT**) considered, at length, the issue of whether the benchmark efficient entity (**BEE**) should be deemed to be regulated or not.⁵³⁸ The ACT was unequivocal:

⁵³⁴ See M. Lally, *Review of Submissions on Transition Issues for the Cost of Debt*, 21 October 2015. p. 26.

⁵³⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 90.

⁵³⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 92.

⁵³⁷ Australian Competition Tribunal, *Applications by Public Interest Advocacy Centre Ltd and Ausgrid* [2016] ACompT 1, 26 February 2016, pp. 242 – 248.

⁵³⁸ Australian Competition Tribunal, *Applications by Public Interest Advocacy Centre Ltd and Ausgrid* [2016] ACompT 1, 26 February 2016, pp. 242 – 248.

It is the Tribunal's view that the BEE referred to in the RoR Objective is not a regulated entity. It need not necessarily be the one entity for the purpose of all regulatory decision-making in a particular regulatory period for all regulated service providers.⁵³⁹

1175. In support, the ACT made the following points:

- The general underlying purpose of the economic regulation of regulated service providers is to:
 - ...secure, so far as practicable, the... NGO in accordance with the RPP. To achieve that, the AER is required to make its regulatory determinations in relation to a regulated service provider, in an environment where there is no competition for the services it provides, but broadly speaking as if the relevant provider were operating in a competitive environment.⁵⁴⁰
- The benchmark efficient entity is to have a similar degree of risk as that which applies to the relevant DNSP in respect of the provision of standard control services.⁵⁴¹
- The benchmark efficient entity, in the view of the Tribunal, is likely to refer to the hypothetical efficient competitor in a competitive market for those services:
 - Such a BEE is not a regulated competitor, because the regulation is imposed as a proxy for the hypothetical unregulated competitor. Otherwise, the starting point would be a regulated competitor in a hypothetically regulated market. That would not be consistent with the policy underlying the purpose of the NEL and the NGL in relation to the fixing of terms on which monopoly providers may operate. Indeed, the concept of a regulated efficient entity as the base comparator would divert the AER from the role of fixing the terms for supply of services on a proxy basis compared to those likely to obtain in a competitive market, and focus its attention on some different and unidentified regulated market.⁵⁴²
- The ACT does not accept the AER's argument that a regulated service provider is insulated from comparative risk, which is implied by the reference in the rate of return objective to the need for the benchmark efficient entity to have a 'similar degree of risk' as the relevant service provider. Nor did the ACT accept the AER's argument that 'the BEE must be a regulated entity because it is otherwise an entity with a risk profile different from, rather than similar to, the risk profile of the regulated DNSP or network provider'. The logic of the ACT then is to reject the AER's contention that the rates of return of investors for investing in regulated service providers is commensurately lower than would occur in a competitive market.⁵⁴³ The ACT considered that the AER's analysis in this context involved a degree of circularity.⁵⁴⁴ Importantly, the ACT states that:
 - ... it is not likely that within the structure of the NER and NGR, premised (as the AER acknowledges) on imposing by regulation a pricing structure for monopoly service providers by reference to the hypothesised efficient pricing structure in a workably competitive market, there would be a discrete subset of tests prescribing a comparison with a regulated service provider. There is nothing in the AEMC materials leading to the 2012 Rule Amendments which indicates such an intention.⁵⁴⁵

⁵³⁹ Ibid, p. 245.

⁵⁴⁰ Ibid.

⁵⁴¹ Ibid, p. 246.

⁵⁴² Ibid, p. 246.

⁵⁴³ Ibid, p. 247.

⁵⁴⁴ Ibid, p. 248.

⁵⁴⁵ Ibid.

1176. The Authority considers that its hybrid trailing average approach is not inconsistent with the ACT's position. The Authority's approach to estimating the return on debt considers the efficient financing and risk management *practices* of an unregulated firm faced with an interest rate risk exposure of 5 years on a standalone revenue stream.
1177. In its Final Position Paper the AEMC notes that:
- The Commission considered this flexibility to be important to allow the methodology used to estimate the return on debt to reflect **the borrowing and risk management practices of an efficiently run service provider** [emphasis added].⁵⁴⁶
1178. In response, the Authority considers that the *practices of an efficiently run service provider* are operative words. It should also be noted that the AEMC defined 'service provider' as electricity and gas network service providers.⁵⁴⁷
1179. The BEE is hypothetical. Despite this, an assumption must be made relating to the interest rate risk exposure on its assets and liabilities. The assets can be viewed as payments receivable from consumers. These payments will be based on a price which in turn incorporates an assumption on the frequency of interest rate changes. The liabilities can be viewed as interest payments on debt that finances the assets used to service consumers. If the asset duration (interest rate sensitivity of revenues) is offset by the liability duration (interest rate sensitivity of interest rate payments) the firm is *immunised* from interest rate risk.
1180. The business environment facing the industry in question is the key driver of profitability.⁵⁴⁸ From this perspective the starting point for determining a financing strategy is considering the interest rate risk that stems from a workably competitive market in which the industry and consumers interact. The financing strategy should be tailored to manage the interest rate risk that stems from the interactions with consumers. That is, the borrowing and risk management practices of an efficiently run service provider should be driven by interest rate risk stemming from a competitive market where *firms* compete to *serve consumers*. Hedging interest rate risk using interest rate swaps is a risk management practice observed in such markets. The Authority therefore considers it more likely that a firm operating in a competitive market will hedge interest rate risk exposure using interest rate swaps rather than rely on passing on costs to consumers.
1181. GGT's proposed approach effectively takes the reverse view – that interactions in a market between the industry and suppliers of credit should be the starting point for determining financing strategy and that the outcomes of these interactions should drive the interest rate risk assumption. This implies that the interactions in the market between industry and consumers should be profitable in such a way that interest rate exposure is reduced.
1182. In light of this, the Authority is of the view that the assumption of 5 year interest rate exposure should not be a basis for viewing regulation as driving financing practices. This is because *any assumption* the regulator, or for that matter regulated entity,

⁵⁴⁶ Australian Energy Market Commission, Final Position Paper: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 -National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, 29 November 2012, p. 77.

⁵⁴⁷ Australian Energy Market Commission, Final Position Paper: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 -National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, 29 November 2012, p. i.

⁵⁴⁸ M. Porter, 'How Competitive Forces Shape Strategy', *Harvard Business Review*, March-April 1979.

makes relating to interest rate risk exposure will ultimately drive financing practices. The emphasis should therefore be moved away from the notion that the incumbent interest rate risk exposure assumption should be altered to match the requirements of the service provider at the time. The Authority, instead, emphasises the borrowing and risk management practices of an efficiently run service provider that is faced with the incumbent interest rate risk exposure of 5 years. The Authority thereby views this approach as being consistent with the practices of an unregulated BEE.

1183. The Authority considers that no conflict arises between the Authority's and ACT's positions for the return on debt methodology. However, the Authority notes that if GGT's interpretation of the ACT's position is taken to its logical conclusion, the decisions on the other parameters in the cost of capital will have to be remade. This is because these parameters have been set with reference to service providers defined as electricity and gas network service providers. These service providers are often natural monopolies and are therefore regulated. In Australia, service providers that have publicly available information useful in benchmarking, also tend to have regulated operations.

1184. In practice excluding regulated firms in the Australian market would lead to the exclusion of firms which are natural monopolies in the benchmarking process. The evaluation of efficiency in a competitive market needs to be made with reference to a benchmark. Using a benchmark that operates in the same industry as the 'service provider' is of primary importance if it is to be of any relevance. As noted above, the AEMC defined 'service provider' as electricity and gas network service providers.⁵⁴⁹ If the definition of the service being provided by the benchmark is considered to be secondary to the requirement of using unregulated firms in benchmarking, the concept of efficiency in a competitive market becomes nebulous. This is because efficient practices are industry specific – this is well recognised in investment analyst's application of the method of comparables.⁵⁵⁰ If this practical reality is not acknowledged there is a strong possibility that strict adherence to exclusion of regulated firms in benchmarking and interpreting the ARORO could lead to the application of regulation that is detrimental to the long term interests of consumers. Strict adherence will likely lead to:

- a) poor comparators being used for benchmarks that have operations and/or risks that are not comparable; and
- b) greater instability and uncertainty in the definition of the benchmark and in the subsequent decisions based on the benchmark.

1185. With reference to point b) the Authority notes the AEMC's comments in its Final Position Paper on this issue:

Arguably, it is even more important that the benchmark is defined very clearly and can be measured, because it needs to be estimated periodically in the future. The measurability of the approach would be a factor that the regulator would have to consider as part of its assessment of different approaches.⁵⁵¹

⁵⁴⁹ Australian Energy Market Commission, Final Position Paper: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 -National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, 29 November 2012, p. i.

⁵⁵⁰ J. Stein, S. Usher, D. Lagattuta and J. Youngen, 'A comparables approach to measuring cashflow-at-risk for non-financial firms', *Journal of Applied Corporate Finance*, vol.13, no.4, 2001, p. 101.

⁵⁵¹ AEMC, Final Position Paper, National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012, National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, 29 November 2012, p. 70.

1186. Viewing the definition of the industry as anything other than of primary importance and in isolation of the purpose of the NGL will therefore likely lead to a result in practice that is inconsistent with the object and purpose underlying the NGL. On this basis the requirement for the benchmark service provider to be an electricity or gas network service provider is more important than the requirement that the benchmark be an unregulated entity.
1187. As noted above, if strict adherence to exclusion of regulated firms is required this would necessitate the Authority remaking its Decision on many of the interrelated cost of capital parameters for consistency. This would apply to:
- the benchmark gearing;
 - equity beta; and
 - the benchmark credit rating.
1188. Strict adherence to the exclusion of regulated firms would also necessitate consideration of the implications for the cost pass through events and optimisation of the regulated asset base to ensure consistent application of the unregulated BEE concept across all aspects of the Access Arrangement.

GGT's further arguments on the BEE

1189. GGT offers further support for the notion that the benchmark efficient entity is not a regulated entity by citing the Australian Energy Market Commission, which considered, first, that;
- ...the most appropriate benchmark to use in the regulatory framework for all service providers, regardless of ownership, in general is the efficient private sector service provider...
- and second, that;
- ...the long-term interests of consumers would be best served by ensuring that the methodology used to estimate the return on debt reflects, to the extent possible, the efficient financing and risk management practices that might be expected in the absence of regulation.⁵⁵²
1190. With regard to the AEMC references summarised above, the first quote referenced by GGT was considering whether there should be any distinction in the regulatory approach between a government and a private sector service provider, particularly in the context of raising debt.
1191. The AEMC noted in context that in 'the absence of competitive neutrality provisions, electricity consumers are unlikely to be better off from defining a separate benchmark for state-owned service'.⁵⁵³ Hence, there should be no distinction in the benchmark efficient entity relating to ownership. In referring then to an 'efficient private sector service provider', the AEMC was making no comment on whether that provider was regulated or not.

⁵⁵² Goldfields Gas Transmission Pty Ltd, Goldfields Gas Pipeline, *Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, pp. 90-91.

⁵⁵³ Australian Energy Market Commission, Final Position Paper: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 -National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, 29 November 2012, p. 53.

1192. The second quote was referring to the draft rule. The full context of the quote is as follows (our italicised emphasis of the section quoted by GGT):

In its draft rule determination, the Commission considered **that the long-term interests of consumers would be best served** by ensuring that the methodology used to estimate the return on debt reflects, to the **extent possible, the efficient financing and risk management practices that might be expected in the absence of regulation**. In its draft rule, the Commission therefore proposed to make it unambiguous that the regulator can consider a range of approaches to estimating the return on debt to meet the overall rate of return objective. This would include a range of different approaches that involved using a "spot rate" methodology that used market data to reflect prevailing conditions in the market for funds or averaging estimates of the return on debt over historical periods, or some combination thereof.

The draft rule did not set the return on debt by reference to any particular base rate and DRP. **The Commission took this view to allow the regulator sufficient flexibility to determine historical averages of either the entire return on debt or just the DRP component**. Furthermore, the Commission's intention was to ensure that there is the flexibility to set a DRP against a base rate other than the Commonwealth government bond rates (eg bank bill swap rates), if that was considered appropriate by the regulator. [emphasis added].⁵⁵⁴

1193. The AEMC also distinguished between the benchmark and the method used to estimate the return on debt:

While the Commission considers that allowing the regulator to estimate the return on debt component of the rate of return using a broad range of methods represents an improvement to the current approach, it is a separate issue from that of benchmark specification and measurement. A historical trailing average approach still requires the regulator to define a benchmark and use appropriate data sources to measure it.⁵⁵⁵

1194. On the basis of the above, the AEMC clarifies several important points:

- serving the long term interests of consumers was an explicit consideration of the AEMC when drafting the rate of return objective;
- use of efficient financing and risk management practices that might be expected in the absence of regulation, is qualified by the words 'to the extent possible';
- the AEMC considered that the Authority should be able to consider the hybrid trailing average method; and
- the regulator can consider a range of approaches to estimating the return on debt.

1195. GGT submits that efficient financing and risk management practices in the absence of regulation is supported by a widely held view that economic regulation seeks to replicate the efficient outcomes of an 'effectively or workably' competitive market and

⁵⁵⁴ Australian Energy Market Commission, Final Position Paper: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 -National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, 29 November 2012, pp. 57- 64.

For the definition of service provider see Australian Energy Market Commission, Final Position Paper: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 -National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, 29 November 2012, p. i.

⁵⁵⁵ AEMC, Final Position Paper, National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012, National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, 29 November 2012, p. 70.

that this – and not the perfectly competitive market of economic theory – is the relevant standard for regulation. GGT cited the Western Australian Supreme Court, the Ministerial Council on Energy’s Expert Panel and the Australian Competition and Consumer Commission’s Regulatory Development Branch in support of this view.

- The Western Australian Supreme Court, in 2002, referenced the concept of a competitive market in the preamble of the Western Australian Gas Act and the introduction to the former Gas Code, noting that such a market would be understood to be a workably competitive market.⁵⁵⁶
- The Ministerial Council on Energy, considered that ‘Regulation and, specifically, the periodic determination of maximum prices or revenue is directed at achieving outcomes that could otherwise be expected from effective competition’.⁵⁵⁷
- The Australian Competition and Consumer Commission’s (ACCC) Regulatory Development Branch, considered that ‘...when determining a new regulatory cost of debt approach, debt practices which are a product of the regulatory environment should be ignored. This is because these practices will change if the regulatory environment changes. If in setting a new regulatory framework, a regulator considers debt practices that are a result of businesses reacting to the existing regulatory framework, it may create a self fulfilling method that may not necessarily be efficient’.⁵⁵⁸

1196. With regard to the observations of the Western Australian Supreme Court, there is little to dispute with regard to the contention that ‘competition’ often means ‘workably competitive’. As noted subsequently by Parker J:

...as a competitive market, in this sense of an economist’s understanding of a workably competitive market, is not a fixed and immutable condition with any absolute or precise qualities, but a process which involves rivalrous market behaviour...⁵⁵⁹

1197. A rivalrous firm would seek to both lower its cost of debt and hedge risks that are outside the scope of its core business, wherever that risk may stem from. In a rivalrous market economic profits converge **toward** the NPV = 0 condition over the long run as the reference service provider with the lowest cost and minimum risk endures and gains market share. As outlined in paragraphs 1180 to 1182 above, the fact that the risk in the present situation stems from the regulatory reset is simply a practical concern. The *practice of hedging* to reduce any risks outside the scope of the reference service provider’s core business while simultaneous lowering costs should be considered efficient. The Authority is therefore of the view that rivalrous behaviour is more likely to entail the minimisation of costs to remain competitive and risk to remain sustainable, than entail regularly passing financing costs onto consumers in an attempt remain financially viable.

1198. The Authority considers that there is no conflict with regard to the Ministerial Council on Energy’s view that ‘Regulation and, specifically, the periodic determination of maximum prices or revenue is directed at achieving outcomes that could otherwise

⁵⁵⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 91.

⁵⁵⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 91.

⁵⁵⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 91.

⁵⁵⁹ Re Dr Ken Michael AM; Ex Parte Epic Energy (WA) Nominees Pty Ltd & Anor [2002] WASCA 231, paragraph 128.

be expected from effective competition'. It is well accepted that competitive markets deliver efficient outcomes, which are in the long term interests of consumers. Ultimately, the relevance of this point is the same as of the Parker J. reference, addressed above, and interpreted to mean rivalrous behaviour which lowers costs to the efficient costs.

1199. Turning to the views of the ACCC's Regulatory Development Branch, the Authority notes that the key issue under consideration is the frequency of the regulatory reset.

1200. The Regulatory Development Branch gave the following example:

... a number of businesses are currently able to lock in part of their cost of debt for the access arrangement period using swap contracts. This debt practice could be used to justify the 5-year prevailing cost of debt benchmark. However if the regulator were to increase the access arrangement from 5 years to 6 years, it could become efficient for the business to enter 6-year swaps rather than 5-years swaps.

The use of swap contracts to lock in the cost of debt for the access arrangement is a consequence of the regulatory framework, and their use by regulated businesses would change if the regulatory framework were to change. Ideally the regulatory framework for the cost of debt should reflect the efficient debt practices that occur in a competitive market. This would align competitive incentives with regulatory incentives.⁵⁶⁰

1201. Other parameters in the Authority's hybrid trailing average approach to estimating the return on debt are already set with reference to competitive markets and their practices, including the debt risk premium, the term for the debt risk premium, credit rating and the measurement of the risk free rate (risk free rate term issues set aside).

1202. Risks to business stem from numerous sources, including the natural environment, competition and operations. Regulatory risk exists for any regulated entity. The Authority acknowledges the appeal of a debt financing approach that appears to be independent of the regulatory regime. However, the regulator should seek to minimise these risks to the regulated firm *whilst ensuring the associated costs to consumers are minimised over the long run*. The annual updating of the 10 year debt risk premium in the hybrid trailing average approach confines the risk associated with the 5 year regulatory reset to the risk free rate component of the return on debt. It also provides a feasible and relatively low cost solution to mitigate this risk.

1203. Removing the remaining component of interest rate risk stemming from the 5 yearly regulatory reset in the way proposed by GGT (the annually updated full 10 year trailing average) comes at higher expected cost to consumers over the long run. While the higher long-run cost to consumers under GGT's proposed approach is relatively certain, the associated benefits to consumers are not quantified or clearly defined in the terms and conditions relating to the provision of the reference service.

1204. Again as outlined above, the Authority is of the view that the emphasis should be placed on the practices of an efficient firm faced with a particular risk. In practice, it would be unlikely that an efficient private sector firm that *exclusively* faces risk *to a single stream of revenue* stemming from a five yearly reset to market interest rates would not hedge this risk.⁵⁶¹ As long as the regulator and regulated firm are faced with the reality of regulatory resets, in practice it will be more efficient for firms to hedge the interest rate risk over the corresponding term of the regulatory period rather

⁵⁶⁰ H. Smyczynski and I. Popovic, *Estimating the Cost of Debt: A Possible Way Forward*, Australian Competition and Consumer Commission Regulatory Development Branch, April 2013, p. 11.

⁵⁶¹ The exception here is where the private sector firm is in the business of speculation.

than conform to some other artificial construct that, when implemented, is detrimental to the interests of consumers in the long run.

1205. As alluded to by the Regulatory Development Branch, the annually updated *full* 10 year trailing average would not be affected by a lengthening or shortening of the access arrangement, or the removal of regulation altogether, assuming it is the debt financing practice competitive firms would undertake.⁵⁶² However, changing the regulatory approach to the return on debt, from the incumbent 5 year reset regime, to the full annual update described by the Regulatory Development Branch, does not eliminate the regulatory risk associated with any subsequent changes in the approach to regulation. The Authority considers that the observation of the Regulatory Development Branch should be given less weight than the broader implications of meeting the requirements of the NGL and NGR, particularly the relative impact of different approaches on the long term interests of consumers.
1206. As noted in paragraph 1172, as part of the justification for rejecting the Authority's hybrid trailing average, GGT submits that to require that the benchmark efficient entity of rule 87 be a regulated entity is not in accordance with the proper construction of the NGR.
1207. On this point it should be noted that NGR 87(10)(c) is explicit. It provides that, subject to the rate of return objective, the regulator may, *without limitation*, adopt a method for estimating the return on debt which is designed to result in the return on debt reflecting a combination of the return on debt raised at the time of decision (NGR 87(10)(a)), and that raised over a historical period (NGR 87(10)(b)). On this matter, the Authority refers back to the points clarified by the AEMC in the discussion in paragraphs 1177 and 1192:
- It is important to allow the borrowing and risk management practices of an efficiently run *service provider*, defined as electricity and gas network service provider, as opposed to *firm* in general, to be reflected in the return on debt.
1208. The Authority notes that in practice, most electricity and gas network service providers in Australia are considered natural monopolies and those listed on the stock exchange are almost all regulated, as would be expected. This means that the most relevant information and data available to ascertain benchmark efficient practices, by default, will reflect that of regulated firms.
- Use of efficient financing and risk management practices that might be expected in the absence of regulation, is qualified by the words '*to the extent possible*'.
1209. What is and is not possible is determined by constraints such as available information, availability of financial instruments and the legislation guiding regulation itself. In the Australian context, there is insufficient information on efficient practices of unregulated electricity and gas network service providers. On this basis the Authority considers evidence about the efficient practices of regulated gas and electricity network service providers. The Authority considers serving the long term interests of the consumer to be the overarching aim of the legislation (as reflected in the NGO).
1210. The Authority considers that it has incentivised the use of efficient financing and risk management practices that might be expected in the absence of regulation to the extent possible without incurring detriment to the long run interests of consumers.

⁵⁶² H. Smyczynski and I. Popovic, *Estimating the Cost of Debt: A Possible Way Forward*, Australian Competition and Consumer Commission Regulatory Development Branch, April 2013, p. 11.

This is demonstrated in the Authority's alterations to its approach in estimating the cost of debt which included:

- incorporating yield observations from foreign debt markets;
- extending the term on the DRP to 10 years; and
- annually updating the DRP in recognition of the inability to hedge it in practice.

BHP Billiton's submission

1211. BHP Billiton submits that it supports a full trailing average, however, it stated that if the transition approach that GGT proposes is the only option for adopting the full trailing average then the current method for setting the regulatory allowance should be maintained. It concluded by proposing that the Authority should adopt a transition to the full trailing average that avoids windfall gains or losses to regulated businesses or consumers.⁵⁶³
1212. The Authority acknowledges BHP Billiton's preference for greater tariff stability. The Authority, however, is not convinced that the benefits to regulated businesses in the form of the enhanced risk management options outlined by BHP is sufficiently balanced with the costs. Given the liquidity of Australian interest rate swaps markets and the term spread typically observed between 5 and 10 year Commonwealth Government Securities (see paragraph 1192), the hybrid trailing average approach is sustainable and produces a lower expected cost over the long run – not just the near term.⁵⁶⁴ This in the long term interests of all consumers and so is consistent with the aim of the NGO and NGL. The Authority must consider the interests of consumers collectively and the interests of consumers in the future as well as the present.

Conclusions regarding the form of the trailing average

1213. In summary, the hybrid trailing average approach allows regulated firms to continue issuing long term debt, is consistent with the practice of competitive unregulated firms, reduces interest rate risk in the lowest (expected) cost manner feasible and so is consistent with the purpose of the NGO and hence the NGR and ARORO.
1214. Under GGT's proposed annually updated full trailing average approach the higher long-run cost to consumers is relatively certain while the associated benefits are not quantified or clearly defined in the terms and conditions relating to the provision of the reference service. The Authority is therefore not convinced that it should depart from the current hybrid trailing average approach.
1215. The Authority for this Final Decision determines that GGT must adopt the hybrid trailing average approach.

The hybrid trailing average approach

1216. The broad outline of the hybrid trailing average approach and the resulting estimate are outlined in what follows.

⁵⁶³ BHP Billiton, *Public submission by BHP Billiton in response to revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 5.

⁵⁶⁴ Economic Regulatory Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, 10 September 2015, p. 365-369. Also see Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2016, p. 68.

Key features of the hybrid trailing average approach

1217. An estimate of the return on debt based on a hybrid trailing average will:

- be comprised of the sum of a debt risk premium and a base risk free rate, combined with a margin for administrative and hedging costs:

$$\text{Return on Debt} = \text{Risk Free Rate} + \text{Debt Risk Premium} + \text{Debt raising costs} + \text{Hedging costs}$$

- estimate the risk free rate once, based on an averaging period at the start of the regulatory period (implying the 'on the day' approach for the risk free rate);
- adopt a 10 year term for the DRP – following Lally's recommendations with regard to achieving the present value principle (or NPV=0 condition), estimate the DRP consistent with the average term at issuance, which the Authority in the Draft Decision determined was 10 years;
- annually update the estimate of the DRP, just prior to the start of each regulatory year, based on the updated hybrid trailing average estimate of the DRP;
- the annually updated hybrid trailing average will feed through into each annual tariff variation.

1218. Having determined to adopt the hybrid trailing average approach for this Final Decision, the remaining key details of the approach are now considered:

- the averaging periods for the DRP estimates;
- the method for estimating the base rate and the resulting point estimate for this Final Decision;
- the term of the DRP;
- the number of years in the trailing average for the DRP;
- the method for weighting for the trailing average;
- the need for a transition;
- the credit rating for the benchmark efficient entity;
- the method for estimating the DRP and the resulting point estimate for this Final Decision;
- the method for estimating the other debt raising and hedging costs and the resulting point estimates for this Final Decision;
- the method for annually updating the return on debt in tariffs, so as to account for the annual update of the DRP component.

The averaging period of the DRP estimates

1219. The averaging period for the base risk free rate estimate contributing the estimate of the return on debt for this Final Decision is the 20 days ending 31 May 2016.

1220. However, with annual updating of the DRP trailing average, it is necessary to adopt a different approach to the averaging period for the DRP. The annual update process requires additional averaging periods for the forward looking estimates of the DRP for 2017, 2018 and 2019.

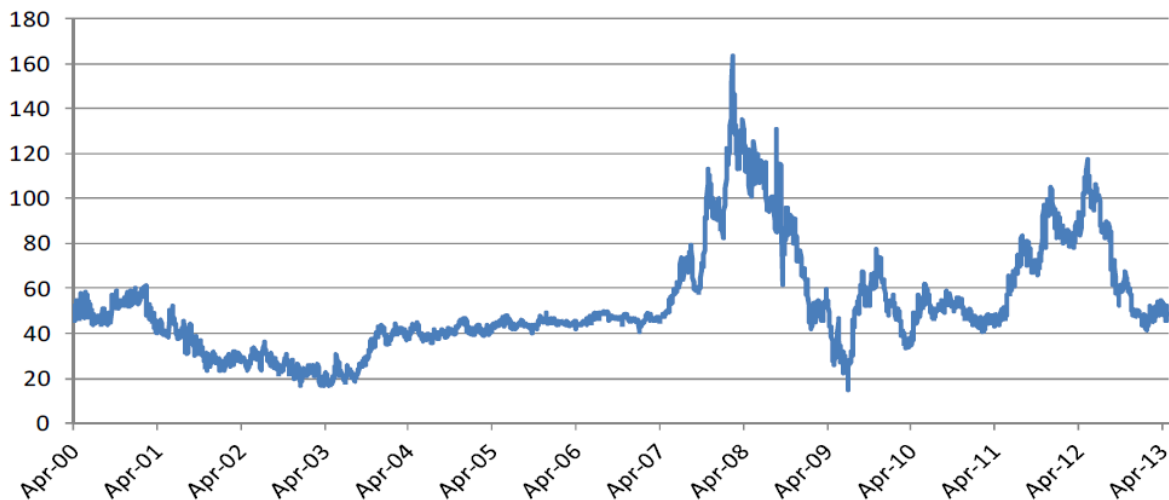
1221. The Authority has developed a forward looking estimate for the DRP – for the period in 2016 that falls after 31 May 2016 – estimated over the 20 day averaging period ending 31 May 2016. Prior to that date, the Authority will use RBA monthly data in the trailing average DRP estimates. Estimates are interpolated daily, and then averaged over the year to provide a calendar year estimate for 2016.
1222. For the DRP update estimates for 2017, 2018 and 2019, the averaging period for the forward looking DRP would be based on a reasonably short period that is as close as practicable to the start of each of the calendar years to which it will apply, while still allowing sufficient flexibility to conduct debt operations without moving the market. The period also needs to give sufficient time for the Authority to consider and approve the annually updated tariffs prior to their subsequent application date on 1 January in each of the specified years.
1223. For those reasons, the Authority considers that choosing the averaging period in the window between two months and seven months prior to the regulatory period is preferred. The five month period is considered sufficient to ensure that the 20 day averaging period cannot be inferred by other market participants.
1224. The Authority therefore determines that the nominated averaging period occur in the period 1 June to 31 October in each year, which is reasonably close to the following 1 January update. Hence the averaging period for 2017 would be in the window 1 June 2016 to 31 October 2016, providing the updated DRP for inclusion in the 1 January 2017 tariff variation.
1225. The Authority considers that adopting a consistent length for the averaging period – therefore of the same length as that used for the risk free rate – has clear advantages for internal consistency. This will be important when the averaging period for the two estimates coincide, for example when setting the rate of return prior to the next access arrangement.
1226. The averaging periods for the future annual updates should be nominated in advance, with the dates then remaining confidential. This is to ensure that the resulting estimates are not biased by opportunistic behaviour. The Authority does not require that the nominated averaging period for each of the three years be identical periods, only that they occur in the period 1 June to 31 October.
1227. In summary, averaging periods are required for each year of the regulatory period, in order to facilitate the annual update of the DRP for the tariff variations to occur on 1 January in 2017, 2018 and 2019. GGT has nominated the averaging periods for 2017 to 2019. Each of the three averaging periods meet the requirements of the Authority, which are that they;
- must be consecutive business days (GGT has proposed 20 days);
 - need to fall in the period between 1 June and 31 October – in the year prior to the year which the resulting forward looking estimate of the DRP first contributes to the hybrid trailing average estimate of the return on debt; and
 - do not need to be over the same dates as that in other years.

The method for estimating the base rate and the resulting point estimate

1228. GGT has proposed use of Commonwealth Government Securities as the proxy for the risk free rate. However, the Authority has recently moved to consider the swaps rate as being the appropriate proxy rate for the estimate of the return on debt.

1229. Interest rate swaps are derivative contracts, which typically exchange – or swap – fixed-rate interest payments for floating-rate interest payments. They provide a means to hedge and manage risk. Investment and commercial banks with strong credit ratings are swap market-makers.
1230. A swap has two ‘legs’, one floating and one fixed. The floating rate is generally referenced to either the Bank Bill Swap Rate (**BBSW**) or the Bank Bill Bid Rate (**BBSY**).⁵⁶⁵ There is usually a difference or spread between the rate on CGS and that of swaps (for example, the 5 year swap spread to CGS is shown in Figure 14). The difference reflects the higher risk associated with the counterparty involved in a floating swap transaction, for a particular credit rating, as compared to the lower risk of the government-backed CGS.

Figure 14 5 year swap spread 2000-2013



Source: Chairmont Consulting, *Comparative Hedging Analysis*, 12 June 2013, p. 17.

1231. The Authority considered this issue in the Guidelines:⁵⁶⁶

As set out by Chairmont Consulting in its June 2013 report to the Authority, the difference between a CGS risk free rate and a swap rate of similar term is called the Spread of Swap (**SS**). However, it should not matter which rate is used for determining the overall return on debt. If debt risk premiums are estimated consistent with the chosen base – whether that base be the CGS risk free rate or BBSW – there should be no difference in the resulting build up of the overall return on debt. The two approaches just represent ‘two different ways of splitting up the total interest rate’, with:⁵⁶⁷

$$Yield = R_F + SS + DRP_s \quad (14)$$

⁵⁶⁵ BBSW is the average mid-rate for Australian Dollar bills of exchange having various tenors which appear on the Reuters Screen BBSW Page at approximately 10.10am Sydney time on the relevant Payment Date. BBSY is the Australian Bank Bill Swap Bid Rate, being the average bid rate for Australian Dollar bills of exchange having various tenors which appear on the Reuters Screen BBSY Page at approximately 10.10am Sydney time on the relevant Payment Date (Westpac, *Interest Rate Swap*, accessed 17 March 2015, pp. 6 and 15).

⁵⁶⁶ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, p. 83.

⁵⁶⁷ Chairmont Consulting, *Comparative Hedging Analysis*, 12 June 2013, p. 14.

where

R_f is the CGS risk free rate;

SS is the spread of swaps to the CGS rate; and

DRP_s is the debt risk premium to the underlying swaps rate base.

1232. The Authority considered a move to using swap rates for the risk free rate when estimating the return on debt at the time of the Guidelines. Such an approach would align with typical hedging practices. However, the Authority had concerns that available IRS market data on swap rates for longer maturities – such as beyond 6 months – are less reliable than short term swaps rate.
1233. The Authority noted that using observed market transactions of swap rates will result in estimates of the risk free rate that are biased upward. This is a consequence of the possible counter-party credit risk present in IRS, and the implicit premium paid by those hedging when entering into a swap.⁵⁶⁸ This approach also relies on the assumption that longer maturity swap markets are sufficiently liquid.
1234. Therefore, the Authority considered that it was more appropriate to retain the use of CGS as the proxy for the risk free rate, as the longer dated rates may be more robustly estimated from CGS data. The Authority noted that such an approach would ensure that firms have ‘reasonable opportunity’ to recover their cost of debt.
1235. The Authority considered that firms base their hedging on the swap rates and that the risk-free rate is generally lower than the relevant swap rate. On this basis, the Authority was of the view that using a risk-free rate as a base rate would allow regulated businesses to hedge a small part of the Authority’s estimate of the DRP, together with the risk-free rate.⁵⁶⁹
1236. GGT in its submission on the Discussion Paper expressed a preference for retaining the CGS yield as the base, in preference to swaps, on the basis that they are easily accessed on the RBA website.⁵⁷⁰
1237. The Authority, however, is now of the view that – having adopted the hybrid trailing average approach – the benefits associated with using CGS are less important, given that the benchmark efficient entity may exactly replicate a hybrid trailing average based on the swaps rate.
1238. Therefore, for the purposes of estimating the return on debt, the Authority will use the annualised 5 year swap mid-rate, as published on Bloomberg (Last Price), over the relevant averaging period for each regulatory year.⁵⁷¹ The Authority will calculate the

⁵⁶⁸ Hull J.C (2009), *Options, Futures and other Derivatives*, Seventh Edition, Pearson Prentice Hall, p. 169.

⁵⁶⁹ This arises because the debt risk premium estimated by the Authority, against a CGS base, will be larger than the debt risk premium over and above the swap rate. Then, to the extent that firms use the swaps market to hedge movements in the base, some of the Authority’s estimate of the debt risk premium will also be hedged. The additional amount hedged will be the spread of swaps.

⁵⁷⁰ Goldfields Gas Transmission Pty Ltd, *GGT submission on Authority return on debt discussion paper*, 25 March 2015, p. 4.

⁵⁷¹ The Authority uses ADSWAP5 Curncy, PX_LAST data from the Bloomberg terminal. This is the average of the bid and ask rate on the 5 year Australian Dollar interest rate swap rate (mid rate). Further details are -

'swap spread' as the annualised 5 year swap mid-rate minus the 5 year risk free rate calculated by the Authority.

The term of the DRP

1239. The Authority in the ATCO Gas Distribution Decision accepted a 10 year term for its estimate of the DRP, following clarifying advice from Lally, and evidence that the average term at issuance of debt by the benchmark efficient entity is 10 years.⁵⁷² This is consistent with GGT's proposal.

The credit rating for the benchmark efficient entity

1240. The Guidelines proposed a credit rating in the BBB/BBB/BBB+ band for the benchmark efficient entity.

1241. GGT has accepted this rating for the purposes of estimating the return on debt.⁵⁷³ Therefore, the BBB/BBB/BBB+ band will be retained for this Final Decision.

The method for developing the estimator of the DRP

1242. The Authority has evaluated two approaches for estimating the 10 year DRP:

- the RBA credit spread estimates, as proposed by GGT; and
- the Authority's revised bond yield approach, which was augmented to allow estimation of a yield curve.

The RBA's corporate credit spread

1243. The RBA's estimates of corporate credit spreads, at the targeted tenor of 10 years, are available for the A-rated and BBB credit rating bands.⁵⁷⁴

1244. The RBA credit spreads are estimated with respect to both contemporaneous estimates of the return on Commonwealth Government Securities and Bank Bill Swap rates, at various target tenors.⁵⁷⁵ They provide one potential approach to estimating the debt risk premium for the BBB band, at 10 year target tenor.

1245. A starting point for the RBA's estimation approach is the development of the samples of Australian corporate bonds that are used to estimate the spreads for the A and BBB credit rating bands respectively. The RBA adopts the following selection criteria to filter the corporate bonds for each of the respective benchmark samples:⁵⁷⁶

Effective: T + 1, Floating side index: BBSW6M, Day Count ACT/365, payment and reset frequency semi-annual. Fixed side: Day Count ACT/365, payment frequency semi-annual. The default pricing source CMPN – the composite with a close time based on the New York market.

⁵⁷² Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 14 October 2014, p. 189.

⁵⁷³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline: Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, p. 135.

⁵⁷⁴ Reserve Bank of Australia, *Interest rates: aggregate measures of Australian corporate bond spreads and yields*, Table F3.

⁵⁷⁵ Reserve Bank of Australia, 'New Measures of Australian Corporate Credit Spreads', *Bulletin*, December quarter 2013.

⁵⁷⁶ Reserve Bank of Australia, 'New Measures of Australian Corporate Credit Spreads', *Bulletin*, December quarter 2013.

- a credit rating of A-rated band or BBB-rated band;
 - a remaining term to maturity of 1 year or longer;
 - an amount at issuance of A\$1 million or greater;
 - inclusion of bonds denominated both in Australian dollars and foreign currencies; including US dollars and Euros;
 - inclusion of bullet bonds and bonds with embedded options, such as callable bonds; and
 - all bonds identified by Bloomberg that were outstanding after 1 January 1990 and were issued by Non-Financial Corporates (**NFCs**) incorporated in Australia.⁵⁷⁷
1246. Once the benchmark sample is developed, the RBA estimates the aggregate credit spreads for A-rated and BBB-rated Australian NFCs given the desired target tenor, based on the weighted average of the Australian dollar equivalent credit spreads over the swap rate. The method is applied to the cross-section of bonds in the sample that have the desired credit rating.
1247. The RBA estimates are determined by the Gaussian Kernel method. This approach assigns a weight to every observation in the bond sample – informed by the distance of the observation’s residual maturity from the target tenor – according to a Gaussian (normal) distribution centred at the target tenor.⁵⁷⁸ The RBA notes that this method recognises that the observed spreads on bonds with residual maturities close to the target tenor contain more information about the underlying spread at that tenor than spreads on bonds with residual maturities further away. The RBA also argues that:⁵⁷⁹
- The advantage of the Gaussian Kernel over parametric methods that have been popularised in the literature on the estimation of government yield curves, is its simplicity. Also, it does not impose a particular functional form on the credit spread curve but allows the observed data to determine its shape.⁵⁸⁰
1248. Formally, the Gaussian Kernel average credit spread estimator $S(T)$ at target tenor T (say, 5 years) for a given broad rating (say, BBB-rated bonds) and date is given by (15):

⁵⁷⁷ Non-financial corporations are identified based on their classification by Bloomberg in a group other than banking, commercial finance, consumer finance, financial services, life insurance, property and casualty insurance, real estate, government agencies, government development banks, governments regional or local, sovereigns, supranationals and winding-up agencies.

⁵⁷⁸ Reserve Bank of Australia, ‘New Measures of Australian Corporate Credit Spreads’, *Bulletin*, December quarter 2013, p. 20.

⁵⁷⁹ Reserve Bank of Australia, ‘New Measures of Australian Corporate Credit Spreads’, *Bulletin*, December quarter 2013, p. 20.

⁵⁸⁰ A number of estimation methods were investigated. These methods produced very similar estimates of credit spreads across tenors and broad credit ratings. These methods included a range of parametric models estimated by least squares regressions applied to the cross-section in each period. In particular, the Nelson and Siegel (1987) method was examined in detail owing to its wide use in practice for estimating government yield curves (BIS 2005); this method has also been adapted for the estimation of corporate bond yield and spread curves (Xiao 2010). However, the RBA notes that in its sample these models displayed spurious statistical properties, producing very high model fit but largely statistically insignificant coefficients. Other studies have also found evidence of possible over-fitting of the data using parametric methods, particularly in the case of the Nelson and Siegel model.

$$S(T) = \sum_{i=1}^N w_i(T; \sigma) \times S_i \quad (15)$$

where

$w_i(T; \sigma)$ is the weight for the target tenor T of the i^{th} bond in the sub-sample of bonds with the given broad rating; and

S_i is the observed spread on the i^{th} bond in the sub-sample of N bonds with the given broad rating.

σ (sigma), which is measured in years, controls the weight assigned to the spread of each observation based on the distance between that bond's residual maturity and the target tenor. Sigma is the standard deviation of the normal distribution used to assign the weights. It determines the effective width of the window of residual maturities used in the estimator, with a larger effective window producing smoother estimates.

1249. The weighting function is as follows in (16).

$$w_i(T; \sigma) = \frac{K(T_i - T; \sigma) \times F_i}{\sum_{j=1}^N K(T_j - T; \sigma) \times F_j} \quad (16)$$

where

$K(T; \sigma)$ is the Gaussian Kernel function giving weight to the i^{th} bond based on the distance of its residual maturity from the target tenor ($|T_i - T|$).

F_i is the face value of the i^{th} bond.

1250. The Gaussian Kernel may then be defined as below in (17).

$$K(T_i - T; \sigma) = \frac{1}{\sqrt{2\pi} \sigma} \exp\left[-\frac{(T_i - T)^2}{2\sigma^2}\right] \quad (17)$$

1251. The Gaussian Kernel method provides for a degree of flexibility in weighting the observations around the target tenor through the choice of the value of the smoothing parameter, σ .

1252. The RBA then selects a smoothing parameter of 1.5 years for both A-rated bonds and BBB-rated bonds.

1253. The RBA concluded that the Gaussian Kernel method produces effective weighted average tenors that are very close to each of the target tenors. The exception is the 10 year tenor, where the effective tenor is currently 8.6 years. The RBA argues that

this difference reflects the dearth of issuance of bonds with tenors of 10 years or more.

1254. The Authority considers that the estimates developed by the RBA are not the best means to deliver on the allowed rate of return objective.
1255. First, the Authority is of the view that there is a need for consistency in the term estimates (that is, the estimates for the target tenors). The Authority notes that the RBA approach does not necessarily achieve this outcome, particularly at the 10 year target tenor. As noted above, the RBA method produces an estimate that is 8.6 years. The Authority recognises that methods are available to adjust the target tenor, which while less than ideal, are able to circumvent this problem.
1256. Second, the Authority notes that the RBA estimates are only available for the BBB and A bands. However, Australian economic regulators, including the Authority, have adopted various other combinations of credit ratings for their regulatory decisions. The Authority considers it should not be constrained in its credit rating evaluation by a limited set of estimates of the related debt risk premia, as this may not be consistent with the requirements of the NGR, or the allowed rate of return. If the Authority determined to use a different credit rating it would use a different bond sample (as indeed it does for its rail decisions). The Authority considers that this flexibility is important.
1257. Third, the RBA estimates are reported as the month-end estimates of the debt risk premium using relevant swap rates or CGS rates. The resulting estimates are less than ideal because Australian regulatory practice is to adopt an average over a period between 20 or 40 trading days, so as to avoid significant fluctuation of the estimates on any particular day. The Authority recognises that interpolation may be used to approximate daily rates, but considers that its own estimation will not require approximation, which has statistical advantages (see paragraph 1260 below).
1258. On this basis, the Authority remains of the view that it is more appropriate to develop its own yield estimates. To this end, the Authority revised its bond yield approach with two additions: (i) the benchmark sample was extended to recognise the importance of Australian bonds denominated in foreign currencies; and (ii) various curve fitting techniques are adopted to allow the estimation of the debt risk premium at various tenors.

The bond yield approach

1259. The revised bond yield (**bond yield approach**) approach allows for the specification of bond selection criteria for a given credit rating band. A regulator or Network Service Provider (**NSP**) employing the approach therefore has the flexibility to assess the impact of employing criteria that differ to (or are the same as) that used by the RBA. In a scenario where few bonds are available under a given set of criteria, less restrictive criteria can be specified to produce yield estimates that can serve as a robustness check.
1260. The Authority views the interpolation of a point estimate between two 1 day estimates to approximate 20 or 40 day averages to be less representative of yields prevailing in the averaging period in question and subject to a higher degree of statistical noise. Two observations represent a very small sample and it is entirely possible that the two observations could differ substantially to those prevailing throughout the averaging period.

1261. Additionally, the Authority considers its approach to be more transparent than using RBA corporate credit spreads because the sample of bonds underlying the bond yield approach estimates are published.
1262. The Authority is of the view that the bond yield approach:
- provides flexibility in sampling bonds within a particular credit rating band;
 - directly addresses the issue of the effective tenor of the Reserve Bank of Australia (**RBA**) corporate credit spread estimates being less than 10 years; and
 - is more robust to anomalous market yields by virtue of using 20 to 40 days of yield observations than using methods based on one day of observations;

Extending the benchmark sample for the bond yield approach

1263. In its bond yield approach discussion paper in December 2010, the Authority considered the trade-off between the ‘market relevance’ and the ‘accuracy’ of the approach to be adopted in estimating the proxy for the cost of debt/the debt risk premium for a benchmark sample of Australian corporate bonds.⁵⁸¹ The Authority considered that a bond price (or its observed yield) is determined by the markets, not by the companies or the regulators. As a result, the Authority was of the view that relying on market data will provide the best means of estimating the proxy for the cost of debt. This means that observed bond yields play a fundamental role in the method of estimation.
1264. In addition, the Authority places emphasis on market relevance. This takes account of the fact that new bond issuers consider the prevailing market conditions prior to the issuance of the bonds. In particular, issuers will consider issuing longer term bonds in a ‘normal’ market situation, whereas shorter term bonds may be more appropriately issued during very unstable market conditions. As a result, the observed yields of bonds currently traded in the market will reflect the nature of the prevailing market conditions prior to the issuance of the bonds.
1265. The Authority notes that firms are increasingly choosing to issue Australian bonds denominated in offshore markets and currencies.⁵⁸² As long as the majority of bond issuances of the various markets and currencies can be captured, then the associated outcomes are ‘market relevant’, and ideally should be included in the benchmark sample.
1266. The decision to issue bonds in the Australian or overseas financial markets lies with businesses. There may be a cost advantage in issuing bonds overseas taking into account all possible risks associated with the process such as exchange rate risk. Alternatively, it may be more convenient to issue longer term bonds and/or bonds with larger amounts at issuance in overseas markets given the Australian financial market is generally considered a smaller market in comparison with the US, European, and UK markets.

⁵⁸¹ Economic Regulation Authority, *Measuring the debt risk premium: bond-yield approach*, 30 November 2010.

⁵⁸² Reserve Bank of Australia, *‘New Measures of Australian Corporate Credit Spreads’*, *Bulletin*, December quarter 2013, p. 16.

1267. An initial search on the Bloomberg terminal, as at 18 June 2014, indicated that Australian corporate bonds are largely denominated either in Australian dollars, US dollars (**USD**), Euros, or British pounds (**GBP**).

Table 82 Australian corporate bonds denominated in various currencies

Currency	No of bonds	Percentage	Amount (in relevant currency)	Exchange rate as at 18 June 2014	Amount (in A\$)	Percentage
AUD	74	39%	20,531,775,500	1.0000	20,531,775,500	21%
CAD	2	1%	521,370,000	1.0148	513,766,259	0.52%
CHF	3	2%	492,910,000	0.8399	413,995,109	0.42%
EUR	14	7%	10,805,920,000	0.6893	15,676,657,479	15.81%
GBP	12	6%	6,196,342,000	0.5504	11,257,888,808	11.36%
JPY	2	1%	109,813,500	95.4700	1,150,241	0.0012%
NZD	3	2%	771,090,000	1.0778	715,429,579	0.72%
SGD	1	1%	217,903,000	1.1704	186,178,230	0.19%
USD	78	41%	46,539,000,000	0.9337	49,843,632,859	50.28%
Total	189	100%	86,186,124,000		99,140,474,063	100%

Source: Authority analysis based on data obtained from Bloomberg and the RBA (for exchange rate), June 2014

1268. The above table indicates that if only Australian corporate bonds denominated in Australian dollars are included in the benchmark sample, then only 39 per cent (in terms of number issued) and 21 per cent (in terms of value at issuance) of bonds are covered. However, when foreign currencies such as USD; Euros; and GBP are included, the benchmark sample captures relevant information relating to 93 per cent of all debt (in terms of the number of bonds issued) and 98 per cent of all debt (in terms of the amount at issuance).

1269. It is clear then that the majority of Australian corporate bonds are denominated in foreign currencies.⁵⁸³ Furthermore, overseas markets have assumed greater importance for the longer end of the yield curve.

1270. In conclusion, the Authority considers that Australian corporate bonds denominated in selected foreign currencies should be included in the benchmark sample, given the changing nature of debt markets, and the clear trend to foreign issuance. Doing so will increase the sample size of the benchmark sample, which leads to a more robust estimate of the DRP.

1271. The Authority will include Australian bonds denominated in USD; Euros; and GBP in the benchmark sample under its bond yield approach. The Authority notes that as at August 2014, bonds denominated in AUD; USD; Euros and GBP covered the majority of debt issued by Australian corporates. Should the debt market evolve in the future and other currencies play a more significant role, the choice of currencies may need to change. The Authority considers that provided the bond sample covers at least 90 per cent of both the number of bonds and the amount at issuance, then its estimates are likely to be sufficiently representative of actual debt issuing practices.

1272. As a further consideration, the Authority notes that it is standard practice to exclude firms operating in the financial sector, because these firms have a different capital

⁵⁸³ Reserve Bank of Australia, 'New Measures of Australian Corporate Credit Spreads', *Bulletin*, December quarter 2013, p. 17.

structure.⁵⁸⁴ Exclusion of bonds issued by firms in the financial sector may reduce the sample size. However, given the approach to include bonds denominated in foreign currencies, this reduction in the sample size does not have an effect on the robustness of the estimates.

1273. In summary, the Authority considers that it is appropriate to include Australian corporate bonds denominated in key foreign currencies in the benchmark sample, as well as domestic issuance in Australian dollars. The Authority also considers it appropriate to exclude bonds issued by financial entities.

1274. The bond yield approach criteria are outlined in Table 83.

Table 83 Bonds in Draft Decision Sample with Country of Risk other than Australia

Criteria	Authority's approach
Remaining term	≥ 2 years
Amount at issuance	N/A
Denominated currency	AUD, USD, EUR and GBP
Industry of issuers	Non-financial corporates only
Country of Risk	Australia
Maturity Type	Bullet, Callable and Puttable
Exclude	Perpetual, inflation linked, called instruments
Consolidate	Duplicate issues

Source Bloomberg and ERA Analysis, December 2015.

1275. The country of risk criteria ensures that yields and credit spreads estimated on the bonds issued are reflective of risks primarily linked to economic and financial market conditions in Australia. Perpetual, inflation linked and called instruments are excluded. This is because these instruments appear infrequently in sampling and require additional complexity in calculating yields that are comparable to those of the other instruments. The additional benefit of including such instruments does not justify the additional complexity of including them. Duplicate issues such as those that are reported by Bloomberg as both privately placed and publically issued are excluded to avoid double counting their yields in the sample.

1276. The sample of bonds as at 31 May 2016 includes 99 instruments which are outlined in Appendix 4. These bonds are used for the purpose of developing the 2016 DRP estimate.

Techniques to estimate the debt risk premium

1277. The Authority in the Draft Decision investigated methods for the purpose of estimating the cost of debt at tenors beyond 5 years.

1278. The Authority notes that there are different curve fitting techniques that could be used for this purpose. However, the following three techniques are widely used:

- the Gaussian Kernel;

⁵⁸⁴ The Authority notes that the RBA estimates exclude financial sector bonds.

- the Nelson-Siegel methodology; and
- the Nelson-Siegel-Svensson methodology.

1279. Each of these techniques is discussed in turn below.

Gaussian Kernel

1280. This methodology was discussed in detail above under the discussion of the RBA's approach.

1281. For the Authority's Gaussian Kernel estimates, bond issue amounts expressed in foreign currencies are converted to Australian dollar amounts before being applied as weights in the Gaussian Kernel estimates.⁵⁸⁵ Consequently, where a bond is issued in a foreign currency the weighting in the Gaussian Kernel estimates uses the principal amount converted into an Australian dollar amount. The currency conversion uses the closing exchange rate on the date of the bond's issue.

The Nelson-Siegel methodology

1282. The Nelson-Siegel methodology assumes that the term structure of the yield curve has the parametric form shown in (18):

$$\hat{y}_t(\tau) = \beta_{0t} + \beta_{1t} \frac{1 - e^{-\lambda\tau}}{\lambda\tau} + \beta_{2t} \left(\frac{1 - e^{-\lambda\tau}}{\lambda\tau} - e^{-\lambda\tau} \right) \quad (18)$$

where

$\hat{y}_t(\tau)$ is the credit spread (debt risk premium) at time t for maturity τ ; and

$\beta_{0t}, \beta_{1t}, \beta_{2t}, \lambda$ are the parameters of the model to be estimated from the data.⁵⁸⁶

1283. The Nelson-Siegel methodology uses observed data from the bond market to estimate the parameters $\beta_{0t}, \beta_{1t}, \beta_{2t}, \lambda$ by using the observed yields and maturities for bonds. With the estimated parameters $\beta_{0t}, \beta_{1t}, \beta_{2t}, \lambda$, a yield curve is produced by substituting these estimates into the above equation and plotting the resulting estimated yield $\hat{y}_t(\tau)$ by varying the maturity τ . $\hat{y}_t(\tau)$ has the interpretation of being the *estimated* yield for a benchmark bond with a maturity of τ for a given credit rating.

The Nelson-Siegel-Svensson methodology

1284. The parametric form of the Nelson-Siegel-Svensson curve used by the Authority is that specified in Svensson's 1994 paper.⁵⁸⁷ The notation for this parametric form is shown in equation (19).

⁵⁸⁵ ATCO Gas Australia, *Response to the Authority's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 72.

⁵⁸⁶ Error term is omitted for brevity.

⁵⁸⁷ L. Svensson, *Estimating and Interpreting Forward Interest Rates: Sweden 1992-1994*, Institute for International Economic Studies, University of Stockholm, Seminar Paper No 579, p. 6.

$$\hat{y}_t(\tau) = \beta_{0t} + \beta_{1t} \frac{1 - e^{-\tau/\lambda_1}}{\tau/\lambda_1} + \beta_{2t} \left[\frac{1 - e^{-\tau/\lambda_1}}{\tau/\lambda_1} - e^{-\tau/\lambda_1} \right] + \beta_{3t} \left[\frac{1 - e^{-\tau/\lambda_2}}{\tau/\lambda_2} - e^{-\tau/\lambda_2} \right] \quad (19)$$

where

$\hat{y}_t(\tau)$ is the credit spread (debt risk premium) at time t for maturity τ ; and

$\beta_{0t}, \beta_{1t}, \beta_{2t}, \beta_{3t}, \lambda_1, \lambda_2$ are the parameters of the model to be estimated from the data.⁵⁸⁸

1285. The Nelson-Siegel-Svensson methodology is estimated in the same way as the Nelson-Siegel method, except uses a different parametric form.

Using the Authority's bond yield approach to estimate the regulated debt risk premium

1286. On the basis of the above considerations, the Authority will use its bond yield approach for the purpose of estimating the regulated DRP.

1287. To estimate the regulated DRP, the Authority:

- extends the benchmark sample under the bond yield approach to: (i) include Australian corporate bonds denominated in domestic currency (**AUD**) and foreign currencies including USD; Euros; and British pounds; and (ii) exclude bonds issued by financial sectors including banks, duplicates, inflation linked, called and perpetual instruments;
- converts the yields into hedged Australian Dollar equivalent yields inclusive of Australian Swap rates;
- averages AUD equivalent bond yields across the averaging period for each bond (for example, where a 20 trading day averaging period applies, each bond will have a single 20 day average yield calculated for it);
- estimates yield curves on this data – applying the Gaussian Kernel, Nelson-Siegel and Nelson-Siegel-Svensson techniques;
- uses the simple average of these 3 yield curve's 10 year cost of debt estimate to arrive at the market estimate of the 10 year cost of debt;⁵⁸⁹
- estimates the regulated debt risk premium for the purposes of estimating the regulated cost of debt.

1288. The following sections summarise these steps in more detail.

Step 1: Determining the benchmark sample

1289. The criteria set out in the Rate of Return Guidelines to determine the benchmark sample in the Authority's bond yield approach have been revised. The following

⁵⁸⁸ Error term is omitted for brevity.

⁵⁸⁹ The Authority intends to adopt the average, because there is no strong evidence to suggest that one approach outperforms the others. It is likely that the average will show less variability under a range of prevailing conditions.

characteristics will be applied to select corporate bonds to be included in the benchmark sample.⁵⁹⁰

- credit rating of each bond must match that of the benchmark efficient entity, as rated by Standard & Poor's;
- time to maturity of 2 years or longer;
- bonds issued where the country of risk is Australia (except by the financial sector⁵⁹¹) and denominated in AUD; USD; Euros; and GBP;⁵⁹²
- inclusion of both fixed bonds⁵⁹³ and floating bonds;⁵⁹⁴
- inclusion of both bullet and callable/ puttable redemptions;⁵⁹⁵
- at least 50 per cent of observations for the averaging period is required (that is, 20 yield observations over the required averaging period of 40 trading days are required),⁵⁹⁶ and
- are not called, perpetual, a duplicate or inflation linked.

1290. The inclusion of the last criteria in paragraph 1289 above ensures the exclusion of duplicates, called, perpetual and inflation linked instruments. Employing these criteria in the Bloomberg search function ensures a consistent sample with that employed by the Authority.

1291. The sample of bonds as at 31 May 2016 – used for the 2016 estimate – includes 99 instruments which are outlined in Appendix 4.

Step 2: Conversion of yields into AUD equivalents

1292. Under the finalised approach for conversion of yields into Australian dollar equivalents only hedged Australian dollar equivalents yields (as opposed to spreads) are reported. The spread to an Australian dollar swap is calculated as a single estimate

⁵⁹⁰ Economic Regulation Authority, *Discussion Paper – Measuring the Debt Risk Premium: A Bond Yield Approach*, December 2010, p. 11.

⁵⁹¹ As classified by Bloomberg Industry Classification System level 1.

⁵⁹² Country of risk is based on Bloomberg's methodology using four factors listed in order of importance; management location, country of primary listing, country of revenue and reporting currency of issuer. This criteria allows for the largest sample of bonds that reflect an Australian risk premium.

⁵⁹³ This is a long term bond that pays a fixed rate of interest (a coupon rate) over its life.

⁵⁹⁴ This is a bond whose interest payment fluctuates in step with the market interest rates, or some other external measure. Price of floating rate bonds remains relatively stable because neither a capital gain nor capital loss occurs as market interest rates go up or down. Technically, the coupons are linked to the bank bill swap rate (it could also be linked to another index, such as LIBOR), but this is highly correlated with the RBA's cash rate. As such, as interest rates rise, the bondholders in floaters will be compensated with a higher coupon rate.

⁵⁹⁵ A callable (puttable) bond includes a provision in a bond contract that give the issuer (the bondholder) the right to redeem the bonds under specified terms prior to the normal maturity date. This is in contrast to a standard bond that is not able to be redeemed prior to maturity. A callable (puttable) bond therefore has a higher (lower) yield relative to a standard bond, since there is a possibility that the bond will be redeemed by the issuer (bondholder) if market interest rates fall (rise).

⁵⁹⁶ The Authority notes that there is a tendency for fewer bonds to be available on the long end of the yield curve. If circumstances arise where this criteria results in a paucity of bonds such that curve fitting is impractical the Authority may exercise judgement to determine whether exclusion of bonds based on this criteria is appropriate.

based on the observed cost of debt on the entire sample of bonds, as opposed to downloading individual swap spreads.

1293. The Authority's finalised approach for conversion into Australian dollar equivalents does not require estimates of a conversion factor as it utilises Bloomberg Swap Manager facilities directly. The Authority believes this approach is transparent and replicable - anyone with access to a Bloomberg terminal can enable the functionality and will get the same hedged Australian dollar equivalent yield for any given bond, provided they use the same date, currency, payment frequency and deal type. Further details of the approach are outlined in Appendix 3.

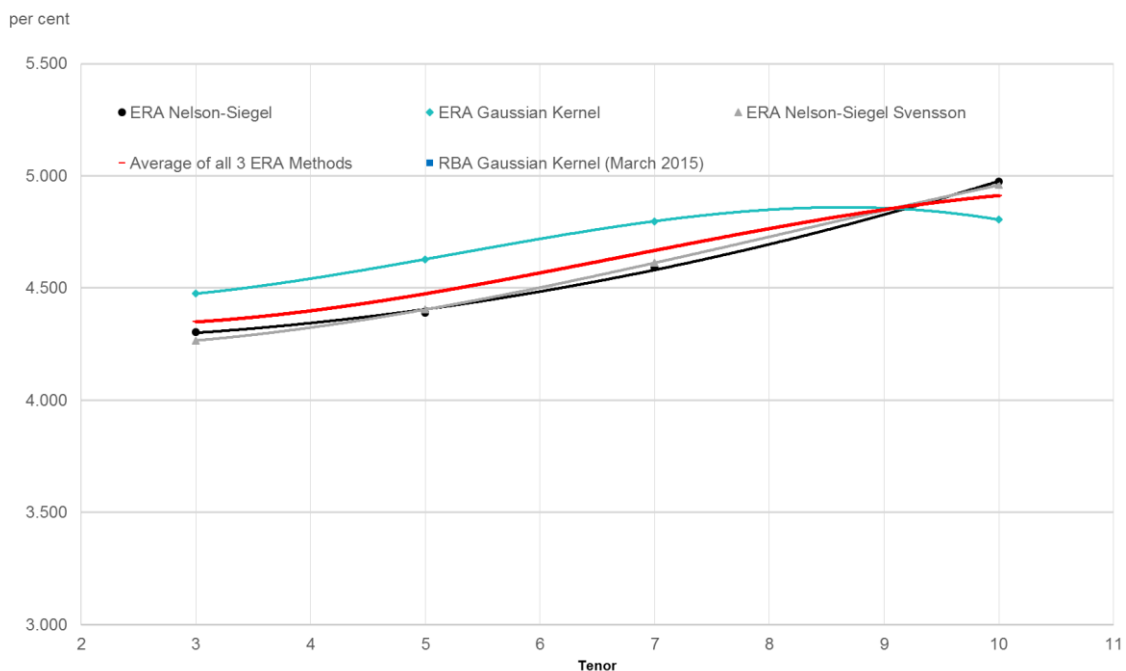
Step 3: Averaging yields over the averaging period

1294. Under the finalised approach for conversion of yields into Australian dollar equivalents only hedged Australian dollar equivalent yields (as opposed to spreads) are reported. The averaging period results in 20 hedged Australian dollar equivalent yields for each bond. The days are based on Australian eastern states trading days and are counted back from and include the determination date for the DRP calculation.
1295. The observations on these days are then averaged to create one 20 day average observation for each bond. The spread to an Australian dollar swap is calculated as a single estimate based on the observed cost of debt estimated using all three techniques on the entire sample of bonds.⁵⁹⁷

Step 4: Apply curve fitting techniques

1296. The results of the three curve fitting techniques applied to the sample of bonds listed in Appendix 4 are plotted in Figure 15.

Figure 15 Estimated Effective Annual Spot Yield Curves for the Cost of Debt for the Averaging Period up to 31 May 2016



⁵⁹⁷ As opposed to downloading individual swap spreads.

Source: Bloomberg, Reserve Bank of Australia and Authority Analysis, June 2016.

1297. The parameters and constraints for the fitted curves are reproduced in Table 84 and Table 85.

Table 84 Nelson-Siegel-Curve Fitted Parameters and Constraints

Parameter	Value	Constraints
β_{0r}	7.963	≥ 0
β_{1r}	-3.350	
β_{2r}	-5.814	
$\beta_{0r} + \beta_{1r}$	4.613	≥ 0
λ_1	0.22170	≥ 0

Source: Authority Analysis, June 2016.

Table 85 Nelson-Siegel-Svensson Curve Fitted Parameters and Constraints

Parameter	Value	Constraints
β_{0r}	8.009	≥ 0
β_{1r}	4.646	
β_{2r}	-13.493	
β_{3r}	-8.348	
λ_1	0.76866	≥ 0
λ_2	4.36475	≥ 0
$\beta_{0r} + \beta_{1r}$	12.655361	≥ 0

Source: Authority Analysis, June 2016.

1298. The 10 year Authority Gaussian Kernel estimate shown in Table 86 on the Authority Gaussian Kernel estimate curve is the extrapolated 10 year estimate using the method outlined in paragraph 1385. This changes the annualised 10 year Gaussian Kernel estimate from 4.802 to 4.804 per cent; an increase of less than one basis point.⁵⁹⁸ The specific yields at each tenor for the various methods are shown in Table 86.

⁵⁹⁸ The 7 and 10 year effective tenors calculated by the Authority are 6.77 and 9.10 years respectively. The associated raw yields (not annualised) are 4.742, 4.746 per cent.

Table 86 Estimated effective annual spot yields at each tenor for the cost of debt as at 31 May 2016

Years	3	5	7	10
RBA Gaussian Kernel (May 2016)	4.346	4.622	4.817	5.055
Authority Gaussian Kernel	4.475	4.628	4.798	4.804
Authority Nelson-Siegel	4.305	4.391	4.592	4.974
Authority Nelson-Siegel Svensson	4.266	4.404	4.612	4.958
Average of all 3 Authority Methods	4.349	4.474	4.667	4.912

Source: Bloomberg, Reserve Bank of Australia and Authority Analysis, June 2016.

Step 5: Estimate the regulatory debt risk premium

1299. For the purposes of calculating the 10 year DRP for the period 2016 in this Final Decision the Authority will use the 10 year cost of debt estimate of 4.912 per cent based on the average of all three methods, estimated as at 31 May 2016.
1300. The 20 day average of the 10 year Australian dollar swap rate as at 31 May 2016 expressed as an annualised yield was 2.438 per cent.⁵⁹⁹
1301. Subtracting the 10 year swap rate of 2.438 per cent from the 10 year cost of debt gives a spread to swap of 2.474 per cent. The Authority will therefore apply a DRP of 2.474 per cent as the spot estimate for the 2016 year for the purposes of this Final Decision.
1302. The foregoing method also will be used to annually update the forward looking DRP, consistent with the 'automatic formula' requirement of NGR 87(12). The automatic formula is set out at Appendix 3.

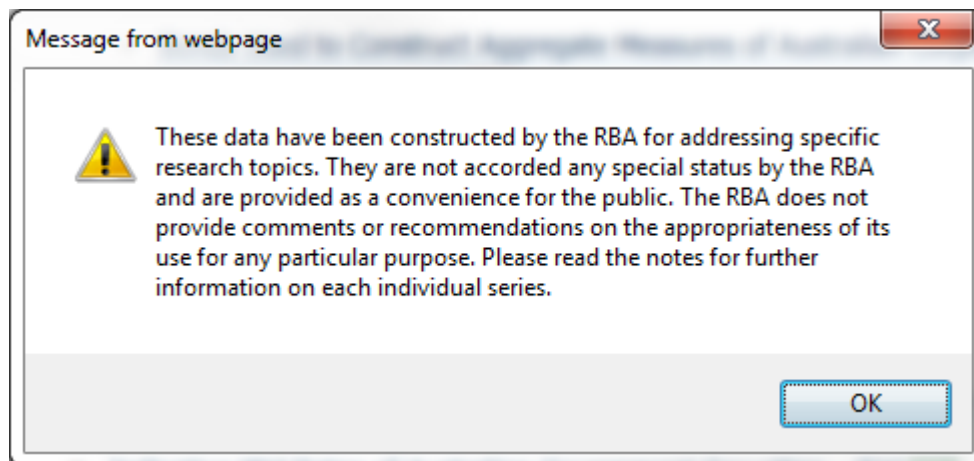
Issues raised by GGT in response to the Draft Decision

1303. GGT considers that the return on debt should be estimated using the RBA data, noting that those data are available from a reliable and independent source.⁶⁰⁰
1304. The Authority is of the view that the RBA did not develop their corporate bond yield and credit spread data for the express purpose of making regulatory determinations. The RBA explicitly states that the series was constructed by the RBA for addressing specific research topics (see Figure 16). Additionally, the RBA explicitly states that it does not provide comments or recommendations on the appropriateness of its use for any particular purpose.

⁵⁹⁹ The 20 day average fixed rate for 'ADSWAP10 Curncy' was 2.424 per cent which is paid semi-annually.

⁶⁰⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 96.

Figure 16 Reserve Bank of Australia F03 Australian Corporate Bond Spreads and Yields Disclaimer



Source: Reserve Bank of Australia Statistical Tables, Reserve Bank of Australia, monthly updating. See <<http://www.rba.gov.au/statistics/tables/>>.

1305. The RBA appears to be under no obligation to continue publishing its Australian corporate credit spreads – its disclaimer states that the data have been provided as a convenience for the public. If the RBA were to cease publication of the credit spreads series a new source of Australian corporate credit yields or spreads would need to be sourced. An estimation *approach*, on the other hand, provided it is adequately detailed and transparent, can be implemented independently of the author and so is not exposed to the risk of the author ceasing to publish the data.
1306. GGT considers the use of RBA credit spreads, extrapolated or interpolated where necessary, more appropriate than applying the bond yield approach and that the Authority's reasons for not using the RBA credits spreads are insubstantial.
1307. For use in the regulatory context, the RBA data requires a series of manipulations in order to approximate cost of debt and debt risk premium estimates other than end of month observations. The RBA also estimates spreads and yields at a target tenor using the Gaussian kernel approach. In the current context of regulation, cost of debt and debt risk premium estimates at an effective tenor of 10 years are required. Again, extrapolation is typically required in order estimate the cost of debt or debt risk premium at an effective tenor of 10 years when using the RBA data. Each of these manipulations are approximations applied to what already are approximations.
1308. These issues are addressed below.

Transparency

1309. GGT submits that, at the time it commenced publication of the credit spreads, the RBA advised that its methods had the advantage of the construction being more transparent over alternatives.⁶⁰¹ It should be highlighted that the alternative that the RBA was referring to was the Bloomberg credit spread series.⁶⁰² The Authority agrees that the RBA's method of construction is transparent in-so-far as the bond

⁶⁰¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 96.

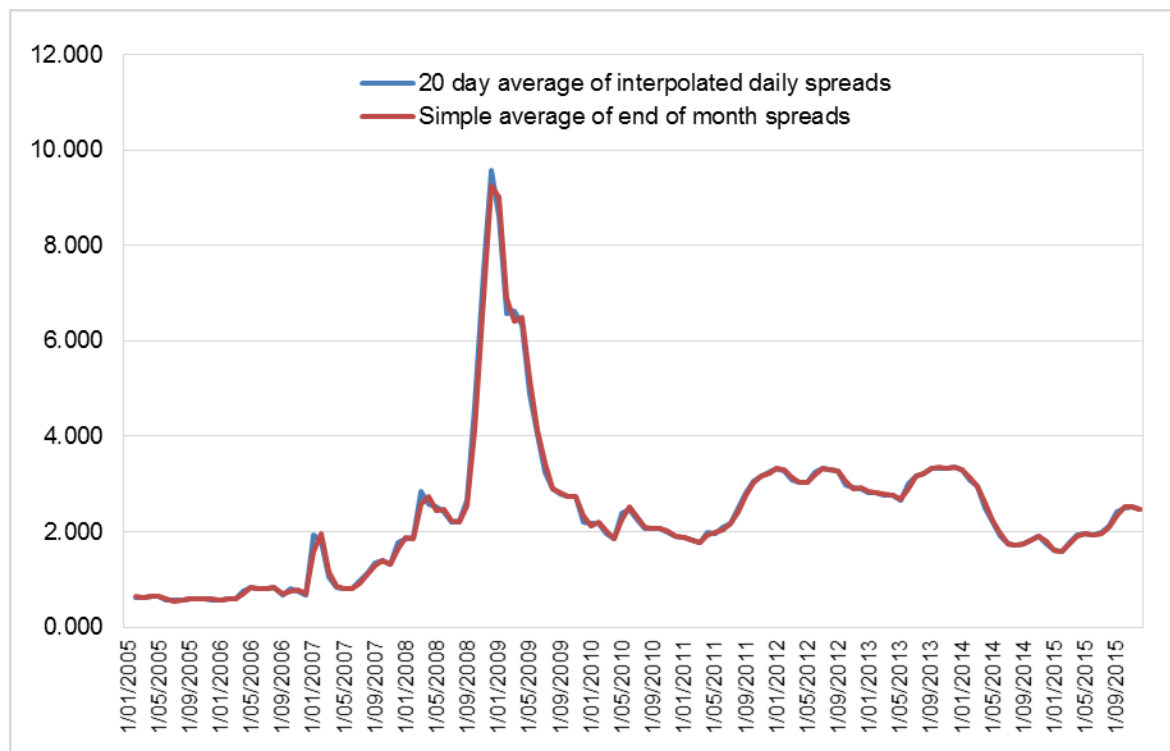
⁶⁰² I. Arsov, M. Brooks and M. Kosev, Reserve Bank of Australia, 'New Measures of Australian Corporate Credit Spreads', Reserve Bank of Australia Bulletin December, 2013, p. 24.

sample has now been published and the application of the Gaussian kernel method is explained in sufficient detail so that it can be replicated. The construction, however, is complicated by the use of option adjusted spreads in conjunction with cross-currency swaps, the application of which is not detailed.

Linear interpolation of trading day estimates

1310. Linearly interpolating between end-of-month estimates is not significantly different from taking a simple average of two end of month estimates as shown in Figure 17. This effectively only uses two data points to inform an estimate. The Authority adopts an averaging period of 20 to 40 trading days for the risk free rate – trading off efficiency of the estimate for smoothing of short term volatility. The same averaging period is applied to the debt risk premium for similar reasons, as well as consistency with the risk free rate.

Figure 17 Linear Interpolation versus Simple Average of RBA End of Month Estimates



Source: ERA Analysis, Reserve Bank of Australia Data, December 2015.

1311. A more rigorous analysis confirms that there is no significant difference between taking the simple average between two end of month estimates and 20 days of linearly interpolated estimates between months. The simple averages are regressed on the averages of the interpolated estimates. If the two are not statistically different from each other the slope coefficient should equal 1 and the intercept (difference) equal to 0 – that is, α and β_t in equation (20) will ‘disappear’ making the left side equal to the right.

$$\text{Simple Average}_t = \alpha + \beta_t (\text{Interpolated Estimates}_t) \quad (20)$$

where

Interpolated Estimates_t is the average of 20 interpolated estimates;

α is the intercept or constant difference;

β_t is the slope coefficient; and

Simple Average_t is the simple average of two end of month estimates.

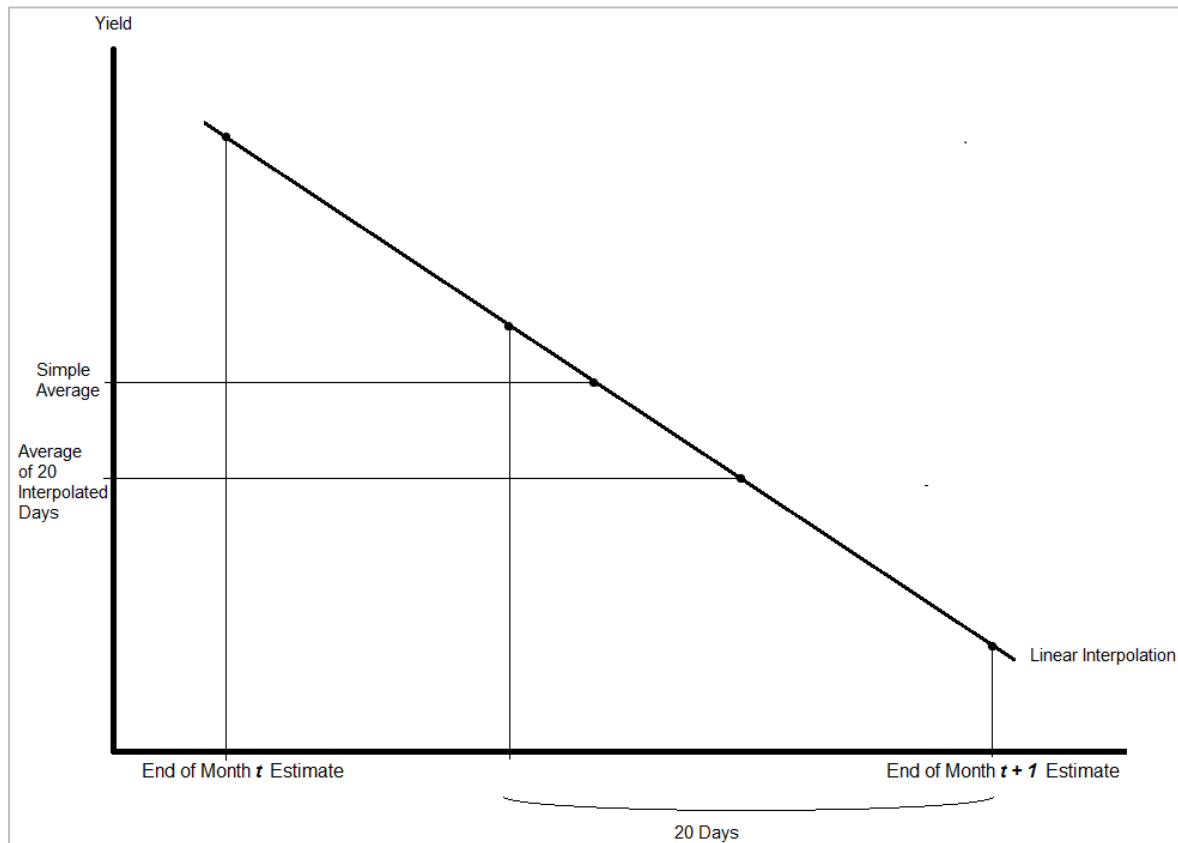
Table 87 Regression of interpolated estimates on simple average

	coefficients	p-value
Difference (α)	0.01	0.61
Slope (β_t)	0.99	<0.001
Observations	131	

Source: ERA Analysis, December 2015.

1312. The p-value on the intercept in the regression is reported in Table 87. The intercept can be interpreted as the 'constant' difference between the two series in Figure 17 and the value of 0.61 strongly suggests that the difference is not different to zero as it is far greater than 0.05 (5 per cent level of statistical significance). The slope coefficient also appears to be very close to one (0.99) and is highly significant as the low p-value indicates. This result indicates that the average of the 20 day interpolations is not much different to using a simple average of two end of month estimates. This is unsurprising given that the average of the interpolations and simple average are two points around 20 days apart on the same linearly interpolated curve. This concept is shown in Figure 18 assuming the latter month has a lower yield than the earlier month, but holds for all other scenarios.

Figure 18 Conceptual distance between linear interpolation and simple average of RBA end of month estimates



Source: ERA Analysis, December 2015.

1313. The Authority considers that two end of month observations in the simple average, is less likely to be representative of the actual daily average DRP or cost of debt in a given month than the actual average itself and is more susceptible to anomalous events such as yield curve inversion on a particular day.⁶⁰³ A result based on two end of month observations that reflects the 20 day average is likely only to occur by chance.

Extrapolating the yield estimate for the 10 year tenor

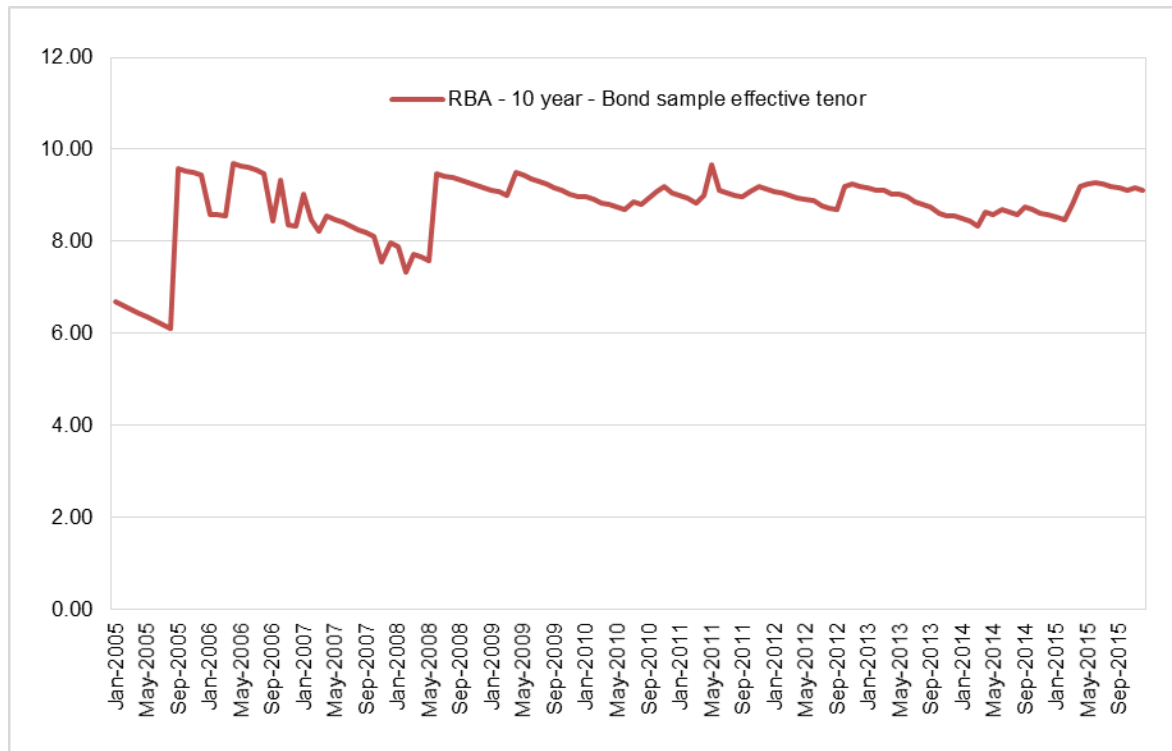
1314. The effective tenor for the RBA corporate bond yield and spread estimates is generally less than the 10 year tenor currently required by Australian regulators as shown in Figure 19. The implication is, assuming an upward sloping yield curve, that the RBA yields and spreads will systematically underestimate those for a 10 year effective tenor. To adjust for this the AER, on the advice of Lally, linearly extrapolates between the effective tenors and yields of the 7 and 10 year series.⁶⁰⁴ This implicitly assumes that a linear approximation past the effective tenor on the 10 year RBA estimates is not significantly different from an estimate that accounts for any curvature in the term structure of a yield curve. If the term structure in a yield curve for a given

⁶⁰³ Yield curve inversion here refers to the situation where the yield of spread observed for a shorter term is higher than the yield or spread observed for a longer term. Plotting a linear curve through these two observations will produce a negative sloped yield or spread curve.

⁶⁰⁴ Australian Energy Regulator, *Jemena Gas Networks (NSW) Ltd Access Arrangement 2015-20: Attachment 3 – Rate of Return*, June, 2015, p. 210.

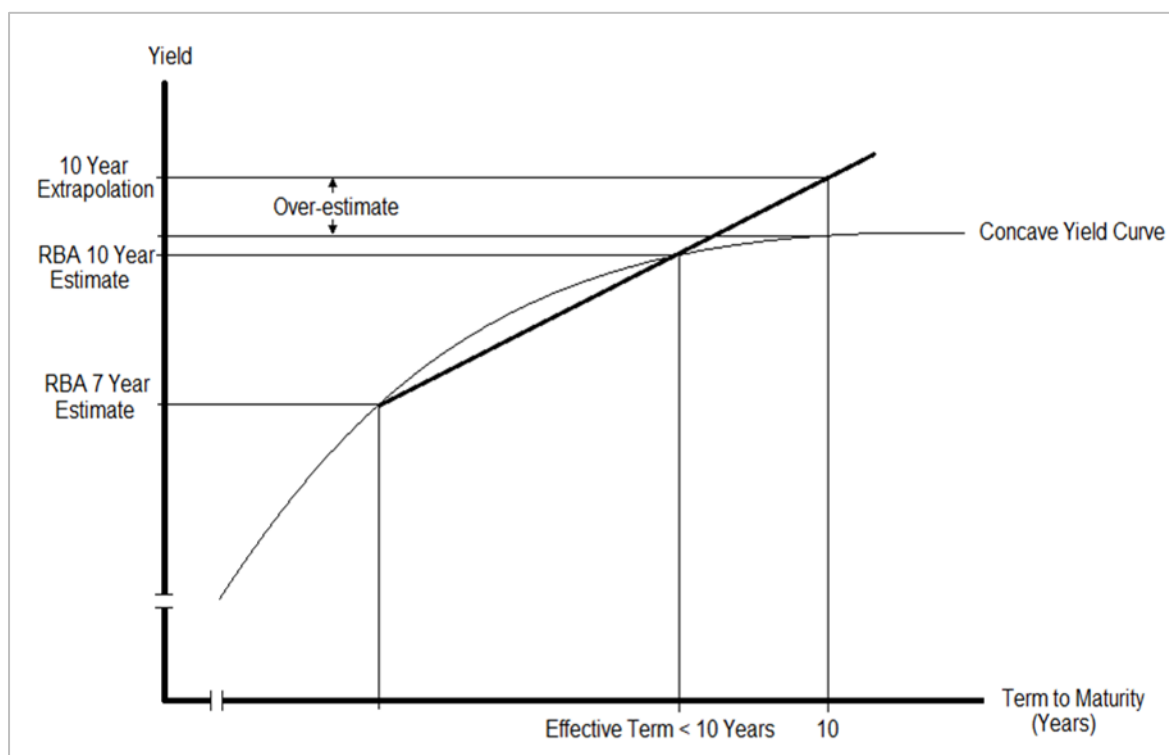
credit band has a tendency to be concave (increasing at a decreasing rate) linear extrapolation will introduce upward bias.

Figure 19 Effective Tenor of Reserve Bank of Australia 10 year Spread



Source: ERA Analysis, Reserve Bank of Australia data, December 2015.

1315. The Authority notes that there may be occasions when the curvature in the term structure of the yield curves are quite pronounced and the effective tenor of the 10 year RBA estimates is significantly lower than 10 years (see Figure 19). In these circumstances a linear extrapolation maybe subject to a material degree of error. The Authority is of the view that curve fitting techniques – which interpolate estimates between observations with a remaining term to maturity less than and greater than 10 years provides additional information on curvature – should be taken into account. Interpolation based on actual data is preferable to extrapolation based on an assumption of a linearity in the yield curve, provided there are sufficient estimates at the long end of the curve. The reasoning behind the possibility of overestimates is stylistically illustrated in Figure 20.

Figure 20 Extrapolating 10 year Estimates from Reserve Bank of Australia Data

Source: ERA Analysis, December 2015.

1316. The potential errors in applying the various interpolations and extrapolations outlined above may also be compounded through the application of more than one approximation at a time. For example, interpolating a 20 day DRP or cost of debt estimate based on two end of month estimates may create an unrepresentative starting point. The error may then be compounded by using a linear extrapolation based on an erroneous assumption of linearity.
1317. GGT submits that the source data are not of a tenor of 10 years, so adjustments for tenor are required irrespective of whether RBA data are used, or some other method of yield estimation.⁶⁰⁵ Although the Authority also uses linear extrapolation across two points as part of the bond yield approach as GGT have highlighted, potential errors are mitigated by using 20 or 40 trading days of observations to arrive at those points instead of one. The use of more than one trading day of observations to arrive at each of the two points (outlined in Figure 20 as the two closest to the origin on the x axis) creates a more robust set of points for use in extrapolation. This is because using 20 or 40 observations, instead of one, will tend to smooth out any idiosyncratic events that might be observed on a single trading day such as yield curve inversion.
1318. Averaging this extrapolated result with the two additional non-linear curve methods (Nelson Siegel and Nelson Siegel Svensson) which do not require linear extrapolation, minimises the error associated with the choice of any one particular model. Issues associated with model choice are discussed further in paragraph 1327.

⁶⁰⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 95.

Flexibility in sampling bonds within particular credit rating bands

1319. While the ability of the bond yield approach to sample bonds within different credit bands is redundant in the context of gas network regulation (the credit rating benchmark is fixed at the BBB band), such flexibility makes the approach robust to changes in the benchmark that may occur over the long-run.

Other Issues

1320. In addition to transparency, GGT submits that, at the time it commenced publication of the credit spreads, the RBA advised that its method also had the following advantages over alternatives:⁶⁰⁶

- the samples are larger; and
- the method is relatively robust, allowing for the estimation of spreads at longer maturities than are available elsewhere.

1321. Again, it should be highlighted that the alternative that the RBA was referring to was the Bloomberg credit spread series – not the bond yield approach.⁶⁰⁷ The sampling criteria used by the Authority maximise the potential of acquiring a robust number of observations around the long end of the yield curve as it allows for the inclusion of floating and variable rate bonds as well as bonds denominated in British Pounds. The Authority's use of functionality introduced by Bloomberg enables the use of bonds other than just fixed rate bonds, as utilised by the RBA, thus increasing the sample.⁶⁰⁸ The inclusion of bonds denominated in British Pounds in addition to Australian dollar, US dollar and euro denominations used by the RBA also facilitates increased sample sizes. The sample sizes at various tenors for this Final Decision are shown in Table 88.

Table 88 Reserve Bank of Australia versus GGT Final Decision Sample by Tenor May 2016

	1<X<=4	4<X<=6	6<X<=8	8<X<=12	12<=X
RBA Number of Bonds	35	30	9	12	4
ERA Number of Bonds	23	34	14	18	10

Source: ERA Analysis, Reserve Bank of Australia, June 2016

1322. GGT submits that the bond yield approach is an ad hoc and untested method of making yield estimates.

1323. The Authority does not agree with GGT's characterisation of the development of the bond yield approach as being 'ad hoc'. The term 'ad hoc' implies that the approach has not been developed with due care and consideration. The bond yield approach has been researched and developed over a period of five years in consultation with

⁶⁰⁶ Goldfields Gas Transmission Pty Ltd, Goldfields Gas Pipeline, Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission, January 2016, p. 96.

⁶⁰⁷ I. Arsov, M. Brooks and M. Kosev, Reserve Bank of Australia, 'New Measures of Australian Corporate Credit Spreads', Reserve Bank of Australia Bulletin December, 2013, p. 24.

⁶⁰⁸ The Bloomberg Swaps Toolkit enables Bloomberg's swap manager function to be called from Excel and thus convert the yields of a long list of fixed, floating and variable rate bonds into fixed Australian dollar equivalent yields simultaneously. This functionality was introduced after the RBA had already begun publishing its Australian corporate bond spreads and yields based on fixed rate bonds.

stakeholders, guidance from the Australian Competition Tribunal, advice from consultants and assistance from Bloomberg.

1324. The Bond Yield Approach was originally developed in 2010 to address the issue of CBASpectrum ceasing to publish its yield estimates for Australian corporate bonds and Bloomberg ceasing to publish Australian 10 year BBB yield estimates.⁶⁰⁹ The approach was tested in the Australian Competition Tribunal in 2012 as part of the application for a review made by WA Gas Networks Pty Ltd. Guidance was given on the weighting of the yields in the approach, but the Authority's application of the method was upheld.⁶¹⁰
1325. In 2014 the Authority received advice from Professor Martin Lally that, given that credit default swaps instruments are not available, the Authority should estimate the debt risk premium based on the average term at issuance.⁶¹¹ The Authority noted that analysis in the Rate of Return Guidelines would support a term at issuance for the benchmark efficient entity of around 10 years.⁶¹² In the ATCO Draft Decision the Authority noted that firms are increasingly choosing to issue Australian bonds in offshore markets and denominated in foreign currencies. It decided that as long as the majority of bond issuances of the various markets and currencies can be captured, then the associated outcomes are 'market relevant', and ideally should be included in the benchmark sample.⁶¹³ The augmentation of the bond yield approach to include bonds in offshore markets and those denominated in foreign currencies greatly expanded the sample and enabled yield estimation methods other than simple or weighted averages.
1326. GGT concluded that 'in the absence of any thorough and critical assessment, there is no basis for concluding that the Nelson-Siegel and Nelson-Siegel-Svensson methods can assist the making of estimates of the return on debt which can contribute to achievement of the allowed rate of return objective'.⁶¹⁴ The Authority investigated methods for the purpose of estimating the debt risk premium for tenors beyond five years. It noted that the three techniques, Gaussian kernel, Nelson-Siegel and Nelson Siegel Svensson are widely used. The methods are based on the same as those used by the RBA as well as tested, conventional methods of estimating yield curves.
1327. In its review of the method for estimating the WACC for the regulated rail network the Authority noted that it is common practice in research to apply different estimation techniques as a test of robustness.⁶¹⁵ The rationale for this is aptly summarised in the following quote from Plümpner and Neumayer:

The recognition that model misspecifications are ubiquitous goes back at least to George Box, who alarmed his readers that "all models are wrong, but some are useful"

⁶⁰⁹ Economic Regulation Authority, Discussion Paper - Measuring the Debt Risk Premium: A Bond-Yield Approach, 1 December 2010, p. 1.

⁶¹⁰ Australian Competition Tribunal, *Application by WA Gas Networks Pty Ltd (No 3) [2012] ACompT 12*, 8 June 2012, paragraph 187.

⁶¹¹ M. Lally, *The Cost of Debt*, 27 August 2014, p. 13.

⁶¹² Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines: Meeting the Requirements of the National Gas Rules*, December 2013, p. 39.

⁶¹³ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 14 October 2014, p. 193.

⁶¹⁴ Ibid.

⁶¹⁵ Economic Regulation Authority, *Review of the method for estimating the Weighted Average Cost of Capital for the Regulated Rail Networks: Final Decision*, 18 September 2015, p. 82.

(Kennedy 2008: 71). Similar claims have been made over and over again. Martin Feldstein (1982: 829), former president of the National Bureau of Economic Research and former Chairman of the Council of Economic Advisers warned that “in practice all econometric specifications are necessarily ‘false’ models”, while Luke Keele put it this way: “statistical models are always simplifications, and even the most complicated model will be a pale imitation of reality” (Keele 2008). In the summary verdict of Peter Kennedy (2008: 71): “It is now generally acknowledged that econometric models are false and there is no hope, or pretense, that through them truth will be found.” Like us, these authors do not suggest that models can be misspecified. Instead, they agree that all models are necessarily misspecified.⁶¹⁶

1328. The bond yield approach has been critiqued and replicated by Competition Economics Group (**CEG**) on behalf of ATCO and by Esquant Consulting on behalf of Dampier to Bunbury Natural Gas Pipeline.⁶¹⁷ The Authority accepted advice from CEG resolving issues with the initial application of the approach.⁶¹⁸ The approach has been applied in the Authority’s 2015 Rail WACC determinations, ATCO Final Decision and in the annual updating of ATCO’s trailing average debt risk premium.⁶¹⁹
1329. On this basis the Authority rejects any notion that the bond yield approach is ad hoc or untested and believes there is sound basis for concluding that the Nelson-Siegel and Nelson-Siegel-Svensson methods can assist the making of estimates of the return on debt which can contribute to achievement of the allowed rate of return objective.

Method of applying weights

1330. The trailing average estimate of the DRP weights the past 10 years of estimates of the annual DRP, consistent with the average term of debt issued by the benchmark efficient entity and its staggered debt portfolio.⁶²⁰
1331. The resulting 10 year trailing average is proposed to be updated annually, adding in the most recent estimate of the DRP, according to its weight, and dropping the estimate from 10 years ago. This replicates the cost of debt for the benchmark efficient entity under a strategy whereby it rolls over 10 per cent of its debt each year.

⁶¹⁶ T. Plümpner and E Neumayer, ‘Model Uncertainty and Robustness Tests: Towards a New Logic of Statistical Inference’, *Rochester: Social Science Research Network*, 2012, p. 3. Available from ProQuest, (accessed 17 July 2015).

⁶¹⁷ See Esquant Statistical Consulting, *Drpr Package*, 22 February 2016 available from <<https://www.erawa.com.au/cproot/14115/2/10.%20Submission%2056%20-%20Appendix%20J%20-%20ESQUANT%20Report%20-%20%20DRPR%20Package.pdf>> (accessed 16 March 2016) and ATCO Gas Australia, Response to ERA amendments to the Final Decision for the Access Arrangement for the Mid-West and South-West Gas Distribution System: Attachment D, 27 August 2015 available from: <[https://www.erawa.com.au/cproot/13885/2/Public%20Submission%20%20ATCO%20Gas%20Australia%20Or~to%20the%20Final%20Decision%2027%20August%202015%20\(attachment%20to%20letter%20received%20on%20dropbox\).PDF](https://www.erawa.com.au/cproot/13885/2/Public%20Submission%20%20ATCO%20Gas%20Australia%20Or~to%20the%20Final%20Decision%2027%20August%202015%20(attachment%20to%20letter%20received%20on%20dropbox).PDF)> (accessed 16 March 2016).

⁶¹⁸ Economic Regulatory Authority, Final Decision on Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems, 10 September 2015., pp.329-347.

⁶¹⁹ See Economic Regulation Authority, Review of the method for estimating the Weighted Average Cost of Capital for the Regulated Rail Networks: Final Decision, 18 September 2015, p.223 and Economic Regulatory Authority, Final Decision on Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems, 10 September 2015., p. 376.

⁶²⁰ Analysis in the Rate of Return Guidelines supported a term at issuance for the benchmark efficient entity of around 10 years. (Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines: Meeting the Requirements of the National Gas Rules*, December 2013, p. 39).

1332. The weights for a simple hybrid trailing average DRP estimate would be 10 per cent for each year's estimated of the DRP over the most recent relevant 10 years.
1333. The benchmark efficient entity could then replicate a simple 10 year trailing average by issuing one tenth of its debt each year. While a simplification of likely practice in reality, this would closely proxy the cost of debt under the observed financing strategies of benchmark efficient entities.

The simple equally weighted trailing average

1334. A first step in developing weights is to establish the formula for the equally weighted trailing average. This develops the weights to each of the DRP annual estimates for the nine past regulatory years, plus the 'current' estimate, that would contribute to the hybrid trailing average DRP estimate for each current regulatory year.
1335. The following equation in (21) specifies the formula for estimating the simple equally weighted 10 year trailing average of the DRP to apply in any regulatory year:

$$TA\ DRP_0 = \frac{\sum_{t=0}^{-9} DRP_t}{10} \quad (21)$$

Where

$TA\ DRP_0$ is the equally weighted trailing average of the DRP to apply in the following year as the annual update of the estimate used in the current year; and

DRP_t is the DRP estimated for each of the 10 regulatory years

$t = 0, -1, -2, \dots, -9$.

1336. All years are in the same year convention as year 0. For example, if year 0 is the next regulatory year 2016 for which the $TA\ DRP_0$ is being calculated, $t = -9$ is the calendar year 2007 because 2016 is a calendar year in this Access Arrangement. Using the same logic if year 0 is regulatory year 2014-15, $t = -9$ is the financial year 2005/2006.
1337. So for example, in (22) the DRP trailing average estimate for the calendar 2016 regulatory year is:

$$\begin{aligned} TA\ DRP_{2016} = & 0.1 \times DRP_{2016} + 0.1 \times DRP_{2015} + 0.1 \times DRP_{2014} \\ & + 0.1 \times DRP_{2013} + 0.1 \times DRP_{2012} + 0.1 \times DRP_{2011} \\ & + 0.1 \times DRP_{2010} + 0.1 \times DRP_{2009} + 0.1 \times DRP_{2008} \\ & + 0.1 \times DRP_{2007} \end{aligned} \quad (22)$$

1338. In terms of the notation used by the Australian Energy Regulator (but in the Authority's case applying just to the DRP trailing average), the foregoing TA DRP for the 2016 calendar year may be written as follows in (23):⁶²¹

⁶²¹ Australian Energy Regulator, *Draft Decision: Jemena Gas Networks (NSW) 2015-20*, November 2014, Attachment 3, p. 3-288.

$$\begin{aligned}
{}_{2015}kd_{2016} = & 0.1 \times {}_{2006}R_{2007} + 0.1 \times {}_{2007}R_{2008} + 0.1 \times {}_{2008}R_{2009} \\
& + 0.1 \times {}_{2009}R_{2010} + 0.1 \times {}_{2010}R_{2011} + 0.1 \times {}_{2011}R_{2012} \\
& + 0.1 \times {}_{2012}R_{2013} + 0.1 \times {}_{2013}R_{2014} + 0.1 \times {}_{2014}R_{2015} \\
& + 0.1 \times {}_{2015}R_{2016}
\end{aligned} \tag{23}$$

Capex weights

1339. Weighting the trailing average to account for new capex can ensure that the marginal cost of investment for new capex reflects the Authority's most recent forward looking estimate of the prevailing DRP. This efficiency consideration is a key concern of the Authority, given the requirements of the NGL and NGR.

1340. However, the approach adds complexity.

1341. Based on a weighing up of the costs and benefits, the Authority determined in the Draft Decision not to include capex weights in the DRP trailing average.⁶²²

1342. GGT did not raise this issue in its response to the Draft Decision.

The need for a transition

1343. A transition would gradually phase in the hybrid trailing average approach. A transition consistent with the 'QTC method' would, for the DRP component:

- provide for 100 per cent weight to the prevailing estimate of the DRP in year 1;
- in year 2, provide for 90 per cent weight to the prevailing estimate of the DRP in year 1, and 10 per cent weight to the annually updated (prevailing) estimate of the DRP in year 2;
- in year 3, provide for 80 per cent weight to the prevailing estimate of the DRP in year 1, and 10 per cent weight to each of the annually updated (prevailing) estimates of the DRP in years 2 and 3 respectively;
- and so on;
- until at year 10, the trailing average is estimated with equal 10 per cent weights for each of the 10 annual updates of the DRP;
- at year 11, the year 1 estimate of the DRP drops off, and is replaced by the year 11 annual update;
- at year 12, the year 2 estimate of the DRP drops off, and is replaced by the year 12 annual update;
- and so on ad infinitum.

1344. GGT does not propose a transition as part of its trailing average approach.

1345. In its Discussion Paper, the Authority proposed a 10 year transition period phasing in the full trailing average would:⁶²³

⁶²² Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 205.

⁶²³ Economic Regulation Authority, *Estimating the return on debt: Discussion paper*, 4 March 2015.

- enhance confidence in the predictability of the regulatory regime;
 - facilitate data collection for implementing the trailing average, as historic data would not be required;
 - remove the potential for gaming of the regulatory regime by service providers (with the specified trailing average approach established through a fixed principle and to apply for 10 years).
1346. The Authority also noted that a transition could allow firms time to adjust arrangements from the previous regulatory regime (on the day), where firms would have undertaken hedging arrangements to align the cost of debt closely to the regulated rate, consistent with the approach adopted by the AER:⁶²⁴
- As discussed in chapter seven, we consider that an efficient financing practice of the benchmark efficient entity would be to minimise the expected present value of its financing costs over the life of its assets subject to managing the associated financial risks (and subject to the regulatory regime). On this basis we have concluded that the benchmark efficient entity would have likely entered into hedging contracts to manage its interest rate risk in the current regulatory control period (that is, under the 'on the day' approach). Further, we consider that holding a (fixed rate) debt portfolio with staggered maturity dates to align its return on debt with the regulatory allowance is likely to be an efficient financing practice of the benchmark efficient entity under the trailing average portfolio approach. To achieve this the benchmark efficient entity would need to unwind its existing hedging contracts and issue new (fixed rate) debt over a transition period to gradually accumulate a portfolio that matches the trailing average regulatory return on debt allowance. Consistent with this, we consider that post transition the benchmark efficient entity is not likely to engage in an active debt management strategy using swaps.
1347. ATCO's consultant CEG submitted that adopting a transition would 'fail to compensate the benchmark efficient entity for its estimated future costs consistent with its trailing average debt risk premium (DRP) costs incurred over the last 10 years'.⁶²⁵
1348. CEG further argues that:^{626,627}
- if the benchmark efficient debt management strategy in the past was the hybrid (as accepted by the AER); and
 - if the Authority is proposing to adopt the hybrid as the benchmark efficient strategy in the future; then
 - there is no need to transition to the hybrid – it should be implemented immediately because it simply reflects benchmark efficient costs.
1349. The Authority recognises that a key reason for a transition would be to allow firms time to unwind hedging positions in the event that, like the AER, a full trailing average was being adopted. That is, the transition would be important for the risk free rate component of the return on debt. However, with the hybrid trailing average, there is

⁶²⁴ Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline*, December 2013, p. 141.

⁶²⁵ ATCO Gas Australia, *Re: Estimating the return on debt: ATCO Gas Australia's response to the Authority's Discussion Paper*, 25 March 2015, Attachment, p. 11.

⁶²⁶ ATCO Gas Australia, *Re: Estimating the return on debt: ATCO Gas Australia's response to the Authority's Discussion Paper*, 25 March 2015, Attachment, p. 12.

⁶²⁷ DBP make similar points (Dampier Bunbury Pipeline, *Response to Authority Discussion Paper of 4 March 2015*, 25 March 2015, pp. 16-18).

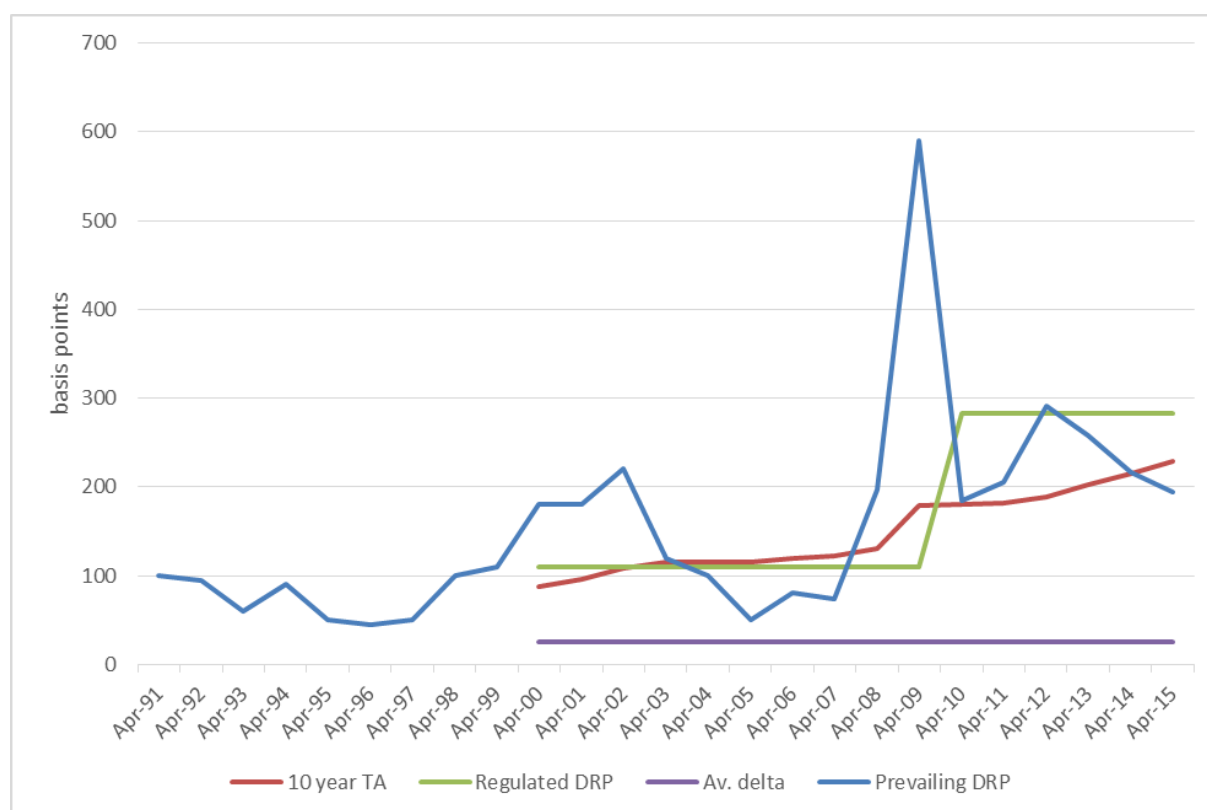
no need to transition for the risk free rate, as the same hedging strategy could continue.

1350. With regard to the DRP, the concern would be if the previous on the day arrangement had resulted in the regulated firm receiving a regulated return on debt that significantly exceeded the actual DRP financing costs of the firm. Network users could reasonably expect to have a period of ‘unders’ to compensate for such a period of ‘overs’ – as this is the nature of the on the day approach. The concern in moving to a trailing average approach would be that users would be denied such an opportunity to recover over payments. Further, reintroducing historic estimates might have the effect of consumers overpaying twice (for example, if the spike in the DRP that occurred in late 2008 during the GFC was incorporated in the trailing average), particularly as it is possible that an efficient debt financing strategy would have been forced to raise debt on the market at that time.
1351. To examine this issue, the Authority constructed a 10 year trailing average series for a number of access arrangement periods stretching back to 2000, and compared the resulting 10 year trailing average DRP with the actual regulated DRP (Figure 21).⁶²⁸ The benchmark efficient entity’s assumed actual DRP costs is based on the RBA’s credit spread on 10 year BBB bonds to the 10 year spread to swap back to 2005, and then a range of *indicative* estimates for the period prior to that, back to 1991.⁶²⁹ This is compared to the regulated DRP that was granted – on the day – for each of the two access arrangements AA1 and AA2.⁶³⁰

⁶²⁸ This assumes that the benchmark efficient entity would have hedged the risk free rate component.

⁶²⁹ The Authority notes that Chairmont Consulting have concluded that the ‘history of Australian BBB bond data is inadequate to measure over and under compensation over the life of energy assets’ (see Chairmont Consulting, *Financing Practices Under Regulation: Past and Transitional*, 13 October 2015, p. 12). However, the Authority considers that its estimates presented here offer some indicative information, which is better than none.

⁶³⁰ The averaging period is assumed to be the month of April in each year, as this is closest to the averaging period used for estimating the return on debt for each of the access arrangement periods.

Figure 21 Comparison of BBB trailing average DRP and the regulated rate

Source *Reserve Bank of Australia, Aggregate measures of Australian corporate bond spreads and yields: non-financial bonds, September 2015 (accessed 3 November 2015); Macquarie Investment Management, The changed nature of credit investment, December 2012, p. 15; Authority analysis, December 2015.*

1352. The results, while only indicative, indicate that there was possibly a small over-payment up to the current period, of around 26 basis points per annum on average for the whole period from 2000 through 2014. However, the Authority does not consider that this amount is significant, particularly given the indicative nature of the estimates. Furthermore, other factors, such as the spread of the BBSW to the risk free rate and hedging costs, have not been taken into account. Overall, the Authority concludes that this (limited) evidence does not support the occurrence of a significant under or over payment on the DRP or the return on debt.
1353. For these reasons, the Authority is prepared to accept that it is more appropriate to move directly to the hybrid trailing average approach, without any phasing in transition.
1354. In doing so, the Authority recognises that there is no change required in hedging arrangements between the previous approach and the hybrid trailing average approach, as both involve a single estimate of the risk free rate, set once at the start of the regulatory period. For the DRP, however, it is likely that the benchmark efficient firm would have adopted a portfolio of debt with a ten year average term, and that the firm would have been reasonably recompensed over the past three access arrangements, without being excessively compensated.

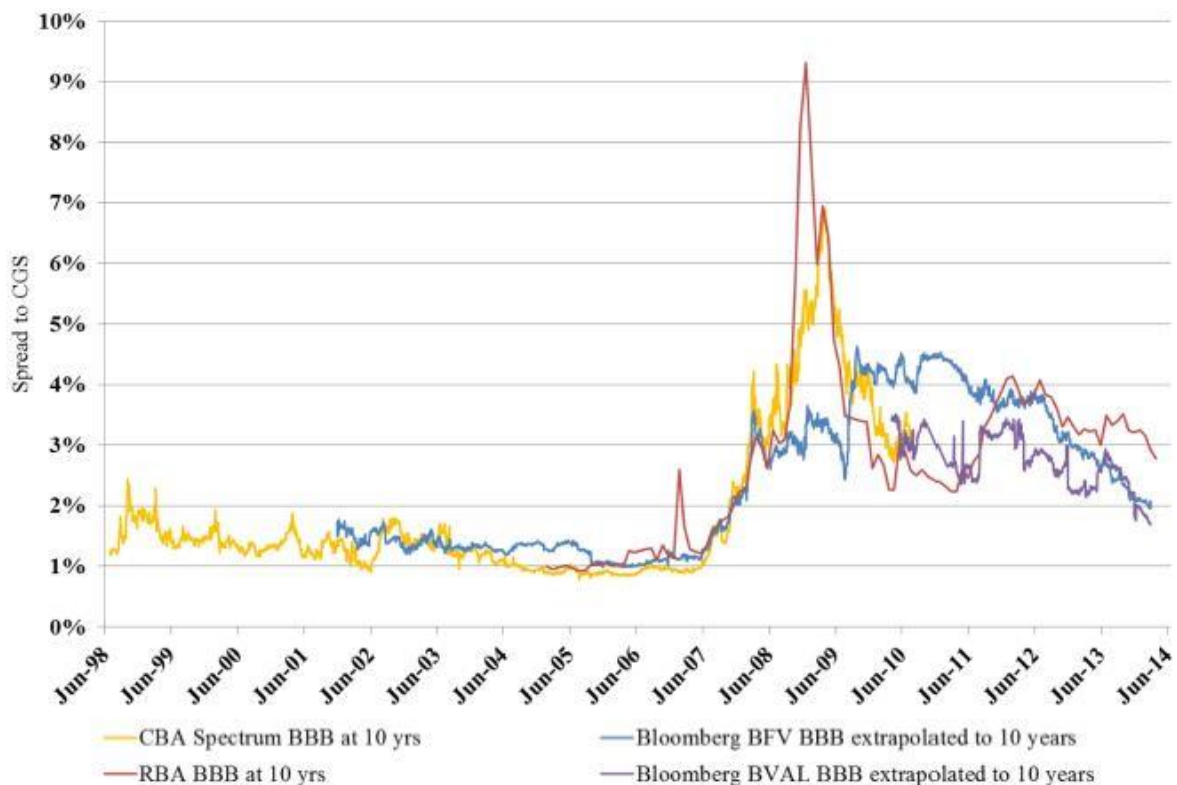
Estimates of the DRP prior to the current on the day estimate

1355. The Authority has determined to adopt the simple hybrid trailing average of the DRP. The trailing average requires annual estimates of the DRP for past years – back to

2005 – to combine with the Authority’s forward looking annual estimates of the DRP (the first of which – as at 31 May 2016 – is set out above).

1356. The Authority endeavoured to obtain historic bond data to estimate the historic annual DRP estimates through its bond yield approach. However, while the Authority was able to access historic BBB credit band bond yields from Bloomberg back to 2005, the resulting bonds did not provide a large enough sample to estimate the return on debt in all years.⁶³¹
1357. The Authority therefore has determined to adopt a third party source for the DRP estimates in past years, for incorporation in the trailing average to be used in this Final Decision. A number of potential options are available which could provide historic estimates of the DRP:
- the RBA’s credit spread estimates;
 - Bloomberg’s Fair Value Curves (**FVC**) estimates; and
 - Bloomberg’s Valuation Service (**BVAL**) estimates.
1358. The Authority notes that these sources give different estimates for the period in question (Figure 22).

Figure 22 Estimates from alternative historical DRP data series (spread to CGS)



Source: Competition Economists Group, Memorandum to ActewAGL, 24 May 2014, p. 5.

⁶³¹ The RBA have been able to acquire larger sample sizes by combining UBS historic bond data with the Bloomberg historic bond data.

1359. The Bloomberg BVAL series does not go back past 2010 so does not provide a consistent series over the entire period. The Authority considers that it should overlook this series for this reason.
1360. It is clear from the relative performance of the two remaining series – the RBA and Bloomberg FVC series – that there is considerable variation in the estimates post June 2008, leading to uncertainty as to the best data series to adopt. An option to overcome this issue could be to average the two series. However, given the Authority’s intention to use an annual average of the available data for the whole year of each of the past nine years (see below), and also to adopt a simple weighting scheme for each of those nine years (see below), there are limited differences between adopting one or the other series, or an average of the two.⁶³²
1361. The Bloomberg FVC also does not include foreign bonds, which raises a clear point of departure from consistency with the Authority’s preferred approach. The RBA series, however, includes foreign bonds.
1362. A further advantage of the RBA data is the smaller extrapolation that is generally required (commonly between 1 and 2 years) as opposed to the three or more for the Bloomberg FVC (which only goes to tenors of 7 years in more recent times).
1363. The Authority therefore considers that adopting the RBA series is fit for purpose for estimating past DRP returns, particularly given the uncertainties, and that averaging the two series is unlikely to deliver any material improvement to the historic estimates.
1364. Over time, the historic RBA estimates will be progressively replaced in the trailing average by the Authority’s own forward looking estimates.

Use of the RBA estimates

1365. The RBA data provides an available source of historic credit spreads for 10 year non-financial corporate bonds.
1366. Issues that arise in using the RBA estimates are:
- the averaging period to apply – whether to align with that adopted for the current 2015 estimate or some other averaging period;
 - whether to apply capex weighting to the historic estimates; and
 - the extrapolation issue – estimating the DRP to match the 10 year term assumed for this Final Decision.
1367. These issues are discussed in what follows.

Aligning with the averaging period dates

1368. GGT’s proposed revised access arrangement covers the period 1 January 2015 to 31 December 2019 (the AA3 period).

⁶³² This may be confirmed by simple inspection of the areas between the RBA series and the FVC series – unders tend to offset overs. CEG confirm this, noting ‘that even though the RBA and Bloomberg estimates differ materially through some periods in the last 10 years these differences tend to cancel each other out – with the RBA estimates being higher in some periods and the Bloomberg estimates higher in other periods. The net difference over the period January 2005 to October 2014 is only 6 basis points – with the Bloomberg average being higher’ (ATCO Gas Australia, *Response to the Authority’s Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 63).

1369. The averaging period dates for the Authority's current forward looking return on debt estimate, made prior to the release of this Final Decision, were the 20 business days from ending 31 May 2016. The resulting 'current' ('t=0') estimate will be included in the trailing average estimate to apply for the 2016 calendar year.
1370. An issue arises whether the historic DRP estimates for inclusion in the hybrid trailing average should be based on the same averaging period in each of the historic years; that is for example, aligning with the 20 day period ending 31 May. This would require interpolation of the RBA monthly estimates to allow a corresponding annual estimate to be made in each previous year. However, those dates may not relate to business days in past years. It may also result in changing estimates for the historic years in the trailing average, depending on whether the averaging period changes.
1371. A better alternative is to average the 12 available months of RBA data, such that the estimated DRP reflects the average DRP in whole of each past year. The Authority prefers the latter approach for the following reasons.
1372. First, the Authority in this instance is not trying to develop an estimator for the year ahead. Rather, it is trying to develop an estimate for the past, which can be actual outcomes. That points to use of the whole year average.
1373. Second, it is not clear when the benchmark efficient entity raised its capital in the past. For the future, the benchmark efficient entity could align its debt issuance with the averaging periods for issuing new debt. However, in the past, it may have issued debt at any time of the year. Accordingly, the best estimate of the DRP relating to debt raised at an unknown point in a past year will be the annual average.
1374. The Authority therefore intends to adopt the annual average of the DRP estimate from the RBA data. Each annual DRP estimate will be derived as the RBA 10 year BBB spread to swap, extrapolated to 10 years (see below for a summary of the method for extrapolating the RBA data), for the year which ends concurrent with the final year in the trailing average.⁶³³

Composition of the hybrid trailing average estimates of the DRP

1375. The Authority's has determined to adopt the simple equally weighted ten year trailing average for this Final Decision, which may be recalled has the following automatic formula (refer to paragraph 1335):

$$TA\ DRP_0 = \frac{\sum_{t=0}^{-9} DRP_t}{10} \quad (24)$$

where

$TA\ DRP_0$ is the equally weighted trailing average of the DRP to apply in the following year as the annual update of the estimate used in the current year; and

⁶³³ So for example, for the 2016 calendar year, the 9 historic averages to be included in the trailing average estimate would be for the 2015, 2014 and so on back to 2007 calendar years.

DRP_t is the DRP estimated for each of the 10 regulatory years

$t = 0, -1, -2, \dots, -9$.

1376. For the 2016 calendar year estimate (which is used as the return on debt for this Final Decision), the following estimates are included in the trailing average:
- $t=-9$: January to December 2007 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=-8$: January to December 2008 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=-7$: January to December 2009 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=-6$: January to December 2010 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=-5$: January to December 2011 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=-4$: January to December 2012 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=-3$: January to December 2013 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=-2$: January to December 2014 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=-1$: January to December 2015 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=0$: January to December 2016 : an average of daily DRP estimates (interpolated daily) comprising RBA DRP estimates for the period 1 January 2016 to April 2016, and the Authority's current 'on-the-day' DRP estimate (interpolated daily to the prior RBA April 2016 estimate) , annualised.
1377. The Authority's 31 May 2016 DRP estimate of 2.474 per cent contributes to the $t=0$ estimate in the 2016 DRP hybrid trailing average, for that period that falls after April 2016 (prior to that date, RBA actual data is available).
1378. This estimate is used to estimate the return on debt for the Final Decision for calendar year 2016, 2017, 2018 and 2019. A separate estimate is made for 2015 (see Appendix 3).
1379. For 2017, the Authority will estimate the $t=0$ DRP estimate, based on the nominated 20 trading days in the five month window 1 June to 31 October 2016, as per the averaging period requirement. For the 2017 calendar year, the Authority will adopt the following estimators:
- $t=-9$: January to December 2008 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=-8$: January to December 2009 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - $t=-7$: January to December 2010 : simple average of (interpolated daily) RBA DRP estimates for the period;

- t=-6: January to December 2011 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-5: January to December 2012 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-4: January to December 2013 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-3: January to December 2014 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-2: January to December 2015 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-1: t=0 estimate in 2016 outlined in paragraph 1376; and
 - t=0: January to December 2017 : 100% the automatic formula (t=0) DRP estimate.
1380. For 2018, the Authority will estimate the t=0 DRP estimate, based on the nominated 20 trading days in the five month window 1 June to 31 October 2017, as per the averaging period requirement. For the 2018 calendar year, the Authority will adopt the following estimators:
- t=-9: January to December 2009 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-8: January to December 2010 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-7: January to December 2011 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-6: January to December 2012 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-5: January to December 2013 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-4: January to December 2014 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-3: January to December 2015 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-2: t=0 estimate in 2016 outlined in paragraph 1376;
 - t=-1: January to December 2017 : 100% the automatic formula (t=-1) DRP estimate;
 - t=0: January to December 2018 : 100% the automatic formula (t=0) DRP estimate.
1381. The last annual update for the AA4 period will occur as part of the 1 January 2019 tariff variation. For 2019, the Authority will estimate the t=0 DRP estimate, based on the nominated 20 trading days in the five month window 1 June to 31 October 2018, as per the averaging period requirement. For the 2019 calendar year, the Authority will adopt the following estimators:
- t=-9: January to December 2010 : simple average of (interpolated daily) RBA DRP estimates for the period;

- t=-8: January to December 2011 : simple average of (interpolated daily) RBA DRP estimates for the period;
- t=-7: January to December 2012 : simple average of (interpolated daily) RBA DRP estimates for the period;
- t=-6: January to December 2013 : simple average of (interpolated daily) RBA DRP estimates for the period;
- t=-5: January to December 2014 : simple average of (interpolated daily) RBA DRP estimates for the period;
- t=-4: January to December 2015 : simple average of (interpolated daily) RBA DRP estimates for the period;
- t=-3: t=0 estimate in 2016 outlined in paragraph 1376;
- t=-2: January to December 2017 : 100% the automatic formula (t=-2) DRP estimate;
- t=-1: January to December 2018 : 100% the automatic formula (t=-1) DRP estimate;
- t=0: January to December 2019 : 100% the automatic formula (t=0) DRP estimate.

1382. A summary of the automatic formulas for the trailing average calculations, and the actual estimate of the DRP for 2016, are set out in Appendix 3.

Method of estimating the 10 year term DRP from the RBA data

1383. The Gaussian Kernel method used by the RBA for estimating the return on debt results in the effective tenor of the DRP estimates varying between years, depending on the sample of bands and their relative weighting in the estimate. In recent times, the actual effective tenor of the estimates has been less than the specified tenor of ten years.

1384. The Authority has overcome this problem in its own estimates by targeting the effective Gaussian Kernel estimate to be a true 10 year term (see paragraph 1298 above).

1385. To be as consistent as possible, the Authority has adjusted the RBA estimates from their effective tenors to be the targeted 10 year tenor. The method follows the simple extension technique laid out by Lally.⁶³⁴ It utilises the slope of the yield curve between the two observed tenors (say the effective 7 and 10 year tenor spread to swap estimates, or '7e' and '10e' tenors respectively), to linearly extrapolate the spread to swap at an exact 10 year tenor. The formula used by the Authority is analogous to that set out by Lally as follows:⁶³⁵

$$RBA(10) = RBA(10e) + Base(10) - Base(10e) + \left[\frac{DRP(10e) - DRP(7e)}{10e - 7e} \right] (10 - 10e) \quad (25)$$

Where

⁶³⁴ M. Lally, *Implementation Issues for the Cost of Debt*, 20 November 2014, p. 38.

⁶³⁵ M. Lally, *Implementation Issues for the Cost of Debt*, 20 November 2014, p. 39.

$$RBA(10) = Base(10) + DRP(10)$$

$$DRP(10) = RBA(10e) - Base(10e) + \left[\frac{DRP(10e) - DRP(7e)}{10e - 7e} \right] (10 - 10e)$$

$$DRP(10) = DRP(10e) + (10 - 10e) / (10 - 7e) \times [DRP(10e) - DRP(7e)]$$

1386. The Authority also interpolates the monthly RBA estimates to daily estimates. This is the same approach adopted by ATCO's consultant CEG in its estimates of the trailing average. The formula for achieving this step shown in (24):

$$y_t = yield_{start} + \left(\frac{yield_{end} - yield_{start}}{Date_{end} - Date_{start}} \right) \times (t - Date_{start}) \quad (26)$$

where

y_t is the interpolated yield for any given date t ;

$yield_{start}$ is the first available yield in any given month;

$yield_{end}$ is the last available yield in any given month;

$Date_{start}$ is the date when first yield was available;

$Date_{end}$ is the date when the last available yield is available; and

t is the date for which the yield is being interpolated.

1387. The Authority also annualises the RBA resulting annual data, as the RBA estimates may be generally interpreted as semi-annual rates. To do this, RBA basis point estimates are converted to percentage point numbers and then annualised:

$$\text{Effective annual rate} = 100 * (1 + \text{yield in basis points}/100/200)^2 - 100$$

The estimate of the DRP for 2016

1388. Utilising the RBA monthly data and the Authority's t=0 (31 May 2016) estimates of the DRP delivers the following results for the annual estimates of.

- The estimate of the simple trailing average DRP for calendar year 2016 is 2.713 per cent (Appendix 3, paragraph 2541).

1389. More detail on the automatic formulas and contributing DRP estimates to these trailing averages are set out in Appendix 3.

Debt raising and hedging costs

1390. In the Guidelines, the Authority provided an allowance for debt raising costs of 0.125 per cent and hedging costs of 0.025 per cent. GGT proposed these costs in its initial proposal.

1391. In its March 2015 Discussion Paper, the Authority noted that the debt raising cost estimate of 0.125 per cent was generally accepted.

1392. With regard to hedging costs, the Discussion Paper stated:⁶³⁶

The current spread cost of the 10 year swap is around 10 bps, half of which would be incurred by the service provider – therefore the total cost of the two swaps required at the current time could approach 2 by 5 bps, or 10 bps. Two swaps would also be required subsequent to cover the amount of any increase in debt associated with capital expenditure over the course of the regulatory period.

To calculate this amount for inclusion in revenue, it would be simplest to provide a single allowance for swaps in the operating expenditure cash flows. The swaps allowance could be based on the swap spread, as outlined above, multiplied by the closing debt balance in the final year of the forecast regulatory period.

1393. In response to the Discussion Paper, ATCO's consultant CEG took issue with these statements. CEG suggests that banks will price interest rate swap contracts based on the prevailing swap bid spread plus execution spread and risk spread costs. CEG considers a hedging allowance of 23 bppa is appropriate, at the upper end of the following range, given that many issues are in foreign currency:⁶³⁷

Based on the evidence surveyed above, swap transaction costs have been estimated to be in the order of 15.5bppa to 23bppa – consistent with the QCA's stated range of 15bppa to 20bppa. The lower/upper end of this range is based on the swap costs estimated by Evans & Peck/UBS and are themselves based on domestic/foreign debt issues.

Debt raising costs

1394. The Guidelines considered the estimate of debt raising costs of 0.125 per cent per annum in depth. The Guidelines noted that the debt raising cost estimate covered:⁶³⁸

- gross underwriting fee: including management fees, selling fees, arrangement fees and the cost of an underwriter for the debt;
- legal and road show fee: this includes fees for legal documentation and fees involved in creating and marketing a prospectus;
- company credit rating fee: a credit rating is generally required for the issue of a debt raising instruments, a company is charged annually by the credit rating agency for the services of providing a credit rating;
- issue credit rating fee: a separate credit rating is obtained for each debt issue;
- registry fee: the maintenance of the bond register; and
- paying fee: payment of a coupon and principal to the security holder on behalf of the issuer.

1395. GGT has no issue with this estimate, so this is adopted for the purpose of this Final Decision.

Hedging costs

1396. Interest rate swaps are derivative contracts, which typically exchange – or swap – fixed-rate interest payments for floating-rate interest payments. They provide a

⁶³⁶ Economic Regulation Authority, *Estimating the return on debt: Discussion paper*, 4 March 2015, p. 23.

⁶³⁷ ATCO Gas Australia, *Re: Estimating the return on debt: ATCO Gas Australia's response to the Authority's Discussion Paper*, 25 March 2015, Attachment, p. 9.

⁶³⁸ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, p. 199.

means to hedge and manage risk. Investment and commercial banks with strong credit ratings are swap market-makers.

1397. Hedging costs involved in converting from typical 10 year fixed debt to the regulated 5 year fixed rate will involve four legs:
- swapping 10 year fixed for a base floating rate at the time of issuance – paying floating and receiving 10 year fixed;
 - swapping the base floating rate at the time of the regulatory reset for 5 year fixed – receiving floating and paying 5 year fixed.
1398. For each set of two legs, the following costs may be incurred:
- a credit and capital charge – relates to the risk of the counterparty, and will depend on the credit rating and the potential default loss;
 - an execution charge – compensates the swap intermediary for the costs associated with transacting the swap.
1399. The benchmark efficient entity would potentially engage in four different transactions in hedging the base of its portfolio of debt:⁶³⁹
- 5-year floating to fixed AUD swaps at start of AA for full amount of debt portfolio;
 - bond issuance potentially made up of three different issue types and hence requiring three different swap considerations:
 - foreign currency bonds – requiring a cross-currency swap into floating AUD;
 - fixed-rate AUD bonds – requiring a fixed-float AUD swap;
 - floating rate AUD notes – no swap will be required.
1400. The QCA has been awarding swaps costs for swapping from 10 year fixed debt to shorter term (typically, although not always) 5 year fixed debt, since 2010, utilising estimates made by Evans & Peck. The most recent cost estimate is 13 basis points per annum (bppa) (Table 89).

⁶³⁹ Chairmont Consulting, *ERA Hedging Costs in the Cost of Debt*, 13 May 2015.

Table 89 Hedging transactions costs for four legs, BBB credit rating

Estimate	10 year fixed to floating (basis points per annum)	Floating to 5 year fixed (basis points per annum)	Total (basis points per annum)
Evans & Peck ^a (12 January 2015)	8.0	5.0	13.0
UBS ^b (November 2014)			23
Jemena ^c (June 2013)			7.9 – 9.4

Source a) Evans & Peck, reported in *Incenta, WACC parameters for GAWB Price Monitoring Investigation 2015-20 – Draft Report, February 2015, p. 32* (swapping 10 for 5; \$250 m debt; BBB; to mid-rate; as at 12 January 2015);

b) UBS, reported in *Transgrid, Revised revenue proposal, 13 January 2015, Appendix R, p. 6* (BBB+ credit rating).

c) Jemena, *Rate of Return Guidelines – Consultation Paper: Submission, 21 June 2013, p. 22* (BBB+ credit rating).

1401. Other recent estimates include those reported by Jemena and UBS (Table 89).

- The Jemena range is based on quotes from two separate banks for BBB+ swaps for 10 year fixed to 5 year fixed.⁶⁴⁰
- The UBS estimate is comprised of the AUD interest rate swap credit, capital and execution costs for a BBB+ rated entity (quoted at 5 basis points) and cross-currency interest rate swap credit, capital and execution costs for a BBB+ rated entity (quoted at 18 basis points).⁶⁴¹

1402. ATCO's consultant CEG, using evidence from Table 89, estimates a range for hedging costs of 15.5 to 23 bppa, based on an Evans & Peck estimate from 4 February 2013 and the UBS estimate (in Table 89).⁶⁴²

Based on the evidence surveyed above, swap transaction costs have been estimated to be in the order of 15.5bppa to 23bppa – consistent with the QCA's stated range of 15bppa to 20bppa. The lower/upper end of this range is based on the swap costs estimated by Evans & Peck/UBS and are themselves based on domestic/foreign debt issues. To the extent that foreign issued debt is relied on then somewhere towards the upper end of this range is appropriate.

1403. However, the Authority does not agree with this estimate. The Authority engaged Chairmont to advise on the costs of undertaking swaps. Chairmont estimates the

⁶⁴⁰ As part of its investigation of this issue, the Authority approached a local bank, which confirmed estimates similar to Jemena's, as at March 2015, for a swap of 10 year fixed for 5 year fixed debt.

⁶⁴¹ The Authority does not include other swaps costs estimated by UBS. The tracking risk and deferral cost estimates are 'a quantification of risks associated with an inability to fully hedge to the regulatory allowance even when using swaps' (ATCO, *Re: Estimating the return on debt: ATCO Gas Australia's response to the Authority's Discussion Paper*, 25 March 2015, Attachment, p. 8.).

⁶⁴² ATCO Gas Australia, *Re: Estimating the return on debt: ATCO Gas Australia's response to the Authority's Discussion Paper*, 25 March 2015, Attachment, p. 9.

following costs for each of the components, based on the data in Table 89 and its own enquiries:⁶⁴³

- 5-year swaps at the start of the AA. The different submissions provide a range of estimated costs, i.e. Evans and Peck (2015) 5bp; UBS <5bp; Jemena <5bp (i.e. less than half of the total 8-10bp, as a 5-year swap costs less for capital and credit charges). This suggests approximately 4bpps is appropriate. This is also supported by informal discussions held by Chairmont with two banks in late 2014.
- Cross-currency swaps. There was only one estimate provided and that was by UBS which reported 18bp. Chairmont's discussions with the banks suggest that this estimate is at the high end of costs and is likely to overstate a swap in relation to a new issuance. It is important to understand that banks tend to be more aggressive on swap pricing when linked to other business. A lower level of 10bp appears to be reasonable, so for further calculation a mid-point of 14bp is used.
- 10-year AUD fixed-floating swaps. The submissions are Evans and Peck (2015) 8bp; UBS 5bp; Jemena and Authority (implied) 5-7bp. Taking a mid-point such as 6bp appears reasonable for this component.

1404. Only a proportion of debt is raised overseas, thereby requiring overseas credit and executions costs. For example, CEG present evidence that regulated energy companies had around 65 per cent of debt issued in AUD in 2013, with the remainder in foreign currencies.^{644,645} Further, CEG identifies that 24 per cent of debt amounts outstanding is already floating, typically bank loans.⁶⁴⁶

1405. On the basis that CEG's estimates remain valid, the Authority calculates the weighted cost of hedging, using Chairmont's estimates set out above, as the sum of:

- 5 year swap floating for fixed for the full amount of debt = 4 bpps x 100 per cent = 4.0 bpps; plus
- 10 year cross currency swaps for (100 – 65 =) 35 per cent of debt issuance = 14 bpps x 35 per cent = 4.9 bpps;
- 10-year fixed-float AUD swaps for (65 – 24=) 41 per cent of debt issuance = 6 bpps x 41 per cent = 2.5 bpps.

1406. That sum gives a total cost of hedging of 11.4 bpps (rounded to the nearest bpps).

1407. Accordingly, the Authority will allow 11.4 bpps as the costs of hedging for this Final determination.

The estimate of the return on debt for this Final Decision

1408. The Authority's estimate for the return on debt for the **2015 calendar year**, which is applied from 1 January 2015 to 31 December 2015, is 4.88 per cent. The estimate is the sum of:

- the on the day 5 year swap rate of 2.116 per cent;

⁶⁴³ Chairmont Consulting, *Authority Hedging Costs in the Cost of Debt*, 13 May 2015.

⁶⁴⁴ Competition Economists Group, *Debt strategies of utility businesses*, June 2013, p. 23.

⁶⁴⁵ This proportion exceeds that of issuance of corporate bonds by Australian corporates, more generally (see Table 82 at p. 274, which reports that only 20 per cent of corporate bonds were issued in AUD as at June 2014).

⁶⁴⁶ Competition Economists Group, *Debt strategies of utility businesses*, June 2013, p. 22.

- a hybrid trailing average debt risk premium of 2.526 per cent;
 - debt issuing costs of 0.125 per cent; and
 - hedging costs of 0.114 per cent.
1409. The Authority's estimate for the return on debt for the **2016 calendar year** (which is applied from 1 January 2016 to 31 December 2016 and also utilised for the other years of the tariff model) is 5.07 per cent. The estimate is the sum of:
- the on the day 5 year swap rate of 2.116 per cent;
 - a hybrid trailing average debt risk premium of 2.713 per cent;
 - debt issuing costs of 0.125 per cent; and
 - hedging costs of 0.114 per cent.
1410. The automatic formula for updating the estimate of the DRP – which will then occur for 2017, 2018 and 2019 consistent with the requirements of NGR 87(12) – is set out at Appendix 3.

Final Decision

1411. The Authority's resulting estimate for the overall post tax nominal rate of return for the 2016 calendar year is 5.84 per cent (Table 90):
- this rate of return is applied from 1 January 2016 to 31 December 2019 in the tariff modelling for this Final Decision in order to establish the reference tariffs;
 - the rate of return applied from 1 January 2015 to 31 December 2015 in the tariff modelling for this Final Decision is 5.73 per cent (which differs only with regard to the different DRP estimate for 2015).
1412. The Authority's estimate of the rate of return has been revised in this Final Decision for the 2015 and 2016 calendar years. The estimated rate of return for 2016 applies in the tariff modelling for this Final Decision for 2017 through to 2019. The 2017 through to 2019 rates of return would then be progressively annually updated through the remaining years of third access arrangement period (see Appendix 3). The resulting revised rate of return will be included in the relevant tariff variations which occur in each calendar year.
1413. The process for implementing the annual update is as follows:
- For each annual update for 2017, 2018 and 2019, the Authority will estimate the updated DRP following the relevant annual averaging period, recalculate the rate of return, and then notify GGT of the outcomes as soon as practicable. This will allow GGT to check the rate of return estimate, prior to its incorporation in the proposed annual tariff variation to occur on 1 January in each year and each subsequent quarterly tariff variation in that year.
 - Following that notification, GGT is required to respond on any issues as soon as practicable, in order to allow the updated DRP and rate of return estimates to be finalised prior to submission by GGT of its proposed annual tariff variation.
 - In the event that there is a disagreement on the DRP annual update estimate, the Authority will work with GGT to ensure that any misapplication of the automatic formulas in Appendix 3 of this Final Decision are corrected in a timely manner.

- The updated annual rate of return based on the correct application of the DRP automatic update formulas is to be utilised for each relevant quarterly tariff variation.

Table 90 Rate of return for the Final Decision

WACC as at 31 May 2016	for 2016
Nominal Risk Free Rate	1.82%
Real Risk Free Rate	0.35%
Inflation Rate	1.46%
Debt Proportion	60%
Equity Proportion	40%
Debt Risk Premium (10 year trailing average)	2.713%
5 year IRS (effective yield)	2.116%
Return on Debt; 5 year Interest Rate Swap Spread	0.296%
Return on Debt; Debt Issuing Cost (0.125%) + Hedging (0.114%)	0.24%
Return on debt	5.07%
Australian Market Risk Premium	7.4%
Equity Beta	0.7
Corporate Tax Rate	30%
Franking Credit	40%
Nominal After Tax Return on Equity	7.00%
Nominal After Tax WACC	5.84%
Real After Tax WACC	4.32%

Source: ERA analysis, June 2016

Required Amendment 10

The Authority has determined to adopt the rate of return estimates set out in Table 90 of the Final Decision. The nominal post tax rate of return for 2015 is 5.73 per cent and for 2016 is 5.84 per cent.

Annual adjustments are to be applied to the debt risk premium to be incorporated in each subsequent tariff update during the third access arrangement period, in line with paragraph 1412 of the Final Decision. The first annual update will apply for the tariff variation for the 2017 calendar year, and will be determined based on the automatic formula set out in Appendix 3 of the Final Decision. The resulting annual adjustment to the rate of return will be incorporated in the Annual Tariff Variation.

The Authority notes that GGT has nominated the averaging periods for each annual update applying in 2017, 2018 and 2019. The averaging periods for each year are a nominated 20 trading days in the window 1 June to 31 October in the year prior to the relevant tariff variation, and will allow estimation of the updated DRP for inclusion in the relevant annual tariff variation. The nominated averaging periods remain confidential.

For each annual update for 2017, 2018 and 2019, the Authority will estimate the updated rate of return following the relevant annual averaging period and then notify GGT of the outcomes as soon as practicable, expected within 10 days. Following that notice, GGT is required to respond on any issues as soon as practicable, expected within 10 days, in order to allow the updated estimate to be finalised prior to submission by GGT of its proposed annual tariff variation within the required timeframe.

The Authority has determined that the Access Arrangement should include a section (section A5 to Schedule A of the proposed revised access arrangement) to set out the process for the annual update.

Gamma

1414. The Authority is required by the NGR to estimate the value of gamma, a parameter in the building block revenue model.
1415. The gamma parameter accounts for the reduction in the effective corporate taxation that is generated by the distribution of franking credits to investors. As a general rule, investors who are able to utilise franking credits will accept a lower required rate of return, before personal tax, on an investment that has franking credits, compared with an investment that has similar risk and no franking credits, all other things being equal.

Regulatory Requirements

1416. Rule 87A of the NGR requires that the estimated cost of corporate income tax of a service provider for each regulatory year of an access arrangement period (ETC_t) is to be estimated in accordance with formula (27).

$$ETC_t = (ETI_t \times r_t)(1 - \gamma) \quad (27)$$

where

ETC_t is an estimate of the taxable income for that regulatory year that would be earned by a benchmark efficient entity as a result of the provision of reference services if such an entity, rather than the service provider, operated the business of the service provider;

ETI_t is the estimated taxable income for the regulated entity;

r_t is the expected statutory income tax rate for that regulatory year as determined by the AER [Authority]; and

γ is the value of imputation credits.

1417. Rule 87A accounts for the ability of imputation credits to reduce the effective corporate tax rate for equity investors.

In determining the value of imputation credits, the Authority is required to account for the national gas objective, the National Gas Law (**NGL**) (including the revenue and pricing principles), and the NGR.

GGT's initial proposal

1418. In the Rate of Return Guidelines, the Authority estimated gamma (γ) as the product of the distribution rate F and the estimate of the utilisation rate θ (theta), consistent with the approach set out in the Rate of Return Guidelines (28).⁶⁴⁷

$$\gamma = F \times \theta \quad (28)$$

1419. Under this Officer formulation (as extended by Monkhouse), gamma depends on the degree to which imputation credits are distributed and the degree to which investors utilise those credits that are distributed.

1420. Contributing to the estimate of gamma, the Rate of Return Guidelines adopted an estimate for the distribution rate, F , of 0.7. The 0.7 rate was based on Australian Taxation Office (**ATO**) data showing around 70 per cent of cumulative imputation credits had been distributed.

1421. For the utilisation rate, the Rate of Return Guidelines adopted a range of 0.35 to 0.55.⁶⁴⁸ This estimated range was based on the results of Dividend Drop Off (**DDO**) studies.

1422. The resulting range for gamma adopted for the Rate of Return Guidelines – given by the product of distribution rate and the range for utilisation rate – was 0.25 to 0.385.

1423. GGT accepted the formula for gamma set out above.⁶⁴⁹

1424. With regard to the distribution rate, GGT:⁶⁵⁰

...is of the view that:

(a) the finding of the Tribunal that the evidence supports an estimate of the payout ratio of 0.70 is important to confirmation that an estimate of 0.70 is currently appropriate when applying rule 87A; and

(b) the Tribunal decision was made prior to the November 2012 amendments to the NGR which introduced rule 87A, and the question of whether or not there is a basis for departing from the finding of the Tribunal is not the criterion which should now be applied in determining an estimate of the payout ratio.

⁶⁴⁷ This follows the analysis by Monkhouse in relation to the impact of imputation credits on the effective tax rate of companies. See equation 2.5 in P. Monkhouse, The valuation of projects under the dividend imputation system, *Accounting and Finance*, 36, 1996, p. 192; Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Appendix 1.

⁶⁴⁸ Monkhouse in his 1993 exposition stated that 'the symbol θ is used throughout to represent a 'utilisation factor'' (P. Monkhouse, The cost of equity under the Australian dividend imputation tax system, *Accounting and Finance*, November 1993, p. 5).

⁶⁴⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 153.

⁶⁵⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 154.

1425. However, despite this concern, GGT still proposed an estimate for the distribution rate of 0.7, on the basis that ‘the evidence adduced by the ERA and reported in the Explanatory Statement supports’ it.⁶⁵¹
1426. GGT did not agree with the Authority’s estimate of the utilisation rate. GGT considered that the estimate should be derived on the basis of a particular dividend drop off study. GGT considered that SFG Consulting’s 2011 study provides a basis for the estimate, as it has been accepted by the Australian Competition Tribunal (**ACT**) and as it adjusts observed dividend drop offs for the change in the overall market return. GGT drew on SFG’s 2014 update of that study for its estimate of gamma.⁶⁵² GGT therefore proposed to use the value of 0.35 for the utilisation rate reported in that study.⁶⁵³
1427. GGT’s proposed estimate for gamma was therefore 0.25, being the product of a distribution rate of 0.7 and a utilisation rate of 0.35.

Draft Decision

1428. In the Draft Decision, the Authority gave consideration to three different approaches to estimating gamma, based on the following methods for estimating the utilisation rate:
- the equity share ownership approach, which gave an estimate of gamma of 0.4;
 - the taxation statistics approach, which gave an estimate of gamma of 0.3; and
 - the dividend drop off (**DDO**) approach, which gave a range for the estimate of gamma of 0.3 to 0.5.
1429. The resulting range for the Authority’s estimated gamma was 0.3 to 0.5, with the Authority placing the most reliance on the equity share ownership approach, and determining a point estimate of 0.4.

GGT’s Revised Proposal

1430. GGT did not accept the estimate of gamma used in the Authority’s Draft Decision.
1431. In its submission in response to the Draft Decision, GGT stated that the Authority was in error in placing most reliance on the equity share ownership method. GGT considered that the equity share ownership method served only to ‘indicate the maximum proportion of equity investors who may be eligible to redeem imputation credits and who may place some value on those credits’.⁶⁵⁴

⁶⁵¹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 155.

⁶⁵² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Appendix 1 (SFG Consulting, *An appropriate regulatory estimate of gamma*, 21 May 2014, referenced at p. 154).

⁶⁵³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Appendix 1 (SFG Consulting, *An appropriate regulatory estimate of gamma*, 21 May 2014, referenced at p. 159).

⁶⁵⁴ Goldfields Gas Transmission, *Access Arrangement Revision Proposal: Response to ERA Draft Decision, Submission*, January 2016, p. 121.

1432. GGT stated that the value of imputation credits should be based on their market value. Consequently, GGT submitted that the Authority should have placed significant reliance on the results of DDO studies, which ‘provide direct estimates of the market value of credits’, and proposed a utilisation rate of 0.35.^{655,656}
1433. GGT considered that the distribution rate should be estimated from all equity (listed and unlisted), and combined with the result of DDO studies to arrive at an estimate of gamma. In line with this, GGT proposed a distribution rate of 0.7 based on all equity.
1434. Consequently, GGT remained of the view that the best estimate of gamma is 0.25 (based on theta of 0.35 multiplied by a distribution rate of 0.7).

Submissions

1435. The Authority received no submissions in response to the Issues Paper, nor the Draft Decision, that commented on the estimation of gamma.

Considerations of the Authority

1436. The Authority re-examined its method for estimating the gamma parameter for the Draft Decision. That review resulted in the Authority adopting a different estimate to that set out in the Rate of Return Guidelines.⁶⁵⁷
1437. The Authority has further considered its position in light of GGT’s response to the Draft Decision, and also has had regard to the recent decision by the ACT. In evaluating its position, the Authority has taken into account:
- considerations relating to the theoretical framework for estimating gamma;
 - the Authority’s prior position, set out in the Rate of Return Guidelines, which accounted for stakeholder input and a range of consultants’ reports, among other things;
 - GGT’s submission on gamma, which also reference 2011 and 2014 reports by its consultant, Gray;⁶⁵⁸
 - Lally’s November 2013 report to the AER;⁶⁵⁹
 - Lally’s November 2013 report to the Queensland Competition Authority (QCA), and his responses to submissions to the QCA on that report;⁶⁶⁰

⁶⁵⁵ Ibid, p. 122.

⁶⁵⁶ **The ERA will refer to the reports by SFG Consulting and Frontier Economics – in the remainder of this discussion – as being by ‘Gray’, in order to minimise any confusion caused for readers, since the reports were prepared by Professor Stephen Gray, prior to and after SFG’s merger with Frontier Economics.** That said, the correct reference (whether SFG or Frontier) may be determined by reference to the relevant footnote citation.

⁶⁵⁷ Economic Regulation Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, as amended 10 September 2015, p. 413.

⁶⁵⁸ SFG Consulting, *Dividend drop-off estimate of theta, 21 March 2011*; SFG Consulting, *An appropriate regulatory estimate of gamma*, 21 May 2014.

⁶⁵⁹ M. Lally, *The estimation of gamma*, 23 November 2013.

⁶⁶⁰ M. Lally, *Estimating Gamma*, 25 November 2013; M. Lally, *Review of submissions to the QCA on the MRP, risk-free rate and gamma*, 12 March 2014.

- the conclusions of the AER in responding to Lally’s report, set out in its rate of return guidelines;⁶⁶¹
- a 2013 report on tax statistics by Hathaway commissioned by the Energy Networks Association;⁶⁶²
- the conclusions of the QCA in its recent cost of capital determination, which also considered the foregoing material, as well as additional material with regard to the estimation of gamma;⁶⁶³
- ATCO’s submission on the Authority’s Gas Distribution System Draft Decision, including the report by its consultant, Gray;⁶⁶⁴
- a report for the Queensland Resources Council by McKenzie and Partington;⁶⁶⁵
- a report on gamma by Handley for the AER;⁶⁶⁶
- further analysis by Gray relating to its 2013 DDO study;⁶⁶⁷
- NERA’s report on the distribution and utilisation rates using ATO data;⁶⁶⁸
- Handley’s response to the NERA report;⁶⁶⁹
- Lally’s report for the QCA, responding to submissions to the QCA arising from the QCA’s Maximum Allowed Revenue for Aurizon Network;⁶⁷⁰
- Lally’s analysis of the distribution rates of Australian companies using financial statement data;⁶⁷¹
- NERA’s report on the distribution and utilisation rates using ATO data;⁶⁷²
- a report on gamma by Gray for DBP;⁶⁷³
- a report on gamma by Gray for Jemena et al;⁶⁷⁴
- a 2016 Decision issued by the ACT;⁶⁷⁵

⁶⁶¹ Australian Energy Regulation, *Explanatory Statement – Rate of Return Guideline*, December 2013.

⁶⁶² N. Hathaway, *Imputation credit redemption ATO data 1988–2011: Where have all the credits gone?* September 2013.

⁶⁶³ Queensland Competition Authority, *Final decision: cost of capital: market parameters*, August 2014.

⁶⁶⁴ ATCO Gas Australia, *Response to the ERA’s Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014.

⁶⁶⁵ M. McKenzie and G. Partington, *Report to the Queensland Resources Council: Review of Aurizon Network’s draft access undertaking*, 5 October 2013.

⁶⁶⁶ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014.

⁶⁶⁷ SFG Consulting, *An Appropriate Regulatory Estimate of Gamma*, 16 January 2014; SFG Consulting, *An Appropriate Regulatory Estimate of Gamma*, 21 May 2014, Appendix 9; SFG Consulting, *Estimating Gamma: Response to UT4 Draft Decision*, 2014.

⁶⁶⁸ NERA, *Estimating Distribution and Redemption Rates from Taxation Statistics*.

⁶⁶⁹ J. Handley, *Advice on the NERA Report: Estimating Distribution and Redemption Rates from Taxation Statistics*, 20 May 2015.

⁶⁷⁰ M. Lally, *Review of Submissions on Gamma*, 27 May 2015.

⁶⁷¹ M. Lally, *Estimating the Distribution Rate for Imputation Credits*, July 2015.

⁶⁷² NERA, *Estimating Distribution and Redemption Rates from Taxation Statistics*, March 2015, section 4.

⁶⁷³ Frontier Economics, *An Appropriate Regulatory Estimate of Gamma: Response to the DBP Draft Decision*, January 2016.

⁶⁷⁴ Frontier Economics, *The Appropriate use of Tax Statistics when Estimating Gamma*, January 2016.

⁶⁷⁵ Australian Competition Tribunal, in the matter of applications by PIA, AusGrid and others, 2016.

- Gray's response to the ACT Decision, for DBP;⁶⁷⁶ and
 - Lally's report for the AER in response to the ACT Decision.⁶⁷⁷
1438. In coming to its position, the Authority has taken into account the most current information and regulatory discussion on the issue of gamma. This includes information submitted to the Authority in response to its Draft Decision on the Dampier to Bunbury Pipeline (**DBP**), the access arrangement revision process that has run concurrently with that for the GGP. In particular, the Authority notes that Gray prepared a report to accompany DBP's submission in response to the Authority's DBNGP Draft Decision,⁶⁷⁸ and that the arguments put forward in that report are very similar to those considered previously by the Authority in relation to GGT. Accordingly, the remainder of this chapter addresses Gray's reports, including the most recent, in some detail.
1439. The Authority notes that experts differ in their interpretation of the best approach to estimating gamma in the regulatory setting. This is particularly the case with regard to the value of the utilisation rate. The Authority also notes that the ACT views the estimate of gamma as an 'ongoing intellectual and empirical endeavour'.⁶⁷⁹
1440. GGT has raised a range of issues with regard to the Authority's position set out in the Rate of Return Guidelines. These are considered in what follows. The Authority also responds to Gray's views on the Authority's revised position on gamma.

Definition of the domestic capital market

1441. In reconsidering its estimate of gamma, the Authority takes account of the definition of the capital market used for determining the allowed rate of return, which was set out in the Rate of Return Guidelines. In particular, the Authority has adopted a domestic CAPM, while allowing for the presence of foreign investors:⁶⁸⁰
- In summary, the Authority's position is that the boundary should account for the full domestic data set, including any direct influences on the cost of capital for Australian domiciled firms. This may include the influence of international investors in Australian markets for equity, or the influence of international lenders supplying debt finance directly to Australian firms.
1442. Therefore, to maintain internal consistency, the Authority considers that the estimate of gamma needs to take into account the presence of international investors in the Australian domestic capital market.

⁶⁷⁶ Frontier Economics, *Issues in Relation to the Regulatory Estimate of Gamma*, March 2016.

⁶⁷⁷ M. Lally, *Gamma and the ACT Decision*, 23 May 2016.

⁶⁷⁸ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission: 56*, 24 February 2016, Appendix D.

⁶⁷⁹ Australian Competition Tribunal, *Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9*, 12 May 2011, paragraph 45.

⁶⁸⁰ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines: Meeting the Requirements of the National Gas Rules*, www.erawa.com.au, December 2013, p. 30.

Interpretation of gamma

1443. The equation set out in paragraph 1418 interprets franking credits in the context of the Officer CAPM framework, as extended by Monkhouse to cover a non-perpetuity setting.⁶⁸¹
1444. As indicated by the AER,⁶⁸² Gray,⁶⁸³ and Handley,⁶⁸⁴ the Officer framework, and specifically Officer's definition of a nominal vanilla rate of return, provides the basis for the rate of return framework underpinning the NGR. The Authority has sought to maintain consistency with the Officer framework in its estimation of gamma.
1445. In stating this, the AER also highlighted the challenges inherent in estimating gamma.⁶⁸⁵
- Estimating the value of imputation credits is a complex and imprecise task. There is no consensus among experts on the appropriate value or estimation techniques to use. Further, with each estimation technique there are often a number of ways these may be applied resulting in different outcomes. Conceptually, the value of imputation credits must be between 0 and 1, and the range of expert views on the value of imputation credits is almost this wide.
1446. The Authority also notes the AER's position that imputation credits should be valued on a pre-personal tax and pre-personal costs level, to be consistent with the Officer model.⁶⁸⁶
1447. The Authority considers that the benefit arising from imputation credits can be interpreted as the proportion of franking credits distributed multiplied by the proportion of these that are utilised by the representative investor.⁶⁸⁷ The Authority's interpretation is consistent with that of the AER, which describes the utilisation rate as

⁶⁸¹ Officer assumes all dividends and imputation credits are fully paid out each period. Monkhouse allows some retained earnings and imputation credits (R.R. Officer, *The Cost of Capital of a Company under an Imputation Tax System*, *Accounting and Finance*, May 1994; P.H.L. Monkhouse, *The Valuation of Projects Under the Dividend Imputation Tax System*, *Accounting and Finance*, 36, 1996.) Handley notes that this assumption is unrealistic, such that any estimate of gamma that ignores retained credits will be an underestimate (J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 13.

It is well understood that the value of a retained imputation credit is less than the value of a distributed imputation credit due to the delay in distribution – but the difficult question is how much less. Unfortunately the answer is unclear as there is currently no empirical evidence on the value of a retained credit. Any value attributable to credits retained in a period would be reflected in the observed capital for that period but there is no known method to identify that component. The suggestion that retained imputation credits are worthless is somewhat implausible.

Estimates of gamma using the traditional approach will, therefore, be downward biased to the extent that retained imputation credits have value. Although it is not possible to reasonably estimate the magnitude of the bias, the Authority considers its direction is clear.

⁶⁸² Australian Energy Regulator, *AusNet Services distribution determination final decision 2016–20*, Attachment 4, p. 75.

⁶⁸³ SFG, *Response to submissions on the rule change proposals*, *Report for the AEMC*, 5 November 2012, para. 2.

⁶⁸⁴ J. Handley, *Report prepared for the Australian Energy Regulator: Advice on the value of imputation credits*, 29 September 2014, pp. 7-8.

⁶⁸⁵ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016–20*, Attachment 4, p. 8.

⁶⁸⁶ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016–20*, Attachment 4, p. 8.

⁶⁸⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 14 October 2014, p. 210.

'the utilisation value to investors in the market per dollar of imputation credits distributed.'⁶⁸⁸

1448. GGT's consultant Gray considered this interpretation to be misplaced.⁶⁸⁹ Gray states that the Authority 'has now abandoned its "value" interpretation of gamma in favour of the AER's taxation statistics approach'.⁶⁹⁰ Gray bases this view on the Authority's definition of the utilisation rate, as being the proportion of imputation credits that are redeemed – the utilisation rate of the representative investor – which the Authority determined was a complex weighted average of the utilisation rates of all investors holding risky assets, where the weights involve each investor's investment in risky assets and their risk aversion.^{691,692}

1449. Gray stated that the Authority committed two errors:⁶⁹³

a) It has misinterpreted the advice provided in the Lally (2013) report to the AER. The ERA interprets that report as supporting its conceptual definition of theta and its use of the equity ownership approach and tax statistic redemption rates to estimate theta. However, as set out in detail in Section 10 below, Lally (2013 AER) provides no such support. That is the ERA has erred in its interpretation of the Lally (2013 AER) report; and

b) Irrespective of what might be contained in the Lally (2013) report to the AER, the regulatory task requires theta to be estimated as the value of distributed credits – as explained in Sections 2 and 5 of this report. The ERA now proposes to perform a different task and has erred in that respect.

1450. The key challenge to the Authority's revised view of gamma therefore relates to the estimate of the utilisation rate. The Authority deals with this first, in what follows, then discusses the distribution rate, before drawing the material together to provide for an overall estimate of gamma.

Utilisation rate (theta)

1451. The Authority considers that the benefit of distributed imputation credits will rely on the proportion of franking credits received that are utilised by the representative investor. The estimate of this proportion is the utilisation rate, theta (θ).

1452. The Authority notes that the utilisation rate is a market-level parameter, meaning that the same value applies to all firms.⁶⁹⁴

⁶⁸⁸ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016–20*, Attachment 4, p. 9.

⁶⁸⁹ Goldfields Gas Transmission Pty Ltd, Access Arrangement Revision Proposal: Supporting Information, 15 August 2014, Attachment, p. 9 (SFG Consulting, An appropriate regulatory estimate of gamma, 21 May 2014).

⁶⁹⁰ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission: 12, December 2014*, Appendix O, p. 16.

⁶⁹¹ Whilst the Authority refers to 'risk aversion' throughout this discussion, it acknowledges that there may be other factors, in addition to risk aversion, that are implicit in this calculation.

⁶⁹² DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission: 12, December 2014*, Appendix O, p. 21.

⁶⁹³ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission: 12, December 2014*, Appendix O, p. 17.

⁶⁹⁴ See M. Lally, *The Estimation of Gamma*, Report for the AER, November 2013, p. 11.

1453. Individual investors have differing utilisation rates; investors who are able to fully use tax credits are assigned a value of one, whilst investors who cannot are assigned a value of zero. These individual utilisation rates may be weighted to produce the required market-level utilisation rate θ . The Authority therefore considers that θ 'is a complex weighted average over all investors holding risky assets, where the weights incorporate each investor's investment in risky assets, and their level of risk aversion'.^{695,696}
1454. To this end, the Authority's previous (Rate of Return Guidelines) estimation approach for estimating theta – using DDO studies – may not correctly estimate the utilisation rate required, as, among other things:
- The utilisation rate is a complex weighted average over investors, reflecting their relative wealth and risk aversion, and this need not correspond to the market value of the credits whether estimated by a DDO study or any other market based method. Even Gray accepts that, if theta is not defined as the market value of the credits, then market value studies such as DDO analysis will be of limited relevance.⁶⁹⁷
 - DDO studies at best only estimate the utilisation rate around just two days, the cum-dividend and ex-dividend dates. As a consequence, they provide an estimate of the utilisation rate with weights that reflect the composition of investors around the cum and ex dividend dates, not the weighted average across all points in time, as required. Furthermore, such investors may be quite untypical of investors in general. The 'market' value in these studies are influenced by the *marginal* investor over those dates, rather than the value attributed across all investors.
 - DDO studies may not accurately separate out the effect of the taxation benefits associated with imputation credits on the share price change from the effect of the cash dividend. There are a range of statistical models that could be used, choices over which data to use, and the results seem to be quite sensitive to a small number of outlying observations.⁶⁹⁸
 - There is considerable evidence of anomalous share price behaviour around ex days, which raises the possibility that any estimate of the utilisation rate from a DDO is instead reflecting that anomalous behaviour.⁶⁹⁹

⁶⁹⁵ M. Lally, *The Estimation of Gamma*, Report for the AER, November 2013, p. 11; M. Lally. and T. van Zijl, 'Capital Gains Tax and the Capital Asset Pricing Model', *Accounting and Finance*, vol.43, 2003, pp. 187-210.

⁶⁹⁶ The normal source of the definition of a parameter within a model is the definition provided in the paper that derives the model. However, in this case, the seminal Officer paper has been interpreted by experts in different ways. However, the Authority considers that Lally and van Zijl provide a rigorous derivation of the Officer model. In this derivation, theta is a complex weighted-average over the utilisation rates of individual investors, where the utilisation rates for individual investors are 1 if they can fully use the credits to reduce their personal tax obligations and 0 if they cannot use the credits, and the weights involve the proportion of risky assets held by each investor and other unobservable terms (M. Lally, *The Estimation of Gamma*, Report for the AER, 23 November 2013, p. 11; M. Lally. and T. van Zijl, 'Capital Gains Tax and the Capital Asset Pricing Model', *Accounting and Finance*, vol.43, 2003, pp. 187-210.). Lally notes that the unobservable terms may vary over investors but do not lend themselves to estimation and therefore one could act as if they are equal across investors, in which case theta is the proportion of risky assets held by investors who can use the imputation credits (M. Lally, *Gamma and the ACT Decision*, 23 May 2016, p. 16).

⁶⁹⁷ Frontier Economics, *An Appropriate Regulatory Estimate of Gamma: Response to the DBP Draft Decision*, January 2016, para 139.

⁶⁹⁸ M. Lally, *The Estimation of Gamma*, Report for the AER, 23 November 2013, section 3.5.

⁶⁹⁹ M. Lally, *The Estimation of Gamma*, Report for the AER, 23 November 2013, section 3.5.

- Estimates of the market value of the credits from methods other than DDOs produce markedly different results, which undermines the credibility of such market-based estimates.⁷⁰⁰
1455. For these reasons, the Authority has determined to place limited weight on the DDO estimates, and on the range of applied market value estimates more generally.
1456. The Authority instead considers other approaches to estimating the utilisation rate.
1457. In response, GGT's consultant Gray has argued that the Authority is in error in interpreting theta (and hence gamma) as the utilisation rate, rather than in terms of the value to the representative investor.⁷⁰¹
1458. First, Gray points to the revised language of NGR 87A, which states that 'gamma is the value of imputation credits', rather than the previous term 'utilisation of imputation credits'. Gray acknowledges that the Australian Energy Market Commission did not provide a detailed explanation about the changed language in its Final Determination, but considers that its apparent intention was to be clear that imputation credits did not rely on utilisation.⁷⁰² The Authority notes that the AER sought clarification from the AEMC on the reason for the change, which was unable to provide 'any further insight'.⁷⁰³ In any event, the definition of a parameter within a model can only be determined from a rigorous derivation of the model.
1459. Second, Gray has argued that the parameter U in the following equation from Lally's analysis, specifically within the term IC_1U , is defined as the *value* that investors attribute to imputation credits:⁷⁰⁴

$$S_0 = \frac{Y_1 - Tax_1 + IC_1U + S_1}{(1 + E[\widehat{R}])} \quad (29)$$

where

U is the utilisation rate or value that investors attribute to imputation credits;

Y_1 is the expected cash flows over the first year to equity holders (net of all deductions except company taxes);

Tax_1 is the expected company taxes over the first year;

S_0 is the current value of equity;

⁷⁰⁰ See M. Lally, *The Estimation of Gamma*, Report for the AER, 23 November 2013, Table 2.

⁷⁰¹ Goldfields Gas Transmission, *Access Arrangement Supporting Information*, 15 August 2014, Attachment, p. 16.

⁷⁰² DBP, Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission: 12, December 2014, Appendix O, p. 21.

⁷⁰³ Australian Energy Regulator, *Draft Decision on Jemena Gas Network 2015–20 Access Arrangement*, Attachment 4 Value of imputation credits, p. 4-37.

⁷⁰⁴ The source of this equation is M. Lally, *The Estimation of Gamma*, Report for the AER, November 2013, p. 9; cited by Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Appendix 1, p. 11 (SFG Consulting, *An appropriate regulatory estimate of gamma*, 21 May 2014). Lally uses U for the utilisation rate rather than θ .

S_1 is the expected value in one year;

$E[\hat{R}]$ is the equilibrium expected rate of return on equity; and

IC_1 is the distributed imputation credits over the first year.

1460. However, the Authority notes that Lally clearly states in context that U in the equation is a market level parameter, derived as a complex weighted average over all investors holding risky assets:⁷⁰⁵

So, relative to the standard form of the CAPM, the Officer CAPM and the associated cash flows requires three additional parameters: the ratio of market-level imputation credits to the value of the market portfolio (IC_m/S_m), the ratio of firm-level imputation credits to firm level company tax payments (IC/TAX) and the utilisation rate (U). The second of these parameters is called the “distribution rate” and the product of the last two is called “gamma”.

The utilisation rate referred to here is a market-level parameter, i.e., the same value applies to each firm. Individual investors also have utilisation rates: one for those who can fully use the credits and zero for those who can't. Consequently it might be presumed that U is some type of weighted average over investors. Although Officer (1994) provides no clarification on this matter, because his derivation of the model is intuitive rather than formal, Lally and van Zijl (2003, section 3) provide a formal derivation of a generalisation of Officer's model (with the Officer model being a special case), in which variation of utilisation rates across investors is recognised. In this derivation, they show that U is a complex weighted average over all investors holding risky assets, where the weights involve each investor's investment in risky assets and their risk aversion. Individual investors' levels of risk aversion are not observable. Accordingly it is necessary to (reasonably) act as if risk aversion is uncorrelated with utilisation rate at the investor level, in which case the weights reduce to investors' relative investments in risky assets, i.e., U is a value-weighted average over the utilisation rates of individual investors.

1461. Third, Gray considers that there is a material difference between the utilisation rate (the proportion of credits that are redeemed at the tax office) and the value of those credits to shareholders.⁷⁰⁶ Gray's core argument is that there is a cost for an investor to obtain and redeem a credit.⁷⁰⁷ Gray considers that:⁷⁰⁸

- some credits that are distributed are never redeemed, for example because;
 - the investors are non-residents; and
 - the 45 day rule precludes it;
- record keeping creates administrative costs;
- there is a time delay in obtaining the benefit;
- imputation credits are taxed at their face value;

⁷⁰⁵ M. Lally, *The Estimation of Gamma*, Report for the AER, November 2013, p. 10.

⁷⁰⁶ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Attachment, p. 13.

⁷⁰⁷ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission*: 12, December 2014, Appendix O, p. 9.

⁷⁰⁸ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission*: 12, December 2014, Appendix O, p. 22.

- as resident investors adjust their portfolio to hold domestic shares for imputation, their portfolios will become less diversified, at a cost; and
- a rational investor would increase the concentration of domestic shares in their portfolio until the marginal benefit of imputation is zero.

1462. Given these reasons, GGT considers that:⁷⁰⁹

[T]he utilisation rate may be interpreted as a complex weighted average determined by the value of equity that investors hold, and their relative wealth and risk aversions. However, this interpretation does not address the market value of those credits, and does not inform an estimate of theta which can lead to the estimate of gamma required by rule 87A. It leads to a measure of the “face value” of imputation credits, which differs from the market value of those credits...

1463. The Authority has noted these points, but has come to the view that:

- the first of these points is uncontroversial; it reduces both the utilisation rate as properly defined and the market value of the credits;
- the remaining points do or may give rise to a divergence between the utilisation rate as properly defined and the market value of the credits, but any such divergences make the market value of the credits less suitable as an estimator of the utilisation rate;
- these are arguments against using market prices to estimate the utilisation rate rather than arguments in support of using market prices;
- the effects of the time value of money are likely to be minimal, given the period of delay; and
- there is no empirical evidence on the diversification effect of imputation credits, and no clear theoretical position for the effect either.⁷¹⁰

1464. In addition, transaction and other costs are unlikely to materially affect redemption of imputation credits, as investors are required to report franked dividends and eligible imputation credits, such that the incremental cost of these other costs to shareholding is likely to be small.

1465. The Authority's view then is that these considerations do not detract from the fact that some investors will redeem credits, and thus have a utilisation rate of 1, and other investors in the Australian share market will not redeem credits, and will thus have a utilisation rate of 0. In the Authority's view, there is no case here that the utilisation rate is not a complex weighted average across all investors, both domestic and international. That complex weighted average depends on risk aversion and wealth.

1466. Therefore the Authority is of the view that approaches that directly inform the degree of utilisation of imputation credits will provide relevant information. Those approaches include the domestic ownership share of equity, and taxation statistics on the proportion of redeemed imputation credits.

⁷⁰⁹ Goldfields Gas Transmission, *Access Arrangement Revision Proposal: Response to ERA Draft Decision, Submission*, January 2016, p. 123.

⁷¹⁰ The Authority notes that diversification will depend on investor's wealth and risk preferences. It may be that investors respond to the presence of imputation by holding more, less or the same value of Australian equities, depending on preferences.

1467. Gray also argues that the complex weighted average interpretation can only be consistent with perfectly segmented or perfectly integrated capital markets – and that this is not consistent with the Authority’s definition of a domestic capital market with the presence of foreign investors.⁷¹¹

However, the ERA’s definition of theta in terms of the proportion of credits that are redeemed is not consistent with any theoretical model. The theoretical models that involve “a complex weighted average over all investors” only apply to two special cases:

- a) The case where Australia is perfectly segmented from world capital markets; and
- b) The case where Australia is perfectly integrated into world capital markets.

1468. Gray then argues that there is *no theoretical model* that is consistent with the Authority’s definition of the boundaries of the domestic market for estimation purposes, which include the presence of foreign investors to the extent that they invest domestically. In this context, Gray considers that the Authority’s definition of the market is not a ‘closed system’, citing Lally in support:⁷¹²

Lally (2013 AER) notes that there is a special case in which the proportion of imputation credits that are redeemed would be an appropriate estimate of the value of imputation credits that is reflected in the share price. He considers a class of models that includes Monkhouse (1993) and Lally and van Zijl (2003). These models all consider a setting in which there is a single market in which the m investors jointly own all of the n assets. In these models there is a closed system – there are no assets outside the market that are available to the m investors inside the market and there are no investors outside the market who can buy any of the n assets inside the market. That is, these models only apply in a closed system where the m investors collectively own all of the n assets and nothing else.

The models then derive an equilibrium by solving a market clearing condition. This involves noting that: a) All of the m investors must invest all of their wealth across the n assets and nothing else; and b) All of the n assets must be owned entirely by the m investors and no one else

Each of the m investors will hold a different amount of each of the n assets according to their wealth, their risk aversion and their tax status. Other things equal, wealthy investors will hold more of each asset than poor investors, highly risk averse investors will tend to hold safer portfolios, and investors who are eligible to redeem imputation credits will hold relatively more of the stocks that distribute larger amounts of those credits.

Because there is a closed system in which the m investors collectively own all of the n assets and nothing else, it is possible to derive the relative amount of each asset that each investor will want to hold. This will be a function of the investor’s relative wealth, risk aversion and tax status. The relative demand for each asset will determine its equilibrium price and the equilibrium return that investors will require for holding it. Again, it is very important to emphasise that none of these equilibrium calculations can be performed unless the system is closed such that the m investors collectively own all of the n assets and nothing else.

These models also make the assumption that a dollar of redeemed credits has the same value as a dollar of cash dividends.

⁷¹¹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Attachment, p. 14. The Rate of Return Guidelines stated that ‘the Authority’s position is that the boundary should account for the full domestic data set, including any direct influences on the cost of capital for Australian domiciled firms. This may include the influence of international investors in Australian markets for equity...’ (Economic Regulation Authority, Explanatory Statement for the Rate of Return Guidelines, 16 December 2013, p. 30).

⁷¹² Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Attachment, p. 73.

1469. This is a pivotal issue. Gray has acknowledged that:⁷¹³

In this [closed system] case, there is equality between:

- a) The extent to which imputation credits are capitalised into stock prices; and
- b) The weighted-average redemption rate.

That is, there are two equivalent ways of determining the value of imputation credits, but only if the pre-requisite conditions and assumptions of the model hold. Importantly, under these special assumptions value and redemption will be equal. That is, redemption rates can be used to estimate value under these special assumptions. That is, these models do not say that redemption is the right interpretation and value is the wrong interpretation – the value interpretation is always the correct one. The only contribution of these models is to identify the special cases in which the redemption rate would provide an estimate of value.

1470. Gray's claims – that the Officer model assumes that national equity markets are completely segregated, and that the existence of foreign investors in the Australian equity market conflicts with this assumption – are not disputed. However, all models make assumptions that are unrealistic to varying degrees, and most of the other assumptions underlying the Officer model are also unrealistic (no transactions costs, infinite divisibility of assets, unlimited borrowing at the risk-free rate, *et cetera*). However, Gray's assumption that the utilisation rate is the market value, unrelated to its relationship to the utilisation rates of individual investors, essentially changes the definition of a parameter within the Officer model. If the definition of a parameter is changed within a model that has been derived from underlying assumptions, then one ceases to be using that model or any model that has been mathematically derived from underlying assumptions. Models and the definitions of their parameters are an indissoluble package.

1471. So, if the Officer model is to be used, and Gray is not proposing an alternative model, then notwithstanding the presence of foreign investors, the utilisation rate is still a complex weighted-average over the utilisation rates of individual investors rather than the market value of the credits. The only issue raised by the presence of foreign investors is whether to exclude them from the set of investors to which this weighted-average relates (consistent with the Officer assumption that national equity markets are fully segregated), or to include them consistent with the empirical fact of their existence.

1472. Gray's approach to this conflict between the assumptions of the Officer model and empirical reality is to define theta as the market value of the credits, and then estimate this using a DDO study. However, as stated above, the parameters in a model cannot simply be redefined. Furthermore, nothing in Gray's approach to the issue overcomes the conflict between the empirical fact of foreign investors and the use of a model (Officer) that assumes that they do not exist. In particular, Gray's estimate of theta reflects the presence of foreign investors in the Australian equity market, and therefore Gray combines a model that assumes no foreign investors with an estimate of one of its parameters that is significantly affected by their presence.

1473. Gray argues that estimating theta from market prices is consistent with the way in which every other WACC parameter is estimated.⁷¹⁴ This could be interpreted as

⁷¹³ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Attachment, p. 72.

⁷¹⁴ Frontier Economics, *An Appropriate Regulatory Estimate of Gamma: Response to the DBP Draft Decision*, January 2016, para 52.

arguing that consistency requires that theta be estimated in this way. However, if a particular model is adopted, the parameters in the model must be defined in accordance with that model, and the only valid source of a definition is from the derivation of the model. Such derivations reveal that the utilisation rate is a complex weighted average over the utilisation rates of individual investors rather than the market value of the credits. So, market prices may be used to estimate the utilisation rate, but they are not the natural choice. The fact that other WACC parameters are market prices does not undermine this reasoning. Furthermore, the utilisation rate also appears in the cash flows, as a deduction from the corporate tax term, and this term represents the legal obligations of the firm rather than the market value of the taxes. So, some terms in the Officer model are market values and some are not, with theta being of the latter type.

1474. Gray also argues that parameters should be estimated ‘as they are rather than conceptualising what they would be under a particular set of assumptions’.⁷¹⁵ However, one cannot estimate any parameter without first defining it, and the definition of theta within the Officer model is *not* the market value of the credits but a complex weighted-average over the utilisation rates of individual investors.
1475. In a recent decision on gamma, the ACT also, like Gray, concludes that the utilisation rate is the market value of the credits, and is therefore best estimated by studies using market data.⁷¹⁶ The source of the ACT’s belief that theta is a market value is claimed to be the Officer model, but the ACT does not explain at what point this conclusion is apparent in Officer’s analysis.
1476. The ACT also argues that defining theta as a market value, and therefore estimating it using market data, is consistent with the processes for estimating the costs of debt and equity from market data.⁷¹⁷ This could be interpreted as claiming that theta must be a market value because the costs of debt and equity are market values. However, as discussed above, if a particular model is adopted, the parameters in the model must be defined in accordance with that model, and the only valid source of a definition is a rigorous derivation of the model. Such derivations reveal that theta is a complex weighted average over the utilisation rates of individual investors rather than the market value of the credits. So, market prices may be used to estimate the utilisation rate but they are not the natural choice, and they may or may not be good estimates.
1477. The Authority notes that the AER explicitly rejects Gray’s view on the definition of theta as a market value, explaining that:⁷¹⁸

[W]e remain of the view that market studies that estimate the value of imputation credits are influenced by differential personal taxation of ordinary income (which includes both cash dividends and the face value of imputation credits to eligible domestic investors) relative to capital gains. These differential taxation rates heavily influence these “market values” and therefore these market value estimates neither reflect a pre-personal nor post-personal tax value of imputation credits. None of our allowed rate of return parameter estimates require an explicit adjustment to make them consistent with the

⁷¹⁵ Frontier Economics, *An Appropriate Regulatory Estimate of Gamma: Response to the DBP Draft Decision*, January 2016, para 58.

⁷¹⁶ Australian Competition Tribunal, *Application by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 2016, paras 1094, 1096.

⁷¹⁷ Australian Competition Tribunal, *Application by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 2016, paras 1073, 1097.

⁷¹⁸ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016-20: Attachment 4 – Value of imputation credits*, 26 May 2016, p. 82.

Officer Framework underpinning the rules. That is, they are already appropriate post tax estimates.

1478. The AER elaborates on the weaknesses of market studies in its United Energy distribution decision, noting for instance, that different investors have DDO ratios depending on factors such as the investor's marginal income tax rate, whether the share was held for over 12 months, whether the investor is a super fund, whether the investor is foreign, and if so, how foreign income is taxed in the investor's home country.⁷¹⁹ It further comments that:⁷²⁰

[T]he marginal investor's valuation is not relevant for the purposes of calculating the taxation building block. What is required is what proportion of the company tax is a prepayment of the investor's personal tax. For the taxation building block what matters is the value to all investors in aggregate and not the marginal investors that trade around the cum-dividend and ex-dividend dates. This would suggest that dividends drop off studies are not the best method for determining the gamma adjustment to the taxation building block.

1479. On the issue of market segregation, the Authority has also considered Handley's view on the CAPM model in this context, where he describes the Australian market as a system of n assets with m investors, some of which are foreigners. He explains that:⁷²¹

The starting point for a CAPM is a given set of n assets and a given set of m investors who hold them. It is then assumed that this set of investors will trade this set of assets among themselves in order to form their optimal portfolios – with the decision criteria of each investor being to maximize his utility of end-of-period wealth, which in turn is defined over the set of n assets. The CAPM makes no explicit assumption about any other assets or any other investors but if there are other assets or investors then it is implicitly assumed that these do not matter for the purposes of determining the prices of the n assets under consideration (otherwise they should be in the model). This means that other assets held by other investors do not matter. It also means that other assets held by the m investors do not matter. This is just a form of market segmentation. By definition the system is closed because what matters for pricing purposes – the n assets and m investors – are in the model and any other assets or investors being outside the model are ignored.

This is precisely the assumption that one implicitly makes when using the CAPM in practice. Once you choose a benchmark market then you define the set of assets and investors that are relevant for pricing purposes – in other words, by choosing a particular proxy for the market, one is saying that this is the best model for estimating expected returns on assets within this market. The model is closed in the sense that it is implicitly assumed to be segmented. If one disagrees with this assumption then the solution is to bring the other assets and investors into the model.

... [Gray's] comments are based on a faulty premise – that the m investors can own no other assets. This is an assumption of [Gray] but is not an assumption of the CAPM. In the current context, it is not assumed that investors in the domestic market hold no other assets but rather it is assumed that investors in the domestic market price domestic assets in isolation of any other assets they may or may not hold. For this purpose, investors in the domestic market consist of domestic investors to the extent that they hold domestic assets and foreign investors to the extent that they hold domestic assets – this is the set of n assets and the set of m investors who hold those

⁷¹⁹ Australian Energy Regulator, *United Energy distribution decision 2016-20: Attachment 4 – Value of imputation credits*, May 2016, p. 158.

⁷²⁰ Australian Energy Regulator, *United Energy distribution decision 2016-20: Attachment 4 – Value of imputation credits*, May 2016, p. 159.

⁷²¹ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 22.

n assets. Foreign assets held by these domestic investors, foreign assets held by these foreign investors and foreign assets held by other foreign investors are outside the model.

1480. This position is opposed by Lally, in the context of the Officer model, who notes that regulators include foreign investors, to the extent that they invest in the Australian market, to reflect the empirical reality of their existence, but that:⁷²²

...this involves use of a model (the Officer CAPM) that assumes that national markets for risky assets are segmented along with the definition for a parameter (U) that is inconsistent with this model. Expressed more technically, the Officer model arises from the portfolio choices of a group of investors whose portfolio choices are limited to the Australian risk free asset (whose rate is determined exogenously) and Australian risky assets, and their portfolio choices determine the prices and hence the expected rates of return on these risky assets. Thus foreign investors, who by definition can hold both Australian and foreign risky assets, have no place in such a model. In addition, if Australian investors have access to foreign assets, the appropriate CAPM will reflect that fact and the equilibrium prices of Australian assets will differ.

1481. But Handley points out:

Lally (2013) adopts an unnecessarily narrow interpretation of segmentation in suggesting that foreign investors should be excluded completely. But once you choose a proxy for the market portfolio you define not only the set of assets that are relevant for pricing purposes but you also define the set of investors that are relevant for pricing purposes – in other words, it is a joint assumption. Lally's suggestion that we include the full set of n assets but only a subset of the of m investors not only contradicts the starting point of the CAPM but also does not accord with the reality that foreign investors are present in and influence the pricing of assets in the domestic market. This notion of (complete) segmentation – that only domestic assets are held by domestic investors – is an assumption of Lally but is not an assumption of the CAPM.⁷²³

1482. The Authority considers that Handley's statements relating to segmentation in the CAPM model provide an alternative view. While it is reasonable to consider that Australian and foreign investors' holdings of Australian assets may be influenced by the prices of assets in overseas markets, a globally integrated market is not used for estimating the rate of return. The Authority explicitly rejected such an approach in the Rate of Return Guidelines.⁷²⁴ While utilisation rates may change as investors in Australian capital markets change their portfolio holdings and the proportion of foreign investors changes, *at any given point in time* the utilisation rate will be a complex weighted average of the m investors' utilisation rates.⁷²⁵

1483. It becomes clear, then, that the term 'value of franking credits' and 'proportion of the tax paid at the company level [which] is really a withholding of personal tax' are interchangeable terms for gamma.⁷²⁶ From the shareholders' point of view 'distributed imputation credits are valuable to the extent that they can be used (or

⁷²² M. Lally, *The Estimation of Gamma*, Report for the AER, November 2013, p. 14.

⁷²³ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 22.

⁷²⁴ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, p. 28.

⁷²⁵ Handley further notes in this context that (J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 8):

An implication of SFG's assertion is that one could validly use a "domestic" version of the CAPM say to price U.S. stocks only if you assume that investors in the U.S. stock market hold no other assets except U.S. stocks. Such an assumption would be clearly implausible.

⁷²⁶ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 9.

utilised or redeemed) to reduce personal taxes and/or have credits refunded'. Officer described gamma in both ways. Handley considers that Officer's central idea is the identification of personal tax component of the company tax paid.⁷²⁷ The relevant value of an imputation credit is the after-company-before-personal-tax value.⁷²⁸

1484. Handley notes that the debate about value and utilisation is a largely sterile one:

...the relevant measure of utilisation value is that value as determined by the market – in other words it is not the utilisation value of a credit to any single investor or the utilisation value to any single class of investors that we want but rather the utilisation value to the market as a whole. In contrast, much of the current debate appears to incorrectly suggest that market value and utilisation value are alternative concepts for this purpose.

1485. Handley observes that Officer concluded that the grossed up return to a company would include returns for capital accumulation, dividends and imputation. The returns

to imputation may be expressed as $\frac{\gamma C_t}{P_{t-1}}$ where C_t is imputation credits distributed

during the period and the share price P_{t-1} is the price at the start of the period.

Handley quotes Officer as defining this component as the 'value of tax credits expressed as a rate or proportion of the initial value of the share'.⁷²⁹ With Monkhouse's extension to a non-perpetuity setting, set out at paragraph 1418, then γ continues to be used to refer to the personal tax proportion of company tax paid – equivalently the utilisation value of generated imputation credits, while theta is used to refer to the utilisation value of distributed imputation credits and is commonly called the utilisation rate'.⁷³⁰

1486. Handley notes that the utilisation rate will reflect the value of imputation credits to the market as a whole, which may be difficult to observe. In this context, Handley reiterates the key messages made by Lally, that:⁷³¹

- the per dollar utilisation value of imputation credits embedded in equilibrium asset prices, theta, is common across all assets in the market; and
- theta may be interpreted as a complex weighted average of investor utilisation rates.

1487. The Authority notes that both Handley and Lally consider that it is appropriate to assume a domestic capital market for the purpose of estimating theta. Further, both take the position – in opposition to Gray – that the complex weighted average approach is preferable to market based approaches. The main point of difference between Handley and Lally is whether or not international investors should be excluded from the model.

1488. Based on the foregoing, the Authority considers, on the balance of the arguments, that use of the CAPM and interpretation of theta as the utilisation rate (as a complex

⁷²⁷ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 9.

⁷²⁸ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 7.

⁷²⁹ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 10.

⁷³⁰ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 11.

⁷³¹ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 20. For a summary of Lally's views, see Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 14 October 2014, Appendix 8.

weighted average) is consistent with the assumption that the CAPM applies to a domestic market that includes the presence of international investors.

1489. In light of the foregoing, the Authority considers that there is considerable uncertainty surrounding the estimation of the utilisation rate. The Authority therefore considers that applying a range of approaches is desirable in determining the estimate.

Equity share ownership

1490. The Authority considers that, by definition, theta is a complex weighted average over the utilisation rates of individual investors, where the utilisation rates for individual investors are 1 if they can fully use the credits to reduce their personal tax obligations and 0 if they cannot use the credits, and the weights involve the proportion of risky assets held by each investor and other unobservable terms. If these other terms are equal across investors, then the market utilisation rate is the proportion of Australian risky assets held by investors who can use the imputation credits. Furthermore, since this assumption cannot be confirmed or rebutted, because these other terms are unobservable, then pragmatically theta should be treated as if it is the proportion of risky assets held by those investors who can use the credits.
1491. Assuming that all local investors can fully use the credits and foreign investors cannot use the credits, it follows that theta is the proportion of Australian risky assets held by local investors. Accordingly, an estimate of the proportion of Australian equities held by local investors is an estimate of theta.
1492. Gray implies that the equity ownership approach overestimates theta because it assumes that 100 per cent of credits distributed to resident investors will be redeemed but some will not be redeemed due to the 45 day rule.⁷³² However, if a resident investor is unable to redeem credits because they held shares for less than 45 days around the ex-dividend date, they could not be a tax arbitrageur (such parties would desist if they were not successful) and therefore would have to have other motives for holding the shares for this short period. Since the penalty for doing so in the form of not receiving imputation credits would be substantial, the set of such investors would be likely to be very small. Additionally, because they would be holding the shares for less than 45 days, their impact on the estimate of theta from the equity ownership approach would be further diluted.
1493. Furthermore, there will be cases in which tax arbitrage is successful despite the 45 day rule (because shares are held for more than 45 days around the ex-dividend date) and the effect of this will be that the equity ownership approach will underestimate theta.

All equity – listed and unlisted

1494. The Authority has previously estimated the domestic equity share ownership proportion of listed and unlisted equity at 0.7. That estimate is based on:

⁷³² Frontier Economics, *An Appropriate Regulatory Estimate of Gamma: Response to the DBP Draft Decision*, January 2016, section 4.6.3.

- evidence from the AER, based on 2007 evidence from the Australian Bureau of Statistics (**ABS**), that 71 per cent of Australian equity (listed and unlisted) is held by domestic investors;⁷³³ and
 - updated ABS evidence from the QCA support a foreign ownership share (listed and unlisted) of around 30 per cent, depending on the period chosen.⁷³⁴
1495. Gray cautions that the estimates in unlisted equity may be unreliable, quoting the original ABS feature article from June 1992 to this effect.⁷³⁵ However, the Authority notes that:
- Gray omitted to include a sentence in the ABS quote that ‘Alternative information sources and methodologies for deriving these estimates are being investigated.’⁷³⁶ The feature article is more than 20 years old, and the ABS has continued to refine the data in the relevant catalogue over the years.
 - The ABS has continued to publish the data, so it is reasonable to consider it relevant.
 - The data quality warning was not repeated in the ABS feature article from 2007.
1496. The Authority is therefore not persuaded that the equity ownership estimates are undermined by data quality issues.
1497. Gray has also noted the use of 2007 ABS data, suggesting that updated estimates based on current ABS data should be used. Gray also suggests that any equity share ownership estimate should be restricted to privately owned equity, else the inclusion of government owned equity will cause a systematic bias in the estimate of foreign ownership.⁷³⁷ The Authority has noted these points and derived an updated series of equity share ownership that excludes government entities.
1498. The Authority has also refined the equity share ownership estimates consistent with the method set out by the AER (Figure 23). The method:
- excludes from the calculation entities that are wholly owned by the public sector – including equity issued by the ‘central bank’, ‘central borrowing authorities’, ‘national public non-financial corporations’ and ‘state and local public non-financial corporations’;
 - sums the equity held by those classes of domestic investor that are eligible to utilise imputation credits – ‘households’, ‘pension funds’ and ‘life insurance corporations’;
 - sums the equity held by those classes of investor that are not eligible to utilise imputation credits – ‘state and local general government’, ‘national general government’ and the rest of the world’; and

⁷³³ Australian Bureau of Statistics, *Feature article: Foreign ownership of equity*, Available at: <http://www.abs.gov.au/ausstats/abs@.nsf/featurearticlesbytitle/EDEB646A92BF2BFBCA2579B8000DF20B?OpenDocument>.

⁷³⁴ Queensland Competition Authority, *Final Decision: cost of capital: market parameters*, August 2014, p. 98.

⁷³⁵ Goldfields Gas Pipeline, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, Attachment, p. 85.

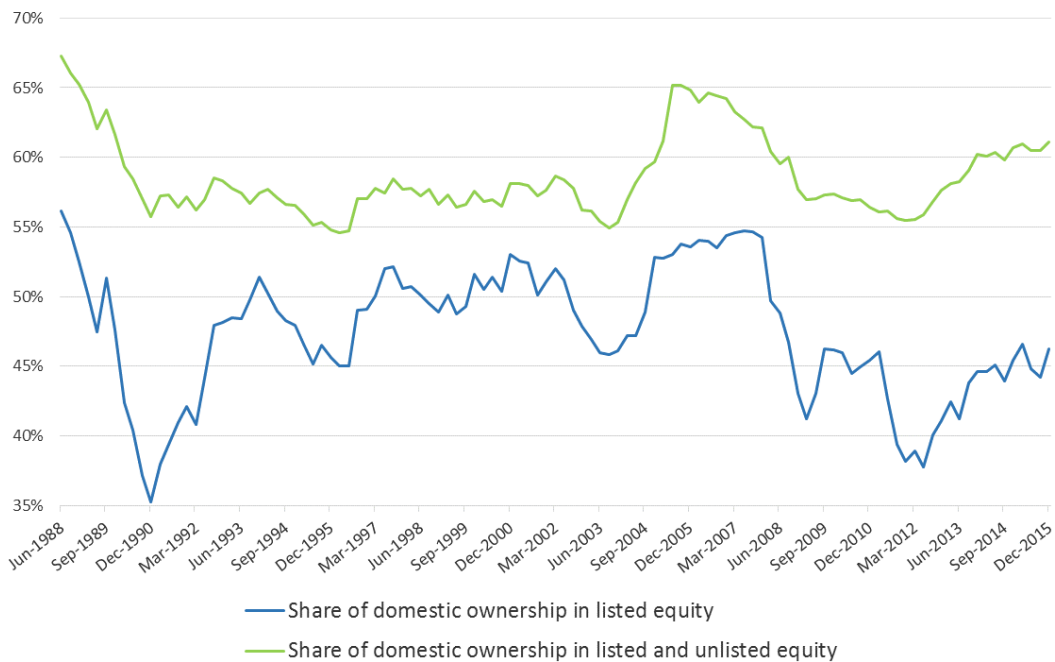
⁷³⁶ Australian Bureau of Statistics, *International Investment Position Australia*, June 1992, Section 4.

⁷³⁷ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission*: 12, December 2014, Appendix O, p. 42.

- determines the share of equity held by investors eligible to utilise imputation credits as a proportion of the equity held by domestic investors that either use or waste imputation credits.⁷³⁸

1499. The resulting domestic ownership for all (listed and unlisted) equity has tended to lie in the range between 55 and 65 per cent much of the time (Figure 23). The most recent share in December 2015 was 61 per cent.

Figure 23 Share of domestic ownership in listed and unlisted equities – excluding government ownership and refined to account for use of imputation credits



Source: Australian Bureau of Statistics, *Australian National Accounts: Finance and Wealth*, Catalogue 5232.0, Tables 47 and 48, June 2015, 24 September 2015; ERA analysis.

1500. The Authority considers that the most relevant period for making an estimate is that since July 2000, when the current regime allowing refunds of excess credits for eligible investors came into effect. Over that period, the share of domestic ownership in all equity has averaged 59 per cent.

1501. The Authority notes that the estimate has fluctuated over time. The Authority therefore is of the view that it is reasonable to infer an estimate around 59 per cent for domestic ownership of listed and unlisted equity, based on the average since 2000. That estimate also happens to be close to the most recent observation.

Listed equity

1502. The listed equity share has fluctuated around 50 per cent much of the time, moving in a range between 35 and 56 per cent in the observed data. The listed equity share is

⁷³⁸ Australian Energy Regulator, *Draft Decision, Jemena Gas Network's 2015–20 Access Arrangement*, Attachment 4 Value of imputation credits, p. 4-55. The AER observes that the case for assuming that governments 'waste' the imputation credits they receive is not clear, but that the effect of the exclusion is immaterial on the final result.

currently 45 per cent (based on recent ABS data for December 2015), and the average value since July 2000 has been 47 per cent (Figure 23).⁷³⁹

1503. The Authority therefore is of the view that it is reasonable to infer an estimate of around 47 per cent for domestic ownership of listed equity, based on the average since June 2000.

Equity share ownership estimate of the utilisation rate

1504. The Authority estimates the utilisation rate of imputation credits as being in the range of 0.47 to 0.59 at the current time (based on the most recent ABS data for December 2015, and using the 'refined' approach), depending on whether the estimate is based on listed or all equity respectively.⁷⁴⁰
1505. The Authority notes that this is somewhat lower than Handley's estimate, which is that the corresponding range is 0.5 to 0.7, depending on whether listed or all equity is used.⁷⁴¹ The Authority notes that Handley's estimate is based on earlier ABS data (March 2014), and also took account of the estimate of Hathaway, that 'domestic investors held between 75 per cent and 81 per cent of Australian equity between 1988 and 2012'.⁷⁴² The Authority has not accounted for Hathaway's data, given its preference to focus on the estimates for the post-2000 period.
1506. In respect of the choice between listed and all equity, the fact that only listed equity is used to estimate the MRP and beta suggests that the same limitation be applied to the present issue. However, Lally argues that the limitation is only imposed for the MRP and beta because data from unlisted firms is entirely inadequate for estimating returns.⁷⁴³
1507. The Authority notes this argument for the use of listed equity, but is also aware that there is a lack of consensus in relation to this point. In the recent AusNet Services decision,⁷⁴⁴ the AER responded by considering both listed equity, and all equity (both listed and unlisted). The Authority has adopted a similar approach in this decision.
1508. In its recent PIAC-AusGrid Decision, the ACT argues that the estimate of theta from the equity ownership approach is an upper bound, due to time delays, administrative costs in distributing the credits, portfolio effects, and the effect of the 45 day rule.⁷⁴⁵ Given the ACT's belief that theta is the market value of the credits, this would seem to follow. However, the Authority considers that the ACT's belief about theta is in

⁷³⁹ The Authority does not accept DBP's argument that it should use either the most recent value, or the last five years average, given the volatility of the data (see DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Response to ERA Issues Paper Submission 26*, 2 June 2015, p. 12).

⁷⁴⁰ This range has changed from that estimated for the ATCO GDS Final Decision due to the inclusion of the most recent data to June 2015.

⁷⁴¹ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 36.

⁷⁴² J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 35.

⁷⁴³ M. Lally, *Review of Submissions to the QCA on the MRP, Risk-Free Rate and Gamma*, 12 March 2014, pp. 34-35.

⁷⁴⁴ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016-20: Attachment 4 – Value of imputation credits*, 26 May 2016.

⁷⁴⁵ Australian Competition Tribunal, *Application by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 2016, paras 1066, 1093, 1095.

error; theta is not the market value of the credits but is instead a complex weighted average over investors' utilisation rates.

1509. In addition, even if theta were the market value of the credits, the belief that the equity ownership proportion necessarily exceeds the market value of the credits due to administrative costs, time delays, portfolio effects, *et cetera* is erroneous. For example, if 50 per cent of Australian equities were foreign owned on average, tax arbitrage involving local investors buying shares shortly before dividend ex-days and selling them shortly afterwards could lead to all credits being redeemed by locals and therefore the market value on the credits could be close to 1.0. Consequently, the market value of the credits may be above the proportion of equity owned by Australian investors.

Taxation statistics

1510. The redemption rate for a year is the total credits redeemed divided by the total credits issued. If all credits issued to investors who can use them are redeemed, it follows that the redemption rate is the total credits issued to investors who can use them divided by the credits issued to all investors. In addition, if investors who can use the credits choose Australian stocks with the same ratio of imputation credits to equity value as do investors who can't use the credits, the redemption rate would be the proportion of Australian equities held by investors who can use the credits. As discussed earlier, essentially this is theta.⁷⁴⁶
1511. However, as argued by Lally, the second assumption is unrealistic.⁷⁴⁷ Investors who can use the credits are likely to tilt towards stocks with high imputation credit to value ratios because only they can use the credits and the market value of these credits is unlikely to fully reflect their full face value because the influence of investors who can't use the credits is significant. Accordingly, the redemption rate would overestimate theta and this is a disadvantage for this estimator.
1512. On the other hand, tax arbitrage causes the equity ownership approach to underestimate theta, as discussed earlier, and this problem does not apply to the redemption rate; that is, tax arbitrage equally raises both theta and the redemption rate. So, the redemption rate tends to overestimate theta, whilst the equity ownership approach tends to underestimate it.
1513. The Authority noted in the Rate of Return Guidelines that two studies – performed by Hathaway and Officer (2004) and Handley and Maheswaran (2008) – have been considered by regulators in the past to estimate the redemption rate.⁷⁴⁸ These reports relied on company statistics published by the ATO.⁷⁴⁹
1514. Hathaway and Officer (2004) used ATO company statistics to estimate the proportion of redeemed imputation credits from 1988 to 2002.⁷⁵⁰ They calculated that 71 per cent

⁷⁴⁶ M. Lally, *Gamma and the ACT Decision*, 23 May 2016, pp. 18-19.

⁷⁴⁷ M. Lally, *Gamma and the ACT Decision*, 23 May 2016, p. 19.

⁷⁴⁸ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines: Meeting the Requirements of the National Gas Rules*, 16 December 2013, p. 212.

⁷⁴⁹ N. Hathaway, *Imputation credit redemption ATO data 1988-2011, Where have all the credits gone?* September 2013, p.6.

⁷⁵⁰ See N.J. Hathaway & R.R. Officer, *The Value of Imputation Tax Credits*, working paper, Melbourne Business School, 2004, p. 14.

of company tax payments had been distributed as imputation credits on average and estimated that 40 to 50 per cent of the distributed credits were redeemed by taxable investors.⁷⁵¹

1515. Handley and Maheswaran (2008) used the same data to examine the reduction in individual tax liabilities due to imputation credits from 1988 to 2004.⁷⁵² Their study found that 67 per cent of distributed imputation credits were used to reduce personal taxes between 1990 and 2000, and this increased to 81 per cent over 2001-2004.
1516. Hathaway provides more recent estimates, using data for 2004 to 2011 – of 44 per cent or 62 per cent – depending upon whether ATO Franking Account Balance (**FAB**) data or ATO dividend data are used.⁷⁵³ Rather than using ATO company statistics, which are subject to double counting errors, Hathaway provides separate estimates based on ATO FAB data and ATO dividend data,⁷⁵⁴ and highlights the large, and apparently non-reconcilable, discrepancy between the two datasets.⁷⁵⁵
1517. Hathaway gives more weight to the estimate based on ATO FAB data, stating that:⁷⁵⁶
- ...I have more faith in the [ATO FAB] data than in the dividend data. The dividend data appears to be missing about \$87.5 billion and the ATO has had substantial problems with the dividend data in the past.
1518. Hathaway's estimate using ATO FAB data has also been updated a number of times by various parties since it was originally calculated. NERA uses data for 2004 to 2012 and updates Hathaway's estimate using tax data for one additional year to 45 per cent.⁷⁵⁷ Similarly, Gray uses data from 2004 to 2013 to arrive at an estimate of 46 per cent⁷⁵⁸, and the AER uses data from 2004 to 2014 to arrive at an estimate of 48 per cent⁷⁵⁹.
1519. The Authority considers that Hathaway's estimate, and the updated estimates produced by NERA, Gray, and the AER, are superior to all earlier estimates of the redemption rate, and therefore uses them to estimate the redemption rate.

⁷⁵¹ N.J. Hathaway & R.R. Officer, *The Value of Imputation Tax Credits*, working paper, Melbourne Business School, 2004, p. 14.

⁷⁵² J. Handley and K. Maheswaran, "A Measure of the Efficacy of the Australian Imputation Tax System", *The Economic Record*, Vol. 84, No. 264, 2008, pp. 82-94.

⁷⁵³ N. Hathaway, *Imputation credit redemption ATO data 1988-2011, Where have all the credits gone?* September 2013, section 1.3.

⁷⁵⁴ N.J. Hathaway & R.R. Officer, *The Value of Imputation Tax Credits*, working paper, Melbourne Business School, 2004, p. 14.

⁷⁵⁵ N. Hathaway, *Imputation credit redemption ATO data 1988-2011, Where have all the credits gone?* September 2013, p. 4.

⁷⁵⁶ N. Hathaway, *Imputation credit redemption ATO data 1988-2011, Where have all the credits gone?* September 2013, p. 39.

⁷⁵⁷ NERA, *Estimating Distribution and Redemption Rates from Taxation Statistics*, March 2015, section 4.

⁷⁵⁸ Frontier Economics, *The Appropriate Use of Tax Statistics when Estimating Gamma*, 6 January 2016, pp. 31-32.

⁷⁵⁹ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016-20: Attachment 4 – Value of imputation credits*, 26 May 2016, p. 4-138.

1520. The Authority notes that the AER recently set out the evidence for the estimate based on tax statistics in a further review, drawing on, and further, considering views from the experts:⁷⁶⁰

- the evidence assembled by Hathaway, NERA, Gray, and the AER points to a range of around 0.4 to 0.6 for the utilisation rate;
- based on the observation that the post-2004 taxation statistics data is more reliable than data available prior to that date:

In this current work I only consider franking credit flows for the period for 2004 onwards and can provide a much more detailed insight into the flows and utilisations of franking credits for that period

I would caution anyone, including the AER, against relying on those parts of my earlier reports which focussed on ATO statistics [up to 2004]. The data was then not as clear as it is today. I had to rely on separate analyses of ATO tax data and the ATO financial data. As I am now aware with the new data, there is an extremely large discrepancy between these two subsets of data. The missing link was the data on the flows of credits between companies which is now visible after the changes of 1 July 2002. I would recommend that the AER do not rely on that earlier report.⁷⁶¹

- informed by two estimates of the distribution rate for the period 2004 to 2011, being 0.43 and 0.61;
- more recently updating the 0.44 estimate to 0.48 using ATO FAB data to the 2014 tax year, with;⁷⁶²
 - the (updated) 0.48 estimate of the utilisation rate (using ATO FAB data) corresponds to estimates of the distribution rate of around 0.7;
 - the 0.61 estimate of the utilisation rate (using ATO dividend data) corresponds to estimates of the distribution rate of around 0.5; and
- with the updated 0.48 estimate based on post-2004 data being preferred as reasonable as it is consistent with an estimate of the distribution rate for 'all equity' of 0.7.⁷⁶³

1521. The Authority has reviewed this evidence and considers that the Hathaway study provides the best estimate of the utilisation rate derived from taxation statistics. The Authority has also been guided by Hathaway's finding that the ATO FAB data is more reliable than the ATO dividend data. On that basis, the Authority considers that a point estimate of 0.48 (as updated by the AER⁷⁶⁴) should be applied, paired with a distribution rate based on all equity of 0.7.

1522. However, the Authority remains mindful of Hathaway's concerns with the ATO data, and the pointed caution about relying on it for estimating utilisation rates:

⁷⁶⁰ Australian Energy Regulator, *Draft Decision, Jemena Gas Network's 2015–20 Access Arrangement*, Attachment 4 Value of imputation credits, pp. 4-58 to 4-59.

⁷⁶¹ N. Hathaway, *Imputation credit redemption ATO data 1988–2011: Where have all the credits gone?*, September 2013, p. 6.

⁷⁶² Australian Energy Regulator, *AusNet Services distribution determination final decision 2016-20: Attachment 4 – Value of imputation credits*, 26 May 2016, p. 4-138.

⁷⁶³ Australian Energy Regulator, *Jemena Gas Network's 2015-20 Access Arrangement Draft Decision*, Attachment 4, p. 4-20.

⁷⁶⁴ Australian Energy Regulator, *Jemena Gas Network's 2015-20 Access Arrangement Draft Decision*, Attachment 4, p. 4-20.

Unfortunately, there are too many unreconciled problems with the ATO data for reliable estimates to be made about the utilisation of franking credits. The utilisation rate of franking credits is based on dividend data (from the tax office) and I have demonstrated that this data is questionable.⁷⁶⁵

Implied market value studies

1523. Implied market value studies include:

- simultaneous price studies for individual stocks;
- simultaneous price studies for share indexes;
- time series analysis of returns; and
- dividend drop off studies.

1524. In the Guidelines, the Authority concluded that simultaneous price studies for individual stocks are not appropriate for estimating the utilisation rate at the current time because these studies have examined only a small number of stocks.⁷⁶⁶ The Authority notes that GGT has not contested this point.

1525. In respect of simultaneous price studies for share indexes, these overcome the Authority's concern with studies dealing with individual stocks. However there is only one such study, using data from 2002-2005, and the resulting estimates of the coefficient on imputation credits are 0.52 and 0.55 from two different specifications.⁷⁶⁷

1526. In respect of time series analysis of returns, NERA regresses returns on the imputation credit yield and various control variables, using data from 2000-2012, and estimates the coefficient on the credits at -1.95.⁷⁶⁸ Since credits are at worst worthless, the highly negative estimate is implausible as noted by Ainsworth, Partington, and Warren.⁷⁶⁹ Accordingly, the Authority gives this study no weight.

1527. The range of DDO studies available were examined at length in the Guidelines, where the Authority considered the existing set of DDO studies. The Authority in the Guidelines adopted a range for the utilisation rate of 0.35 to 0.55, based on the results of studies by Gray and by the Economic Regulation Authority Secretariat.

1528. Since the Guidelines, the Authority has become aware of Lally's view that the regression coefficient on franking credits estimated in DDO studies may not necessarily equate to theta, given that the tax rate on gross dividends diverges from capital gains. Rather, Lally argues that the regression coefficient on franking credits may be constituted as a product of theta and the regression coefficient on the value

⁷⁶⁵ N. Hathaway, *Imputation credit redemption ATO data 1988–2011: Where have all the credits gone?*, September 2013, p. 39.

⁷⁶⁶ Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, p. 214.

⁷⁶⁷ J. Cummings and A. Frino, "Tax Effects on the Pricing of Australian Stock Index Futures", *Australian Journal of Management*, Vol. 33, 2008, pp. 391-406, Table 2 and Table 4.

⁷⁶⁸ NERA, *Imputation Credits and Equity Prices and Returns*, 2013, section 3 and Table 3.5.

⁷⁶⁹ A. Ainsworth, G. Partington and G. Warren, *Do franking credits matter? Exploring the financial implications of dividend imputation*, June 2015, CIFR Working Paper No. 058/2015, p. 17.

of the dividend in determining the resulting share price drop off.⁷⁷⁰ This is discussed in greater detail below.

1529. GGT's consultant Gray has provided the Authority with the following response with regard to its approach to establishing a range for the DDO estimates:⁷⁷¹

- econometric issues are not sufficiently significant to preclude use of DDO studies;
- DDO estimates measure the utilisation rate directly; no adjustment is required for the coefficient on dividends;
- the composition of investors around ex-dividend dates is representative of the long term providers of equity capital; and
- greater reliance should be placed on the Gray DDO studies.

1530. GGT considers that:⁷⁷²

[D]ividend drop off studies focus on short periods around the issue of dividends, but sees no reason why this detracts from those studies leading to providing the market estimate of theta required for estimation of the value of gamma required by rule 87A.

Notwithstanding recognised issues with the econometrics, issues which were addressed by Professor Gray in his 2011 study, the best possible estimate of theta in the circumstances is 0.35.

Econometric issues

1531. Gray notes that:⁷⁷³

The ATCO Gas Draft Decision raises a number of general econometric issues in relation to dividend drop-off analysis. Most of these issues have previously been considered by the ERA, with the ERA determining that they are not so severe as to impact on its total reliance on drop-off analysis for estimating theta.

1532. The Authority agrees that it has given some weight, albeit limited, to the DDO studies in spite of its concerns regarding econometric issues. However, the Authority is of the view that the required utilisation rate under the Officer framework is a complex weighted average determined by the value of equity that investors hold, and by their risk aversion. DDOs, however, only estimate the utilisation rate around just two days, the cum-dividend and ex dividend dates. As a consequence, they provide an estimate of the utilisation rate with weights that reflect the composition of investors around the cum and ex dividend dates, not the weighted average across all points in time, as required.

1533. The Authority notes that both Handley and Lally agree that the composition of investors around ex-dividend dates may not be representative of long term

⁷⁷⁰ Note that Lally refers to theta (θ) by the equivalent symbol U (see M. Lally, *Estimating Gamma*, Report for the QCA, 25 November 2013, p. 21).

⁷⁷¹ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission*: 12, December 2014, Appendix O, pp. 47 – 50.

⁷⁷² Goldfields Gas Transmission, *Access Arrangement Revision Proposal: Response to ERA Draft Decision, Submission*, January 2016, p. 123.

⁷⁷³ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission*: 12, December 2014, Appendix O, p. 47.

investors.⁷⁷⁴ Lally also points out that ex-dividend movements can reflect a range of factors, including tax, transactions costs, risk aversion amongst tax arbitrageurs, market microstructure effects, and anomalous behaviour around ex days, with the result that it is not clear that DDO studies necessarily over-estimate the utilisation rate. For the same reasons, there remain valid concerns as to what exactly DDO studies are measuring.

1534. The Authority also notes further concerns raised by the AER in relation to implied market value studies; specifically that:⁷⁷⁵

- ‘these studies can produce nonsensical estimates of utilisation rate’, being estimates of greater than 1 or less than 0;
- the results ‘may not be reflective of the value of imputation credits to investors in the market as a whole’; and
- ‘it is only the combined package of dividends and imputation credits’; that is to say, there is no expert consensus on how best to separate the market value of dividends from the market value of imputation credits.

1535. The Authority therefore considers that this is a contentious area. It adds to the caution the Authority has in relying overly on DDO studies in estimating the utilisation rate.

DDO coefficient adjustment

1536. Econometric problems that exist with DDO studies have been well explored by the Authority,⁷⁷⁶ which has previously noted that this is the reason for the large divergence in empirical estimates of theta using DDO studies.⁷⁷⁷ The Authority noted that any estimate of theta is essentially a function of the most influential observations, due to the extreme multicollinearity present in the data.

1537. This conclusion is supported by the AER, which has noted:

Further, even if implied market value estimates were conceptually appropriate, there are significant limitations with the accuracy and robustness of such studies.⁷⁷⁸

1538. Lally further notes:⁷⁷⁹

The AER does not consider that these estimates are useful for a number of reasons. In respect of dividend drop off studies, these include evidence that trading activity around dividend ex-days is abnormal, that correction is required for market movements, and the sensitivity of results to data, outliers and model choices. More generally these problems include the difficulties in separating the values of franking credits and dividends in these

⁷⁷⁴ M. Lally, *The estimation of gamma*, 23 November 2013, pp. 27-29; J. Handley, *Advice on the value of imputation credits*, 29 September 2014, p. 15.

⁷⁷⁵ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016-20: Attachment 4 – Value of imputation credits*, 26 May 2016, pp. 36-37.

⁷⁷⁶ D. Vo, B. Gellard, S. Mero. ‘*Estimating the Market Value of Franking Credits, Empirical Evidence from Australia*’, *Conference Paper*, Australian Conference of Economists 2013.

⁷⁷⁷ The Authority explored the econometric issues encountered in dividend drop off studies in the Explanatory Statement for the Rate of Return Guidelines, see: Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines: Meeting the Requirements of the National Gas Rules*, Dec 2013, p. 216 and Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines* Dec 2013, Appendix 28.

⁷⁷⁸ Australian Energy Regulator, *Better Regulation Explanatory Statement for the Rate of Return Guidelines*, December 2013, p. 177.

⁷⁷⁹ M. Lally, ‘*The Estimation of Gamma*, Report for the AER’, November 2013, p. 20.

studies, the wide range of empirical results from such studies, the possibility of bias from 'bid-ask bound', and the exposure of such estimates to the tax circumstance and transaction costs of tax arbitrageurs. Many of these problems are manifest in high standard errors in the estimates of the coefficients. I concur with all of these concerns, and I have additional concerns about these studies or their interpretation.

1539. In this report, Lally also contends that Australian regulators (including the Authority) and the ACT have misinterpreted the results of DDO studies for estimating the utilisation rate. Lally observes that the coefficient of the regression equation in DDO studies is generally (and wrongly) assumed to be the utilisation rate, and is typically denoted using the symbol 'theta' consistent with that assumption. To avoid this confusion, the regression coefficient on the credits in the exposition that follows is denoted 'b' to avoid any presumption that it is 'theta'. Lally demonstrates the error here by first outlining the dividend drop off equation as follows:

$$P_{i,t-1} - P_{i,t}^* = \delta D_i + bFC_i + u_i \quad (32)$$

where

$P_{i,t-1}$ is the cum-dividend price;

$P_{i,t}^*$ is the ex-dividend price corrected for the market movement;

D_i is the cash dividend;

FC_i is the franking credit; and

u_i is the regression residual.

1540. Lally begins by noting that no distinction should be made regarding the cash dividend and franking credit if the franking credit can be fully utilised by all investors; a cash dividend of \$10 and a franking credit of \$2 is equivalent to a cash dividend of \$12 if the franking credit can be fully utilised by all investors. That is, an investor should be indifferent between the decomposition of any gross dividend received to the extent the franking credit can be fully utilised.⁷⁸⁰ Consequently, if all investors can utilise imputation credits, the required regression equation would be as follows:

$$P_{i,t-1} - P_{i,t}^* = \delta[D_i + FC_i] + u_i \quad (33)$$

1541. In this circumstance, δ , recognises that the expected price change can differ from the paid out gross dividend,⁷⁸¹ because the tax rate applicable to the gross dividend can diverge from that of capital gains.⁷⁸² In order to incorporate the empirical reality of not

⁷⁸⁰ Gross dividend refers to the sum of the cash dividend and the franking credit, $G_i = D_i + FC_i$.

⁷⁸¹ The coefficient δ , is the gross drop-off ratio, see: Beggs D., and Skeels, C., 2006, 'Market Arbitrage of Cash Dividends and Franking Credits', *Australian Economic Papers*, vol 82, pp. 239-252. The estimated coefficient, $\hat{\delta}$, therefore measures the expected change in stock price that occurs due to payment of \$1 of gross dividend.

⁷⁸² The Authority notes that the theoretical model underlying dividend drop off studies is based on Elton, E.J and Gruber, M.J (1970), 'Marginal Stock Holder Tax Rates and the Clientele Effect', *Review of Economics and Statistics*, 52, pp. 68-74. Under the assumptions of no stochastic uncertainty, no time value of money

all investors being able to utilise franking credits, Lally notes that the franking credit coefficient should be multiplied by the coefficient U , to represent the utilisation rate. The required equation is then as follows:

$$\begin{aligned} P_{i,t-1} - P_{i,t}^* &= \delta[D_i + U.FC_i] + u_i \\ &= \delta D_i + U.\delta FC_i + u_i \end{aligned} \quad (34)$$

1542. Comparison of equations (33) and (34) reveals that $b = U\delta$. Therefore, in order to estimate the required utilisation rate, U , from DDO studies, the estimated coefficient of the franking credit, b , must be divided by the estimated coefficient of the cash dividend, δ , as follows, $U = b/\delta$.
1543. On this basis, the Authority accepts that it did not correctly estimate the utilisation rate in the Rate of Return Guidelines. Re-estimating the utilisation rate – from the two DDO studies considered relevant – results in an estimated utilisation rate of 0.4 from Gray's analysis,⁷⁸³ and an upper bound of 0.69 from the ERA Secretariat's analysis.⁷⁸⁴
1544. However, Gray considers that the DDO coefficient does not need to be adjusted.⁷⁸⁵

In our view, this adjustment is not appropriate when estimating theta as the value of distributed imputation credits. When theta takes a value interpretation within the regulatory framework, what is required is an estimate of the price that investors would be prepared to pay for an imputation credit. This is because the allowed return for an investor will be reduced by theta for every dollar of imputation credits that is distributed to them. To preserve the appropriate return to investors, the regulatory framework must reduce the return to investors by an amount that is equivalent to the price investors would be prepared to pay for the credit. Dividend drop-off analysis is specifically designed to estimate the price that investors would be prepared to pay for imputation credits. It directly estimates the extent to which imputation credits are capitalised into the stock price. This is an estimate of how much the stock price has been bid up in relation to the imputation credit that is to be received. The standard dividend drop-off estimate of theta provides a direct estimate of the value of distributed credits.

1545. The crucial issue here can be highlighted by considering a scenario in which all investors can fully utilise imputation credits, but where capital gains are tax free whilst gross dividends are taxed at 30 per cent, leading to a coefficient on the imputation credits in a DDO of 0.70. Expressed equivalently, \$1 of imputation credits is worth \$0.70 just as \$1 of cash dividends is worth \$0.70. In this scenario, Gray would claim

and no transaction costs, it can be shown that $\delta = \frac{(1-T_d)}{(1-T_g)}$ where T_d is the tax rate applicable to the gross

dividend, whilst T_g is the tax rate applicable on capital gains. It follows that $\hat{\delta}$ measures the divergence in tax rates applicable to the gross dividend and capital gains of the representative investor.

⁷⁸³ SFG Consulting, *Dividend drop-off estimate of theta, Final Report*, 21 March 2011, p. 32. SFG's estimate is 0.35, which is 'paired with an estimate of the value of cash dividends in the range of 0.85 to 0.90'. Dividing 0.35 by 0.875 gives 0.4.

⁷⁸⁴ Based on adjusting the range of 0.35 to 0.55 (using robust techniques) set out in D. Vo, B. Gellard, S. Mero. 'Estimating the Market Value of Franking Credits, Empirical Evidence from Australia' Conference Paper, Australian Conference of Economists 2013, final paragraph. The corresponding value of δ in that study for the upper bound (unrounded) value with no market correction of 0.53 was 0.77 (Table 5). Dividing 0.53 by 0.77 gives 0.69.

⁷⁸⁵ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission*: 12, December 2014, Appendix O, p. 50.

that the utilisation rate is 0.70. If the utilisation rate is by definition the market value of the credits, Gray's claims would be valid. However, the utilisation rate is not the market value of the credits. By definition, it is instead a weighted average over the utilisation rates of investors, and therefore it is 1 in this case. Accordingly, the coefficient on the credits (0.70) must be divided by the coefficient on the cash dividends (0.70) in order to correctly estimate the market utilisation rate (1.0).

1546. On this point, the Authority notes that both Handley and Lally have recommended such an adjustment. Handley, for example, observes:⁷⁸⁶

The key message here is that other stuff (such as taxes and risk) may need to be taken into account in interpreting dividend drop-off studies...

Importantly, the regression coefficients δ and θ can be interpreted in this way only if there are no other factors such as differential personal taxes and risk reflected in the estimates. But the results of [Gray] clearly tell us that this is not the case. [Gray] estimate[s] the value of cash dividends δ to be in the range of 0.85 to 0.90 but one would expect a coefficient of $\delta = 1$ in the absence of differential personal taxes and risk, since by definition the (after-company-before-personal-tax) value of one dollar of dividends is one dollar. This means that the coefficient of $\theta = 0.35$ does not represent the (after-company-before-personal-tax) value of one dollar of imputation credits but rather it represents the (after-company-before-personal-tax) value of one dollar of imputation credits and the impact of other factors, such as differential personal taxes and risk. We don't really need to concern ourselves with precisely identifying what these other factors are – it is sufficient to know that collectively they have reduced the estimates of the (after-company-before-personal-tax) values of one dollar of dividends and one dollar of imputation credits by 10 – 15%. Accordingly, we need to gross-up the [Gray] estimates of θ by 10 – 15% to correctly interpret the results of the study. In other words, the [Gray] studies suggest a utilisation rate of 0.39 – 0.41 rather than the 0.35 as claimed. This approach is equivalent to the "Lally Adjustment"...

1547. In a recent Decision, the ACT does not favour this adjustment, and quotes from Gray, who dismisses the argument because it is based upon the belief that the coefficient on cash dividends is less than 1 due to an 'econometric bias'.⁷⁸⁷ However, Lally argues that the coefficient on cash dividends is less than 1 because capital gains are taxed less onerously than dividends, and the same is true for the valuation of the imputation credits.⁷⁸⁸ This is a tax issue, not an econometric issue.⁷⁸⁹ The Authority agrees with this.
1548. The Authority therefore considers that it is appropriate to use the adjusted figure for the upper bound of the range for the estimate of the utilisation rate, based on applying the Lally adjustment to the upper bound of its own study. That gives an upper bound of 0.69. The Authority will also adopt the unrounded lower bound of 0.35, which reflects the results from the Authority's unadjusted estimates and also Gray's unadjusted finding.
1549. The resulting range for the utilisation rate is 0.35 to 0.69. This range is reasonably wide, reflecting the uncertainty surrounding the estimates, and the conflicting views of the experts regarding the adjustment to the coefficient on the credits.

⁷⁸⁶ J. Handley, *Advice on the value of imputation credits*, 29 September 2014, p. 43.

⁷⁸⁷ Australian Competition Tribunal, *Application by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 2016, paras 1102-1103.

⁷⁸⁸ M. Lally, *Gamma and the ACT Decision*, 23 May 2016, p. 15.

⁷⁸⁹ M. Lally, *The Estimation of Gamma*, 23 November 2013, pp. 20-21.

Composition of investors

1550. Gray questions the Authority's concern with the composition of investors around ex-dividend days. Gray considers that the Energy Networks Association:⁷⁹⁰

...demonstrated that the empirical evidence shows that the increase in trading volume around ex-dividend dates is driven by a subset of investors who value imputation credits highly. These investors purchase shares to capture the dividend and imputation credit, causing a run-up in the cum-dividend price.⁷⁹¹

To the extent that this effect is material, it results in the dividend drop-off being higher than it would otherwise be, which in turn results in the estimate of theta being higher than it would otherwise be. That is, to the extent that the increase in trading volume around the ex-dividend date has an effect, it is likely to result in an over-estimate of theta.

1551. However, whilst such activities would raise the estimated coefficient on the credits in a DDO study, various activities by investors who cannot use the credits would have the opposite effect. For example, investors who could not use the credits and were holding the shares at the cum-dividend date but were also planning to sell them would be more inclined to sell cum-dividend rather than ex-dividend if the expected price drop exceeded the cash dividend, net of the tax effects, and this would reduce the estimated coefficient on the credits in a DDO study.

1552. Furthermore, unlike the activities to which Gray refers, such activities by investors who could not use the credits would be free of any incremental transactions costs and would also involve less risk rather than more (by selling at the known cum-dividend price rather than the unknown ex-dividend price). Accordingly, the net effect of transactions around ex day that are tax motivated is unclear.

1553. Moreover, even if the net effect of these transactions were to raise the coefficient on imputation credits in a DDO study, the coefficient is also affected by market microstructure issues and the widely documented and generally accepted anomalous behaviour around ex days, and these effects could outweigh the effect of tax arbitrage.

Relevance of the Authority's study

1554. Gray considers that his DDO estimates are superior to the Authority's estimates, on the grounds that:⁷⁹²

- The Authority's estimates do not apply the 'standard market adjustment' to account for the overall movement of the market on the ex-dividend day. When the market correction is applied to the Authority's results, the outcome is very close to Gray's estimate of 0.35 for the market value of imputation credits.
- The mid-point of the Authority's range of 0.35 to 0.55 does not represent the best estimate, as the majority of estimates are below 0.45 – Gray considers that 0.4 is a better representation of the Authority's results;
- Gray's studies have been subject to intense scrutiny, including by the Australian Competition Tribunal, whereas the Authority's study has not.

⁷⁹⁰ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission*: 12, December 2014, Appendix O, p. 49.

⁷⁹¹ The same point is made by McKenzie and Partington (2011), pp. 9-10.

⁷⁹² DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission*: 12, December 2014, Appendix O, p. 46.

- Gray's theta estimates 'have been shown to be stable and reliable in the face of a battery of stability and robustness checks, whereas the Authority expresses concerns about the stability and reliability of its own results'.
1555. The Authority considers that its studies have been subject to extensive scrutiny, including by regulators, experts, and GGT and Gray themselves.⁷⁹³
1556. Gray considers that the Authority's study produces a theta estimate of 0.34 when the same 'ex-day market correction is applied', as is undertaken by Gray in his study.⁷⁹⁴
1557. Gray also disagrees with the Authority's contention that DDO studies have resulted in a wide range of estimates, or are sensitive to particular data observations.⁷⁹⁵
1558. However, the Authority notes that Lally has considered both studies in depth, stating that:⁷⁹⁶

...despite using the same methodology and data filtering rules to data from an almost identical period (July 2001 to July 2012 versus July 2001 to October 2012), Vo et al (2013) and [Gray] (2013a) generate some quite dramatic differences in results. In particular, for models 3 and 4 with OLS, [Gray] estimate[s] U at 0.15 and 0.33 respectively whilst Vo et al estimates it at 0.60 and -0.08 respectively. In addition Vo et al's standard errors on the franking credit coefficient are on average 50% larger than [Gray's]. In addition, using different (but reasonable) approaches to investigating the effect of removing outliers, the effect on the parameter estimates is quite different. For example, in respect of [Gray's] preferred approach involving model 4 and "robust regression", the effect on Vo et al's estimate of the franking credit coefficient from progressively removing the 30 most extreme observations (in absolute terms), and rerunning the model after each deletion, is to generate estimates of this coefficient that (largely) progressively increase from 0.32 to 0.53 (ibid, Table 8 and Figure 15). The associated coefficients on cash dividends are not given but it could be presumed that the range in estimates for U would be at least as great as that for the coefficient on franking credits. Importantly, these 30 observations represent less than 1% of the total set of observations. By contrast, [Gray] progressively remove[s] the 20 most extreme pairs of observations (the one that exerts the most upward effect on the franking credit coefficient and the one exerting the most downward effect) and find only trivial effect on the coefficient ([Gray], 2013a, Figure 4).

...in respect of the robust regression models used by both [Gray] and Vo et al, the latter authors rerun the models with various values of the "tuning constant" in the model, and obtain significantly different estimates of the coefficient on franking credits across the range of values for the tuning coefficient, for each of [Gray's] four models. For example, in respect of [Gray's] model 4, the estimated coefficient varies from 0.32 to 0.64 (Vo et al, 2013, Table 11 and Figure 19). Again, the associated coefficients on cash dividends are not given but it could be presumed that the range in estimates for U would be at least as great as that for the coefficient on franking credits.

⁷⁹³ See for example, Australian Energy Regulator, *Draft Decision: Jemena Gas Networks 2015-20*, November 2014, Attachment 4, p. 4-23.

⁷⁹⁴ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission: 12*, December 2014, Appendix O, p. 47.

⁷⁹⁵ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission: 12*, December 2014, Appendix O, p. 46.

⁷⁹⁶ M. Lally, *The Estimation of Gamma*, Report for the AER, November 2013, p. 25.

1559. In response to these claims, Gray notes that his sensitivity tests are performed on results with the ‘market correction’ while the Authority’s are not. However, Gray goes on to perform additional tests on his results with the ‘market correction.’⁷⁹⁷
1560. In particular, Gray argues that deleting outliers in the same way as in the Authority’s analysis does not exert a material effect upon the estimated coefficient on imputation credits, with his Figure 16 showing that this coefficient varies from 0.30 to 0.38 as the 20 most extreme observations are progressively removed. This contrasts with the Authority’s conclusion that the coefficient varies from 0.32 to 0.53 as the most extreme observations are removed. However, Gray removes only the 20 most extreme observations, whilst the Authority’s analysis removes the 30 most extreme cases and the additional 10 observations significantly expand the range in the Authority’s analysis.⁷⁹⁸
1561. Furthermore, the Authority’s analysis referred to by Lally (in paragraph 1558) relates to Gray’s preferred approach (Model 4 with robust regression) whilst Gray’s analysis involves Model 4 without robust regression.⁷⁹⁹ So, Gray’s sensitivity tests have failed to replicate the Authority’s work, subject only to using the market correction, and therefore do not rebut the problems revealed by the Authority. Furthermore, Gray does not dispute the Authority’s conclusion that alternative values for the “tuning coefficient” in robust regression produce significantly different estimates for the coefficient on imputation credits, and the failure to dispute it could reasonably be interpreted as Gray accepting that this is the case.
1562. Gray is presumably aware of the points raised in the last paragraph because they have been raised by Lally.⁸⁰⁰ However, the Authority notes that, in subsequent reports Gray has not responded to these points.⁸⁰¹
1563. In its most recent decision on the value of gamma, the ACT provisionally concluded that the best estimate of theta is that provided by Gray, of 0.35.⁸⁰² Given the ACT’s view that theta is the market value of the credits, it is natural that the ACT would prefer market studies to other types of evidence. However, there are types of market evidence other than DDOs. Implicitly, the ACT prefers DDOs over these alternatives but fails to explain why. Furthermore, there are DDO studies other than Gray’s, most particularly that by the Authority. Implicitly, the ACT prefers Gray’s study but again it fails to explain why. Furthermore, even if it had explained its preference for Gray’s study, it has failed to explain why it prefers the methodology favoured by Gray. Inter

⁷⁹⁷ SFG Consulting, *An Appropriate Regulatory Estimate of Gamma*, 21 May 2014, Appendix 9.

⁷⁹⁸ See D. Vo, B. Gellard, and S. Mero, *Estimating the Market Value of Franking Credits: Empirical Evidence from Australia*, Figure 15.

⁷⁹⁹ SFG never state that their sensitivity analysis is model 4 without robust regression but this can be deduced by comparing their Figure 16 with the results shown in Table 2 (OLS/GLS) and Table 3 (Robust Regression) of their earlier paper (SFG, *Updated Dividend Drop-Off Estimate of Theta*, 7 June 2013). Table 2 gives an estimated coefficient on imputation credits of 0.3044 for Model 4 whilst Table 3 gives 0.3516, and Figure 16 of their 2014 paper shows the estimated coefficient on credits of about 0.30 when no observations have been deleted. So, Figure 16 must relate to Model 4 without robust regression. Furthermore, a comparison of SFG’s results for the other three models in Table 2 and Table 3 of their 2013 paper with their sensitivity results for those models (Figure 13, 14 and 15 in their 2014 paper) confirms that the sensitivity analysis has been performed on Model 4 without robust regression.

⁸⁰⁰ M. Lally, *Review of Submissions on Gamma*, 27 May 2015, pp. 20-21.

⁸⁰¹ For example, see Frontier Economics, *An Appropriate Regulatory Estimate of Gamma: Response to the DBP Draft Decision*, January 2016; Frontier Economics, *Issues in Relation to the Regulatory Estimate of Gamma*, March 2016.

⁸⁰² Australian Competition Tribunal, *Application by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 2016, para 1103.

alia, that methodology involves ‘robust regression’ with the default value for the tuning coefficient, and the Authority’s study shows that alternative choices for that tuning coefficient produce significantly different estimates of the coefficient on imputation credits. So, implicitly, the ACT favours the default option for this tuning coefficient but has not provided reasons for its preference.

1564. In addition, the credibility of any statistical estimates depends upon how robust they are to the deletion of outliers. Gray’s results are robust to the deletion of outliers if Gray’s method of selecting them is adopted. By contrast, the Authority’s results are not robust to the deletion of outliers using a different method of choosing them. This raises the possibility that Gray’s results from his preferred approach would not be robust to the deletion of outliers if they were chosen by the Authority’s method. So, implicitly, the ACT favours Gray’s method of deleting outliers but has not explained why.
1565. In addition, any estimate of theta from a DDO study is sensitive to the degree of tax arbitrage, anomalous behaviour around ex-days, and market microstructure issues. So, implicitly, the ACT favours an estimate of theta that is exposed to all of these extraneous factors but fails to explain its reasons for doing so. It may be that the ACT has sound reasons for all of these implicit views but, without revealing them, there remain valid questions around these issues.

Distribution rate

1566. The Rate of Return Guidelines adopted an estimate for the distribution rate, F , of 0.7. The estimate was based on data for the cumulative payout ratio from ATO franking account balances, and related to listed and unlisted equity. The estimate has been widely accepted in recent times; the ACT, for example, concluded that a distribution ratio of 0.7 was supported by a range of evidence and submissions.⁸⁰³
1567. Estimation of the distribution rate requires consideration of the following issues:
- Whether the data set used to estimate the distribution rate must be consistent with that used to estimate the utilisation rate.
 - If consistency is not essential, the principles that should guide the choice of data for estimating the distribution rate.
 - Whether to use data for listed equity or all equity.
 - If listed equity is used, whether to use ATO data or data from the financial statements of companies.
1568. In respect of the first question, the distribution rate is the proportion of a firm’s imputation credits that are distributed, and therefore is a firm-specific parameter whilst theta is a market parameter. Thus, theta *must* be estimated using market-wide data, whilst the distribution rate could be estimated using firm, industry, or market-wide data according to which was judged to provide the best estimate for this firm-specific parameter. In short, consistency is *not* essential, but nor is it precluded.
1569. In respect of the principles that should guide the choice of data, Lally has explained the trade-offs here.⁸⁰⁴ At one extreme, one could use data from the firm in question

⁸⁰³ Australian Competition Tribunal, *Application by Energex Limited (Distribution Ratio (Gamma)) (No 3) [2010] ACompT9*, October 2010.

⁸⁰⁴ M. Lally, *The Estimation of Gamma*, 23 November 2013, section 4.2.

but, if the firm's dividends are fully franked, then it will be able to manipulate (raise) its price or revenue cap by reducing its dividends (so as to reduce its distributed credits, which lowers its distribution rate, therefore raising its cost of capital estimated from the Officer model used by regulators).

1570. An alternative would then be some kind of industry average, with the relevant industry being regulated businesses. However many regulated businesses are publicly owned and do not pay dividends.
1571. Another alternative would be to examine a set of large private-sector Australian firms that contain significant regulated businesses. However, the set of firms is not large and therefore the choice of whether or not to include certain marginal cases is likely to materially affect the resulting estimate. All of this points to the use of some type of market-wide data. However, there is considerable variation in the distribution rate across firms and therefore any market-wide average could be a poor indicator of the situation for any firm.
1572. Taking account of these competing considerations, the Authority favours the use of some type of market-wide data, and this matches the general practice to date.
1573. In respect of whether to use all equity or only listed equity, Handley, for example, found that the choice is significant when using ATO tax data. His estimate for the distribution rate for listed companies is about 80 per cent,⁸⁰⁵ whilst that for unlisted companies is about 50 per cent, leading to an estimate for all companies of about 70 per cent.⁸⁰⁶ The choice should be based on which group is most like regulated businesses. Lally argues that, since it is always sensible to distribute credits if possible, and the only restriction on doing so is the size of the firm's cash dividends, the presumed cause of the difference in distribution rates between listed and unlisted firms is lower dividend payout rates in unlisted companies.⁸⁰⁷
1574. Lally goes on to argue that the factors determining dividend policy in listed and unlisted businesses are different. Many unlisted companies are sole traders who have corporatised to reduce their tax rate (but only if they retain rather than distribute the profits), and many others are closely held entities with dividend policy considerations quite different to those of listed companies. Furthermore, all of the privately-owned regulated businesses in Western Australia are listed firms or subsidiaries of listed firms, and this is typical across Australia.⁸⁰⁸ Handley similarly argues for the use of only listed firms because unlisted businesses "by definition are financed in entirely different ways".⁸⁰⁹
1575. The Authority has reviewed the arguments for using listed equity in estimating the distribution rate and considers that the above points make a strong case for the use

⁸⁰⁵ Following the same cumulative payout ratio approach used by Hathaway and NERA for all equity, Handley developed an estimate for only listed equity, based on ATO tax data, of 0.8 (see J. Handley, *Advice on the value of imputation credits*, 29 September 2014, p. 28).

⁸⁰⁶ J. Handley, *Advice on the NERA Report: Estimating Distribution and Redemption Rates from Taxation Statistics*, 20 May, 2015, p. 11.

⁸⁰⁷ M. Lally, *Gamma and the ACT Decision*, 23 May 2016, p. 26.

⁸⁰⁸ The privately owned businesses are the DBP, which is owned by the DUET Group (listed in Australia), the GGP, which is 88% owned by APA (listed in Australia), and the Midwest South West Gas Distribution System, which is owned by ATCO Gas Australia who in turn is owned by the ATCO Group (listed in Canada).

⁸⁰⁹ J. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 28.

of listed equity. However, the Authority also notes that the use of listed equity, only, is not universally preferred, and that the AER considered both listed equity, and all equity (listed and unlisted) in its recent AusNet Services decision.⁸¹⁰ Consequently, the Authority has also considered both approaches in its decision.

1576. If listed equity is to be used, the final question is whether to use ATO data or data from the financial statements of listed firms. Using the ATO data, the distributed credits, and hence the distribution rate, could be estimated using either tax data or dividend data, and the results from these two approaches are markedly different. As discussed above, Hathaway provides estimates of 71 per cent and 47 per cent using these two approaches, and notes that the difference has not been reconciled.⁸¹¹ This undermines the credibility of both figures.
1577. By contrast, using data from the financial statements of the 20 largest ASX200 firms, which comprise 62 per cent of the value of the ASX200 index, Lally estimates the distribution rate at 83 per cent.⁸¹² Lally also explains how this data is protected against the problems with the ATO data: the financial statement data is audited; the researcher is able to personally identify the source data (the figures of interest for particular firms) rather than having to rely upon the aggregation exercise carried out by the ATO (and is therefore protected against double-counting and other aggregation problems); and the financial statement data is internally consistent (that is, there are no unexplained discrepancies in the financial statement data whereas there are major inconsistencies in the ATO data, which casts doubt on all of it).⁸¹³
1578. In response to this, Gray argues that:
- the regulatory framework and the Post Tax Revenue Model (**PTRM**) requires a distribution rate that is defined as the ratio of distributed credits to *corporate tax paid*; but that
 - Lally has estimated the ratio of distributed credits to *imputation credits created*.⁸¹⁴
1579. Gray suggests that large ASX firms pay a considerable amount of corporate tax overseas, which sets up a significant difference between the denominators of the two ratios.
1580. However, Lally argues that the distribution rate is not the ratio of distributed credits to corporate tax paid, but the ratio of distributed credits to corporate tax paid to the ATO, and the corporate tax paid to the ATO is the same as the credits created. So, if a business pays corporate tax of \$100m to the ATO and \$100m to another tax authority, and distributes \$80m in imputation credits, the distribution rate is \$80m/\$100m = 0.80, not \$80m/\$200m = 0.40. This indicates that Gray's point is incorrect.⁸¹⁵

⁸¹⁰ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016-20: Attachment 4 – Value of imputation credits*, 26 May 2016, p. 43.

⁸¹¹ N. Hathaway, *Imputation Credit Redemption: ATO data 1988-2011: Where have all the credits gone?* September 2013, section 1.3.

⁸¹² M. Lally, *Estimating the Distribution Rate for Imputation Credits*, July 2015, Table 1.

⁸¹³ M. Lally, *Estimating the Distribution Rate for Imputation Credits*, July 2015, p. 3.

⁸¹⁴ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission*: 12, December 2014, Appendix O, p. 59.

⁸¹⁵ M. Lally, *Review of Submissions on Gamma*, 27 May 2015, pp. 5-6.

1581. The Authority also notes that Hathaway's estimate of the distribution ratio is the ratio of the credits distributed to the company tax payments to the ATO.⁸¹⁶ The same holds for NERA.⁸¹⁷ The same holds for Handley.⁸¹⁸ The same even holds for Gray.⁸¹⁹ So, all analysts who have estimated the distribution rate have defined it as credits distributed divided by company tax payments to the ATO. Furthermore, the fact that Gray holds this view suggests that the earlier view expressed by Gray has been implicitly acknowledged to be in error.
1582. Gray argues that the top 20 firms should be excluded in estimating the distribution rate because they have foreign-sourced profits that elevate their distribution rate for credits (by raising their dividends and hence the maximum credits they can attach but not the imputation credits that they create), and foreign-sourced profits are not a feature of the benchmark firm that is being regulated (a pure-play business operating within Australia).⁸²⁰ In line with this view, GGT considers that 'an entity with significant foreign profits, and corresponding foreign tax liabilities, will, in consequence, have a higher distribution rate than an entity with the same levels of dividends and imputation credits distributed, but with low or no foreign profits'.⁸²¹
1583. Lally has empirically assessed Gray's claim by examining (amongst the top 20 firms) the seven firms with the largest tax payments to the ATO (accounting for 79 per cent of the taxes paid to the ATO by this set of 20 firms).⁸²² Lally estimates the proportion of their profit from their foreign operations (from their latest Annual Report), and reports their distribution rates from his earlier paper. The proportion of profit from foreign operations is decreasing in the distribution rate, and the correlation between the two variables is -0.95.⁸²³ This is in the opposite direction to that claimed by Gray.⁸²⁴
1584. Lally also estimates the dividend payout rate for each of these firms (dividends to cash flow from operations, from the Cash Flow Statement in the latest Annual Report), and finds that the payout rate is positively correlated with the distribution rate (0.50).⁸²⁵ Lally concludes that foreign operations reduce rather than increase the distribution rate because of the investment of profits in order to finance these foreign operations,

⁸¹⁶ N. Hathaway, *Imputation Credit Redemption: ATO data 1988-2011: Where have all the credits gone?* September 2013, section 1.3.

⁸¹⁷ NERA, *Estimating Distribution and Redemption Rates from Taxation Statistics*, March 2015, Table 1. The fact that the tax payments used by NERA are only those to the ATO is evident from the notes at the bottom of the Table, and from the fact that NERA calculates the distributed credits from the Tax Paid less the change in the FAB (which would only be sensible if the Tax Paid is that to the ATO).

⁸¹⁸ J. Handley, *Advice on the NERA Report: Estimating Distribution and Redemption Rates from Taxation Statistics*, 20 May 2015, pp. 9-11. The fact that the tax payments used by Handley are only those to the ATO is evident from the ATO being the source of this data, and from the fact that Handley calculates the distributed credits from the Tax Paid less the change in the FAB (which would only be sensible if the Tax Paid is that to the ATO).

⁸¹⁹ Frontier Economics, *The Appropriate use of Tax Statistics when Estimating Gamma*, January 2016, section 3. The fact that the tax payments used by Frontier are only to the ATO is evident from the sources given for the calculations in their Table 2.

⁸²⁰ Frontier Economics, *An Appropriate Regulatory Estimate of Gamma: Response to the DBP Draft Decision*, January 2016, section 3.3.

⁸²¹ Goldfields Gas Transmission, *Access Arrangement Revision Proposal: Response to ERA Draft Decision, Submission*, January 2016, p. 124.

⁸²² M. Lally, *Gamma and the ACT Decision*, 23 May 2016, section 3.5.

⁸²³ M. Lally, *Gamma and the ACT Decision*, 23 May 2016, p. 27.

⁸²⁴ Frontier Economics, *An Appropriate Regulatory Estimate of Gamma: Response to the DBP Draft Decision*, January 2016, section 3.3.

⁸²⁵ M. Lally, *Gamma and the ACT Decision*, 23 May 2016, p. 27.

which depresses the payout rate and therefore also depresses the distribution rate for credits.⁸²⁶ Accordingly, the effect of these firms with foreign operations being included within the set of firms used to estimate the distribution rate for the benchmark firm (with only local operations) is to underestimate rather than overestimate the distribution rate for the benchmark firm. The Authority considers that this addresses the issue raised by Gray.

Estimate for all equity

1585. In respect of the ACT's recent decision on gamma, the ACT states that 'it is appropriate to follow past practice', and this leads to an estimate of 70 per cent for all equities using ATO data.⁸²⁷ The ACT offers no reason for this decision. As discussed above, there are concerns about the accuracy of the ATO FAB and dividend data. Additionally, the natural comparators for regulated businesses are listed companies because the private regulated businesses are typically listed companies or subsidiaries of listed companies, the distribution rates of listed companies are significantly higher than unlisted companies, and explanations for this are readily apparent. Furthermore, the ACT acknowledges that the ATO data are flawed.⁸²⁸
1586. There is considerable variation in estimates based on the ATO data depending upon whether ATO FAB or ATO dividend data are used to estimate the total credits distributed. For example, using data from 2004-2011, Hathaway estimates the company tax payments at \$422b, and estimates the credits distributed at \$292b (ATO FAB data) or \$205b (using ATO dividend data). Accordingly, the distribution ratio is either 71% or 47%. Hathaway states that this difference between the tax and dividend data has not been reconciled.⁸²⁹
1587. However, it is generally accepted that the cumulative distribution rate provides a reasonable estimate. Handley summarises the position with regard to these studies as follows:
- ...the cumulative payout approach... has been used by NERA (2013) and Hathaway (2013) and is reasonably uncontroversial. [Gray] (2014 p.57) also supports this estimation methodology. Using data from the start of the imputation tax system on 1 July 1987 and covering the twenty-four tax years from 1988 to 2011, NERA estimates the cumulative payout ratio to be 0.69. Hathaway (2013) provides an estimate of 0.71 based on the eight year period from 2004 to 2011.⁸³⁰
1588. On this basis, the Authority considers it reasonable to conclude that the ATO FAB data supports an estimate for the distribution rate across all equity, listed and unlisted, of around 0.7.

⁸²⁶ M. Lally, *Gamma and the ACT Decision*, 23 May 2016, p. 5.

⁸²⁷ Australian Competition Tribunal, *Application by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 2016, para 1106.

⁸²⁸ Australian Competition Tribunal, *Application by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 2016, para 1092.

⁸²⁹ N. Hathaway, *Imputation Credit Redemption: ATO data 1988-2011: Where have all the credits gone?*, September 2013, section 1.3.

⁸³⁰ J. Handley, *Advice on the value of imputation credits*, 29 September 2014, p. 27.

Estimate for listed equity

1589. Following the same cumulative payout ratio approach used by Hathaway and NERA for all equity, Handley developed an estimate for only listed equity, based on ATO tax data, of 0.8.⁸³¹
1590. Lally has developed an alternative estimate of the distribution rate, based on the financial reports of the top 20 ASX200 firms, of 0.84.⁸³² Gray, however, is critical of this estimate, suggesting that it does not measure the distribution rate appropriately.
1591. In particular, Gray considers that:
- the regulatory framework and the PTRM requires a distribution rate that is defined as the ratio of distributed credits to *corporate tax paid*; but that
 - Lally has estimated the ratio of distributed credits to *imputation credits created*.⁸³³
1592. Gray suggests that large ASX firms pay a considerable amount of corporate tax overseas, which sets up a significant difference between the denominators of the two ratios.
1593. Since the publication of the Authority's draft decision, the AER arrived at an estimate of 0.75 in its recent AusNet Services decision.⁸³⁴ In coming to this estimate, the AER reviewed a substantial set of estimates from both experts and other regulators, which ranged from 0.7 to 0.84:

⁸³¹ J. Handley, *Advice on the value of imputation credits*, 29 September 2014, p. 28.

⁸³² M. Lally, *Estimating Gamma*, Report for the QCA, 25 November 2013.

⁸³³ DBP, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Regulatory Period Rate of Return Supporting Submission: 12*, Appendix O, p. 59.

⁸³⁴ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016-20: Attachment 4 – Value of imputation credits*, 26 May 2016, Section A.10.

Table 91 Summary of views on the distribution rate for listed equity

Source	Distribution rate
Lally (2016) ⁸³⁵ (20 largest ASX companies)	0.83
AER ⁸³⁶ (2016)	0.75
Lally (2013a, 2013b, 2014) ⁸³⁷ (20 largest ASX companies)	0.84
Handley (2014) ⁸³⁸	0.8
SACES (2015) ⁸³⁹	0.8
Gray, for Frontier (2015) ⁸⁴⁰ (excluding 20 largest ASX companies)	0.7

Source: Various, compiled by the Australian Energy Regulator.

1594. Having considered Gray's arguments, the estimates made by Handley, Lally, and other experts, the AER's recent determination, and the reliability of the data underpinning these various estimates, the Authority considers that a reasonable estimate of the distribution rate for listed equity is a rounded estimate of 0.8.

Estimate of gamma

1595. The Authority considers that three different approaches to estimating gamma are appropriate, based on the following methods for estimating the utilisation rate:

- the equity share approach;
- the taxation statistics approach; and
- the DDO method.

1596. The Authority considers that, consistent with this conclusion, the 'most important approaches to estimation in order of importance to be the equity ownership approach, the taxation statistics approach, and DDO studies (being the most relevant within the class of implied market value studies)'.⁸⁴¹ However, the Authority agrees that 'all

⁸³⁵ Frontier Economics, *The appropriate use of tax statistics when estimating gamma*, January 2016.

⁸³⁶ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016-20: Attachment 4 – Value of imputation credits*, 26 May 2016, Section A.10.

⁸³⁷ M. Lally, *The estimation of gamma*, 23 November 2013; M. Lally, *Estimating gamma*, 25 November 2013; M. Lally, *Review of submissions to the QCA on the MRP, risk-free rate and gamma*, 12 March 2014.

⁸³⁸ J. Handley, *Advice on the value of imputation credits*, 29 September 2014.

⁸³⁹ SA Centre for Economic Studies (2015), *Independent estimate of the WACC for SA Power Networks 2015 to 2020: Report commissioned by the SA Council of Social Services*, January 2015.

⁸⁴⁰ Frontier Economics, *An appropriate regulatory estimate of gamma*, June 2015, and Frontier Economics, *The appropriate use of tax statistics when estimating gamma*, January 2016.

⁸⁴¹ J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 31.

approaches are subject to substantial uncertainty and so the estimate of theta is imprecise'.⁸⁴²

1597. In considering the weight to be given to each approach, the Authority notes the AER's conclusion that:⁸⁴³

...estimating the value of imputation credits consistent with the Officer framework will best promote the National Electricity Objective/National Gas Objective (NEO/NGO) and other requirements of the [National Electricity Rules/National Gas Rules].

1598. In identifying a methodology consistent with the Officer framework, the AER noted that the equity share ownership, and tax statistics approaches are reasonably consistent with the Officer framework. However, DDO studies are affected by factors such as personal taxation and other costs. As such, they are inconsistent with the Officer framework unless adjusted.⁸⁴⁴

1599. The Authority agrees with Handley that the equity ownership and tax statistics on utilisation of imputation credits provide key evidence for the utilisation rate. The Authority has also considered DDO estimates.

1600. In what follows, these estimates are considered.

The equity share ownership estimate

1601. The Authority's estimate of the utilisation rate based on the equity share ownership approach is either 0.59 (all equity – both listed and unlisted) or 0.47 (listed equity).

1602. Combining the utilisation rate estimate for all equity, of 0.59, with the estimate of the distribution rate of all equity, of 0.7, gives an estimate of gamma of 0.41.

1603. Combining the utilisation rate estimate for listed equity, of 0.47, with the estimate of the distribution rate for listed equity, of 0.8, gives an estimate of gamma of 0.38.

The taxation statistics estimate of the redemption rate

1604. The Authority's estimate of the utilisation rate based on taxation statistics approach (using ATO FAB data) is 0.48. Combining that estimate with the relevant estimate of the distribution rate of 0.7 (all equity) gives a point estimate of gamma of 0.3, at one significant figure.

The dividend drop off estimate

1605. As discussed above, the Authority's estimate of the utilisation rate from DDO studies is fairly broad, at 0.35 to 0.69, reflecting concerns with the robustness of the method.

⁸⁴² J.C. Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p. 32.

⁸⁴³ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016-20: Attachment 4 – Value of imputation credits*, 26 May 2016, p. 4-17.

⁸⁴⁴ Australian Energy Regulator, *AusNet Services distribution determination final decision 2016-20: Attachment 4 – Value of imputation credits*, 26 May 2016, p. 4-11.

1606. That range for the utilisation rate combines with an estimate of the distribution rate for listed equity of 0.8.⁸⁴⁵ The resulting range for gamma is 0.28 to 0.55, rounded to one significant figure.

Estimate of gamma

1607. The Authority bases its estimate of gamma on the following, with estimates given most weight ranked first:

- the equity share ownership approach gives an estimate of gamma of 0.41 based on all equity, and 0.38 based on listed equity with a distribution rate of 0.8;
- the taxation statistics approach, using ATO FAB data, gives an estimate of gamma of 0.34; and
- the DDO approach gives a range for the estimate of gamma of 0.28 to 0.55 assuming a distribution rate of 0.8.

1608. The resulting range for the Authority's estimate of gamma is 0.28 to 0.55, as shown in Table 92.

Table 92 Estimates of the value of imputation credits

Approach	Utilisation rate	Distribution rate	Value of imputation credits
All equity (listed and unlisted)			
Equity share ownership	0.59	0.7	0.41
Tax statistics (FAB data)	0.48	0.7	0.34
Listed equity only			
Equity share ownership	0.47	0.8	0.38
DDO studies	0.35 to 0.69	0.8	0.28 to 0.55

Source Authority's analysis.

1609. Consistent with its approach set out in the Draft Decision, the Authority places most reliance on the equity share ownership approach. It suggests a point estimate for gamma of 0.4.

1610. Taxation statistics, using the ATO FAB data, suggest that the estimate of gamma could be lower, at 0.34. However, the Authority does not place much weight on the estimate, or on its ability to inform a point estimate of the utilisation rate, given concerns about the robustness of the taxation data used for estimating the utilisation rate.

1611. Similarly, the DDO estimate suggests that the estimate of gamma could be higher or lower than 0.4, although the mid-point of the estimate range is reasonably consistent with an estimate of 0.4. The Authority gives only limited weight to the estimated range, and to the point estimate, given its concerns with regard to the sensitivity of the

⁸⁴⁵ The Authority considers that it was in error in the Guidelines and Draft Decision in applying an estimate of the distribution rate that was based on all equity.

estimates to the dividend sample, parametric form of the regression equation and regression technique used.

1612. In summary, based on the foregoing, the Authority considers that the evidence supports a prudent point estimate of gamma of 0.4. Therefore, the Authority does not accept the value of 0.25 put forward by GGT.
1613. The Authority considers that the resulting estimate of 0.4 is consistent with its approach used elsewhere in this Final Decision, and in particular the use of the value of imputation credits within the building block framework. The estimate is supported by a range of evidence, including relevant academic literature, and also the views of academic experts:
- the estimate is within the range set out by Handley for his preferred estimate of gamma, of 0.4 to 0.5;⁸⁴⁶ and
 - the estimate is primarily based on the equity share ownership approach, which is Lally's second preference as a method for estimating gamma (after a strict Officer CAPM approach, which gives a value of 0.7 based on a utilisation rate of 1).⁸⁴⁷

Consistency with the National Gas Law and National Gas Rules

1614. Consistent with the expert advice considered for this Final Decision, the Authority has determined that the Officer framework rightly provides the basis for the rate of return framework in the NGL and the NGR. It follows that estimating the value of imputation credits consistent with the Officer framework will best promote the NGO and the other requirements of the NGR.
1615. To this end, the Authority has considered the differing expert opinions on the proper interpretation of the gamma parameter in the Officer framework. The Authority considered Handley's expert advice for the AER on the Officer framework at length in the Draft Decision. An important aspect of that advice is that the framework is on a 'before-personal-tax and before-personal-costs' basis.
1616. By determining a value of imputation credits in a manner consistent with the Officer framework, the Authority considers that this Final Decision is made in a manner that will or is likely to contribute to the achievement of the NGO. Further, when exercising its discretion in making the relevant parts of a decision, the Authority has accounted for the revenue and pricing principles (**RPP**). The RPP provide, amongst other things, that:
- a service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs providing regulated services and complying with regulatory obligations;
 - a service provider should be provided with effective incentives in order to promote economic efficiency with respect to the regulated services it provides; and
 - a price, charge or tariff for the provision of a regulated service should allow for a return commensurate with the regulatory and commercial risks involved in providing the regulated service.

⁸⁴⁶ J. Handley, *Advice on the value of imputation credits*, 29 September 2014, p. 3.

⁸⁴⁷ M. Lally, *The Estimation of Gamma*, Report for the AER, 23 November 2013, p. 5.

1617. Therefore, the gamma determined for this Final Decision will promote the achievement of the NGO (via its application in the estimated cost of corporate income tax building block) if it takes into account the RPP, being:
- not too low, in that it contributes to providing a reasonable opportunity to recover at least efficient corporate tax costs; and
 - not too high, in that it contributes to a return that is not excessive and is commensurate with the relevant risks.
1618. Finding the right balance in this task has been served by having regard to the merits of the full range of relevant evidence. The Authority has considered, and relied upon, the range of relevant evidence set out in here. The Authority is satisfied that the gamma balances first, the opportunity for service providers to recover at least efficient costs, and second, the relevant risks.
1619. The Authority therefore considers that its estimate is fit for purpose, notwithstanding concerns with the data and the resulting robustness of the estimates. Importantly, the use of a range of approaches for estimating gamma assists in overcoming limitations associated with any particular study. This helps to ensure that the estimation method is consistent with accepted economic and financial principles, informed by sound empirical analysis. For these reasons, the Authority considers that its estimates meet the requirements of the NGL and the NGR.
1620. In contrast, the Authority notes that GGT's proposed estimate is based on a single study, of questionable robustness. The Authority considers that GGT's proposed estimate does not provide the best estimate for the purposes of the NGL and the NGR, and therefore has determined to amend GGT's value of gamma for use in the building block model.

Final Decision

Required Amendment 11

The Authority's estimate of gamma for this Final Decision is 0.4.

Depreciation

Regulatory Requirements

1621. Rule 88(1) of the NGR provides that the 'depreciation schedule sets out the basis on which the pipeline assets constituting the capital base are to be depreciated for the purpose of determining a reference tariff'. Rule 88(2) of the NGR provides that the 'depreciation schedule may consist of a number of separate schedules, each relating to a particular asset or class of assets'.
1622. Rule 89 of the NGR specifies particular depreciation criteria and requirements for the calculation of depreciation. Rule 89 criteria are as follows:
- 89 Depreciation Criteria
- (1) The depreciation schedule should be designed:

- (a) so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services; and
 - (b) so that each asset or group of assets is depreciated over the economic life of that asset or group of assets; and
 - (c) so as to allow, as far as reasonably practicable, for adjustment reflecting changes in the expected economic life of a particular asset, or a particular group of assets; and
 - (d) so that (subject to the rules about capital redundancy), an asset is depreciated only once (ie that the amount by which the asset is depreciated over its economic life does not exceed the value of the asset at the time of its inclusion in the capital base (adjusted, if the accounting method approved by the [Authority] permits, for inflation)); and
 - (e) so as to allow for the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs.
- (2) Compliance with subrule (1)(a) may involve deferral of a substantial proportion of the depreciation, particularly where:
- (a) the present market for pipeline services is relatively immature; and
 - (b) the reference tariffs have been calculated on the assumption of significant market growth; and
 - (c) the pipeline has been designed and constructed so as to accommodate future growth in demand.
- (3) The [Authority's] discretion under this rule is limited.
1623. NGR 89(3) is explicit that the Authority's discretion is limited. Rule 40(2) of the NGR sets out the requirements where limited discretion is involved.
1624. Rule 90 of the NGR specifies that a full access arrangement must contain provisions governing the calculation of depreciation for establishing the opening capital base for the next access arrangement period. The provisions must resolve whether depreciation of the capital base is to be based on forecast or actual capital expenditure.

GGT's Initial Proposal

1625. GGT proposed to continue using the straight-line method for depreciating the GGP Regulatory Asset Base (**RAB**), based on the nominal historical cost accounting (**HCA**) method. GGT had already been applying the HCA depreciation method – with the approval of the Authority – since its first access arrangement. Hence, GGT's proposal was for a continuation of the previous access arrangement approach.
1626. Straight-line depreciation with HCA starts with the initial nominal historic value of an asset/asset class and, for each year of the economic life, subtracts from the initial value of the asset/asset class the initial (unadjusted, nominal historic) value of the asset/asset class divided by the economic life.
1627. Straight-line depreciation with HCA recovers relatively more depreciation in real terms in the earlier years of an asset's life.
1628. In contrast, straight-line depreciation with Current Cost Accounting (**CCA**), also known as 'indexed' straight-line depreciation, indexes the closing value of the asset/asset class to inflation (bringing it each year to 'current cost'). The current cost is then divided by the remaining economic life to determine the annual depreciation. The CCA method is equivalent to straight line depreciation in real terms. Straight-line

depreciation with CCA recovers depreciation more evenly over an asset's life on a real basis. Australian energy regulators generally adopt the CCA indexed straight-line method for depreciating the regulatory asset base.

1629. Real straight-line CCA depreciation may be converted to the equivalent nominal outcomes – as is done in the Australian Energy Regulator's Post Tax Revenue Model (PTRM) – by:
- indexing the RAB;
 - determining the associated straight-line depreciation for each asset; and then
 - removing an amount so as to avoid a double count for inflation that would otherwise occur when a nominal rate of return is applied to an indexed asset base.⁸⁴⁸
1630. Under rule 88 of the NGR, GGT proposed a separate depreciation schedule for each of the eight depreciable asset classes in the RAB.
1631. GGT adopted the same regulatory asset lives that were approved by the Authority for the second access arrangement period, apart from revising the SCADA and communications life from 10 years to 15 years.
1632. GGT has applied an adjustment to address over-depreciation, by 'writing up' the opening capital base at 1 January 2015 by an amount equivalent to the over-depreciation accumulated over the second access arrangement.
1633. GGT initially proposed annual depreciation totalling \$54 million in nominal terms over the third access arrangement period (Table 93).

⁸⁴⁸ For a summary of the need to remove double counting for inflation when a nominal rate of return is applied to a nominal asset base, see section 2.2 in Queensland Competition Authority, *Financial Capital Maintenance and Price Smoothing*, February 2014.

Table 93: GGT's Proposed Depreciation (AA3)

\$ million nominal	2015	2016	2017	2018	2019	Total
Pipeline and laterals	6.811	6.811	6.860	6.888	6.893	34.263
Main line valve and scraper stations	0.207	0.207	0.207	0.221	0.221	1.063
Compressor stations	2.622	2.680	2.716	2.746	2.746	13.51
Receipt and delivery point facilities	0.109	0.120	0.133	0.133	0.157	0.652
SCADA and communications	0.169	0.305	0.341	0.370	0.371	1.556
Cathodic protection	0.119	0.119	0.126	0.128	0.133	0.625
Maintenance bases and depots	0.178	0.210	0.223	0.223	0.223	1.057
Other assets	0.133	0.265	0.301	0.282	0.259	1.24
Total Depreciation	10.348	10.717	10.907	10.991	11.003	53.966

Source: Goldfields Gas Transmission, Access Arrangement Revision Proposal Supporting Information, 15 August 2014, Table 10.

Draft Decision

1634. In the Draft Decision, the Authority required that GGT adopt the CCA method of depreciation, as it is compliant with the NGL(WA) and NGR, whereas the HCA method is not.

1635. The Authority determined that the HCA method unfairly discriminates against current consumers of natural gas on the GGP, to the benefit of future consumers. The Authority noted the following in relation to HCA:

- HCA markedly accelerates the return of capital costs in real terms as compared to CCA. HCA therefore leads to higher real costs for current consumers, and lower real costs for future consumers; this transfer of costs is not in the long term interests of (all) consumers:
 - The Authority noted that a switch to depreciate the residual value of the RAB through the CCA method would reduce the present value of the total revenue over the third access arrangement period by some \$30 million (2014 dollars) or 15 per cent, as compared to that with the HCA method. This illustrated the magnitude of the penalty imposed by HCA on current consumers of gas services on the GGP.
- HCA may result in unnecessarily higher prices in the short to medium term – these could discourage gas usage and upstream and downstream investment.
- HCA depreciation schedules provide for price paths that encourage inefficient utilisation of assets, that is, under or over utilisation of the asset at different times in its life cycle.
 - For example, under the HCA approach, there may be an incentive for a service provider to dispose of assets or ignore maintenance near the end of the useful life because the return on and of the specific asset would be relatively small and considerably lower at that time than under the CCA approach.
 - As a corollary of the previous point, under the HCA method, the early replacement of the asset could provide a higher return on and of the asset to the service provider than it was getting on the previous asset.

- This may be facilitated by the artificially low tariffs induced by the HCA method near the end of the asset's life. At the same time, downstream users may be induced to invest on the basis of such artificially low tariffs, only to find that such tariffs were unsustainable.
1636. Based on its analysis of the impacts, the Authority determined that the HCA depreciation method was not compliant with the requirements of:
- NGR 89(1)(a);
 - the National Gas Objective⁸⁴⁹ (NGO); or
 - the second Revenue and Pricing Principle⁸⁵⁰ (RPP (2)).
1637. In contrast, the Authority considered that the CCA depreciation method meets all the requirements of the NGL and NGR.
1638. The Authority concluded that the CCA method:
- provides signals for efficient use, which reflect the opportunity cost of the capital employed in the pipeline;
 - discourages replacement investment before the end of the useful life of the assets; and
 - balances the requirement for the service provider to have a reasonable opportunity to recover the efficient costs of providing reference services, with the need to address the long term interests of consumers, including current and future consumers.
1639. In particular, the Authority considered that:
- CCA allocates capital costs more evenly between current and future customers, resulting in price paths that reflect the opportunity costs of the pipeline. As a consequence, CCA:
 - avoids imposition of costs on current consumers which flow to the benefit of future consumers, thereby ensuring outcomes that are in the long term interests of consumers with respect to price;
 - allows for efficient use of the pipeline by upstream and downstream consumers both now and in the future, thereby contributing to the efficient growth in the market for reference services;
 - signals efficient production and investment decisions by the service provider and consumers of natural gas, thereby contributing to the efficient growth in the market of reference services;
 - avoids price shocks for consumers, both for the forthcoming access arrangement period, and also at the end of the economic lives of major assets.
 - CCA depreciation schedules encourage more efficient asset utilisation, which strengthens the long term security and reliability of gas supply.
1640. Therefore, the Authority required that GGT amend its proposed approach, to adopt the CCA method of depreciation forthwith. In a nominal model, that method would be

⁸⁴⁹ National Gas Access (WA) Act 2009, Western Australian National Gas Access Law text, section 23.

⁸⁵⁰ National Gas Access (WA) Act 2009, Western Australian National Gas Access Law text, section 24(2).

consistent with the method set out in Australian Energy Regulator's Post Tax Revenue Model.

1641. The Authority accepted GGT's proposed regulatory asset lives.
1642. The Authority's Draft Decision also required that GGT amend the calculation of depreciation by:
- removing GGT's over-depreciation adjustment from the regulatory asset base and total revenue, and instead adjust the capital base for over-depreciation by 'writing up' over-depreciated assets through a 'positive' depreciation amount in the first year of the third access arrangement so as to return over-depreciation (depreciation is usually a negative value entry in the roll forward);
 - calculating the opening capital base for the GGP for the third access arrangement period by escalating it at the rate of inflation as measured by the CPI All Groups, Weighted Average of Eight Capital Cities.
1643. Table 94 shows the Authority's approved forecast depreciation amount for the third access arrangement period using the CCA approach.

Table 94 Authority's Draft Decision Approved Forecast Depreciation⁸⁵¹

Nominal \$ million	2015	2016	2017	2018	2019
Regulatory Depreciation	2.581	6.631	6.978	7.318	7.597
Straight Line CCA Depreciation	6.923	11.012	11.295	11.516	11.660
Less: Inflationary Gain	(4.342)	(4.382)	(4.317)	(4.198)	(4.063)

Source: Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 344.

GGT's Revised Proposal

1644. GGT in its response to the Draft Decision contends that the Authority has erred in applying the NGO and the RPP 'as if they were applicable criteria governing the depreciation schedule'.⁸⁵² GGT argues:

Under section 28 of the NGL, the ERA must exercise its limited discretion in respect of the depreciation schedule under rule 89 in a manner that is likely to contribute to the achievement of the NGO. However this requires the ERA to apply the criteria in rule 89; not supplant that criteria with the overarching objective stated in the NGO in a manner that renders rule 89 redundant. Similarly, under section 28, the ERA must take account of the RPP in exercising its limited discretion. Again, the ERA cannot use the RPP to override rule 89.

The distinction described in the preceding paragraph is important. If the NGO and the RPP are applied by the ERA as "overarching" criteria, it is inevitable that the ERA will fail to exercise a limited discretion but will instead exercise a full discretion.

1645. GGT also argues that the Authority's reasoning in respect of criterion NGR 89(1)(a) fails to have regard to the economic circumstances of the covered pipeline and is

⁸⁵¹ Authority's draft decision approved forecast depreciation numbers include an adjustment for cost allocation.

⁸⁵² Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 101.

based on generalised principles that are not applicable in all cases. In particular, GGT contends that moving to the CCA method now would make no difference to the growth in the market for reference services, as the pipeline is fully contracted to 2029, and there is little foreseeable new demand.⁸⁵³

1646. On the other hand, the HCA method, GGT advises, would allow lower tariffs later, at a time when major contracts for reference services roll off, reducing the potential likelihood of ‘negative growth’. GGT considers that negative growth after 2030 is a significant risk, given the uncertain lives of the mines along the GGP.
1647. GGT supports this view with a quote from the Authority from the 2005 decision:
- ...Given that the level of use of the pipeline is related directly or indirectly to the level of mining activity in the Pilbara and Eastern Goldfields regions and that mines have finite but uncertain lives, the Authority accepted that it is not unreasonable to presume that the economic life of the pipeline could be circumscribed by a reduction in mining activity.⁸⁵⁴
1648. GGT considers that its HCA approach would lead to more efficient growth in the market for reference services, as required by NGR 89(1)(a), as it provides for a less volatile price path over time. To this end, GGT has developed a long run estimate of potential price paths to 2060 under the two approaches.
1649. GGT suggests that the CCA price path ‘involves substantial reductions in tariffs followed by relatively higher tariffs in later years’. GGT suggests this ‘will not provide good signals to GGT as to the sustainable level of demand, or its customers (and end users) as to the sustainable level of reference tariffs. GGT considers that such a situation will operate to undermine investment certainty for both GGT and its customers.’⁸⁵⁵
1650. Table 95 shows GGT’s revised proposed forecast HCA depreciation. The key differences in this table, as compared to GGT’s initial proposal set out in Table 93, are that:
- GGT now proposes that total revenue should be calculated from 1 July 2016 to 31 December 2019, as GGT considers that there is no interval of delay.⁸⁵⁶
 - GGT has removed its proposed over-depreciation adjustment, and has implemented the Authority’s required alternative adjustment for over-depreciation.

⁸⁵³ Goldfields Gas Transmission, Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission, January 2016, p. 108.

⁸⁵⁴ Goldfields Gas Transmission, Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission, January 2016, p. 108.

⁸⁵⁵ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 105.

⁸⁵⁶ The Interval of delay issue is discussed further in the Reference Tariff chapter.

Table 95 GGT's Revised Proposed Forecast Depreciation

Nominal \$ million	2015	2016	2017	2018	2019	Total
Depreciation	-	5.462	10.972	10.972	10.857	38.263

Source: Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information Amended in response to ERA Draft Decision dated 17 December 2015, 29 January 2016*, p. 12.

Submissions

1651. Only one third party submission on the Draft Decision was received by the Authority – from BHP Billiton (**BHPB**).⁸⁵⁷
1652. BHPB did not reference the depreciation aspects of the Authority's Draft Decision. However, BHPB made the following points with regard to cost allocation, which have bearing on the depreciation aspects of the Authority's consideration. BHPB submits that:⁸⁵⁸

It is incorrect to claim, as GGT does, that there is no loss of economic activity associated with use of the pipeline if reference tariffs are held high (and equivalently, that a benefit to efficiency would not be expected if reference tariffs are lowered).

BHPB does not agree with CEG's and GGT's contention that, because the GGP capacity is almost fully contracted for an extended period under fixed commitment contracts, a reduction in tariffs would not result in greater utilisation of the GGP. This argument does not take into account any rights that shippers may have to relinquish contracted capacity. BHPB understands that relinquishment rights are common in gas transportation agreements in Australia and, if there are such rights on the GGP, the exercise of such rights could have a substantial impact on the contracted capacity of the covered pipeline. As a result, the ERA should carefully consider the potential impact of any relinquishment rights before giving any weight to this argument.

In this respect, GGT has previously noted that the demand for pipeline services provided using the covered pipeline is dependent on conditions in international commodity markets, and the ERA has noted that raising reference tariffs on a 'willingness to pay' basis would disadvantage nickel producers.

1653. The Authority also received a supplementary submission from GGT, together with attached expert reports, which were primarily directed at cost allocation and capacity and throughput forecasts but also contained some submissions concerning depreciation.^{859,860} In particular, the expert report of Mr Geoff Swier, responded to matters raised in the Draft Decision in relation to depreciation and addressed economic considerations for interpretation and application of the NGO.⁸⁶¹

⁸⁵⁷ BHP Billiton, *Public submission in response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016.

⁸⁵⁸ BHP Billiton, *Public submission in response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016.

⁸⁵⁹ Goldfields Gas Transmission, *Goldfields Gas Pipeline, Access Arrangement Revision Proposal, Supplementary Submission in response to ERA Draft Decision*, March 2016.

⁸⁶⁰ Houston Kemp; *Review of ERA's draft decision on allocating total revenue*, A report for Gilbert + Tobin, 26 February 2016; Farrier Swier Consulting, *Economic considerations for ++ interpreting the National Gas Objective*, Expert report prepared by Geoff Swier for Gilbert + Tobin, 26 February 2016.

⁸⁶¹ Farrier Swier Consulting, *Economic considerations for ++ interpreting the National Gas Objective*, Expert report prepared by Geoff Swier for Gilbert + Tobin, 26 February 2016, at pp. 48-69.

Considerations of the Authority

1654. GGT proposes to apply straight-line depreciation in *nominal* terms to the historic costs of the RAB assets, using so-called HCA depreciation. As noted above, GGT's proposed HCA approach would represent a continuation of the method that was approved by the Authority for the (second) access arrangement. The Authority considers that the HCA approach is not compliant with NGR 89(1)(a), nor does it align with the long term interests of all consumers (which is a key requirement of the NGO), or meet the RPP.

Genesis of the current approach

1655. The HCA depreciation approach for the GGP was first accepted by the Authority in its 2005 Final Decision for the first access arrangement.⁸⁶² The Authority's 2005 decision was made subject to the requirements of the former *National Third Party Access Code for Natural Gas Pipeline Systems* (the **Code**).⁸⁶³ In that 2005 Final Decision, the Authority considered that:

...the depreciation methodology used by GGT for the purpose of its submission is different to that generally used by Service Providers and approved by regulators under the Code. The more common approach has been a real or current cost accounting approach to straight-line depreciation, whereby the Service Provider is compensated for the effects of inflation on the "value" of the Capital Base through escalation of the closing value at the end of each regulatory period by the rate of inflation in that period to derive an opening value for the next regulatory period in "dollars of the day".⁸⁶⁴

...Given that the level of use of the pipeline is related directly or indirectly to the level of mining activity in the Pilbara and Eastern Goldfields regions and that mines have finite but uncertain lives, the Authority accepted that it is not unreasonable to presume that the economic life of the pipeline could be circumscribed by a reduction in mining activity.⁸⁶⁵

...The Authority was mindful that the historical cost accounting methodology used by GGT for the calculation of Total Revenue has the effect of accelerating depreciation and considers that there is no substantive justification in terms of expectations of a decline in the market for pipeline services. However, taking into account that the effect of this is to affect the time path of tariffs but not the present value of returns to GGT over the life of the pipeline, and that the required amendments to the Access Arrangement under this Amended Draft Decision result in a reduction in tariffs for the pipeline despite the accelerated depreciation, the Authority considered that the historical-cost, straight-line depreciation methodology used by GGT for the purposes of the tariff calculation described in its submission of 17 December 2002 complies with the requirements of the Code.⁸⁶⁶

⁸⁶² Economic Regulation Authority, *Final Decision on the Proposed Access Arrangement for the Goldfields Gas Pipeline*, 17 May 2005, p. 66.

⁸⁶³ National Third Party Access Code for Natural Gas Pipeline Systems, 11 July 2003. The relevant key differences between the Code and the NGL and NGR are discussed in the next section.

⁸⁶⁴ Economic Regulation Authority, *Final Decision on the Proposed Access Arrangement for the Goldfields Gas Pipeline*, 17 May 2005, p. 68.

⁸⁶⁵ Economic Regulation Authority, *Final Decision on the Proposed Access Arrangement for the Goldfields Gas Pipeline*, 17 May 2005, p. 69.

⁸⁶⁶ Economic Regulation Authority, *Final Decision on the Proposed Access Arrangement for the Goldfields Gas Pipeline*, 17 May 2005, p. 70.

1656. The Authority did not revisit these method issues in its 2010 decision for the second access arrangement. It continued to accept GGT's proposed HCA approach.⁸⁶⁷ It considered that the HCA method of depreciation was acceptable under the former gas Code.

Depreciation under the NGL and NGR (and comparison with the former Code)

1657. The NGL and NGR effected a number of important changes to the treatment of depreciation as compared with the former Code. These changes have given the Authority cause to review carefully the compliance of GGT's proposed HCA depreciation method with the new rules.

1658. First, key aspects of the rules for depreciation in the NGR retained the requirements of the former Code. For example, 'efficient growth in the market for reference services' was, and remains, an important consideration (refer to paragraph 1622 above for the relevant NGR extracts, specifically NGR 89(1)(a)). In particular, section 8.33(a) of the former Code required that the depreciation schedule be designed 'so as to result in the Reference Tariff changing over time in a manner that is consistent with the efficient growth of the market for the Services'.⁸⁶⁸ Also, section 8.33(b) of the former Code (which is equivalent to NGR 89(1)(b)), required that assets are depreciated over their economic lives and section 8.33(d) of the former Code (which is equivalent to NGR 89(1)(d)) required that assets are depreciated only once.

1659. Second, the NGR amplify the former gas Code in some areas. For example, the NGR explicitly allow for deferral of a substantial proportion of the depreciation where the market is immature and there is scope for significant uptake of unutilised capacity on the pipeline (per NGR 89(2) – see paragraph 1622).

1660. Third, the NGR introduced a requirement in rule 89(3), which provides for only limited discretion for the regulator (refer to paragraph 1622 above). In turn, the limited discretion under NGR 89(3) is governed by NGR 40(2), which sets out the Authority's limited discretion powers. Rule 40(2) states that (our **bold emphasis**):

Limited discretion

(2) If the Law states that the [ERA]'s discretion under a particular provision of the Law is limited, then the [ERA] may not withhold its approval to an element of an access arrangement proposal that is governed by the relevant provision if the [ERA] is satisfied that it:

(a) complies with applicable requirements of the Law; and

(b) is consistent with applicable criteria (if any) prescribed by the Law.

Example:

The [ERA] has limited discretion under rule 89. (See rule 89(3).) This rule governs the design of a depreciation schedule. In dealing with a full access arrangement submitted for its approval, the [ERA] cannot, in its *draft decision*, insist on change to an aspect of a depreciation schedule governed by rule 89 **unless the [ERA] considers change necessary to correct non-compliance with a provision of the Law or an inconsistency between the schedule and the applicable criteria**. Even though the [ERA] might consider change desirable to achieve more complete conformity between

⁸⁶⁷ Economic Regulation Authority, *Draft Decision on GGT's Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 9 October 2009, p. 70.

⁸⁶⁸ National Third Party Access Code for Natural Gas Pipeline Systems, 11 July 2003, p. 122.

the schedule and the principles and objectives of the *Law*, it would not be entitled to give effect to that view in the *decision* making process.

1661. Fourth, the NGL introduced the NGO, which provides a clear objective for the Authority in its consideration of any access arrangement proposal, and its compliance with the NGR. The NGO is defined in section 23 of the NGL(WA) as:

23. National gas objective

The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.

1662. Further, NGR 100 provides that the provisions of an access arrangement must be consistent with the NGO. This is one of the "*applicable requirements of the Law*" referred to in NGR 40(2)(a) as it is a requirement of the NGR that the access arrangement must comply with.

1663. In this context, the Authority notes that the Australian Competition Tribunal recently commented:⁸⁶⁹

The role of the AER and the Tribunal in giving effect to the NEO and NGO is to promote the "long term interests of consumers" with respect to the matters stipulated. This will always involve an attempt to promote efficient investment in, and operation and use of, services, but will also require taking into account other factors as appropriate. The Minister gave emphasis to taking into account the appropriate "long term" character of the consumer interests that are to be promoted. He also said that it may also, in an appropriate case, require taking into account the distribution to consumers of the benefits of efficiencies, even though this may not bear on the economic efficiency of the decision. Of course, the benefits of efficiencies are to be awarded to consumers – that is, to use the Minister's word "axiomatic". The Tribunal has previously acknowledged that "in some circumstances" it may, in effect, be preferable for the benefits of economic efficiencies to be passed to consumers in their long term interests rather than wholly retained or captured by the regulated entity: *Envestra (No 2)* [2012] ACompT 3 at [265].

1664. Fifth, the NGL introduced requirements in section 28 of the NGL (see extract below), for the ERA, when performing or exercising a function or power under the NGL or NGR that relates to the economic regulation of pipeline services provided by GGT by means of, or in connection with the GGP:

- to perform or exercise that function or power in a manner that will or is likely to contribute to the achievement of the NGO (see section 28(1)(a)) and
- if deciding to approve or not approve a full access arrangement or revisions to an applicable access arrangement, if there are two or more possible such decisions that will or are likely to contribute to the achievement of the NGO, then the Authority must make the decision that it is satisfied will or is likely to contribute to the achievement of the NGO to the greatest degree (see section 28(1)(b)(iii)).

1665. The Authority is also required to take the RPP into account when exercising a discretion in approving or making those parts of an access arrangement relating to a reference tariff (see section 28(2)(a)) and NGR 88(1) makes clear that a depreciation schedule is relevant "for the purpose of determining a reference tariff". In any case, the Authority may take the RPP into account (if it considers it appropriate) when performing or exercising any other function or power under the NGL or NGR that

⁸⁶⁹ Australian Competition Tribunal, *PIAC-Ausgrid decision* [2016] A Comp T1, 26 February 2016, p. 31.

relates to the economic regulation of pipeline services provided by GGT by means of, or in connection with the GGP (see section 28(2)(b)).

1666. Sixth, section 24 of the NGL (see extract below), sets out the RPP. There are various instances where compliance with the RPP is specifically required (e.g. NGL s.28(2) and NGR 50(4), 93(2)(c), 95(2)(b), 95(3)(b), 98(3) and 101(2)). However, in relation to the matter of depreciation schedules (and mindful of the limited discretion restriction in NGR 40(2)), there is no specific requirement that an access arrangement proposal or its depreciation schedule must comply with the RPP. While the Authority is required by section 28(2) to consider the RPP in relation to approving the depreciation schedule, because of the combined operation of the limited discretion provisions in NGR 89(3) and 40(2), the RPP cannot be used by the Authority as a basis for rejecting the depreciation schedule for inconsistency with the criteria in NGR 89(1).
1667. Given these changes, the Authority in the Draft Decision set out that it is now required to account for the requirements of the NGL and the associated NGR when making its decision.⁸⁷⁰ Specifically, the Authority is required to ensure that GGT's proposal is consistent with the criteria under NGR 89 and compliant with the requirement under NGR 100. The Authority must also seek to observe the requirements in section 28 relating to its own decision-making, but because of the combined operation of the limited discretion provisions in NGR 89(3) and 40(2), cannot use those requirements as reasons for rejecting the depreciation schedule for inconsistency with the criteria in NGR 89(1).
1668. As noted above, the Authority must appropriately meet the requirements of section 28 of the NGL in relation to its own decision making. Section 28 of the NGL states (our **bold** emphasis added):

28. Manner in which [ERA] must perform or exercise [ERA] economic regulatory functions or powers

(1) The [ERA] must, in performing or exercising an [ERA] economic regulatory function or power—

(a) perform or exercise that function or power in a manner that will or is likely to contribute to the achievement of the national gas objective; and

(b) if the [ERA] is making a designated reviewable regulatory decision —

(i) ensure that —

(A) the covered pipeline service provider that provides the pipeline services to which the applicable access arrangement decision will apply; and

(B) users or prospective users of the pipeline services that the [ERA] considers have an interest in the matter; and

(C) any user or consumer associations or user or consumer interest groups that the [ERA] considers have an interest in the matter,

are, in accordance with the Rules —

(D) informed of the material issues under consideration by the [ERA]; and

(E) given a reasonable opportunity to make submissions in respect of the decision before it is made; and

(ii) specify —

⁸⁷⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 259.

(A) the manner in which the constituent components of the decision relate to each other; and

(B) the manner in which that interrelationship has been taken into account in the making of the decision; and

(iii) if there are 2 or more possible designated reviewable regulatory decisions that will or are likely to contribute to the achievement of the national gas objective —

(A) make the decision that the [ERA] is satisfied will or is likely to contribute to the achievement of the national gas objective to the greatest degree (the preferable designated reviewable regulatory decision); and

(B) specify reasons as to the basis on which the [ERA] is satisfied that the decision is the preferable designated reviewable regulatory decision.

(2) In addition, the [ERA]—

(a) must take into account the revenue and pricing principles—

(i) when exercising a discretion in approving or making those parts of an access arrangement relating to a reference tariff; or

(ii) when making an access determination relating to a rate or charge for a pipeline service; and

(b) may take into account the revenue and pricing principles when performing or exercising any other [ERA] economic regulatory function or power, if the [ERA] considers it appropriate to do so.

(3) For the purposes of subsection (2)(a)(ii), a reference to a “reference service” in the revenue and pricing principles must be read as a reference to a “pipeline service”.

1669. The RPP are defined in section 24 of the NGL(WA).

24. Revenue and pricing principles

- (1) The revenue and pricing principles are the principles set out in subsections (2) to (7).
- (2) A service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in—
 - (a) providing reference services; and
 - (b) complying with a regulatory obligation or requirement or making regulatory payment.
- (2) A service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides. The economic efficiency that should be promoted includes—
 - (a) efficient investment in, or in connection with, a pipeline with which the service provider provides reference services; and
 - (b) the efficient provision of pipeline services; and
 - (c) the efficient use of the pipeline.
- (5) A reference tariff should allow for a return commensurate with the regulatory and commercial risks involved in providing the reference service to which that tariff relates.
- (6) Regard should be had to the economic costs and risks of the potential for under and over investment by a service provider in a pipeline with which the service provider provides pipeline services.

- (7) Regard should be had to the economic costs and risks of the potential for under and over utilisation of a pipeline with which a service provider provides pipeline services.

1670. The Authority considers that its limited discretion under NGR 89(3) and 40(2) does not prevent it ensuring that GGT's HCA proposal "complies with applicable requirements of the Law" and "is consistent with applicable criteria (if any) prescribed by the Law" (including the criteria under NGR 89 and with the requirement under NGR 100).

1671. GGT acknowledged that the regulator must consider the applicable requirements and criteria of the NGL and NGR, when determining the appropriate form of depreciation:⁸⁷¹

Rule 89(3) limits the regulator's discretion under rules 89(1) and 89(2). The regulator may not withhold its approval of a proposed depreciation schedule if it is satisfied that:

- (a) the proposal complies with the applicable requirements of the NGL and the NGR; and
- (b) is consistent with applicable criteria (if any) prescribed by the NGL and the NGR.

1672. The Authority also notes that GGT's consultant HoustonKemp advised GGT to continue using the straight-line depreciation method to depreciate the GGP RAB, based on a broader consideration of the RPP:⁸⁷²

We noted above that the assessment of a depreciation method in the particular circumstances of the GGP is unlikely to be assisted by the particular question of that which promotes efficient growth in the market for reference services. Rather, such an assessment is more likely to be assisted by the wider-ranging revenue and pricing principles, which guide the application of the NGRs in general.

1673. The Authority agrees with GGT that the Authority has limited discretion with regard to depreciation under rule 89 of the NGR. However, given the specific construct of the NGL and NGR 40(2), noted above, the Authority believes that it must reject GGT's proposed depreciation schedule and HCA depreciation approach if the Authority is satisfied it:

- Is not consistent with *the applicable criteria* listed under rule 89 of the NGR, which include ensuring that the depreciation schedule is designed so that:
 - reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services; and
 - assets or groups of assets are depreciated over their respective economic lives; or
- does not comply with *the applicable requirements* of the NGL and NGR, including that the provisions of the access arrangement (including the depreciation schedule and methodology) must be consistent with the NGL (NGR 100).

1674. The Authority therefore remains of the view that it must evaluate the depreciation method in terms of its consistency/compliance with the applicable requirements and

⁸⁷¹ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, p. 40.

⁸⁷² Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, Attachment 4, p. 12.

criteria of the NGL and NGR, specifically those in NGR 89 and 100. Accordingly, in what follows, the Authority considers whether GGT's proposed depreciation schedule and methodology is consistent with the "depreciation criteria" in NGR 89 and compliant with the "general requirements" of NGR 100.

Consistency with criteria of NGR 89(1)(b) - (e)

1675. It is convenient to deal with NGR 89(1)(b) – (e) at the outset. The Authority considers that the HCA depreciation approach is consistent with the depreciation criteria in NGR 89(1)(b) to (e), as it:

- enables assets to be depreciated over their economic lives (NGR 89(1)(b));
- allows for adjustments reflecting changes in the expected economic lives of particular assets (NGR 89(1)(c));
- allows for assets to be depreciated only once (NGR 89(1)(d)); and
- allows for the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs (NGR 89(1)(e)).

Consistency with NGR 89(1)(a)

1676. NGR 89(1)(a) provides that a depreciation schedule should be designed so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services.

1677. GGT contends in this context that the GGP serves a mature market that is not growing rapidly:⁸⁷³

- GGP has a small number of relatively large customers that operate in natural resource mining;
- GGP has operated at or near capacity for the last ten years;
- demand for GGP services is not forecast to grow materially;
- innovation of energy supply chains and development of compressed and liquefied natural gas are contributing to the limited growth of demand for GGP services;
- GGP capacity expansions have been through discrete investments to meet the needs of specific customers that underwrite these investments; and
- GGP capacity expansions have not formed part of the covered pipeline.

1678. Based on the above, HoustonKemp considered that the NGR 89(1)(a) will be of limited assistance for evaluating the RAB depreciation approach that GGT should use:⁸⁷⁴

Consistent with this outlook, in our opinion the market for reference services provided by the GGP can best be characterised as mature, with limited scope for future growth. A corollary of these circumstances is that the time profile of the future expected costs of providing services is unlikely to be important for the prospects for growth in the market

⁸⁷³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 44.

⁸⁷⁴ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, Attachment 4, p. 11.

for reference services. This conclusion has significant implications for the interpretation and application of rule 89(1)(a).

The guidance provided by rule 89(1)(a) principally goes to the selection of a depreciation method that results in a time profile of reference tariffs that, in turn, promotes efficient growth in the market for reference services. However, in the absence of much or any scope for serving efficient growth in the market for reference services by means of the available covered capacity of the GGP, a wide range of depreciation methods is likely to be consistent with rule 89(1)(a).

It follows that the evaluation of different potential depreciation methods for the GGP is unlikely to be assisted by looking beyond the ability of one method or another to promote efficient growth in the market for reference services. Rather, it is more helpful to turn to the wider-ranging revenue and pricing principles, which guide the application of the NGRs.

1679. As was discussed above, and will be discussed in more detail below, the Authority considers that the RPP, appropriately, can inform the evaluation of compliance with the requirements of the NGO. In any event, NGL 24(3) (that is, 'RPP(3)'), in requiring 'effective incentives in order to promote economic efficiency with respect to reference services the service provider provides', is analogous to the criterion of NGR 89(1)(a).
1680. However, contrary to HoustonKemp's contention, the Authority considers that consistency with NGR 89(1)(a) remains a key issue for this Final Decision. This is explored in what follows.

Implications of depreciation method for NGR 89(1)(a)

1681. NGR 89(1)(a) requires assessment of whether a particular depreciation approach produces a depreciation schedule that is designed so that reference tariffs will vary over time in a way that promotes efficient growth in the market for reference services.
1682. With regard to what may be required to ensure reference tariffs vary over time in a way that promotes efficient growth in the market for reference services, the Authority notes that, in the context of assessing consistency with the criteria in NGR 89(1)(a), it was generally accepted by the parties and the Tribunal in Application by APA GasNet Australia (Operations) Pty Limited (No 2) [2013] ACompT 8 that efficient pricing entails ensuring that the marginal cost of consumption is signalled to consumers and that reference tariffs should therefore reflect the long run marginal cost of providing the service with recovery of any remaining costs being done so as to minimise distortion of demand for reference services (e.g. by spreading them across consumers in a way that minimises distortion of consumption decisions). In other words, efficient pricing essentially entails devising tariffs that minimise the demand distortion that results from having to recover non-marginal costs through increases in price above marginal cost.⁸⁷⁵ The Authority considers that if reference tariffs are not cost reflective in this way, then they do not send an appropriate signal for asset utilisation and are unlikely to promote efficient growth.

⁸⁷⁵ See Application by APA GasNet Australia (Operations) Pty Limited (No 2)[2013] ACompT 8 at [217] and [218]. In that case (see at [221], [222]) the Tribunal agreed with the AER that APA GasNet's depreciation methodology did not promote efficient growth in the market for reference services, including because it had the effect of shielding customers from cost reductions (by bringing forward cash flows in the short to medium term). That is it meant higher tariffs in the short to medium term that did not reflect cost reductions.

1683. As put by HoustonKemp:⁸⁷⁶

By virtue of its focus on changes in the use of a pipeline over time, rule 89(1)(a) of the NGRs goes to the allocative efficiency implications of one depreciation schedule, as compared with another.

Tariffs that reflect the principle of allocative efficiency are those that ensure users are presented with a financial signal that reflects the resource cost of providing the service, thereby encouraging users to consume the service only when the benefit to them exceeds the cost of its provision. However, it is important to note that:

- the allocative efficiency of any given reference tariff will principally depend on its structure, ie, the choice of charging parameter – say, as between capacity, throughput or fixed elements – and the balance between those charging parameters; whereas
- the depreciation method affects the time profile of revenue per unit of service, as distinct from the structure of reference tariffs.

It is widely recognised in economic literature⁸⁷⁷ that, in the presence of fixed costs, the most efficient means to achieve allocative efficiency is through the use of a two-part tariff structure. An allocatively efficient two-part tariff should be designed so that:

- the variable element of the tariff is set as close as possible to the long run marginal cost (LRMC) of the resources used to provide that element of service; and
- the fixed element of the tariff is set so as to recover the residual revenue requirement for that year.

LRMC is a forward-looking concept that considers the change in future costs – assessed at a particular point in time – necessitated by a postulated change in future demand. It follows that, properly calculated, LRMC is unaffected by previously incurred capital costs. Further, since LRMC is estimated over a time frame sufficient to allow all factors of production to be varied, and because forward-looking market circumstances change, any estimate of LRMC will change through time.⁸⁷⁸

Setting reference tariffs such that the revenue per unit of service that must be recovered by them varies through time so as to reflect as closely as possible to LRMC of the relevant reference service will ensure that consumers face price signals that reflect the resource cost of providing reference services. This in turn encourages consumers to demand reference services only when the benefit to them exceeds the cost of provision. Such a time profile of reference tariffs will be allocatively efficient and promote efficient growth in the market for reference services.

However, in circumstances whereby capital costs previously incurred need to be recovered, the total revenue per unit of service is likely to include a residual element that exceeds the forward-looking LRMC of providing a unit of service. This residual revenue requirement is affected by the return of capital building block element, the time profile of which will be affected by the choice of depreciation method.

Determining a depreciation schedule that promotes efficient growth in the market for reference services then becomes a question of how to allocate this residual revenue requirement per unit of service through time, in a manner that minimises the extent of departure from the allocatively efficient, LRMC-based tariff.

It follows that, to the extent there is scope for growth in the market for reference services, this will best be achieved by a depreciation schedule that results in a time profile of total

⁸⁷⁶ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, Attachment 4, p. 9.

⁸⁷⁷ See, for example: Oi, Walter Y, A Disneyland Dilemma: Two-Part Tariffs for a MickeyMouse Monopoly. *Quarterly Journal of Economics* 85 (1971), pp. 77-96.

⁸⁷⁸ We note that LRMC can be significantly affected by the balance between existing capacity and anticipated demand – because these two variables affect the timing and quantum of necessary future capacity expansions.

revenue per unit of service that minimises the extent of departure from the ideal, LRMC-based structure of tariffs.

1684. There are three key points in this passage. First, in the presence of a two part tariff, the issue of historic capital cost recovery can be separated from the LRMC signal, as the latter may be aligned with the variable component of the tariff. Second, the total revenue requirement is dependent on the resulting residual fixed cost. The time profile of this residual will be affected by the depreciation method recovering the historic capital costs. Third, when considering the path for reference tariffs which promotes efficient growth in the market for reference tariffs, the allocation of the residual between periods is important for efficiency. The Authority considers that efficiency covers all aspects – productive, allocative and dynamic.
1685. In line with HoustonKemp’s analysis, GGT submitted that annual depreciation charges need to be independent of volume of use, and hence should be contained within the fixed part of the tariff, and not the variable component.⁸⁷⁹ GGT observed that depreciation relates to capital, which is a sunk cost, such that it should have no bearing on LRMC, except to the extent that it relates to incremental increases in production. GGT quotes Kahn that depreciation, along with the return on investment:⁸⁸⁰

... is a function of time instead of the rate of utilization. To the extent that such costs are truly fixed, they do not belong in the computation of marginal cost, for the purposes of economically efficient pricing. Moreover, even to the extent that depreciation does vary with use, what belongs in the marginal cost calculation is not the book cost, the writing off of investment costs historically incurred, but the amount by which this and other capital costs will be higher than they would otherwise be in the future by virtue of the incremental production in question. It is for the higher future costs or the decline in future values – not for fixed, historically sunk costs – that the marginal production is causally responsible; it is only the future, and not the past, costs that will be saved if production is not undertaken.

1686. GGT then concluded that the price of gas is expected to rise over time, such that the use of HCA depreciation would promote growth in the market:⁸⁸¹

If the reference tariff is also to promote growth in the market for the reference service then, as discussed above, the tariff should decline over time as the delivered cost of gas rises.

In the case of the Covered Pipeline, the reference tariff is a two part tariff: it has two fixed components, and a single, throughput-related, variable component. By providing for the recovery of depreciation through the fixed components of the tariff, and not through the variable component, GGT has sought to structure a tariff consistent with efficiency in the market for the Firm Service reference service. By proposing the use of straight line depreciation in circumstances where the cost of gas is expected to rise, GGT has sought to promote growth in the market for the reference service. The use of straight line depreciation, together with a two part tariff structure, allows the reference tariff to vary, over time, in a way that promotes efficient growth in the market for reference services in accordance with the requirement of rule 89(1)(a).

⁸⁷⁹ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, pp. 49 - 50.

⁸⁸⁰ Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions*, Volume 1, Cambridge, Massachusetts: MIT Press, 1991, pp. 72-73, quoted at Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, p. 49.

⁸⁸¹ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, p. 50.

Use of a two part tariff and a depreciation schedule which either accelerated, or deferred, the return of investment may be consistent with the requirement for efficiency. However, in circumstances where the price of gas is expected to increase over time, it would not promote growth in the market for the reference service. It would not promote efficient growth in the market for reference services in accordance with the requirement of rule 89(1)(a).

Scope for future growth

1687. In response, first, the Authority does not agree with HoustonKemp's or GGT's conclusions regarding the scope for growth. Specifically, the Authority does not consider that the 'scope for future growth' is limited. That inference belies the trends of the last decade – where pipeline capacity and throughput has nearly doubled.⁸⁸²
1688. In particular, iron ore operations have added significant new loads in the past few years to the northern section of the GGP.⁸⁸³ Production from the Pilbara's iron ore province – which is adjacent to the northern section of the GGP – is at the very low end of the global iron ore cost curve.⁸⁸⁴ It follows that further expansions on the northern section, over the medium to longer term, cannot be ruled out. In addition, new loads may continue to take capacity elsewhere on the GGP. For example, the AngloGold Ashanti Independence Group gold joint venture added a significant new load from January 2016 on the southern half of the pipeline (see paragraph 257).⁸⁸⁵ In consequence, the Authority considers that the 'time profile of the future expected costs' remains important in promoting efficient (new load) growth in the market for reference services. The potential for growth cannot be discounted.
1689. Furthermore, the fact that recent expansions have been uncovered, or 'taken the form of discrete lumpy investments designed to meet the needs of one or more specific customers', should have little bearing on matters here.⁸⁸⁶ The fact is, the capacity of the GGP has continued to grow. That growth may continue at times in the future. There should be no good reason why that growth might not be based on reference services. An exception might be if there were barriers to growth of reference services in the construct of the extensions and expansions policy, or in the cost allocation mechanism. The Authority is of the view that such barriers are not acceptable under the NGR, so it is reasonable to assume that there may be further growth in the demand for reference services on the GGP in the future.

⁸⁸² Current covered GGP capacity is 109 TJ/day (refer paragraph 317), while uncovered portions of the pipeline have a capacity of around 91 TJ/day, giving a total gas transmission capacity of 200 Tj/day. Capacity of the pipeline was 108.4 TJ/d in 2006 (Economic Regulation Authority, *Further Final Decision and Final Approval on the Proposed Access Arrangement for the Goldfields Gas Pipeline*, 14 July 2005, p. 17).

⁸⁸³ APA Group informed investors of the following in an ASX release in 2011 (APA Group, *APA expanding capacity of the Goldfields Gas Pipeline*, 22 December 2011):
 APA Managing Director Mick McCormack said the Goldfields Gas Pipeline was critical to mining operations in the Pilbara.

"This is our third expansion in the last three years, and given the developments in the region, we don't expect it to be the last," Mr McCormack said.

⁸⁸⁴ Rio Tinto, *Delivering sustainable shareholder returns: 2014 investor seminar*, http://www.riotinto.com/documents/141127_RT_Investor_seminar_presentation_Sydney_.pdf, accessed 27 June 2016, slide 31.

⁸⁸⁵ See also www.anglogoldashanti.com/en/Media/Presentations/InvestorAnalystvisitAugust2015.pdf, accessed 21 October 2015.

⁸⁸⁶ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 7, p. 6.

1690. Second, the Authority considers that ‘growth’ should not be interpreted simply in a positive sense, as encouraging new capacity, but also in terms of the need to maintain existing capacity, by avoiding inefficient contraction (or ‘negative growth’) in the utilisation of existing capacity in the market for reference services.

1691. In this context, the Authority notes that GGT suggested in its original proposal that it was having difficulty securing new customers for existing capacity – the Authority in the Draft Decision quoted GGT as stating:⁸⁸⁷

The forecast of demand for capacity used in preparing this access arrangement revision proposal (section 4 above) recognises:

(a) the difficulty GGT has encountered in finding a user for capacity made available by the failure of gold miner Apex Minerals at Wiluna; and

(b)

[REDACTED]

1692. However, GGT advised recently that it has been able to contract the resulting available capacity.⁸⁸⁸

...GGT had suggested that it was having some difficulty securing new customers for existing capacity on the covered pipeline. It appears to be on this basis that the ERA concludes that there is a material risk of contraction in demand in the near term. As explained below, GGT is no longer facing any difficulty in securing customers for existing capacity on the covered pipeline. Consequently, GGT now expects that the covered pipeline will be at (or close to) full utilisation over the forthcoming access arrangement period.

1693. The Authority is pleased that GGT has been able to recontract capacity. However, it is clear from this sequence of events that capacity utilisation is not assured. The Authority, in this context, notes BHPB’s comment reported at paragraph 1652 above, that shippers may have rights to relinquish existing contracted capacity.⁸⁸⁹ GGT responded to BHPB’s point by stating that:⁸⁹⁰

[REDACTED]

⁸⁸⁷ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, p. 97.

⁸⁸⁸ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Supplementary Submission in response to ERA Draft Decision*, February 2016, section 2.3 first page.

⁸⁸⁹ BHP Billiton, *Public submission in response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 7.

⁸⁹⁰ Goldfields Gas Transmission, *Response to information request ERA27*, 20 April 2016.



1694. The Authority considers that GGT's response on this question does not preclude the potential for existing contracted capacity to be vacated. Such an outcome might occur where a shipper is under financial stress given, for example, a poor revenue outlook, as might occur with a pronounced downturn in relevant commodity prices for that shipper. In that event, any potential reduction in the shipper's cost base – as might occur with a reference tariff reduction under CCA – might avert the vacating of the contracted capacity. Such an outcome would only be efficient when the reduction in tariffs reflected the economic allocation of costs, including those of depreciation.
1695. The Authority notes in this context that the relevant economics of long term entry or exit decisions relate to whether a shipper's *average costs* of production per unit exceed the price per unit. In that case, the fixed cost component of tariffs has bearing on the efficient growth in the market for reference services, as it will affect the average costs per unit of output of the shippers on the GGP, and hence their decision to enter or exit their operations. Shipper entry or exit has a major impact on the growth of the market for reference services.
1696. GGT itself states, elsewhere, that it considers that the risk of losing shippers is real:⁸⁹¹
- The GGP is exposed to the risk of losing shippers (contracts for capacity) for a sustained period, and this risk flows through to the equity holders because of the operating and financial leverage of the business.
1697. The Authority is therefore of the view that a depreciation schedule which results in an efficient allocation of the existing pipeline capital costs (both the return on and of capital) – between current and future users in real terms – will serve to promote efficient growth in the market for reference services, both now and in the future. This is because it will encourage efficient use of the pipeline, by ensuring that current consumers of gas are not facing unnecessary fixed charges which do not reflect the economic costs of the pipeline.
1698. The Authority is of the view that the HCA approach does not have such an efficient allocation of the existing pipeline capital costs. This means the HCA approach would not result in efficient lower tariffs at the current time, with the result that current consumers of gas may shut down operations earlier than might otherwise be efficient, including in response to difficult commodity price circumstances.
1699. However, the CCA approach would result in efficient lower tariffs at the current time, meaning that current consumers of gas are more likely to keep operations open where efficient to do so, even in the face of difficult commodity price circumstances.

⁸⁹¹ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision*, January 2016, p. 76.

1700. The lower charges under CCA at the current time would also ensure that potential new operations – that require additional gas from the GGP – are evaluated in an efficient manner, and may start earlier than might otherwise be the case, as compared to the case with inefficient tariffs. In this way, the CCA would promote efficient growth in the market for reference services.
1701. However, because the HCA approach does not have such an efficient allocation of the existing pipeline capital costs, it would not promote efficient growth in the market for reference services.

Do expectations for the price of gas support HCA?

1702. As noted above, GGT claimed in its initial proposal that it has, 'by proposing the use of straight line depreciation in circumstances where the cost of gas is expected to rise, ...sought to promote growth in the market for the reference service'.⁸⁹²
1703. However, the Authority set out in the Draft Decision that it considers that GGT is relying on assumptions which may not be borne out in reality.⁸⁹³ Specifically, the long term trend for the price of gas is not certain, as it will depend on the interaction of a range of factors, on both the supply and demand sides. Gas prices may remain at, or fall back from, current levels in real terms, as lower cost sources of global supply become available, such as from tight gas. Other factors such as climate change or air quality policy may affect demand for gas in some applications, such as for urban power generation, ultimately reducing overall demand for gas. Combined, such trends could potentially lead to global price declines over the longer term.
1704. This suggests that drawing in the unknown future price of complements to the GGP – such as gas prices – as a means to justify higher network tariffs, now, from HCA, is a potentially unreliable approach.

Willingness to pay arguments

1705. In GGT's Initial Proposal, HoustonKemp suggested that – given its assumed outlook of limited scope for future growth – the time profile of costs is unimportant:⁸⁹⁴

A corollary of these [limited growth] circumstances is that the time profile of the future expected costs of providing services is unlikely to be important for the prospects for growth in the market for reference services. This conclusion has significant implications for the interpretation and application of rule 89(1)(a).

The guidance provided by rule 89(1)(a) principally goes to the selection of a depreciation method that results in a time profile of reference tariffs that, in turn, promotes efficient growth in the market for reference services. However, in the absence of much or any scope for serving efficient growth in the market for reference services by means of the available covered capacity of the GGP, a wide range of depreciation methods is likely to be consistent with rule 89(1)(a).

⁸⁹² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 48.

⁸⁹³ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 262.

⁸⁹⁴ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, Attachment 4, p. 11.

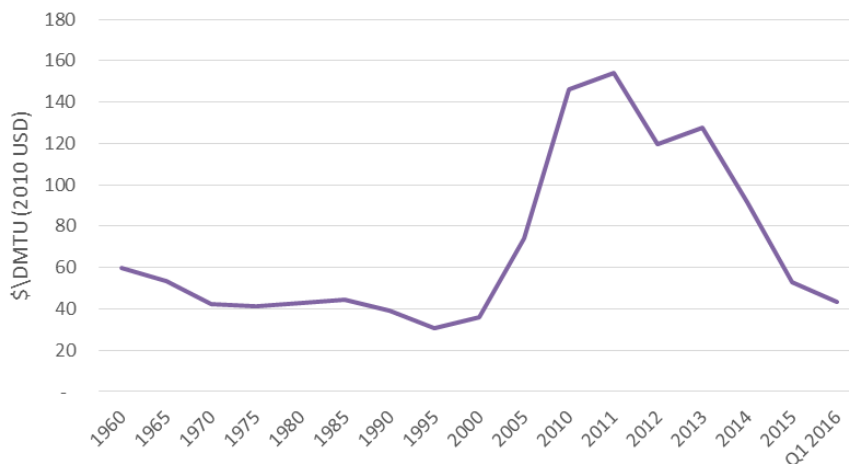
1706. Instead, HoustonKemp considered that reference to the RPP would assist assessment of the efficient allocation of the fixed residual (that is, not variable) costs allowing recovery of depreciation charges.⁸⁹⁵
1707. HoustonKemp argued that ‘allowing service providers reasonable opportunity to recover at least the efficient costs’ (per the second Revenue and Pricing Principle) implied that:⁸⁹⁶
- ...In our opinion, the method for returning capital invested in the GGP, ie, depreciation, should seek to recover relatively more depreciation during periods when customers have a relatively high willingness to pay.
1708. HoustonKemp went on to argue that *current* consumers of gas on the GGP had a high willingness to pay, given relatively high commodity prices, such that there was an ‘effective opportunity to recover the efficient costs incurred in providing the reference services’ sooner rather than later.⁸⁹⁷ HoustonKemp considered this supported the HCA approach.
1709. To this end, HoustonKemp noted that GGT’s major customers are large natural resource (iron ore, gold, lead and nickel) mining companies, and contended the following:
- GGP customers currently have a higher ‘willingness to pay’ at the current time due to global resource price trends, with recent prices of iron ore, gold, nickel and lead higher than historical averages;
 - recovering more revenue now from users in earlier years would:⁸⁹⁸
- ...amount to prudent management of the future risk that resource prices will not remain at their current historical highs, in which event the ability or willingness to pay for pipeline services will be reduced. In extreme, such an approach would reduce the risk of the GGP pipeline asset being stranded, through unanticipated shrinkage in the demand for reference services.
1710. HoustonKemp depicted natural resource prices until 2010 in real USD, which showed an increase compared to historical trends. In Figure 24 to Figure 26, the Authority has updated HoustonKemp’s analysis to reflect available data, up to the March quarter of 2016.

⁸⁹⁵ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, Attachment 4, p. 12.

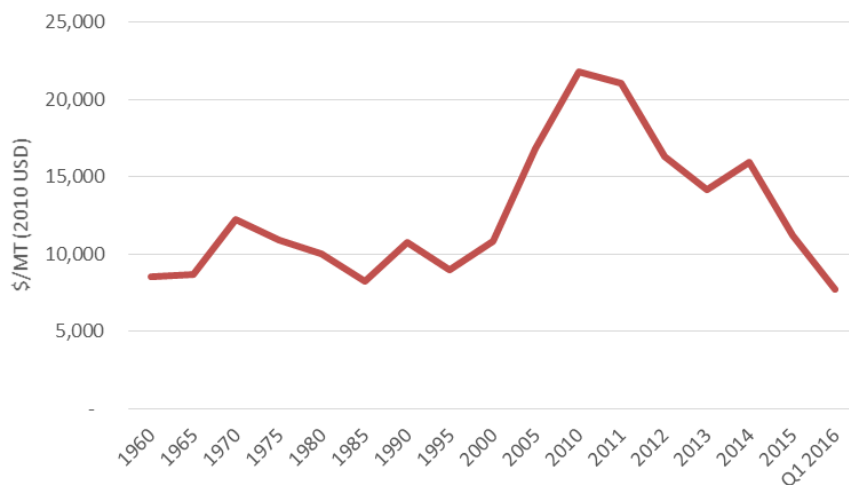
⁸⁹⁶ Ibid.

⁸⁹⁷ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, Attachment 4, p. 12.

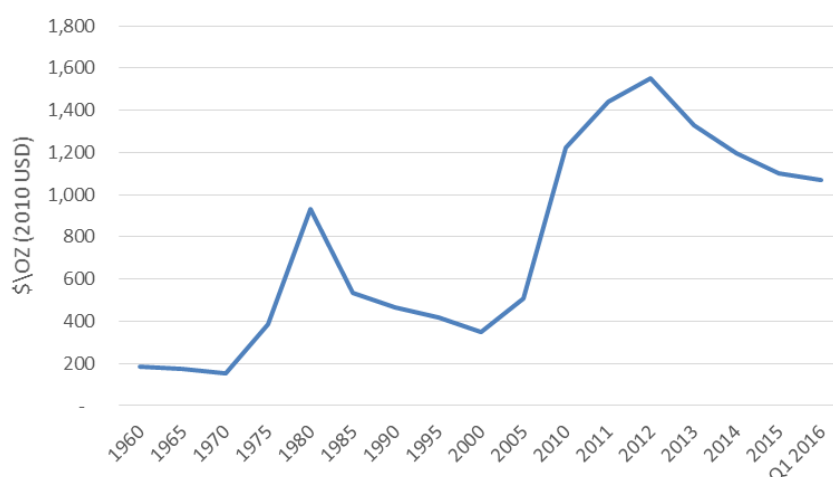
⁸⁹⁸ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, Attachment 4, p. 13.

Figure 24 Iron Ore Price Trend – Annual Average Prices 1960-2016

Source: *Global Economic Monitor (Commodities)*, *World Databank*, *The World Bank*; ERA Analysis (2016 based on first quarter of 2016 and 2016 nominal to real conversion derived using the US GDP implicit price deflator series – see research.stlouisfed.org/fred2/series/GDPDEF).

Figure 25 Nickel Price Trend – Annual Average Prices 1960-2016

Source: *Global Economic Monitor (Commodities)*, *World Databank*, *The World Bank*; ERA Analysis (2016 based on first quarter of 2016 and 2016 nominal to real conversion derived using the US GDP implicit price deflator series – see research.stlouisfed.org/fred2/series/GDPDEF).

Figure 26 Gold Price Trend – Annual Average Prices 1960-2016

Source: *Global Economic Monitor (Commodities), World Databank, The World Bank; ERA Analysis (2016 based on first quarter of 2016 and 2016 nominal to real conversion derived using the US GDP implicit price deflator series – see research.stlouisfed.org/fred2/series/GDPDEF).*

1711. The Authority notes that natural resource prices have dropped significantly since 2010, consistent with the unwinding of the China boom. Prices for nickel and iron ore have fallen to levels approaching the average prices around the time the pipeline was built (1995 to 2000). The exception is the gold price, which remains more than double the price observed in 2000 in real terms.
1712. In terms of the importance of the various commodities in supporting the contracting for the GGP's capacity, the Authority estimates from the current GGP load data that:
- nickel is most important – contributing an estimated 53 per cent of the GGP's covered capacity;
 - gold is important – contributing an estimated 27 per cent;
 - iron ore is less important – contributing an estimated 16 per cent;
 - other smaller loads relating to gas distribution in the townships, and electricity generation, contribute the remainder.
1713. Overall, it is clear that while the gold price is at relatively elevated levels, the nickel and iron ore prices are not. This suggests that the 'willingness to pay' argument has limited validity at the current time. Raising reference tariffs on this basis would clearly disadvantage nickel and iron ore producers at a time when they face a difficult global market. Nickel is a particularly important consideration, given that prices are lower in real terms than at any time since 1960. As noted by BHPB:⁸⁹⁹

⁸⁹⁹ BHP Billiton, *Public submission in response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 6.

Global nickel prices have experienced a sustained deterioration since a high of US\$13.20/lb in February 2011. This deterioration has significant negative implications for the profitability of the nickel industry globally, with UBS commenting in October 2015 that “for nickel, around 50% is loss making at spot of US\$4.60/lb, which is among the most extreme across mined commodities”.⁴ This price deterioration has continued into 2016 with the nickel spot price reaching US\$3.43/lb on 11 February 2016 (representing a 74% deterioration from the February 2011 position).

Nickel West is not immune from macroeconomic pricing. In the financial years ending 30 June 2014, 30 June 2015 and the half-year ending 31 December 2015, Nickel West reported EBIT losses of US\$208m, US\$74m and US\$142m despite realising a significant reduction in its cost base since 2012. Also notable is the energy intensity of Nickel West’s operations with energy costs exceeding 12% of its total cost base in each of these reporting periods, inclusive of gas transportation costs.

Similar cost pressures and the weak macroeconomic outlook have resulted in the suspension and/or closure of nickel operations worldwide, including Mincor and Panoramic Resources’ operations in the Kambalda region of Western Australia.⁵

1714. The Authority notes that at the time of this Final Decision, nickel prices remain at depressed levels (currently around US\$ 4.00/lb).⁹⁰⁰
1715. Furthermore, the ‘willingness to pay’ argument is predicated on an assumption about the trend in commodity prices going forward. However, no-one can foretell with any certainty whether natural resource prices will increase, continue to decrease, or stabilize over the longer term future, which is commensurate with the life of the pipeline.
1716. Overall, the Authority concludes that the ‘willingness to pay’ argument has very limited relevance for its decision on the appropriate depreciation method.

Tariff variation implications

1717. In its response to the Draft Decision, GGT no longer argued the importance of the time profile of the fixed charges supporting growth in the market, giving lower future charges under HCA as a means to offset assumed future increases in the price of gas (as discussed above in the section titled ‘Do expectations for the price of gas support HCA?’). Instead GGT submits that the ‘relevant issue under rule 89(1)(a) is the **variation** in tariffs that results from the proposed depreciation approach, and whether the resulting tariff path promotes efficient growth in the market for reference services.’⁹⁰¹ (Authority’s bold emphasis)
1718. GGT then argues that there would be ‘little variation, with the HCA method, in the amount of depreciation to be recovered through reference tariffs, as between the current access arrangement period and the next, and over the course of the next access arrangement’.⁹⁰²
1719. GGT also contends that with the HCA method, over the longer term:⁹⁰³
- ..the amount of depreciation to be recovered through reference tariffs would remain essentially flat in nominal terms, and would gradually decline in real terms. Under the ERA’s proposed approach, the depreciation allowance would lead to an increase

⁹⁰⁰ www.lme.com/metals/non-ferrous/nickel/; accessed 24 June 2016.

⁹⁰¹ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 102.

⁹⁰² Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 103.

⁹⁰³ *Ibid.*

in the amount of depreciation to be recovered through reference tariffs over time in real terms, after the immediate sharp decline...

1720. The Authority, however, considers that the tariff impacts of depreciation cannot be isolated from the associated return on the capital base, as the two effects are bound together in their effect on the tariffs. The two elements combine to give the total revenue impact of the depreciation approach. For HCA, there is clearly a declining total revenue through time, as well as a declining allowance for depreciation. The Authority does not consider that this is compliant with the NGR, for the reasons outlined elsewhere in this chapter.
1721. On the other hand, the CCA approach does deliver reasonably equal tariffs through time, which reflects equal depreciation in real terms. Specifically, once the double count for inflation in the AER's nominal Post Tax Revenue Model is accounted for, it is clear that the CCA method provides for exactly equal amounts of depreciation in each year in real terms. The outcome is consistent with straight line depreciation in real terms. This issue is discussed in detail in Appendix 5.
1722. For these reasons, the Authority does not consider that examining the impact of the CCA and HCA methods on the time profile of the *depreciation* building block, in isolation of the *return on* the capital base, is helpful.⁹⁰⁴ Rather, it is the effect on the revenue that must be examined. As a corollary, given the forecast for demand going forward, the revenue impacts arising from the two depreciation methods will be reflected in the respective future reference tariff paths.
1723. Importantly, in this context, GGT does go on to evaluate the impacts of the two depreciation schedules on reference tariffs:

The effect on reference tariffs is similar. Holding all other elements of GGT's proposal constant (i.e. as originally proposed by GGT), changing the depreciation approach from HCA to CCA leads to a significant change in the profile of reference tariffs. Changing to the CCA approach leads to a significant reduction in the reference tariff at the commencement of the next access arrangement period, and higher reference tariffs in later access arrangement periods (from around 2030 onwards). This is shown in Figure 5 below.⁹⁰⁵

⁹⁰⁴ Hence, the Authority considers that GGT's arguments relating to 'Figure 4' only partially bear on the issue at hand, and are therefore not compelling (see Goldfields Gas Transmission, Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission, January 2016, p. 104).

⁹⁰⁵ GGT's footnote attached to the title of Figure 5 below, (labelled '93') states:

'Since the reference tariff has three components, an indicative average tariff is shown in the above chart. The indicative reference tariff is calculated as average revenue per GJ kilometres of contracted capacity. This is calculated by dividing forecast revenue (calculated by applying the tariff components to GGT's forecasts of capacity and throughput) by the total number of GJ kilometres of contracted capacity. The average revenue is a single number which is a good indicator of the three-component tariff.'

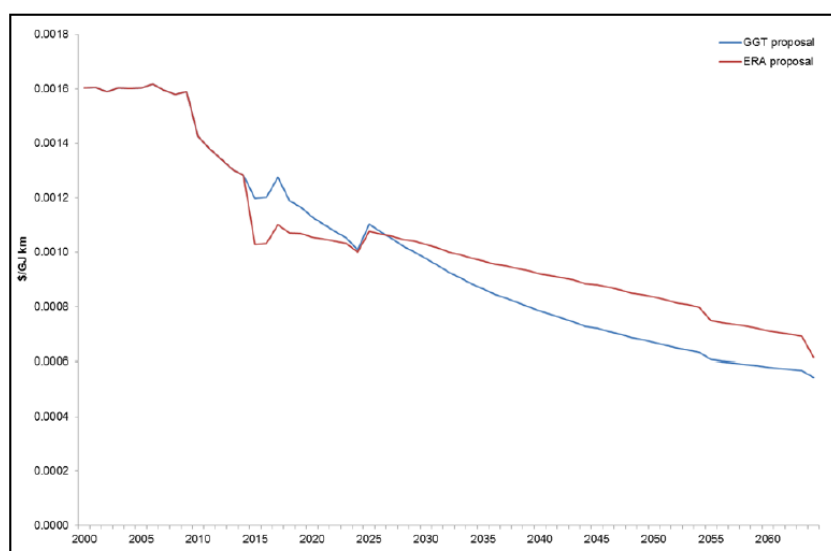


Figure 5: Indicative path of reference tariffs under ERA and GGT approaches⁹³

1724. The Authority notes that the 'Figure 5' above is represented by GGT in terms of being nominal \$/GJ/km on the y axis. However, following an information request to GGT for the supporting analysis, the Authority is satisfied that the y axis and the chart itself are actually in *real* December 1999 \$/GJ/km prices. The Authority considers that such real analysis is important for evaluating the two approaches (refer to Appendix 5 for more detail on this real versus nominal issue in the evaluation).⁹⁰⁶

1725. Based on 'Figure 5' in paragraph 1723, GGT submits that its proposed approach to determining the depreciation allowance promotes efficient growth in the market for reference services:⁹⁰⁷

This is primarily because GGT's proposed approach provides for less volatility in the price path over time.

GGT submits that a more stable path for reference tariffs will better promote efficient growth in the market for reference services over time for several reasons, including:

- a more stable path for reference tariffs will provide more reliable signals to service providers as to the genuinely sustainable level of demand for reference services, which will in turn promote investment certainty and therefore promote efficient investment by GGT in pipeline assets;
- similarly, a more stable path for reference tariffs will provide more reliable signals to GGT's customers as to the genuinely sustainable level of reference tariffs and therefore promote efficient investment in associated facilities.

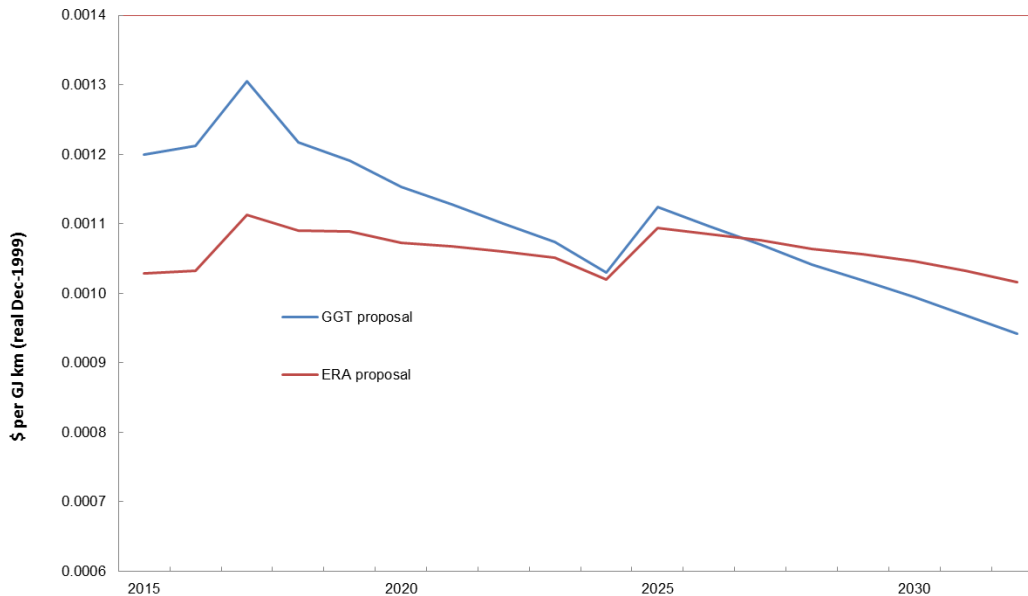
⁹⁰⁶ The Authority notes that 'Figure 5' adopts a constant rate of return over the period from 2015 on through to 2065, consistent with GGT's proposal (a rate of return of 9.67 per cent). Varying this rate of return – for example applying the Authority's rate of return – results in only minor differences to the relativities of the two lines, post 2015. For that reason, 'Figure 5' serves for the discussion, as the shape of the lines is not sensitive to the rate of return assumption.

It is also noted that part of the variation in tariff revenue from 2014 (the last year of the second access arrangement) to 2015 (the first year of the third access arrangement) arises from the significant drop in the rate of return between the two access arrangement periods.

⁹⁰⁷ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 105.

1726. However, the Authority considers that 'Figure 27' indicates that, in real terms, the path for the HCA-based tariff varies markedly over the period 2015 to 2030, declining steadily over time, to be down by 17 per cent in 2030 as compared to the 2015 value. In contrast, the CCA based tariff is comparatively stable, showing just a 2 per cent difference at 2030, as compared to the 2015 value (Figure 27).⁹⁰⁸

Figure 27 Unit reference tariff under HCA and CCA – 2015 to 2030



Source GGT analysis (note, assumes a constant nominal rate of return over the period)

1727. In the out-years past 2030, both tariff paths trend down, albeit the HCA approach at a more rapid rate. The Authority considers that this pattern is a function of the assumed lack of further investment in reference services, aside from a small amount of 'stay in business' capital expenditure.⁹⁰⁹ Such an assumption may not be borne out in reality; as the further into the future, the less certain such capital expenditure assumptions become. The Authority therefore considers that assumptions for the extreme long term – such as beyond 2030 – are speculative.

1728. The Authority therefore places greater weight on the illustrated near-term trends in 'Figure 27'.

1729. With that in mind, Figure 27 illustrates clearly that the HCA method does not allocate revenue evenly between years in real terms.⁹¹⁰ Hence, the HCA method leads to

⁹⁰⁸ Figure 27 reproduces the segment of 'Figure 5' which relates to the 2015 to 2030 period.

⁹⁰⁹ Nominal capex is assumed to grow at 3 per cent from 2020 on, aside from a large one-off compressor replacement investment in the mid-2020s, which leads to the blip in 'Figure 5' around that time. To the extent that there were significant new investments post 2030, it is likely that the flat trend for the tariff path under the CCA approach would be maintained for longer.

⁹¹⁰ This assumes that GGT is correct in its statement that capital charges – covering the return on and of capital – are contained with the fixed components of the reference tariffs. In this context, the Authority notes that GGT provides no evidence as to the alignment of the variable component of reference tariffs with the marginal costs of pipeline reference services. However, the Authority considers that the current

variation in tariffs going forwards. This in turn means HCA method does not promote efficient growth in the market for reference services [and is not consistent with the NGO. The resulting tariffs do not minimise the fixed component of tariffs through time (that is, by spreading them across consumers through time in a way that minimises distortion of consumption decisions).

1730. The Authority notes that if GGT's proposed HCA depreciation approach is not approved because it is found to be not compliant/consistent with the applicable requirements and criteria of the Law, and if a CCA depreciation approach were to be adopted in place of the existing HCA method, then that would entail a significant step down in revenue and tariffs in 2015, the first year following the switch from HCA to CCA. That step down would be a required change to bring tariffs back to efficient levels, in order to drive efficient growth in the market for reference services. This justification is considered in the next section.

Consistency with NGR 89(1)(a)

1731. In the Draft Decision, the Authority considered that a more even allocation of pipeline capital costs between current and future users in real terms will encourage efficient growth in the market for reference services, as it will result in more even tariffs, all other things equal.⁹¹¹ HoustonKemp is critical of this conclusion, suggesting there is 'no economic basis' for it.⁹¹²
1732. However, the Authority considers that its view does have an economic basis, because it is consistent with a reasonable assumption that the average costs of GGP reference service delivery are relatively stable in real terms going forward. The even allocation of pipeline capital costs through time then signals, through the resulting tariffs, the pattern of changes in the efficient costs of use, which are taken to be stable (Figure 27).
1733. The Authority considers that it follows that an even allocation of reference tariffs provides for variation – over time – in a way that promotes efficient growth in the market for reference services, consistent with NGR 89(1)(a). However, the Authority notes that the accelerated capital cost recovery under HCA does not allocate reference tariffs evenly or provide for variation – over time – in a way that promotes efficient growth in the market for reference services, and therefore the HCA method is not consistent with NGR 89(1)(a). CCA, however, does have such an even allocation of reference tariffs and does promote efficient growth in the market for reference services consistent with NGR 89(1)(a).
1734. The key driver of this conclusion is the way in which the depreciation method influences the level of tariffs through time. With a two part tariff, as noted above, the level of tariffs are affected in turn by the level of the variable and fixed charges. The effect of each of these components is considered in turn.

proportion of variable tariffs in the cost of delivering a GJ of gas – as a reasonably minor percentage – does not give it cause to question GGT's claim.

⁹¹¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 261.

⁹¹² Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, Attachment 7, p. 17.

Variable cost component of tariffs

1735. The variable cost component of tariffs will drive shippers' decisions on gas consumption at the margin, affecting decisions whether to:
- increase or decrease day to day use of gas;
 - enter into short run production shut down decisions (such shut downs may be rational when the price received for output falls below the variable costs of production, and where such price levels are not expected to persist).
1736. The efficient variable cost signals for an existing user are the long run marginal costs of the pipeline (**LRMC**). Those marginal costs, being long run, should account for the capital costs of expanding the pipeline in order to meet an additional increment of capacity.
1737. The Authority notes that GGT has provided no information in its submission on the estimated future levels of LRMC, or the degree to which that future LRMC path matches the variable cost components of tariffs. The Authority therefore has no information of the resulting impact of variable charges on the efficient growth in the market.
1738. However, given that the GGP is close to fully utilised through long term contracts, and that significant new capital expenditure to expand capacity is not likely for the medium term, the Authority considers that the variable component of tariffs has limited bearing on the efficient growth in the market for reference services over the medium term.

Fixed cost component of tariffs

1739. The *average cost* per unit of production is relevant for an existing shipper firm's decision to remain in or exit from production. It follows that the fixed cost component of tariffs is an important consideration for efficient 'growth' in the market for reference services, as it will affect the average costs per unit of output of the shippers on the GGP. Existing shippers considering the viability of their operations, including whether to undertake a long term shutdown, will consider the total reference tariff charges – variable and fixed – in any decision.
1740. It follows then that the schedule of depreciation, to the extent that it recovers capital costs through the fixed charges, matters for the 'growth' in the market arising from the exit of shippers.
1741. Second, a significant consideration for the Authority is that the HCA approach simply allocates the historic cost in accounting terms, without concern for efficiency considerations. In particular HCA does not ensure that the written down value of the asset at any point in time is equal to the net present value of the cash flows it will generate in the future, and so HCA does not thereby ensure 'financial capital maintenance' for the investor and does not maintain the asset value, at any point in time, consistent with that value that it would obtain on the sale of the asset. In this regard the HCA approach does not promote efficient growth in the market for reference services (and is not consistent with the NGR) because it does not reflect the forward looking opportunity cost of making the asset services available and therefore distorts efficient utilisation.

1742. CCA on the other hand, is an example of a method of *economic* depreciation, which was first identified by Hotelling.⁹¹³ Economic depreciation seeks to ensure that the written down value of the asset at any point in time is equal to the net present value of the cash flows it will generate in the future, thereby ensuring ‘financial capital maintenance’ for the investor. Economic depreciation maintains the asset value, at any point in time, consistent with that value that it would obtain on the sale of the asset.
1743. On that basis, economic depreciation reflects the forward looking opportunity cost of making the asset services available.
1744. In particular, economic depreciation is the change between the economic value of the asset through time, where that value at any point is given by the discounted present value of its future cash flows. An economic depreciation schedule therefore reflects the decline in earnings potential over time. Hence, the written down asset value with economic depreciation should reflect the value of the asset that would accrue on its sale at any point in time.
1745. There is a range of economic depreciation schedules possible. The exact form of the depreciation schedule depends on the degree to which the asset deteriorates in its productive performance, as well as any risks of asset stranding. These factors may affect the asset’s resale value prior to the end of its useful life.
1746. With regard to asset deterioration, polar extremes are illustrated by:
- an asset retaining its productive capacity through to the end of its expected life;
 - this requires the so-called ‘one hoss shay’ or ‘light bulb’ economic depreciation schedule – which is ‘back end loaded’ in real terms;⁹¹⁴
 - the back-end loaded schedule then captures the decline of the present value of future cash flows over time, given appropriate discounting, but there is no effect on those cash flows arising from productivity or demand declines;
 - much of the depreciation occurs at the end of the asset’s useful life;
 - it results in an ‘annuity’ style constant payment of capital costs in each period;
 - an asset which depreciates rapidly, delivering a reduced output over time;
 - an example of such an asset might be a laptop computer, which presents increasing slowness and reducing application through time as software upgrades are implemented;
 - in this example, economic depreciation will be ‘front end loaded’ in real terms, to capture the decline in value associated with productivity, as well as diminution of the discounted future value of output flows with the passing of time.

⁹¹³ H. Hotelling, A general mathematical theory of depreciation, *Journal of the American Statistical Association*, 20, 1925, pp. 340–53.

⁹¹⁴ The ‘one hoss shay’ depreciation schedule applies to an asset that is fully productive to the end of its effective life, with little or no increase in periodic maintenance requirements. Further, there is no reduction in the value of the service of the asset through time, for example as might occur with technological obsolescence.

1747. The HCA method is front end loaded in revenue terms. It significantly accelerates capital cost recovery. In this regard the HCA approach does not promote efficient growth in the market for reference services [and is not consistent with the NGO] because it does not minimise the fixed component of tariffs through time (that is, by spreading them across consumers through time in a way that minimises distortion of consumption decisions). On the other hand, the CCA method of depreciation, generally used by energy regulators in Australia, is similar to an annuity, although it involves less back end loading of depreciation than an annuity in real terms. To the extent that it involves less back end loading of depreciation, it provides some acceleration of capital returns. The acceleration in capital returns accommodates some future uncertainty in the recovery of capital.
1748. With regard to asset deterioration, the Authority considers that the GGP should, with consistent maintenance schedules, be able to maintain its current capacity through to the end of its effective life. On this basis, the depreciation schedule could be considered to have the characteristics of the one hoss shay, such that it should be back end loaded. However, the fact that the GGP is comprised of sub-components, each of which depreciate at different rates, will tend to ameliorate the back end loading effect. Nonetheless, given the importance of the main pipeline in the overall capital spend (some 85 per cent as at 2006), this amelioration should not be large.
1749. The risk of asset stranding will be affected by a range of issues. In the case of the GGP, key factors include:
- technological change, particularly the potential for alternate energy sources to take significant market share from the GGP;
 - demand for capacity, which will be influenced by the competitiveness of the mainly mining operations that are serviced by the GGP; and
 - supply issues, which will depend on continuing supply of gas at competitive prices.
1750. With regard to technological change, the Authority considers that natural gas will continue to be an important fuel of choice through to 2065, particularly for major loads such as minerals processing and electricity generation.⁹¹⁵ The Authority then is of the view that the GGP is an asset within a mature industry, which is subject to limited technological change, and which therefore has limited risks relating to obsolescence over its expected life. That in turn supports an approach to depreciation which is close to an annuity.⁹¹⁶
1751. With regard to the demand issue, the Authority notes that GGT suggests that the GGP is fully committed through to 2029:⁹¹⁷

⁹¹⁵ For example, World Energy Council scenarios to 2050 all have an increasing share for natural gas in global total primary energy supply (see World Energy Council, *World Energy Scenarios*, 2013, p. 141).

⁹¹⁶ The Authority notes that in competitive markets, firms in mature industries, subject to limited technological change or productivity decline, are forced to recover their capital costs as a real annuity. This is because a real annuity – equal return of a portion of total capital costs each period – minimises the cost of production through time. Such firms then are able to produce at lowest cost, and meet the competitive market price. In other words, a competitive market will drive the price of the product to that lowest cost. It follows that competitor firms do not have the opportunity of varying their depreciation schedules in order to influence the profile of their revenues through time, because they are price takers.

⁹¹⁷ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 160.

For all relevant purposes, the capacity of the covered pipeline is fully contracted. GGT does not anticipate any material tranches of capacity on the covered pipeline to be uncontracted before 2029. To the extent small tranches of capacity on the covered pipeline have become available over the current access arrangement period, GGT has been able to successfully recontract that capacity.

1752. However, GGT then argues there is a distinct possibility of spare capacity post 2030:⁹¹⁸

Over the longer term, demand for reference services over the GGP is much more uncertain, since it relies on the ongoing viability of the mining operations that it serves. Indeed, it would be reasonable to assume that the longer term demand outlook for reference services on the GGP would be weaker than the short term outlook, since the most economically attractive mining projects would already be developed and in operation, while any later projects (yet to be developed) are likely to be of less economic value and may never actually cross the threshold of being economic to develop.

In these circumstances, an approach that recovers relatively more depreciation now and provides for a gradual reduction in the real depreciation allowance over time is more likely to promote efficient growth in the market for reference services. Such an approach:

- will not damage prospects for market growth (and will not induce 'negative growth') in the short-term, given what is known about the short-term demand outlook and the proposed level of reference tariffs over the forthcoming access arrangement period; and
- provides greater scope to reduce tariffs in future periods, should this be necessary in order to stimulate growth in the market (or guard against 'negative growth').

On the other hand, an approach that effectively defers more depreciation and leads to a substantial short-term reduction in reference tariffs is unlikely to promote efficient growth in the market for reference services. Such an approach potentially creates a risk of 'negative growth' over the long-term, since it reduces scope to lower reference tariffs in future periods, should the demand outlook change.

Deferral of more depreciation may also limit scope for future changes in asset lives, should this be necessary to reflect future changes in market conditions affecting the useful life of pipeline assets. If more depreciation is deferred to future periods, then any shortening of asset lives in future will have a more significant effect on reference tariffs. Therefore, such an approach may not allow for appropriate future adjustments to reflect changes in the expected economic life of a particular asset, or a particular group of assets.⁹¹⁹

1753. The Authority does not agree with GGT's claim that it is reasonable to assume that longer term demand for reference services on the GGP will be weaker than they are currently, such that HCA is likely to lead to efficient growth in the market for reference services. To examine this claim, the Authority considers current and future demand trends.

1754. First, iron ore reserves in the Pilbara are sufficient to allow production to continue at current levels well past 2065.⁹²⁰ At the same time, RIO and BHPB's iron ore operations – which support gas demand on the GGP – are at the lowest end of the

⁹¹⁸ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 108.

⁹¹⁹ NGR, rule 89(1)(c).

⁹²⁰ The Pilbara has more than 40 billion tonnes of iron ore resource (www.australianminesatlas.gov.au/education/fact_sheets/iron.html, accessed 9 May 2015). Current production of iron ore from Western Australia is over 700 million tonnes (see Department of Mines and Petroleum, *Statistics Digest 2014-15*, 2015, p. 12).

global cost curve. This suggests that it is reasonable to infer that GGP gas demand related to iron ore in the Pilbara will be supported for the life of the GGP.⁹²¹

1755. Second, and in distinct contrast, Western Australia's nickel producers are struggling to remain in operation, being at the high cost end of the global cost curve, while being faced with pronounced price pressure (see Figure 25). As noted by the Western Australian Business News in February of 2016:⁹²²

The net result is the [current global] nickel market remains grossly oversupplied with at least one, and perhaps more, of the world's biggest mines to be closed; and that list of the big potential closures is led by WA's big three – Murrin Murrin, Ravenshorpe and Nickel West.

1756. On that basis, contrary to GGT's submission, the Authority considers that the longer term outlook for gas demand from nickel production is unlikely to be worse than the current situation. The corollary is that the clear threat for efficient growth in the market for reference services relates to mine closures now. From that perspective, the HCA method – which potentially increases the costs of the currently struggling nickel miners – may then result in inefficient (earlier than otherwise) mine closures, which in turn would potentially reduce demand for reference services rather than promoting efficient growth in the market for reference services. The CCA method, on the other hand, would reduce reference tariffs at the current time, helping to ensure that any decisions relating to mine closure are efficient.
1757. Ultimately, if nickel prices rise back towards the average levels of the past few decades, then there are sufficient nickel reserves in Western Australia – most of which are adjacent to the GGP – to support more than 50 years of production at current levels.⁹²³ That reserves situation would imply continued gas demand on the GGP, provided that the larger operations in the Western Australian industry are still operational (and have not been inefficiently displaced).
1758. Third, with regard to GGP gas demand related to gold production, the Authority notes that gold production in the Goldfields region is supported until at least 2030.⁹²⁴ Beyond that time, technological advances and new discovery may continue to support gold operations and associated gas demand. Alternatively, some GGP capacity supported by gold production may be vacated.
1759. With regard to the gas supply side issue, the Authority considers that gas is expected to play an important role in energy supply at least to 2065. The Authority considers that Western Australia's natural gas resources are sufficient to provide a measure of domgas supply to at least that point in time.⁹²⁵

⁹²¹ See for example, <http://marketrealist.com/2015/10/iron-ore-miners-placed-cost-curve/>, accessed 12 May 2016.

⁹²² Business News, 'Nickel woes a simple equation', 12 February 2016.

⁹²³ Western Australia has Economic Demonstrated Reserves of nickel close to 20 million tonnes, all of which is purported to be accessible. Geoscience Australia suggest that at 'the rate of production in 2014, Accessible Economic Demonstrated Resources (AEDR) of nickel is sufficient for about 78 years' (www.ga.gov.au/scientific-topics/minerals/mineral-resources/nickel#heading-5, accessed 9 May 2015).

⁹²⁴ Gold production in Western Australia current exceeds 150 tonnes per annum (see Department of Mines and Petroleum, *Statistics Digest 2014-15*, 2015, p. 25). Newcrest and KCGM combined produced 34 tonnes in 2015 (Ibid, p. 24). KCGM announced on 5 February 2014 that it would continue to process gold until 2029, extending the mineral processing life of the Fimiston Open Super Pit (KCGM, KCGM Processing Gold to 2029, *Media release*, 5 February 2014).

⁹²⁵ .The Gorgon project for example is expected to continue production for 'at least the next 40 years' (see Chevron, Gorgon an iconic project, 17 November 2009, p. 3).

Conclusions with regard to the consistency with NGR 89(1)(a)

1760. On balance, taking the foregoing into account, the Authority considers that the risk of declines in demand from the closure of nickel mines over the access arrangement period, and beyond, is significant.
1761. The Authority considers that this current uncertain outlook for demand on the GGP does not support GGT's argument that the *expected* value of capacity utilisation, post 2030, is materially different to the present. In turn, that insight does not support GGT's contention that a lower reference tariff path in the future, as compared to now, will lead to efficient growth in the market for reference services.
1762. On the contrary, the HCA method increases the average cost of gas transport to existing shippers, increasing the likelihood of an inefficient exit, all other things equal. At the same time, new loads are discouraged. The converse is true in the latter half of the GGP's life. These HCA outcomes are not consistent with promoting efficient growth in the market for reference services
1763. For these reasons, the Authority considers that the HCA method is not compliant with NGR 89(1)(a), and must therefore be rejected.
1764. On the other hand, the Authority considers that GGT has presented no evidence supporting a departure away from a relatively even allocation of capital costs through time, as occurs with CCA.
1765. Overall, the Authority considers that the even allocation of depreciation through time in real terms, as occurs with CCA, is consistent with an efficient, economic depreciation of the pipeline. The CCA method results in a more even total reference tariff charge (per 'Figure 5' above).
1766. With those insights, it is apparent that CCA ensures 'normal' remuneration of the GGP's employed capital, but without additional gains or losses to that capital at any point in time which might arise from depreciation that is not based on the opportunity cost.
1767. Shippers face relatively constant average costs per unit of gas transport input cost possible at any point in time. It follows that entry and exit by shippers at the current time will be based on an efficient allocation of capital costs. It also follows that inefficient entry is not encouraged in the second half of the GGP's life. CCA therefore results in efficient growth in the market for reference services, consistent with NGR 89(1)(a).
1768. On this basis, CCA is compliant with NGR 89(1)(a).
1769. Further, in line with the NGO, the CCA 'standard' regulatory approach can be considered to be in the long term interests of consumers. This is because it results in a more even allocation of the return on and of capital in real terms over time, thereby:
- providing efficient signals for utilisation of assets over the whole of their economic life, thereby achieving the NGO and the RPP;⁹²⁶

⁹²⁶ The efficient use of assets relate to the network assets themselves, as well as the assets of the upstream and downstream users of the network services.

- taking account of the interests of current and future customers and consumers over the economic lives of the assets (the long term interests);
- avoiding unnecessary costs for current customers and consumers to the benefit of future customers and consumers; and
- avoiding price shocks for customers and consumers when major assets reach the end of their effective life and are replaced.

1770. The Authority therefore requires the CCA method be implemented by GGT as the method for depreciating the capital assets from 2015 on.

Compliance with requirements of NGR 89(2)

1771. Generally, the Authority considers that NGR 89(2) refers to the deferral of depreciation in the very early years of a pipeline which is at less than full capacity, such that the market for the existing capacity is 'relatively immature'. Such an approach ensures that the foundation customers do not bear a disproportionate share of the capital costs. HoustonKemp acknowledges this:⁹²⁷

Rule 89(2) refers to three scenarios in which a substantial deferment of depreciation may be considered by reference to rule 89(1), ie, where:

- (a) the present market for pipeline services is relatively immature; and
- (b) the reference tariffs have been calculated on the assumption of significant market growth; and
- (c) the pipeline has been designed and constructed so as to accommodate future growth in demand.

Each of these scenarios implies that a gas pipeline has a material amount of spare capacity available, and that this spare capacity is expected to be utilised in the future.

In the event that any such spare capacity is taken up over time, the operation of the building block approach causes the revenue per unit of service (or the reference tariff) to fall through time – because the annual revenue requirement is allocated between a greater number of units served. To mitigate such a fall in the revenue per unit, rule 89(2) permits depreciation to be deferred such that total revenue rises as the market for reference services provided by a pipeline grows.

To summarise, in our opinion each of the scenarios set out in rule 89(2) is more likely to apply to the circumstances of a relatively new gas pipeline with significant spare capacity, rather than an established gas pipeline with limited available capacity.

1772. The Authority agrees that the issue of deferment of depreciation charges is not relevant for the GGP. Given that spare newly-constructed capacity is not, and has never been, an issue for the covered section of the GGP, the Authority considers that NGR 89(2) does not bear on the choice of depreciation method in the context of the current decision.

1773. The Authority's considerations of the depreciation method does not extend to a consideration of a 'substantial deferment of depreciation' in real terms. Rather, the Authority notes that the relevant issue at hand is whether to allow a substantial acceleration of depreciation in the first half of the GGP's life – as occurs with HCA – and whether this is compliant with NGR 89(1)(a). The Authority considered this issue in the previous section.

⁹²⁷ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, Attachment 4, p. 10.

Compliance with the national gas objective

1774. GGP's access arrangements for the first and second access arrangement periods were governed by the former gas Code. In both access arrangements, GGT employed straight-line nominal depreciation under the HCA approach. As noted above, a key difference between the NGL and the Code is that NGR 100 requires that 'the provisions of an access arrangement must be consistent with the NGO. The NGO states:⁹²⁸

The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long run interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.

1775. As GGT's depreciation schedule is part of its access arrangement proposal, that depreciation schedule must also be consistent with the NGO. This is an over-arching requirement for the evaluation of GGT's depreciation approach. Outcomes under the HCA (and CCA) method of depreciation need to be evaluated in light of compliance with the NGO.

1776. The Authority notes that HCA 'drags forward' depreciation revenue in real terms from the second half of an asset's life to the first half (see 'Figure 27' at paragraph 1723). As a result:

- HCA in relative terms leads to real transfers of depreciation costs from future consumers to current consumers, which are without economic foundation, but in fact inefficient. This is not in the long term interests of (all) consumers, counter to the requirements of the NGO.
- The corollary is that HCA depreciation schedules provide for price paths, as noted above, that may encourage inefficient utilisation of assets, that is, potential under-utilisation of the asset in the first half of its life, and potential over utilisation of the asset in the second half (to the extent that tariffs are lower than they would otherwise be). This is counter to the requirements of the NGO.
- HCA may result in an inefficient management of assets, as it creates incentives to manage assets based on reasons other than the efficient provision of reference services. Again, this is counter to the requirements of the NGO.

1777. Based on the above, the HCA method is not compliant with the NGO, as it is not in the long term interests of consumers of natural gas with respect to price. Specifically, the Authority considers that HCA unfairly discriminates against current consumers of natural gas on the GGP, to the benefit of future consumers. The Authority notes the following in relation to HCA:

- HCA accelerates depreciation markedly – with typical rates of return, HCA recovers around 80 per cent of the present value of an asset within 15 years, whereas CCA only recovers 65 per cent over the same timeframe;
- HCA therefore leads to highly significant real depreciation transfers from current consumers to future consumers, which is not in the long term interests of (all) consumers.
- HCA may result in unnecessarily high prices in the short to medium term – these could discourage gas usage and upstream and downstream investment.

⁹²⁸ NGL s. 23.

- HCA depreciation schedules provide for price paths that encourage inefficient utilisation of assets, that is, under or over utilisation of the asset at different times in its life cycle.
 - For example, under the HCA approach, there may be an incentive for a service provider to dispose of assets or ignore maintenance near the end of the useful life because the return on and of this asset would be relatively small and considerably lower at that time than under the CCA approach.
 - This may be facilitated by the artificially low tariffs induced by the HCA method near the end of the assets life. Downstream users may be induced to invest on the basis, only to find that such tariffs were unsustainable.
 - Under the HCA method, the early replacement of the asset would provide a higher return on and of the asset to the service provider than it was getting on the previous asset.⁹²⁹

1778. For these reasons, the Authority considers that the HCA approach is not consistent with the NGO.

1779. On the other hand, the Authority considers that the CCA method of depreciation is consistent with the NGL(WA) and NGR, as it:

- provides signals for efficient use, which reflect the opportunity cost of the capital employed in the pipeline;
- discourages replacement investment before the end of the useful life of the assets; and
- balances the requirement for the service provider to have reasonable opportunity to recover the efficient costs of providing reference services, with the need to address the long term interests of consumers, including current and future consumers.

Compliance with requirements of the Revenue and Pricing Principles

Revenue and Pricing Principle (2)

1780. GGT and its consultant HoustonKemp refer to the second RPP. In this context, HoustonKemp states that:⁹³⁰

We noted above that the assessment of a depreciation method in the particular circumstances of the GGP is unlikely to be assisted by the particular question of that which promotes efficient growth in the market for reference services. Rather, such an assessment is more likely to be assisted by the wider-ranging revenue and pricing principles, which guide the application of the NGRs in general. The revenue and pricing principles state that:⁹³¹

⁹²⁹ The Authority notes that FarrierSwier agrees (Goldfields Gas Transmission, *Supplementary submission in response to ERA Draft Decision*, Farrier Swier Report, March 2016, p. 52):

I consider the ERA's concern about inefficient incentives for early replacement of assets towards their useful life could exist. However I consider that the circumstances in which the concern arises are more limited than assessed by the ERA.

⁹³⁰ Goldfields Gas Transmission, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information*, 15 August 2014, Attachment 4, p. 12.

⁹³¹ National Gas Law, National Gas (South Australia) Act 2008, clause 24(2). [HoustonKemp footnote]

‘A service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in —

- (a) providing reference services; and
- (b) complying with a regulatory obligation or requirement or making a regulatory payment.’

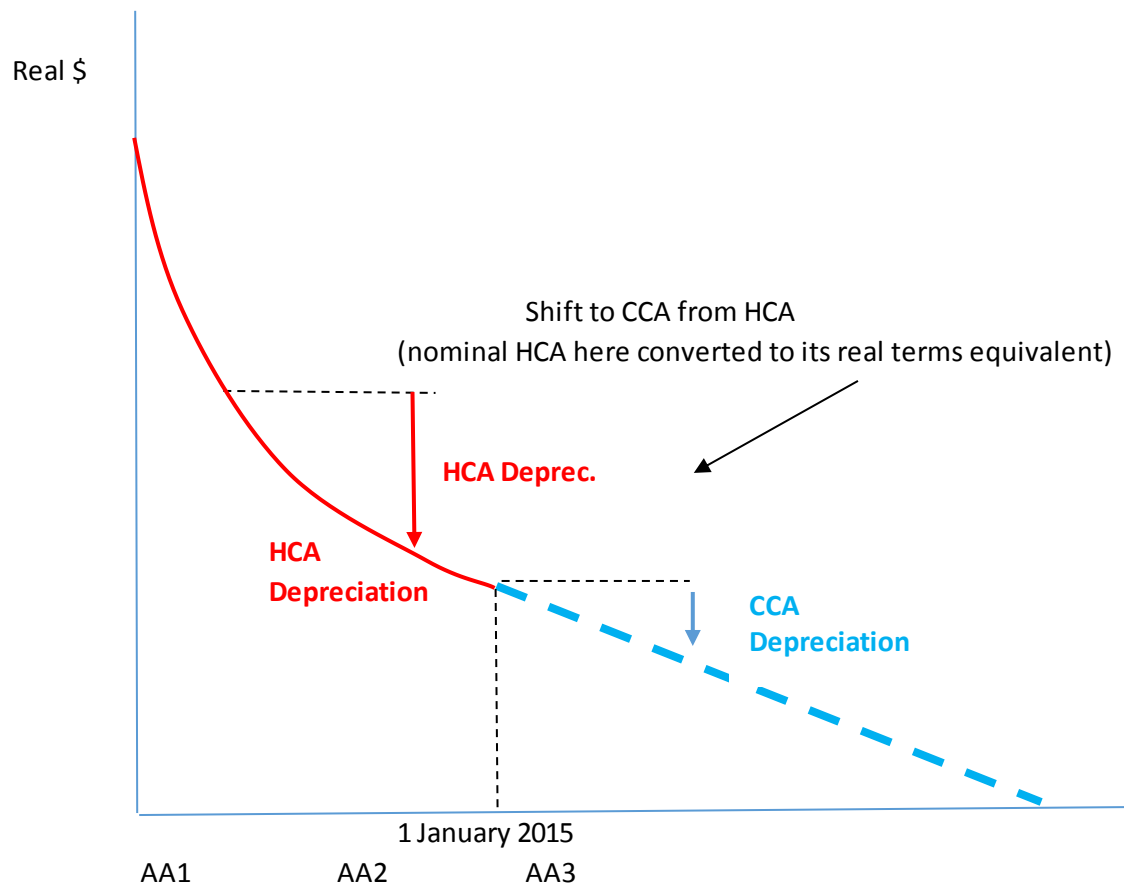
Adopting these considerations, in our opinion, the depreciation method applied to the GGP in the revised access arrangement should be that which is likely to provide the most effective opportunity to recover the efficient costs incurred in providing the reference services, i.e. the extent of capital investment in the GGP.

1781. As noted above, the Authority is required by section 28(2)(a) of the NGL to have regard to the RPP in relation to exercising a discretion in approving or making those parts of an access arrangement relating to a reference tariff (which would include the depreciation schedule). However, as there is no requirement in the NGL or NGR that the depreciation schedule itself must comply with the RPP (section 28(2) being a requirement that applies only to the Authority's decision-making, not to the access arrangement proposal itself), the Authority is prohibited by the limited discretion provisions in NGR 89(3) and 40(2) from rejecting GGT's proposed HCA depreciation schedule if it does not satisfy the RPP. That is not the case where the Authority is itself proposing a depreciation schedule (e.g. if GGT's proposed depreciation schedule is rejected). So, the Authority is of the view that, if the proposed HCA method is rejected for non-compliance with NGR 89 or NGR 100, then the RPP is relevant for assessing the Authority's proposed depreciation method, such as CCA. The following discussion concerning the RPP is therefore conducted in the above context and noting that the Authority is not basing its rejection of GGT's proposed depreciation schedule and HCA depreciation method on the RPP.
1782. GGT has noted that, under the CCA method, there is an initial sharp decline in reference tariffs in 2015. The Authority considers that this is a function of moving to the efficient depreciation method. Given that it involves a reduction in tariffs, it is not considered to create hardship for any consumer of pipeline services. If anything, the reduction comes at a time when many consumers are facing difficult economic circumstances. as noted above.
1783. At the same time, the change will not have any impacts on GGT's overall prospects for the return of its capital over time.
1784. The Authority only requires that the CCA depreciation method be applied from the commencement of the third access arrangement. It does not require a retrospective application of CCA. Therefore the depreciated value of the RAB at the end of the second access will be taken to be the current cost in that year. Indexation will only apply to that value, going forward to the third access arrangement.
1785. In this context, the Authority notes that, by 2030, in net present value terms, more than 93 per cent of the total covered pipeline revenue – that is slated to accrue over the life of the covered asset to 2065 – will have been received by the equity owners (irrespective of whether the CCA or HCA method is applied). It follows that very little of the capital cost of the covered pipeline will remain to be recovered after 2030.
1786. In the event that the life of the GGP was expected to be curtailed, for example by mining operation closures prior to the expected life out to 2065, a shorter asset life

for depreciation could be utilised, to recoup the remaining return of capital over the operational life of the mines.⁹³²

1787. As an illustration, the Authority evaluated the impact of a shortening of the expected life of the GGP, at say 2030, to instead finish at 2045 instead of 2065. That involved increasing the rate of CCA depreciation from 2030. It results in tariffs increasing in 2030 and thereafter in real terms.
1788. Nonetheless, those higher reference tariffs would still be *less*, in real terms as compared to the level of reference tariffs which have applied over the period 2000-2010. This outcome does not change, even if the forecast demand over the period 2030 to 2045 is around 20 per cent below full capacity (which allows for some existing capacity to become vacated from 2030 on).
1789. This evaluation gives the Authority reassurance that there is plenty of scope for GGT to make the case for shortening of the life of the GGP, or reducing forecast demand, in future access arrangements. Approved reference tariffs could then take that into account. GGT then would be able to recover the small amount of capital costs remaining after 2030. Existing covered users would face higher tariffs than might otherwise occur, but these are not dissimilar to the reference tariff levels paid to date (in real terms).
1790. As an aside, the Authority notes that none of this analysis takes into account the nearly 100 TJ/day of non-covered capacity on the GGP. The Authority has no information as to whether GGT is recovering any of the capital costs of the covered pipeline from those non-covered users. However, in the event that GGT was recovering mainline capital from those non-covered users (that is, beyond the incremental compressor costs associated with non-covered capacity), then GGT would be recovering its capital much earlier than 2065 in any event (see paragraphs 1988 to 1989).
1791. Moving from HCA to CCA to change the depreciation approach will result in the following stylistic treatment of the depreciation of the RAB (Figure 28). The approach:
- ensures that the present value condition is met;
 - is consistent with the requirements of NGR 89(1)(b) – that the assets are depreciated only once over the economic life.

⁹³² The Authority notes that the original pipeline compressors are scheduled for replacement in 2024. These are included in this evaluation.

Figure 28 Moving from HCA to CCA depreciation

Source ERA analysis

1792. The Authority estimates that the switch to depreciate the residual value of the RAB through CCA will reduce revenue over the third access arrangement period by some \$34 million (2014 dollars) or 17 per cent. This illustrates the magnitude of the penalty imposed by HCA on current consumers of gas services on the GGP.
1793. Given this, and noting the analysis under the heading 'Tariff variation implications' above (commencing at paragraph 1717 above), the Authority considers that GGT will have reasonable opportunity to recover its efficient costs incurred in providing the reference services with the CCA method, consistent with the requirements of RPP(2).
1794. However, given that the HCA method provides for an inefficient tariff path, leading to an inefficient recovery of fixed costs, as set out above, it does not meet the requirements of RPP(2), in that the recovery of its capital costs are front end loaded, and hence, 'not reasonable'.

Revenue and Pricing Principle (3)

1795. The requirement under NGR 89(1)(a) to consider the efficient growth in the market for reference services, and the efficient utilisation of existing capacity, is also a clear requirement of the third Revenue and Pricing Principle in the NGL(WA), which requires that:⁹³³

⁹³³ National Gas Law, Division 2.

- (3) A service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides. The economic efficiency that should be promoted includes—
- (a) efficient investment in, or in connection with, a pipeline with which the service provider provides reference services; and
 - (b) the efficient provision of pipeline services; and
 - (c) the efficient use of the pipeline.
1796. This further reinforces the conclusions of the Authority with regard to NGR 89(1)(a) set above. The Authority considers that the arguments relating to the efficient growth in the market for reference services, and the requirements of the third Revenue and Pricing Principle, are entirely analogous.
1797. The requirements of third Revenue and Pricing Principle supports allocating costs in a way which does not distort either current or future demand for pipeline services, by apportioning the capital (depreciation) cost evenly across all users, current and future, in real terms. Following the analysis under the heading 'Tariff variation implications' above (commencing at paragraph 1717 above), tariffs based on CCA depreciation will reflect the efficient share of capital costs through time, thereby promoting efficient use of reference services over time, thereby meeting RPP(3). Importantly, that efficient use of references services also includes considerations relating to avoiding unnecessary contractions in demand for pipeline capacity, particularly in times of downturn.
1798. In contrast, HCA depreciation, by dragging forward depreciation inefficiently, distorts tariffs through time, thereby introducing the clear risk of inefficient use of reference services. The HCA depreciation approach therefore does not meet the requirements of RPP(3).

Conclusions with regard to the method for depreciation

1799. The analysis of the Authority set out above makes clear that GGT's proposed depreciation schedule and HCA depreciation method do not meet the applicable requirements of the NGL(WA) and NGR, including but not limited to, the requirements of:
- NGR 89(1)(a);
 - NGR 100 (consistency with the NGO);
 - The Authority also notes that GGT's proposed depreciation schedule and HCA depreciation method are not consistent with RPP (2) or RPP(3). However, the Authority's decision to reject GGT's proposed depreciation schedule and HCA depreciation method was not based on the RPP.
1800. The analysis of the Authority set out [above] makes clear that the HCA depreciation method is not compliant with NGR 89(1)(a), as it results in:
- an inefficient reference tariff path;
 - this could unnecessarily discourage efficient gas usage, leading to inefficient growth in the market for reference services;
 - as a corollary, result in inefficient upstream and downstream investment by gas consumers;
 - price paths that encourage inefficient utilisation of the GGP pipeline assets, that is, under or over utilisation of the asset at different times in its life cycle;

- the tariff path varies significantly through time in real terms;
- there may be an incentive for GGT to ignore maintenance near the end of the useful life because the return on and of the specific asset would be relatively small and considerably lower at that time than under the CCA approach;
- as a corollary of the previous point, under the HCA method, an early replacement of an asset could provide a higher return on and of the asset to the service provider than was being obtained on the previous asset;

1801. The HCA method is not compliant with the NGO. This is because HCA accelerates depreciation markedly – with typical rates of return, HCA recovers 72 per cent of the discounted real total capital costs of a 65 year asset within 25 years, whereas CCA recovers 60 per cent over the same timeframe;

- By way of illustration, the Authority estimates that the HCA method would lead to an additional (real 2014) \$34 million revenue requirement over the third access arrangement – around 17 per cent higher as compared to application of the CCA method. That increased revenue requirement with HCA represents a transfer of costs to current consumers, from consumers of gas in future access arrangement periods. It illustrates the magnitude of the penalty imposed by HCA on current consumers of gas services on the GGP.
- HCA therefore leads to highly significant additional real costs for current consumers, provided by lower real costs for future consumers; this transfer of costs is not in the long term interests of (all) consumers, and hence is not consistent with the requirements of the NGO.

1802. In contrast to the HCA method, the Authority concludes that the CCA method meets the requirements of NGR 89(1)(a), as it:

- provides signals for efficient use, which reflect the opportunity cost of the capital employed in the pipeline;
 - allows for efficient use of the pipeline by upstream and downstream consumers both now and in the future, thereby contributing to the efficient growth in the market of reference services;
 - signals efficient production and investment decisions by the service provider and consumers of natural gas, thereby contributing to the efficient growth in the market of reference services;
 - avoids price shocks for consumers, both for the forthcoming access arrangement period, and also at the end of the economic lives of major assets, given that the tariff path remains relatively stable through time, thereby contributing to the efficient growth in the market of reference services; and
- discourages inefficient replacement investment before the end of the useful life of the assets.

1803. The CCA method also meets the requirements of the NGO and RPP, by:

- allocating capital costs more evenly between current and future customers, resulting in price paths that reflect the opportunity costs of the pipeline;

- avoiding imposition of costs on current consumers which flow to the benefit of future consumers, thereby ensuring outcomes that are in the long term interests of consumers with respect to price;
 - balancing the requirement for the service provider to have reasonable opportunity to recover the efficient costs of providing reference services, with the need to address the long term interests of consumers, including current and future consumers;
 - encouraging more efficient asset utilisation, which strengthens the long term security and reliability of gas supply.
1804. Based on its analysis of the impacts, the Authority has determined that the CCA depreciation method does meet the applicable requirements of the NGL(WA) and NGR, including but not limited to, the requirements of:
- NGR 89(1)(a);
 - the National Gas Objective (NGO); and
 - the second and third Revenue and Pricing Principles (RPP (2) and (3)).
1805. Therefore, the Authority requires that GGT amend its proposed approach, to adopt the CCA method of depreciation forthwith. In a nominal model, that method would be consistent with the method set out in Australian Energy Regulator's Post Tax Revenue Model.

Depreciation for rolling forward capital base

1806. GGT has not adopted the CCA method of depreciation. As a corollary, GGT also considers that the adjustment of the capital base for inflation is not required.
1807. The Authority requires that GGT amend its proposed approach, to:
- adopt the CCA method of depreciation;
 - calculate the opening capital base for the GGP for the third access arrangement period by escalating it at the rate of inflation as measured by the CPI All Groups, Weighted Average of Eight Capital Cities. The Authority requires GGT to amend Section 3.5 of its revised Access Arrangement to ensure that it is consistent with the CCA approach.

Asset lives

1808. The Authority accepts GGT's proposed asset lives which include a revised asset life of 10 years for SCADA and communications as shown in Table 96.

Table 96 Asset lives for the derivation of forecast depreciation

Asset Category	Asset Life (years)
Pipeline and laterals	70
Main line valve and scraper stations	50
Compressor stations	30
Receipt and delivery point facilities	30
SCADA and communications	10
Cathodic protection	15
Maintenance bases and depots	50
Other assets	10

Source: ERA Tariff Model, June 2016.

Final Decision

1809. The Authority notes that the CCA approach may be achieved in a nominal building block model by using the AER's PTRM approach to depreciation. Table 97 sets out the Authority's required depreciation amounts for the third access arrangement period, derived using the CCA approach.

Table 97 Authority's Final Decision Approved Forecast Depreciation

Nominal \$ million	2015	2016	2017	2018	2019	Total
Regulatory Depreciation	1.384	5.362	5.590	5.808	5.921	24.065
Straight Line CCA Depreciation	7.084	11.110	11.301	11.449	11.486	52.430
Less: Inflationary Gain	(5.699)	(5.748)	(5.712)	(5.641)	(5.565)	(28.365)

Source: Economic Regulation Authority, Tariff Model June 2016.

Required Amendment 12

The Authority has determined to apply straight-line depreciation with the Current Cost Accounting approach to the regulatory asset base from 1 January 2015.

The values of depreciation allowances for the 2015 to 2019 access arrangement periods must be amended to values as indicated in Table 97 of this final decision.

Amend Clause 3.5 (Depreciation) of its Access Arrangement as follows:

The depreciation schedule for establishing the Opening Capital Base at 1 January 2020 will be based on forecast capital expenditure.

For the calculation of the nominal Opening Capital Base for the GGP for the Next Access Arrangement Period, for the purposes of rule 77(2)(d) of the NGR, depreciation over the Current Access Arrangement Period is to be calculated in accordance with the current cost accounting depreciation method, consistent with the Australian Energy Regulator's Post Tax Revenue Model method – where first, the real opening capital base in any year is divided by the remaining asset life to calculate the real depreciation for the regulatory year, second, indexation is applied to the real depreciation to convert it to nominal terms, and third, the nominal depreciation is adjusted for the resulting double count of inflation by subtracting the value ascribed to inflation from the opening regulatory asset base for that regulatory year, and is to be the sum of:

- 1) depreciation on the Opening Capital Base over the Current Access Arrangement Period; and
- 2) depreciation of the forecast Capital Expenditure for the Current Access Arrangement Period (being the amount of forecast Capital Expenditure used for the purpose of determining Tariffs for the Current Access Arrangement Period).

Indexing and adjustment for inflation should be calculated consistent with the rate of inflation as measured by the CPI All Groups, Weighted Average of Eight Capital Cities as at 31 December of each year of the regulatory the period.

Taxation

Regulatory Requirements

1810. Rule 76(c) of the NGR provides for the estimated cost of corporate income tax as a building block for total revenue.

1811. Rule 87A of the NGR elaborates on how to calculate the estimated cost of corporate income tax:

87A. Estimated cost of corporate income tax

- (1) The estimated cost of corporate income tax of a service provider for each regulatory year of an *access arrangement period* (ETCt) is to be estimated in accordance with the following formula:

$$\text{ETCt} = (\text{ETIt} \times \text{rt}) (1-\gamma)$$

Where

ETIt is an estimate of the taxable income for that regulatory year that would be earned by a benchmark efficient entity as a result of the provision of reference services if such an entity, rather than the service provider, operated the business of the service provider;

rt is the expected statutory income tax rate for that regulatory year as determined by the [ERA]; and

v is the value of imputation credits.

GGT's Initial Proposal

1812. GGT proposed to include the estimated cost of corporate tax as one of the building blocks used to determine the total revenue requirement for the GGP over the third access arrangement period.

1813. GGT estimated the cost of tax in each regulatory year by multiplying an estimate of annual taxable income by the expected statutory income tax rate of 30 per cent.⁹³⁴ Where it considered appropriate, any estimated tax losses were carried forward to offset taxable income. GGT reduced its estimated amount of tax payable by the value of imputation credits.

1814. GGT estimated annual taxable income as total net revenue; that is, revenue earned by a benchmark efficient service provider in each regulatory year less expenses allowed for income tax purposes. These expenses were:

- the cost of debt financing – the return on debt from the total revenue calculation;
- operating expenses – the forecasts of operating expenditure from the total revenue calculation; and
- tax depreciation – depreciation of the Tax Asset Base (**TAB**).

1815. GGT estimated the TAB using the historical costs of tax depreciable GGP assets. Tax depreciation was calculated on a straight line basis using asset lives determined by the ATO.⁹³⁵

1816. GGT proposed an opening TAB as at 1 January 2015 as \$63.170 million in nominal dollars. This was calculated as follows:

- Capital expenditure of \$507.092 million in nominal dollars;
 - Capital expenditure from the second quarter 1994 to third quarter 1996 of \$398.276 million in nominal dollars, commissioned in the third quarter 1996;
- plus*
- Post-commissioning capital expenditure from fourth quarter 1996 to fourth quarter 2014 of \$108.816 million in nominal dollars;

minus

⁹³⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal; Supporting Information*, 15 August 2014, p. 152.

⁹³⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal; Supporting Information*, 15 August 2014, p. 152.

- Depreciation of capital expenditure from fourth quarter 1996 to fourth quarter 2014 of \$443.923 million in nominal dollars.

1817. GGT proposed an estimated corporate income tax amount (net of imputation credits) of \$25.818 million over the third access arrangement period as shown in Table 98.

Table 98 GGT's Proposed Estimated Cost of Corporate Income Tax (AA3)

Nominal \$ million	2015	2016	2017	2018	2019	Total
GGT's Estimated Cost of Corporate Income Tax	0.591	3.677	9.994	10.132	10.030	34.424
Value of Imputation Credits	(0.148)	(0.919)	(2.498)	(2.533)	(2.507)	(8.606)
GGT's Proposed Estimated Cost of Corporate Income Tax Net of Imputation Credits	0.444	2.758	7.495	7.599	7.522	25.818

Source: Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information*, 28 August 2014, Table 16, p. 28.

Draft Decision

Estimate of the Taxable Income

Revenue

1818. GGT based the revenue component of its taxable income calculation on the building block revenue for each year.⁹³⁶
1819. The Authority considered that smoothed tariff revenue is reflective of actual revenue received, whereas the building block revenue represents the cost of service. In accordance with rule 87A of the NGR, the Authority considered that the actual revenue received would be used by the efficient benchmark entity in lodging its assessment of taxable income to the ATO. On this basis the Authority determined that the revenue component in GGT's taxable income calculation should be based on the smoothed tariff revenue rather than the building block revenue.

Tax Depreciation

1820. The Authority noted that other regulators, namely the AER, allow service providers to adopt both straight line tax depreciation and diminishing value tax depreciation. For example, the AER has accepted Jemena Gas Networks proposal to use diminishing value tax depreciation in its next access arrangement period from 2015 to 2020. The AER has also accepted SP AusNet's proposal to use straight-line tax depreciation in its 2013 to 2017 access arrangement.
1821. The Authority further noted that under rule 87A of the NGR, the taxable income of a benchmark efficient entity should be used rather than the actual tax returns of the service provider. The Authority considered that a benchmark efficient entity could use either diminishing value depreciation or straight-line depreciation, based on its capital expenditure profile and therefore accepted GGT's proposal to use straight-line tax depreciation.

⁹³⁶ Goldfield Gas Transmission Pty Ltd, *Tariff Model*, August 2014.

Tax Asset Base

1822. The Authority's previous decisions had aligned with the AER's methodology in determining a TAB in its "Transition of energy businesses from pre-tax to post-tax regulation" issues paper in June 2007.⁹³⁷
1823. The Authority agreed with the AER that the approach for determining the value of an opening TAB should:
- be done in light of the specific circumstances of each business;
 - in principle, require a detailed examination of the company's asset register; and
 - where possible, the TAB should take into account the actual tax position of assets that constitute the RAB.
1824. The Authority adopted the AER's proposed approach to setting the TAB by:
- taking the value of a firm's assets for tax purposes when it first became subject to tax;
 - rolling these values forward to the date when a post-tax approach is to apply; and
 - taking account of relevant tax depreciation rules, in addition to actual capital expenditure and disposals.
1825. In general the Authority calculated the value of the firm's assets for tax purposes by collecting the following information consistent with the AER's guidelines:
- the date the business was first subject to tax;
 - the tax value of assets at that date, in sufficient detail to distinguish RAB assets from any non-RAB assets; and
 - the vintage profile of the RAB assets when first subject to tax including any capital expenditure that took place prior to the commencement of regulation.⁹³⁸
1826. The Authority assessed GGT's opening TAB by taking into account the tax position of assets that constituted GGT's RAB on account of it not having a fixed asset register. The Authority noted that GGT's proposed TAB value at 1 January 2000 did not match its opening RAB value due to the following:
- GGT's opening RAB value was a 'current cost' value while its opening TAB is a 'historic cost' value.
 - GGT's proposed opening TAB only includes 'construction costs' whereas its opening RAB includes capital recovery costs and non-depreciable assets.
 - GGT proposes to start depreciating its TAB from 1 October 1996 when the pipeline started operating. GGT's RAB is depreciated from 1 January 2000 when the pipeline was first regulated.
1827. The Authority considered that GGT was correct not to index the TAB for inflation. The Authority also considered that the opening TAB will not be the same as the opening

⁹³⁷ Australian Energy Regulator, *Transition of energy businesses from pre-tax to post-tax regulation*, June 2007.

⁹³⁸ Australian Energy Regulator, *Transition of energy businesses from pre-tax to post-tax regulation*, June 2007, p. 63.

RAB as the methodology for determining the TAB is not the same as the methodology used by the Authority to determine the opening RAB in 2005.

1828. The Authority accepted GGT's proposal that the opening TAB should only include construction costs and amounts for capital recovery and non-depreciable assets included in the opening RAB should not be included in the TAB as they are not depreciable for tax purposes. The Authority assessed GGT's proposed construction costs and considers that these costs are consistent with the construction costs used in determining the opening RAB. Further, the Authority accepted GGT's proposal to not reset the construction costs and considers that the ownership structure of a benchmark efficient entity should not affect the calculation of corporate income tax under rule 87A of the NGR.
1829. The Authority considered that the opening TAB should take the value of a firm's assets for tax purposes when it first became subject to tax, or in GGT's case when it would have been subject to tax. The Authority considers that for GGT this was when the pipeline came into operation on 1 October 1996. This decision is consistent with the Authority's decision on ATCO.
1830. The Authority considered that GGT had included capital expenditure in the TAB on an incurred basis rather than on a commissioned basis.⁹³⁹ The Authority considered that all capital expenditure in the TAB should be aligned to the end of the calendar year. This was on the basis that it is consistent with the ATCO Final Decision, which starts depreciating capital expenditure the year after the capital expenditure was commissioned, and ATO practice where assets may only be included in the tax asset register on an "as commissioned" basis.

Tax Asset Lives

1831. The Authority reviewed GGT's proposed tax asset lives and considered that GGT's assumptions for its proposed tax asset lives were justified by current tax legislation and tax rulings.⁹⁴⁰ As a result, the Authority accepted GGT's proposed tax asset lives.

⁹³⁹ Goldfield Gas Transmission Pty Ltd, *Tariff Model*, August 2014.

⁹⁴⁰ A capped effective life of 20 years is available for applicable assets in subsection 40-102(5).

Table 99 Authority's approved Tax Asset lives

Asset Category	Draft Decision Approved Tax Asset Lives
Pipeline and laterals	20
Main line valve and scraper stations	20
Compressor stations	20
Receipt and delivery point facilities	20
SCADA and communications	10
Cathodic protection	10
Maintenance bases and depots	20
Other depreciable assets	10

Source: ERA, Draft Decision, Table 70, p. 288.

The Cost of Debt Financing

1832. The Authority required that GGT use the RAB derived using the CCA depreciation method for determining the cost of debt financing used in the taxation calculations and accordingly amended GGT's proposed cost of debt financing to reflect its revised decision on the opening RAB for each year of the third access arrangement period as noted in the Projected Capital Base chapter of the Draft Decision.

1833. The Authority also revised the cost of debt risk margin and nominal risk free rate as noted in the Rate of Return chapter of the Draft Decision. GGT's proposed debt to equity ratio of 60 per cent was accepted as it is consistent with assumptions in the Rate of Return Guidelines.

Operating Expenditure

1834. The Authority required GGT to use the forecast operating expenditure approved by the Authority as noted in the Operating Expenditure chapter of the Draft Decision for the calculation of the estimated cost of corporate income tax.

Statutory corporate income tax rate

1835. The Authority accepted GGT's proposal to apply the current statutory corporate tax rate of 30 per cent to the annual estimates of taxable income net of any loss which has been brought forward to calculate the cost of tax.

Value of Imputation Credits (Gamma)

1836. The Authority assessed GGT's proposed value of gamma (0.25) in the Gamma Chapter of the Draft Decision and decided that the value of gamma should be 0.4. As a result, GGT's estimated cost of corporate income tax was determined net of the value of imputation credits based on a value of 0.4 of the annual estimated cost of taxable income.

Required Amendment

1837. The Authority required GGT to update the calculation of the estimated cost of corporate income tax (net of imputation credits) as per Table 100.

Table 100 Authority Approved Estimated Cost of Corporate Income Tax (AA3)

Nominal \$ million	2015	2016	2017	2018	2019	Total
Estimated Cost of Taxable Income	8.754	2.962	-	-	-	11.716
Value of Imputation Credits	(3.501)	(1.185)	-	-	-	(4.686)
Authority Approved Estimated Cost of Corporate Income Tax Net of Imputation Credits	5.252	1.777	-	-	-	7.029

Source: Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline, 17 December 2015, p. 343.

GGT's Revised Proposal

Estimate of the Taxable Income

Revenue

1838. In its revised proposal, GGT submits that it has updated the estimate of the cost of corporate income tax used in the calculation of the total revenue for the GGP. It calculated the estimate of the taxable income that would have been earned by a benchmark efficient entity providing the GGP reference service using the smoothed tariff revenue rather than the (building block) total revenue.

Tax Asset Base

1839. GGT submits that it agrees that the TAB should include commissioned assets only, however, is of the view that a substantial part of the pipeline should be considered, for the purpose of calculating the cost of tax, as having been commissioned at the end of the third quarter of 1996, and not at the end of the fourth quarter, as is the case in the Authority's tariff model. This is on the basis that commercial operation of the pipeline, and the earning of taxable income, commenced in October 1996.

The Cost of Debt Financing

1840. GGT submits that its updated estimates of the cost of debt financing used in the calculation of the estimate of taxable income are not those of required amendment 12 in the Draft Decision. GGT's reasons for this are set out in paragraphs 720 to 737 in the Rate of Return Chapter of this Decision.

Operating Expenditure

1841. GGT submits that its updated estimates of the operating expenditure used in the calculation of the estimate of taxable income are not those of required amendment 12 in the Draft Decision. GGT's reasons for this are set out in paragraphs 376 to 395.

Interval of Delay

1842. In relation to the calculation of total revenue, GGT has only calculated corporate income tax from 1 July 2016 to 31 December 2019. GGT has adopted the 1 July 2016, as the commencement date for the purpose of amending the access arrangement revision proposal, and considers that there is no interval of delay under the NGR as determined in the Authority's Draft Decision. This is further discussed in the interval of delay section of the Reference Tariffs chapter of this Final Decision.

Value of Imputation Credits (Gamma)

1843. GGT does not accept the Authority's required amendment to adopt a gamma of 0.4. GGT submits that it demonstrates the correct value for gamma is 0.25. GGT's reasons for this are set out in paragraph 1430 and 1434 in the Gamma Chapter of this Final Decision.

Estimated corporate income tax amount

1844. GGT proposed an estimated corporate income tax amount (net of imputation credits) of \$23.572 million over the third access arrangement period as shown in Table 101.

Table 101 GGT's Proposed Revised Estimated Cost of Corporate Income Tax (AA3)⁹⁴¹

Nominal \$ million	2015	2016	2017	2018	2019	Total
GGT's Estimated Cost of Corporate Income Tax	-	2.429	8.932	10.139	9.930	31.429
Value of Imputation Credits	-	(0.607)	(2.233)	(2.535)	(2.482)	(7.857)
GGT's Proposed Revised Estimated Cost of Corporate Income Tax Net of Imputation Credits	-	1.822	6.699	7.604	7.447	23.572

Source: Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Information*, 29 January 2016, Table 16, p. 28.

Submissions

1845. BHP Billiton (**BHPB**) submitted that it supports calculating the TAB based on the value of assets, for tax purposes as at 1 October 1996. BHPB recognises this as the date that the GGP first came into operation and the date that GGT would have been first subject to tax.⁹⁴²

⁹⁴¹ For the period 1 July 2016 to 31 December 2019, as GGT considers that there is no interval of delay. This is further discussed in the interval of delay section of the Reference Tariffs chapter of this Final Decision.

⁹⁴² BHP Billiton, *Public Submission by BHP Billiton in Response to the Revised Access Arrangement Submitted by Goldfields Gas Transmission Pty Limited*, 11 March 2016, p. 5.

Considerations of the Authority

Estimate of the Taxable Income

Revenue

1846. The Authority notes and accepts that GGT has calculated the estimate of the taxable income that would have been earned by a benchmark efficient entity providing the GGP reference service using the smoothed tariff revenue rather than the building block total revenue.

Tax Asset Base

1847. As noted above, GGT agrees with the Authority that the TAB should include commissioned assets only. However, GGT is of the view that a substantial part of the pipeline should be considered, for the purpose of calculating the cost of tax, as having been commissioned at the end of the third quarter of 1996, and not at the end of the fourth quarter, as is the case in the Authority's tariff model.

1848. In its Draft Decision, the Authority applied the assumption that for all years, capital expenditure is commissioned at the end of the year in which it is incurred in the TAB. GGT accepted the application of this assumption for capital expenditure in the TAB for all years except 1996. This is on the basis that commercial operation of the pipeline, and the earning of taxable income, commenced in October 1996.

1849. The capital expenditure in 1996 accounts for a significant proportion of GGT's assets because it consists of the capital expenditure incurred between 30 June 1994 and 30 September 1996 while the initial assets of the pipeline were being constructed. The approved tax asset life for the larger part of the capital expenditure, for example pipelines and laterals, incurred in 1996 is 20 years. This large component of the TAB reaches the end of its tax depreciable life in 2016. Depreciating the asset base one quarter earlier results in a \$2.84 million decrease in tax depreciation that can be used to reduce tax expenses passed on to consumers in 2016. The net effect is an increase in net tax expense in 2016 of around \$530,000.

1850. In the Draft Decision the Authority formed the view that the value of an opening TAB should be done in light of the specific circumstances of each business. Additionally, the Authority determined it appropriate to measure the value of the firm's assets for tax purposes when it first became subject to tax and roll these values forward to the date when a post-tax approach is to apply.

1851. The business specific circumstances proposed by GGT should therefore be taken into account when forming the opening value of the TAB. It would be unreasonable to apply a hypothetical benchmark method when business specific circumstances have already been explicitly permitted in establishing the TAB. Given that GGT's ICB began earning taxable income at the end of the third quarter of 1996 the Authority agrees that GGT's ICB first became subject to tax after that date. This view is also supported by BHP Billiton who submitted that 1 October 1996 is the date that the GGP first came into operation and the date that GGT would have been first subject to tax.⁹⁴³

⁹⁴³ BHP Billiton, *Public Submission by BHP Billiton in Response to the Revised Access Arrangement Submitted by Goldfields Gas Transmission Pty Limited*, 11 March 2016, p. 5.

1852. The Authority notes that GGT's proposal is also consistent with the relevant tax depreciation rules. The Australian Taxation Office's (ATO) 2015 guide to depreciating assets outlines that:

The decline in value of a depreciating asset starts when you first use it, or install it ready for use, for any purpose, including a private purpose. This is known as a depreciating asset's start time.⁹⁴⁴

1853. GGT's proposal to depreciate using fractions of a year also appears to be consistent with the ATO's guide:

Effective life is expressed in years, including fractions of years. It is not rounded to the nearest whole year.⁹⁴⁵

1854. In light of these considerations the Authority accepts GGT's proposal to depreciate the ICB in the TAB from the end of the third quarter in 1996.

Tax Depreciation

1855. The Authority accepts GGT's proposal to use straight-line tax depreciation. As discussed in the interval of delay section of the Reference Tariffs chapter of this Final Decision, GGT has proposed that there is no interval of delay. Therefore, GGT's proposed tax depreciation only includes 50 per cent of the costs incurred over the 2016 calendar year and those costs incurred over the 2017, 2018 and 2019 calendar year. The Authority's Final Decision on tax depreciation takes into account the decision on the TAB and tax asset lives outlined above, and the interval of delay. Accordingly, the Authority has calculated a total of \$60.437 million for tax depreciation during the third access arrangement period.

The Cost of Debt Financing

1856. GGT's revised proposal for the cost of debt financing is \$51.37 million for the third access arrangement period. GGT has calculated the cost of debt by multiplying the debt portion, assumed at 60 per cent consistent with the assumption for the calculation of the rate of return, of its opening RAB each year by the nominal cost of debt (cost of debt risk margin plus nominal risk free rate). As discussed in the interval of delay section of the Reference Tariffs chapter of this Final Decision, GGT has proposed that there is no interval of delay. Therefore the cost of debt financing only includes 50 per cent of the costs incurred over the 2016 calendar year and those costs incurred over the 2017, 2018 and 2019 calendar year (see Table 102).

⁹⁴⁴ Australian Taxation Office, *Guide to depreciating assets*, June 2015, p. 5.

⁹⁴⁵ Australian Taxation Office, *Guide to depreciating assets*, June 2015, p. 11.

Table 102 GGT's proposed cost of debt financing for taxation purposes

Nominal \$ million	2015	2016	2017	2018	2019
RAB	-	386.92	383.34	373.57	363.27
Debt (60 per cent of RAB)	-	232.15	230.00	224.14	217.96
Cost of Debt (%)	-	7.95	7.95	7.95	7.95
Cost of Debt Financing	-	9.23 ⁹⁴⁶	18.29	17.82	17.33

Source: ERA Analysis

1857. The Authority has amended GGT's proposed cost of debt financing to reflect its revised decision on the opening RAB for each year of the third access arrangement period as noted in the Projected Capital Base chapter of this Final Decision, and the revised cost of debt risk margin and nominal risk free rate as noted in the Rate of Return chapter of this Final Decision.⁹⁴⁷ The Authority accepts GGT's proposed debt to equity ratio of 60 per cent as it is consistent with assumptions in the Rate of Return Guidelines.
1858. The Authority notes that GGT has maintained its use of a capital base value which is the written down value using the historic cost depreciation method, for the purposes of determining the cost of debt financing used as the interest shield in the tax calculations. This depreciation method is not consistent with the CCA depreciation approach used to determine the RAB for other purposes in the building block approach, as discussed in the Depreciation chapter of this Final Decision. In particular, this debt shield approach is not consistent with the RAB used for the purposes of determining the revenue, through the application of the WACC or the allowance for depreciation.
1859. The Authority considers that the two approaches should be consistent, otherwise the taxation cash flows will not be correct or consistent with the approach used to determine revenue.
1860. As discussed in the interval of delay section of the Reference Tariffs chapter of this Final Decision, the Authority is of the view that there has been an interval of delay and so includes the costs incurred over the 2015, 2016, 2017, 2018 and 2019 calendar years in the Authority's estimate of the cost of debt financing over the third access arrangement period.
1861. The Authority requires that GGT use the RAB derived using the CCA depreciation method for determining the cost of debt financing used in the taxation calculations. The Authority requires GGT to amend its cost of debt financing to \$58.637 million for the third access arrangement period (Table 103).

⁹⁴⁶ Cost of debt financing in 2016 is multiplied by 50 per cent as proposed by GGT to reflect costs incurred only in the last half of the 2016 calendar year.

⁹⁴⁷ See Table 60 for the Authority's approved RAB and Table 90 for the Authority's approved cost of debt risk margin and nominal risk free rate.

Table 103 Authority's Final Decision on cost of debt financing for taxation purposes

\$m (Nominal)	2015	2016	2017	2018	2019
RAB	390.362	393.693	391.203	386.382	381.172
Debt (60 per cent of RAB)	234.217	236.216	234.722	231.829	228.703
Cost of Debt (%)	4.881%	5.068%	5.068%	5.068%	5.068%
Cost of Debt Financing	11.432	11.971	11.895	11.749	11.590

Source: ERA Analysis.

Operating Expenditure

1862. GGT's revised proposal for forecast operating expenditure is \$93.79 million for the third access arrangement period as stated in Table 5. GGT proposed to use its forecast operating expenditure for each year of the period for the calculation of estimated taxable income. As discussed in the interval of delay section of the Reference Tariffs chapter of this Final Decision, GGT has proposed that there is no interval of delay. Therefore, GGT's proposed operating expenditure only includes 50 per cent of the costs incurred over the 2016 calendar year and those costs incurred over the 2017, 2018 and 2019 calendar year.

1863. The Authority has decided to accept \$99.978 million for operating expenditure for the third access arrangement period as stated in Table 22. The Authority has used its accepted operating expenditure for each year of the period for the calculation of GGT's estimated taxable income.

Value of Imputation Credits (Gamma)

1864. GGT has proposed a value of 0.25 for gamma. Under the Australian imputation tax system, a franking credit is distributed to investors at the time dividends are paid, providing a potential offset to those investors' taxation liabilities. Gamma is the parameter that takes into account the value generated by the distribution of franking credits to investors. As part of the post-tax nominal framework, the value of gamma must be applied to calculate the net income tax allowance for the third access arrangement period.

1865. The Authority has assessed GGT's proposed value of gamma in the Gamma Chapter of this Final Decision and has decided that the value of gamma should be 0.4.

Final Decision

1866. The Authority has calculated taxable income as assessable income less tax deductible costs that are recognised by the ATO, as follows:

- Smoothed tariff revenue.⁹⁴⁸
- *minus* Approved forecast operating expenditure.
- *minus* Depreciation of the TAB. The Authority has applied straight line depreciation on the TAB.

⁹⁴⁸ The Authority notes that GGT has accepted to base taxable income on smoothed revenue rather than the net cost of service, in response to the Draft Decision.

- *minus* Debt servicing costs. The Authority has calculated by multiplying the debt portion of the opening RAB by the debt to equity ratio (assumed at 60 per cent) and the Authority's nominal cost of debt (cost of debt risk margin plus nominal risk free rate) based on the Rate of Return chapter of this Final Decision.
- *equals* Estimated taxable income.

1867. The Authority requires GGT to amend its tax depreciation to \$55.530 million, cost of debt financing to \$58.637 million and operating expenditure to \$99.978 million for the third access arrangement period. The Authority has decided that the value of gamma should be 0.4.

1868. Table 104 breaks down the calculation of the Authority approved estimated cost of taxable income. The Authority has updated GGT's estimated cost of taxable income tax based on the considerations discussed above.

Table 104 Authority Approved Calculation of Estimated Cost of Corporate Income Tax (AA3)

Nominal \$ million	2015	2016	2017	2018	2019	Total
Revenue						
Tariff Revenue (smoothed)	73.540	56.175	34.371	35.559	35.559	235.204
Expenses						
Operating Expenditure	(19.211)	(19.695)	(20.135)	(20.210)	(20.728)	(99.978)
Debt Servicing Costs	(11.432)	(11.971)	(11.895)	(11.749)	(11.590)	(58.637)
Tax Depreciation ⁹⁴⁹	(24.946)	(20.267)	(4.541)	(2.973)	(2.802)	(55.530)
Taxable Income	17.951	4.242	(2.201)	(1.573)	(1.134)	17.285
Estimated Cost of Taxable Income (30 per cent of taxable income)	5.385	1.273	0.000	0.000	0.000	6.658

Source: ERA, Tariff Model, June 2016.

1869. The Authority requires GGT to update the calculation of the estimated cost of corporate income tax (net of imputation credits) as per Table 105.

Table 105 Authority Approved Estimated Cost of Corporate Income Tax (AA3)

Nominal \$ million	2015	2016	2017	2018	2019	Total
Estimated Cost of Taxable Income	5.385	1.273	0.000	0.000	0.000	6.658
Value of Imputation Credits	(2.154)	(0.509)	0.000	0.000	0.000	(2.663)
Authority Approved Estimated Cost of Corporate Income Tax Net of Imputation Credits	3.231	0.764	0.000	0.000	0.000	3.995

Source: ERA, Tariff Model, June 2016.

1870. Table 106 lists the Authority's estimated closing tax asset base by year over the third access arrangement period which was used to calculate tax depreciation.

⁹⁴⁹ The decrease in tax depreciation from 2016 to 2017 is due to the initial tax asset value for pipelines and laterals being fully written off. The annual tax depreciation for that asset category is around \$18 million per annum.

Table 106 Authority Approved Estimated Closing Tax Asset Base (AA3)

Nominal \$ million	2015	2016	2017	2018	2019
Opening Tax Asset Base	63.020	42.789	25.394	21.622	19.245
Authority Forecast Capital Expenditure	4.715	2.872	0.769	0.597	0.461
Authority Forecast Tax Depreciation	(24.946)	(20.267)	(4.541)	(2.973)	(2.802)
Authority approved Estimated Closing Tax Asset Base	42.789	25.394	21.622	19.245	16.905

Source: ERA, *Tariff Model*, June 2016.

Required Amendment 13

The estimated cost of corporate income tax (net of imputation credits) must be amended to reflect the values in Table 105.

Allocation of Total Revenue between Reference Services and Other Services

Regulatory Requirements

1871. The allocation of the total revenue to reference services and other services for the purpose of reference tariff determination and, ultimately, for cost recovery, is governed by rules 93(1) and 93(2) of the NGR.

93. Allocation of total revenue and costs:

- (1) Total revenue is to be allocated between reference and other services in the ratio in which costs are allocated between reference and other services.
- (2) Costs are to be allocated between reference and other services as follows:
 - (a) costs directly attributable to reference services are to be allocated to those services; and
 - (b) costs directly attributable to pipeline services that are not reference services are to be allocated to those services; and
 - (c) other costs are to be allocated between reference and other services on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the [Authority].

1872. The National Gas Objective (**NGO**) in section 23 and the Revenue Pricing Principles (**RPP**) in sections 24(2) and 24(3) of the NGL(WA) are also relevant.

23 National gas objective

The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.

24 Revenue and pricing principles

...

- (2) A service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in—
 - (a) providing reference services; and
 - (b) complying with a regulatory obligation or requirement or making a regulatory payment. (**RPP(2)**)
- (3) A service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides. The economic efficiency that should be promoted includes—
 - (a) efficient investment in, or in connection with, a pipeline with which the service provider provides reference services; and
 - (b) the efficient provision of pipeline services; and
 - (c) the efficient use of the pipeline. (**RPP(3)**)

...

GGT's Initial Proposal

1873. Under the Extension and Expansion Policies (**EPP**) in the first and second access arrangements for the GGP, GGT has elected to undertake expansions in capacity

through the installation of assets that are not covered in its second access arrangement,⁹⁵⁰ and these assets will not be covered in its third access arrangement.

1874. In its initial proposal, GGT calculated the total revenue for the GGP as the sum of all costs associated with services that are provided by its covered assets, excluding incremental capital and operating costs associated with the services that are provided by uncovered assets.
1875. Specifically, GGT proposed that the total revenue is the total of the costs of offering to provide, and providing, the reference service, the negotiated services and services to the joint venturers using the covered assets of the GGP⁹⁵¹ excluding:
- the capital costs of those parts of the pipeline system (a second compressor at Paraburdoo, in 2006, and compressors installed at Wyloo West and Ned's Creek in 2009) that are uncovered;
 - the capital costs of the recent expansion for Rio Tinto Iron Ore and for BHP Billiton Iron Ore, pipeline expansion which GGT has elected be uncovered and in respect of which the Authority gave its consent to GGT's election on 30 May 2014; and
 - the costs of operating and maintaining those parts of the GGP that are uncovered, and the costs of operating and maintaining the expansion for Rio Tinto Iron Ore and BHP Billiton Iron Ore.⁹⁵²
1876. Hence, GGT adopted an allocation of total revenue to covered services that is similar to the approach approved by the Authority for its second access arrangement in order to comply with section 8.38 of the Gas Code. Under this approach, the total revenue allocation to covered services under rule 93 of the NGR apportions all of the joint costs associated with covered assets that are used in the delivery of both covered and uncovered services (**joint costs**) only to users of covered services (hereafter, referred to as GGT's proposed cost allocation methodology(**CAM**)).
1877. GGT submitted that its proposed CAM is supported by:
- provisions in the NGR and the NGL(WA), which determine that an access arrangement is only for the covered pipeline; and
 - the NGO and RPP, which promote the achievement of outcomes that are economically efficient.
1878. GGT asserted that its proposed CAM promotes economic efficiency because it:
- ensures that GGT has a reasonable opportunity to recover the efficient costs that are incurred in the provision of reference services on the covered pipeline; and

⁹⁵⁰ Under the EEP in AA1, GGT could elect for any future expansions in the capacity of the GGP to be 'uncovered' based only on a notification to the ERA without a requirement for subsequent approval. In AA2, the EEP was amended to require an express determination by the ERA on any election by GGT for an uncovered expansion. Since AA1, the capacity has expanded three times: twice under AA1 and once under AA2.

⁹⁵¹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal; Supporting Information*, 15 August 2014, p. 25.

⁹⁵² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal; Supporting Information*, 15 August 2014, p. 25.

- provides GGT with the flexibility to charge prices for services on uncovered capacity that reflect marginal costs.⁹⁵³

1879. In support of this position, GGT provided reports by HoustonKemp Economists (**HoustonKemp**)⁹⁵⁴ and Competition Economists Group (**CEG**)⁹⁵⁵ as Attachment 2 and 3 of its Initial Proposal.

Draft Decision

1880. In its Draft Decision, the Authority rejected GGT's proposal for the total revenue allocation to covered services under rule 93 of the NGR on the basis that a CAM that implicitly apportions all of the joint costs to users of covered services does not comply with the specific guidance provided in the RPP to promote the economic efficiency of gas pipeline service provided by the GGP as consistent with the NGO.⁹⁵⁶

1881. Rather, the Authority determined that, where joint costs are currently included in the total revenue calculation under rule 76 of the NGR in full, the total revenue allocation under rule 93(2)(c) should be based on relative capacity utilisation.⁹⁵⁷ In effect, this would ensure that the joint costs are spread evenly across all services provided by the GGP.

No legal precedent

1882. The Authority considered that there was no regulatory precedent to guide its decision on the total revenue allocation to covered services delivered by the GGP under rule 93 of the NGR and, in particular, to assess GGT's proposed CAM that apportions joint costs only to users of covered services.

1883. In making its Draft Decision, the Authority noted that:

- the GGP is the only gas pipeline in Australia that has regulated assets which are used to deliver both covered and uncovered services,⁹⁵⁸ and

⁹⁵³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal; Supporting Information*, 15 August 2014, pp. 26-28.

⁹⁵⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal; Supporting Information: Attachment 2, HoustonKemp Methodology for Allocating Goldfields Gas Pipeline Costs*, 15 August 2014.

⁹⁵⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal; Supporting Information: Attachment 3, Competition Economists Group Cost Allocation for the Goldfields Gas Pipeline*, 15 August 2014.

⁹⁵⁶ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, see section on 'Allocation of Total Revenue between Reference Services and Other Services', pp. 292-323.

⁹⁵⁷ The ERA assessed the most appropriate allocator to attribute joint costs to the covered and uncovered services in the Draft Decision section "Allocation of Total Revenue to reference services" on pages 323-344. Typically most joint costs were allocated on a relative capacity utilisation but there are instances where operating expenditure and capital expenditure for compressor stations were allocated on a different basis as there was a better allocation method for those costs. For example, expenditure directed to assets at compressor stations, apportioned in accordance with the ratio of covered compressor assets to uncovered compressor assets at the designated station (See page 332 and 338 of the Draft Decision).

⁹⁵⁸ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 315.

- the third access arrangement provides the first occasion for the Authority to consider the unique circumstances of the GGP under the NGL(WA) and the NGR.⁹⁵⁹

1884. Hence, the Authority considered that its interpretation and use of discretion on this matter should be guided by the NGO and RPP.⁹⁶⁰

Services covered by an access arrangement

1885. In its Draft Decision, the Authority indicated that there should be no ambiguity that a full access arrangement determined under the NGL(WA) and NGR can only apply to reference services even though the term 'Services' is not defined in a way that strictly constrains the Authority's considerations to covered services as provided in section 10.3 of the Gas Code.⁹⁶¹

1886. Thus, the Authority determined that the full access arrangement for the GGP should only apply to services that are provided by regulated assets identified in Schedule A of the Gas Code and which remain covered under the NGL(WA) and NGR. Further, the Authority indicated that, if stakeholders consider that a full access arrangement should extend to services that are provided by uncovered assets, then they should seek a coverage determination from the National Competition Council (**NCC**) through the appropriate legal process prescribed in the NGL(WA) and the NGR.⁹⁶²

Efficiency considerations

1887. In making its Draft Decision, the Authority carefully considered the reports of HoustonKemp⁹⁶³ and CEG⁹⁶⁴ that were submitted with GGT's initial proposal and also a report by Incenta Economic Consulting⁹⁶⁵ attached to the initial submission by BHP Billiton.

1888. In its Draft Decision, the Authority considered that the RPP are intended to provide specific guidance to ensure that the reference tariff determination for GGP will promote the economically efficient outcomes required to achieve the NGO. In particular, the Authority considered that RPP(2) requires that GGT is provided with a

⁹⁵⁹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p.314.

⁹⁶⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 315.

⁹⁶¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 317.

⁹⁶² Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 317.

⁹⁶³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal; Supporting Information: Attachment 2, HoustonKemp Methodology for Allocating Goldfields Gas Pipeline Costs*, 15 August 2014.

⁹⁶⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal; Supporting Information: Attachment 3, CEG Competition Economists Group Cost Allocation for the Goldfields Gas Pipeline*, 15 August 2014.

⁹⁶⁵ BHPB Billiton, *Public Submission In Response to Goldfields Gas Transmission Pty Limited's Proposed revisions to the Goldfields Gas Pipeline Access Arrangement, Attachment — Incenta economic consulting report*, 27 November 2014

reasonable opportunity to recover the 'efficient cost' of providing reference services.⁹⁶⁶

1889. To comply with RPP(2), the Authority determined that the CAM for joint cost should minimise the net economic cost of inefficiencies (the **deadweight loss**) that may be associated with investment in services provided by existing infrastructure that is characterised by high fixed costs and economies of scale.⁹⁶⁷ The Authority noted that there are three sources of economic inefficiency:
- allocative inefficiency, which occurs if the range of services provided by the GGP is not aligned to the demand for those services, even when the users' willingness to pay is commensurate with the incremental costs of supplying those services;
 - productive inefficiency, which occurs if expansions in capacity across the GGP do not fully exploit the economies of scale associated with sunk assets and production costs remain higher than otherwise might be the case; and
 - dynamic inefficiency, which occurs if future expansions in capacity across the GGP are either insufficient to meet future demand for services or result in spare capacity that becomes, and remains, idle.⁹⁶⁸
1890. Hence, the Authority determined that the CAM for joint costs should minimise any trade-offs in the efficiency of investment in the GGP across all dimensions identified in paragraph 1889. In this context, the Authority noted that, in aggregate, the total revenue from tariffs across all services must exceed the incremental costs in order to ensure a rate of return that secures the financial sustainability of operations over the longer term. Hence, there can be a trade-off between the allocative and dynamic efficiency of investment in the GGP.⁹⁶⁹
1891. Further, to reflect the unique circumstances of the GGP, in particular, the Authority determined that the CAM should additionally minimise any trade-offs in the economic efficiency of investment across covered and uncovered services. In this context, the Authority noted that, while a reference tariff determined under GGT's proposed CAM provides additional opportunities for GGT to price uncovered services at incremental cost, it increases the risk that usage of, and investment in, covered services could be dissuaded. Hence, there can be a trade-off between the allocative efficiency of investment across covered and uncovered services provided by the GGP.⁹⁷⁰
1892. In its Draft Decision, the Authority determined that there was a greater risk under GGT's proposed CAM that demand for covered services could be dissuaded and that the covered capacity of the GGP could become, and remain, idle even as uncovered capacity was expanded. Further, the Authority considered that the deadweight loss associated with GGT's proposed CAM across all services would increase in each successive access arrangement period as, perversely, an even higher reference tariff

⁹⁶⁶ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 320.

⁹⁶⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 320.

⁹⁶⁸ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 320.

⁹⁶⁹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 320.

⁹⁷⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 320-21.

determination would be required to ensure that the joint costs could be recovered from the fewer remaining users of covered services.⁹⁷¹

1893. On this basis, after taking into account the trade-off for the economic efficiency of investment in covered and uncovered services provided by the GGP, the Authority determined that GGT's proposed CAM increased the risk that the reference tariff determination for GGP, in and of itself, could exacerbate the deadweight loss associated with all services provided by GGP's regulated assets.⁹⁷²

1894. In its Draft Decision, the Authority considered:

- confidential statements in GGT's initial proposal to explain its demand forecasts for the third access arrangement, which indicated that demand for covered services had fallen over the second access arrangement period even while the capacity of the GGP had been expanded;⁹⁷³ and
- circumstantial evidence that the price GGT could charge for uncovered services provided by the GGP would exceed the reference tariff, as considered in more detail in paragraph 1907.⁹⁷⁴

1895. Hence, the Authority determined that GGT's proposed CAM would not provide a reference tariff determination in the third access arrangement period for the GGP that complied with the operational guidance in the RPP intended to promote the economic efficiency of services provided by the GGP as required to achieve the NGO.

Consistency with the NGO

1896. In its Draft Decision, the Authority considered that it has a legislative responsibility under the NGL(WA) and the NGR to ensure that provisions in an access arrangement, which it has either approved or determined, promote the economic efficiency of services as required to achieve the NGO.⁹⁷⁵ In particular, the Authority considered that this responsibility is clear under:

- clause 7 of Part 2 of Schedule 2 to the NGL(WA) that in interpreting a provision of the NGL(WA), including a rule of the NGR, the Authority must prefer the interpretation that will best achieve the NGO;⁹⁷⁶ and
- rule 100 of the NGR that provisions of an access arrangement must be consistent with the NGO.⁹⁷⁷

⁹⁷¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 321.

⁹⁷² Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 321-322.

⁹⁷³ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 321.

⁹⁷⁴ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 322-323.

⁹⁷⁵ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 314-323.

⁹⁷⁶ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 319.

⁹⁷⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 319.

1897. As summarised in paragraphs 1887 to 1895, on the basis of economic principles, the Authority determined that GGT's proposed CAM would not provide a reference tariff for the third access arrangement period that complies with the RPP and, hence, would not promote the achievement of the NGO. Further, the Authority determined that, for the reference tariff determination to comply with the RPP, it would have to incorporate a CAM that only partially allocates joint costs to covered users.

The total revenue calculation in the NGR

1898. In making its Draft Decision, the Authority demonstrated that the total revenue calculated for the GGP under rule 76 of the NGR based on the building block approach would reflect all of the costs of regulated assets even when they are being used substantially to deliver uncovered services.⁹⁷⁸

1899. Indeed, the Authority noted that, over time, due to GGT's elections for uncovered expansions over the course of AA1 and AA2, the proportion of regulated assets being used to deliver covered services was decreasing while the proportion used to deliver uncovered services was increasing.⁹⁷⁹

1900. Although the Authority considered that the total revenue calculation under rule 76 of the NGR would not provide for a reference tariff determination that promoted the economic efficiency of services provided by the GGP as consistent with the NGO, in its Draft Decision, the Authority determined that there was currently no discretion under rule 77, or elsewhere in the NGR, that would flexibly provide the discretion for the Authority to adjust the initial capital base or capital expenditure in AA1 in order to reflect the unique circumstances of the GGP.⁹⁸⁰

The total revenue allocation to reference services

1901. In its Draft Decision, the Authority considered that rule 93 of the NGR provided the Authority with discretion to flexibly apportion to covered services only a share of the joint costs included in the total revenue calculation under rule 76.⁹⁸¹

1902. Specifically, the Authority considered that this discretion was provided under rule 93(2)(c) of the NGR, which states that:

... 'other costs' are to be allocated between reference and other services on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the AER.⁹⁸²

1903. Hence, the Authority:

- interpreted 'other costs' in rule 93(2)(c) as 'joint costs' that are not directly attributable to covered services because they are associated with regulated

⁹⁷⁸ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 317-318.

⁹⁷⁹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 318.

⁹⁸⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 318-19.

⁹⁸¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 319.

⁹⁸² Rule 93(2)(c) of the National Gas Rules.

assets that are required in the delivery of all services including, for the unique circumstances of the GGP, uncovered services;

- considered that rule 93(2)(c) provides full discretion for a determination on the CAM that apportions other [joint] costs to covered services as long as this determination is consistent with the RPP;
- considered that there was nothing in rule 93(2)(c) that requires other [joint] costs to be allocated to covered services *in full*; and
- determined that other [joint] costs should be allocated to covered services only *in part* given that the only guidance provided in rule 93(2)(c) that the CAM for other [joint] costs must be consistent with the RPP.⁹⁸³

1904. In its Draft Decision, the Authority considered that it had a legislative responsibility under the NGL(WA) and NGR to interpret and construct rule 93 in the NGR as outlined in paragraph 1903 in order to provide a CAM for joint costs in the reference tariff determination that would promote the economic efficiency of outcomes for the GGP as required for compliance with the RPP and, hence for consistency with the NGO.⁹⁸⁴

The CAM for joint costs

1905. In its Draft Decision, the Authority considered that there was limited public information on the actual tariffs set for uncovered services, which are usually protected by contracts that are commercial in confidence.

1906. Based on publicly available information and at least circumstantial evidence that uncovered services could bear an even share of the joint costs,⁹⁸⁵ the Authority determined that, for the GGP's third access arrangement period, there would be minimal distortions to the economic efficiency of all services if joint costs were apportioned to covered services on the basis of relative capacity utilisation.⁹⁸⁶

1907. In making this determination, the Authority indicated that it had relied on:

- publicly available information on the NERA Economic Consulting expert report which indicated that, while the incremental costs of installing the uncovered compressors in 2006 and 2009 were below the reference tariff for AA2, the tariffs for additional uncovered services provided by those compressors exceeded the reference tariff;⁹⁸⁷ and
- an ASX release by Duet Group on 16 January 2014 on a \$100 million placement for the Fortescue Rive Gas Pipeline Project that stated FMG, which has higher production costs than either of BHP Billiton (BHPB) or Rio Tinto, was prepared

⁹⁸³ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 319.

⁹⁸⁴ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 319-323.

⁹⁸⁵ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 322-323.

⁹⁸⁶ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 322.

⁹⁸⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 322.

to pay an internal rate of return of 10.3 per cent.⁹⁸⁸ Roughly estimated, this would translate to a price for services from the Dampier Bunbury Natural Gas Pipeline (DBNGP) that is at least 10 to 15 per cent above its long run efficient costs,⁹⁸⁹ and

- the price of diesel, which is the closest available alternative fuel for users of the GGP, is more than \$25 per GJ and this could be reasonably assumed to be approaching double the efficient price for GGP delivered gas, which would be inclusive of a gas commodity cost contributing around \$8 per GJ and a pipeline cost contributing in the vicinity of \$5 per GJ.⁹⁹⁰

GGT's Revised Proposal

1908. In its Revised Proposal, GGT has submitted that:

- the Authority's construction of rule 93(2)(c) of the NGR is incorrect and the Authority will engage in legal error if it makes revisions to the GGP Access Arrangement based on that incorrect construction of rule 93(2)(c); and
- even if the Authority's construction of rule 93(2)(c) is legally correct, there are errors in the economic and factual conclusions that support the Authority's Draft Decision on cost allocation.⁹⁹¹

1909. With respect to the legal permissibility of the CAM determined in the Draft Decision, GGT submits that:

- the regulatory regime in the NGL and NGR appropriately allows for extensions and expansions either to form, or not to form, part of the covered pipeline based on the circumstances prevailing at the time the investment is undertaken;⁹⁹² and
- references to 'services' in Part 9 of the NGR, and hence rule 93 of the NGR, should be interpreted as 'services provided by means of the covered pipeline'.⁹⁹³

1910. To support its view that there are errors in the economic conclusions in the Authority's Draft Decision, GGT has provided the Authority with a report from Competition Economists Group (CEG)⁹⁹⁴ at Attachment 8 of its Revised Proposal.

The NGL and NGR allow for uncovered expansions

1911. GGT considers that the Authority has based its Draft Decision on a conclusion that it would be unacceptable if the regulatory framework operated so that:

⁹⁸⁸ Duet Group, *Fortescue River Gas Pipeline Project and \$100m Placement*, ASX Release, 16 January 2014.

⁹⁸⁹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 322-323.

⁹⁹⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 323.

⁹⁹¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, pp. 150-151.

⁹⁹² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, pp. 155-57.

⁹⁹³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, pp. 151-155.

⁹⁹⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, Attachment 8, Competition Economists Group, *Cost Allocation for the Goldfields Gas Pipeline*, January 2016.

- a. no adjustment was permitted to be made to the capital base of a covered pipeline to reflect expansions of capacity that, pursuant to extension and expansion requirements, are not treated as forming part of the covered pipeline; and
- b. as a consequence, the capital and operating costs associated with the capital base of a covered pipeline were allocated only to services provided by means of the covered pipeline.⁹⁹⁵

1912. GGT asserts that the NGL and NGR appropriately provide for the physical reality that a covered pipeline could deliver services that are provided by means of its covered assets (that is, covered services) and by means of extensions and expansions that do not form part of the covered pipeline (that is, uncovered services). Further, in the drafting of the NGL and NGR, GGT asserts that the Ministerial Council on Energy (**MCE**) was aware that an expansion could be uncovered and would not affect the reference tariff for covered services.

1913. To support this view, GGT considers that:

- the regulatory regime makes a clear distinction between the covered and uncovered capacity of a pipeline, both in terms of costs and revenues;⁹⁹⁶
- the scope of coverage of a pipeline is determined at the time of the initial coverage determination and, subsequently in accordance with the EEP specified in its access arrangement;⁹⁹⁷
- in a coverage determination, the National Competition Council (**NCC**) may recommend that only a part of a pipeline subject to an application be covered (see the example to subsection 95(3) of the NGL) or that only part of a coverage determination be revoked (see the example in section 104(3) of the NGL);⁹⁹⁸
- with respect to the NCC recommendations, the relevant Minister may determine that different parts of the pipeline be covered (see the example in section 99(7) of the NGL) and that a different part of the coverage determination be revoked (see the example in section 106(7) of the NGL)⁹⁹⁹
- under rule 18 of the NGR, an application for a coverage revocation determination must state whether the application is for revocation of coverage for the whole, or part only, of the covered pipeline;¹⁰⁰⁰
- the definition of extensions and expansions requirements in section 2 of the NGL is:
 - (a) the requirements contained in an access arrangement that, in accordance with the Rules specify —
 - (i) the circumstances when an extension to, or expansion of the capacity of, a covered pipeline is to be treated as forming part of the covered pipeline; and

⁹⁹⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2014, pp. 150-151.

⁹⁹⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2014, p. 156.

⁹⁹⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2014, p. 156.

⁹⁹⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2014, p. 156.

⁹⁹⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 156.

¹⁰⁰⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 156.

- (ii) whether the pipeline services provided or to be provided by means of, or in connection with, spare capacity arising out of an extension to, or expansion of the capacity of, a covered pipeline will be subject to the applicable access arrangement applying to the pipeline services to which that arrangement applies; and
 - (iii) whether an extension to, or expansion of the capacity of, a covered pipeline will affect a reference tariff, and if so, the effect on the reference tariff; and
- (b) any other requirements specified by the Rules as extension and expansion requirements.
- the coverage decision may involve a commercial and economic assessment of the risks associated with the extension or expansion. For example:
 - demand for the extension or expansion may be uncertain and existing users may not wish to incur financial responsibility for the additional costs incurred;
 - incremental demand for the extension or expansion may only be generated by pricing the additional capacity at the marginal cost of the additional capacity;¹⁰⁰¹
- there are mechanisms in the NGL and NGR that provide for an assessment, or re-assessment of the circumstances that extensions and expansions form part of the covered pipeline:
 - the coverage determination for an extension or expansion can be revisited through an application for coverage determination, and this can be made at any time; and
 - in an access arrangement review, where the regulator does not consider that the extension and expansion requirements proposed by service providers are consistent with the regulatory scheme, the regulator is empowered to draft and approve its own revisions to those requirements;¹⁰⁰² and
- GGT considers that the extension and expansion requirements for the GGP in AA1 and AA2 have provided for expansions in capacity that do not form part of the covered pipeline:
 - pursuant to the EEP in AA1, GGT elected for the expansions in capacity in 2006, from the installation of a second compressors at Paraburdoo, and in 2009, as a result of the installation of compressors at Wyloo West and Ned's Creek, to be uncovered;
 - pursuant to the EEP in AA2, the ERA approved GGT's election not to treat expansions in the capacity of the GGP as part of the covered pipeline for any purpose under the Gas Code.¹⁰⁰³

1914. Hence, GGT submits that the Authority's construction of rule 93 in the NGR in the Draft Decision would, in effect, revise the financial consequences of earlier decisions made in accordance with the applicable extensions and expansions policy, which was

¹⁰⁰¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, pp. 156-157.

¹⁰⁰² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 157.

¹⁰⁰³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 157.

subject to review by the Authority and stakeholders at the relevant time, and that this would be contrary to the NGO and the RPP.¹⁰⁰⁴

Services covered by an access arrangement

1915. GGT submits that the legal construction of rule 93 of the NGR is that it should be read as if the words ‘provided by means of the covered pipeline’ were inserted following the word ‘services’ in a number of places in rule 93(1) and 93(2) of the NGR. That is GGT proposes:

- a. rule 93(1) requires total revenue to be allocated between reference and other services provided by means of the covered pipeline in the ratio in which costs are allocated between reference and other services; and
- b. rule 93(2) requires costs to be allocated between reference services and other services provided by means of the covered pipeline as follows:
 - i. costs directly attributable to reference services are to be allocated to those services; and
 - ii. costs directly attributable to pipeline services provided by means of the covered pipeline that are not reference services are to be allocated to those services; and
 - iii. other costs are to be allocated between reference and other services provided by means of the covered pipeline on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the ERA. Total revenue is to be allocated between reference and other services in the ratio in which costs are allocated between reference and other services.¹⁰⁰⁵ [

1916. In submitting this construction, GGT has considered:

- the scheme of regulation under the NGL and NGR is based on the concept of a covered pipeline;¹⁰⁰⁶
- chapter 3 of the NGL, which makes clear that coverage may be confined to part of the capacity of a pipeline, and this is reinforced by definitions and rules relating to expansions;¹⁰⁰⁷
- there are examples where the absence of a definition for covered pipeline services in the NGL and NGR is overcome by use of the textual qualification ‘provided by means of a covered pipeline’. In the NGL, these include:
 - section 2, in the definition of ‘covered pipeline service provider’ and the definition of ‘pipeline service standard’;
 - section 18, which defines when extensions and expansions are to become part of the covered pipeline;
 - section 111, relating to applications for light regulation determinations;

¹⁰⁰⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 157.

¹⁰⁰⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 152.

¹⁰⁰⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 152.

¹⁰⁰⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2014, p. 152.

- section 122, which sets out the principles relating to the making or revoking of light regulation determinations;
 - section 131, which provides that a service provider must be a legal entity of a specified kind to provide pipeline services by means of a covered pipeline;
 - section 133, which prohibits conduct that prevents or hinders access; and
 - section 181, which relates to notification of access disputes.¹⁰⁰⁸
- there are other examples in the NGL and NGR where the term “pipeline services” is clear in context and hence the qualification “provided by means of the covered pipeline” is unnecessary.
 - For example, in Chapter 4, *General requirements for provision of covered pipeline services*, section 131 of the NGL, if read in conjunction with rules 46 and 48 of the NGR, is clear in context that the reference to “pipeline services” in section 132 means services “provided by means of the covered pipeline” even though this qualification is not provided in the text.¹⁰⁰⁹

1917. For Part 9 of the NGR, in which rule 93 is located, GGT submits that the qualifier ‘provided by means of the covered pipeline’ is not found because it is redundant. GGT submits that it is clear from the text of the NGL and the NGR that references to ‘pipeline services’, or ‘services’, in Part 9 refers only services ‘provided by means of the covered pipeline’, because it is precisely these services to which the access arrangement applies. Similarly, GGT submits that references to ‘the pipeline’ in Part 9 are to be read as references to the covered pipeline because access arrangements apply to services provided by covered pipelines. GGT considers that this is clear from:

- rule 48 of the NGR which, when read in the context of rule 46, identifies the “pipeline” to which a full access arrangement relates as the covered pipeline.
- rule 77, which sets out how the opening capital base for the pipeline in an access arrangement is to be calculated when the pipeline first becomes a covered pipeline.
- rules 15 and 16, which respectively require the application for a coverage determination to identify the pipeline for which coverage is sought, and the application for a coverage determination to identify the pipeline to which a coverage recommendation relates.¹⁰¹⁰

1918. GGT has also provided a number of other references in Part 9 of the NGR to ‘the pipeline’ and ‘services’ which it has considered ‘often only make sense’ if read to mean ‘the covered pipeline’ and ‘services provided by means of a covered pipeline’ respectively. As examples, GGT has highlighted:

- rules 72, 77 and 78 of the NGR for references to ‘the pipeline’.

¹⁰⁰⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2014, pp. 152-53.

¹⁰⁰⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2014, p. 153.

¹⁰¹⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 153.

- rules 72 and 91 of the NGR for references to ‘pipeline services’.¹⁰¹¹

1919. GGT submits that the most striking example where ‘services’ can only refer to services provided by means of a covered pipeline is the expression ‘reference services’. That is, GGT considers that, although the definition of reference services in Section 2 of the NGL does not contain any qualification,¹⁰¹² it is clear from the basis of the regulatory regime, and given the mandatory requirements of both rules 48 and 101 of the NGR, that a reference service can only be provided by means of a covered pipeline. As GGT states:

... it can only make sense for these services to be services provided by means of the covered pipeline; it would make no sense for “reference services” to include services that are provided by means of an uncovered part of the pipeline.¹⁰¹³

1920. On this basis, GGT submits that the Authority’s construction of rule 93 of the NGL would appear to create inconsistencies in which:

- the term ‘reference services’ would be interpreted as provided by means of the covered pipeline while the term ‘other services’ would not be so limited; and
- the term ‘other services’ would be interpreted as provided by means of the covered pipeline in rule 93(1) but not so limited in rule 93(2)(c).¹⁰¹⁴

1921. In its revised proposal, GGT again refers to extrinsic materials concerning the legislative history of the NGL and NGR that GGT had considered in detail in an additional submission provided to the Authority prior to its Draft Decision.¹⁰¹⁵ GGT considers that these extrinsic materials confirm that the approach taken to price and revenue regulation under the Gas Code is replicated under the NGR and that GGT’s approach to the meaning of the text in rule 93 of the NGR is correct.

Efficiency considerations

1922. In support of the efficiency of its proposed CAM, GGT substantially relies on the conclusions of HoustonKemp and CEG in reports attached to its initial proposal and summarised in detail in the Authority’s Draft Decision.¹⁰¹⁶ In a report attached to GGT’s revised proposal,¹⁰¹⁷ CEG has further submitted that its conclusions are supported by the academic literature.¹⁰¹⁸

¹⁰¹¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 154.

¹⁰¹² In Section 2 of the NGL, the definition of Reference Service is “a pipeline service specified by, or determined or approved by the AER under the Rules as a reference service”.

¹⁰¹³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 154.

¹⁰¹⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 154.

¹⁰¹⁵ Goldfields Gas Transmission Pty Ltd, *Response to BHP Billiton’s submission on Goldfields Gas Transmission’s proposed revisions to the Access Arrangement for the Goldfields Gas Pipeline cost allocation*, 18 February 2015.

¹⁰¹⁶ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 296-299.

¹⁰¹⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, Attachment 8, Competition Economists Group, *Cost Allocation for the Goldfields Gas Pipeline*, January 2016.

¹⁰¹⁸ CEG has referred to the work of Sappington, 2000, *Price regulation and incentives* in Cave, Majumdar and Vogelsange, (2002), *Handbook of Telecommunications Economics*, vol. I, North-Holland, Amsterdam; and

1923. GGT notes the Authority's conclusion in the Draft Decision that a total revenue allocation to covered services should include a CAM that minimises the burden of economic inefficiencies across all services delivered by the GGP in its entirety. In this context, GGT considers that the Authority appears to discount the potential source of inefficiency associated with the CAM determined in the Draft Decision from foregone incremental investment that may have proceeded under GGT's proposed CAM, and that the basis for this discounting is not clear.¹⁰¹⁹
1924. GGT does not accept the Authority's determination that reference tariffs based on GGT's proposed CAM would be too high to be consistent with economically efficient outcomes.
1925. GGT considers that the CAM determined by the Authority in its Draft Decision creates a regulatory risk for the commerciality of arrangements that GGT has entered into for uncovered services, which set out the price and non-price terms and conditions for uncovered services based on the assessment by each respective party of the risk and reward associated with uncovered expansions. GGT has indicated that, under these arrangements, there is no ability for GGT to pass through any of the share of the joint costs that were previously borne by the reference tariff. According to GGT:
- The ERA's proposed cost allocation has a significant impact on how GGT views the commerciality of these arrangements, which in turn impacts upon GGT's incentives to undertake efficient investment. The introduction of this regulatory risk may have broader consequences for the promotion of efficient investment more generally.¹⁰²⁰
1926. In this context, CEG considers that the absence of specifically negotiated clauses, which would require prices to be changed in some way if new customers connect at a future date, provides evidence of a theoretically efficient risk and reward allocation for a workably competitive market that is consistent with the circumstances of the GGP, in which:
- The owner takes on the risks and the expected rewards from serving new customers. The foundation customers receive a negotiated price (or price path) that does not depend on the success or otherwise of the owner in serving new customers with additional capacity.¹⁰²¹
1927. GGT considers that there is no evidence to suggest that the reference tariff arising from its proposed CAM creates a risk that the use of covered services could be dissuaded. GGT has stated:
- For all relevant purposes, the capacity of the covered pipeline is fully contracted. GGT does not anticipate any material tranches of capacity on the covered pipeline to be uncontracted before 2029. To the extent small tranches of capacity on the covered

Crew and Crocker, 1991, *Diversification and regulated Monopoly* in Crew (1991), Competition and the regulation of utilities, Kluwer Academic Publishers, Boston, p. 43.

¹⁰¹⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, pp. 159-160.

¹⁰²⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 160.

¹⁰²¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, Attachment 8, Competition Economists Group, *Cost Allocation for the Goldfields Gas Pipeline*, January 2016, p. 16.

pipeline have become available over the current access arrangement period, GGT has been able to successfully recontract that capacity.¹⁰²²

1928. GGT considers that the Authority's finding in the Draft Decision that existing and potential users may withdraw their demand for covered services, including by re-locating or scaling back their operations, is not reasonable. On the basis that users of the GGP are predominantly involved in the resources sector, GGT has asserted:

It is not credible to suggest that such users would re-locate their operations as a consequence of GGT's proposed cost allocation in order to withdraw their volumes from the GGP.¹⁰²³

1929. In this regard, GGT considers that this was also the view expressed in the process of revising GGP's second access arrangement by:

- Frontier, the Authority's consultant, in its observation that a customer is unlikely to withdraw volume from the pipeline, even when it is free to do so without consequence, provided that continued operations are viable for the customer;¹⁰²⁴ and
- the Authority, in its finding that, for any expiration of a customer contract on the covered portion of the capacity on the GGP, it is reasonable to assume that existing customers, and/or new customers, would provide continued demand for the covered capacity.¹⁰²⁵

1930. In particular, GGT has drawn attention to the Authority's conclusion in the AA2 Final Decision that:

[it is] reasonable to assume that there is limited volume or price risk for the covered portion of the GGP capacity.¹⁰²⁶

1931. GGT has submitted that, if there was a material risk of users withdrawing their demand for covered services on the basis of GGT's proposed CAM, then this could be adequately managed via the prudent discount provisions in rule 96 of the NGR. GGT has noted the finding by CEG in reports submitted with its proposals that a prudent discount allows for efficient usage of the covered capacity without compromising efficient investment in uncovered capacity.¹⁰²⁷

Consistency with the NGO

1932. GGT has considered the finding by Incenta that it is not clear whether the NGO has a pure efficiency objective, or gives priority to the long term interests of consumers.

¹⁰²² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 160.

¹⁰²³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 160.

¹⁰²⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 160.

¹⁰²⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 161.

¹⁰²⁶ As quoted by Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 161.

¹⁰²⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 161.

1933. In this context, GGT submits that the requirements to promote economic efficiency and the pursuit of the long term interests of consumers are not two individual components to be assessed or approached separately. Hence, GGT asserts that it is unambiguous that the NGO is a pure efficiency objective, and as stated by GGT:

The promotion of efficiency is how the long term interests of consumers are achieved.¹⁰²⁸

1934. In support of its position, GGT has submitted that both the second reading speech that accompanied the National Gas (South Australia) Bill and the background to the development of the NGO, and pertinently the advice of the Expert Panel on Energy Access Pricing (the Expert Panel) established by the MCE, confirm the efficiency focus of the NGO.¹⁰²⁹

1935. GGT submits that notions of fairness are not relevant to the CAM in its access arrangement. GGT states:

... it would be an error to seek to construe the provisions of Part 8 of the NGL in light of notions of “fairness” or “reasonableness”. This is consistent with advice commissioned by the Standing Committee of Officials of the MCE on the initial NGR that it was inappropriate to include “fairness and reasonableness” as a criterion in the assessment of cost allocation because their inclusion is not consistent with an economic efficiency objective.¹⁰³⁰

Relevance of regulatory approaches in other industry sectors

1936. GGT submits that approaches to cost allocation in other industries will generally be of no assistance in seeking to interpret the cost allocation provisions in the NGR.

1937. In support of this position, GGT notes:

- the findings by CEG in a report submitted with its revised proposal, which examines the different examples of cost allocation for shared assets across industry sectors provided in the Authority’s Draft Decision;¹⁰³¹ and
- the ERB’s position that approaches taken by regulators operating under different regulatory regimes do not assist in construing the provisions of the applicable regulatory framework.¹⁰³²

1938. GGT submits that the CAM determined by the Authority in its Draft Decision requires provisions for shared assets that are equivalent to those made by the AEMC in 2012 for the NER but which do not exist in the NGR.

1939. In this context, GGT indicates that the rule changes proposed by the AER in 2011, which included provisions relating to shared assets, concerned both the NER and the

¹⁰²⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 162.

¹⁰²⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, pp. 162-165.

¹⁰³⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 164.

¹⁰³¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, Attachment 8, Competition Economists Group, *Cost Allocation for the Goldfields Gas Pipeline*, January 2016, pp. 23-27.

¹⁰³² Western Australian Energy Review Board, *Applications No. 1 and 2 of 2010*, 22 November 2011 as referred to in Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, February 2016, p. 165.

NGR. Where the AER considered it was beneficial to align the electricity and gas regimes (for example, with respect to the setting of the rate of return), the AER proposed similar amendments across the NER and the NGR. With respect to shared assets, the AER only proposed provisions relating to shared assets in respect of the NER, and did not make a similar proposal with respect to the NGR.

Submissions

1940. On 10 March 2016, the Authority received a supplementary submission from GGT that provided reports from HoustonKemp Economists (**HoustonKemp**)¹⁰³³ and Farrier Swier Consulting (**Farrier Swier**)¹⁰³⁴ addressing the consistency of the CAM determined by the Authority in its Draft Decision with the NGO.
1941. On 14 March 2016, the Authority received a submission from BHPB responding to the GGT revised proposal. On 21 March 2016, the Authority received a further submission from BHPB responding only to matters raised in GGT's supplementary submission.

GGT's Supplementary Submission

1942. HoustonKemp maintains its position that GGT's proposed CAM is consistent with the NGO because it provides for a total revenue allocation to reference services that lies between the 'lower' and 'upper' bounds for allocative efficiency defined, respectively, by the incremental and standalone costs of providing those services.¹⁰³⁵
1943. With respect to the Authority's concern that the reference tariff under GGT's proposed CAM could dissuade usage of GGP's covered capacity, HoustonKemp states that:
- The information available to me suggests that the Authority is not correct to conclude or assume that there is a material degree of surplus, covered capacity on the GGP. Rather, for all practical purposes, covered capacity on the GGP is fully contracted through to 2029, and largely contracted through to 2035.¹⁰³⁶
1944. On this basis, HoustonKemp concludes that allocative efficiency across users and potential users of covered and uncovered services cannot be improved through the allocation of a lower amount of total revenue for reference services.¹⁰³⁷
1945. HoustonKemp considers that the CAM determined by the Authority in its Draft Decision would have a detrimental effect on the efficiency of the GGP because:

¹⁰³³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, HoustonKemp Economists, *Review of ERA's draft decision on allocating total revenue*, 26 February 2016.

¹⁰³⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016.

¹⁰³⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, HoustonKemp Economists, *Review of ERA's draft decision on allocating total revenue*, 26 February 2016, pp. 10-16.

¹⁰³⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, HoustonKemp Economists, *Review of ERA's draft decision on allocating total revenue*, 26 February 2016, p. 13.

¹⁰³⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, HoustonKemp Economists, *Review of ERA's draft decision on allocating total revenue*, 26 February 2016, p. 14.

- a lower allocation of total revenue for reference services will not improve allocative efficiency across users and potential users of covered and uncovered services in the absence of any material degree of spare, covered capacity;¹⁰³⁸
 - a potential reduction in the returns to GGT would be detrimental to its incentive to invest in further capacity expansions, thereby reducing dynamic efficiency;¹⁰³⁹
 - the uncertainty and variability as to the costs that would need to be recovered from users of uncovered capacity would likely be detrimental the long term demand for such capacity by users and potential users;¹⁰⁴⁰ and
 - by precluding GGT from setting tariffs by reference to the incremental cost of any future, uncovered pipeline capacity, some efficient potential investments may not proceed, particularly those that are only worthwhile if the tariff for that capacity is set at, or close to, incremental cost.¹⁰⁴¹
1946. Farrier Swier submits that the overarching requirement of the NGO is to promote economic efficiency as the only consideration *for* promoting the long term interest for consumers.¹⁰⁴² In this context, Farrier Swier concludes:
- while the NGL provides no explicit limitation on regulatory decisions that take account of the return that a service provider earns on unregulated sales, this is subject to the overarching NGO requirement to promote economic efficiency; and
 - it would be contrary to the NGO for regulators to make decisions that would have the effect of transferring economic rent from provision of unregulated services to the consumers of regulated services where to do so would be materially economically inefficient.¹⁰⁴³
1947. With reference to Section 28 of the NGL, Farrier Swier considers that the Authority must:
- make decisions and exercise its discretion in a manner that will or is likely to contribute to the achievement of the NGO; and
 - where there are two or more possible designated reviewable regulatory decisions that will, or are likely to, contribute to the achievement of the NGO, be

¹⁰³⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, HoustonKemp Economists, *Review of ERA's draft decision on allocating total revenue*, 26 February 2016, p. 14.

¹⁰³⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, HoustonKemp Economists, *Review of ERA's draft decision on allocating total revenue*, 26 February 2016, p. 15.

¹⁰⁴⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment A, HoustonKemp Economists, *Review of ERA's draft decision on allocating total revenue*, 26 February 2016, p. 15.

¹⁰⁴¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, HoustonKemp Economists, *Review of ERA's draft decision on allocating total revenue*, 26 February 2016, p. 15.

¹⁰⁴² Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016, p. 19.

¹⁰⁴³ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016, p. 19.

satisfied that its decision will or is likely to contribute to the achievement of the NGO *to the greatest degree* and specify reasons.¹⁰⁴⁴

1948. Farrier Swier submits that, based on detailed analysis undertaken by HoustonKemp and CEG summarised in the Authority's Draft Decision:
- GGT's proposed CAM will promote allocative economic efficiency and therefore contribute to the achievement of the NGO;¹⁰⁴⁵ and
 - the CAM determined by the Authority in its Draft Decision will not promote allocative economic efficiency and, hence, does not contribute to the achievement of the NGO.¹⁰⁴⁶
1949. With respect to the Authority's concern that a reference tariff under GGT's proposed CAM could be too high to be consistent with economically efficient outcomes as broadly defined, Farrier Swier has not examined whether the risks of a decline in the utilisation of the covered pipeline are realistic, or not, because it considers this analysis to be unnecessary.¹⁰⁴⁷
1950. In particular, Farrier Swier considers that the ERA's concerns can be addressed through existing rule provisions, such as:
- rule 96 of the NGR, which provides that GGT may be able to provide a prudent discount;¹⁰⁴⁸ and
 - rule 85 of the NGR, which provides that a capital redundancy mechanism could be included in a future access arrangement with the effect that certain assets ceased to contribute in any way to delivery of pipeline services.¹⁰⁴⁹
1951. Farrier Swier also submits that GGT is better placed than the ERA to manage underutilisation risk, if it were to emerge, based on the situation and facts at the time.¹⁰⁵⁰

¹⁰⁴⁴ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016, p. 27.

¹⁰⁴⁵ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016, pp. 71-74.

¹⁰⁴⁶ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016, pp. 74-76.

¹⁰⁴⁷ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment: Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016, p. 75.

¹⁰⁴⁸ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016, p. 75.

¹⁰⁴⁹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016, p. 73, p. 75.

¹⁰⁵⁰ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016, p. 76.

1952. On the basis that the CAM determined by the Authority in its Draft Decision does not contribute to the NGO, Farrier Swier concludes that:

There is no need to consider which method would contribute to the achievement of the NGO to the greatest degree.¹⁰⁵¹

BHPB's Submission on GGT's Revised Proposal

BHPB submits that the CAM determined by the Authority in its Draft Decision under rule 93 of the NGR is correct and in accordance with the NGO and RPP.¹⁰⁵²

Legal permissibility

1953. With respect to the Authority's interpretation of rule 93 of the NGR, BHPB has maintained its position that:

... there is no basis to read in the wording suggested by GGT. If the legislature had intended the definition of "pipeline service" to be limited to covered pipelines, it would have expressly provided for this in the text of rule 93, as it has elsewhere in the NGR.¹⁰⁵³

Efficiency considerations

1954. BHPB notes the significant challenges to its subsidiary Nickel West despite significant reductions in its cost base since 2012. According to BHPB, Nickel West has reported EBIT losses of US\$208 million in the financial years ending 2014, US\$74 million in the financial year ending 2015 and US\$142 million in the half year ending 31 December 2015.¹⁰⁵⁴ According to BHPB, these losses reflect:

- a decline in global nickel prices of 74 per cent from US\$13.20/lb in February 2011 to a spot price of US\$3.43/lb on 11 February 2016; and
- the energy intensity of its operations, with energy costs exceeding 12 per cent of its total cost base in each of these reporting periods, inclusive of gas transportation costs.¹⁰⁵⁵

1955. BHPB considers that similar cost pressures and macroeconomic pricing have resulted in the suspension and/or closure of nickel operations worldwide, including Mincor and Panoramic Resources operations in the Kambalda region of Western Australia.¹⁰⁵⁶

¹⁰⁵¹ Goldfields Gas Transmission Pty Ltd, *Goldfields Gas Pipeline Access Arrangement Revision Proposal Supplementary Submission in Response to ERA Draft Decision: Submission*, Attachment, Farrier Swier Consulting, *Economic considerations for interpreting the National Gas Objective*, 26 February 2016, p. 76.

¹⁰⁵² BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 2.

¹⁰⁵³ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 6.

¹⁰⁵⁴ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 7.

¹⁰⁵⁵ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, pp. 6-7.

¹⁰⁵⁶ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 7.

1956. In this context, BHPB submits that the CAM determined by the Authority in its Draft Decision ensures that costs are distributed efficiently across all services and in accordance with the NGO and RPP.

1957. BHPB notes that the uncovered capacity, which predominantly services iron ore producers, relates only to delivery points located along the first half of the GGP. In contrast, a substantial portion of the covered capacity, which services nickel and gold producers, relates to delivery points on the second half of the GGP. Given that nickel producers comprise more than fifty per cent of GGP's covered capacity, BHPB submits that:

continued efficient use of the second half of the pipeline is dependent upon the continued viability of the nickel sector, which is energy intensive and faces a relatively high proportion of gas transportation costs.¹⁰⁵⁷

1958. BHPB submits that tariffs are an important aspect of demand for pipeline services and that it is not correct for GGT or CEG to claim that there would be no loss of economic activity on the GGP if reference tariffs are held high or, equivalently, that there would be no benefit to efficiency if reference tariffs were lowered.¹⁰⁵⁸

1959. In particular, BHPB submits that GGT has not considered that:

- shippers on the GGP may have the right to relinquish contracted capacity, which if applicable, could have a substantial impact on the contracted capacity of the covered pipeline.¹⁰⁵⁹
- demand for the covered and uncovered capacity of the GGP is not fungible so that any reduction in the use of the covered capacity can be assumed to be taken up as uncovered capacity.¹⁰⁶⁰

1960. BHPB disputes the position taken by GGT and CEG that, under GGT's proposed CAM, the prudent discount rule would mitigate the risk of inefficient economic outcomes for the GGP. BHPB considers that, in order for selective discounting to eliminate the risk of inefficiency it would be necessary for GGT to have an unrealistic degree of omniscience about the mining activities associated with the GGP. As stated by BHPB:

In particular, GGT would not only need to offer a discount for current activities, but also need to offer discounts for future activities to ensure that prospective future projects continue to be developed. BHPB submits that it is not reasonable to assume that GGT would have all of the information required to offer such discounts in advance, especially in an industry that makes investment decisions many years in advance and constantly reviews those decisions based on (often very confidential) information about resources and projects.¹⁰⁶¹

¹⁰⁵⁷ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 7.

¹⁰⁵⁸ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 7.

¹⁰⁵⁹ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 7.

¹⁰⁶⁰ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 7.

¹⁰⁶¹ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 8.

1961. Further, BHPB submits that GGT would need to quarantine the selective discount to only those shippers that require the discount to remain on the GGP. Without an effective quarantine, BHPB considers that the increased revenue loss to GGT associated with keeping the target shipper on the GGP would reduce the likelihood that GGT could offer that discount.¹⁰⁶²
1962. In this context, BHPB considers that it is unlikely that GGT could quarantine any discount because:
- transportation agreements in the Australian gas industry commonly contain ‘most favoured nation’ clauses, which have the effect of requiring that a discount provided to one user is also provided to other users;¹⁰⁶³ and
 - Nickel West uses gas from the GGP to generate and sell electricity to other third party mines, which means that GGT would not be able to directly provide a selective discount to the mines that Nickel West sells electricity without also providing a discount to BHPB.¹⁰⁶⁴
1963. With respect to the impact of the CAM determined by the Authority in the Draft Decision on the commerciality of efficient uncovered projects, BHPB submits that, under current circumstances and in the absence of evidence to the contrary, the Authority was correct in forming the view that the uncovered service could bear its proportionate share of the joint costs.¹⁰⁶⁵
1964. BHPB notes that:
- GGT did not provide any empirical evidence that the ERA’s proposed allocation of costs would result in a reasonable return not being achieved on the two tranches of uncovered service that have already been installed, or that a new augmentation project to create a new tranche of uncovered capacity would be made uncommercial.
- Indeed, the ERA’s analysis during the previous review demonstrated that the first of the uncovered augmentations (the second occurred after that review) would generate a substantial surplus over its incremental cost even assuming that only the reference tariff was applied to that project. The available surplus would be even greater in light of the evidence on the public record that the prices for the uncovered services are materially higher than the reference tariff.¹⁰⁶⁶
1965. BHPB notes that CEG considered that the absence of specifically negotiated clauses, which would require prices to be changed in some way if new customers connect at a future date, provides evidence of the theoretically efficient risk and reward allocation for a workably competitive market that is consistent with the circumstances of the GGP.¹⁰⁶⁷

¹⁰⁶² BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 8.

¹⁰⁶³ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 8.

¹⁰⁶⁴ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 8.

¹⁰⁶⁵ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 8.

¹⁰⁶⁶ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 8.

¹⁰⁶⁷ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 11.

1966. BHPB submits that CEG has drawn this conclusion on the basis that all but one of the contracts for the covered capacity on the GGP have fixed prices. With respect to this contract, BHPB indicates that CEG does not disclose any details about this contract, including the capacity provided under this contract. Hence, BHPB considers that it is not clear whether, or not, this contract is significant in the context of the GGP or supportive of the argument that new users are not required to pay a share of common costs.¹⁰⁶⁸

1967. Further, BHPB submits that:

Under CEG's preferred competitive market outcome, the prices that GGT would charge would have it bearing a substantial risk as to whether the expected growth in demand emerges. As a result, GGT might not recover its costs if the forecast demand does not emerge. However, this is not consistent with how the GGP was actually developed.

As the ERA is aware, the GGP was constructed with a tariff model in place,¹⁰⁶⁹ in which that tariff was determined to generate an NPV = 0 over the life of the GGP.^{9, 1070} Under this tariff model, the tariffs were to be adjusted over time to reflect past actual demand and updated forecasts of demand. There was no long term volume risk under this approach to pricing. Therefore, the ERA's proposed method of cost allocation, where the allocation of common costs to new users (and so the price benefit to existing users) depends on the actual utilisation of the GGP, is the version of CEG's two 'competitive market outcomes' that is more consistent with the historical facts surrounding the GGP.¹⁰⁷¹

1968. BHPB disagrees with GGT's conclusions that the examples of regulatory precedents for shared assets in other sectors, as considered by Incenta and summarised in the Draft Decision, are sufficiently different to render them uninformative.

1969. In particular, BHPB highlights the relevance of the flexible CAM applied by the New Zealand Commerce Commission (NZCC), which provides for an adjustment to the CAM for specific services to avoid 'unduly deterring' the unregulated service. BHPB considers that this approach would provide GGT with the opportunity to approach the Authority for a variation to its standard CAM, if the evidence indicated that the new tranche of uncovered capacity would not be commercially viable under that CAM.¹⁰⁷²

BHPB's Further Submission

1970. In a further submission, BHPB considers that GGT and HoustonKemp have incorrectly presented that the choice of the CAM for the GGT is between the methodology determined by the Authority in its Draft Decision based on relative capacity utilisation or no cost allocation at all.¹⁰⁷³

¹⁰⁶⁸ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, p. 11.

¹⁰⁶⁹ The pipeline was constructed by the major customers (of which BHPB was one), but who were assumed to pay the calculated tariff for the purpose of the tariff calculation.

¹⁰⁷⁰ It is noted that one of the factors the ERA's predecessor gave weight when setting the initial capital base for the GGT was the implied residual value generated by this tariff model

¹⁰⁷¹ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, pp. 11-12.

¹⁰⁷² BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, 11 March 2016, pp. 10-11.

¹⁰⁷³ BHP Billiton Limited, *Response to GGT further submission*, 18 March 2016, p. 1.

1971. On this matter, BHPB submits that Incenta's recommendation prior to the Draft Decision was to:
- adopt a usage based allocation as a starting point;
 - test whether that allocation would be consistent with GGT recovering its costs across all services provided by the GGP, and provide assumptions that would be relevant to that analysis; and
 - modify the CAM if necessary to avoid reasonable prospect that GGT will not recover its costs across all services provided by the GGP in aggregate.¹⁰⁷⁴
1972. In this context, BHPB reiterates that GGT has not provided any empirical evidence that demonstrates that the CAM determined by the Authority in its Draft Decision would result in GGT not recovering its costs across all services provided by the GGP in aggregate.¹⁰⁷⁵
1973. BHPB submits that Farrier Swier's interpretation of the NGO supports the CAM determined by the Authority in its Draft Decision because it only requires that the allocation methodology for joint costs does not diminish economic efficiency, rather than requiring that economic efficiency is positively advanced. BHPB submits that:
- ... the Farrier Swier interpretation of the NGO is very similar to the interpretation of the NGO that Mr Balchin [Incenta] considered would provide a stronger case for allocating a share of joint costs to uncovered services.¹⁰⁷⁶

Considerations of the Authority

1974. In its revised proposal, GGT has proposed to continue with the approach used to allocate total revenue to reference services approved by the Authority for the GGP's second access arrangement in order to comply with section 8.38 of the Gas Code. That is, for the third access arrangement period, GGT has calculated total revenue as the standalone costs associated with providing covered services, excluding incremental capital and operating costs associated with providing uncovered services.
1975. The effect of GGT's approach is succinctly stated by CEG in a report provided to the Authority by GGT:
- ... when new customers have been added to the pipeline — most notably by way of uncovered expansions — the existing customers procuring covered services have not been attributed a reduced portion of the pipeline costs that are shared with those new customers. The existing customers continued to be allocated 100 per cent of the costs of the pipeline itself — even though the new customers are also using it.¹⁰⁷⁷
1976. As such, GGT has proposed a total revenue allocation to covered services under rule 93 of the NGR that implicitly adopts a CAM that apportions all of the joint costs associated with GGP's covered assets that are used in the delivery of both covered and uncovered services only to users of covered services.

¹⁰⁷⁴ BHP Billiton Limited, *Response to GGT further submission*, 18 March 2016, p. 2.

¹⁰⁷⁵ BHP Billiton Limited, *Response to GGT further submission*, 18 March 2016, p. 1.

¹⁰⁷⁶ BHP Billiton Limited, *Response to GGT further submission*, 18 March 2016, p. 2.

¹⁰⁷⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal; Supporting Information: Attachment 3, Competition Economists Group Cost Allocation for the Goldfields Gas Pipeline*, 15 August 2014, p. 4.

1977. In its Draft Decision, the Authority:

- rejected GGT’s proposal for the total revenue allocation to covered services under rule 93 of the NGR on the basis that a CAM that implicitly apportions all of the joint costs to users of covered services does not comply with the specific guidance provided in the RPP to promote the economic efficiency of gas pipeline services; and
- determined that, where joint costs are currently included in the total revenue calculation under rule 76 of the NGR *in full*, the total revenue allocation under rule 93(2)(c) should be based on relative capacity utilisation.¹⁰⁷⁸ In effect, this would ensure that the joint costs are spread evenly across all services provided by means of the GGP.

1978. The reasons for the Authority’s Draft Decision have been carefully outlined in detail in a previous sub-section commencing at paragraph 1880. In brief, to avoid a reference tariff determination for the GGP that, in and of itself, increases the risk of inefficient economic outcomes for the GGP that are not compliant with the operational guidance provided in the RPP as required to promote the achievement of the NGO, the Authority adopted a specific interpretation of ‘other costs’, and chose to exercise its discretion under, rule 93(2)(c) of the NGR in order to allocate only a share of the joint costs to covered services.

1979. In the making of its Draft Decision, the Authority reviewed the total revenue calculation submitted by GGT in its initial proposal, and examined all of the relevant rules in Part 9 of the NGR that govern price and revenue regulation and, in particular, the total revenue calculation under rule 76 of the NGR pursuant to the building blocks. On the basis of the relevant provisions in the NGR, the Authority confirmed GGT’s position that the total revenue calculation for the GGP under rule 76 would:

- include all of the capital and operating costs of the covered gas pipeline system — identified as the mainline of the GGP and four compressors at Yarraloola, Ilgarari, Wiluna and Paraburdoo (**initial compressors**); and
- exclude only the incremental capital and operating costs as a result of uncovered expansions in capacity — identified as the additional compressors at Paraburdoo, Wyloo West, Ned’s Creek and a new compressor station installed at Turee Creek (**additional compressors**).

1980. Hence, the Authority noted that a reference tariff determination based on the total revenue calculation for the GGP under rule 76 of the NGR will reflect all of the costs of the GGP’s covered assets, even when unique circumstances have provided, over time, for an increasing proportion of those covered assets to be used for the provision of uncovered services.

1981. In its Draft Decision, the Authority determined that the total revenue calculation for the GGP under rule 76 of the NGR would not provide for a reference tariff determination that promoted the economic efficiency of services provided by the GGP

¹⁰⁷⁸ The ERA assessed the most appropriate allocator to attribute joint costs to the covered and uncovered services. Refer to the Draft Decision section “Allocation of Total Revenue to reference services” on pages 323-344. Typically most joint costs were allocated on a relative capacity utilisation but there are instances where operating expenditure and capital expenditure for compressor stations were allocated on a different basis as there was a better allocation method for those costs. For example, expenditure directed to assets at compressor stations, apportioned in accordance with the ratio of covered compressor assets to uncovered compressor assets at the designated station (See page 332 and 338 of the Draft Decision).

consistent with the NGO. Accordingly, the Authority had no discretion under rule 77, or other provisions of the NGR, to adjust the initial capital base or capital expenditure determined for its first access arrangement in order to reflect the unique circumstances of the GGP.¹⁰⁷⁹ Instead, the Authority sought to make an adjustment to the total revenue allocated to covered services under rule 93 with a view to improving the efficiency of the reference tariff determination for the third access arrangement period of the GGP.

1982. However, the Authority has reviewed GGT's submission on the construction of rule 93 of the NGR as well as the submissions of other stakeholders on this matter. On the basis of its reconsideration of these matters, the Authority has determined that it has no discretion under the NGR or NGL(WA) to provide for a part allocation of the total revenue for the GGP calculated under rule 76. In particular, based on textual and contextual evidence in the NGL(WA) and NGR referred to in GGT's submission, and set out at paragraphs 1915 to 1921, under rule 93, joint costs of shared regulated assets that are used in both the delivery of covered and uncovered services must be allocated only between covered reference and non-reference services.
1983. As a result, the Authority accepts the CAM submitted by GGT in its revised proposed access arrangement is consistent with rule 93 of the NGR. The Authority notes that the change to its legal interpretation under rule 93 of the NGR from the Draft Decision to the Final Decision has significantly affected the reference tariff determination for the GGP compared to the CAM used by the Authority in its Draft Decision. The Authority notes that the reference tariff determination in its Draft Decision is more indicative of the reference tariff that would apply if all services provided by the GGP were covered under its access arrangement.
1984. While the Authority accepts the CAM that was submitted by GGT is consistent with rule 93 of the NGR, the Authority rejects GGT's position that the total revenue it has submitted for the GGP complies with the RPP or promotes outcomes for the GGP as required for consistency with the NGO. Further, the Authority disagrees with GGT's application of its CAM, which was explained earlier in the Final Decision regarding operating and capital expenditure assessments.
1985. The Authority is concerned that there is a significant risk that the reference tariff determined for the third access arrangement period for this Final Decision, will not reflect the 'efficient cost of reference services' as required by RPP(2) or provide 'effective incentives in order to promote economic efficiency with respect to reference services the service provider provides' as required by RPP(3) and hence, in and of itself, will not promote the NGO.
1986. The Authority considers that the reference tariff determined for GGP could dissuade usage of covered services.
1987. The Authority notes that its reference tariff determination provides the opportunity for GGT to undertake investment projects to expand the capacity of the GGP to deliver uncovered services at incremental cost.
1988. However, in negotiating with users of uncovered services, GGT is expected to maximise profits in the provision of uncovered services. Given that uncovered services utilise the same regulated assets which have been declared on the basis of

¹⁰⁷⁹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 317.

their natural monopoly characteristics, the Authority considers that it is not unreasonable to expect that GGT will exercise some degree of market power and charge tariffs as close as possible to each user's opportunity cost.

1989. In this context, the Authority notes that it is not privy to GGT's demand forecasts for uncovered services or to information on tariffs charged for uncovered services. However, according to economic principles and without evidence to the contrary, the Authority considers that it is not unreasonable to assume that tariffs for uncovered services will not only exceed their incremental cost but also exceed the long run average cost of all services provided by the GGP.
1990. In addition, the Authority notes that there is an economic incentive for GGT to expand the capacity of the GGP but only for the purposes of providing uncovered services. That is, if GGT can set tariffs for uncovered services above incremental cost, then it can earn above normal economic profit on its investment to expand the capacity of the GGP and unlike for similar investment in covered services, such expansions will have no effect on the reference tariff determination in the next access arrangement.
1991. Accordingly, the Authority remains concerned that there is a significant risk that the reference tariff determination for the GGP will exacerbate the economic inefficiency of all services provided by the GGP from unexploited economies of scale over the longer term. This is despite the application of the gas pipeline access regime that is embodied in the NGL(WA) and NGR, which is intended to avoid such outcomes. The Authority further notes that stakeholders may be able to seek a coverage determination from the National Competition Council (**NCC**) through the appropriate legal process prescribed in the NGL(WA) and the NGR for a full access arrangement to extend to services that are provided by uncovered assets.

Reference Tariffs

Regulatory Requirements

1992. Rule 92 of the NGR sets out the requirements for the equalisation of revenues from tariffs charged with calculated tariff revenue.

92 Revenue equalisation

- (1) A full access arrangement must include a mechanism (*a reference tariff variation mechanism*) for variation of a reference tariff over the course of an *access arrangement period*.
- (2) The *reference tariff variation mechanism* must be designed to equalise (in terms of present values):
 - (a) forecast revenue from reference services over the *access arrangement period*; and
 - (b) the portion of total revenue allocated to reference services for the *access arrangement period*.
- (3) However, if there is an interval (the **interval of delay**) between a revision commencement date stated in a full access arrangement and the date on which revisions to the access arrangement actually commence:
 - (a) reference tariffs, as in force at the end of the previous access arrangement period, continue without variation for the interval of delay; but
 - (b) the operation of this subrule may be taken into account in fixing reference tariffs for the new access arrangement period.

1993. Rule 95 of the NGR sets out the requirements for the determination of reference tariffs for transmission pipelines. Rule 95 also determines how total revenue is apportioned to reference services and to particular users or class of users.

95 Tariffs – transmission pipelines

- (1) A tariff for a reference service provided by means of a transmission pipeline must be designed:
 - (a) to generate from the provision of each reference service the portion of total revenue referable to that reference service; and
 - (b) as far as is practicable consistently with paragraph (a), to generate from the user, or the class of users, to which the reference service is provided, the portion of total revenue referable to providing the reference service to the particular user or class of users.
- (2) The portion of total revenue referable to a particular reference service is determined as follows:
 - (a) costs directly attributable to each reference service are to be allocated to that service; and
 - (b) other costs attributable to reference services are to be allocated between them on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the [Authority].
- (3) The portion of total revenue referable to providing a reference service to a particular user or class of users is determined as follows:
 - (a) costs directly attributable to supplying the user or class of users are to be allocated to the relevant user or class; and

- (b) other costs are to be allocated between the user or class of users and other users or classes of users on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the [Authority].

(4) The [Authority's] discretion under this rule is limited.

GGT's Initial Proposal

1994. GGT proposed to relocate several clauses from the current General Terms and Conditions into its initial proposed revised access arrangement. Table 107 sets out GGT's initial proposed revised access arrangement sections for reference tariffs and charges that were revised and relocated from the current General Terms and Conditions.

Table 107 Initial Proposal Relocated Reference Tariff Clauses

Proposed Revised Access Arrangement Reference/Terms and Conditions	Current General Terms and Conditions/Access Arrangement
4.1 Reference Service Tariff and Charges	9.1 Transportation Tariff and Charges
4.1 Reference Service Tariff and Charges	9.2 Transportation Tariff Components
4.1 Reference Service Tariff and Charges	9.4 Transportation Charges
4.2 Other Charges	9.5 Other Charges
4.2 Other Charges	9.6 Quantity Variation Charges
4.3 Multiple Delivery Points	9.7 Multiple Outlet Points
4.4 Basis of Charges	9.3 Basis of Charges
4.5 Reference Tariff Variation Mechanism	Access Arrangement - Section 5.3 and Schedule 1 Reference Tariff Adjustment Mechanism
4.6 Reference Tariff after 31 December 2019	-
4.7 GST	9.11 Goods and Services Tax
Section A of Schedule A to the proposed revised access arrangement	Fourth Schedule: Statement of Tariffs and Charges
Section A1 of Schedule A to the proposed revised access arrangement	9.8 Tariffs and Charges Adjustment for Inflation
Section A2 of Schedule A to the proposed revised access arrangement	Access Arrangement – Schedule 1 Reference Tariff Adjustment Mechanism
Section A3 of Schedule A to the proposed revised access arrangement	9.10 Rounding
Section A4 of Schedule A to the proposed revised access arrangement	9.9 Change in Imposts
Terms and Conditions Clause 5	9.13 Bond/Deposit
Terms and Conditions Clause 23	9.12 Charges When Flows are Restricted

Source: Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014
 Goldfields Gas Transmission Pty Ltd, *Proposed Revisions to Access Arrangement – Appendix 3 – General Terms and Conditions*, 30 March 2012. Goldfields Gas Transmission Pty Ltd, *Proposed Revisions to Access Arrangement*, 30 March 2012.

1995. GGT proposed to retain its three-part reference tariff, which has been in place since the first access arrangement for the GGP. The three-part tariff comprises:

- toll charge (a price per GJ of contracted capacity (MDQ));
- capacity reservation charge (a price per GJ MDQ kilometre); and
- throughput charge (a price for GJ kilometre).

1996. GGT considered that the toll charge and capacity reservation charge are effectively access fees for recovering the fixed costs of the covered pipeline, whereas the throughput charge recovers variable costs.¹⁰⁸⁰ GGT stated that by structuring the capacity reservation and throughput charges as distance related charges, this would make the reference tariff reflective of the costs of the resources used to provide pipeline services to individual users at different locations along the GGP.

1997. GGT noted that reference tariffs in the preceding two access arrangement periods were established assuming an allocation of the total revenue to the components of the reference tariff in the proportions shown in Table 108. GGT stated that it examined its mix of fixed and variable costs for allocating total revenue and did not make changes to the proportions shown in Table 108.

Table 108 GGT Proposed Allocation of Total Revenue to Reference Tariff Components

Tariff Component	Proportion (%)
Toll Charge	11.3
Capacity Reservation Charge	72.2
Throughput Charge	16.5

Source: Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 189.

1998. GGT stated that the toll charge of the its initial proposal reference tariff had been calculated as the price during the forthcoming access arrangement period, which set the value of the forecast revenue from the charge equal to 11.3 per cent of the present value of the total revenue.

1999. GGT calculated the capacity reservation charge as the price during the forthcoming access arrangement period, which set the present value of the forecast revenue from the charge equal to 72.2 per cent of the present value of the total revenue.

2000. GGT calculated the throughput charge as the price during the forthcoming access arrangement period, which set the present value of the forecast revenue from the charge (as per GGT's proposed throughput forecast) equal to 16.5 per cent of the present value of the total revenue.

2001. Table 109 shows GGT's initial proposal reference tariffs.

¹⁰⁸⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 189.

Table 109 GGT's Initial Proposal Reference Tariff (Nominal \$)

Tariff Component	Tariff
Toll Charge (\$/GJ MDQ)	0.235806
Capacity Reservation Charge (\$/GJ MDQ KM)	0.001459
Throughput Charge (\$/GJ KM)	0.000442

Source: Goldfields Gas Transmission Pty Ltd Access Arrangement Revision Proposal: Supporting Information, 15 August 2014, p. 190.

Draft Decision

Reference Service Tariff and Charges

2002. The Authority accepted GGT's proposal to include certain terms and conditions for pipeline services in section 4 of the proposed revised access arrangement. However, the Authority did not accept GGT's proposal to remove the specific terms and conditions from the terms and conditions applying to the reference tariffs and charges in Schedule D of the proposed revised access arrangement.

Section 4.1 reference service tariff and charges

2003. GGT proposed to relocate reference tariffs and charges from clauses 9.1, 9.2 and 9.4 of the current General Terms and Conditions to section 4.1 of the proposed revised access arrangement. The Authority accepted GGT's proposed section 4.1 as stated in part 2 of Appendix 9 of the Draft Decision. The Authority also required that transportation charges and other charges be included in the proposed revised terms and conditions in GGT's revised proposal.

Section 4.2 other charges

2004. GGT proposed to relocate other charges and quantity variation charges from clause 9.5 and 9.6 of the current General Terms and Conditions to section 4.2 of the proposed revised access arrangement. The Authority did not accept GGT's proposed section 4.2 as stated in Appendix 9 of the Draft Decision. The Authority required that GGT amend section 4.2 in accordance with the Authority's recommendations in Appendix 9 of the Draft Decision. Additionally, the Authority required that other charges in section 4.2 of the proposed revised access arrangement be consistent with the proposed revised terms and conditions in GGT's revised proposal.

Section 4.3 multiple delivery points

2005. GGT proposed to relocate multiple outlet points from clause 9.7 of the current General Terms and Conditions to section 4.3 of the proposed revised access arrangement. The Authority accepted GGT's proposed section 4.3 as stated in part 2 of Appendix 9 of the Draft Decision. The Authority also required that multiple delivery points be included in the proposed revised terms and conditions in GGT's revised proposal.

Section 4.4 basis of charges

2006. GGT proposed to relocate basis of charges from clause 9.3 of the current General Terms and Conditions to section 4.4 of the proposed revised access arrangement. The Authority did not accept GGT's proposed section 4.4 as stated in Appendix 9 of the Draft Decision. The Authority required that GGT amend section 4.4 of the

proposed revised access arrangement in accordance with the Authority's recommendations in Appendix 9 of the Draft Decision. The Authority also required that basis of charges be included in the proposed revised terms and conditions in GGT's revised proposal.

Section 4.6 reference tariff after 31 December 2019

2007. GGT proposed to introduce a section that sets out the reference tariff that would apply should the revision commencement date for the fourth access arrangement date be later than 1 January 2020. The Authority did not reject the inclusion of this section 4.3. The Authority accepted that the existing tariff at 31 December 2019 should continue to apply to the provision of the firm service between 1 January 2020 and the later revision commencement date. The Authority considered this section to be consistent with rule 92(3) of the NGR.

Section 4.7 GST

2008. GGT proposed to revise and relocate the Goods and Services Tax (**GST**) from clause 9.11 of the current General Terms and Conditions to section 4.7 of the proposed revised access arrangement. The Authority did not accept GGT's proposed section 4.7 as stated in part 2 of Appendix 9 of the Draft Decision. The Authority required that GGT amend section 4.7 of the proposed revised access arrangement in accordance with part 2 of Appendix 9 of the Draft Decision. Additionally, the Authority required that GST in section 4.7 of the proposed revised access arrangement be consistent with the proposed revised terms and conditions in GGT's revised proposal.

Section A of Schedule A

2009. GGT proposed to revise and relocate the Fourth Schedule to the current General Terms and Conditions to Schedule A of the proposed revised access arrangement. The Authority did not accept GGT's initial proposal reference tariffs for the fourth access arrangement period. The Authority required GGT to amend the Toll Tariff, Capacity Reservation Tariff and Throughput Tariff in Section A of Schedule A to the proposed revised access arrangement in line with required amendment 14 of the Draft Decision.

2010. As stated in Appendix 9 of the Draft Decision, the Authority did not accept the following rates and allowances:

- Authorised Overrun Rate
- Imbalance Rate
- Imbalance allowance
- Daily Variance Rate
- Daily Variation Allowance

2011. The Authority required that GGT amend the five rates and allowances in Schedule A to the proposed revised access arrangement in accordance with the Authority's recommendations in Appendix 9 of the Draft Decision. Additionally the Authority required that all rates, allowances and charges be included in the proposed revised terms and conditions as stated in Appendix 9 of the Draft Decision.

Section A3 of Schedule A - rounding

2012. GGT proposed to relocate rounding from clause 9.10 of the current General Terms and Conditions to section A3 of Schedule A to the proposed revised access arrangement. The Authority accepted GGT's proposed section as stated in part 2 of Appendix 9 of the Draft Decision. The Authority also required that rounding be included in the proposed revised terms and conditions.

Section A4 of Schedule A

2013. GGT proposed to revise and relocate change in imposts from clause 9.9 of the current General Terms and Conditions to section A4 of Schedule A. The Authority accepted GGT's proposed section as stated in part 2 of Appendix 9 in the Draft Decision.¹⁰⁸¹

Reference Tariff Structure and Components

2014. The Authority approved GGT's initial proposal not to revise its three part tariff structure and percentage proportions.
2015. As a result of the various required amendments in the Draft Decision, the Authority did not accept GGT's initial proposal reference tariffs for the forthcoming access arrangement. The Authority required that GGT amend its tariffs in line with Table 110.
2016. The Authority noted that, in calculating its Draft Decision approved reference tariffs for the third access arrangement period, it had regard to rule 92(3) of the NGR. The Authority considered that there would be an interval (interval of delay) between the revision commencement date and the date on which revisions to the access arrangement would commence. The Authority noted that, as a result of the interval, the reference tariffs at the end of the second access arrangement period should continue to apply without variation for the interval of delay. In calculating the reference tariffs, the Authority factored in the delay and calculated the tariffs based on revised prices commencing on 1 July 2016 to ensure that GGT would be no better or worse off as a result of the delay. The Authority's stated intention was for tariffs to begin on 1 July 2016, and to be adjusted in accordance with the Authority's Draft Decision approved tariff variation mechanism.

Table 110 Authority's Draft Decision Reference Tariff (Nominal \$)

Tariff Component	Tariff
Toll Charge (\$/GJ MDQ)	0.083075
Capacity Reservation Charge (\$/GJ MDQ KM)	0.000446
Throughput Charge (\$/GJ KM)	0.000163

Source: ERA, GGP Tariff Model, December 2015.

¹⁰⁸¹ Section 4.5 and Sections A1 and A2 of Schedule A of the proposed revised access arrangement are discussed in the Reference Tariff Variation Mechanism chapter of the Final Decision. Clauses 5 and 23 of the initial proposal proposed revised terms and conditions are discussed in the Terms and Conditions Applying to Firm Services chapter of the Final Decision.

GGT's Revised Proposal

2017. GGT has not accepted all of the changes under Required Amendment 14 of the Draft Decision.
2018. GGT states that it has amended its reference tariff and charges section of its revised proposal, which reflect the way GGT has addressed the required amendments from the Draft Decision. However, as GGT has not accepted all of the Authority's required amendments, GGT's revised proposal reference tariffs for the forthcoming access arrangement period are not the same required in as the Authority's Draft Decision.¹⁰⁸² GGT's revised proposal reference tariff, which is proposes as applying from 1 July 2016, is shown in Table 111 below.

Table 111 GGT's Revised Proposal Reference Tariff (Nominal \$)

Tariff Component	Tariff
Toll Charge (\$/GJ MDQ)	0.245608
Capacity Reservation Charge (\$/GJ MDQ KM)	0.001488
Throughput Charge (\$/GJ KM)	0.000458

Source: Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, Table 15, p. 168.

Reference Service Tariff and Charges¹⁰⁸³

Section 4.1 reference service tariff and charges

2019. GGT has made two minor changes to section 4.1 of the proposed revised access arrangement, removing "clause" in section 4.1.2 and section 4.1.3 and replacing it with "section". In accordance with the Draft Decision, GGT has included reference service tariff and charges into the revised proposal Terms and Conditions (Schedule D of the proposed revised access arrangement). However, Clause D9.1 of GGT's revised proposal Terms and Conditions is a new addition that does not appear in section 4.1 of the proposed revised access arrangement.

Section 4.2 other charges

2020. GGT has made four minor updates to the cross references in section 4.2 of the proposed revised access arrangement¹⁰⁸⁴ and has removed section 4.2.2(f) in accordance with one of the changes under Required Amendment 21 of the Draft Decision. GGT has also included other charges into clause D10 of the revised proposal Terms and Conditions in accordance with the Draft Decision, however the wording in section 4.2 and clause D10 do not match and are not entirely consistent with each other.

¹⁰⁸² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 168.

¹⁰⁸³ Section 4 of GGT's proposed revised access arrangement should be read in conjunction with the revised proposal Terms and Conditions (Schedule D of the proposed revised access arrangement) for clarity and comparability.

¹⁰⁸⁴ At clauses 4.2.3(a), 4.2.5(b) and 4.2.6 of GGT's proposed revised access arrangement.

Section 4.3 multiple delivery points

2021. GGT has not made any changes to section 4.3 of the proposed revised access arrangement. GGT has included multiple delivery points into clause D10.8 of the revised proposal Terms and Conditions in accordance with the Draft Decision. The wording of section 4.3 and clause D10.8 are the same.

Section 4.4 basis of charges

2022. GGT has not made any changes to section 4.4 of the proposed revised access arrangement. GGT has reintroduced clause 9.3 of the current General Terms and Conditions into clause D12.1 of the revised proposal Terms and Conditions in accordance with the Draft Decision, but with some cross referencing discrepancies. The wording of section 4.4 and clause 9.3 do not match and are not entirely consistent with each other.

Section 4.6 reference tariff after 31 December 2019

2023. GGT has not made any changes to section 4.4 of the proposed revised access arrangement from its initial proposal.

Section 4.7 GST

2024. GGT has removed section 4.7 from its proposed revised access arrangement and reinstated an updated version of clause 9.11 of the current General Terms and Conditions into clause D41 of the proposed revised Terms and Conditions.

Section A of Schedule A

2025. GGT has updated Section A of Schedule A of the proposed revised access arrangement as follows:

- capacity of covered portion of the pipeline changed from approximately 109 TJ/day¹⁰⁸⁵ to approximately 102.5 TJ/day;
- tariff start dates changed from 1 January 2015¹⁰⁸⁶ to 1 July 2016; and
- a change in tariffs as a result of GGT's response to the Authority's Draft Decision required amendments.

Section A3 of Schedule A - rounding

2026. GGT has not made any changes to rounding in section A3 of Schedule A to the proposed revised access arrangement. GGT has not included rounding into its revised proposal Terms and Conditions as required by the Draft Decision.

Section A4 of Schedule A – cost pass-through events

2027. GGT has not made any changes to the cost pass throughs in section A4 of Schedule A to the proposed revised access arrangement.

¹⁰⁸⁵ The change in the capacity of the covered portion of the pipeline is discussed further in the demand chapter of this Final Decision.

¹⁰⁸⁶ The change in dates is discussed further in the interval of delay section in this chapter of the Final Decision.

Interval of Delay

2028. GGT considers that there is no interval of delay for this current access arrangement review, within the meaning of that term under rule 92(3) of the NGR. Therefore, GGT submits that the operation of rule 92(3) of the NGR is not to be taken into account in fixing reference tariffs for the forthcoming access arrangement period.
2029. Alternatively, GGT states that, if it is wrong about there not being an interval of delay, and an interval of delay has occurred, rule 92(3)(b) of the NGR provides for the fixing of reference tariffs for the forthcoming access arrangement period in a manner that compensates GGT for CPI, reflecting the fact that tariffs that applied from 1 October 2014 will have continued without variation until revisions to the access arrangement commence which it says the Draft Decision anticipates will be on 1 July 2016.

No interval of delay within the meaning of rule 92(3)

2030. GGT submits that rule 93(2) of the NGR does not have any operation with respect to the approval of revisions for the GGP Access Arrangement. GGT considers this to be the case, by noting that the current access arrangement at section 3.3 governs what is to occur in the event that revisions to the GGP Access Arrangement do not come into effect on 1 January 2015.¹⁰⁸⁷
2031. GGT notes that the current access arrangement that was last approved by the Authority for the GGP on 5 August 2010 was made pursuant to section 2.42 of the Gas Code. GGT states that pursuant to clause 29 of Schedule 3 of the NGL(WA), the current access arrangement is deemed to be a full access arrangement (as revised) made by the Authority under a full access arrangement decision.
2032. GGT also notes that clause 30 of Schedule 3 provides that despite the repeal of the Gas Code, sections 3.8 and 10.8 of the Gas Code continue to apply to a transitioned access arrangement until revisions to that access arrangement are first approved or made in accordance with the NGL and the NGR after the commencement date take effect. GGT cites clause 1 of Schedule 3 to note that a transitioned access arrangement includes a current access arrangement incorporating revisions approved, or approved and made, in accordance with clause 29. As such, GGT considers that the current access arrangement applying to the GGP is a transitioned access arrangement and that sections 3, 8 and 10.8 of the Gas Code continue to apply to the current access arrangement.
2033. GGT notes that it has continued to charge reference tariffs, as last varied in August 2014, to users acquiring reference services.
2034. GGT submits that the current access arrangement has not expired, and will not expire until the date that revisions to the GGP Access Arrangement commence. GGT states that the provisions of the current access arrangement operate such that there is no interval of delay, and therefore, there is no scope for the operation of rule 92(3)(b) of the NGR.
2035. GGT considers that there is no basis upon which any true up can be applied using rule 93(2)(b) of the NGR, as adopted by the Authority in its Draft Decision. GGT

¹⁰⁸⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, pp. 34-35.

considers that the true up from 1 January 2015 to 1 July 2016 is a backward looking application of the NGR, to determine reference tariffs for the end of the current access arrangement period.

2036. On the topic of cost allocation and depreciation, GGT does not consider that the Authority can retrospectively make adjustments to reference tariffs for the last part of the current access arrangement, if there is no interval of delay.¹⁰⁸⁸

Rule 92(3) of the NGR

2037. GGT states that if it is incorrect, and an interval of delay has occurred, it submits that the Authority has misconstrued the requirements of rule 92(3)(b) in fixing reference tariffs for the forthcoming access arrangement period.¹⁰⁸⁹

2038. GGT notes that the Authority appears to have made a downward adjustment to reference tariffs in having regard to rule 92(3) of the NGR, as it perceived that an over recovery had occurred for the period between 1 January 2015 and 30 June 2016. In GGT's view, the Authority had regard to rule 92(3) in its modelling by:

- calculating the present value of total revenue for the years 2015-2019;
- calculating the present value of the forecast revenues for the years 2015-2019 using:
 - the current reference tariff (as at 31 December 2014) to calculate the revenues for 2015 and for the period 1 January to 30 June 2016; and
 - a proportion of the current tariff to calculate the revenues for the period 1 July 2016 to 31 December 2016, and for 2017-2019.

2039. GGT submits that the NGR does not permit the Authority to scale down the current tariff to the point where the present value of the forecast revenues for 2015-2019 is equal to the present value of total revenues for that period. Instead, GGT states that the NGR requires the Authority to approve/determine:

- total revenue for each regulatory year of the access arrangement (rule 76 of the NGR); and
- a reference tariff variation mechanism that is designed to equalise (in terms of present values) forecast revenue from reference services over the access arrangement period and the portion of total revenue allocated to reference services for the access arrangement period (rule 92(2) of the NGR).

2040. GGT considers that what rule 92(3) requires is that regard be had to the fact that reference tariffs were last varied at 1 October 2014, and have applied without variation since then and, if revisions to the access arrangement do not commence until 1 July 2016, will continue to apply without variation until 30 June 2016. GGT states that regard is properly had for by compensating for CPI adjustments that would, in normal course, have occurred through the tariff variation mechanism.¹⁰⁹⁰ GGT considers that:

¹⁰⁸⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to the ERA Draft Decision*, January 2016, pp. 37-38.

¹⁰⁸⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to the ERA Draft Decision*, January 2016, p. 38.

¹⁰⁹⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to the ERA Draft Decision*, January 2016, p. 39.

- total revenue is to be determined for each regulatory year of the access arrangement period (1 July 2016 to 31 December 2019);
 - the reference tariff variation mechanism is to be designed to equalise in terms of present values forecast revenue from reference services over the access arrangement period and the portion of total revenue allocated to reference services for the access arrangement period; and
 - if the Authority is correct that an interval of delay occurred, GGT should be compensated for relevant CPI adjustments in recognition that reference tariffs as last varied to apply from 1 October 2014 have continued, and will likely continue, without variation until 1 July 2016.
2041. For total revenue, GGP submits that pursuant to rule 76 of the NGR, total revenue should only be calculated for the period 1 July 2016 (assuming that revisions to the access arrangement commence on this date) to 31 December 2019. GGT is of this view that the access arrangement period is 1 July 2016 to 31 December 2019. GGT states that this is clear from the definition of access arrangement period in the NGR, which it notes as the period between the commencement of the last revision of the access arrangement and the revision commencement date for the access arrangement. GGT notes that rule 76 of the NGR provides for total revenue to be determined for each regulatory year of the access arrangement period.
2042. GGT submits that the Authority's application of rule 92(3) of the NGR is inconsistent with other provisions of the NGR that provide for the elements of total revenue to be calculated on a forward looking basis. GGT considers that it would be inconsistent with the operation of the rules and the underlying incentive framework to make an adjustment to the forward looking assessment of total revenue by reference to a perceived under or over recovery. GGT states that the Authority's adjustments to total revenue would also be inconsistent with the NGO and several of the revenue and pricing principles.¹⁰⁹¹

Submissions

2043. The Authority did not receive any submissions in relation to GGT's initial proposal tariff structure or reference tariff. The Authority received a submission from BHP Billiton (**BHPB**) in response to its Draft Decision and GGT's revised proposal.
2044. BHPB notes that the revisions commencement date of 1 January 2015 (clause 3.2(b) of the current access arrangement) has passed without any revisions actually commencing and, as a result, there has been an interval of delay as defined in the NGR. BHPB agrees with the approach taken by the Authority to the interval of delay and considers it appropriate for the Authority to take that delay into account in fixing reference tariffs for the new access arrangement.¹⁰⁹²
2045. BHPB considers that GGT attempts to read a restriction (not expressed in the rule) into the ordinary meaning of rule 92(3)(b) of the NGR by reference to extrinsic material. That is, GGT contends that the Authority is limited to adjusting the reference tariffs only by a CPI factor. BHPB considers this neither necessary nor appropriate. BHPB notes that, when interpreting the NGR, consideration may only be given to

¹⁰⁹¹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to the ERA Draft Decision*, January 2016, p. 41.

¹⁰⁹² BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, March 2016, p. 3.

extrinsic material if the rule is ambiguous or obscure, if the ordinary meaning of the rule leads to a result that is manifestly absurd or unreasonable, or to confirm the interpretation conveyed by the ordinary meaning of the rule.

2046. It is evident to BHPB that:

- the words are not ambiguous or obscure;
- the approach adopted by the Authority does not lead to a manifestly absurd or unreasonable result. GGT will effectively be in the same position, from a net present value perspective, that it would have been absent in the interval of delay; and
- GGT is seeking to use extrinsic material to read words into the text to give a new meaning, rather than to confirm the ordinary meaning of the rule.

2047. BHPB states that if the legislature wanted to limit the Authority's ability to take into account an interval of delay, it could have included a reference to CPI in the text of rule 92(3)(b), as it does in other rules to provide explicit limitations on the Authority's power to make adjustments.

2048. BHPB considers that the approach adopted by the Authority to be correct based upon a plain reading of the NGR and notes that it is also consistent with the approach taken by the AER in the electricity context, whereby the AER regularly adjusts upwards, or downwards, a network service provider's allowable revenue if there is a delay following a review by the Australian Competition Tribunal under the National Electricity Law.¹⁰⁹³

Considerations of the Authority

Reference Service Tariff and Charges

Section 4.1 reference service tariff and charges

2049. The Authority notes that GGT has made two minor changes to section 4.1 of the proposed revised access arrangement such that the term, 'section', is used instead of 'clause'. The Authority approves the change from the word 'clause' to 'section'.

2050. The Authority also notes that GGT has included reference service tariff and charges into the revised proposal Terms and Conditions (Schedule D of the proposed revised access arrangement). However, clause D9.1 of GGT's revised proposal Terms and Conditions is a new addition that does not appear in section 4.1 of the proposed revised access arrangement. Clause D9.1 and the heading to clause D9.1 of the proposed Terms and Conditions refers to a "Transportation Tariff". It appears that GGT intended to define "Transportation Tariff" in Schedule C (Definitions and Interpretation), however, the definition is not complete – it simply says "Transportation Tariff means [blank]". The introduction of a new term – "Transportation Tariff" – has not previously been approved by the Authority. In any event, it is not clear to the Authority, what is the purpose of clause D9.1. The Authority considers that clause D9.1 of the revised proposed Terms and Conditions should be deleted.

¹⁰⁹³ BHP Billiton Limited, *Public Submission by BHP Billiton In response to the revised access arrangement submitted by Goldfields Gas Transmission Pty Ltd*, March 2016, p. 4.

Section 4.2 other charges

2051. The Authority notes that GGT updated cross references in section 4.2 of the proposed revised access arrangement and has removed section 4.2.2(f) in accordance with one of the changes in Required Amendment 21 of the Draft Decision. Additionally, the Authority notes that GGT has included other charges into clause D.10 of the revised proposal Terms and Conditions in accordance with the Draft Decision. However, the wording in section 4.2 and clause D.10 are not entirely consistent with each other. The Authority considers that section 4.2.2 of the proposed revised access arrangement should match the content of clause D10.2 of the proposed revised Terms and Conditions. Section 4.2.2 of the proposed revised access arrangement must be amended to match the content of clause D10.2 as follows:

4.2.2 Overtime Charges

(a) The User must pay an Overtime Charge for Overtimes at a Delivery Point, except to the extent that Service Provider (or a related body corporate of Service Provider) caused the Overtime without the prior approval of the User or if the Overtime occurred as a result of circumstances beyond the reasonable control of User.

...

(c) The Authorised Overtime Charge is the product of:

(i) the Authorised Overtime Rate set out in the Details; and

(ii) the relevant Authorised Overtime Quantity excluding System Use Gas and User's Line Pack (expressed in GJ).

...

2052. Additionally, the Authority considers that section 4.2.4 of the proposed revised access arrangement must be amended so that it is substantially the same (with necessary changes) as clause D10.4 of the proposed revised Terms and Conditions. Section 4.2.4 of the proposed revised access arrangement must be amended to read as follows:

4.2.4 Daily Variance Charges

(a) A **Daily Variance** occurs when the quantity of Gas:

(i) received from or on behalf of the User at a Receipt Point during a Gas Day is different from the quantity of Gas Scheduled for the User for that Receipt Point; or

(ii) delivered to or for the account of the User at a Delivery Point during a Gas Day is different from the quantity of Gas Scheduled for the User for that Delivery Point,

the quantity of which at each Delivery Point and Receipt Point (as applicable), in GJ, is the **Daily Variance Quantity**.

(b) If Service Provider, acting as a reasonable and prudent pipeline operator, believes that a Daily Variance has occurred because the User is not making Nominations in good faith, then Service Provider may give notice to the User ("**Variance Notice**") requiring the User to nominate in good faith.

(c) If on any Gas Day after the expiry of 21 Gas Days from receipt of a Variance Notice the Daily Variance Quantity:

(i) at a Receipt Point exceeds the Daily Variation Allowance; and

(ii) at a Delivery Point exceeds the Daily Variation Allowance,

excluding any portion of that variation that has been caused by Service Provider or a Force Majeure Event, the User must pay to Service Provider the Daily Variance Charge for each Gas Day on which such an exceedance occurs until such time as the Variance Notice is withdrawn by Service Provider. If Service Provider has issued the User with a Variance Notice, Service Provider may withdraw that Variance Notice at any time in its

discretion and must withdraw that Variance Notice immediately if a period of 3 consecutive Months has elapsed without the User incurring the Daily Variance Charge.

- (c) The **Daily Variance Charge** for a Gas Day is calculated by multiplying the Daily Variance Rate set out in the Details by the Daily Variance Quantity for that Gas Day for a Receipt Point or a Delivery Point (as applicable) for which the Daily Variance Charge is payable under paragraph (c) above and aggregating the amounts calculated above for each relevant Receipt Point and Delivery Point.

2053. Furthermore, in its Draft Decision the Authority required GGT to reinstate provisions from clauses 9.6(b), (d) & (e) of the current terms and conditions concerning overrun charges, imbalance charges and variance charges (all types of "Quantity Variation Charges" listed in the fourth schedule to the current access arrangement) into the proposed revised terms and conditions, so that users are no worse off under GGT's proposed revised access arrangement in relation to the charging mechanisms (including rates) for these types of charges than they are under the current access arrangement.
2054. In its response, GGT claimed it had accepted these required amendments. However, rather than making its proposed revised charging mechanism (including rates) for overrun charges, imbalance charges and variance charges subject to provisions like those in the Quantity Variation Charges provisions in clauses 9.6(b), (d) and (e) of the current terms and conditions so that users are no worse off, GGT instead added a provision (in clause D.10.1(e) of the proposed revised terms and conditions) which would have charged users "Quantity Variation Charges" (defined in Appendix 4 to the proposed revised access arrangement to include transportation tariff and imbalance, overrun and variance charges, as per the current access arrangement definitions) in addition to its new charges for tariff, overruns, imbalances and variances under the proposed revised access arrangement, effectively requiring that users pay twice over (via two different mechanisms and rates) for tariff, overruns, imbalances and variance. Clearly this would not leave users "no worse off" than under the current access arrangement. Further, while GGT did include provisions from clauses 9.6(b), (d) & (e) of the current terms and conditions as new clauses D.10.6(a), (c), (d) and (e) of the proposed revised terms and conditions, it did not do so in a way that would ensure those provisions applied as restrictions on GGT's proposed new charges for overrun, imbalances and variances, so that users are no worse off than under the current access arrangement.
2055. The Authority has (in Appendix 6 to this Final Decision) required amendments to clauses D.10.1 and D.10.6 of the proposed revised terms and conditions to rectify this issue so that users are no worse off. However, as these charges are also dealt with in section 4.2 ("Other Charges") of the proposed revised access arrangement, similar amendments must also be made to section 4.2 to ensure consistency between the access arrangement and the terms and conditions. Accordingly, the Authority has required amendments to section 4.2 as set out below.
2056. Further, to avoid establishing an additional and inconsistent set of charges for tariff, imbalances, overruns and variances under the access arrangement, GGT's proposed definition of the term "Quantity Variation Charges" in Appendix 6 to its proposed revised access arrangement (which includes transportation tariff and imbalance, overrun and variance charges as per the current access arrangement definitions) must be amended so that the term "Quantity Variation Charges" refers only to the terms Overrun Charge, Imbalance Charge and Daily Variance Charge as defined in the proposed revised access arrangement. Accordingly, the Authority has required amendments in Appendix 6 of this Final Decision to Schedules C.1 and TC1.1 to the proposed revised access arrangement. Section 4.2 of the proposed revised access

arrangement must be amended as set out below to ensure users are no worse off with regard to the charging mechanisms (including rates) for overrun charges, imbalance charges and variance charges than they are under the current access arrangement.

4.2.1 Other Tariff Charges

Subject to section 4.2.7, the User may also be required to pay the following charges:

- (a) Overrun Charges as set out in section 4.2.2;
- (b) Imbalance Charge as set out in section 4.2.3;
- (c) Daily Variance Charge as set out in section 4.2.4; and
- (d) Charges in respect of Connection and Delivery Points as set out in section 4.2.5.

...

4.2.7 Quantity Variation Charges

- (a) Service Provider may only impose Quantity Variation Charges relating to Imbalances or Overruns where, in the reasonable opinion of Service Provider acting as a reasonable and prudent pipeline operator, the conduct contemplated by those charges:
 - (i) causes Service Provider or any User of the Pipeline loss or damage; or
 - (ii) exposes the Pipeline to significant risk (whether or not that risk becomes manifest) that threatens the integrity of the Pipeline.
- (b) Subject to section 4.2.7(a), the Quantity Variation Charges may be applied or waived solely at Service Provider's discretion. Waiver of the application of any such charges at any time does not constitute any precedent for waiver of the application of such charges at any time in the future.
- (c) Notwithstanding section 4.2.7(a), Service Provider will waive a User's liability for an Accumulated Imbalance Charge and a Daily Variance Charge where the liabilities are incurred during a period of interruption or reduction of Services that is the direct responsibility of Service Provider.
- (d) Service Provider must, upon User's request, rebate 95 percent of Quantity Variation Charges in excess of Service Provider's direct costs and expenses associated with and arising from the User's acts or omissions which cause the Overruns or Imbalances to occur:
 - (i) to any other User of the Reference Service not having caused the particular Quantity Variation Charges to occur; and
 - (ii) which rebate will be paid to the non-offending Users, where relevant, at the end of each calendar year.
- (e) For the avoidance of doubt where there is no other User of the Reference Service at the time at which the Overruns or Imbalances occur then this rebate mechanism will not be activated.
- (f) Service Provider is not responsible for eliminating any Imbalances between the User and an Interconnect Party or any other person operating Interconnection Facilities and, except in certain circumstances (eg as required by Good Engineering and Operating Practice), is not obliged to adjust or deviate from its standard operating and accounting procedures in order to alleviate those imbalances.
- (g) At the conclusion of the Term, each Party will use reasonable endeavours to ensure the Accumulated Imbalance is set to zero. This may be accomplished by the User trading the Accumulated Imbalance with another User or with Service Provider within 7 days. If this is not achieved within 7 days, Service Provider will issue an invoice or refund for the value of the Accumulated Imbalance at gas prices reasonably nominated by Service Provider, which may vary from time to time.

Section 4.3 multiple delivery points

2057. The Authority notes that GGT has not made any changes to section 4.3 of the proposed revised access arrangement. GGT has included multiple delivery points into clause D10.8 of the revised proposal Terms and Conditions in accordance with the Draft Decision. The wording of section 4.3 and clause D10.8 are consistent with each other. The Authority approves section 4.3 of the proposed revised access arrangement.

Section 4.4 basis of charges

2058. The Authority notes that GGT has not made any changes to section 4.4 of the proposed revised access arrangement. GGT has reintroduced clause 9.3 of the current General Terms and Conditions into clause D12.1 of the revised proposal Terms and Conditions in accordance with the Draft Decision, but with some minor cross referencing discrepancies. Additionally, the Authority notes that the wording of section 4.4 and clause D12.1 do not match and are not entirely consistent with each other. Most of the discrepancies can be explained by the change in terminology in the proposed access arrangement (compared to that used in the current access arrangement) – for example, "Service Provider" instead of "GGT"; "Receipt Point" instead of "Inlet Point". The Authority approves the amendments to section 4.4 of the proposed revised access arrangement subject to a required amendment for clause D12.1, stipulated in Appendix 6 of this Final Decision. The Authority also requires that the word, "recorded", in section 4.4 of the proposed revised access arrangement be amended to read "generated".

Section 4.6 reference tariff after 31 December 2019

2059. The Authority notes that GGT has not made any changes to section 4.4 of the proposed revised access arrangement from its initial proposal. The Authority notes that it accepted this section 4.6 in its Draft Decision. However, and in light of the objections which GGT has raised to the interval of delay in the revised proposed access arrangement, and the Authority's decision on this matter (as stated in paragraph 2090 to 2091) the Authority considers that section 4.6 of the proposed revised access arrangement must be amended as follows:

4.6 Reference Tariff after 31 December 2019

In the event that the Revisions Commencement Date is later than 1 January 2020 the tariff in effect at 31 December 2019 shall continue to apply, without variation, to the provision of the Firm Service between 1 January 2020 and that later Revisions Commencement Date, but for the purposes of rule 92(3) of the National Gas Rules, 1 January 2020 shall be taken to be the "revision commencement date" stated in this Access Arrangement and nothing in this Access Arrangement prejudices or prevents the application or operation of rule 92(3) of the National Gas Rules in relation to the fixing of reference tariffs for the Access Arrangement Period next following the period of this Access Arrangement.

Section 4.7 GST

2060. The Authority notes that GGT has removed section 4.7 from its proposed revised access arrangement. GGT has reinstated an updated version of clause 9.11 of the current General Terms and Conditions into clause D41 of the proposed revised Terms and Conditions. The Authority requires a GST section be included in the proposed revised access arrangement. As such, the Authority requires that the following be inserted as a new section, 4.7, of the proposed revised access arrangement:

4.7 GST

All tariffs, charges and amounts payable under this Access Arrangement are expressed to be exclusive of GST. In addition to any tariff, charge or amount payable under the Access Arrangement by a User or Prospective User, the User or Prospective User will pay any applicable GST in accordance with clause D.41 of the Terms and Conditions.

Section A of Schedule A

2061. The Authority notes that GGT has updated Section A of Schedule A of the proposed revised access arrangement as follows:

- capacity of covered portion of the pipeline changed from approximately 109 TJ/day approximately to 102.5 TJ/day;¹⁰⁹⁴
- tariff start dates changed from 1 January 2015 to 1 July 2016;¹⁰⁹⁵ and
- a change in tariffs as a result of GGT's response to the Authority's Draft Decision required amendments.

2062. As discussed in the Demand chapter of this Final Decision, the Authority requires that section A of Schedule A to the proposed revised access arrangement be amended to reflect the capacity of the covered pipeline of 109 TJ/day.

2063. The Authority notes that the following rates have not changed from the initial proposal to the revised proposal in Section A of Schedule A:

- Authorised Overrun Rate
- Imbalance Rate
- Imbalance Allowance
- Daily Variance Rate
- Daily Variation Allowance

2064. The Authority requires that the Daily Variance Rate and Daily Variation Allowance be amended in accordance with the Authority's Final Decision in Appendix 6 of this Final Decision.

Section A3 of Schedule A - rounding

2065. As stated in the Draft Decision, the Authority accepted GGT's proposed section A3 of Schedule A to the proposed revised access arrangement. The Authority also required in its Draft Decision that GGT include the clause for rounding into the revised proposal Terms and Conditions. The Authority notes that GGT has not included rounding into its revised proposal Terms and Conditions as required by the Draft Decision. The Authority discusses this further in Part 2 of Appendix 6 of this Final Decision under the heading, "Rounding".

¹⁰⁹⁴ The change in the capacity of the covered portion of the pipeline is discussed further in the Demand chapter of this Final Decision.

¹⁰⁹⁵ The change in dates is discussed further in the interval of delay section in this chapter of the Final Decision.

Section A4 of Schedule A – cost pass-through events

2066. The Authority notes that GGT has not made any changes to the cost pass throughs in section A4 of Schedule A to the proposed revised access arrangement. The Authority approves section A4 of Schedule A of the proposed revised access arrangement.¹⁰⁹⁶

Interval of Delay

2067. In its Draft Decision, the Authority noted that in calculating approved reference tariffs for the third access arrangement period, it had regard to rule 92(3) of the NGR. The Authority considered that there would be an interval (interval of delay) between the revision commencement date stated in the access arrangement (1 January 2015) and the date on which revisions to the access arrangement would commence (expected to be 1 July 2016). The Authority noted that, as a result of the interval, the reference tariffs at the end of the second access arrangement period should continue to apply without variation for the interval of delay. In calculating the reference tariffs for the third access arrangement period, however, the Authority factored in the delay and calculated the tariffs based on revised prices commencing on 1 July 2016 to ensure that GGT would be no better or worse off as a result of the delay.

2068. The Authority notes that GGT first raised an issue with the application of rule 92(3) of the NGR in its revised proposal. The issue was not raised earlier in its initial proposal or in response to the Authority's Issue Paper. As noted below at paragraph 2084, GGT (via its owner, APA Group) has previously indicated that rule 92(3) of the NGR should apply in a situation where there is a delay to the commencement of the access arrangement. The Authority considers that, based upon the submission date for the initial proposal of 15 August 2014, GGT should have reasonably foreseen the likelihood that the forthcoming access arrangement would not have commenced four and a half months later on 1 January 2015, as the National Gas Rules prescribe minimum conditions on consultation periods for the initial proposal, including a period allowed to the service provider to revise its access arrangement in response to the Authority's Draft Decision (assuming the Authority did not accept the service provider's proposal) and further consultation on the Authority's Draft Decision. These minimum conditions require nearly three months of consultation.

An interval of delay has occurred

2069. Where there is an interval of delay within the meaning of rule 92(3)(a) of the NGR, rule 92(3)(b) of the NGR applies to enable the Authority to undertake a 'true-up' to take place in the revised access arrangement to adjust for any under or over recovery of revenue.

2070. Rule 92(3) of the NGR defines an interval of delay as the interval "between a revision commencement date stated in a full access arrangement and the date on which revisions to the access arrangement actually commence".

2071. The Revisions Commencement Date in clause 3.2 of GGT's current access arrangement is a fixed date, that is, 1 January 2015. As the date on which revisions

¹⁰⁹⁶ Section 4.5 of the proposed revised access arrangement and Sections A1 and A2 of Schedule A to the proposed revised access arrangement are discussed in the Reference Tariff Variation Mechanism chapter of this Final Decision.

actually commence for the third access arrangement period will be 1 July 2016, there is clearly an interval of delay within the meaning of that phrase in NGR 92(3).

No inconsistency with current access arrangement

2072. The Authority notes GGT's view that the provisions under the Gas Code operate in place of rule 92(3)(b) of the NGR with respect to the period between the end of the second access arrangement period and the revisions commencement date for the third access arrangement period. Additionally, the Authority notes that GGT considers that rule 92(3) of the NGR has no operation with respect to the approval of the proposed revised access arrangement, as GGT is of the view that the current access arrangement, at section 3.3, governs what is to occur in the event that revisions to the GGP access arrangement do not come into effect on 1 January 2015.¹⁰⁹⁷
2073. The Authority recognises that GGT's current access arrangement is a "transitional access arrangement" (as defined in clause 1(1) of Schedule 1 to the NGR) and that GGT's current access arrangement operates according to its terms without relevant alteration. Further, clause 2 of Schedule 1 to the NGR provides that "subject to [schedule 1 to the NGR] the rules are to be read subject to such adaptations and modifications as are necessary to give full effect to a transitional access arrangement under the rules". On this basis, if there is an inconsistency between the NGR and GGT's current access arrangement, the Authority accepts that the terms of GGT's access arrangement take precedence and the NGR must accommodate the terms of the current access arrangement to the extent of the inconsistency.
2074. For the reasons set out below, however, the Authority rejects GGT's view that rule 92(3) of the NGR has no operation with respect to approving the proposed revised access arrangement. Further, the Authority considers that GGT's interpretation of the current access arrangement is incorrect and, in any event, there is no inconsistency between the terms of the current access arrangement and rule 92(3) of the NGR.
2075. Firstly, section 3.3 of the current access arrangement does not purport to address the issue of an interval of delay adjustment because no such provision existed under the former Gas Code.
2076. At the time of approval of the second access arrangement, GGT had proposed a Revisions Commencement Date be the later of 1 January 2015 and the date a revised Access Arrangement replacing the Access Arrangement approved by the Regulator took effect. In its Draft Decision, the Authority noted a number of difficulties with this approach, namely that the Gas Code requires a *date* rather than multiple dates for the Revisions Commencement Date, and GGT's approach would have led to uncertainty as to the length of the Access Arrangement Period for the purposes of the Gas Code.¹⁰⁹⁸ Accordingly, the Authority required GGT to revise its access arrangement to define the intended Revisions Commencement Date as 1 January 2015. Section 3.2(b) of GGT's current access arrangement specifies that "the intended Revisions Commencement Date is 1 January 2015".

¹⁰⁹⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 35.

¹⁰⁹⁸ Economic Regulation Authority, *Draft Decision on GGT's Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 9 October 2009, paragraphs 1236-1237

2077. GGT had stipulated in section 3.1 of its proposed revisions for the second access arrangement period that the Access Arrangement will expire on the Revisions Commencement Date. Given that the Revisions Commencement Date is a set date, the Authority considered in its Draft Decision for the second access arrangement period that specific provision should be made in the current access arrangement to ensure that the Access Arrangement would not expire until the next revisions to the Access Arrangement came into effect.
2078. Accordingly, section 3.3 of GGT's current access arrangement provides that the access arrangement for second access arrangement period will not expire until the access arrangement for third access arrangement period comes into effect. Therefore, the terms of GGT's current access arrangement for the second access arrangement period (including the reference tariffs under it) will continue to apply by virtue of section 3.3 until the revised access arrangement for the third access arrangement period comes into effect. In the Authority's view, it is clear from this background that section 3.3 was not intended to affect the calculation of tariffs or revenue during the third access arrangement period.
2079. Secondly, the Authority notes, and GGT acknowledges, that the reference tariff for the GGP has not varied since the last variation on 1 October 2014 for the period between 1 January 2015 and the actual commencement date of the proposed revised access arrangement.¹⁰⁹⁹ The Authority considers that as no variation in the tariff occurred during this period, invoking rule 92(3)(a) of the NGR is not inconsistent with the current access arrangement, because, under the current access arrangement, the reference tariff as last varied, continues to be the reference tariff. The Authority thus considers it appropriate to invoke rule 92(3)(b) of the NGR in these circumstances, such that the reference tariff for the start of the forthcoming access arrangement can be determined, so as to ensure GGT has the opportunity to recover the total revenue approved for the third access arrangement period 2015-2019.
2080. Thirdly, the Authority notes that it is not proposing to retrospectively adjust the reference tariff for the second access arrangement period nor is it proposing to retrospectively adjust the wording of the current access arrangement itself. Rather, the Authority is only seeking to apply rule 92(3)(a) and rule 92(3)(b) of the NGR in order to determine the reference tariff for the revised access arrangement. The Authority is not seeking to amend or read down the current access arrangement (as amended by the Western Australian Electricity Review Board). The Authority notes that rule 92(3)(b) of the NGR allows it to deal with any possible revenue shortfall or windfall as a result of an interval of delay, depending on whether the tariff is rising or falling. The Authority considers that this construction of rule 92(3)(b) of the NGR is likely to achieve the greatest degree of consistency with the efficiency objectives of the NGR and the long term interests of consumers by applying a true up mechanism if the reference tariffs prevailing in the period of delay were lower (higher) than what they would otherwise have been.
2081. Whilst GGT notes that the current access arrangement was approved under the Gas Code, and considers it to be a transitional access arrangement, the Authority notes that clause 3.2(b) of the current access arrangement contains a stated revisions commencement date, similar to one that is required under the NGR in the present regulatory framework. The Authority considers that this revisions commencement date makes it clear that the intended third access arrangement period was to

¹⁰⁹⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 36.

commence on 1 January 2015 and therefore the objective of revenue equalisation as contemplated by rule 92 of the NGR should apply. Additionally, the Authority notes that BHPB's position and view with regard to the applicability and operation of rule 92(3) of the NGR, is consistent with the view that the Authority adopted in its Draft Decision and what it is determining in this Final Decision.

Use of extrinsic material to give meaning to the wording in rule 92(3) of the NGR

2082. If the wording in rule 92(3) of the NGR is considered ambiguous, regard should be had to extrinsic material, such as the AEMC's Rule Determination for the National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012 (the change to rule 87 of the NGR for the rate of return framework), to determine whether a true up mechanism can operate in these circumstances.
2083. With respect to the use of extrinsic materials, clause 8(3) of Part 2 of Schedule 2 to the NGL provides that, in the interpretation of a provision of the Rules, consideration may be given to rule extrinsic material (including a final Rule determination) capable of assisting:
- if the provision is ambiguous or obscure, to provide an interpretation of it; or
 - if the ordinary meaning of the provision leads to a result that is manifestly absurd or is unreasonable, to provide an interpretation that avoids such a result; or
 - in any other case, to confirm the interpretation conveyed by the ordinary meaning of the provision.
2084. The Authority notes that, in the lead up to the AEMC's Rule Determination for the National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012 (the change to rule 87 of the NGR for the rate of return framework), GGT (via its listed parent the APA Group) indicated its intention that rule 92(3) of the NGR should apply in the situation where there is a delay to the commencement of the access arrangement.¹¹⁰⁰ The Authority notes that at the time of the AEMC's determination making process, it was recognised that the APA Group, along with ATCO Gas Australia Pty Ltd, would be affected by the timing of the implementation of the new rate of return framework as at the time GGT was due to submit its initial proposal on 1 January 2014 one month after the Authority was due to publish its Rate of Return Guidelines on 29 November 2013.¹¹⁰¹ Specifically, APA Group submitted the following to the AEMC:¹¹⁰²

Importantly, as the submitting business needs time to develop its arguments and evidence in response to the Guideline, APA recommends that the earliest filing date for Access Arrangement Revisions should be no earlier than three months after the release of the final Guideline.

This will impact the ATCO Gas distribution network in Perth, and the Goldfields Gas Transmission pipeline in Western Australia. In this regard, APA considers that existing

¹¹⁰⁰ Australian Energy Market Commission, *Rule Determination National Gas Amendment (Price and Revenue Recognition of Gas Services) Rule 2012*, 29 November 2012, p. 270.

¹¹⁰¹ Australian Energy Market Commission, *Rule Determination National Gas Amendment (Price and Revenue Recognition of Gas Services) Rule 2012*, 29 November 2012, pp. 266-267.

¹¹⁰² APA Group, *Submission to AEMC Draft Determination: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 and National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, 4 October 2012, p. 4.

Rule 92(3) is capable of dealing with any resulting delay in the approval of revisions to the current Access Arrangements.

For the same reasons, this same transitional approach should apply to any other requirements to file revisions to an Access Arrangement, particularly in light of a trigger mechanism.

2085. The Authority notes that, in its resulting rule change determination, the AEMC determined that:¹¹⁰³

- transitional arrangements would permit the next GGP access arrangement revisions (i.e. the third access arrangement period) to be submitted by the APA Group up to six months after the ERA published the final rate of return guidelines; and
- to the extent that the postponement of the proposed access arrangement revisions gave rise to a delay in the commencement of the revisions, the following would occur (on the assumption that rule 92(3) of the NGR would apply):
 - the reference tariffs in force at the end of the existing access arrangement (i.e. AA2) would continue without variation; and
 - the Authority would be allowed to take into account the effect of any delay when setting reference tariffs in the new access arrangement period.

2086. The AEMC recognised that although not ideal, the existing provisions within the NGR, specifically rule 92(3) of the NGR, “set out what is to occur when there is a delay between the revision commencement date specified in an access arrangement and the date on which revisions actually commence”.¹¹⁰⁴ The AEMC went on to say:

In the course of its discussions with the Commission about the effect of postponing the Mid-West and South-West Gas Distribution System and Goldfields Gas Pipeline review submission dates, the ERA has confirmed that rule 92(3) could accommodate any delay in the commencement of the revisions. The Commission also understands that the ERA has used this provision to deal with delays in the commencement date of both the 2010-2014 Mid-West and South-West Gas Distribution System access arrangement and the 2011-2015 Dampier to Bunbury Natural Gas Pipeline access arrangement. In both of these cases, the reference tariffs prevailing at the end of the previous access arrangement period continued for the duration of the delay and a NPV neutral true-up was carried out on a smoothed basis when the new reference tariffs were approved.

Given the manner in which this provision has been utilised by the ERA, the Commission is satisfied that rule 92(3) can be relied upon to deal with the effect of any delay between:

- the revision commencement date specified in the Mid-West and South-West Gas Distribution System and Goldfields Gas Pipeline access arrangements; and
- the date that the revisions actually take effect for these two pipelines.

No additional transitional provisions are therefore required to deal with this type of delay.¹¹⁰⁵

¹¹⁰³ Australian Energy Market Commission, *Rule Determination National Gas Amendment (Price and Revenue Recognition of Gas Services) Rule 2012*, 29 November 2012, p. 276.

¹¹⁰⁴ Australian Energy Market Commission, *Rule Determination National Gas Amendment (Price and Revenue Recognition of Gas Services) Rule 2012*, 29 November 2012, p. 277.

¹¹⁰⁵ Australian Energy Market Commission, *Rule Determination National Gas Amendment (Price and Revenue Recognition of Gas Services) Rule 2012*, 29 November 2012, p. 277.

2087. The Authority considers that, based upon the wording of the AEMC's determination and the understanding between the Authority, AEMC and APA at the time of the consultation on the rule change, as quoted in paragraph 2084 and 2086, the AEMC in effect determined that, where a delay occurs, a true up should apply for the interval of delay via rule 92(3) of the NGR. The AEMC also clearly stated that given the manner in which the Authority has previously utilised the provisions in rule 92(3) of the NGR, no specific transitional provisions were required to deal with this type of delay. This is a clear endorsement of the Authority's approach to calculating the interval of delay under rule 92(3) of the NGR from the rule-making body.
2088. Additionally, the Authority notes that in the same determination outlining the applicability of rule 92(3) of the NGR, the AEMC separately noted that:
- The Commission accepts that the use of the word "may" used in NGR 92(3)(b) in this provision appears to provide the AER with some discretion as to whether a true up will be carried out. However, it must be borne in mind that when exercising discretion, the AER is required to have regard to both the NGO and the RPP. In the Commission's opinion, these sections of the NGL would support the application of a true up mechanism if the reference tariffs prevailing in the period of delay were lower (higher) than what they would otherwise have been.¹¹⁰⁶
2089. Given the APA Group's express acceptance in its submission to the AEMC, which was noted and relied upon by the AEMC in making its final Rule Determination, that rule 92(3) of the NGR is capable of dealing with the delay in revisions to the GGP access arrangement actually taking effect, and the AEMC's apparent intention that it would do so, as quoted in paragraph 2086, the Authority considers that a true up under rule 92(3)(b) of the NGR is appropriate in this situation. Additionally, unless a true up under rule 92(3)(b) of the NGR is allowed in situations such as this, the Authority considers that it could give rise to perverse results whereby service providers, who are aware of a likely downward trend in their reference tariffs from one access arrangement period to the next, deliberately delaying the process for revising their access arrangements so that they can maximise the period of delay during which higher tariffs are received – i.e. receive a windfall gain. If such a result were to occur, it would be unreasonable and inconsistent with achieving the NGO. Conversely, where tariffs are likely to trend upwards from one access arrangement period to the next, it would be inconsistent with the NGO and RPP if the service provider were not allowed to recover a potential shortfall.

Conclusions on GGT's primary argument

2090. For the reasons set out in paragraphs 2079 to 2089, the Authority disagrees with GGT and considers that there is an interval of delay under rule 92(3)(a) of the NGR, and a true up mechanism under rule 92(3)(b) of the NGR is applicable in this situation. Furthermore, given that there is an interval of delay as per rule 92(3) of the NGR, the Authority considers that, for the purposes of calculating total revenue under rule 76 of the NGR, the second access arrangement period is from 20 August 2010 to 31 December 2014. The Authority notes that the definition of an access arrangement period in rule 3 of the NGR includes:
- (e) the period between the commencement of the last revision of the access arrangement and the revision commencement date for the access arrangement.

¹¹⁰⁶ Australian Energy Market Commission, *Rule Determination National Gas Amendment (Price and Revenue Recognition of Gas Services) Rule 2012*, 29 November 2012, p. 252.

2091. The Authority considers that definition (e) of rule 3 of the NGR is the period contemplated as per clause 3.1 of the current access arrangement for GGP, which states that “the Access Arrangement Period or term of the Access Arrangement is intended to expire on the Revisions Commencement Date.” Consistent with this, the Authority considers that the tariffs under the current access arrangement, being the access arrangement for the second access arrangement period, concern the period from 20 August 2010 through to 31 December 2014.
2092. With respect to GGT’s arguments on the interaction between the Authority’s approach to the interval of delay and cost allocation, the Authority notes that it is no longer adopting the cost allocation methodology from the Draft Decision. As such, the Authority does not consider these arguments are applicable to its assessment of whether there is an interval of delay for this Final Decision. The Authority’s cost allocation methodology is further discussed in the Allocation of Total Revenue between Reference Services and Other Services chapter of this Final Decision.
2093. On the interaction between the Authority’s approach to the interval of delay and the depreciation schedule, the Authority does not agree with GGT’s view that there would be a retrospective adjustment to tariffs for the last part of the current access arrangement as the Authority has determined that there is an interval of delay, for the purposes of rule 92(3) of the NGR, and the second access arrangement period concluded on 31 December 2014.

Alternative argument on application of rule 92(3)(b) of the NGR

2094. The Authority notes GGT’s alternative argument that, if it is incorrect on there being no interval of delay, then it submits that the Authority has misconstrued the requirements of rule 92(3)(b) of the NGR.
2095. The Authority disagrees with GGT’s interpretation of the NGR with respect to what GGT has referred to as a “scale down” of the current tariff.¹¹⁰⁷ The Authority notes that rule 92 of the NGR does not refer specifically to a scaling up or scaling down of reference tariffs. Rather, the NGR stipulates that the Authority equalise (in terms of present values) the forecast revenue from reference services over the access arrangement period and the portion of total revenue allocated to reference services for the access arrangement period. Additionally, the Authority notes that it would equally have increased tariffs for the forthcoming access arrangement period if current tariffs resulted in a shortfall for the service provider. The Authority considers that its approach to equalising tariffs with the portion of total revenue allocated to reference services is symmetrical in that it is present value neutral, as required by rule 92 of the NGR. It is also consistent with the NGO and RPP.
2096. The Authority notes GGT’s use of extrinsic material to read in a restriction that any application of rule 92(3)(b) of the NGR be confined to only a CPI adjustment for the period between 1 January 2015 and 1 July 2016.¹¹⁰⁸ GGT makes reference to the first version of the NGR and documents published along with the draft version of the NGR by the Ministerial Council on Energy’s Standing Committee of Officials (**SCO**) to support its argument.

¹¹⁰⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 39.

¹¹⁰⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 39.

2097. The Authority does not consider the words or meaning of the rule to be ambiguous or obscure, nor does it consider that the application of the rule leads to a result that is manifestly absurd or unreasonable. As BHPB has noted, the Authority considers that GGT will effectively be in the same position from a present value perspective.
2098. Furthermore, the Authority notes that GGT has used extrinsic material relevant to the draft version published by the SCO and the first version of the NGR. The Authority notes that the current version of rule 92(3)(b) of the NGR makes no reference to only having regard to CPI adjustments. As BHPB has noted, the Authority considers that GGT is seeking to use extrinsic material to read words into the current text of rule 92(3) of the NGR to give a new meaning, rather than to confirm the ordinary meaning of the rule. Further to BHPB's submission, if the legislature or rule making body wanted to restrict the Authority's discretion with regard to taking into account the interval of delay, it would have introduced a limited discretion sub rule, as it does for other rules in the NGR. Additionally, the Authority notes that it has previously proposed the same methodology to calculate the interval of delay in its decisions for the Mid-West and South-West Gas Distribution Systems and Dampier to Bunbury Natural Gas Pipeline.^{1109 1110}
2099. The Authority does not dispute the fact that tariffs have remained unchanged since 1 October 2014, nor does it dispute the fact that GGT should be compensated for the effects of inflation. The Authority's tariff modelling is calculated on a real dollar basis and takes into account. The Authority considers that its X-factor, as discussed in the Reference Tariff Variation Mechanism chapter of this Final Decision, ensures the relevant adjustments are accounted for, including the effects of inflation during this interval of delay. However, the Authority strongly disagrees with GGT's assertion that the adjustment for the interval of delay is only limited to changes in the CPI, as the Authority considers that the current wording and meaning of rule 92(3) of the NGR does not limit the Authority to only having regard for CPI changes. In the Authority's view, GGT's misconstruction of the interval of delay provisions leads to a distorted view on the need for CPI adjustments.
2100. For the reasons set out in paragraphs 2095 to 2099, the Authority rejects GGT's alternative argument that the Authority has misconstrued rule 92(3) of the NGR. The Authority considers that its tariff modelling approach is present value neutral and symmetrical, and is consistent with the NGO and RPP. The Authority also considers that rule 92(3)(b) does not restrict the Authority to only having regard for CPI adjustments.
2101. As the Authority already considers that there is an interval of delay under rule 92(3) of the NGR, as stated in paragraph 2090, the second access arrangement period concluded on 31 December 2014. Therefore, the Authority rejects GGT's assertion that total revenue under rule 76 of the NGR is only to be calculated for the period 1 July 2016 to 31 December 2019. Accordingly, the Authority considers that the third access arrangement period is between 1 January 2015 and 31 December 2019. The Authority has calculated total revenue based upon these dates, having regard to the interval of delay between the revisions commencement date of 1 January 2015 and the date on which the tariffs for the access arrangement will commence, being 1 July 2016. Therefore, as contemplated in the regulatory scheme, GGT will have

¹¹⁰⁹ Economic Regulation Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, 28 February 2011.

¹¹¹⁰ Economic Regulation Authority, *Amended Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline*, 22 December 2011.

the opportunity to recover the Total Revenue calculated for the full third access arrangement period, 1 January 2015 to 31 December 2019, with an adjustment to tariffs (to ensure that revenue from higher current tariffs is taken into account) that will apply from when the access arrangement revisions become effective, i.e. 1 July 2016.

Reference Tariff Structure

2102. The Authority received no submissions on its Draft Decision to accept GGT's proposal of continuing with the three part tariff structure. Accordingly, the Authority approves GGT's revised proposal to continue with the three part tariff structure.
2103. As a result of the various required amendments made in this Final Decision, the Authority does not accept GGT's revised proposal reference tariffs for the forthcoming access arrangement. Additionally, as stated at paragraphs 2090 and 2101, the Authority rejects GGT's arguments and considers that there is an interval of delay. Furthermore, the Authority considers that total revenue should be calculated for the third access arrangement period of 1 January 2015 to 31 December 2019.
2104. In calculating the approved reference tariffs for the third access arrangement the Authority has factored in the interval of delay and determined tariffs that begin on 1 July 2016 to ensure that GGT is no better off or worse off as a result of the delay. Table 112 shows the Authority's approved reference tariffs that are to begin on 1 July 2016, and which are to be adjusted in accordance with the approved tariff variation mechanism in the Access Arrangement. The reference tariff variation mechanism is discussed in the Reference Tariff Variation Mechanism chapter of this Final Decision.

Table 112 Authority's Approved Final Decision Reference Tariff (Nominal \$)

Tariff Component	Tariff ¹¹¹¹
Toll Charge (\$/GJ MDQ)	0.116369
Capacity Reservation Charge (\$/GJ MDQ KM)	0.000620
Throughput Charge (\$/GJ KM)	0.000228

Source: ERA, GGP Tariff Model, June 2016.

2105. The Authority's approved reference tariffs above in Table 112 have been designed to generate the total revenue allocated to reference services, consistent with rule 95(1) of the NGR, as indicated in Table 113.

¹¹¹¹ The model is solved for nominal tariffs as at 1 July 2016 based on the Authority's forecast inflation (1.46 per cent per annum). The forecast inflation is then discounted out of these tariffs to produce tariffs in 31 December 2014 dollars and then reinflated using actual CPI figures across 30 June 2014 and 31 December 2015. These CPI figures have been used for consistency with the Tariff Variation Mechanism.

Table 113 Authority's Approved Final Decision Reference Services Revenue (AA3)

\$ million	NPV
Authority Approved Total Revenue Allocated to Reference Services	203.941
Authority Approved Reference Services Revenue	203.941

Source: ERA, GGP Tariff Model, June 2016.

Final Decision

2106. The Authority's Final Decision is to not approve GGT's revised proposal reference tariffs for the forthcoming access arrangement. The proposed revised access arrangement must be amended as per the required amendment below.

Required Amendment 14

The Reference Tariffs and Charges Section and Schedule A of the proposed revised access arrangement must be amended in accordance with paragraphs 2049 to 2066 of this Final Decision.

The proposed revised access arrangement must be amended to reflect the reference tariff for the third access arrangement period as per Table 112 of this Final Decision.

Reference Tariff Variation Mechanism

Regulatory Requirements

2107. Rules 92 and 97 of the NGR set out requirements for an access arrangement to include a mechanism for variation of reference tariffs during an access arrangement period.

92 Revenue equalisation

- (1) A full access arrangement must include a mechanism (*a reference tariff variation mechanism*) for variation of a reference tariff over the course of an *access arrangement period*.
- (2) The *reference tariff variation mechanism* must be designed to equalise (in terms of present values):
 - (a) forecast revenue from reference services over the *access arrangement period*; and
 - (b) the portion of total revenue allocated to reference services for the *access arrangement period*.
- (3) However, if there is an interval (the **interval of delay**) between a revision commencement date stated in a full access arrangement and the date on which revisions to the access arrangement actually commence:
 - (a) reference tariffs, as in force at the end of the previous *access arrangement period*, continue without variation for the interval of delay; but
 - (b) the operation of this subrule may be taken into account in fixing reference tariffs

97 Mechanics of reference tariff variation

- (1) A *reference tariff variation mechanism* may provide for variation of a reference tariff:
 - (a) in accordance with a schedule of fixed tariffs; or
 - (b) in accordance with a formula set out in the access arrangement; or
 - (c) as a result of a cost pass through for a defined event (such as a cost pass through for a particular tax); or
 - (d) by the combined operation of 2 or more of the above.
 - (2) A formula for variation of a reference tariff may (for example) provide for:
 - (a) variable caps on the revenue to be derived from a particular combination of reference services; or
 - (b) tariff basket price control; or
 - (c) revenue yield control; or
 - (d) a combination of all or any of the above.
 - (3) In deciding whether a particular *reference tariff variation mechanism* is appropriate to a particular access arrangement, the [Authority] must have regard to:
 - (a) the need for efficient tariff structures; and
 - (b) the possible effects of the reference tariff variation mechanism on administrative costs of the [Authority], the service provider, and users or potential users; and
 - (c) the regulatory arrangements (if any) applicable to the relevant reference services before the commencement of the proposed reference tariff variation mechanism; and
 - (d) the desirability of consistency between regulatory arrangements for similar services (both within and beyond the relevant jurisdiction); and
 - (e) any other relevant factor.
 - (4) A *reference tariff variation mechanism* must give the [Authority] adequate oversight or powers of approval over variation of the reference tariff.
 - (5) Except as provided by a *reference tariff variation mechanism*, a reference tariff is not to vary during the course of an *access arrangement period*.
2108. Rule 100 of the NGR sets out a general requirement that the provisions of an access arrangement must be consistent with the national gas objective set out in section 23 of the NGL(WA). Further, section 28(1) of the NGL(WA) requires the Authority to perform or exercise certain of its regulatory functions or powers (including a decision to approve (or not approve) or make or make revisions to, a full access arrangement) in a manner that will or is likely to contribute to the achievement of the national gas objective and, if making a designated reviewable regulatory decision where there are two or more possible such decisions that will or are likely to contribute to the achievement of the national gas objective, make the decision (giving reasons) that it is satisfied will or is likely to contribute to achieving the national gas objective to the greatest degree.
2109. The revenue and pricing principles are set out in section 24 of the NGL(WA). Section 28(2) of the NGL(WA) requires the Authority to take into account the revenue and pricing principles when exercising a discretion in approving or making those parts of an access arrangement relating to a reference tariff or when making an access arrangement determination relating to a rate or charge for a pipeline service.

GGT's Initial Proposal

2110. The reference tariff variation mechanism for the GGP in GGT's initial proposal comprised a scheduled reference tariff variation mechanism and a cost pass-through mechanism.

Tariff Variation Mechanism

2111. GGT proposed to revise its current tariff variation mechanism, which it had noted as satisfying the requirements of the Code, such that it would also meet the requirements of the NGR.

2112. GGT's reference tariff variation mechanism provided for a quarterly variation of the reference tariff and an annual scheduled variation of the reference tariff.

2113. GGT noted that its proposed quarterly tariff variation mechanism replicated the quarterly tariff variation mechanism currently contained in clause 9.8 of the General Terms and Conditions in Appendix 3 to the current GGP access arrangement. GGT proposed to move the quarterly tariff variation mechanism from the Terms and Conditions to Schedule A of the proposed revised access arrangement for the GGP.

2114. At the commencement of each quarter, GGT's proposed quarterly tariff variation mechanism replaced the inflation assumption, which was used in its access arrangement proposal, with "a measure of actual inflation obtained from the change in the Consumer Price Index six months prior and varies the reference tariff accordingly."¹¹¹²

2115. GGT submitted that its annual scheduled tariff variation mechanism for the proposed revised access arrangement was similar in design to the reference tariff adjustment mechanism of Schedule 1 to the current access arrangement for the GGP. GGT stated its annual scheduled tariff variation mechanism:

- effected the quarterly inflation adjustment of the reference tariff, in place of the quarterly scheduled adjustment discussed in paragraph 2113;
- allowed GGT the flexibility to vary the individual components of the reference tariff by up to 2 per cent, within a constraint on the overall revenue which might be earned at the reference tariff (Weighted Average Tariff Basket);
- effected a change in the reference tariff following the annual adjustment of the return on debt; and
- provided for the recovery, through a varied reference tariff, of regulatory costs which were unanticipated, and not taken into account at the time of submitting the access arrangement proposal.

2116. GGT noted that three of the four components of the tariff variation mechanism discussed in paragraph 2115 were components of the tariff adjustment mechanism in Schedule 1 of the current access arrangement. GGT stated that it had added the fourth component to the proposed revised access arrangement to effect the annual update of the return on debt. This was further discussed in the Rate of Return chapter of the Authority's Draft Decision.

¹¹¹² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 192.

Notice Period for a Reference Tariff Variation

2117. GGT noted that there are no provisions in the NGR regarding the process by which the service provider notifies the regulator of a proposed reference tariff variation nor the process by which the regulator allows or disallows the variation. GGT proposed to retain consistency with the previous process (under sections 8.3B to 8.3H of the former Code) by incorporating as much of it into the proposed revised access arrangement.
2118. Prior to varying the reference tariff, GGT proposed to:
- provide written notice to the Authority setting out proposed variations to the reference tariff, including evidence that the proposed variations have been calculated in accordance with the tariff variation mechanism (including the formulas); and
 - provide the written notice to the Authority at least 25 business days before the date that the relevant tariff is scheduled to be varied.¹¹¹³
2119. GGT proposed to vary the reference tariff in accordance with the written notice on the relevant variation date unless one or both of the following occurs:
- the Authority considered that it needs additional information from GGT to adequately assess the proposed tariff variation and extends the period for assessment beyond the relevant variation date in order to consider additional information; and/or
 - the Authority disallowed the proposed variation to the reference tariff in accordance with section 4.5.1(d) of the proposed revised access arrangement.¹¹¹⁴
2120. Should either of the above occur, GGT proposed that the reference tariffs would be varied on a date and in a form as determined by the Authority in accordance with the tariff variation mechanism.¹¹¹⁵
2121. GGT proposed that the Authority must publish its reasons for seeking an adjustment to a proposed variation at the time that it publishes its decision in relation to an adjustment to a proposed variation. Additionally, GGT proposed that the decision must set a revised date for the proposed tariff variation (as adjusted), and this date must not be later than 20 business days after the relevant tariff variation was originally intended to take place.¹¹¹⁶

¹¹¹³ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, section 4.5.1(b), p. 18.

¹¹¹⁴ Section 4.5.1(d) of GGT's proposed revised access arrangement states: The Regulator may, by notice to Service Provider before a proposed variation to the Reference Tariff is scheduled to take effect, disallow the proposed variation if it considers that proposed variation does not comply with the approved Scheduled Reference Tariff Variation Mechanism. If the regulator disallows a proposed variation, it may specify a variation that is consistent with the Scheduled Reference Tariff Variation Mechanism.

¹¹¹⁵ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, section 4.5.1(c), p. 18.

¹¹¹⁶ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, section 4.5.1(e), p. 18.

Cost Pass-Through Variation of Reference Tariff

2122. GGT noted that the cost pass-through variation mechanism of the proposed revised access arrangement was similar to the adjustment for changes in imposts, as per the current access arrangement under the Code. GGT stated that the purpose of the mechanism was to ensure that costs from material unforeseen or uncontrollable events affecting provision of the reference service could be recovered through the reference tariff.
2123. GGT proposed that the unforeseen or uncontrollable events be limited to the following classes in the access arrangement:
- an insurance cap event
 - an insurer credit risk event
 - a natural disaster event
 - a regulatory change event
 - a service standard event
 - a tax change event; and
 - a terrorism event.¹¹¹⁷
2124. GGT stated that the occurrence of any of the above events would be beyond its control and likely to result in GGT incurring costs in the provision of the reference service for which it would not be compensated, either through the unvaried reference tariff or any other mechanism in the proposed revised access arrangement.
2125. GGT proposed that the tariffs should be varied subject to the cost of providing the reference service across the remaining years of the access arrangement period exceeding a materiality threshold of 0.5 per cent of total revenue of the covered pipeline in the year in which the event occurs.

Notice Period for a Cost Pass-Through Variation of a Reference Tariff

2126. GGT noted that, under the Code, the regulator had oversight of the cost pass-through variations via a notice and approval process. GGT stated that it had incorporated into its proposed revised access arrangement much of the process that was previously provided in the Code.
2127. GGT's proposed clauses for the notice period are largely similar to the notice period discussed in paragraphs 2118 to 2121.
2128. GGT proposed under section 4.5.2(e) of the proposed revised access arrangement that it may submit one or more cost pass-through event notices each year. Each notice may incorporate a number of claims relating to cost pass-through events. GGT proposed that the minimum notice period for each cost pass-through event notice would be 25 business days prior to the date on which the proposed variations are to take effect.¹¹¹⁸

¹¹¹⁷ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, section 4.5.2, pp. 19-22.

¹¹¹⁸ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, section 4.5.2(e), p. 22.

2129. GGT proposed to vary the reference tariff in accordance with the cost pass-through event notice on the next scheduled reference tariff variation date identified in the notice, unless one or both of the following occurs:
- the Authority considered that it needs additional information from GGT to adequately assess the cost pass-through event notice, and extended the period for assessment beyond the date that the cost pass-through notice was intended to take effect in order to consider additional information; and
 - the Authority disallowed the proposed variation to the reference tariff in accordance with section 4.5.2(h) of the proposed revised access arrangement.¹¹¹⁹
2130. Should either of the above occur, GGT proposed that the reference tariffs would be varied on a date and in a form as determined by the Authority in accordance with the tariff variation mechanism.¹¹²⁰
2131. Similar to section 4.5.1(e) for the scheduled reference tariff variation mechanism, GGT proposed that the Authority must publish its reasons for disallowing or seeking an adjustment to a proposed variation at the time that it publishes its decision in relation to an adjustment to a proposed variation. Additionally, GGT proposed that, where relevant, the Authority must also set a revised date for the proposed tariff variation (as adjusted) to take effect and this date must not be later than 20 business days after the proposed variation was originally intended to take effect.¹¹²¹

Draft Decision

Tariff Variation Mechanism

2132. For the quarterly tariff variation, the Authority found no reason to reject the proposed formula contained in section A1 of Schedule A to the proposed revised access arrangement.¹¹²² The Authority noted that GGT had set the variable, X, being GGT's forecast annual percentage inflation rate used in its proposal, at 2.5 per cent. The Authority did not accept GGT's proposed forecast inflation rate of 2.5 per cent, for reasons discussed in the Rate of Return chapter of the Draft Decision and, accordingly, the Authority required that X be set at the Authority's Draft Decision approved forecast inflation rate of 1.90 per cent.¹¹²³ For reasons set out in the discussion below, the Authority renamed variable X to Z. The Authority required GGT to rename variable X to Z. The Authority's changes to section A1 of Schedule A to the proposed revised access arrangement in the Draft Decision were as follows:

¹¹¹⁹ Section 4.5.1(h) of GGT's proposed revised access arrangement states:

The Regulator may, by notice to Service Provider before a proposed variation to the Reference Tariff is scheduled to take effect, disallow the proposed variation if it considers that proposed variation does not comply with the Cost Pass-through Reference Tariff Variation Mechanism. If the regulator disallows a proposed variation, it may specify a variation that is consistent with the Cost Pass-through Tariff Variation Mechanism.

¹¹²⁰ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, section 4.5.2(f), p. 22.

¹¹²¹ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, section 4.5.2(h), p. 22.

¹¹²² The Authority notes that the mathematical derivation of variable, K, has been changed by GGT. However, the Authority does not consider that this has a numerical impact on the calculation of the varied reference tariff as it is a simplification of the formula used to derive K.

¹¹²³ The estimate is indicative to the extent that it is based on an averaging period ending 2 April 2015. That averaging period and the estimate of inflation will be revised for the Final Decision.

Quarterly Scheduled Variation of Reference Tariffs

The Reference Tariff Components (as described in section 4.1 of the Access Arrangement) are adjusted for inflation on a Quarterly basis in accordance with the formula below.

$$C_t = C_{t-1} \times \frac{1}{(1+K)} \times \frac{CPI_{t-2}}{CPI_{t-3}}$$

where

C_t is the relevant charge in the Quarter t in which the adjustment occurs.

C_{t-1} is the charge for the Quarter commencing three months prior to the commencement of Quarter t. For the Quarter commencing 1 September 2016, C_{t-1} is the relevant charge shown above for 1 July 2016.

$$K \text{ is } (1+Z)^{0.25} - 1$$

Z is 0.019 (1.90% being the forecast annual percentage inflation rate used in the Draft Decision).

CPI_{t-2} is the CPI All Groups, Weighted Average of Eight Capital Cities for the Quarter commencing six months prior to the commencement of Quarter t.

CPI_{t-3} is the CPI for the Quarter commencing nine months prior to the commencement of Quarter t.

2133. For the annual tariff variation, the Authority noted that GGT had adopted the current formula under the Code with some modifications such that it could put the annual update of the debt risk premium into effect. The Authority required GGT to replace the Rate of Return portion of section A2 of Schedule A to the proposed revised access arrangement with the following text.

Annual update of trailing average debt risk premium

The annual update of the trailing average debt risk premium component of the rate of return in each year starting from 1 June 2016 of the Access Arrangement Period is to be calculated by applying the following formula:

$$TA\ DRP_0 = \frac{\sum_{t=0}^{-9} DRP_t}{10}$$

Where

$TA\ DRP_0$ is the equally weighted trailing average of the DRP to apply in the following year as the annual update of the estimate used in the current year; and

DRP_t is the DRP estimated for each of the 10 regulatory years $t = 0, -1, -2, \dots, -9$, which are either:

the forward looking DRP estimators for the calendar year 2017, 2018 or 2019, estimated during the 40 trading days averaging period, using the method of automatic formulas set out in Appendix 8 of the Draft Decision; or

the published DRP_t estimates, derived from the Reserve Bank of Australia 10 year BBB credit spread to swap interpolated daily data (up to period [end date of the month just prior to averaging period date]) and from the Authority's [averaging period date] estimate of the DRP, as follows, as set out in Appendix 8 of this Draft Decision:

calendar year 2007: DRP_{2007} : 1.241 per cent;
 calendar year 2008: DRP_{2008} : 3.489 per cent;
 calendar year 2009: DRP_{2009} : 4.624 per cent;
 calendar year 2010: DRP_{2010} : 2.127 per cent;
 calendar year 2011: DRP_{2011} : 2.371 per cent;
 calendar year 2012: DRP_{2012} : 3.172 per cent;
 calendar year 2013: DRP_{2013} : 3.068 per cent;
 calendar year 2014: DRP_{2014} : 2.250 per cent;
 calendar year 2015: DRP_{2015} : 1.953 per cent;
 calendar year 2016: DRP_{2016} : [to be estimated and included in the Final Decision].

The first annual update will apply for the tariff variation for the 2017 calendar year. As noted, all annual updates of the debt risk premium should be determined consistent with the automatic formulas summarised in [Schedule []] of the Access Arrangement and set out in Appendix 8 of the Draft Decision.¹¹²⁴ The resulting automatic annual adjustment to the rate of return, based on the outputs of the updating of the tariff model for the revised debt risk premium for the regulatory year, should be incorporated in the relevant Annual Tariff Variation.

The Authority in this Draft Decision requires that GGT nominate, as soon as practicable after release of the Draft Decision, the averaging period for 2016 and for each annual update applying in 2017, 2018 and 2019. The averaging periods for each annual update must be a nominated 40 trading days (based on eastern states holidays) in the window 1 June to 31 October in the year prior to the relevant tariff variation. The nominated 40 trading day averaging period for each year of the four years do not need to be identical periods, only that they occur in the period 1 June to 31 October in each relevant year, and are nominated prior.

2134. As a result of the annual update, the Authority inserted a new factor into the annual tariff variation formula 'X-Factor' to replace 'TREV'. To avoid confusion with the term 'X-Factor' due to replacing TREV with the X-Factor, the Authority renamed variable X in GGT's proposed tariff variation mechanism to Z.
2135. The Authority amended the annual tariff variation formulas in section A2 of Schedule A to the proposed revised access arrangement as shown below. Similar to the quarterly tariff variation, the Authority did not accept GGT's proposed forecast inflation rate. The Authority amended the tariff variation formulas for a start date of 1 July 2016. In addition to the changes in the annual update of trailing average debt risk premium, noted in paragraph 2133, the Authority required GGT to replace section A2 of Schedule A to the proposed revised access arrangement with the following text.

¹¹²⁴ The Authority expects that the proposed revised access arrangement will include a schedule which summarises the automatic formulas for updating the debt risk premium and the techniques to estimate the forward looking debt risk premium.

Annual Scheduled Variation of Reference Tariffs

The Service Provider has adopted a ‘tariff basket price cap’ approach as the manner in which Reference Tariff Components (as described in section 4.1 of the Access Arrangement) may vary within this Access Arrangement Period.

The Service Provider has also adopted a ‘trailing average’ approach to estimate the Debt Risk Premium used to determine the Reference Tariff. The trailing average approach is a method of the type referred to in Rule 87(9)(b). The change in Total Revenue which results from use of a method of the type referred to in Rule 87(9)(b) must be effected through the automatic application of a formula. That formula, which was specified in the decision on this Access Arrangement for this Access Arrangement Period, is set out below.

The formula effects a change in Total Revenue in each year of the Access Arrangement Period. The change in Total Revenue requires an annual adjustment to the Reference Tariff. That adjustment is to be made using the formulae in this Annual Scheduled Variation of Reference Tariffs (A2).

The Service Provider may in its discretion vary any Reference Tariff Component annually (each annual period being a Variation Year) subject to the limit on the varied Reference Tariff Components and the limit on movement of the weighted average tariff basket described below.

Any annually varied Reference Tariff Component will be effective 1 January of each Year, and the annual variation in this way will be in lieu of the CPI adjustment specified in A1 above.

Limit on varied Reference Tariff Components and the Tariff Basket for Access Arrangement Period (years) 2017, 2018 and 2019

Each Reference Tariff Component may be varied by the Service Provider provided the varied Reference Tariff Component satisfies the following conditions:

$$p_t^i \leq p_{t-1}^i \times (1 + X_Factor_t^i) \times \frac{(1 + Y^i)}{(1 + Z)} \times \frac{CPI_{Sep(t-1)}}{CPI_{Sep(t-2)}}$$

and the tariff basket:

$$\sum_{i=1}^m (p_t^i \times q_{t-2}^i) \leq \frac{1}{(1 + Z)} \times \frac{SepCPI_{t-1}}{SepCPI_{t-2}} \times \sum_{i=1}^m ((1 + X_Factor_t^i) \times p_{t-1}^i \times q_{t-2}^i)$$

where:

p_t^i is the value of Reference Tariff Component i as varied for Year t;

p_{t-1}^i is the value of Reference Tariff Component i in Year t – 1;

p_{2016}^1 is \$0.083066 x $(1 + X_Factor_{2016}^1)$ per GJ MDQ at 1 July 2016 for Toll charge reference tariff;

p_{2016}^2 is \$0.000446 x $(1 + X_Factor_{2016}^2)$ per GJ MDQ km at 1 July 2016 for Reservation charge reference tariff;

p_{2016}^3 is \$0.000163 x $(1 + X_Factor_{2016}^3)$ per GJ km at 1 July 2016 for Throughput charge reference tariff;

q_{t-2}^i	is the quantity of service (GJ, GJ km MDQ, or GJ km throughput) provided at Reference Tariff Component i in Year $t - 2$;
$CPI_{Sep(t-1)}$	is the September Quarter CPI for Year $(t - 1)$;
$CPI_{Sep(t-2)}$	is the September Quarter CPI for Year $(t - 2)$;
$X_Factor_t^i$	is the change from 1 January Year $(t-1)$ to 1 January Year (t) in tariff for Reference Tariff Component i as varied for Year t of 2017, 2018 and 2019 resulting from the annual update of the Debt Risk Premium and from any change in Regulatory Costs and calculated using the approved Tariff Model
$X_Factor_{2016}^i$	is the change in tariff for Reference Tariff Component i from 1 July 2016 to 1 January 2017 as calculated by the approved Tariff Model
Z	is 0.019 (1.90% being the forecast annual percentage inflation rate used in the [Draft] Decision)
Y^i	is not greater than 0.02 (2%) for each of the Tariff Component i
t	is the Variation Year and $t \leq 2017$ to 2019
i	is the Tariff Component with: $i = 1$ for Toll charge; $i = 2$ for Reservation charge; and $i = 3$ for Throughput charge.

2136. The Authority amended the annual tariff variation formula replacing $(1-X)$ with $1/(1+Z)$ for deflating using forecast inflation. The Authority did not allow GGT's proposed adjustment for the difference between the actual and forecast regulatory costs.

Notice Period for a Reference Tariff Variation

2137. The Authority noted that, under section 4.5.1(b)(ii) of GGT's initial proposal revised access arrangement, it proposed to set a minimum notice period of 25 business days between the time it submitted the written notice and the time it proposed the reference tariff be varied. The Authority did not consider that 25 business days was sufficient to assess GGT's proposed tariff variations, especially given the introduction of the annual update of the debt risk premium in the annual reference tariff variation. Given the potential complexities that may arise as a result of this additional factor, the Authority considered that a minimum notice period of 40 business days to provide the written notice should be set in the proposed revised access arrangement. The Authority required that GGT amend section 4.5.1(b)(ii) to set a minimum notice period of 40 business days prior to the scheduled variation date.

2138. The Authority was of the opinion that section 4.5.1(c) had been drafted to allow GGT to vary its reference tariff unless the Authority responded to GGT in the manner specified in sections 4.5.1(c)(i) and 4.5.1(c)(ii). The Authority considered that this drafting would constitute an automatic approval of GGT's proposed reference tariff variation should the Authority not respond by the scheduled variation date. The Authority did not consider that this drafting was appropriate as it unduly placed

responsibility on the Authority to respond before the scheduled variation date. The Authority noted that valid circumstances could arise whereby a delayed response from the Authority would lead to an automatic approval of the reference tariff variation, without the Authority expressly approving it via a written response.

2139. Furthermore, the Authority did not consider that this clause was consistent with rule 97(4) of the NGR, which requires that the reference tariff variation mechanism provide the Authority with adequate oversight or powers of approval over variation of the reference tariff. The Authority considered that an automatic approval of the reference tariff variation as a result of a delayed response would not be consistent with this rule. Accordingly, the Authority rejected the proposed wording of section 4.5.1(c) of the proposed revised access arrangement.
2140. As a result of amending section 4.5.1(c), the Authority introduced an additional clause, section 4.5.1(d), into the proposed revised access arrangement which set out when the reference tariff would be varied should there be a delay in the assessment of GGT's written notice.
2141. Further to the addition of section 4.5.1(d), the Authority required that GGT move section 4.5.1(c)(i) and reintroduce it as a standalone clause, section 4.5.1(e).
2142. Similar to the Authority's concerns regarding adequate oversight with respect to section 4.5.1(c), the Authority noted that section 4.5.1(d) would only allow the Authority to disallow a proposed variation if it provided notice to GGT before the scheduled reference variation date. Whilst the Authority considered that it is necessary to provide notice to GGT, it was of the opinion that there could be valid circumstances whereby it is unable to provide notice as soon as intended. Accordingly, the Authority did not consider it appropriate to include a time constraint in this clause.
2143. With respect to the second portion of section 4.5.1(d), the Authority considered that the onus should be on GGT to resubmit a variation to tariffs that is in accordance with the tariff variation mechanism should the Authority disallow it in the first instance. The Authority required that GGT replace the section in its proposed revised access arrangement.
2144. The Authority noted that, as a result of its amendments and inclusions to section 4.5.1, GGT's original section 4.5.1(e) in its proposed revised access arrangement had been deleted. The Authority considered that its amendments and inclusions to section 4.5.1 rendered the original text obsolete as the Authority was already committed to providing written notice to GGT stating its decision and its reasons for making the decision. As the Authority considered that the onus should be on GGT to resubmit a compliant tariff variation, the portion of the clause regarding adjustments to the proposed variation and new effective timing of the variation no longer needed to be included.
2145. The Authority did not consider it necessary to replace sections 4.5.1(a) and 4.5.1(b) of the proposed revised access arrangement. The Authority approved these two clauses.

Cost Pass-Through Variation of Reference Tariff

2146. The Authority noted that GGT introduced seven cost pass-through events as part of its cost pass-through tariff variation mechanism, as a result of the regulatory change

from the Code to the NGR.¹¹²⁵ Previously under the Code, section 5.4 of the access arrangement included an adjustment for imposts.

2147. The Authority considered that section 4.5.2(b)(ii) of the initial proposal revised access arrangement did not provide it with adequate oversight over the approval of the variation of the reference tariff, as per rule 97(4) of the NGR, if GGT submitted a cost pass-through event notice, without documentary evidence to substantiate the financial impact. The Authority considered that the practical effect of the terms “reasonable endeavours” and “if available”, would be to enable GGT to submit a cost pass-through event without substantiating its financial impact. This would inevitably place the Authority in a position in which it would have to make an assessment of the cost pass-through events without sufficient evidence. The Authority was of the opinion that this information asymmetry is inconsistent with rule 97(4) of the NGR.
2148. The Authority considered that the insurance cap event, insurer credit risk event, natural disaster event and terrorism event are insurance related event types. The Authority noted in the Operating Expenditure chapter of its Draft Decision, it had approved an amount of \$1.375 million as forecast APA commercial expenditure for insurance. The Authority considered that GGT’s proposal should have included reasonable amounts for its insurance expenditure related to its insurance policy it obtained and the premiums associated with it. The Authority noted that GGT stated the following as the purpose of the cost pass-through mechanism:
- “to ensure that costs resulting from material unforeseen or uncontrollable events affecting provision of the reference service can be recovered through the reference tariff”.¹¹²⁶
2149. The Authority considered it necessary to assess GGT’s insurance policies and self-insurance documentation to determine the level of coverage that GGT had sought and the type of events that were covered. The Authority noted that no insurance policies were provided as part of GGT’s initial proposal on 15 August 2014.
2150. The Authority requested that GGT provide copies of its insurance policies and internal self-insurance documentation which detailed the types of events that GGT is covered for. In response to the information request, GGT provided the Authority with a copy of its insurance estimate as a stand-alone business from Marsh Pty Limited.¹¹²⁷ The Authority noted that this two page estimate provided only a non-binding indication of the insurance premiums that GGT would pay. The estimate did not detail any useful information other than an indicative price that GGT would have to pay. In the absence of a proper and full insurance policy or documentation on self-insurance, the Authority was unable to properly assess the validity and appropriateness of GGT’s proposed cost pass-through events. The Authority noted that the policies were required so that the Authority could determine whether there was an overlap between the coverage that the insurance policy provided and the cost pass-through events GGT sought to include in its proposed revised access arrangement, or whether there is a shortfall between the two.
2151. With respect to the terrorism event, the Authority noted that the text in the proposed revised access arrangement did not mention insurance per se. However, the

¹¹²⁵ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, section 4.5.2, pp. 19-22.

¹¹²⁶ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 193.

¹¹²⁷ Goldfields Gas Transmission Pty Ltd, *Email Response to ERA17 and ERA18*, 16 October 2015.

Authority considered that it was necessary to review GGT's insurance policies to determine whether it was covered and whether a prudent service provider would seek coverage for this type of event proposed by GGT.

2152. For these reasons, the Authority rejected the inclusion of the insurance cap event, insurer credit risk event, natural disaster event and terrorism event. The Authority required that GGT amend section 4.5.2(c) of the proposed revised access arrangement to remove all references to the insurance cap event, insurer credit risk event, natural disaster event and terrorism event. The Authority stated that, should GGT wish to resubmit these cost pass-through events for consideration in the Final Decision, the Authority requires that GGT submit all relevant insurance policies and self-insurance documentation as part of its response to the Draft Decision. Additionally, the Authority required that GGT detail the exact insured events that were included in its APA commercial operating expenditure for insurance. The Authority expected that these events would not be included as a cost pass-through.
2153. The Authority did not object to the inclusion of cost pass-through events for changes in law or tax change events. The Authority noted that it had previously included such a clause in its revised access arrangement for the GDS, being a cost pass-through event for a "change in law or tax change". The Authority considered that GGT's proposed service standard event was essentially similar to an event for a change in law as it is an event that arises as result of a legislative or administrative act. However, to ensure regulatory consistency between decisions¹¹²⁸ and for ease of application for GGT and the Authority, the Authority required that:
- the service standard event be renamed to a change in law event; and
 - the change in law event be combined with the tax change event.
2154. The Authority did not require any change to the wording of these cost pass-through events.
2155. The Authority rejected the inclusion of GGT's proposed regulatory change event. The Authority did not consider that the wording or purpose of the proposed clause was consistent with the rule 97(1)(c) of the NGR. The Authority considered that a catch all "no other category" event was inconsistent with the requirements of rule 97(1)(c), which required a variation of a reference tariff as a result of a cost pass-through event, to be for a defined event. The Authority considered that the cost pass through event should be defined and as such, required GGT to remove this event from the proposed revised access arrangement.
2156. The Authority noted that GGT included a materiality clause as part of its cost pass-through tariff variation mechanism. The Authority did not object to a materiality threshold being included into the mechanism. However, it considered 0.5 per cent to be too low due to the administrative costs of assessing these cost pass-through events. The Authority considered that a higher threshold should be introduced. The Authority noted that the Roma to Brisbane access arrangement, which GGT stated it had based its cost pass-through events on, has a materiality threshold of 1 per cent as opposed to the 0.5 per cent proposed by GGT for the GGP.¹¹²⁹ Additionally, the

¹¹²⁸ Economic Regulation Authority, *Revised Access Arrangement for the Mid-West and South-West Gas Distribution Systems*, 29 September 2015, p. 58.

¹¹²⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 194.

Authority did not consider that GGT had provided valid reasoning as to why it believed that a 0.5 per cent materiality threshold was appropriate.

2157. The Authority required that GGT amend section 4.5.2(d) to reflect an increased materiality threshold of 1 per cent. The Authority amended the wording of section 4.5.2(d) to state forecast tariff revenue as opposed to total revenue and removed the words “over the remaining years of the access arrangement period”.

Notice Period for a Cost Pass-Through Variation of a Reference Tariff

2158. The Authority noted that the notice period sections of GGT’s proposed cost pass-through reference tariff variation mechanism were largely similar to the sections it had proposed for the scheduled reference tariff variation mechanism. The Authority considered that, as GGT had drafted the notice period clauses in a similar manner across both variation mechanisms, it was necessary to align its amendments from the scheduled tariff variation mechanism to those of the cost pass-through tariff variation mechanisms. The Authority noted that aligning both notice period clauses, would provide more clarity and ease of operation for both GGT and the Authority.
2159. The Authority made an additional change to section 4.5.2(e) as the Authority did not consider it administratively efficient to be making multiple adjustments to the reference tariff during the year, other than that for CPI changes. The Authority considered that it is necessary to restrict the submission of cost pass-through tariff variation written notices only to when the annual scheduled reference tariff variation written notices are submitted. This approach was also consistent with the notice period for a cost pass-through in the recently approved access arrangement for the GDS. Additionally, as the Authority would be making the adjustments for the cost pass-throughs tariff variations through the reference tariff model, this could only happen with the annual tariff variation as the quarterly reference tariff variations are not varied directly through the reference tariff model. This is illustrated by the formulas in the Draft Decision.
2160. The Authority amended sections 4.5.2(e) to 4.5.2(h) and included two additional clauses, similar to those in the scheduled reference tariff variation mechanism. The Authority requires that GGT replace the sections in its proposed revised access arrangement as stated in the Draft Decision.

GGT’s Revised Proposal

2161. GGT agreed to replace its earlier inflation forecast of 2.5 per cent used in the tariff variation mechanism with the Authority’s inflation forecast (Z) of 1.90 per cent.¹¹³⁰
2162. With respect to the estimation of the cost of debt in the annual scheduled variation of tariffs, GGT considered the Authority’s annual update of the trailing average debt risk premium was not relevant. GGT’s reasoning on this is addressed in the Rate of Return chapter of this Final Decision.
2163. GGT retained the adjustment for the difference between actual and forecast regulatory costs in the annual tariff variation mechanism. GGT stated that the

APT Petroleum Pipelines Pty Ltd, *Access Arrangement Effective 1 September 2012 – 30 June 2017*, August 2012, clause 4.5.3, p. 18.

¹¹³⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 168.

adjustment was intended to allow the recovery, via the reference tariff, of unanticipated regulatory costs which were not under the control of the service provider and was of the view that this reason remains. GGT also submitted that the adjustment provides the service provider with the opportunity to recover costs efficiently incurred in providing reference services which is then reflected in prices. On this basis, it viewed the resultant price signal to users of pipeline capacity as a signal for allocative efficiency, consistent with the efficiency focus of section 23 of the NGL.

2164. GGT is of the view that the retention of the adjustment precludes operation of the annual tariff variation mechanism in the way intended in the formulas set out in paragraph 1655 of the Draft Decision. Accordingly, GGT has retained the mechanism of its August 2014 proposed revised GGP Access Arrangement.
2165. GGT states that it has retained its earlier scheme of cost pass through variation with only minor amendments. GGT considers that the changes proposed by the Authority in its Draft Decision have no real basis in either the NGL or NGR. GGT is of the view that it serves to facilitate the regulator's task rather than providing a mechanism for cost recovery, and ultimately efficiency in the provision of natural gas services.¹¹³¹

Submissions

2166. The Authority did not receive any submissions relating to GGT's revised proposal for the reference tariff variation mechanism.

Considerations of the Authority

Tariff Variation Mechanism

Quarterly Tariff Variation – Section A1 of Schedule A

2167. The Authority notes that GGT has not rejected the changes it proposed in the Draft Decision for the quarterly tariff variation in section A1 of Schedule A of the proposed revised access arrangement. The Authority also notes that GGT has accepted the Authority's Draft Decision to re-label variable X, to variable Z to avoid any confusion. However, it appears that GGT, in preparing its revised proposal, has made a formatting error in copying the quarterly tariff variation formula twice, side by side.¹¹³²
2168. For the avoidance of any doubt, the Authority has reproduced the formula it set out in the Draft Decision below, with the exception of amending the inflation rate (Z variable) to reflect the current forecast inflation rate of 1.46 per cent. The Authority requires section A1 of Schedule A to the proposed revised access arrangement to be amended as follows:

A1 Quarterly Scheduled Variation of Reference Tariffs

The Reference Tariff Components (as described in section 4.1 of the Access Arrangement) are adjusted for inflation on a Quarterly basis in accordance with the formula below.

¹¹³¹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, p. 169.

¹¹³² Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, January 2016, p. 35.

$$C_t = C_{t-1} \times \frac{1}{(1+K)} \times \frac{CPI_{t-2}}{CPI_{t-3}}$$

Where

C_t is the relevant charge in the Quarter t in which the adjustment occurs.

C_{t-1} is the charge for the Quarter commencing three months prior to the commencement of Quarter t. For the Quarter commencing 1 September 2016, C_{t-1} is the relevant charge shown above for 1 July 2016.

K is $(1+Z)^{0.25} - 1$

Z is 0.0146 (1.46% being the forecast annual percentage inflation rate used in the Final Decision).

CPI_{t-2} is the CPI All Groups, Weighted Average of Eight Capital Cities for the Quarter commencing six months prior to the commencement of Quarter t.

CPI_{t-3} is the CPI for the Quarter commencing nine months prior to the commencement of Quarter t.

Annual Tariff Variation – Section A2 of Schedule A

2169. GGT's proposed mechanism for the annual scheduled variation of reference tariffs differs from that outlined by the Authority in the Draft Decision solely in that it replaces the term $X_Factor_t^i$ with the term $\Delta TREV_t$. GGT's proposed adjustment for differences between actual and forecast regulatory costs, and changes in the cost of debt factor are made through this term in the annual tariff variation mechanism. GGT has defined this term for 2017 in equation (29).

$$\Delta TREV_{2017} = \frac{\Delta REGCOST_{2016} \times (1 + NVWACC_{2017}) + \Delta RoD_{2017}}{TREV_{2017}} \quad (29)$$

Where

$\Delta REGCOST_{2016}$ is the actual Regulatory Cost for the period 1 July 2016 to 31 December 2016 minus the forecast Regulatory Cost for the period 1 July 2016 to 31 December 2016;

$NVWACC_{2017}$ is the allowed rate of return in 2017 determined as the nominal vanilla weighted average of the return on equity used in the determination of the Total Revenue, and the rate of return on debt calculated as a trailing average and updated for Year 2017 in the way described below;

ΔRoD_{2017} is the change in the return on debt for 2017 calculated as a trailing average and updated for 2017 in the way described in paragraph 2174, 2175 and 2178; and

$TREV_{2017}$ is Total Revenue for 2017.

2170. This term indexes each of the tariff components determined at the beginning of the Access Arrangement by a factor equal to the change in regulatory costs

(compounded at the $NVWACC_{2017}$ rate) and change in the return on debt expressed as a percentage of total revenue.

2171. The $\Delta TREV_t$ term is defined for 2018 and 2019 in equation (30).

$$\Delta TREV_t = \frac{1 + \frac{\Delta REGCOST_{t-1} \times (1 + NVWACC_t) + \Delta RoD_t}{TREV_t}}{1 + \frac{\Delta REGCOST_{t-2} \times (1 + NVWACC_{t-1}) + \Delta RoD_{t-1}}{TREV_{t-1}}} - 1 \quad (30)$$

Where

$\Delta REGCOST_{t-1}$ is the actual Regulatory Cost for Year t – 1 minus the forecast Regulatory Cost for Year t – 1, which is subject to a ‘deadband’ materiality threshold of plus or minus 0.5% of the Total Revenue for Year t – 1;

$NVWACC_t$ is the allowed rate of return in Year t determined as the nominal vanilla weighted average of the return on equity used in the determination of the Total Revenue, and the rate of return on debt calculated as a trailing average and updated for Year t in the way described below;

ΔRoD_t is the change in the return on debt for Year t calculated as a trailing average and updated for Year t in the way described in paragraph 2176, 2177 and and 2178;

$TREV_t$ is the Total Revenue for Year t;

$\Delta REGCOST_{t-2}$ is the actual Regulatory Cost for Year t – 2 minus the forecast Regulatory Cost for Year t – 2, which is subject to a ‘deadband’ materiality threshold of plus or minus 0.5% of the Total Revenue for Year t – 2; Regulatory Costs;

$NVWACC_{t-1}$ is the allowed rate of return in Year t – 1 determined as the nominal vanilla weighted average of the return on equity used in the determination of the Total Revenue, and the rate of return on debt calculated as a trailing average and updated for Year t – 1 in the way described below;

ΔRoD_{t-1} is the change in the return on debt for Year t – 1 calculated in paragraph 2176, 2177 and and 2178; the way described in ; and

$TREV_{t-1}$ is the Total Revenue for Year t -1.

2172. This $\Delta TREV_t$ term performs a similar function to equation (29), however, discounts the previous year’s regulatory cost and cost of debt based indexation out of the previous year’s tariff before applying the regulatory cost and cost of debt based indexation for year t.

2173. The rate of return on debt calculation submitted by GGT to determine the reference tariff at 1 July 2016 is set out in equation (31)

$$RoRD_{2015} = \frac{1}{10} \sum_{t=2006}^{2015} (r_{f,t} + DRP_t + DRC) \quad (31)$$

Where

$r_{f,t}$ is the nominal risk free rate of return for Year t, expressed as a percentage, which is estimated as the average of yields on Commonwealth Government bonds with a term to maturity of 10 years, as published by the Reserve Bank of Australia, the average being calculated for the 40 trading days immediately preceding 30 April in Year t;

DRP_t is the debt risk premium for Year t, expressed as a percentage, which is estimated as the average of the spreads to CGS for February, March and April in Year t, on the bonds of BBB rated Australian non-financial corporations, for a tenor of 10 years, as published by the Reserve Bank of Australia; and

DRC is 0.1250 per cent.

2174. GGT submits that at the end of 2016 and prior to 1 January 2017 the rate of return on debt is updated using the formula shown in equation (32).

$$RoRD_{2016} = \frac{1}{10} \sum_{t=2007}^{2016} (r_{f,t} + DRP_t + DRC + HC) \quad (32)$$

2175. The dollar value return on debt in 2017 is then updated using equation (33)

$$RoD_{2017} = RoRD_{2016} \times \frac{D}{D + E} \times CB_{2017} \quad (33)$$

Where

$\frac{D}{D + E}$ is the gearing assumed for determination of the Reference Tariff, which was 60%; and

CB_{2017} is the projected Capital Base for the Covered Pipeline at 1 January 2017, which was used for determination of the Reference Tariff.

2176. In the years 2018 and 2019 of the Access Arrangement Period the GGT proposes the use of the rate of return on debt formula shown as equation (34).

$$RoRD_t = \frac{1}{10} \sum_{t=A-9}^A (r_{f,t} + DRP_t + DRC + HC) \quad (34)$$

Where

A is successively, 2018 and 2019;

$r_{f,t}$ is the nominal risk free rate of return for Year t, expressed as a percentage, which is estimated as the average of yields on Commonwealth Government bonds with to maturity of 10 years, as published by the Reserve Bank of Australia, the

average being calculated for the 40 trading days immediately preceding 30 April in Year t ;

DRP_t is the debt risk premium for Year t , expressed as a percentage, which is estimated as the average of the spreads to CGS for February, March and April in Year t , on the bonds of BBB rated Australian non-financial corporations, for a tenor of 10 years, as published by the Reserve Bank of Australia; and

DRC is 0.1250 per cent.

2177. The dollar value return on debt in each successive year is then updated using equation (35)

$$RoD_t = RoRD_t \times \frac{D}{D+E} \times CB_t \quad (35)$$

Where

$RoRD_t$ is the rate of return on debt in year t ;

$\frac{D}{D+E}$ is the gearing assumed for determination of the Reference Tariff, which was 60%; and

CB_t is, successively, the projected Capital Base for the Covered Pipeline at 1 January in each of 2018 and 2019, as used for determination of the Reference Tariff.

2178. The change in the return on debt for year t is calculated as shown in equation (36).

$$\Delta RoD_t = RoD_t - RoD_{t-1} \quad (36)$$

Where

RoD_t is the dollar value return on debt in year t ; and

RoD_{t-1} is the dollar value return on debt in year $t-1$.

Circumvention of Tax Impact

2179. The Authority notes that GGT's submitted approach to annual tariff variation is still similar to that used in conjunction with the pre-tax nominal tariff model during the second GGT Access Arrangement. The use of such an approach fails to account for the impact of changes in costs on tax in the post-tax nominal model which, under rule 87A(1) of the NGR, requires an estimated cost of corporate income tax of a service provider for each regulatory year of an access arrangement period.

2180. The Authority's approach accounts for the impact of changes in costs on the estimated cost of corporate income tax ensures that regard is had to regulatory arrangements underlying the implementation of the GGT post-tax nominal tariff model - in particular, rule 87A(1) of the NGR. In contrast to GGT's approach, the Authority's approach is also consistent with rule 97(3) of the NGR, for example rule 97(3)(c) of the NGR, which requires that regard must be had to the regulatory arrangements

applicable to the relevant reference services before the commencement of the proposed reference tariff variation mechanism.

2181. In addition to the issue of the cost adjustments that need to be considered in the annual tariff variation, the Authority requires that changes in the tariff components resulting from such adjustments must be modelled using the GGT post-tax nominal tariff model to account for the impact of changes in costs on tax. The resulting tariff components are then used to calculate an 'X_Factor' for each tariff component.

Authority's Augmentations to Draft Decision Tariff Variation Mechanism

2182. The following formulas are augmentations to the mechanism for the annual scheduled variation of reference tariffs set out in the Draft Decision. These formulas only provide further detail on the mechanism outlined in the Draft Decision rather than alter it. These augmentations are included in the complete layout of the mechanism shown in paragraph 2195.

2183. The X Factor used in the limits on the varied reference tariff components and tariff basket shown in paragraph 2135 above is mathematically defined in equation (37).

$$X_Factor_t^i = \frac{p_{x,t}^i}{p_{t-1}^i} - 1 \quad (37)$$

Where

i is the tariff component with 1 being the Toll charge, 2 being the Reservation charge and 3 being the Throughput charge;

t is the j th period to which the varied tariff applies;

j is the period, with 1 being July - December 2016, 2 being January- December 2017, 3 being January- December 2018 and being 4 January- December 2019; and

$p_{x,t}^i$ is the tariff set for each component within the GGT post-tax nominal tariff model. The x subscript signifies that this price is a function of the X Factor solution and last year's price.

2184. The X Factor is set such that each $p_{x,t}^i$ results in a present value of revenue already received and forecast to be received is equal to the present value of building block revenue required over the access arrangement. This is outlined in equation (38).

$$\sum_{i=1}^3 PVR^i = \sum_{j=1}^4 \frac{BBRev_j}{(1+r_j)} \quad (38)$$

Subject to the constraint

$$PVR^1 / \sum_{i=1}^3 PVR^i = 11.30\%, \quad PVR^2 / \sum_{i=1}^3 PVR^i = 72.20\%, \quad PVR^3 / \sum_{i=1}^3 PVR^i = 16.50\%$$

Where

PVR^i is the present value of tariff revenue already received and forecasted to be received for tariff component i and is calculated as $\left(\sum_{j=1}^{t-1} \frac{p_j^i q_j^i}{(1+r_j)} + \sum_{j=t}^4 \frac{p_t^i q_j^i}{(1+r_j)} \right)$;

p_j^i is the tariff set for component i in period j ;

q_j^i is the quantity or 'load' forecast associated with tariff component i in period j ;

r_j is the compounded nominal vanilla weighted average cost of capital (WACC) applicable in period j calculated as:

$$r_1 = (1+WACC_1) - 1;$$

$$r_2 = (1+WACC_1) \times (1+WACC_2) - 1;$$

$$r_3 = (1+WACC_1) \times (1+WACC_2) \times (1+WACC_3) - 1; \text{ and}$$

$$r_4 = (1+WACC_1) \times (1+WACC_2) \times (1+WACC_3) \times (1+WACC_4) - 1; \text{ and}$$

$BBRev_j$ is the building block total revenue requirement for period j .

2185. The $X_Factor_t^i$ is solved for after the GGT post-tax nominal tariff model has been updated to account for any cost adjustments resulting from approved cost pass-through variations and the annual update of the debt risk premium.
2186. As discussed in paragraphs 2179 to 2201, this approach ensures that the tax impacts of any cost adjustments, as well as the cost adjustments themselves, are taken into account when calculating a factor by which tariff components are indexed at each annual scheduled variation.

Regulatory Costs

2187. GGT retained the adjustment for the difference between actual and forecast regulatory costs in the annual tariff variation mechanism. It submitted that the adjustment was intended to allow the recovery, via the reference tariff, of unanticipated regulatory costs which were not under the control of the service provider and GGT was of the view that this reason remains.
2188. The Authority notes that provisions for passing through costs that are not under the control of the service provider exist under the cost pass-through reference tariff variation mechanism. Cost pass-through events approved by the Authority are factored into the calculation of the X Factor as outlined in paragraph 2185. Additionally, rule 97(4) of the NGR requires that a reference tariff variation mechanism must give the Authority adequate oversight or powers of approval over variation of the reference tariff. In light of this, the Authority is of the view that unanticipated and/or uncontrollable costs are most appropriately dealt with through the Cost pass-through Reference Tariff Variation Mechanism because the Authority's approval is required on a case by case basis – giving the Authority an appropriately adequate level of oversight. As a result, the adjustment for the difference between

actual and forecast regulatory costs in the annual tariff variation mechanism is redundant.

2189. The Authority notes GGT's argument with respect to the Authority's reason for removing the change in regulatory costs from the tariff variation formulas. The Authority rejects GGT's assertion that it is a narrow view of regulatory costs and that GGT has little control over costs where legislation and regulation impose costs upon it. The Authority notes that under the current access arrangement, the cost pass-through mechanism, being the adjustment for "Change in Imposts",¹¹³³ restricts GGT to any change in an existing Impost or any new Impost, which increases GGT's cost of owning or operating the Covered Pipeline. "Impost" is defined as "any royalty (based on value, but not profit or otherwise), petroleum resource rent tax, environmental tax, excise, sales tax, use tax, consumption tax, levy or duty imposed by or payable to any Government Authority affecting the transportation and supply of Gas at or upstream of the Outlet Point but does not include any income taxes." In essence therefore, the current the cost pass through mechanism covers changes in certain taxes, royalties, or duties levied against GGT. The Authority considers that the change in law or tax change cost pass-through event the Authority is incorporating in the proposed revised access arrangement would provide GGT with a mechanism to submit to the Authority for its consideration, any unforeseen costs incurred as a result of a change in law or tax change. The Authority considers that GGT's argument with respect to the costs arising due to "regulatory state" and government intervention would fall under the purview of the change in law or tax change cost pass-through event.¹¹³⁴
2190. The Authority also retains its view from the Draft Decision that GGT is best placed to forecast its annual regulatory expenditure obligations as it is the party that deals directly with other government agencies and regulatory bodies. The Authority considers that allowing GGT to recoup the difference between its forecast and actual regulatory costs is contrary to the revenue and pricing principles and would not provide GGT the right incentive to forecast its future regulatory costs reasonably, and ensure that regulatory expenditure is incurred prudently and efficiently. The Authority also notes that no other category of operating expenditure has an ex post adjustment between actual and forecast costs and as such, further highlights the inconsistency with the revenue and pricing principles if the service provider was compensated as a result of an unreasonable estimate of regulatory costs being submitted. The Authority considers that its decision in rejecting regulatory costs is consistent with the NGO.
2191. The Authority rejects the inclusion of regulatory costs in the reference tariff variation mechanism. The Authority has removed this from the formulas as set out in paragraph 2195 and the definitions associated with regulatory costs in Section A2 of Schedule A to the proposed revised access arrangement.

Annual Update of the Debt Risk Premium

2192. GGT submits that the annual update of the debt risk premium in the annual tariff variation should also include an annual update of the risk free rate. It proposes the risk free rate be estimated as the average of yields on Commonwealth Government bonds with a term to maturity of 10 years, as published by the Reserve Bank of Australia, the average being calculated for the 40 trading days immediately preceding

¹¹³³ Section 5.4 of the current access arrangement of the GGP.

¹¹³⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Response to ERA Draft Decision*, January 2016, pp. 168-169.

the issue of the Authority's Final Decision. Since the submission of this proposal GGT has notified the Authority that it has opted to use an average over 20 trading days instead of the 40 initially proposed.

2193. For the reasons detailed in paragraphs 1167 to 1238, the Authority considers that only an annual update of the debt risk premium is appropriate within the tariff variation mechanism and that no allowance is to be made for updates of the risk free rate of return.
2194. The Authority does not accept GGT's continued use of the Change in Total Revenue ($\Delta TREV_t$) factor to index tariff components and requires that factor be replaced with the 'X Factor' outlined above. The Authority will make no explicit allowance for the adjustment for the difference between actual and forecast regulatory costs in the annual tariff variation mechanism and requires that all proposed changes to costs outside annual updates of the debt risk premium take place through the Cost pass-through Reference Tariff Variation Mechanism. Approved Cost pass-through Events will factor into the annual scheduled variation of reference tariffs formula via the 'X Factor'. The Authority therefore determines that only an annual update of the debt risk premium is to be applied within the tariff variation mechanism and that no allowance is to be made for updates of the risk free rate of return.

Final Decision mechanism for the annual scheduled variation of reference tariffs

2195. The Authority requires GGT to replace section A2 of Schedule A to the proposed revised access arrangement with the following text.

A2 Annual Scheduled Variation of Reference Tariffs

The Service Provider has adopted a 'tariff basket price cap' approach as the manner in which Reference Tariff Components (as described in section 4.1 of the Access Arrangement) may vary within this Access Arrangement Period.

The Service Provider has also adopted a 'trailing average' approach to estimate the Debt Risk Premium used to determine the Reference Tariff. The trailing average approach is a method of the type referred to in Rule 87(9)(b). The change in Total Revenue which results from use of a method of the type referred to in Rule 87(9)(b) must be effected through the automatic application of a formula. That formula, which was specified in the decision on this Access Arrangement for this Access Arrangement Period, is set out below.

The formula effects a change in Total Revenue in each year of the Access Arrangement Period. The change in Total Revenue requires an annual adjustment to the Reference Tariff. That adjustment is to be made using the formulae in this Annual Scheduled Variation of Reference Tariffs (A2).

The Service Provider may in its discretion vary any Reference Tariff Component annually (each annual period being a **Variation Year**) subject to the limit on the varied Reference Tariff Components and the limit on movement of the weighted average tariff basket described below.

Any annually varied Reference Tariff Component will be effective 1 January of each Year, and the annual variation in this way will be in lieu of the CPI adjustment specified in A1 above.

Limit on varied Reference Tariff Components and the Tariff Basket for Access Arrangement Period (years) 2017, 2018 and 2019

Each Reference Tariff Component may be varied by the Service Provider provided the varied Reference Tariff Component satisfies the following conditions.

Limit on varied Reference Tariff Components

$$p_t^i \leq p_{t-1}^i \times (1 + X_Factor_t^i) \times \frac{(1 + Y^i)}{(1 + Z)^D} \times \left(\frac{SepCPI_{t-1}}{SepCPI_{t-2}} \right)^D$$

Where

i is the tariff component with 1 being the Toll charge, 2 being the Reservation charge and 3 being the Throughput charge;

t is the j th period to which the varied tariff applies;

j is the period, with 1 being July - December 2016, 2 being January-December 2017, 3 being January- December 2018 and 4 being January-December 2019;

p_t^i is the value of Reference Tariff Component i as varied for Year t ;

p_{t-1}^i is the value of Reference Tariff Component i in Year $t - 1$;

p_{2016}^1 is \$0.112142 x $(1 + X_Factor_{2016}^1)$ per GJ at 1 July 2016 for Toll charge reference tariff;

p_{2016}^2 is \$0.000627 x $(1 + X_Factor_{2016}^2)$ per GJ km at 1 July 2016 for Reservation charge reference tariff;

p_{2016}^3 is \$0.000218 x $(1 + X_Factor_{2016}^3)$ per GJ km at 1 July 2016 for Throughput charge reference tariff;

Y^i is a side constraint not greater than 0.02 (2%) for each of the Tariff Component i ;

D is the number of calendar days in the regulatory period t divided by the number of calendar days in the regulatory year t ;

and

Z is 0.0146 (1.46% being the forecast annual percentage inflation rate used in the Final Decision).

The X Factor is the change in Reference Tariff Component i as varied for Year t of 2017, 2018 and 2019 resulting from the annual update of the Debt Risk Premium and from any change in approved Cost Pass-through Events outlined in section 4.5.2 of the Access Arrangement. It is calculated using the approved Tariff Model and is the solution to the optimisation problem set out below.

$$X_Factor_t^i = \frac{p_{x,t}^i}{p_{t-1}^i} - 1$$

Where

$X_Factor_{2016}^i$ is the change in Reference Tariff Component i from the previous value to the 1 July 2016 value as calculated by the approved Tariff Model at the outset of the Access Arrangement.

$p_{x,t}^i$ is the tariff set for each component within the GGT post-tax nominal tariff model. The x subscript signifies that this price is a function of the X Factor solution and last year's price.

$X_Factor_t^i$ is set such that each $p_{x,t}^i$ results in $\sum_{i=1}^3 PVR^i = \sum_{j=1}^4 \frac{BBRev_j}{(1+r_j)}$

Subject to the constraint

$$PVR^1 / \sum_{i=1}^3 PVR^i = 11.30\%;$$

$$PVR^2 / \sum_{i=1}^3 PVR^i = 72.20\%; \text{ and}$$

$$PVR^3 / \sum_{i=1}^3 PVR^i = 16.50\%.$$

Where

PVR^i is the present value of tariff revenue already received and forecasted to be received for tariff component i and is calculated as

$$\left(\sum_{j=1}^{t-1} \frac{p_j^i q_j^i}{(1+r_j)} + \sum_{j=t}^4 \frac{p_t^i q_j^i}{(1+r_j)} \right);$$

p_j^i is the tariff set for component i in period j ;

q_j^i is the quantity or 'load' forecast associated with tariff component i in period j ;

r_j is the compounded nominal vanilla weighted average cost of capital (WACC) applicable in period j calculated as:

$$r_1 = (1+WACC_1) - 1;$$

$$r_2 = (1+WACC_1) \times (1+WACC_2) - 1;$$

$$r_3 = (1+WACC_1) \times (1+WACC_2) \times (1+WACC_3) - 1; \text{ and}$$

$$r_4 = (1+WACC_1) \times (1+WACC_2) \times (1+WACC_3) \times (1+WACC_4) - 1;$$

$BBRev_j$ is the building block total revenue requirement for period j factoring in the annual update of the trailing average debt risk premium and any approved Cost pass-through Events; and

$p_{x,t}^i$ that satisfies these conditions becomes p_t^i .

For years $t+1$ or greater $X_Factor_t^i$ is set to zero.

Limit on movement of the weighted average tariff basket

$$\sum_{i=1}^m (p_t^i \times q_{t-2}^i) \leq \frac{1}{(1+Z)^D} \times \left(\frac{SepCPI_{t-1}}{SepCPI_{t-2}} \right)^D \times \sum_{i=1}^m ((1+X_Factor_t^i) \times p_{t-1}^i \times q_{t-2}^i)$$

Where

$i, t, j, p_t^i, p_{t-1}^i, p_{2016}^1, p_{2016}^2, p_{2016}^3$ and $X_Factor_t^i$ are defined above for the Limit on varied Reference Tariff Components;

q_{t-2}^i is the quantity of service (GJ, GJ km, or GJ km throughput) provided at Reference Tariff Component i in Year $t - 2$;

Z is 0.0146 (1.46% being the forecast annual percentage inflation rate used in the Final Decision);

D is the number of calendar days in the regulatory period t divided by the number of calendar days in the regulatory year t ;

$SepCPI_{t-1}$ is the September Quarter CPI one year prior to t ;

$SepCPI_{t-2}$ is the September Quarter CPI two years prior to t ; and

Y^i is not greater than 0.02 (2%) for each of the Tariff Component i .

The annual update of the trailing average debt risk premium component of the rate of return in each year starting from 1 January 2017 of the Access Arrangement Period is to be calculated by applying the following formula:

$$TA\ DRP_0 = \frac{\sum_{t=0}^{-9} DRP_t}{10}$$

Where

$TA\ DRP_0$ is the equally weighted trailing average of the DRP to apply in the following year as the annual update of the estimate used in the current year; and

DRP_t is the DRP estimated for each of the 10 regulatory years $t = 0, -1, -2, \dots, -9$, which are either:

- the forward looking DRP estimators for the calendar year 2017, 2018 or 2019, estimated during the 20 trading days averaging period, using the method of automatic formulas set out in Appendix 3 of the Final Decision; or
- the published DRP_t estimates, derived from the Reserve Bank of Australia 10 year BBB credit spread to swap interpolated daily data (up to 30 April 2016) and from the Authority's 31 May 2016 estimate of the DRP, as follows, as set out in Appendix 3 of this Final Decision:

calendar year 2007: DRP_{2007} : 1.130 per cent;
 calendar year 2008: DRP_{2008} : 3.756 per cent;
 calendar year 2009: DRP_{2009} : 4.624 per cent;
 calendar year 2010: DRP_{2010} : 2.125 per cent;
 calendar year 2011: DRP_{2011} : 2.379 per cent;
 calendar year 2012: DRP_{2012} : 3.168 per cent;
 calendar year 2013: DRP_{2013} : 3.043 per cent;
 calendar year 2014: DRP_{2014} : 2.251 per cent;
 calendar year 2015: DRP_{2015} : 2.070 per cent;
 calendar year 2016: DRP_{2016} : 2.582 per cent.

The first annual update will apply for the tariff variation for the 2017 calendar year. As noted, all annual updates of the debt risk premium should be determined consistent with the automatic formulas summarised in Automatic Formulas for Updating the Debt Risk Premium (A5) of the Access Arrangement and set out in detail in Appendix 3 of the Final Decision. The resulting automatic annual adjustment to the rate of return, based on the outputs of the updating of the tariff model for the revised debt risk premium for the regulatory year, should be incorporated in the relevant Annual Tariff Variation.

The Authority in the Final Decision required that GGT nominate the averaging period for each annual update applying in 2017, 2018 and 2019. The averaging periods for each year are a nominated 20 trading days (based on eastern states holidays) in the window 1 June to 31 October in the year prior to the relevant tariff variation, to allow estimation of the updated DRP for inclusion in the relevant annual tariff variation. The nominated 20 trading day averaging period for each of the four years do not need to be identical periods, only that they occur in the period 1 June to 31 October in each relevant year, and are nominated prior.

Notice Period for Reference Tariff Variation

2196. The Authority notes that GGT has not accepted all of the Authority's Draft Decision amendments with respect to section 4.5 of the proposed revised access arrangement:
- GGT has made minor updates to the cross references in section 4.5.1(b) and 4.5.1(c)(ii).
 - For section 4.5.1(e), GGT has updated the notice period for the regulator to respond to a proposed variation from 20 business days to 40 business days.
 - For section 4.5.2(b)(ii), GGT has accepted the Authority's decision to remove the words "use reasonable endeavours to" and "(if available)".
 - GGT has made a minor update to the cross reference in section 4.5.2(f)(ii).
2197. The Authority notes that GGT in its revised proposal response did not specifically address any of the concerns the Authority raised with respect to section 4.5.1 of the proposed revised access arrangement. GGT has amended the amount of days the regulator has to set out its decision in response to a service providers proposed variation in section 4.5.1(e). However, the Authority considers this to be an unnecessary change as this was not one of the required amendments the Authority set out in its Draft Decision. For the purposes of this Final Decision, the Authority considers that GGT did not accept the Authority's required amendment with respect to section 4.5.1 of the access arrangement.
2198. In the absence of any new information or reasoning from GGT, the Authority retains its position from the Draft Decision for section 4.5.1 of the proposed revised access

arrangement with some minor amendments to ensure the consistent use of the word “section”, rather than “clause” throughout section 4.5.1.

2199. The Authority does not consider it necessary to amend section 4.5.1(a), 4.5.1(b) or 4.5.1(b)(i). The Authority accepts the minor update to the cross reference in 4.5.1(b). The Authority approves these two sections.

2200. As stated in the Authority’s Draft Decision and reproduced above in the Draft Decision section of this chapter at paragraph 2137, the Authority does not consider that 25 business days is sufficient to assess GGT’s proposed tariff variations, especially given the introduction of the annual update of the debt risk premium in the annual reference tariff variation. Given the potential complexities that may arise as a result of this additional factor, the Authority considers that a minimum notice period of 40 business days to provide the written notice to the regulator should be set in the proposed revised access arrangement. The Authority requires that section 4.5.1(b)(ii) be amended to set a minimum notice period of 40 business days prior to the scheduled variation date as follows:

4.5.1 Scheduled Reference Tariff Variation Mechanism

...

(b) Before Service Provider varies the Reference Tariff as provided for in section (a), Service Provider must:

...

(ii) provide the Scheduled Reference Tariff Variation Formula Notice to the Regulator at least 40 Business Days before the date that the relevant Reference Tariff is scheduled to be varied.

2201. As stated in the Authority’s Draft Decision and reproduced above in paragraph 2138, the Authority does not accept GGT’s proposed sections 4.5.1(c)(i) and 4.5.1(c)(ii). The Authority is of the opinion that it has been drafted to allow GGT to vary its reference tariff unless the Authority responds to the GGT in the manner specified. The Authority considers that this drafting would constitute an automatic approval of GGT’s proposed reference tariff variation should the Authority not respond by the scheduled variation date. As stated in paragraph 2138, the Authority does not consider that this drafting is appropriate as it unduly places responsibility on the Authority to respond before the scheduled variation date. The Authority notes that valid circumstances could arise whereby a delayed response from the Authority would lead to an automatic approval of the reference tariff variation, without the Authority expressly approving it via a written response.

2202. Furthermore, as stated in paragraph 2139, the Authority does not consider that this clause is entirely consistent with rule 97(4) of the NGR, which requires that the reference tariff variation provide the Authority with adequate oversight or powers of approval over variation of the reference tariff. The Authority considers that an automatic approval of the reference tariff variation as a result of a delayed response would not be consistent with this rule. The Authority rejects the proposed wording of section 4.5.1(c) of the proposed revised access arrangement and requires that it be amended as follows:

4.5.1 Scheduled Reference Tariff Variation Mechanism

...

(c) The Regulator will use its reasonable endeavours to give notice to the Service Provider before a proposed variation to the Reference Tariff is scheduled to take effect, advising whether the Regulator approves or does not approve the proposed

tariff variation and the reasons for its decision, in accordance with the approved Reference Tariff Variation Mechanism.

2203. As stated in paragraph 2140, having amended section 4.5.1(c), the Authority has introduced an additional clause, section 4.5.1(d) into the proposed revised access arrangement which sets out when the reference tariff will be varied should there be a delay in the assessment of GGT's written notice. The Authority requires that this clause be introduced as section 4.5.1(d) in the proposed revised access arrangement:

4.5.1 Scheduled Reference Tariff Variation Mechanism

...

- (d) If the Regulator approves the proposed tariff variation, it will take effect on the date specified in the proposed Scheduled Reference Tariff Variation Notice, or if the date or dates specified in the proposed Scheduled Reference Tariff Variation notice have passed, the proposed tariff variation will take effect on the date or dates specified in the Regulator's notice to the Service Provider under section 4.5.1(c).

2204. As a consequence of introducing a revised section 4.5.1(d) into the proposed revised access arrangement, the Authority requires that section 4.5.1(c)(i), with some minor amendments, be reintroduced as a standalone section as section 4.5.1(e) as follows:

4.5.1 Scheduled Reference Tariff Variation Mechanism

...

- (e) If the Regulator considers that it needs additional information from the Service Provider to adequately assess the proposed tariff variation, it may extend the period for assessment beyond the relevant Scheduled Reference Tariff Variation Date in order to consider the additional information.

2205. As stated in paragraph 2142, similar to the Authority concerns regarding adequate oversight with respect to section 4.5.1(c), the Authority notes that section 4.5.1(d) would only allow the Authority do disallow a proposed variation if it provides notice to GGT before the scheduled reference variation date. Whilst, the Authority considers it necessary to provide notice to GGT, it is of the opinion that there would be valid circumstances whereby it is unable to provide notice as soon as intended. The Authority rejects the inclusion of a time constraint in this section.

2206. With respect to the second portion of GGT's proposed section 4.5.1(d), as stated in paragraph 2143, the Authority considers that the onus should be on GGT to resubmit a variation to tariffs that is in accordance with the reference tariff variation mechanism, should the Authority disallow in the first instance. The Authority requires that GGT's proposed section 4.5.1(d) be replaced with the following sections (renumbered as sections 4.5.1(f) and (g)), as follows:

4.5.1 Scheduled Reference Tariff Variation Mechanism

...

- (f) The Regulator may, by notice to the Service Provider, disallow the proposed variation if it considers that the proposed variation does not comply with the approved Scheduled Reference Tariff Variation Mechanism. If the Regulator does not approve the Service Provider's proposed tariff variation, it will not take effect.
- (g) If the Regulator does not approve the Service Provider's proposed tariff variation, the Service Provider may submit a revised Scheduled Reference Tariff Variation Notice.

2207. The Authority notes that as a result of its amendments to sections 4.5.1(b)(ii) through to sections 4.5.1(g), section 4.5.1(e) as proposed by GGT has been deleted. As

discussed in paragraph 2144, the Authority considers that its amendments and inclusions to section 4.5.1 have rendered the original text of section 4.5.1(e) obsolete as the Authority is committed to providing written notice to GGT, stating its decision and reasons for making the decision. Additionally, as the Authority considers that the onus is on GGT to resubmit a compliant tariff variation, the portion of the section regarding adjustments to the proposed variation and new effective timing of the variation no longer needs to be included.

2208. For the reasons set out in paragraphs 2197 to 2207, the Authority's Final Decision is to maintain its position from the Draft Decision and reject GGT's proposed section 4.5.1(b)(ii) through to section 4.5.1(e). The Authority requires that the section 4.5.1 of the proposed revised access arrangement be amended to read as follows:

4.5.1 Scheduled Reference Tariff Variation Mechanism

- (a) Service Provider may vary the Reference Tariff for the Firm Service on the basis of the Scheduled Reference Tariff Variation Mechanism as set out in the Details (Schedule A).
- (b) Before Service Provider varies the Reference Tariff as provided for in section (a), Service Provider must:
 - (i) provide a written notice (a Scheduled Reference Tariff Variation Notice) to the Regulator setting out proposed variations to the Reference Tariff, including evidence that the proposed variations have been calculated in accordance with the Reference Tariff Variation Mechanism, including the formulae, set out in the Details
 - (ii) provide the Scheduled Reference Tariff Variation Formula Notice to the Regulator at least 40 Business Days before the date that the relevant Reference Tariff is scheduled to be varied.
- (c) The Regulator will use its reasonable endeavours to give notice to the Service Provider before a proposed variation to the Reference Tariff is scheduled to take effect, advising whether the Regulator approves or does not approve the proposed tariff variation and the reasons for its decision, in accordance with the approved Reference Tariff Variation Mechanism.
- (d) If the Regulator approves the proposed tariff variation, it will take effect on the date specified in the proposed Scheduled Reference Tariff Variation Notice, or if the date or dates specified in the proposed Scheduled Reference Tariff Variation notice have passed, the proposed tariff variation will take effect on the date or dates specified in the Regulator's notice to the Service Provider under section 4.5.1(c).
- (e) If the Regulator considers that it needs additional information from the Service Provider to adequately assess the proposed tariff variation, it may extend the period for assessment beyond the relevant Scheduled Reference Tariff Variation Date in order to consider the additional information.
- (f) The Regulator may, by notice to the Service Provider, disallow the proposed variation if it considers that the proposed variation does not comply with the approved Scheduled Reference Tariff Variation Mechanism. If the Regulator does not approve the Service Provider's proposed tariff variation, it will not take effect.
- (g) If the Regulator does not approve the Service Provider's proposed tariff variation, the Service Provider may submit a revised Scheduled Reference Tariff Variation Notice.

Cost Pass-Through Variation of Reference Tariff

2209. The Authority notes GGT's criticisms of the Draft Decision with respect to the cost pass-through variations of the reference tariff. The Authority rejects GGT's assertion that the changes proposed have no real basis in either the NGL or the NGR and that

they are facilitative of the regulator's task. The Authority notes that the two of the changes it required for section 4.5.2 of the proposed revised access arrangement were made as a result of considering rules 97(1)(c) (see paragraph 2155) and 97(4) (see paragraph 2147) of the NGR. Furthermore, the Authority notes that rule 97 of the NGR is not subject to limited discretion.

2210. With respect to the insurance type cost pass-through events, the Authority notes that it afforded GGT several opportunities to respond or provide further information to justify the need for these cost pass-through events during the initial proposal assessment phase, via information requests, and also in response to the Authority's Draft Decision, as stated in paragraph 2152. The Authority notes that as part of the Draft Decision, it only required GGT to provide the policies and the events it was insured for, in order to substantiate its claims.
2211. For the materiality threshold under section 4.5.2(d), the Authority notes that GGT has not provided the Authority with any reason or justification why it believes the threshold should be 0.5 per cent, rather than 1.0 per cent as the AER has determined for the RBP access arrangement.
2212. Despite its criticisms of the Authority's Draft Decision changes, GGT did accept one amendment with respect to section 4.5.2(b)(ii) of the proposed revised access arrangement to remove the words, "use reasonable endeavours to" and "(if available)". The Authority notes that it required this change specifically after considering rule 97(4) of the NGR.
2213. Except for the three sentences GGT has included in its revised proposal, which the Authority has addressed in paragraphs 2209 to 2212, GGT has not provided any new information or justification to support its proposed revised access arrangement.
2214. In contrast to the Authority's detailed assessment in the reference tariff variation mechanism chapter of the Draft Decision, GGT did not provide the Authority with a section by section response for section 4.5.2 of the proposed revised access arrangement in its revised proposal for the Authority to consider. In the absence of any viable new information or reasoning from GGT, the Authority retains its position from the Draft Decision for section 4.5.2 of the access arrangement, with some minor amendments to ensure the consistent use of the word "section", rather than "clause" throughout section 4.5.2.
2215. The Authority does not consider it necessary to amend section 4.5.2(a) of the proposed revised access arrangement. The Authority notes that 4.5.2(b) contains inconsistent wording which refers to "clause 4.5.2(a)" rather than section 4.5.2(a). As stated in paragraph 2214, the Authority considers it is necessary to ensure the consistent use of the word section such that there is no confusion with the Terms and Conditions. The Authority requires that section 4.5.2(b) be updated to replace the word, "clause", with the word, "section". The Authority does not object to the wording of section 4.5.2(b)(i) or 4.5.2(b)(ii) as GGT has implemented part of the Draft Decision change.
2216. As discussed in the Authority's Draft Decision and paragraphs 2148 to 2152 and 2210, the Authority considers the insurance cap event, insurer credit risk event, natural disaster event and terrorism event to be insurance related event types. The Authority noted in its Draft Decision that it considered GGT should have included reasonable amounts for its insurance expenditure, consistent with the insurance policy it has obtained and the premiums associated with it. The Authority made several requests to GGT, leading up to its Draft Decision, to provide its insurance

policies and self-insurance documentation in order to determine the level of coverage that GGT has actually sought and the type of events it has covered. In its Draft Decision, the Authority did not consider that the Marsh Pty Limited estimate contained sufficient information, for the purposes of assessing whether the proposed cost pass-through events are necessary or appropriate, as it did not detail any useful information other than an indicative cost that GGT would have to pay as a standalone business. The Authority afforded GGT another opportunity in its Draft Decision to provide the information it needs in order to perform a proper and thorough assessment of whether the cost pass-through events are necessary and appropriate. GGT has not responded to the Authority's requests. The Authority notes that in the Operating Expenditure chapter of this Final Decision, it has used the Marsh Pty Limited estimate to determine the efficient standalone cost of insurance. However, as stated previously, the Authority does not consider that the Marsh Pty Limited contains sufficient information for the purposes of assessing whether the proposed cost pass-through events are appropriate or necessary.

2217. Additionally, the Authority notes that that insurance special risks premium in the Marsh Pty Ltd estimate provided by GGT, includes coverage for terrorism.¹¹³⁵ Therefore the Authority maintains its position from the Draft Decision that the terrorism cost pass-through event should be removed from the proposed revised access arrangement as the Authority has approved an insurance expenditure based on the Marsh Pty Limited estimate. Consequently the Authority rejects the inclusion the terrorism event.
2218. As noted in paragraphs 2216 and 2217, the Authority rejects the inclusion of the insurance cap event, insurer credit risk event, natural disaster event and terrorism event
2219. For the reasons set out in paragraphs 2216 and 2217, the Authority rejects the inclusion of the insurance cap event, insurer credit risk event, natural disaster event and terrorism event in the proposed revised access arrangement. The Authority requires that section 4.2.5(c) of the proposed revised access arrangement be amended to remove all references to the insurance cap event, insurer credit risk event, natural disaster event and terrorism event.
2220. The Authority noted in its Draft Decision that it did not object to the inclusion of the cost pass-through events for changes in law or tax change events. The Authority is still of the view that GGT's proposed service standard event is essentially an event for a change in law that arises as a result of a legislative or administrative act. The Authority also maintains its view from the Draft Decision that to ensure regulatory consistency between access arrangements for the GDS, and ease of operation for GGT and the Authority:
- the service standard event must be renamed to a change in law event to improve clarity; and
 - the change in law event be combined with the tax change event.
2221. The Authority notes that it does not require any change in wording to these cost pass through events, it only requires that they be combined.
2222. The Authority has not changed its view from the Draft Decision with respect to the regulatory change event. As stated in the Draft Decision and paragraph 2155, the

¹¹³⁵ Goldfields Gas Transmission Pty Ltd, *Email Response to ERA 18 – letter attachment*, 16 October 2015.

Authority rejects the inclusion of this proposed event as it does not consider the wording or purpose of the proposed clause is consistent with rule 97(1)(c) of the NGR.. The Authority considers that a catch all “no other category” event is inconsistent with the requirements of rule 97(1)(c) of the NGR, which requires a variation of a reference tariff as a result of a cost pass-through to be a defined event. The Authority considers that the cost pass through event should be defined and as such, requires that the regulatory change event be removed from the proposed revised access arrangement.

2223. Consistent with its Draft Decision and paragraphs 2156, 2157 and 2211, The Authority does not approve section 4.5.2(d). The Authority does not consider that GGT has provided the Authority with sufficient reasoning as to why it considers a materiality threshold of 0.5 per cent to be appropriate. The Authority notes that the materiality threshold is too low at present due to the administrative costs of assessing these cost pass-through events. The Authority requires that section 4.5.2(d) be amended to reflect an increased threshold of 1.0 per cent. Additionally, the Authority requires that the wording be amended to remove the words “over the remaining years of the access arrangement period”.

2224. As a result of the amendments detailed in paragraphs 2215 to 2223, the Authority has renumbered and reproduced section 4.5.2(a) to 4.5.2(d). The Authority requires that the proposed revised access arrangement be amended as follows:

4.5.2 Cost pass-through Reference Tariff Variation Mechanism

- a) If one or more Cost Pass-through Events occur or are expected to occur during the Access Arrangement Period the Service Provider has discretion to vary the Reference Tariff for the Firm Service to recover the financial impact of the Cost Pass-through Event/s, to the extent that financial impact of these events is not already accounted for in the Reference Tariff.
- (b) Before the Service Provider varies the Reference Tariff as provided for in section 4.5.2(a), the Service Provider must:
 - i) provide a written notice (a **Cost Pass-through Event Notice**) to the Regulator specifying the type of defined Cost Pass-through Event to which the Notice applies, the impact or expected impact of the Cost Pass-through Event, the proposed variations to the Reference Tariff, and an effective date for the changes; and
 - ii) provide the Regulator with documentary evidence which substantiates the financial impact set out in the Cost Pass-through Event Notice and its compliance with the NGR.
- (c) The following is a Cost Pass-through Event for the purposes of section 4.5.2(a):
 - i) a change in law or tax change event.

where

Change in law or tax change event—means:

- a) A legislative or administrative act or decision that:
 - i) has the effect of:
 - (A) varying, during the course of the Access Arrangement Period, the manner in which Service Provider is required to provide the Firm Service; or
 - (B) imposing, removing or varying, during the course of an Access Arrangement Period, minimum service standards applicable to the Firm Service; or

- (C) altering, during the course of an Access Arrangement Period, the nature or scope of the Firm Service, provided by Service Provider; and
 - ii) materially increases or materially decreases the costs to Service Provider of providing the Firm Service.
- b) A tax change event occurs if any of the following arises during the course of the Access Arrangement Period:
 - i) a change in a relevant Tax, in the application or official interpretation of a relevant Tax, in the rate of a relevant Tax, or in the way a relevant Tax is calculated; or
 - ii) the removal of a relevant Tax; or
 - iii) the imposition of a relevant Tax; and
 in consequence, the costs to Service Provider of providing the Firm Service are materially increased or decreased.
- (d) A Cost Pass-through Event is considered material where the cumulative costs of the event exceed 1.0% of the forecast Tariff Revenue for the Covered Pipeline in the years in which costs are incurred.

Notice Period for a Cost Pass-Through Variation of a Reference Tariff

2225. Similar to sections 4.5.2(a) to 4.5.2(d) of the proposed revised access arrangement, GGT has not provided any specific responses in its revised proposal for the Authority to assess. In the absence of any viable new information or reasoning from GGT, the Authority retains its position from the Draft Decision for the remaining sections of section 4.5.2 of the proposed revised access arrangement.
2226. In its Draft Decision and paragraph 2152, the Authority noted that the notice period sections of GGT's proposed cost pass-through tariff variation mechanism are largely similar to the sections it has proposed for the scheduled reference tariff variation mechanism at section 4.5.1. As such, the Authority maintains its view from the Draft Decision that, as GGT has drafted the notice period sections in a similar manner across both variation mechanisms, it is necessary for the Authority to align its amendments from section 4.5.1 to section 4.5.2 of the proposed revised access arrangement. The Authority considers that by aligning both notice period sections, it will provide more clarity and ease of operation for both GGT and the Authority.
2227. As stated in the Draft Decision and paragraph 2159, the Authority made an additional change to section 4.5.2(e) of the proposed revised access arrangement as the Authority did not consider it administratively efficient to be making multiple adjustments to the reference tariff during the year, other than for CPI changes. The Authority maintains its view from the Draft Decision, and considers that it is necessary to restrict the submission of cost pass-through tariff variation written notices only to when the annual scheduled reference tariff variation written notices are submitted. This approach is consistent with the notice period for a cost pass-through in the Authority's approved access arrangement for the ATCO GDS. Additionally, as the Authority will be making adjustments for the cost pass-through tariff variations through the reference tariff model, this can only happen with the annual tariff variation. This is due to the fact that quarterly reference tariff variations are not varied directly through the reference tariff model.
2228. For the reasons set out in paragraphs 2225 to 2227, the Authority requires that sections 4.5.2(e) to 4.5.2(h) of the proposed revised access arrangement be amended as follows:

4.5.2 Cost pass-through Reference Tariff Variation Mechanism

...

- (e) The Service Provider may submit a Cost Pass-through Event Notice with its annual Scheduled Reference Tariff Variation. Each notice may incorporate a number of claims relating to Cost Pass-through Events. The minimum notice period for a Cost Pass-through Event Notice is 40 Business Days prior to the date on which the proposed variations to the Reference Tariff are intended to take effect.
- (f) The Regulator will use its reasonable endeavours to give notice to the Service Provider before a proposed variation to the Reference Tariff (arising from a Cost Pass-through Event Notice) is scheduled to take effect, advising whether the Regulator approves or does not approve the Cost Pass-through Event/s and the reasons for its decision, in accordance with the approved Reference Tariff Variation Mechanism.
- (g) If the Regulator approves the Cost Pass-through Event/s, it will take effect on the next Scheduled Reference Tariff Variation date identified in the Cost Pass-through Event Notice, or if the date or dates specified in the Cost Pass-through Event Notice have passed, the proposed tariff variation will take effect on the date or dates specified in the Regulator's notice to the Service Provider under section 4.5.2(f).
- (h) If the Regulator considers that it needs additional information from the Service Provider to adequately assess the Cost Pass-through Event Notice, it may extend the period for assessment beyond the date that the Cost Pass-through Notice is intended to take effect in order to consider additional information;
- (i) The Regulator may, by notice to the Service Provider, disallow the proposed variation if it considers that the proposed variation does not comply with the Cost Pass-through Reference Tariff Variation Mechanism. If the Regulator does not approve the Service Provider's Cost Pass-through Event/s it will not take effect.
- (j) If the Regulator does not approve the Service Provider's Cost Pass-through Event/s, the Service Provider may resubmit a revised Cost Pass-through Event Notice.

Final Decision

2229. For the reasons given above, the Authority does not approve sections 4.5.1 and 4.5.2, sections A1 and sections A2 to Schedule A of the proposed revised access arrangement. The Authority requires that the proposed revised access arrangement be amended as per the required amendment set out below.

Required Amendment 15

Section 4.5 of the proposed revised access arrangement and sections A1 and A2 of Schedule A to the proposed revised access arrangement must be amended as per paragraphs 2168, 2181, 2191, 2195, 2208, 2224 and 2228 of this Final Decision.

Other Access Arrangement Provisions

Requests for Access and Queuing Policy

Regulatory Requirements

2230. Rule 111 of the NGR – Public registers of spare capacity - requires that a scheme pipeline service provider that provides pipeline services by means of a transmission pipeline to which this rule applies, must establish and maintain a register of spare capacity.

- (1) This rule applies to:
 - (a) a *scheme pipeline service provider* that provides pipeline services by means of a transmission pipeline; and
 - (b) a *scheme pipeline service provider* that:
 - (i) provides pipeline services by means of a distribution pipeline; and
 - (ii) is, by determination of the [Authority], a service provider to which this rule applies.
- (2) In deciding whether this rule should apply to a distribution service provider, the [Authority] must have regard to whether it is technically feasible and commercially reasonable for the service provider to maintain a register of spare capacity.
- (3) A service provider to which this rule applies must establish and maintain a register of spare capacity.
- (4) The register of spare capacity must include the following information:
 - (a) information about the spare capacity that the service provider reasonably believes exists for the haulage of natural gas between defined receipt and delivery points; and
 - (b) information about spare capacity that the service provider reasonably believes will exist for the haulage of natural gas between defined receipt and delivery points including information about planned developable capacity and expected additions to spare capacity; and
 - (c) information (which must be as specific as the circumstances reasonably allow) about when the spare capacity is, or will become, available; and
 - (d) information notified to the service provider by a user about unutilised contracted capacity including:
 - (i) the quantity and type of the unutilised contracted capacity and when it will be available; and
 - (ii) proposed terms and conditions (which may include the price) for the sale of the unutilised contracted capacity.

...

2231. Schedule 1, clause 3(16) of the NGR states that a service provider who was, immediately before the date of transition, required to maintain a public register by or under section 5.9 of the Gas Code is taken to have been required by the Authority, on the date of transition, to maintain a public register of spare capacity under rule 111 of the NGR.

2232. Rule 112 of the NGR – Request for access, provides that a prospective user ‘may’ request a scheme pipeline service provider to provide a pipeline service for the prospective user.

112 Requests for access

- (1) A prospective user may request a scheme pipeline service provider to provide a pipeline service for the prospective user.
- (2) The request must be made in writing and must:
 - (a) state the time or times when the pipeline service will be required and the capacity that is to be utilised; and
 - (b) identify the entry point where the user proposes to introduce natural gas to the pipeline or the exit point where the user proposes to take natural gas from the pipeline or, if the requested service is a haulage service, both entry and exit point; and
 - (c) state the relevant technical details (including the proposed gas specification) for the connection to the pipeline, and for ensuring safety and reliability of the supply of natural gas to, or from, the pipeline.
- (3) The service provider must, within 20 business days after the date of the request, respond to the request:
 - (a) by informing the prospective user:
 - (i) whether the service provider can provide the requested pipeline service; and
 - (ii) if so, the terms and conditions on which the service provider is prepared to provide the requested pipeline service;
 - (b) by informing the prospective user that the service provider needs to carry out further investigation to determine whether it can provide the requested pipeline service and setting out a proposal for carrying out the further investigation including:
 - (i) a statement of the nature of the investigation; and
 - (ii) a plan (including a time schedule) for carrying out and completing the investigation; and
 - (iii) a statement of the reasonable costs of the investigation the prospective user would be required to meet.
- (4) If the service provider informs the prospective user that it cannot provide the requested pipeline service, the service provider must:
 - (a) provide the prospective user with written reasons explaining why the requested pipeline service cannot be provided; and
 - (b) if there is some prospect that it will become possible to provide the requested service at some time in the future – give details (which must be as specific as the circumstances reasonably allow) of when capacity to provide the requested service is likely to become available and, if possible, nominate a specific date.
- (5) If the service provider responds to the request by proposing further investigation, the following provisions apply:
 - (a) if the parties have not agreed on the service provider's proposal or some negotiated modification of it within 20 business days after the date of the response – the service provider is taken to have rejected the prospective user's request; and
 - (b) if the parties agree on the service provider's proposal or on some negotiated modification of it within 20 business days after the date of the response – the service provider must carry out the investigation in accordance with the agreement and, on the conclusion of the investigation, inform the prospective user whether it can, or cannot, provide the requested pipeline service and comply with other relevant requirements of this rule.

2233. Rule 103 of the NGR – Queuing requirements – provides that an access arrangement must contain queuing requirements if it is for a transmission pipeline.

103 Queuing requirements

- (1) An access arrangement must contain queuing requirements if:
 - (a) the access arrangement is for a transmission pipeline; or
 - (b) the access arrangement is for a distribution pipeline and the [Authority] notifies the service provider that the access arrangement must contain queuing requirements.
- (2) If the [Authority] gives a notification under subrule (1), the access arrangement must contain queuing requirements as from the commencement of the first access arrangement period to commence after the date of the notification (but this requirement lapses if the [Authority], by notice to the service provider, withdraws the notification).
- (3) Queuing requirements must establish a process or mechanism (or both) for establishing an order of priority between prospective users of spare or developable capacity (or both) in which all prospective users (whether associates of, or unrelated to, the service provider) are treated on a fair and equal basis.
- (4) Queuing requirements might (for example) provide that the order of priority is to be determined:
 - (a) on a first-come-first-served basis; or
 - (b) on the basis of a publicly notified auction in which all prospective users of the relevant spare capacity or developable capacity are able to participate.
- (5) Queuing requirements must be sufficiently detailed to enable prospective users:
 - (a) to understand the basis on which an order of priority between them has been, or will be, determined; and
 - (b) if an order of priority has been determined – to determine the prospective user's position in the queue.

GGT's Initial Proposal

2234. GGT proposed a number of revisions to its application and queuing policy for the third access arrangement period.¹¹³⁶ The major areas of proposed change were:

- changes to its application process;
- changes to the management of its spare capacity register;
- changes to its queuing mechanism for existing spare capacity;
- changes to its queuing mechanism for developable capacity;
- changes to its requirement to develop capacity where a viable application for it to do so has been made; and
- registration of interest.

¹¹³⁶ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, p. 24.

Application process

2235. GGT submitted that the revisions it proposed to its application and queuing procedures were made in order to ensure compliance with rule 112 of the NGR.¹¹³⁷ The changes proposed by GGT to its application process include:
- removing its Enquiry Form and Order Form (previously Appendix 2.1);
 - introducing a Registration of Interest form; and
 - incorporating the application process into its proposed queuing mechanism.
2236. GGT proposed to include section 5.1.2, which addresses how it would respond to registrations of interest for spare or developable capacity from prospective users.

Spare capacity register

2237. Where the volume of spare capacity that is, or is likely to become available is less than 2 TJ per day, GGT may elect not to run an open season and auction for that capacity and instead make that spare capacity available by placing it on the Spare Capacity Register. Spare capacity that is placed on the Spare Capacity Register pursuant to this clause in the access arrangement will be available on a first come, first served basis.¹¹³⁸

Spare capacity – open season

2238. GGT proposed that, where spare capacity is or is likely to become available, it would:¹¹³⁹
- notify prospective users who submitted a registration of interest for capacity;
 - publish a notice in a local and a national newspaper; and
 - advise of a deadline of 30 days by which time subsequent expressions of interest would have to be made.
2239. GGT states that spare capacity does not merely become available because a current agreement is nearing its end date. Where all expressions of interest for services to be provided by spare capacity are able to be met with the available spare capacity, GGT would enter into negotiations with all prospective users that lodge expressions of interest, for the provision of services using the available spare capacity.

Spare capacity - Auction

2240. In the event that GGT determines that there is sufficient demand to proceed with an auction for the spare capacity (and that the spare capacity is not sufficient to meet the expressions of interest for services), GGT proposed to replace the first come, first served queuing policy in the current access arrangement with a public auction process.

¹¹³⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 15.

¹¹³⁸ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, p. 24.

¹¹³⁹ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, pp. 25-26.

2241. GGT considered that a public auction would better meet the NGO as it would promote the efficient use of natural gas services by ensuring that existing capacity is allocated to those users who value it most, and should, therefore, allocate capacity in a way that is in the long term interests of consumers with respect to price, reliability and security of supply.¹¹⁴⁰

2242. GGT also indicated that:

- If the aggregate of all complying bids for spare capacity in the auction does not exceed the spare capacity, each complying bid would be deemed to be an irrevocable request capable of immediate acceptance.
- If the aggregate of all complying bids received on or before the auction could not be satisfied by the spare capacity then GGT would allocate the spare capacity on the basis of its assessment of the NPV of the respective applications, from highest to lowest.

Developable Capacity

2243. GGT proposed an open season approach for developable capacity. GGT proposed to conduct a public process to aggregate all possible interest in developable capacity, and then, if there was sufficient demand for similar projects, commence negotiations with interested parties with the aim of developing the most efficient investment in additional capacity. GGT considered that this process was more likely to facilitate timely decisions on investment, and realise economies of scale than a first come, first served approach.¹¹⁴¹

2244. GGT outlined the key features of the proposed requirements for developable capacity and proposed that, regardless of the outcome for developable capacity, it would not be bound to undertake the relevant development.¹¹⁴²

Compliance Reports

2245. GGT proposed to provide to the regulator an independently audited report within 60 days of the completion of an auction for spare capacity, outlining the process and subsequent allocation of capacity.¹¹⁴³

Draft Decision

2246. The Authority approved GGT's proposal to amend its access and queuing methodology as outlined in its access arrangement revision proposal for the third access arrangement period, subject to a number of amendments.

¹¹⁴⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 18.

¹¹⁴¹ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement*, 15 August 2014, pp. 28-29.

¹¹⁴² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 19.

¹¹⁴³ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 376.

Spare Capacity

2247. The Authority required GGT to remove the provision that only spare capacity less than 2TJ would be listed in the spare capacity register for the GGT, and to reinstate the provision that all spare capacity relating to the covered pipeline would be included in the spare capacity register.¹¹⁴⁴
2248. The Authority accepted GGT's proposal to implement an auction in cases where there is insufficient capacity to meet the needs of all prospective users. However, the Authority required GGT to explain how it intends to calculate the NPV in more detail in its access arrangement.¹¹⁴⁵

Developable capacity

2249. The Authority accepted GGT's open season approach for developable capacity subject to the following required amendments:¹¹⁴⁶
- amend section 5.3.1(c) so that the sharing of costs for the investigation between prospective users is based on their proportionate shares of requested capacity and not MDQ;
 - reinstate section 7.2(h) of the existing arrangement which pertains to a prospective user who has paid for investigations assigning its application for the service and investigation information to another party interested in the relevant portion of the developable capacity;
 - reinstate section 7.2(i) of the current access arrangement which pertains to GGT providing a prospective user who has paid the cost of an investigation with an itemisation of the costs related to the investigation for developable capacity as soon as reasonably practicable; and
 - reinstate section 7.2(e) which states that prospective users who decline to meet the cost of investigations will be given a lower priority in the queue and that investigation costs borne by users are those that are incurred on a reasonable basis by GGT.
2250. Furthermore, the Authority considered that allowing prospective users to pay the costs of investigations and then not allowing viable capacity expansions was not in the best interests of consumers and is inconsistent with the NGO. The Authority agreed with Santos that capacity development should not be hindered where it is economically, technically and financially viable.¹¹⁴⁷ The Authority therefore required GGT to:¹¹⁴⁸
- amend proposed sections 5.3.2(a) to remove GGT's subjective discretion, so that it must be objectively assessed whether any Developable Capacity "can"

¹¹⁴⁴ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 377.

¹¹⁴⁵ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 378.

¹¹⁴⁶ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 378.

¹¹⁴⁷ Santos (BOL) Pty Ltd, *Public Submission by Santos in Response to the Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement and Access Arrangement Information*, 15 August 2014, 10 November 2012, p. 2.

¹¹⁴⁸ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 380.

be provided, and, if it can be provided, then the service provider must enter into negotiations with prospective users in relation to it. In this regard, if there are certain circumstances known in advance where it is generally accepted that a service provider "cannot" provide developable capacity, then those circumstances should be listed in section 5.3.2(a) so that unnecessary waste of time and expense can be avoided; and

- delete proposed section 5.3.3 that GGT is not bound to undertake development.

Compliance Reports

2251. The Authority required GGT to delete proposed section 5.4 as the Authority did not consider it necessary or efficient for it to receive or review compliance reports on an ongoing basis.¹¹⁴⁹ However, the Authority noted that it was of course prudent for GGT to keep audited records to evidence its compliance with its policies and procedures should the need arise, and the Authority reserved the right to request production of those records and other information should it consider it necessary to do so.

GGT's Revised Proposal

Spare capacity register

2252. In its response to the Draft Decision, GGT advises that it never suggested that spare capacity greater than 2 TJ/d would not be included in the spare capacity register. GGT states that if it were to neglect to list any spare capacity in excess of 2 TJ/d on its spare capacity register, it would be in breach of Rule 111 of the NGR.¹¹⁵⁰ Further, GGT proposes to amend clause 5.2.1(c) of its revised proposed access arrangement to read "enter into an agreement for that capacity within 2 months of seeking access to the spare capacity" rather than becoming spare capacity.

Spare Capacity

2253. In its response to the Draft Decision, GGT accepted the Authority's required amendment that proposed section 5.2.5 should be amended to provide a detailed description of how GGT intends to calculate the NPV of bids from prospective users. GGT proposed to add additional text outlining that the NPV will be assessed using:¹¹⁵¹

- the prospective user's nominated tariff;
- the prospective user's requested capacity requirement;
- the prospective user's requested contract term;
- the prospective user's requested contract commencement date; and
- the regulator-approved WACC as a discount rate.

2254. GGT states that, as there are a number of variables to the NPV calculation (price, volume, terms and commencement date), it is not possible to provide an advanced

¹¹⁴⁹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 380.

¹¹⁵⁰ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision*, Submission, January 2016, p. 29.

¹¹⁵¹ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 30.

determinative ranking of bids. However, GGT will include information to the effect that all other things remaining equal:

- a bid at a higher offer price will outrank a bid at a lower price;
- a bid for a larger volume will outrank a bid for a lower volume;
- a longer term contract will outrank a shorter term contract; and
- a contract with an earlier commencement date will outrank a contract with a later commencement date.

Developable capacity

2255. GGT has accepted the Authority's required amendment that sharing of costs for the investigation between prospective users is based on their proportion of shares of requested capacity, not MDQ.¹¹⁵²

2256. GGT has reinstated:

- section 7.2(h) of the existing access arrangement, which allows a prospective user who has paid for investigations to assign its application for service and investigation information to another party interested in the relevant portion of the developable capacity.
- section 7.2(i) of the existing access arrangement which states that prospective users who have contributed to the cost of an investigation for developable capacity must be provided with an itemisation of the costs incurred in the investigation.¹¹⁵³
- section 7.2(e) of the current access arrangement, which requires GGT to give a higher priority to users who have contributed to the cost of investigations than it does to those who have not contributed to their cost.¹¹⁵⁴
- the final sentence of current section 7.2(e) relating to the requirement for the user to only bear costs of investigations that are reasonably incurred.¹¹⁵⁵

2257. GGT has not fully accepted the Authority's required amendment on entering into negotiations for developable capacity. GGT has amended section 5.3.2 (a) of the proposed revised access arrangement to the extent that it will commit to entering negotiations to develop pipeline capacity where GGT has determined that the development is technically and economically feasible.¹¹⁵⁶ However, this does not remove GGT's subjective discretion (as required by the Authority in its Draft Decision) as to whether any Developable Capacity can be provided. Furthermore, GGT has not provided any examples of known circumstances where it is generally accepted

¹¹⁵² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 30.

¹¹⁵³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 31.

¹¹⁵⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016 p. 31.

¹¹⁵⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 31.

¹¹⁵⁶ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 32.

that a service provider “cannot” provide developable capacity, (as required by the Authority in its Draft Decision).

2258. GGT has accepted in part the Authority’s required amendment that section 5.3.3 of the proposed revised access arrangement, which implies that GGT is not bound to undertake development, should be removed. GGT states that the purpose of the discretion is to reflect the scope of an access determination under section 191 of the NGL(WA) and rule 118 of the NGR. Drawing on rule 118 of the NGR, GGT states that it will retain this discretion by inserting the provisions from rule 118 of the NGR into section 5.3.3 as follows:¹¹⁵⁷

Service Provider will enter negotiations to undertake expansion development where it is:

- i) technically and economically feasible; and
- ii) consistent with the safe and reliable operation of the pipeline.

Service Provider may elect, but cannot be required, to fund, in whole or part, an expansion of the capacity of the pipeline unless the extension and expansion requirements of the applicable access arrangement provide for the relevant funding.

Service Provider is not required to extend the geographical range of the pipeline.

A user or prospective user acquires no interest in a pipeline by funding an expansion of capacity of the pipeline in accordance with an access determination unless the service provider agrees.

Compliance reports

2259. GGT accepted the Authority’s required amendment that section 5.4 of the proposed revised access arrangement, which states that GGT will provide compliance reports to the regulator, should be removed.

Submissions

2260. In response to GGT’s initial proposal, Santos was concerned that GGT was not obliged to undertake a development of capacity if it chose not to. It further noted that, if a pipeline expansion is technically feasible and economically viable, there should not be an opportunity for GGT to prevent it from proceeding. Santos believes that GGT’s proposed revisions are inconsistent with the NGO and will diminish the effectiveness of the Authority.¹¹⁵⁸
2261. In response to GGT’s initial proposal, BHPB submitted that under the current and proposed revised access arrangement, GGT is only required to expand the GGP where a user commits to sufficient negotiated services for GGT to recover all its costs in undertaking such an expansion. BHPB noted that a negotiated service is, by definition, not a reference service and accordingly is not subject to a regulated tariff.¹¹⁵⁹ BHPB considered that requiring expansions to be funded by negotiated services is unnecessary, and that GGT should not be obliged to expand unless it is

¹¹⁵⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal Response to ERA Draft Decision: Submission*, January 2016, p. 32.

¹¹⁵⁸ Santos (BOL) Pty Ltd, *Public Submission by Santos in Response to the Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement and Access Arrangement information*, 15 August, 2014.

¹¹⁵⁹ BHP Billiton, *Public Submission by BHP Billiton in Response to the Revised Access Arrangement Submitted by Goldfields Gas Transmission Pty Limited*, 27 November 2014, p. 14.

able to recover its costs of providing such an expansion. However, where GGT is able to recover these costs by providing sufficient reference services, users should be given the opportunity to obtain such reference services.

2262. No submissions were received in response to the Authority's Draft Decision or GGT's initial revised proposal that specifically referred to the requests for access or queuing requirements. However, BHPB did submit generally that, in relation to the issues on which BHPB had previously commented, BHPB agreed with the approach taken by the ERA in its Draft Decision.¹¹⁶⁰

Considerations of the Authority

Spare capacity register

2263. The Authority accepts GGT's argument that section 5.2.1 of the proposed revised access arrangement addresses the disposition of spare capacity when the amount of spare capacity is 2 TJ/d or less and it is not intended that spare capacity greater than 2 TJ/d would not be listed.

2264. The Authority notes that GGT has added clause 5.2.1(b) to its proposed revised access arrangement which states as follows:¹¹⁶¹

"Service Provider will include all spare capacity in the Spare Capacity Register, and will add a note on the Register describing the process for access to Spare Capacity."

2265. The Authority accepts the wording in GGT's proposed new section 5.2.1(b), subject to amending the reference to "spare capacity" (not a defined term) in the first line so that it reads "Spare Capacity" (defined term). Further, with the (necessary) insertion of GGT's proposed new section 5.2.1(b), the drafting of section 5.2.1 has now become more complicated and potentially confusing.

2266. Accordingly, the Authority is of the view the drafting of section 5.2.1 can be made clearer and simpler, so as to avoid any potential confusion, by making the following amendments (including moving the wording in GGT's proposed new section 5.2.1(b) to section 5.2.1(a)):

5.2.1 Spare Capacity ~~—less than 2TJ~~

- (a) Service Provider will include all Spare Capacity in the Spare Capacity Register, and will add a note on the Register describing the process for access to Spare Capacity.
- (b) Where the volume of Spare Capacity that is, or is likely to, become available is less than 2TJ/d, Service Provider may elect not to run an open season and auction for that Spare Capacity and if so, Service Provider must make that Spare Capacity available by placing it on the Spare Capacity Register.
- ~~(b) Service Provider will include all spare capacity in the Spare Capacity Register, and will add a note on the Register describing the process for access to Spare Capacity.~~
- ~~(c) Spare Capacity that is placed in the Spare Capacity Register pursuant to clause 5.2.1(a) Service Provider will be made make that Spare Capacity available to Prospective Users on a first come, first served basis to those Prospective Users who will enter into an agreement for that Spare Capacity within 2 months of seeking access to the Spare Capacity and at a rate which is at or above the Reference~~

¹¹⁶⁰ BHP Billiton, *Public Submission by BHP Billiton in Response to the Revised Access Arrangement Submitted by Goldfields Gas Transmission Pty Limited*, 11 March 2016, p. 2.

¹¹⁶¹ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement – Amended in response to ERA Draft Decision dated 17 December 2015, January 2016*, p. 23.

Tariff, and sections 5.2.2 to 5.2.6 will not apply to such of that Spare Capacity as is so taken up.

Spare Capacity

2267. The Authority accepts GGT's explanation on how it intends to calculate the NPV in section 5.2.5.

Developable Capacity

2268. The Authority notes that GGT has amended section 5.3.2(a) to the extent that it will commit to entering negotiations to develop pipeline capacity where it determines that the development is technically and economically feasible. However, contrary to Required Amendment 16 of the Draft Decision, GGT has not made the feasibility test an objective assessment, nor has it added any circumstances in section 5.3.2(a) where it is generally accepted that a service provider "cannot" provide developable capacity. GGT has not provided any reasons why it has not complied with these aspects of Required Amendment 16 of the Authority's Draft Decision.
2269. The Authority remains of the view that an objective assessment of whether the development of pipeline capacity is feasible is required and therefore requires that GGT conducts the feasibility assessment to the objective standard of a reasonable and prudent pipeline operator. This will include requiring that GGT conduct any investigation to the standard of a reasonable and prudent pipeline operator and also, when determining if it is economic to develop the capacity taking into account its operational and technical requirements (see definition of "Developable Capacity"). Sections 5.3.1 and 5.3.2(a) and the definition of "Developable Capacity" must therefore be amended to reflect this – see Required Amendment 17 below.
2270. The Authority required GGT in section 5.3.2(a) of the proposed revised access arrangement to list certain circumstances known in advance where it is generally accepted that a service provider "cannot" provide developable capacity. GGT has not said why it did not comply with this aspect of Required Amendment 16 of the Draft Decision. The Authority considers that while a list of reliable examples could provide some efficiency gains for users in avoiding unnecessary waste of time and expense with applications/negotiations that are almost certain to fail, this does not seem to be a major issue for users. Furthermore, the Authority does not want to unnecessarily introduce inflexibility into the assessment of feasibility if there are no obvious circumstances which would invariably prevent the provision of developable capacity. Therefore, in these circumstances, the Authority accepts the omission of such a list.
2271. The Authority notes that GGT has not deleted section 5.3.3 of the proposed revised access arrangement (Service Provider not bound to undertake development of capacity) as required. GGT has amended section 5.3.3 to include parts of rule 118 of the NGR, which GGT claims is so that it "will retain this discretion"¹¹⁶² (i.e. discretion whether or not to undertake a particular capacity expansion development). GGT claims the "purpose of the discretion is to reflect the scope of an Access Determination under section 191 of the NGL(WA) and rule 118 of the NGR."¹¹⁶³ The Authority accepts that the provisions from rule 118 of the NGR that GGT has sought

¹¹⁶² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 32.

¹¹⁶³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 32.

to include in section 5.3.3 do provide some reasonable limits on what a service provider can be required to do regarding Expansions, and that these reasonable limits may therefore be included in the access arrangement regarding access to "Developable Capacity" (assuming that term is also meant to be limited to Expansions, not Extensions). However, that does not mean GGT should have discretion to refuse to carry out an Expansion (of "Developable Capacity" or otherwise) that meets these reasonable limits.

2272. In this regard, the Authority notes the submission by Santos that "if a pipeline expansion is technically feasible and economically viable, there should not be an opportunity to prevent it going ahead."¹¹⁶⁴
2273. The Authority considers that, in the case of regulated monopoly assets such as the GGP, if it is technically and economically feasible, consistent with the safe and reliable operation of the Pipeline to meet demand for extra capacity by developing the capacity of the existing asset, rather than by independent "duplication" of the asset, then the monopoly service provider should not have discretion to refuse to provide that capacity development provided it also meets any relevant criteria, such as those in section 7.1 of the proposed revised access arrangement (GGT not required to fund Extensions or Expansions) and (as regards Expansions only) in rule 118 of the NGR.
2274. As currently drafted, GGT's amended proposed revised access arrangement does not do this. It would still allow GGT discretion to refuse an Expansion development even if it satisfied relevant criteria of the sort in NGR 118. That is because section 5.3.3 of the proposed revised access arrangement merely obliges GGT to "*enter negotiations to*" undertake an expansion development with no obligation to actually provide the expansion development. Accordingly, the Authority requires section 5.3.3 of the proposed revised access arrangement be amended to remove GGT's discretion so long as certain criteria of the sort in NGR 118 are satisfied (see Appendix 6 below).
2275. The Authority also notes that the defined term "Developable Capacity" refers to "Pipeline Capacity" which is not a defined term. As "Capacity" is defined by reference to the current configuration of the Covered Pipeline, the Authority is of the view that "Developable Capacity" should logically refer to an increase in that current Capacity. Accordingly, the Authority requires the defined term "Developable Capacity" in schedule C be amended to reflect this by replacing the word "Pipeline" on line one with the words "an increase in" (see Appendix 6 below).
2276. Further, the Authority considers that the requirement in the defined term "Developable Capacity" for the Service Provider to form an opinion that the capacity (increase) is "economic to develop taking into account its operational and technical requirements" should be amended to align those criteria with the criteria in revised section 5.3.3(a) (as amended by Appendix 6 below) that the Expansion must be:
- (i) technically and economically feasible; and
 - (ii) consistent with the safe and reliable operation of the Pipeline."

¹¹⁶⁴ Santos (BOL) Pty Ltd, *Public Submission by Santos in Response to the Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement and Access Arrangement information*, 15 August, 2014, letter dated 10 November 2014, p. 2.

Minor Inaccuracies in Access Arrangement

2277. The Authority notes that GGT has inadvertently referred to “clause” in some instances in Section 5.3 of the proposed revised access arrangement when it means “section”. As a result, the Authority has amended this incorrect references in section 5.3 of the proposed revised access arrangement.

Required Amendment 16

Amend section 5.2.1 of the access arrangement as follows:

"5.2.1 Spare Capacity ~~—less than 2TJ~~

- (a) Service Provider will include all Spare Capacity in the Spare Capacity Register, and will add a note on the Register describing the process for access to Spare Capacity.
- (b) Where the volume of Spare Capacity that is, or is likely to become, available is less than 2 TJ/d, Service Provider may elect not to run an open season and auction for that Spare Capacity, and if so, Service Provider must make that Spare Capacity available by placing it on the Spare Capacity Register.
- ~~(b) Service Provider will include all spare capacity in the Spare Capacity Register, and will add a note on the Register describing the process for access to Spare Capacity.~~
- (c) ~~Spare Capacity that is placed on the Spare Capacity Register pursuant to clause 5.2.1(a)~~ Service Provider will be made make that Spare Capacity available to Prospective Users on a first come, first served basis to those Prospective Users who enter into an agreement for that Spare Capacity within 2 months of seeking access to the Spare Capacity and at a rate which is at or above the Reference Tariff, and sections 5.2.2 to 5.2.6 will not apply to such of that Spare Capacity as is so taken up.

Amend section 5.3.1(d) of the access arrangement by adding the following words at the end of the section after the full stop: "The Service Provider will conduct any investigation to the standard of a reasonable and prudent pipeline operator."

Amend section 5.3.2(a) of the access arrangement by inserting in the first line the words ", acting as a reasonable and prudent pipeline operator, reasonably" immediately after the words "Service Provider has".

Amend section 5.3.3 of the access arrangement as follows:

"5.3.3 Service Provider ~~not is~~ is bound to undertake certain ~~developments~~ of capacity

- (a) Subject only to paragraphs (b), (c) and (d) below, Service Provider will enter negotiations to must undertake an Expansion development to provide Developable Capacity if requested by a User or Prospective User where it is:
 - (ia) technically and economically feasible; and
 - (iib) consistent with the safe and reliable operation of the Ppipeline;
- (b) Service Provider may elect, but cannot be required, to fund, in whole or part, an Expansion of the capacity of the pipeline unless the extension and expansion requirements of the access arrangement provide for the relevant funding.
- (c) Where an Expansion is proposed, Service Provider is not required to extend the geographical range of the Ppipeline unless otherwise agreed by Service Provider.

- (d) A User or Prospective User acquires no interest in a Pipeline by funding an Expansion ~~of capacity of the pipeline~~ unless the Service Provider agrees."

Amend the defined term "Developable Capacity" in schedule C as follows:

"Developable Capacity means an increase in Pipeline Capacity which, in Service Provider's opinion, acting reasonably and to the standard of a reasonable and prudent pipeline operator, is technically and economically feasible to develop consistent with the safe and reliable operation of the Pipeline. ~~economic-to-develop-taking-into-account-its operational-and-technical-requirements;~~"

Amend references from "clause" to "section" in Section 5 of the proposed revised access arrangement which refer to sections of the proposed revised access arrangement.

Extensions and Expansion Requirements

Regulatory Requirements

2278. Section 18 of the NGL(WA) states:

18. Certain extensions to, or expansion of the capacity of, pipelines to be taken to be part of a covered pipeline

For the purposes of this Law

(a) an extension to, or expansion of the capacity of, a covered pipeline must be taken to be part of the covered pipeline; and

(b) the pipeline as extended or expanded must be taken to be a covered pipeline,

if, by operation of the extension and expansion requirements under an applicable access arrangement, the applicable access arrangement will apply to pipeline services provided by means of the covered pipeline as extended or expanded.

2279. Under rule 48(1)(g) of the NGR, a full access arrangement proposal must set out the extension and expansion requirements.

2280. Extension and expansion requirements are defined under section 2 of the NGL(WA).

Extension and expansion requirements means –

(a) the requirements contained in an access arrangement that, in accordance with the Rules, specify—

(i) the circumstances when an extension to, or expansion of the capacity of, a covered pipeline is to be treated as forming part of the covered pipeline; and

(ii) whether the pipeline services provided or to be provided by means of, or in connection with, spare capacity arising out of an extension to, or expansion of the capacity of, a covered pipeline will be subject to the applicable access arrangement applying to the pipeline services to which that arrangement applies; and

(iii) whether an extension to, or expansion of the capacity of, a covered pipeline will affect a reference tariff, and if so, the effect on the reference tariff; and

(b) any other requirements specified by the Rules as extension and expansion requirements;

2281. Specific provisions relating to extension and expansion requirements are set out in rule 104 of the NGR:

104 Extension and expansion requirements

(1) Extension and expansion requirements may state whether the applicable access arrangement will apply to incremental services to be provided as a result of a particular extension to, or expansion of the capacity of, the pipeline or may allow for later resolution of that question on a basis stated in the requirements.

(2) Extension and expansion requirements included in a full access arrangement must, if they provide that an applicable access arrangement is to apply to incremental services, deal with the effect of the extension or expansion on tariffs.

(3) The extension and expansion requirements cannot require the service provider to provide funds for work involved in making an extension or expansion unless the service provider agrees.

2282. 'Incremental services' are defined under rule 3 of the NGR as "pipeline services provided by means of an extension to, or expansion of the capacity of, the pipeline".
2283. Under rule 100 of the NGR, the extension and expansion requirements must also be consistent with the NGO.

GGT's Initial Proposal

2284. GGT maintained its current approach of seeking consent for elections in relation to extensions and expansions.
2285. GGT proposed what it indicated were minor amendments to the wording of sections 7.1 and 7.3 of the access arrangement. GGT proposed the following amendments:
- GGT removed the words "of the Covered Pipeline" from immediately after the word "Capacity" in the opening paragraph of section 7.1 of its proposed revised access arrangement so that the opening paragraph would read as follows:
"Other than as required under the National Gas Rules, Service Provider will not incur capital to expand the Capacity unless a User:"
 - Proposed section 7.3(b) (section 10.3(b) in the current access arrangement) was amended from stating that users making use of expanded capacity who have not made a capital contribution towards that capacity *will* be liable to pay for surcharges as allowed for in section 8 of the Code, to stating that they *may* be liable to pay a surcharge under rule 83 of the NGR.
2286. GGT submitted that its proposed revisions:
- were limited to terminology and approach under the NGR which differ to the former Code, with no change to operation of provisions;¹¹⁶⁵
 - aligned its extension and expansion policy with the requirements and terminology of rule 104 of the NGR; and
 - did not seek to change the intent of the extensions and expansions policy, which was the subject of a decision by the Western Australian Electricity Review Board (**ERB**) in 2012.^{1166 1167}

Draft Decision

2287. The Authority accepted GGT's submission that proposed section 7.1 of the proposed revised access arrangement made a number of amendments to the wording of existing section 10.1 of the current access arrangement to better reflect the terminology and approach under the NGR (which differs to the Code), but otherwise does not change the operation of the provisions.¹¹⁶⁸ However, having regard to the submissions of interested parties, the Authority considered that GGT's proposal to only incur capital to expand the capacity if a user commits to a negotiated transportation agreement was not consistent with the NGO.

¹¹⁶⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information, Attachment 1, Log of Changes to GGP Access Arrangement*, 15 August 2014, p. 12.

¹¹⁶⁶ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, at para 2.5 on p. 14.

¹¹⁶⁷ Electricity Review Board, *Applications Nos. 1 and 2 of 2010, Supplementary Decision*, 30 March 2012.

¹¹⁶⁸ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 385.

2288. The Authority considered that the requirement for users to enter into ‘negotiated transportation agreements’ has the effect that the service provider does not have to expand the GGP unless a user contracts for a non-regulated service which effectively denies users the option of obtaining a regulated tariff and is not consistent with the NGO. The Authority therefore required GGT to remove proposed section 7.1(c).
2289. The Authority did not accept GGT’s proposal in section 7.2(a), that it must, with the regulator’s consent, elect at some point in time whether or not a proposed extension to, or expansion of the capacity of the pipeline should be treated as part of the covered pipeline. The Authority required that section 7.2 should be amended so that the access arrangement will apply to incremental services to be provided as a result of any extension or expansion in capacity of the GGP, except in instances where GGT can demonstrate to the Authority’s reasonable satisfaction that application of the access arrangement to such services is inconsistent with the NGO.
2290. The Authority noted that GGT’s proposal:
- put the onus on the Authority to determine why the extension or expansion should or should not be covered in accordance with the NGO;
 - was the subject of a decision by the ERB in 2012, under the Code;¹¹⁶⁹ and
 - did not provide any supporting information for how its proposed extension and expansion policy is consistent with the NGO.
2291. The Authority also considered that:¹¹⁷⁰
- GGT’s proposal may result in it making an election that takes into account only its own commercial interests, which may result in an outcome contrary to the NGO. This consideration is consistent with the decision of the ERB on GGT’s current access arrangement.
 - The Australian Competition Tribunal previously upheld the Authority’s decision for DBNGP Transmission Pty Ltd (**DBP**) to amend its policy for expansions so that its access arrangement would apply to incremental services to be provided as a result of any expansion in capacity of the Dampier to Bunbury Natural Gas Pipeline (**DBNGP**), except in instances where DBP can demonstrate that application of the access arrangement to such services is inconsistent with the NGO.¹¹⁷¹
 - Where the default position is for deemed coverage, there is greater certainty that regulated services will apply and consequently, less opportunity for GGT to channel prospective users into contracting for a negotiated service rather than a regulated service which could expose them to the extraction of unregulated (monopoly) tariffs and undermine the NGO.
 - If GGT were to take the view at any time that an expansion of capacity should not form part of the covered pipeline, then it is open to GGT to seek revocation

¹¹⁶⁹ Western Australian Electricity Review Board, *Applications Nos. 1 and 2 of 2010, Supplementary Decision*, 30 March 2012.

¹¹⁷⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 386-387.

¹¹⁷¹ Australian Competition Tribunal, *Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14, Decision*, 26 July 2012.

of coverage of the relevant part of the GGP under the coverage provisions of the NGL(WA).

2292. The Authority considered that having regard to the reasons highlighted in its determination on 30 May 2014 (regarding an application to not cover an expansion) and the submissions by BHPB, GGT's proposal to elect "at some point in time" was not consistent with the NGO. However, the Authority considered that this issue would be resolved if the access arrangement were amended such that the default position is that extended or expanded pipeline capacity is automatically to be treated as covered unless the service provider makes an election to have it not covered and the Authority consents.
2293. The Authority considered that GGT's proposed "extension and expansion requirements" (formerly "policy") were not compliant with relevant requirements of the NGL(WA) and NGR.
2294. The Authority accepted GGT's proposed amendments to the wording of section 7.3(b). The Authority considered that GGT's proposed amendment to replace "will be liable to pay for surcharges" with "may be liable to pay a surcharge" would appear to be simply reflecting the reality that a surcharge will only arise if GGT seeks and obtains the Authority's approval for it (neither of which are certainties).

GGT's Revised Proposal

Expansion of capacity and negotiated agreements

2295. GGT did not accept the Authority's Draft Decision required amendment 17 to remove section 7.1(c) of the proposed revised access arrangement, which stated that the Service Provider would not incur capital to expand the capacity unless they committed to a Negotiated Transportation Agreement. In its revised proposal, GGT proposed to remove section 7.1 in its entirety and replace it with a provision in similar terms to rule 104(3) of the NGR as follows:
- "GGT will not be required to provide funds for work involved in making an extension or expansion, unless GGT agrees to do so."
2296. GGT considered that if section 7.1(c) were to be removed, section 7.1 in its remaining form would not contribute to the achievement of the NGO. Section 7.1 is said to provide the mechanism by which GGT can obtain some certainty that users are willing and able to contract for the new capacity and without this certainty, GGT's incentives to invest are likely to be significantly diminished.¹¹⁷²
2297. GGT states that it does not consider that the Authority's Draft Decision required amendments are required or appropriate.¹¹⁷³ GGT maintains that the current policy which is contained in section 7 of the proposed revised access arrangement has worked effectively and efficiently in recent years and is consistent with the achievement of the NGO.¹¹⁷⁴

¹¹⁷² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 21.

¹¹⁷³ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 18.

¹¹⁷⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 18.

2298. GGT states that rule 104 of the NGR outlines the requirements of an access regime with respect to expanded or extended capacity and contains no requirement that expanded or extended capacity must operate so that a user is given the option of obtaining a regulated tariff.¹¹⁷⁵
2299. In terms of the NGO, GGT states that the NGO provides no express or implied requirement that all expanded or extended capacity should be offered to users with the option of obtaining a regulated tariff with respect to that capacity and that it seeks to ensure that the entire productive process with respect to natural gas is directed towards the long term interests of consumers in terms of price, quality, safety, reliability and security of supply.¹¹⁷⁶ The continuing extension and expansion of the GGP is said to be a significant contributor to the reliability and security of supply of consumers.¹¹⁷⁷
2300. GGT considers that the revised form of section 7.1 provides GGT with greater certainty around the circumstances in which it will be required to provide funds for new investment, than would the existing section 7.1 with section 7.1(c) removed. Therefore this revised form of section 7.1 better contributes to the achievement of the NGO, compared to the Authority's proposal.¹¹⁷⁸

Application of access arrangement

2301. GGT has not accepted the Authority's Draft Decision required amendment 17 to section 7.2 of the proposed revised access arrangement to set coverage as the default position. However, GGT has amended section 7.2 to allow for consideration by the Authority of whether treating the extension or expansion as forming part of the covered pipeline will or is likely to contribute to the achievement of the NGO.
2302. GGT considers that it is not necessary to change the process of application of the access arrangement as:¹¹⁷⁹
- the consent of the Authority is required for any election by GGT, thus providing the Authority with an ability to veto an election made by GGT should this be deemed necessary;
 - the current regime has worked successfully, encouraging efficient expansion of capacity; and
 - it risks ultimately undermining the NGO as a result of discouraging efficient investment in expanded or extended capacity of the GGP.

¹¹⁷⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, pp. 21-22.

¹¹⁷⁶ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 21.

¹¹⁷⁷ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 21.

¹¹⁷⁸ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 21

¹¹⁷⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 22.

2303. GGT submits that the NGL(WA) requirement in respect of the extensions and expansions policy to be included in a full access arrangement proposal should be interpreted consistently with how it was interpreted under the Code.¹¹⁸⁰
2304. GGT notes that the process contained in section 7.2 of the proposed revised access arrangement was the subject of two decisions by the Electricity Review Board (**ERB**) in 2011 and 2012.¹¹⁸¹ The ERB ultimately considered that a policy in which GGT elected whether or not a proposed extension/expansion should be treated as part of the covered pipeline was appropriate. The ERB also considered it appropriate that the question of whether extensions and expansions should form part of the covered pipeline be considered on a case-by-case basis. GGT considers that although there has been a transition from the Code to the NGL(WA)/NGR regulatory regime, the core concepts of the Code regime referred to by the ERB remain in place.¹¹⁸²
2305. GGT considers that its proposed approach better promotes the NGO, compared to the Authority's 'default coverage approach'. GGT considers that the Authority's approach does not contemplate the possibility that, in some circumstances, while coverage of an extension or expansion may not be inconsistent with the NGO, non-coverage may contribute to the achievement of the NGO to a greater degree and/or may better satisfy other provisions of the NGL(WA).¹¹⁸³
2306. GGT states that the Draft Decision provides very little reasoning to support a conclusion that the default coverage approach is consistent with the NGO. GGT states that the circumstances and history of the GGP demonstrate that regulated outcomes will not always be preferable to negotiated outcomes. The relevant circumstances include:¹¹⁸⁴
- a customer base that comprises large industrial users, many of whom may have an incentive and ability to seek negotiated outcomes;
 - several capacity expansions that have not been included as part of the covered pipeline, with the terms on which services are to be provided over this uncovered pipeline successfully negotiated between GGT and users; and
 - many users of the covered pipeline acquiring services other than on regulated terms – i.e. users opting for negotiated terms over regulated terms, even where regulated terms are available.
2307. GGT states that there are many reasons why regulation of services to be provided over expanded capacity may not be in the interests of users and may not promote the NGO. For example, where expansions of capacity are to service new mining

¹¹⁸⁰ Goldfields Gas Transmission Pty Ltd, Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission, January 2016, p. 22.

¹¹⁸¹ Western Australian Electricity Review Board, *Applications Nos. 1 and 2 of 2010, Decision*, 22 November 2011; Western Australian Electricity Review Board, *Applications Nos. 1 and 2 of 2010, Supplementary Decision*, 30 March 2012.

¹¹⁸² Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 24.

¹¹⁸³ Goldfields Gas Transmission Pty Ltd, Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission, January 2016, p. 25.

¹¹⁸⁴ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 26.

projects, not treating these expansions as part of the covered pipeline may be in the interests of both existing and new users because:¹¹⁸⁵

- existing users would not be exposed to risks associated with expansion of the covered pipeline to service new projects; and
- this may enable a better assessment of the economics of the contemplated project(s), since the tariff to be charged to the party seeking the expansion could be set to reflect the incremental cost of that expansion only, rather than the average cost across the entirety of the covered pipeline.

2308. GGT submits that the approach taken by the Authority in its determination on the expansion of the GGP on 30 May 2014, is preferable to the Authority's 'default coverage approach'.¹¹⁸⁶ GGT considers that the proper analysis was undertaken by the Authority in that case, taking into account all relevant circumstances of the expansion and relevant legal requirements and criteria. GGT submits such an analysis would potentially not be permitted under the Authority's 'default coverage approach', since the Authority's consideration would be confined to a binary question of whether coverage would be inconsistent with the NGO.

2309. GGT considers that the current extensions and expansions policy has been successful in promoting efficient investment in new capacity and that the Authority's required amendments may ultimately not promote the NGO if they have the unintended consequence of discouraging efficient investment by GGT. GGT submits that, in order to contribute to the achievement of the NGO to the greatest degree, questions of coverage should be addressed on a case-by-case basis in light of the prevailing circumstances.

2310. GGT states that its proposed revised access arrangement will do nothing to prevent users from obtaining existing regulated services. With respect to expanded or extended capacity, GGT submits that neither the NGR nor the NGO contemplate users having an opportunity to access associated regulated services unless and until that new capacity becomes subject to coverage determination. GGT states that there is no reason to assume that commercial negotiated outcomes will result in an outcome contrary to the NGO; and that the NGO itself recognises that non-regulated outcomes are to be preferred and given precedence over regulated outcomes.

2311. GGT does not accept that the timing of any of its previous elections in relation to coverage of expanded or extended pipeline was contrary to the requirements of access arrangements, or undermined the NGO. However, if the Authority does have genuine concerns about the timeliness of elections, this should be addressed in and of itself, rather than via an inversion of the default coverage position of expanded or extended pipelines.

2312. GGT has not adopted the Authority's Draft Decision required amendment for section 7.2 of the access arrangement. However, GGT now proposes to replace section 7.2 with the following new provision, which it considers is more likely to result in outcomes that contribute to the achievement of the NGO to the greatest degree:

¹¹⁸⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 26.

¹¹⁸⁶ Economic Regulation Authority, Notice, *Application for expansion of the Goldfields Gas Pipeline to not be regulated: Determination*, 30 May 2014, pp. 1-2.

“An extension to, or expansion of the capacity of, the covered pipeline is to be treated as forming part of the covered pipeline where, in response to a notification from GGT of a proposed extension / expansion which includes an election by GGT as to whether the extension or expansion of the capacity of the covered pipeline is to be treated as forming part of the covered pipeline, the ERA determines that treating the extension or expansion as forming part of the covered pipeline will or is likely to contribute to the achievement of the national gas objective. In all other circumstances, an extension to, or expansion of the capacity of, the covered pipeline is not to be treated as forming part of the covered pipeline.”

Submissions

2313. In response to GGT’s initial proposal, both Santos and BHPB provided submissions on GGT’s proposed extension and expansion policy.
2314. Santos submitted that in order to meet the NGO the Authority should consider whether an access arrangement should contain clearer provisions to regulate pipeline expansion for third party access.¹¹⁸⁷
2315. BHPB also considered that the principles of the gas access regime, especially the NGO, can be seriously undermined by an extensions and expansions policy which is not sufficiently robust and transparent.¹¹⁸⁸
2316. Santos noted in its submission that currently it does not appear that a third party can enforce a right to gain access to the pipeline through access arrangement terms and conditions. Santos submitted that if a party required something other than those terms and conditions, a negotiated service would then be appropriate however, it should not be the default position for all new shippers.¹¹⁸⁹
2317. BHPB submitted that in Western Australia, the owners of significant pipeline infrastructure such as the GGP enjoy a position of considerable market power and even though the Authority’s consent for an election is required, GGT is not required to expand the GGP unless users commit to a negotiated service.
2318. BHPB considered that GGT should not be obliged to expand unless it is able to recover its costs of providing such an expansion. However, where GGT was able to recover these costs by providing sufficient reference services, users were to be given the opportunity to obtain such reference services. BHPB submitted that all extensions and expansions to the GGT pipeline should be automatically covered unless GGT could satisfy the Authority that this was inconsistent with the NGO. BHPB stated that this would bring the proposed revised access arrangement into line with the DBP and would put the onus on GGT to make timely elections in respect to coverage.
2319. BHPB considered that, to prevent GGT from being able to extract monopoly rents from users, an alternative method (to users having to apply for coverage through

¹¹⁸⁷ Santos (BOL) Pty Ltd, *Public Submission by Santos in Response to the Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement and Access Arrangement information*, 15 August, 2014, dated 10 November 2014, p. 2.

¹¹⁸⁸ BHP Billiton, *In response to Goldfields Gas Transmission Pty Limited’s Proposed revisions to the Goldfields Gas Pipeline Access Arrangement*, 27 November 2014, p. 11.

¹¹⁸⁹ Santos (BOL) Pty Ltd, *Public Submission by Santos in Response to the Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement and Access Arrangement information*, 15 August, 2014, dated 10 November 2014, p. 2.

the National Competition Council (**NCC**) would be to include a requirement that until the Authority has consented to any election, GGT would be prevented from entering into agreements with users with respect to the additional capacity.¹¹⁹⁰ Furthermore, the current approach of GGT requiring to elect “at some point” in time whether or not a proposed extension or expansion should be treated as part of the covered pipeline, does not give sufficient protection to users or allow the Authority sufficient time to properly consider the implications of a proposed election and this was shown in the latest decision on the GGP when a decision was made after capacity had been contracted with users.

2320. In relation to the notification of uncovered capacity, BHPB submitted that the timing of this notification should be such that all interested parties are afforded adequate time to consider the appropriate treatment of any available GGP capacity.¹¹⁹¹
2321. In its submission in response to GGT’s response to the Authority’s Draft Decision, BHPB submits that:¹¹⁹²
- it supports the Authority’s Draft Decision on extensions /expansions and in particular its proposed regime of providing for automatic coverage, unless GGT can demonstrate that such coverage would be inconsistent with the NGO;
 - it considers that GGT is better placed than users to make the initial arguments as to whether automatic coverage is consistent with the NGO; and
 - a regime that provides for automatic access is consistent with the access arrangements for the DBNGP and the Mid-West and South-West gas distribution systems (GDS).

Considerations of the Authority

Expansion of capacity and negotiated agreements

2322. The Authority’s Draft Decision required GGT to remove proposed section 7.1(c) of the proposed revised access arrangement, as the Authority considered that the requirement for users to enter into ‘negotiated transportation agreements’ would have the effect that the service provider does not have to expand the GGP unless a user contracts for a non-regulated service which effectively denies users the option of obtaining a regulated tariff and is not consistent with the NGO. The Authority notes that GGT’s revised approach to replace section 7.1 with a provision in similar terms to rule 104(3) of the NGR removes the requirement for a user to commit to a Negotiated Transportation Agreement.

2323. Rule 104(3) of the NGR states that:

The extension and expansion requirements cannot require the service provider to provide funds for work involved in making an extension or expansion unless the service provider agrees.

2324. The Authority accepts that GGT’s proposal is in accordance with rule 104 of the NGR. Therefore, the Authority accepts GGT’s proposal to replace section 7.1 with

¹¹⁹⁰ BHP Billiton, *In response to Goldfields Gas Transmission Pty Limited’s Proposed revisions to the Goldfields Gas Pipeline Access Arrangement*, 27 November 2014, p. 13.

¹¹⁹¹ BHP Billiton, *In response to Goldfields Gas Transmission Pty Limited’s Proposed revisions to the Goldfields Gas Pipeline Access Arrangement*, 27 November 2014, p. 14.

¹¹⁹² BHP Billiton, *Public Submission by BHP Billiton in Response to the Revised Access Arrangement Submitted by Goldfields Gas Transmission Pty Limited*, 11 March 2016, p. 5.

a provision in similar terms to rule 104(3) of the NGR. However, the Authority does not accept GGT's proposed wording. The Authority determines that GGT should reinstate the following words "Other than as required under the NGR" as initially proposed and also add "State Agreement", which is in the current access arrangement. The Authority also considers that "GGT" should be changed to "Service Provider" for consistency of terms in the proposed revised access arrangement.

2325. The Authority requires GGT to amend the wording of section 7.1 as follows:

"Other than as required under the National Gas Rules and the GGP State Agreement, the GGT Service Provider will not be required to provide funds for work involved in making an eExtension or eExpansion, unless the Service Provider GGT agrees to do so."

Application of access arrangement

2326. The Authority does not accept that GGT's revised section 7.2 of its proposed revised access arrangement is compliant with the relevant requirements of the NGL(WA) and NGR.

2327. In assessing GGT's revised proposal for extension and expansion requirements, the Authority has considered the overall purpose of the regulatory regime as well as the extent to which these requirements in past decisions have promoted outcomes that are consistent with the NGO.

2328. On this basis, the Authority has determined that:

- the access arrangement should apply to the incremental services that are provided as a result of any expansion in the capacity of the GGP, unless otherwise proposed by the Service Provider and agreed by the Authority; and
- with respect to incremental services that are provided as a result of any extension in capacity of the GGP, the question of coverage should be considered on a case-by-case basis taking into account the unique circumstances of the particular extension.

Incremental services provided by means of expansions

2329. The Authority considers that default coverage of expansions in the capacity of the GGP is appropriate to ensure that investment decisions improve the efficient provision of services in the long term interests of consumers as consistent with the NGO. That is, given that incremental services provided through an uncovered expansion in capacity will utilise the same regulated assets which have been declared on the basis of their natural monopoly characteristics, the Authority considers that it is not unreasonable to expect that GGT will exercise some degree of market power and charge tariffs as close as possible to each user's opportunity cost. This could exacerbate the economic inefficiency of all services provided by the GGP from unexploited economies of scale over the longer term.

2330. In this context, the Authority draws attention to its concern, as outlined in detail in paragraphs 1974 to 1991 of this Final Decision, that under the existing provisions in the NGL and NGR:

- there is already an economic incentive for GGT to expand the capacity of the GGP but only for the purposes of providing uncovered services. That is, if GGT can set tariffs for uncovered services provided by an uncovered

expansion above incremental cost, then it will be able to earn above normal economic profit for a sustained period of time since, unlike for similar investment in covered services, there is no effect on the reference tariff determination in the next access arrangement.

- due to GGT's elections for uncovered expansions over its first and second access arrangement period, there is already a significant risk that the reference tariff determination for the GGP, could exacerbate the economic inefficiency of all services provided by the GGP from unexploited economies of scale over the longer term. This is because under current provisions of the NGL(WA) and NGR, the reference tariff will reflect all of the costs of its covered assets, even when unique circumstances have provided for an increasing proportion of those assets to be used to deliver uncovered services.

2331. The Authority has also considered the relevance of its Final Decision on the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline 2011-15, which required DBNGP Transmission (WA) Pty Ltd to amend its policy for expansions so that its access arrangement would apply to incremental services to be provided as a result of any expansion in capacity of the DBNGP, except in instances where DBNGP could demonstrate that application of the access arrangement to such services is inconsistent with the NGO.

2332. In a review of the Authority's 2011 Final Decision on the Dampier to Bunbury Natural Gas Pipeline, the Australian Competition Tribunal stated:¹¹⁹³

Nor does the Tribunal accept that it is erroneous for the ERA to have observed what is really self-evident, namely that the acceptance of the DBP alternative proposed would give it an unfettered discretion to include or exclude an expansion from the scope of the Access Arrangement Decision, with the risk that DBP's decision may result in an outcome not consistent with the national gas objective. That is not to attribute to DBP any sinister motives, but to point to a simple fact. Under the national gas objective and the NGL(WA) and NGR, the regulator is given specified responsibilities as an independent entity which, if DBP's proposal were accepted, it would be excluded from fulfilling in relation to any expansion during the regulatory period.

2333. In that review, the Australian Competition Tribunal concluded:¹¹⁹⁴

For the reasons the ERA gave, it could properly conclude that – as a starting point – the application of those terms to an expansion of the DBNGP would be consistent with the national gas objective. That is because the overall terms imposed by the Access Arrangement Decision (subject to other issues raised on this review) can reasonably be taken as consistent with that objective and the revenue and pricing principles. There is no reason why the ERA, in that context, should regard its starting point as a disincentive to efficient investment in, and efficient operation and use of, any expansion of the DBNGP. It has, however, preserved to DBP the opportunity to claim to the contrary in respect of any particular expansion, and to show to the ERA that in the particular circumstances the subjection of that expansion to the terms of the access arrangement would not be consistent with the national gas objective. So understood, the ERA has simply left the door open to DBP, if it contemplates an expansion during the access arrangement period, to present material to it which it may then review and decide whether, on the whole of the material, the national gas objective is not served by the inclusion of expansions in the scope of operation of the Access Arrangement Decision. As the ERA noted, DBP may also seek a coverage revocation determination under Part 4 Division 2 of the NGL(WA) in any event. Given the starting point of the

¹¹⁹³ *Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14 at [616].*

¹¹⁹⁴ *Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14 at [613].*

ERA, the Tribunal does not consider that the ERA's decision in that respect is unreasonable or that it involves an incorrect exercise of its discretion.

2334. As applied to the issue at hand, the Authority determines that where GGT proposes that the capacity of the GGP is to be expanded, and that the expanded capacity will not be covered by the access arrangement, then GGT should bear the onus of showing that the change is not going to be inconsistent with the NGO. If GGT were to take the view at any time that an expansion of capacity should not form part of the covered pipeline, then the Authority notes that it is also open to GGT to seek revocation of coverage of the relevant part of the GGP under the coverage provisions of the NGL(WA).
2335. With regard to the examples given by GGT, where it claims that not treating expansions of capacity to service new mining projects as part of the covered pipeline may be in the interests of both existing and new users, the Authority considers:¹¹⁹⁵
- risks associated with covered expansions servicing new mining projects can be managed in other ways, without having to make the expansion uncovered. For example, this risk could be addressed by including in the access arrangement a capital redundancy mechanism as contemplated by rule 85(1) of the NGR, such that if demand reduced to such a level that expansion assets were no longer required, they could be removed from the capital base. Further or alternatively, the access arrangement could include a cost-sharing mechanism for decline in demand (as contemplated by NGR 85(3)) which makes clear that the proponents of the new mining project expansion should bear (backed up by appropriate security) the cost of any asset redundancy/tariff increase resulting from a reduction in their expected demand; and
 - though the Authority accepts that there is a risk that some of the costs of a covered expansion may be averaged across the entirety of the covered pipeline, the Authority considers there may equally be cases where (e.g. by optimising efficiencies of scale), an expansion could lead to a decrease in the average cost of gas transmission (i.e. an overall benefit for all users (that outweighs averaging of cost)). In any event, GGT and other parties can raise this sort of objection at the time as a potential reason why the expansion should not be covered.
2336. The Authority therefore does not consider that the examples given by GGT are good justification for requiring a default position that mining project expansions be uncovered.
2337. The Authority notes that default coverage of expansions in the capacity of gas pipelines is also consistent with the position taken by the AER in recent decisions on other APA Group transmission pipelines.
2338. For the *APA Gas Net Access Arrangement 2013-17*, the AER accepted APA GasNet's revision proposal that the access arrangement will apply to incremental services provided as a result of an expansion. In its Draft Decision, the AER stated:
- the AER considers that, in general, expansions to the pipeline should be covered by default. Pipeline expansions involve the augmentation of pipeline capacity of the

¹¹⁹⁵ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal, Response to ERA Draft Decision, Submission*, January 2016, p. 26.

existing pipeline, and are likely to be used by existing pipeline users. They are much less likely than an extension to serve new or isolated customers. As such, the AER considers that it is appropriate that pipeline expansions form part of the covered pipeline, unless the AER expressly agrees otherwise.¹¹⁹⁶

2339. Similarly for the *Amadeus Gas Pipeline Access Arrangement 2016-21*, the AER approved APTNT's proposed extension and expansion requirements. In its Draft Decision, the AER considered:

... Pipeline expansions involve the augmentation of pipeline capacity of the existing pipeline, and are likely to be used by existing pipeline users. They are much less likely than an extension to serve only new or isolated customers. In general, therefore, expansions to a transmission pipeline should be covered by default and form part of the covered pipeline, unless we expressly agree otherwise.¹¹⁹⁷

Incremental services provided by means of extensions

2340. In contrast, to expansions, with respect to incremental services that are provided as a result of any extension of the GGP, the Authority considers that it is appropriate to consider the question of coverage on a case by case basis taking into account the unique circumstances of the particular extension.

2341. The Authority shares the AER's view from recent decisions that:¹¹⁹⁸

all extensions to transmission pipelines should be assessed on a case-by-case basis for coverage. This is because transmission pipelines could be used either as viable bypass options to end users, or to support the existing network.

2342. The Authority considers that the reasons for the extension, and the degree of its integration into the existing network, will affect whether a coverage determination is in accordance with the NGO. Hence, for incremental services that are provided as a result of any extension of the GGP, the Authority determines that GGT must apply to the Authority for a decision regarding whether or not the proposed extension will form a part of the covered pipeline.

2343. With regard to when GGT needs to notify the Authority of a proposed extension, the Authority maintains its view from its draft decision that in order for the Authority to assess GGT's coverage determination in a timely way, GGT must make an application when the extension is first being considered, prior to making a final investment decision.

Pipeline Extensions/Expansions and Tariffs

2344. The Authority considers that section 7.3 of the proposed revised access arrangement should be amended to reflect the Authority's decision (as per the discussion above and required amendment below, in relation to section 7.2) that it is not simply a case of the Service Provider electing whether an extension or expansion of the capacity of the covered pipeline is to be treated as forming part of the covered pipeline.

¹¹⁹⁶ Australian Energy Regulator, *Access arrangement draft decision APA GasNet Australia (Operations) Pty Ltd 2013–17 Part 2 Attachments*, September 2012, p. 356.

¹¹⁹⁷ Australian Energy Regulator, *Access arrangement draft decision Amadeus Gas Pipeline 2016–21 Attachment 12*, November 2015, section 12.5.4.

¹¹⁹⁸ Australian Energy Regulator, *Draft Decision on the APA Gas Net Access Arrangement 2013-17, Part 2*, 11 September 2012, p. 355.

2345. The Authority notes that under the Gas Supply (Gas Quality Specifications) Act 2009 (WA), the Service Provider might undertake an extension or expansion to replace “lost” capacity due to a change in the gas quality specification. The Authority considers that this should be treated in the same way as any other extension or expansion when it comes to a determination of whether any new assets form part of the covered pipeline and the amount of investment is added to the capital base. The Authority notes that the extension or expansion may be financed by a party other than GGT, any of the owners or the User.
2346. The Authority considers that to avoid any doubt the following text should be added at the end of section 7.3 (a):
- ... To avoid doubt, neither the Service Provider nor any of the owners will benefit through a change to Reference Tariffs (except in relation to any contributions to Service Provider’s operating costs) to the extent that:
- (i) any such Extension or Expansion is undertaken for or in relation to any adjustments to Capacity occurring (or which, but for the Extension or Expansion, would occur) as a result of the application of the provisions of *the Gas Supply (Gas Quality Specifications) Act 2009 (WA)*; and
 - (ii) the funding of that Extension or Expansion was made by someone other than the Service Provider or any of the Owners or any related body corporate of Service Provider or any of the Owners.
2347. The Authority requires that GGT’s proposed revised access arrangement be amended in line with the required amendments below.

Defined Terminology

2348. The Authority has decided to amend GGT's definition of "Incremental Services" to more closely match the wider NGR definition and reduce the risk of potential inconsistency with the NGR.
- "Incremental Services means pipeline services (as defined in the NGL) provided by means of an Extension or Expansion ~~a Service relating to capacity above the Capacity;~~"
2349. The Authority has also decided to amend GGT’s definition of “Expansion” which currently includes both increases and decreases in Capacity, so that it only includes increases in Capacity (i.e. true expansions).
- “Expansion means additions of plant or pipeline made by Service Provider to the Covered Pipeline which result in an increase ~~difference~~ in Capacity;”

Required Amendment 17

Amend section 7.1 of the access arrangement as follows:

“Other than as required under the National Gas Rules and the GGP State Agreement, the GGT Service Provider will not be required to provide funds for work involved in making an eExtension or eExpansion, unless the Service Provider GGT agrees to do so.”

Replace the content of section 7.2 of the access arrangement with the following:

(a) Extensions

If Service Provider proposes an Eextension of the Covered Pipeline, it must apply to the Regulator for the Regulator to decide whether the proposed Eextension will be taken to form part of the Covered Pipeline such that this Access Arrangement would apply to the lincremental Sservices provided by means of the proposed Eextension.

The application given by the Service Provider must be submitted to the Regulator when the Eextension is first being considered, prior to making its final investment decision.

The Regulator’s decision, may be made on such reasonable conditions as determined by the Regulator consistent with the National Gas Objective and will have the effect stated in its decision on the Service Provider’s proposed pipeline Eextension.

(b) Expansions

~~In the event that the Service Provider expands If there is an Expansion of the capacity of the covered pipeline above the existing Capacity at any time, this Access Arrangement will apply to all and any the Incremental Services provided as a result of after the Eexpansion at the time it comes into operation, except to the extent (if any) that unless the Service Provider proposes (by application to the Regulator) and the Regulator agrees that this Access Arrangement will not apply to all or any of those Incremental Services provided as a result of that Expansion.~~

Any such application by the Service Provider must be submitted to the Regulator when the Expansion is first being considered, prior to making its final investment decision.

Amend Section 7.3 (a) and (c) of the access arrangement as follows:

(a) Pipeline Extensions or Expansions ~~to~~ which form part of the Covered Pipeline such that Service Provider elects that this Access Arrangement will apply under section 7.2 to any Incremental Services provided by means of them, will result in no change to the Reference Tariff applied to a User when those Extensions or Expansions have been fully funded by that User’s capital contributions except to contribute to Service Provider’s operating costs in connection with those eExtensions and eExpansions. Any change to Reference Tariffs may occur only pursuant to the processes set out in Part 8 of the NGR. To avoid doubt, and without limiting the above in any way, neither the Service Provider nor any of the Owners will benefit through a change to Reference Tariffs (except as regards any contributions to Service Provider’s operating costs) to the extent that:

(i) any such Extension or Expansion is undertaken for or in relation to any adjustments to Capacity occurring (or which, but for the Extension or Expansion, would occur) as a result of the application of the provisions of the Gas Supply (Gas Quality Specifications) Act 2009 (WA); and

(ii) the funding of that Extension or Expansion was made by someone other than the Service Provider or any of the Owners or any Related Body Corporate of Service Provider or any of the Owners.

(c) Pipeline ~~extensions or expansions~~ funded by Service Provider and which form part of the Covered Pipeline such that this Access Arrangement will apply ~~Service Provider elects to cover (or which become covered)~~, under section 7.2 to any Incremental Services provided by means of them, may result in the application of a Surcharge on Users subject to Service Provider providing written notice to the Regulator, and the Regulator approving the same, in accordance with Rule 83 of the NGR.

Amend the definition of "Incremental Services" in the access arrangement as follows:

Incremental Services means pipeline services (as defined in the NGL) provided by means of an Extension or Expansion;

Amend the definition of "Expansion" as follows:

Expansion means additions of plant or pipeline made by Service Provider to the Covered Pipeline which result in an increase in Capacity;

Amend the definition of "Capacity" as follows:

"Capacity means the measure of the potential of the Covered Pipeline as currently configured from time to time during the life of the Access Arrangement, to deliver a particular Service between a Receipt Point and a Delivery Point at a point in time;"

Capacity Trading Requirements

Regulatory Requirements

2350. A full access arrangement must, inter alia, set out capacity trading requirements (rule 48(1)(f) of the NGR).

2351. Rule 105 of the NGR provides for capacity trading requirements.

105 Capacity trading requirements

- (1) Capacity trading requirements must provide for transfer of capacity:
 - (a) if the service provider is registered as a participant in a particular gas market – in accordance with rules or Procedures governing the relevant gas market; or
 - (b) if the service provider is not so registered, or the relevant rules or Procedures do not deal with capacity trading – in accordance with this rule.
- (2) A user may, without the service provider's consent, transfer, by way of subcontract, all or any of the user's contracted capacity to another (the **third party**) with the following consequences:

- (a) the transferor's rights against, and obligations to, the service provider are (subject to paragraph (b)) unaffected by the transfer; but
- (b) the transferor must immediately give notice to the service provider of:
 - (i) the subcontract and its likely duration; and
 - (ii) the identity of the third party; and
 - (iii) the amount of the contracted capacity transferred.
- (3) A user may, with the service provider's consent, transfer all or any of the user's contracted capacity to another (the third party) with the following consequences:
 - (a) the transferor's rights against, and obligations to, the service provider are terminated or modified in accordance with the capacity trading requirements; and
 - (b) a contract arises between the service provider and the third party on terms and conditions determined by or in accordance with the capacity trading requirements.
- (4) The service provider must not withhold its consent under subrule (3) unless it has reasonable grounds, based on technical or commercial considerations, for doing so.
- (5) An adjustment of rights and liabilities under subrule (3) does not affect rights or liabilities that had accrued under, or in relation to, the contract before the transfer took effect.
- (6) The capacity trading requirements may specify in advance conditions under which consent will or will not be given, and conditions to be complied with if consent is given.

2352. Rule 106 of the NGR provides for changing receipt and delivery points.

106. Change of receipt or delivery point by user

- (1) An access arrangement must provide for the change of a *receipt or delivery point* in accordance with the following principles:
 - (a) a user may, with the service provider's consent, change the user's *receipt or delivery point*;
 - (b) the service provider must not withhold its consent unless it has reasonable grounds, based on technical or commercial considerations, for doing so.
- (2) The access arrangement may specify in advance conditions under which consent will or will not be given, and conditions to be complied with if consent is given.

GGT's Initial Proposal

2353. GGT renamed its "Trading Policy" as "Capacity Trading" and replaced provisions in section 9 of its current access arrangement with new provisions in section 6 of its proposed revised access arrangement. GGT deleted the "Capacity management policy" in section 11 of its current access arrangement as GGT claimed it is no longer required by the NGR.

2354. GGT proposed substantial changes to the section on capacity trading to comply with rule 105 of the NGR and other APA Group access arrangements.¹¹⁹⁹ GGT proposed the following;

¹¹⁹⁹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information, Attachment 1, Log of changes to GGP Access Arrangement*, 15 August 2014, pp. 11-12.

- Section 6.1 (“governing provisions”) provided for transfers of contracted capacity to be taken either in accordance with the rules of the relevant market where parties are registered as participants or in accordance with rule 105 of the NGR and sections 6.2 and 6.3 when not participating in a gas market.
 - Section 6.2 (“assignment of contracted capacity by subcontract”) allowed the user to assign by way of subcontract, all or any of the user's contracted capacity to another person without prior consent of the service provider in accordance with the terms of the transportation agreement.
 - Section 6.3 (“other assignments”) allowed the user to assign, other than by way of subcontract, its Receipt Point MDQ or Delivery Point MDQ (or both) with GGT's prior written consent, which must not be unreasonably withheld but may be withheld on reasonable commercial and technical grounds, provided certain conditions were met.
2355. GGT included a new section 6.4, which contains the proposed conditions under which GGT is prepared to allow users to substitute receipt and delivery points.
2356. GGT also proposed the addition of new section 6.5 to address its intended meaning of the terms ‘reasonable commercial grounds’ and ‘reasonable commercial conditions’, which is used throughout section 6 of its proposed revised access arrangement.

Draft Decision

2357. The Authority required GGT to either provide adequate justification and definition for the use of “relevant parties” in section 6.1 of its proposed revised access arrangement, or revert to using “service provider” as used in rule 105(1) of the NGR.¹²⁰⁰
2358. The Authority required GGT to specify the consequences of assignment by way of subcontract as set out in paragraphs (a) and (b) in rule 105(2) of the NGR and to delete the word “prior” from proposed section 6.2. The Authority also considered that as it was not clear what terms apply to the “Transportation Agreement” as “Transportation Agreement” is defined in schedule C as “any contract entered into between the Service Provider and a User for Services for that User” so it is not necessarily a contract based on the terms and conditions attached in schedule D.
2359. The Authority was of the view that section 6.3 should be consistent with rules 105(3), 105(4), 105(5) and 105(6) of the NGR. Therefore, proposed section 6.3 should be amended to set out the “consequences” of assignment set out in rule 105(3)(a) and (b) of the NGR.
2360. The Authority considered that the penultimate paragraph of proposed section 6.3, should be amended to track more closely the wording of rule 105(4), so that it states:¹²⁰¹

¹²⁰⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 391.

¹²⁰¹ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 393.

"Service Provider must not withhold its consent to an assignment under this section 6.3 unless it has reasonable grounds, based on technical or commercial considerations, for doing so."

2361. The Authority noted that rule 105(6) of the NGR allows GGT to "specify in advance conditions under which consent will or will not be given, and conditions to be complied with if consent is given". GGT's proposed section 6.3 included a number of such conditions. The Authority considered that GGT should :
- provide an explanation as to precisely what the term "subject to any Pre-existing Contractual Rights" means;
 - satisfy why consent must be "prior written consent";
 - amend section 6.3(a) so GGT will only be allowed reimbursement of costs that it has "reasonably and properly incurred";
 - amend sections 6.3(b) and 6.3(b)(i) to require that, in exercising its rights and discretions under the provision, GGT must do so "acting reasonably, based on reasonable commercial or reasonable technical considerations";
 - clarify what "reasonable requirements" would be in the context of proposed section 6.3(c);
 - amend section 6.3(f) to require that, in exercising its rights and discretions under the provision, GGT must do so "acting reasonably, based on reasonable commercial or reasonable technical considerations";
 - clarify the meaning of "any other reasonable commercial or technical conditions" in proposed section 6.3(g); and
 - clarify that section 6.3 refers to all or any of a user's contracted capacity that might be traded, and not just capacity that has a nominated throughput associated with it.
2362. The Authority considered that while the terms of GGT's section 6.4 of its proposed revised access arrangement are largely acceptable GGT should amend section 6.4:
- to make clear the requirements for the substitution of receipt and delivery points;
 - to clarify if the notice period and response period requirements are for calendar days or for gas days; and
 - to indicate that it will respond to the user in writing within its proposed timeframe of 30 days.
2363. The Authority was of the view that the wording in the second paragraph of proposed section 6.4 was not consistent with the requirements in rule 106(1)(b) of the NGR. The Authority required GGT to:
- clarify that it's commercial and technical requirements with respect to a user's request to change delivery or receipt points will be reasonable;
 - include circumstances under which GGT may choose to impose additional conditions on the changing of delivery or receipt points; and
 - include the additional conditions that may be imposed on users who wish to change delivery or receipt points.
2364. The Authority required section 6.5 to be deleted. The Authority was concerned that the examples provided in the proposed definition for the term "reasonable

commercial grounds” were one-sided and rejected GGT’s proposed definition on the basis that it is not consistent with the NGO.

GGT’s Revised Proposal

2365. GGT deleted section 6.1(a) from its initial proposal so that section 6.1 no longer refers to participants registered to a gas market.¹²⁰²
2366. GGT accepted the Authority’s Draft Decision required amendment that proposed section 6.2 should be amended to specify the consequences of assignment as set out in rule 105(2) of the NGR and to delete the word "prior".¹²⁰³ GGT still requires the user to assign contracted capacity in accordance with the terms of the Transportation Agreement.
2367. GGT considered that it has already included the content of rule 105(3)(b) in section 6.3(b), and that the content of rule 105(3)(a) is reflected in the last paragraph of section 6.3.¹²⁰⁴ GGT accepted the Authority’s Draft Decision required amendment that the penultimate paragraph of proposed section 6.3 should be amended. GGT considers that it does not need to include an explanation as to precisely what the term “subject to any Pre-existing Contractual Rights” is supposed to mean in the context of section 6.3 as there is a definition of the term in Schedule C of the proposed revised access arrangement and notes the reference within that definition to the term as defined in the NGR.
2368. GGT provided the following justification as to why “prior written consent” is required for an assignment under section 6.3:¹²⁰⁵
- “Where consent is required under any typical commercial agreement, consent is more than not required to be written. This it to protect both parties to the agreement to ensure there is no confusion or dispute over whether consent has actually been provided and what consent was provided for. Consent can be provided by e-mail, so this is extremely unlikely to inhibit any shipper flexibility. Consent must be required prior to the occurrence for which consent is sought as Service Provider may need to withhold its consent based on commercial and/or technical grounds. Seeking consent after the event could have significant consequences for operations, efficiency and other users of a pipeline, where it is not appropriate or possible, based on technical or commercial grounds, for the assignment to proceed.”
2369. GGT accepted the following Draft Decision required amendments:¹²⁰⁶
- section 6.3(a) should be amended so GGT will only be allowed reimbursement of costs that it has "reasonably and properly incurred" (however, GGT did not make the required amendment completely, as its drafting only applies the "reasonably and properly incurred" test to some, not all, costs that are to be reimbursed);
 - sections 6.3(b) and 6.3(b)(i) should be amended to require that, in exercising its rights and discretions under the provision, GGT must do so "acting reasonably, based on reasonable commercial or reasonable technical

¹²⁰² Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement Amended in Response to ERA Draft Decision dated 17 December 2015*, February 2016, p. 30.

¹²⁰³ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 11.

¹²⁰⁴ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 12.

¹²⁰⁵ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 12.

¹²⁰⁶ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, pp. 12-13.

- considerations" (however, GGT has only made the required amendment to section 6.3(b)(i) and has not done so for section 6.3(b));
- section 6.3(c) should be amended so it is clear what the "reasonable requirements" would be if different Receipt Points or Delivery Points are proposed;
 - section 6.3(f) should be amended to require that, if the assignment requires additional facilities then GGT in exercising its rights and discretions under the provision, must do so "acting reasonably, based on reasonable commercial or reasonable technical considerations" (however, GGT has incorrectly used the word "reasonably" instead of "reasonable" in the latter two places where it occurs in the required amendment); and
 - section 6.3(g) should be amended to clarify what are the "reasonable commercial or technical conditions" referred to in it (however, GGT sought to do this by cross referring to examples set out in section 6.5 – which only purports to set out examples of reasonable *commercial* conditions, not *technical* ones).
2370. GGT did not consider it was necessary to make the Authority's draft Decision required amendment to clarify that section 6.3 refers to all or any of a user's contracted capacity that might be traded, and not just capacity that has a nominated throughput associated with it.
2371. GGT did not accept the Authority's Draft Decision required amendment to improve clarity in the first paragraph of proposed section 6.4. GGT considered that the section has sufficient clarity in that sets out a clear process for users to request change to their receipt or delivery points and GGT will consent to such requests as long as there no technical or commercial reasons preventing it from consenting. GGT states that this will likely vary from case to case.
2372. GGT amended proposed section 6.4 to clearly state that the notification timeline requirements for GGT and users are on the basis of gas days.
2373. GGT did not consider it necessary to make the Draft Decision required amendment to amend:
- section 6.4 to state that GGT will respond to the users request to change delivery or receipt points in writing (but the Authority notes GGT has in any case made the necessary change by inserting "in writing" in paragraph 3 of section 6.4); and
 - paragraph 2 to clarify that GGT's commercial and technical requirements with respect to a user's request to change delivery or receipt points will be reasonable.
2374. GGT did not accept the Authority's Draft Decision required amendment that proposed section 6.4 should be amended to include circumstances under which GGT may choose to impose additional conditions on the changing of delivery or receipt points.
2375. GGT was of the view that the Draft Decision required amendment to include in section 6.4 circumstances under which GGT may choose to impose additional conditions on the changing of delivery or receipt points was not necessary given that the inclusion of such circumstances would be speculative only and not of real assistance to users given that each situation would be dealt with on its particular

circumstances. According to GGT, imposing a set of circumstances would likely limit both GGT's and user's flexibility in the determination of conditions which may or may not be required.

2376. GGT did not accept the Authority's Draft Decision requirement that proposed section 6.4 should be amended to include the additional conditions that may be imposed on users who wish to change delivery or receipt points. GGT states that rule 106(2) provides that the access arrangement "may" specify in advance, conditions under which consent will or will not be given, and conditions to be complied with if consent is given. GGT notes that given the NGR does not require specification, GGT does not consider the request warranted and further considers that such an inclusion would not be useful to users since the conditions which may be imposed would be dependent on each set or circumstances.
2377. GGT did not accept the Authority's Draft Decision required amendment that proposed section 6.5 should be deleted as it notes that the purpose of this clause is to provide guidance as to what "reasonable commercial grounds" may be. GGT states that the examples are inclusive only and do not in any way suggest that GGT will not assess each request on its own circumstances and in a reasonable manner as it is required to do.

Submissions

2378. The Authority did not receive any submissions relating to proposed capacity trading requirements in the proposed revised access arrangement.

Considerations of the Authority

2379. The Authority considers that GGT's deletion of section 6.1(a) of the proposed revised access arrangement is acceptable as there is no formal gas capacity trading market in Western Australia.
2380. Section 6.2 of the proposed revised access arrangement requires an assignment by the user by way of subcontract to be "in accordance with the terms of the Transportation Agreement". In its Draft Decision,¹²⁰⁷ the Authority noted that, given the breadth of the definition of "Transportation Agreement" in schedule C (including that it is not necessarily a contract based on the Terms and Conditions attached in schedule D), it is "*not clear what terms apply to the "Transportation Agreement" and whether it contains any terms that are consistent with rule 105(2) of the NGR.*" However, the Authority notes that the definition of "Transportation Agreement" in schedule C has now been amended (as required by the Authority in its Draft Decision)¹²⁰⁸ to clarify that, as regards the Firm Service, the "Transportation Agreement" means "*a contract entered into between the Service Provider and a User using the Order Form and the Terms and Conditions [i.e. those in schedule D], and where used in relation to such a User, means that User's contract for the Firm Service.*" The Authority is therefore satisfied that the "Transportation Agreement" is now appropriately defined for the purposes of the cross-reference to it in section 6.2. However, the Authority is still concerned to ensure that the applicable terms of

¹²⁰⁷ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, pp. 391-392.

¹²⁰⁸ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 581.

- the Transportation Agreement relating to assignments by users are not inconsistent with the terms in section 6 of the revised proposed access arrangement.
2381. In this regard, clause D.36 of the Terms and Conditions sets out the various means of assignment and these include at clauses D.36.8 and D.36.9 provisions which the Authority considers need to be consistent with the substance of sections 6.2 and 6.3 respectively of the proposed revised access arrangement. The Authority notes that they are currently not fully consistent. Accordingly, the Authority requires that, in addition to amending the provisions in section 6 of the proposed revised access arrangement in accordance with this Final Decision, the corresponding provisions in Clause D.36 of the Terms and Conditions should also be amended as necessary to make them substantially the same as the provisions in section 6 of the proposed revised access arrangement as amended in accordance with this Final Decision. Once that is done, the Authority is satisfied that it is acceptable for GGT's proposed section 6.2 to require the user to assign, by way of subcontract, its contracted capacity "in accordance with the terms of the Transportation Agreement".
2382. The Authority notes that, sections 6.2(a) and (b) refer to "transfer" and "transferred" respectively, whereas the opening paragraph of section 6.2 refers to "assignment" by way of subcontract, and the corresponding clause in the Terms and Conditions (clause D.36.8) also uses "assignment" (not "transfer") terminology throughout. The Authority also notes that the corresponding provision in NGR 105(2) refers to "transfer" throughout. The Authority considers that the same terminology (whether "assignment" or "transfer") should be used consistently throughout section 6.2 and clause D.36.8 in the Terms and Conditions to avoid any potential uncertainty or confusion. Accordingly the Authority requires that "assignment" and "assign" be used in sections 6.2(a) and (b) instead of "transfer" and "transferred" respectively.
2383. In Appendix 9 to its Draft Decision at pp. 574-575, the Authority noted that:
- "Proposed clause 108 [now clause D.36.8] accords with rule 105(2) of the NGR, except that the requirement in proposed clause 108(b)(iii) [now clause D.36.8(b)(iii)] for the User to give GGT notice of "*any other details (other than price) reasonably requested by Service Provider*" does not appear to be an NGR requirement.
- GGT has not explained why it has included this requirement for additional details in proposed clause 108(b)(iii), nor has the Authority received any submissions specifically concerning this requirement for additional details.
- While these additional words are not included in rule 105(2) of the NGR, the Authority notes that the requirement is subject to a reasonableness test and the Authority considers their inclusion to be acceptable.
- Proposed section 6.2 of the AA must also be amended to be consistent with this change."
2384. The Authority notes that GGT has not made any change to section 6.2(b)(iii) to add the words "*and any other details (other than price) reasonably requested by Service Provider*" so as to make section 6.2 consistent with clause D.36.8(b)(iii) of the Terms and Conditions. The Authority remains of the view that section 6.2 should be consistent with clause D.36.8 of the Terms and Conditions. Accordingly, the Authority requires that section 6.2 be amended to add the words "*and any other details (other than price) reasonably requested by Service Provider*".
2385. In its Draft Decision, the Authority required that "proposed section 6.3(a) should be amended so GGT will only be allowed reimbursement of costs that it has "reasonably and properly incurred". While GGT accepted this required amendment it did not make the required amendment completely. In particular, GGT's proposed

amendment only applies the "reasonably and properly incurred" test to some, but not all, costs that are to be reimbursed. That is because in section 6.3(a), GGT has inserted the words "which it has reasonably and properly incurred" immediately before, not after, the closing bracket following the words "reasonably required" and this has the effect that the requirement embodied in the words "which it has reasonably and properly incurred" only applies to the costs that are identified by the words within the brackets. This is narrower than what was required by the Authority's required amendment. No explanation for this shortcoming was given by GGT and the Authority assumes it was an unintentional mistake. The Authority therefore requires that the "reasonably and properly incurred" requirement should apply to all costs and expenses the Service Provider seeks reimbursement for under section 6.3(a). Accordingly, the Authority repeats its previous requirement that proposed section 6.3(a) be amended so GGT will only be allowed reimbursement of costs and expenses that it has "reasonably and properly incurred" – refer to Required Amendment 18 below.

2386. GGT asserts that the consequences of assignment in NGR 105(3)(b) are reflected in section 6.3(b) of the access arrangement. The Authority notes that NGR 105(3)(b) provides that a contract between GGT and the transferee will "arise" as a "consequence" of the transfer, and that the transfer requires GGT's consent. In accordance with NGR 105(4), GGT can only withhold that consent (and so stop the transfer happening) if "it has reasonable grounds, based on technical or commercial considerations, for doing so". So, by asserting that the consequences of assignment in NGR 105(3)(b) are reflected in section 6.3(b), GGT appears to be saying in effect that the requirement it is imposing in section 6.3(b) of the access arrangement for the assignee to enter into a Transportation Agreement is a "reasonable ground" referred to in NGR 105(4) (for which it would be reasonable for GGT to refuse to consent to the transfer if the transferee did not comply). That is, GGT is requiring a new Transportation Agreement to be entered into (i.e. a form of novation), before it will consent to the assignment. While GGT does not provide its reasons for requiring this, the Authority accepts that, in principle, to effect a "transfer" of all or any of the user's contracted capacity (as contemplated by NGR 105(3)) it is reasonable that assignees be required to enter into a contract that ensures they acquire not just an assignment of the contracted capacity rights but also substantially the same obligations in relation to those rights as the transferring user has under its Transportation Agreement.
2387. However, in this regard the Authority notes that GGT has used the words "in a form and substance similar" in section 6.3(b), and that the word "similar" would potentially allow GGT to seek terms for a Transportation Agreement with an assignee that were not "substantially the same" as those the assignor has in relation to the rights it is assigning. Accordingly, the Authority requires that in section 6.3(b) the words "*in a form and substance similar to the User's Transportation Agreement*" be deleted and replaced with the words "*that is being assigned in a similar form to, and on substantially the same terms as, the User's Transportation Agreement*".
2388. GGT accepted sections 6.3(b) and 6.3(b)(i) should be amended to require that, in exercising its rights and discretions under the provision, GGT must do so "acting reasonably, based on reasonable commercial or reasonable technical considerations".¹²⁰⁹ However, GGT has only made the required amendment to section 6.3(b)(i) and has not done so for section 6.3(b) (as was required). The Authority is of the view that this omission needs to be corrected. No explanation for

¹²⁰⁹ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 12.

- this omission was given and the Authority assumes it was an unintentional mistake. Accordingly, the Authority requires that section 6.3(b) be further amended by inserting the following words immediately after the words "*acceptable to Service Provider*" on the second line of the paragraph: "*(acting reasonably, based on reasonable commercial or reasonable technical considerations)*".
2389. The Authority also notes that GGT has proposed amending clause D.36.9(c) (prudent pipeline operator" test) of the Terms and Conditions by adding the words "having regard to what would be the reasonable requirements of a prudent pipeline operator" at the end of the paragraph that do not appear in section 6.3(c). The Authority considers that this proposed addition to clause D.36.9(c) is acceptable subject to using the correct defined term "reasonable and prudent pipeline operator" instead of just "prudent pipeline operator". The Authority therefore requires that section 6.3(c) should be amended by inserting the following words immediately before the semi colon at the end of the paragraph: "*having regard to what would be the reasonable requirements of a reasonable and prudent pipeline operator*".
2390. GGT accepted section 6.3(f) should be amended to require that, if the assignment requires additional facilities then GGT in exercising its rights and discretions under the provision, must do so "acting reasonably, based on reasonable commercial or reasonable technical considerations". However, in making the required amendment GGT has incorrectly used the word "reasonably" instead of "reasonable" in the latter two places where it occurs in the required amendment. No explanation for this was given and the Authority assumes it was a typographical error. Accordingly, the Authority requires that section 6.3(f) be further amended by replacing the last two occurrences of the word "*reasonably*" in the paragraph with the word "*reasonable*".
2391. The Authority notes GGT's proposed amendment to section 6.3(g) does not adequately clarify what are the "reasonable commercial or technical conditions" referred to in it as it merely cross-refers to examples set out in section 6.5 – which only purports to set out examples of reasonable *commercial* conditions, not *technical* ones, and which, for the reasons set out below, is in any case to be deleted. Accordingly, the Authority is of the view that in the circumstances it is better that no examples be given and therefore requires that section 6.3(g) be amended by deleting the following words: "*examples of which are set out in section 6.5*".
2392. The Authority rejects GGT's assertion that the last paragraph of section 6.3 sets out the consequences of assignment highlighted in rule 105(3)(a). The last paragraph of section 6.3 currently only deals with NGR 105(5), not NGR 105(3)(a). Rule 105(3)(a) states that a user may, with the service provider's consent, transfer all or any of the user's contracted capacity to another (**the third party**) with the consequence that the transferor's rights against, and obligations to, the service provider are terminated or modified in accordance with the capacity trading requirements. NGR 105(5) provides that an adjustment of rights and liabilities under NGR 105(3) does not affect rights or liabilities that had accrued under, or in relation to, the contract before the transfer took effect. So, consistent with NGR 105(5), the last paragraph of section 6.3 provides that "an assignment made under this section 6.3 does not affect rights or liabilities that had accrued under, or in relation to, the Transportation Agreement before the relevant assignment took effect. For consistency with NGR 105(3)(a), therefore, the Authority requires that the last paragraph of section 6.3 be amended by adding the following words in place of the word "An" at the beginning of the paragraph:
- "Where a User assigns its Contracted Capacity in accordance with this section 6.3, the User's rights and obligations under or in relation to its Transportation Agreement in relation to such of its Contracted Capacity as is so assigned, will, when that

assignment takes effect, transfer to the assignee absolutely (subject only to any modifications or changes made by virtue of the Transportation Agreement executed by Service Provider and assignee referred to in section 6.3(b)) and will terminate and be of no further effect as between the User and Service Provider. However, unless expressly agreed otherwise between the User, the assignee and Service Provider, an..."

2393. The Authority also notes that, consistent with the Authority's required amendment in Appendix 9 to its Draft Decision, GGT has proposed amending clause D.36.9 (assignment) of the Terms and Conditions by adding what is now clause D.36.9(j) requiring GGT to notify the User within 30 days whether or not it consents to the assignment.¹²¹⁰ The Authority considers that GGT's proposed addition of clause D.36.9(j) is acceptable subject to replacing "advise" with "notify", so as to use terminology more clearly consistent with clause D.40 (Notices), and "days" with "Gas Days" so as to use the defined terminology. The Authority remains of the view that section 6.3 should be consistent with clause D.36.9 of the Terms and Conditions. The Authority therefore requires that section 6.3 should be amended by inserting the following words as a final paragraph at the end of section 6.3:

"Service Provider must, within 30 Gas Days of receiving User's request to assign its Contracted Capacity under section 6.3, notify User whether or not it consents to the assignment."

2394. With regard to the opening paragraph of section 6.3, the Authority accepts GGT's assertion that the definition of the term "Pre-existing Contractual Rights" is in Schedule D of the proposed revised access arrangement and is in accordance with the NGL. The Authority is also satisfied with GGT's justification as to why "prior written consent" is necessary.
2395. The Authority rejects GGT's assertion that providing clarity that proposed section 6.3 refers to all or any of a user's contracted capacity that might be traded, and not just capacity that has a nominated throughput associated with it, is unnecessary. As stated in the Draft Decision, the Authority questions why GGT is not consistent in its reference of a user's contracted capacity (rather than MDQ) in sections 6.2 and 6.3. The Authority therefore, requires section 6.3 to be amended so that it refers to all or any of a user's contracted capacity that might be traded, and not just capacity that has a nominated throughput associated with it. (Refer to Required Amendment 18 below)
2396. The Authority is satisfied that the first paragraph of section 6.4 contains sufficient clarity with regard to GGT's requirements for the substitution of receipt and delivery points. The Authority also notes that GGT has added gas days and that it will respond to users in writing.
2397. GGT has provided no good justification why it has not made the Authority's required amendment to section 6.4 (for compliance with NGR 106(1)(b)), when GGT has made a substantially identical change to the penultimate paragraph of section 6.3 (for compliance with NGR 105(4) - which is substantially identical to NGR 106(1)(b)). In any case, the Authority is of the view that GGT must comply with rule 106(1)(b). Therefore, the Authority requires that GGT amend the second paragraph of proposed section 6.4 to read as follows:

¹²¹⁰ Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 577.

"Service Provider must not withhold its consent to all or part of the above request or make its consent subject to conditions, unless it has reasonable grounds, based on technical or commercial considerations, for doing so."

2398. The Authority notes GGT's view that the inclusion in the access arrangement of circumstances under which GGT may choose to impose additional conditions on the changing of delivery or receipt points would be speculative only and not of real assistance to users given that each situation would be dealt with on its particular circumstances and would likely limit both GGT's and user's flexibility in the determination of conditions which may or may not be required.
2399. The Authority accepts that rule 106(2) of the NGR provides that the access arrangement may specify in advance, conditions under which consent will or will not be given, and conditions to be complied with if consent is given. In circumstances where no users have made submissions addressing this issue, the Authority accepts GGT's reasoning and no longer requires an amendment to section 6.4 to specify circumstances when additional conditions may apply.
2400. With regard to proposed section 6.5, as stated in the Draft Decision, the Authority accepts that there may be some benefit to both the service provider and to any prospective and existing users for the term 'reasonable commercial' to be defined in the access arrangement. However, the Authority has assessed whether the examples provided by GGT are consistent with the NGO and determined that the examples provided in the proposed definition are one-sided and may have the effect of preventing an objective assessment of reasonableness taking into account all of the relevant circumstances. For example, the Authority notes that:
- In both the first paragraph of section 6.5 and in the example given in paragraph (b) of section 6.5, GGT considers it is a "reasonable commercial" ground or condition that GGT "receive at least the same amount of revenue" after the change as it did before. The Authority does not think that this is a reasonable ground or condition as it could effectively provide GGT with a guarantee of future revenue after the change that it did not have before the change. That is because the revenue GGT was receiving before the change would depend on a number of variables that would mean it is unlikely to remain constant into the future, even if there is no assignment. For example, while some revenue would derive from charges that are constant in nature (e.g. take-or-pay for capacity reservation), other revenue would derive from charges that are variable in nature (e.g. based on throughput of gas or overruns) and so there is no guarantee that that revenue would remain constant.
 - Similarly, in the first paragraph of section 6.5, the reference to "allowing Service Provider to deliver the same amount of the Service" is not a reasonable ground or condition, to the extent any Service volumes are not currently fixed, as it could also effectively provide GGT with a guarantee of future revenue after the change that it did not have before the change. A similar point may arise under paragraph (a) in section 6.5.
 - In the first paragraph of section 6.5, the reference to "bear no additional capital or non-capital costs" is not a reasonable (or fair) ground or condition as, to the extent such costs are not currently fixed, it could also effectively provide GGT with a guaranteed cap on its costs after the change that it did not have before the change. A similar point may arise under paragraph (b) in section 6.5.
2401. Therefore, the Authority rejects GGT's proposed definition for the term "reasonable commercial grounds" for the purposes of this access arrangement on the basis that

it is not consistent with the NGO and the Authority requires that section 6.5 be deleted.

2402. The Authority requires that GGT's proposed revised access arrangement be amended in line with the required amendments below.

Required Amendment 18

Amend section 6.2(a) of the revised proposed access arrangement by deleting the word "*transfer*" and replacing it with the word "assignment".

Amend section 6.2(b)(iii) by deleting the word "transferred" and replacing it with the words "assigned and any other details (other than price) reasonably requested by Service Provider".

Amend section 6.3(a) as follows:

"(a) the User pays Service Provider's reasonable costs and expenses (including legal costs, and internal costs ~~and other costs~~) as reasonably determined and which ~~it~~ Service Provider has reasonably and properly incurred), in respect of application for consent (whether or not the assignment proceeds to completion) and any assignment;"

Amend section 6.3(b) as follows:

"(b) Service Provider and the assignee execute a Transportation Agreement acceptable to Service Provider (acting reasonably, based on reasonable commercial or reasonable technical considerations) in relation to the Receipt Point MDQ or Delivery Point MDQ Contracted Capacity (that is being assigned) in a similar form and substance similar to, and on substantially the same terms as, the User's Transportation Agreement;

Amend section 6.3(c) as follows:

"(c) the Receipt Point MDQ or Delivery Point MDQ Contracted Capacity to be assigned relates to the User's Receipt Point and Delivery Points under the User's Transportation Agreement or, if different Receipt Points or Delivery Points are proposed, the assignee meets Service Provider's reasonable technical and commercial requirements in relation to the assignment of Receipt Point MDQ or Delivery Point MDQ Contracted Capacity to those different Receipt Points or Delivery Points having regard to what would be the reasonable requirements of a reasonable and prudent pipeline operator;"

Amend section 6.3(f) as follows:

"(f) if the assignment of part or all of the Receipt Point MDQ or Delivery Point MDQ Contracted Capacity to the assignee requires additional facilities at the Receipt Point or Delivery Point, the User or the assignee (or both) agree to pay Service Provider for the cost of construction on terms and conditions reasonably determined by Service Provider (acting reasonably, based on ~~reasonably~~ reasonable commercial or ~~reasonably~~ reasonable technical considerations);"

Amend section 6.3(g) by deleting the words "examples of which are set out in section 6.5".

Amend the last paragraph of section 6.3 by adding the following words in place of the word "An" at the beginning of the paragraph:

"Where a User assigns its Contracted Capacity in accordance with this section 6.3, the User's rights and obligations under or in relation to its Transportation Agreement

in relation to such of its Contracted Capacity as is so assigned, will, when that assignment takes effect, transfer to the assignee absolutely (subject only to any modifications or changes made by virtue of the Transportation Agreement executed by Service Provider and assignee referred to in section 6.3 (b)) and will terminate and be of no further effect as between the User and Service Provider. However, unless expressly agreed otherwise between the User, the assignee and Service Provider, an..."

Add the following as a new paragraph at the end of section 6.3:

"Service Provider must, within 30 Gas Days of receiving User's request to assign its Contracted Capacity under section 6.3, notify User whether or not it consents to the assignment."

Amend section 6.3 by replacing all and any references in the section 6.3 to "*Receipt Point MDQ or Delivery Point MDQ (or both)*" or to "*Receipt Point MDQ or Delivery Point MDQ*", with "*Contracted Capacity*" and make all such other amendments (if any) as are necessary or desirable to clarify that section 6.3 refers to all or any of a user's Contracted Capacity that might be traded, and not just capacity that has a nominated throughput associated with it.

Amend the second paragraph of section 6.4 as follows:

"Service Provider ~~may~~ must not withhold its consent to all or part of the above request ~~on reasonable commercial or technical grounds~~ or make its consent subject to conditions, ~~which are on~~ unless it has reasonable ~~commercial or technical~~ grounds, based on technical or commercial considerations, for doing so."

Delete section 6.5.

Once the above amendments have been made to the provisions in section 6, amend the corresponding provisions in Clause D.36 of the Terms and Conditions as necessary to make them substantially the same as the provisions in section 6 of the revised proposed access arrangement (as amended in accordance with this Final Decision).

Trigger Events

Regulatory Requirements

2403. The NGR provides for the inclusion of a trigger event for accelerating the review submission date.

51 Acceleration of review submission date

- (1) The *review submission* date fixed in an access arrangement advances to an earlier date if:
 - (a) the access arrangement provides for acceleration of the review submission date on the occurrence of a trigger event; and
 - (b) the trigger event occurs; and
 - (c) the *review submission* date determined, in accordance with the access arrangement, by reference to the trigger event, is earlier than the fixed date.

- (2) A trigger event may consist of any significant circumstance or conjunction of circumstances.

Examples:

1. A re-direction of the flow of natural gas through the pipeline.
 2. A competing source of natural gas becomes available to customers served by the pipeline.
 3. A significant extension, expansion or interconnection occurs.
- (3) The [Authority] may insist on the inclusion in an access arrangement of trigger events and may specify the nature of the trigger events to be included.

GGT's Initial Proposal

2404. GGT's proposed revised access arrangement does not include any trigger events. GGT considered that the circumstances which would have triggered an access arrangement revision in accordance with section 3.4 of its current access arrangement have now passed. GGT submitted that the early revision of an access arrangement is:¹²¹¹

- inconsistent with the scheme of incentive regulation provided for by the NGL(WA) and the NGR;
- inconsistent with the provision of effective incentives for efficient investment in a pipeline, as provided for in section 24(3) of the NGL(WA); and
- inconsistent with the NGO in terms of efficient investments for the long term interests of consumers in section 23 of the NGL(WA).

Draft Decision

2405. The Authority disagreed with GGT that the requirement for the inclusion of trigger events in the GGP access arrangement is against the principles of the NGO, the NGL(WA) or the NGR. The Authority considered that the inclusion of trigger events in an access arrangement provides protection for the long term interests of the consumers of natural gas, and under certain circumstances, may offer protection for the interests of pipeline owners themselves.¹²¹²

2406. However, having scrutinised GGT's forecast capital and operating expenditure, and forecast demand, the Authority was satisfied that on the basis of GGT's forecast it is unlikely that the events contained within GGT's current provisions for triggering of revisions to its access arrangement will occur. Therefore, the Authority did not require GGT to have any trigger events in its proposed revised access arrangement.

GGT's Revised Proposal

2407. In its response to the Draft Decision, GGT has neither highlighted nor queried the issue of trigger events in the proposed revised access arrangement.

¹²¹¹ Goldfields Gas Transmission Pty Ltd, *Access Arrangement Revision Proposal: Supporting Information*, 15 August 2014, p. 14.

¹²¹² Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline*, 17 December 2015, p. 400.

Submissions

2408. The Authority did not receive any submissions that related to the inclusion of trigger events in the proposed revised access arrangement.

Final Decision

2409. In light of the above, for the same reasons as outlined in the Draft Decision, the Authority does not require GGT to have any trigger events in its proposed revised access arrangement.

Terms and Conditions Applying to Firm Services

Regulatory Requirements

2410. Rule 48(d)(ii) of the NGR requires an access arrangement proposal to detail the terms and conditions for each reference service.
2411. In accordance with section 28 of the NGL(WA) and rule 100 of the NGR, the Authority must be satisfied that any proposed amendments to reference service terms and conditions are consistent with the NGO.

GGT's Initial Proposal

2412. GGT informed the Authority that it undertook a comprehensive revision of the terms and conditions applying to the provision of the reference service (firm gas transportation service) for the following reasons:
- to comply with the NGR and NGL(WA) (the previous access arrangement was under the Code);
 - to remove obsolete terms and conditions and to relocate terms and conditions to the access arrangement; and
 - to align terms and conditions with APA Group's national operations.

Draft Decision

2413. The Authority considered GGT's proposal and submissions made by BHPB and Santos. The Authority gave consideration to the following matters:
- any reasons given by GGT for its proposed variations to the existing terms and conditions;
 - the effect of each of the reference service terms and conditions contained in GGT's Proposed Revisions;
 - the factors set out in the NGR, to the extent that they are applicable; and
 - the current GGP access arrangement.
2414. The Authority did not accept GGT's proposed amendments and determined that:
- GGT's amendments were not required in order for the terms and conditions to comply with the NGR;
 - all terms and conditions for the reference service should be contained in a single document or bundle of documents annexed to the access arrangement; and
 - all changes proposed by GGT for the purpose of aligning the terms and conditions to the national APA Group terms and conditions should be reversed.
2415. The Authority determined that, in many instances, the current terms and conditions offer fairer or more reasonable terms and conditions for users and prospective users than GGT's proposed revisions. Furthermore, in the instances identified in detail in Appendix 9 of the Draft Decision, the Authority preferred the existing terms and conditions over GGT's proposed amendments for the reason that they are more likely to promote the long term interests of consumers of gas and are, therefore, more likely to achieve the NGO.

2416. The Authority considered it important that terms and conditions for a reference service included in the access arrangement are presented so they can be readily accepted by a prospective user "as is" (without requiring any further changes), if a prospective user wishes to enter a contract for the reference service. Therefore, the Authority did not approve GGT's proposed changes to the terms and conditions that have the effect of preventing those terms and conditions being in a single document or bundle of documents annexed to the access arrangement, containing all of the terms and conditions, presented in a transparent way and capable of being readily accepted as a contract without the need for negotiation.
2417. The Authority did not believe that GGT made a convincing case, or provided sufficient evidence to show, that GGT's terms and conditions needed to change to align with APA Group's national operations. The Authority considered GGT did not provide any reasonable justification that the changes were necessary to:
- comply with the NGR or any other law;
 - offer fairer or more reasonable terms and conditions for prospective users than under the current access arrangement;
 - correct errors; or
 - remove provisions that are obsolete.
2418. The Authority set out its required amendments for GGT's terms and conditions in Appendix 9 of its Draft Decision. Appendix 9, Part 1 deals with the provisions in GGT's proposed revised terms and conditions, while Part 2 deals with additional provisions the Authority requires GGT to insert or move back to the terms and conditions.

GGT's Revised Proposal

2419. GGT urged the Authority to reconsider its position in rejecting APA Group's national terms and conditions as appropriate for the GGP access arrangement terms and conditions. However, GGT stated that, if the Authority chose to maintain its rejection of the APA Group's national terms and conditions, GGT was prepared to revise its terms and conditions, as requested by the Authority, subject to a small number of changes.¹²¹³
2420. GGT states that the Authority's approach of examining GGT's proposed terms and conditions 'clause-by-clause' did not adequately respond to the total 'change of package' approach that GGT proposed and is, largely, continuing to propose.¹²¹⁴
2421. GGT submits that the APA Group national terms and conditions are largely reflected in APA's standard form gas transportation agreement, as used on all of APA's pipelines, including in Western Australia.¹²¹⁵
2422. GGT rejects the view expressed by BHPB that the revision of the terms and conditions undertaken by GGT represent a significant deterioration in the rights of both new and existing users from the current access arrangement and that the proposed amendments will increase inefficiency, raise costs and would be contrary

¹²¹³ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 18.

¹²¹⁴ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 16.

¹²¹⁵ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 16.

- to the achievement of the NGO. GGT states that, while the form of the proposed revisions to the terms and conditions differ from the current access arrangement terms and conditions, they maintain the same balance of rights and obligations between the users and the service provider, particularly on the key issues of risk allocation, operational interface and service quality.¹²¹⁶
2423. GGT submits that the AER approved the APA Group national terms and conditions as appropriate and balanced, and would not have done so if the terms and conditions represented a deterioration of rights for users.¹²¹⁷
2424. GGT agrees with the submission put forward by Santos that continual changes to terms and conditions can amount to a burden on users as they have to become familiar with, and administer different contractual terms. GGT notes that the same burden applies to service providers and consistency of contractual terms supports real operational efficiencies within APA.¹²¹⁸
2425. In support of this, GGT notes the implications of inconsistent terms and conditions for its Integrated Operations Centre (**IOC**). The IOC controls, monitors, operates and manages all of GGT's pipeline assets including the GGP. GGT advise that any deviation from its national terms and conditions can take more than a month of dedicated system configuration time and resource to input, and may require manual monitoring.¹²¹⁹
2426. GGT also submit that consistency of terms and conditions assists APA to offer benefits to users in the form of a “one-stop shop” seamless service across multiple assets’.¹²²⁰ GGT submits that the APA Group has heavily invested in operational systems capabilities to be able to provide seamless service across multiple assets, enabling users to transport gas across multiple assets under a single gas transportation agreement with a single set of nominations. In Western Australia, a multi-asset service can include transportation and service provision under a single contract covering the APA Group's assets including the GGP, Mondarra storage facility, Parmelia Pipeline (**PP**) and the Eastern Goldfields Pipeline (**EGP**).¹²²¹
2427. GGT states that a requirement that GGP services be provided under different terms and conditions will mean separate contracts and separate nominations for the GGP will be required, resulting in an inability for GGT to offer seamless services. As its national terms and conditions were developed for the express purpose of being able to be applied across the suite of the APA Group's assets, GGT sees no operational or jurisdictionally specific reason why the GGP access arrangement terms and conditions could not be aligned with the APA Group's national terms and conditions.¹²²²
2428. GGT also proposed that it meet with the ERA to “work through” its proposed changes to the terms and conditions and explain their rationale.

¹²¹⁶ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 17.

¹²¹⁷ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 17.

¹²¹⁸ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 17.

¹²¹⁹ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 17.

¹²²⁰ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 17.

¹²²¹ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 18.

¹²²² Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 18.

Submissions

2429. BHPB made submissions in response to GGT's initial proposal and to GGT's response to the Authority's Draft Decision and Santos made a submission in response to GGT's initial proposal.^{1223,1224,1225} In these submissions, BHPB and Santos both challenged the need for the wholesale changes proposed by GGT.

2430. In its initial submission, BHPB considered that GGT did not provide any compelling rationale for the changes and, as a result, the existing terms and conditions should remain. BHPB stated that the proposed amendments would increase inefficiency, raise costs and would be contrary to the achievement of the NGO. BHPB submitted that GGT's amendments:¹²²⁶

“represent a significant deterioration in the rights of both new and existing users from the current access arrangement.”

2431. Santos submitted that such wholesale change “creates an unnecessary burden on all stakeholders” and that:¹²²⁷

“Certainty is critical. Change should only be necessary where a clear error has occurred or where conditions have altered to the extent that a change is absolutely necessary. GGT has not adequately demonstrated the need for change.”

2432. In its submission in response to GGT's response to the Authority's Draft Decision BHPB submits that:¹²²⁸

“it is not acceptable for GGT to vary the terms and conditions just to align with other APA pipelines in Australia.”

Considerations of the Authority

2433. In its Draft Decision, the Authority rejected GGT's proposed amendments to the terms and conditions applying to the reference service (firm gas transportation service) on the basis that:

- GGT's amendments were not required in order for the terms and conditions to comply with the NGR;
- all terms and conditions for the reference service should be contained in a single document or bundle of documents annexed to the access arrangement; and

¹²²³ BHP Billiton, *Public Submission by BHP Billiton In Response to the Goldfields Gas Transmission Pty Limited's Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement*, 27 November 2014.

¹²²⁴ BHP Billiton, *Public Submission by BHP Billiton in Response to the Revised Access Arrangement Submitted by Goldfields Gas Transmission Pty Limited*, 11 March 2016.

¹²²⁵ Santos (BOL) Pty Ltd, *Public Submission by Santos in Response to the Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement and Access Arrangement information*, 15 August, 2014.

¹²²⁶ BHP Billiton, *Public Submission by BHP Billiton In Response to the Goldfields Gas Transmission Pty Limited's Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement*, 27 November 2014, p. 2.

¹²²⁷ Santos (BOL) Pty Ltd, *Public Submission by Santos in Response to the Proposed Revisions to the Goldfields Gas Pipeline Access Arrangement and Access Arrangement information*, 15 August, 2014, p. 1.

¹²²⁸ BHP Billiton, *Public Submission by BHP Billiton in Response to the Revised Access Arrangement Submitted by Goldfields Gas Transmission Pty Limited*, 11 March 2016, p. 6.

- all changes proposed by GGT for the purpose of aligning the terms and conditions to the national APA Group terms and conditions should be reversed.

2434. The Authority notes that GGT urged the Authority to reconsider its position in rejecting APA Group's national terms and conditions as appropriate for the GGP access arrangement terms and conditions. In its response to the Authority's Draft Decision, GGT submitted new arguments to support its proposed revised terms and conditions (based on APA's national terms and conditions). The Authority addresses each of these arguments below.

2435. The Authority also notes that GGT submitted further revisions to its terms and conditions that it considers complies with the required amendments in the Authority's Draft Decision if the Authority chose to maintain its rejection of the APA Group's national terms and conditions, subject to a small number of changes. The Authority has assessed these revisions in detail in Appendix 6 of this Final Decision.

Authority's considerations of GGT's new arguments to support its proposed revised terms and conditions (based on APA's national terms and conditions).

GGT's claim that National T&Cs maintain "same balance of rights and obligations"

2436. GGT has claimed that:

"while the form of the National T&Cs differs to the existing GGT AA terms and conditions, they substantially maintain the same balance of rights and obligations as between the Users and the Service Provider, particularly on the key issues of risk allocation, operational interface and service quality¹²²⁹...the Authority's clause-by-clause approach cannot adequately respond to total "change of package" which GGT had proposed and is, largely, continuing to propose".¹²³⁰

2437. The Authority considers GGT has not shown that this claimed "same balance of rights and obligations" actually exists or how it is maintained in practice. The Authority compared GGT's proposed new terms and conditions against the current GGP terms and conditions (which resulted in Appendix 9 to the Draft Decision). This comparison showed clearly that users would overall be worse off under GGT's proposed new terms and conditions, in terms of allocation of risk and liability, when compared with their position under the current GGP terms and conditions. The submissions received from BHPB and Santos did not indicate they perceived GGT's proposed changes would "maintain the same balance of rights and obligations as between the Users and the Service Provider, particularly on the key issues of risk allocation, operational interface and service quality".

2438. The Authority considers GGT has not explained why the Authority's clause-by-clause approach (which highlighted a large number of negative outcomes for users) is not an adequate response or how GGT's "total change of package" is justified under the NGO.

2439. The Authority is, therefore, of the view that GGT has not adequately justified its claims.

¹²²⁹ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 17.

¹²³⁰ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 16.

GGT's claims about the Australian Energy Regulator's approval

2440. GGT claimed that "The AER approved the National T&Cs as appropriate and balanced, and would not have done so if the terms represented a deterioration of rights for users."¹²³¹
2441. The Authority notes that approval by other regulators is neither conclusive nor necessarily relevant to establishing whether GGT's proposed terms and conditions overall, achieve the NGO better than the existing terms and conditions or at all. Other regulators may have had different context, circumstances and reasons for their decisions. The question for the Authority is whether the changes GGT is proposing are consistent with the NGO in the context and other circumstances in which they are being proposed.

GGT's claims about operational efficiencies and benefits to users

2442. GGT has claimed that

"From the perspective of APA, consistency of terms results in real operational efficiencies. In 2015, APA established an Integrated Operations Centre (IOC) in Brisbane, which controls, monitors, operates and manages all of its pipeline assets nationally, including the GGP. APA's Gas Contracts Administrators administer the operational and billing aspects of APA's gas transportation agreements, including for the GGP. They also configure the User interface platform, called Energy Components (EC), to enable Users to be provided with near real time information relating to their nominations, scheduling, system use gas requirements and billing information. Any deviation from the National T&Cs can take more than a month of dedicated system configuration time and resource to input, and may require ongoing manual monitoring. Gas transportation agreements reflective of the National T&Cs are far more speedily and efficiently able to be set up in the EC system. This reduces operational costs for the Service Provider but also enables far quicker service commencement for Users, which particularly for shorter term contracts, is often an imperative for Users."¹²³²

"APA has invested heavily in its operational systems capabilities to be able to provide Users with a "one-stop shop" seamless service across multiple assets, enabling Users to transport gas across multiple assets under a single gas transportation agreement with a single set of nominations. On the East Coast, this is referred to as the "East Coast Grid" multi-asset service and has proved extremely popular with Users. In Western Australia, the multi-asset service can include transportation and service provision under a single contract covering the GGP, Mondarra Storage facility, Parmelia Pipeline and the newly constructed Eastern Goldfields Pipeline. The National T&Cs, as reflected in APA's standard form agreement, provides for consistency across that suite of assets enabling provision of seamless multi-asset services. A requirement that GGP services be provided under different terms and conditions will mean separate contracts and separate nominations for the GGP will be required, resulting in an inability to offer the seamless services currently offered on the East Coast."¹²³³

2443. The Authority considers GGT has not demonstrated that basing terms and conditions on the APA Group national terms and conditions will achieve operational efficiencies. GGT has not provided evidence to quantify or otherwise justify these claimed operational efficiencies, including "reduced operational costs" and "quicker service commencement". Further, GGT has not shown how any operational efficiencies compare against the apparent detriments for users through having

¹²³¹ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 17.

¹²³² Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 17.

¹²³³ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, pp. 17-18.

reduced rights and greater risks and obligations under GGT's proposed changes to the terms and conditions (based on the APA Group national terms and conditions) as compared to under the current terms and conditions.

2444. GGT also submit that consistency of terms and conditions assists APA to offer benefits to users in the form of a “one-stop shop” seamless service across multiple assets’.¹²³⁴ However, the Authority considers GGT has provided no evidence to justify its claim that users, or prospective users, of the GGT are in favour of GGT's proposed changes to the terms and conditions.
2445. The Authority notes that it has received no submissions from users or prospective users of the GGT supporting GGT's proposed terms and conditions based on the APA Group national terms and conditions at all. On the contrary, all submissions that have been received have been most emphatically against GGT's proposed changes to the terms and conditions.

Authority’s considerations of GGT's further revisions to its terms and conditions that it considers complies with the required amendments in the Authority’s Draft Decision.

2446. The Authority considers that GGT has not adequately justified that its proposed change from its current terms and conditions for the GGP to its proposed new terms and conditions for the GGP (based on the APA Group national standard terms and conditions) would be consistent with the NGR and the NGO. On this basis, the Authority maintains its rejection from its Draft Decision of GGT's proposed revised terms and conditions for the GGP (based on the APA Group national standard terms and conditions).
2447. The Authority has, therefore, considered GGT's proposal to revise its proposed revised terms and conditions for the GGP as required by the Authority in Appendix 9 of the Draft Decision, subject to a "small number of changes". In its Response to the Draft Decision, GGT provided the Authority with a revised version of its proposed revised access arrangement (including its proposed revised terms and conditions), and a supporting submission that addresses the Authority’s required amendments in the Authority's Draft Decision.^{1235 1236}
2448. Where GGT has rejected the Authority’s required revisions, the Authority has assessed the "small number of changes" proposed by GGT to assess whether individually, or in combination with other terms and conditions, they render the proposed terms and conditions inconsistent with the NGR. This includes assessing whether the proposed changes are consistent with the NGO and better promote the NGO than the existing terms and conditions. Where GGT has indicated that it has accepted the Authority’s required revisions, the Authority has assessed if GGT's changes to its proposed terms and conditions shown in its Amended Revised Access Arrangement properly reflect the Authority's required amendments in Appendix 9 of the Draft Decision. The Authority’s considerations and required amendments for GGT’s proposed revised terms and conditions are set out in Appendix 6 of this Final Decision.

¹²³⁴ Goldfields Gas Transmission Pty Ltd, *Response to ERA Draft Decision*, February 2016, p. 17.

¹²³⁵ Goldfields Gas Transmission Pty Ltd, *Proposed Revised Access Arrangement, amended in response to ERA Draft Decision dated 17 December 2015*, January 2016.

¹²³⁶ Goldfields Gas Transmission Pty Ltd, *Submission on Proposed Revisions to the Access Arrangement for the Goldfields Gas Pipeline Terms and Conditions (GGT’s Response Attachment 1)*, February 2016.

2449. In its assessment of the proposed terms and conditions, the Authority has also considered the following matters:
- the reasons given by GGT for its proposed variations to the existing terms and conditions;
 - relevant issues raised in public submissions by existing and prospective shippers;
 - the relevance and appropriateness of the proposed terms and conditions to the reference service;
 - the effect of each of the proposed reference service terms and conditions as compared to the existing terms and conditions; and
 - the factors set out in the NGR, to the extent that they are applicable, including the consistency of the proposed terms and conditions with achieving the NGO.
2450. As in the Draft Decision the Authority's Final Decision assessment of GGT's revised proposed terms and conditions are set out in two parts. , Part 1 deals with the provisions in GGT's proposed revised terms and conditions while Part 2 deals with additional provisions, which the Authority requires GGT to insert or move back to the terms and conditions. The table in Part 1 mirrors the clauses in GGT's revised proposed terms and conditions that the Authority requires to be amended.
2451. In summary the Authority requires amendments to GGT's proposed revised terms and conditions, detailed in Appendix 6 of this Final Decision, to:
- more correctly adopt some of the Authority's required amendments in the Draft Decision;
 - amend some of the Authority's required amendments in the Draft Decision, as a result of GGT's response;
 - improve the clarity of the terms and conditions;
 - reinstate the Authority's required amendments in the Draft Decision that GGT accepted but did not actually change in the terms and conditions; and
 - correct drafting errors, incorrect cross-references and definitions.
2452. The Authority considers that the required amendments in Appendix 6 are required in order to better promote the NGO.
2453. GGT proposed that it meet with the ERA to "work through" its proposed changes to the terms and conditions and explain their rationale. The Authority considers that GGT had an opportunity to explain its rationale in its response to the Draft Decision. The Authority had concerns about procedural fairness obligations to other interested parties if it met solely with GGT. The Authority did not consider it necessary to conduct further consultation on this matter in addition to the standard consultation prescribed in the NGR and did not meet with GGT.

Final Decision

2454. The Authority rejects GGT's revised proposed terms and conditions for the GGP based on the APA Group national standard terms and conditions, as initially proposed by GGT.

2455. The Authority accepts GGT's revised proposed terms and conditions in its proposed revised access arrangement amended in response to the Authority's Draft Decision, subject to GGT making the required amendments set out in Appendix 6.

Required Amendment 19

Amend the proposed revised terms and conditions in the Proposed Revised Access Arrangement amended in response to the Authority's Draft Decision in accordance with the required amendments set out in Appendix 6.

Appendices

Appendix 1	Summary of Required Amendments	550
Appendix 2	Abbreviations	558
Appendix 3	Automatic updating formulas for the return on debt	562
Appendix 4	International Bond Sample	597
Appendix 5	Depreciation methods compared	600
Appendix 6	Authority's required amendments to GGT's revised Terms and Conditions applying to the firm service.	605
Appendix 7	Public Reference Tariff Model	675

Appendix 1 Summary of Required Amendments

Required Amendment 1

Amend the following sentences under section 1.7 of the proposed revised access arrangement as follows:

Service Provider will submit revisions to this Access Arrangement (Proposed Revisions) to the Regulator on or before 1 January 2019, ~~or four Years from the commencement date of this Access Arrangement, whichever is the later~~ (Review Submission Date).

The revisions to this Access Arrangement are intended to ~~will~~ commence on the ~~later of~~ 1 January 2020 ~~and the date on which the approval by the Regulator of the revisions to the Access Arrangement takes effect under the National Gas Rules (Revisions Commencement Date)~~.

~~In the event that the Access Arrangement Proposed Revisions in relation to the Access Arrangement Period next following the period of this Access Arrangement ("Next Access Arrangement") does not come into effect on the intended Revisions Commencement Date this Access Arrangement will not expire until the date after the Revisions Commencement Date on which the Regulator specifies that the Next Access Arrangement comes into effect.~~

~~Service Provider may also at any time between the commencement of this Access Arrangement and the Review Submission Date, submit revisions to this Access Arrangement to the Regulator under Rule 52.~~

Required Amendment 2

MDQ and MHQ

Amend section 2.2.2(d) of GGT's proposed revised access arrangement as follows:

(d) Except as an Authorised Overrun, Service Provider will not be obliged:

(i) on any Gas Day, to receive or deliver a quantity of Gas greater than the Firm MDQ applicable Receipt Point MDQ ~~or to deliver at any Delivery Point a quantity of Gas greater than the applicable Delivery Point MDQ;~~

(ii) on any Gas Day, to receive at a Receipt Point a quantity of Gas, excluding System Use Gas and the User's Linepack, greater than the applicable Receipt Point MDQ ~~or to deliver at any Delivery Point a quantity of Gas greater than the applicable Delivery Point MDQ;~~ or

(iii) in any Hour, to receive at a Receipt Point a quantity of Gas greater than the MHQ for that Receipt Point, ~~or to deliver at any Delivery Point a quantity of Gas greater than the MHQ for that Delivery Point, greater than the applicable Receipt Point MDQ or to deliver at any Delivery Point a quantity of Gas greater than the applicable Delivery Point MDQ.~~

Overrun

Delete section 2.2.3(k) of GGT's proposed revised access arrangement and replace it with the following (as per the Authority's Draft Decision Required Amendment 2 to reinstate clause 7.3(d) of the existing terms and conditions in place of GGT's proposed section 2.2.4(l), which was accepted but not implemented by GGT in its revised access arrangement proposal):

"(k) If for a period of 30 Gas Days the Daily Overrun Quantity at the Delivery Point for each of those Gas Days is positive then Service Provider may give notice to the User ("Overrun Notice"). If on any Gas Day after the expiry of 7 Gas Days from receipt of the Overrun Notice, the User's Daily Overrun Quantity at the Delivery Point is positive then with effect from the next Gas Day the User's MDQ will be increased by either:

- (i) the average of the Daily Overrun Quantity at the Delivery Point for a period of 12 months; or
- (ii) if the Transportation Agreement has been in force for less than 12 Months then the average of the Daily Overrun Quantity at the Delivery Point between the Commencement Date and the date of the Overrun Notice,
- and the Transportation Agreement will be deemed to be amended accordingly.

So that the proposed revised terms and conditions for the Firm Service are consistent with section 2.2.3 of GGT's proposed revised access arrangement, insert a new clause D.8A in the proposed revised terms and conditions for the Firm Service in accordance with the required amendments in Part 2 of Appendix 6.

Minimum Term

Amend section 2.2.4 of GGT's revised access arrangement so the minimum term of the firm service will be 12 months rather than 5 years.

Technical Specifications for connecting to the Pipeline

Delete the contents of Appendix 3 ("Technical Requirements for Delivery Facilities") from the proposed revised terms and conditions for the Firm Service in accordance with the required amendments set out in Part 1 of Appendix 6.

Title to Gas

Amend section 2.2.7 of the proposed revised access arrangement so that it is substantially the same (with necessary changes) as clauses D.26.2 – D.26.7 of the proposed revised terms and conditions for the Firm Service (as amended by the required amendments to those clauses set out in Appendix 6).

Operational obligations – System Use Gas and the User's Line pack

Amend section 2.2.8 of the proposed revised access arrangement so that it is substantially the same (with necessary changes) as clause D.13 of the proposed revised terms and conditions for the Firm Service (as amended by the required amendments to clause D.13 set out in Appendix 6).

Negotiated Services

Amend section 2.3 of the proposed revised access arrangement by adding the following as section 2.3(c) (and renumber existing section 2.3(c) consequentially as section 2.3(d)):

2.3(c) To the extent that the Spare Capacity of the Covered Pipeline is not sufficient to meet the User's requirements in their entirety with a Firm Service, Service Provider will, on the User contracting to take the entire Spare Capacity as a Firm Service, offer an Interruptible Service, as a Negotiated Service, for the balance of the User's requirements in excess of that contracted as Firm Service. Should Spare Capacity become available on the Covered Pipeline, the User will be required to contract for that Spare Capacity as a Firm Service and reduce the amount of Interruptible Service accordingly.

Required Amendment 3

The proposed revised access arrangement values for total revenue (nominal) must reflect the values in Table 6.

Required Amendment 4

Pipeline capacity in section 1.5 of the Access Arrangement must be amended to 109 TJ/day.

Figures in GGT's access arrangement information should be amended to reflect those in Table 13.

Required Amendment 5

Amend operating expenditure and capacity data in Figures 1 and 2 of the Access Arrangement Information in line with Required Amendment 4 and 477 in this final decision.

Required Amendment 6

Forecast operating expenditure must be amended to reflect Table 23 of this Final Decision.

Required Amendment 7

The opening capital base for 1 January 2015 used in the revised access arrangement must be amended to reflect the values in Table 43 of this Final Decision.

Required Amendment 8

The value of forecast conforming capital expenditure for the 2015 to 2019 access arrangement period must be amended to reflect the values shown in Table 57 of this Final Decision.

Required Amendment 9

The projected capital base used in the revised access arrangement must be amended to reflect the values in Table 60 of this Final Decision.

Required Amendment 10

The Authority has determined to adopt the rate of return estimates set out in Table 90 of the Final Decision. The nominal post tax rate of return for 2015 is 5.73 per cent and for 2016 is 5.84 per cent.

Annual adjustments are to be applied to the debt risk premium to be incorporated in each subsequent tariff update during the third access arrangement period, in line with paragraph 1412 of the Final Decision. The first annual update will apply for the tariff variation for the 2017 calendar year, and will be determined based on the automatic formula set out in Appendix 3 of the Final Decision. The resulting annual adjustment to the rate of return will be incorporated in the Annual Tariff Variation.

The Authority notes that GGT has nominated the averaging periods for each annual update applying in 2017, 2018 and 2019. The averaging periods for each year are a nominated 20 trading days in the window 1 June to 31 October in the year prior to the relevant tariff variation, and will allow estimation of the updated DRP for inclusion in the relevant annual tariff variation. The nominated averaging periods remain confidential.

For each annual update for 2017, 2018 and 2019, the Authority will estimate the updated rate of return following the relevant annual averaging period and then notify GGT of the outcomes as soon as practicable, expected within 10 days. Following that notice, GGT is required to respond on any issues as soon as practicable, expected within 10 days, in order to allow the updated estimate to be finalised prior to submission by GGT of its proposed annual tariff variation within the required timeframe.

The Authority has determined that the Access Arrangement should include a section (section A5 to Schedule A of the proposed revised access arrangement) to set out the process for the annual update.

Required Amendment 11

The Authority's estimate of gamma for this Final Decision is 0.4.

Required Amendment 12

The Authority has determined to apply straight-line depreciation with the Current Cost Accounting approach to the regulatory asset base from 1 January 2015.

The values of depreciation allowances for the 2015 to 2019 access arrangement periods must be amended to values as indicated in Table 97 of this final decision.

Amend Clause 3.5 (Depreciation) of its Access Arrangement as follows:

The depreciation schedule for establishing the Opening Capital Base at 1 January 2020 will be based on forecast capital expenditure.

For the calculation of the nominal Opening Capital Base for the GGP for the Next Access Arrangement Period, for the purposes of rule 77(2)(d) of the NGR, depreciation over the Current Access Arrangement Period is to be calculated in accordance with the current cost accounting depreciation method, consistent with the Australian Energy Regulator's Post Tax Revenue Model method – where first, the real opening capital base in any year is divided by the remaining asset life to calculate the real depreciation for the regulatory year, second, indexation is applied to the real depreciation to convert it to nominal terms, and third, the nominal depreciation is adjusted for the resulting double count of inflation by subtracting the value ascribed to inflation from the opening regulatory asset base for that regulatory year, and is to be the sum of:

- 1) **depreciation on the Opening Capital Base over the Current Access Arrangement Period; and**
- 2) **depreciation of the forecast Capital Expenditure for the Current Access Arrangement Period (being the amount of forecast Capital Expenditure used for the purpose of determining Tariffs for the Current Access Arrangement Period).**

Indexing and adjustment for inflation should be calculated consistent with the rate of inflation as measured by the CPI All Groups, Weighted Average of Eight Capital Cities as at 31 December of each year of the regulatory the period.

Required Amendment 13

The estimated cost of corporate income tax (net of imputation credits) must be amended to reflect the values in Table 105.

Required Amendment 14

The Reference Tariffs and Charges Section and Schedule A of the proposed revised access arrangement must be amended in accordance with paragraphs 2049 to 2066 of this Final Decision.

The proposed revised access arrangement must be amended to reflect the reference tariff for the third access arrangement period as per Table 112 of this Final Decision.

Required Amendment 15

Section 4.5 of the proposed revised access arrangement and sections A1 and A2 of Schedule A to the proposed revised access arrangement must be amended as per paragraphs 2168, 2181, 2191, 2195, 2208, 2224 and 2228 of this Final Decision.

Required Amendment 16

Amend section 5.2.1 of the access arrangement as follows:

"5.2.1 Spare Capacity ~~—less than 2TJ~~

Amend section 5.3.1(d) of the access arrangement by adding the following words at the end of the section after the full stop: "The Service Provider will conduct any investigation to the standard of a reasonable and prudent pipeline operator."

Amend section 5.3.2(a) of the access arrangement by inserting in the first line the words ", acting as a reasonable and prudent pipeline operator, reasonably" immediately after the words "Service Provider has".

Amend section 5.3.3 of the access arrangement as follows:

"5.3.3 Service Provider ~~not~~ is bound to undertake certain developments of capacity

Amend the defined term "Developable Capacity" in schedule C as follows:

"Developable Capacity means an increase in Pipeline Capacity which, in Service Provider's opinion, acting reasonably and to the standard of a reasonable and prudent pipeline operator, is technically and economically feasible to develop consistent with the safe and reliable operation of the Pipeline. ~~economic to develop taking into account its operational and technical requirements;~~"

Amend references from "clause" to "section" in Section 5 of the proposed revised access arrangement which refer to sections of the proposed revised access arrangement.

Required Amendment 17

Amend section 7.1 of the access arrangement as follows:

"Other than as required under the National Gas Rules and the GGP State Agreement, the ~~GGT~~ Service Provider will not be required to provide funds for work involved in making an eExtension or eExpansion, unless the Service Provider ~~GGT~~ agrees to do so."

Replace the content of section 7.2 of the access arrangement with the following:

(a) Extensions

If Service Provider proposes an Eextension of the Covered Pipeline, it must apply to the Regulator for the Regulator to decide whether the proposed Eextension will be taken to form part of the Covered Pipeline such that this Access Arrangement would apply to the incremental Sservices provided by means of the proposed Eextension.

The application given by the Service Provider must be submitted to the Regulator when the Eextension is first being considered, prior to making its final investment decision.

The Regulator's decision, may be made on such reasonable conditions as determined by the Regulator consistent with the National Gas Objective and will have the effect stated in its decision on the Service Provider's proposed pipeline Eextension.

(b) Expansions

~~In the event that the Service Provider expands the covered pipeline above the existing Capacity at any time, this Access Arrangement will apply to all and any the Incremental Services provided as a result of after the Eexpansion at the time it comes into operation, except to the extent (if any) that unless the Service Provider proposes (by application to the Regulator) and the Regulator agrees that this Access Arrangement will not apply to all or any of those Incremental Services provided as a result of that Expansion.~~

Any such application by the Service Provider must be submitted to the Regulator when the Expansion is first being considered, prior to making its final investment decision.

Amend Section 7.3 (a) and (c) of the access arrangement as follows:

(a) Pipeline Extensions or Expansions ~~to~~ which form part of the Covered Pipeline such that ~~Service Provider elects that~~ this Access Arrangement will apply under section 7.2 to any Incremental Services provided by means of them, will result in no change to the Reference Tariff applied to a User when those Extensions or Expansions have been fully funded by that User's capital contributions except to contribute to Service Provider's operating costs in connection with those eExtensions and eExpansions. Any change to Reference Tariffs may occur only pursuant to the processes set out in Part 8 of the NGR. To avoid doubt, and without limiting the above in any way, neither the Service Provider nor any of the Owners will benefit through a change to Reference Tariffs (except as regards any contributions to Service Provider's operating costs) to the extent that:

- (i) any such Extension or Expansion is undertaken for or in relation to any adjustments to Capacity occurring (or which, but for the Extension or Expansion, would occur) as a result of the application of the provisions of the *Gas Supply (Gas Quality Specifications) Act 2009 (WA)*; and
- (ii) the funding of that Extension or Expansion was made by someone other than the Service Provider or any of the Owners or any Related Body Corporate of Service Provider or any of the Owners.
- (c) Pipeline eExtensions or eExpansions funded by Service Provider and which form part of the Covered Pipeline such that this Access Arrangement will apply ~~Service Provider elects to cover (or which become covered)~~, under section 7.2 to any Incremental Services provided by means of them, may result in the application of a Surcharge on Users subject to Service Provider providing written notice to the Regulator, and the Regulator approving the same, in accordance with Rule 83 of the NGR.

Amend the definition of "Incremental Services" in the access arrangement as follows:

Incremental Services means pipeline services (as defined in the NGL) provided by means of an Extension or Expansion;

Amend the definition of "Expansion" as follows:

Expansion means additions of plant or pipeline made by Service Provider to the Covered Pipeline which result in an increase in Capacity;

Amend the definition of "Capacity" as follows:

"Capacity means the measure of the potential of the Covered Pipeline as currently configured from time to time during the life of the Access Arrangement, to deliver a particular Service between a Receipt Point and a Delivery Point at a point in time;"

Required Amendment 18

Amend section 6.2(a) of the revised proposed access arrangement by deleting the word "*transfer*" and replacing it with the word "assignment".

Amend section 6.2(b)(iii) by deleting the word "transferred" and replacing it with the words "assigned and any other details (other than price) reasonably requested by Service Provider".

Amend section 6.3(a) as follows:

"(a) the User pays Service Provider's reasonable costs and expenses (including legal costs, and internal costs ~~and other costs~~) as reasonably determined and which it Service Provider has reasonably and properly incurred), in respect of application for consent (whether or not the assignment proceeds to completion) and any assignment;"

Amend section 6.3(b) as follows:

"(b) Service Provider and the assignee execute a Transportation Agreement acceptable to Service Provider (acting reasonably, based on reasonable commercial or reasonable technical considerations) in relation to the ~~Receipt Point MDQ or Delivery Point MDQ~~ Contracted Capacity (that is being assigned) in a similar form ~~and substance similar to~~, and on substantially the same terms as, the User's Transportation Agreement;

Amend section 6.3(c) as follows:

"(c) the ~~Receipt Point MDQ or Delivery Point MDQ~~ Contracted Capacity to be assigned relates to the User's Receipt Point and Delivery Points under the User's Transportation Agreement or, if different Receipt Points or Delivery Points are proposed, the assignee meets Service Provider's reasonable technical and commercial requirements in relation to the assignment of ~~Receipt Point MDQ or Delivery Point MDQ~~ Contracted Capacity to

those different Receipt Points or Delivery Points having regard to what would be the reasonable requirements of a reasonable and prudent pipeline operator;"

Amend section 6.3(f) as follows:

"(f) if the assignment of part or all of the ~~Receipt Point MDQ or Delivery Point MDQ~~ Contracted Capacity to the assignee requires additional facilities at the Receipt Point or Delivery Point, the User or the assignee (or both) agree to pay Service Provider for the cost of construction on terms and conditions reasonably determined by Service Provider (acting reasonably, based on ~~reasonably~~ reasonable commercial or ~~reasonably~~ reasonable technical considerations);"

Amend section 6.3(g) by deleting the words "examples of which are set out in section 6.5".

Amend the last paragraph of section 6.3 by adding the following words in place of the word "An" at the beginning of the paragraph:

"Where a User assigns its Contracted Capacity in accordance with this section 6.3, the User's rights and obligations under or in relation to its Transportation Agreement in relation to such of its Contracted Capacity as is so assigned, will, when that assignment takes effect, transfer to the assignee absolutely (subject only to any modifications or changes made by virtue of the Transportation Agreement executed by Service Provider and assignee referred to in section 6.3 (b)) and will terminate and be of no further effect as between the User and Service Provider. However, unless expressly agreed otherwise between the User, the assignee and Service Provider, an..."

Add the following as a new paragraph at the end of section 6.3:

"Service Provider must, within 30 Gas Days of receiving User's request to assign its Contracted Capacity under section 6.3, notify User whether or not it consents to the assignment."

Amend section 6.3 by replacing all and any references in the section 6.3 to "*Receipt Point MDQ or Delivery Point MDQ (or both)*" or to "*Receipt Point MDQ or Delivery Point MDQ*", with "*Contracted Capacity*" and make all such other amendments (if any) as are necessary or desirable to clarify that section 6.3 refers to all or any of a user's Contracted Capacity that might be traded, and not just capacity that has a nominated throughput associated with it.

Amend the second paragraph of section 6.4 as follows:

"Service Provider ~~may~~ must not withhold its consent to all or part of the above request ~~on reasonable commercial or technical grounds~~ or make its consent subject to conditions, ~~which are on~~ unless it has reasonable commercial or technical grounds, based on technical or commercial considerations, for doing so."

Delete section 6.5.

Once the above amendments have been made to the provisions in section 6, amend the corresponding provisions in Clause D.36 of the Terms and Conditions as necessary to make them substantially the same as the provisions in section 6 of the revised proposed access arrangement (as amended in accordance with this Final Decision).

Required Amendment 19

Amend the proposed revised terms and conditions in the Proposed Revised Access Arrangement amended in response to the Authority's Draft Decision in accordance with the required amendments set out in Appendix 6.

Amendment no longer required.

Amendment required to correct definition.

Amendment required to correct definition.

Amendment required to correct definition.

Amendment required as GGT accepted the required amendment but did not implement it.

Amendment required to correct definition.

Amendment required to improve clarity.

Amendment required to correct definition.

Amendment required to correct definition.

Amendment no longer required.

Amendments required to more correctly adopt the required amendment from the Draft Decision.

Amendments required to more correctly adopt the required amendment from the Draft Decision.

Amendment required to correct definitions.

Amendment required to correct definitions.

Amendment required to correct definitions.

Appendix 2 Abbreviations

Abbreviation	For
AA1	First Access Arrangement Period (1 January 2000 to 19 August 2010)
AA2	Second Access Arrangement Period (20 August 2010 to 31 December 2014)
AA3	Third Access Arrangement Period (1 January 2015 to 31 December 2019)
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACT	Australian Competition Tribunal
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
AMP	Asset Management Plan
APIA	Australian Pipeline Industry Association
API	Bloomberg Application Programming Interface
ATCO	ATCO Gas Australia Pty Ltd
ATCO GDS Final Decision	Amended Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems
ATO	Australian Taxation Office
AUD	Australian Dollar
Authority	Economic Regulation Authority
BBSW	Bank Bill Swap Rate
BBSY	Bank Bill Bid Rate
BDH	Bloomberg Data History
BDP	Bloomberg Data Point
BHM	Brailsford, Handley and Maheswaran
BHPB	BHP Billiton Limited
BVAL	Bloomberg Valuation Service
CAGR	Compound Annual Growth Rate
CAM	Cost Allocation Methodology
CAPM	Capital Asset Pricing Model
CCA	Current Cost Accounting
CDA	Cost Directly Attributable
CnDA	Costs not Directly Attributable
CEG	Competition Economists Group
CGS	Commonwealth Government Securities

Code	National Third Party Access Code for National Pipeline Systems
Commerce Commission	New Zealand Regulator
CPI	Consumer Price Index
CV	Coefficient of Variation
DAC	Depreciated Actual Cost
DBNGP	Dampier to Bunbury Natural Gas Pipeline
DBP	Dampier to Bunbury Pipeline
DDO	Dividend Drop Off
DFL	Degree of Financial Leverage
DGM	Dividend Growth Model
DMP	Department of Mines and Petroleum
DOL	Degree of Operating Leverage
DORC	Depreciated Optimised Replacement Cost
DRP	Debt Risk Premium
DTL	Degree of Total Leverage
EAMS	Enterprise Asset Management System
EBIT	Earnings Before Interest & Tax
EEP	Extension and Expansion Policies
EMCa	Energy Market Consulting associates
ERB	Western Australian Electricity Review Board
ERP	Equity Risk Premium
FSA	Formal Safety Assessments
FTE	Full Time Equivalent
FVC	Fair Value Curves
GBP	British Pound
GDS	Mid-West and South-West Gas Distribution Systems
GFC	Global Financial Crisis
GGT	Goldfields Gas Transmission Pty Ltd
GGTJV	Goldfields Gas Transmission Joint Venture
GHV	Gross Heating Value
GJ	Gigajoule
GSL	Gas Supply (Gas Quality Specifications) Act 2009 and Gas Supply (Gas Quality Specifications) Regulations 201
GST	Goods and Services Tax
HCA	Historical Cost Accounting
HHV	Higher Heating Value
HoustonKemp	HoustonKemp Economists
IDMT	Integrity Data Management Tool

Incenta	Incenta Economic Consulting
IPART	Independent Pricing and Regulatory Tribunal
IRS	Interest Rate Swap
ITAA97	Income Tax Assessment Act 1997
KPI	Key Performance Indicators
LAD	Least Absolute Deviation
MCE	Ministerial Council of Energy
MDQ	Maximum Daily Quantity
MHQ	Maximum Hourly Quantity
MM	Modigliani-Miller
MRP	Market Risk Premium
NCC	National Competition Council
NEM	National Electricity Market
NEO	National Electricity Objective
NERA	NERA Economic Consulting
NFC	Non-Financial Corporate
NGL	National Gas Law
NGL(WA)	National Gas Access (WA) Act 2009
NGO	National Gas Objective
NGR	National Gas Rules
NPV	Net Present Value
NSP	Network Service Provider
NSS	Nelson-Siegel Svennson
OLS	Ordinary Least Squares
PIA	Pipeline Impact Agreement
PTRM	Post Tax Revenue Model
QCA	Queensland Competition Authority
RAB	Regulatory Asset Base
RBA	Reserve Bank of Australia
RBP	Roma to Brisbane Pipeline
RBP AA T&Cs	RBP Access Arrangement Terms and Conditions
RPP	Revenue and Pricing Principles
RPP2	Revenue Pricing Principles 2
RPP3	Revenue Pricing Principles 3
RPP4	Revenue Pricing Principles 4
RPP5	Revenue Pricing Principles 5
RPP6	Revenue Pricing Principles 6
RPP7	Revenue Pricing Principles 7

Santos	Santos (BOL) Pty Ltd
SCADA	Supervisory Control and Data Acquisition
SFG	SFG Consulting
SIB	Stay In Business
SL CAPM	Sharpe-Lintner Capital Asset Pricing Model
SQO	Supplementary Quantity Option
SS	Spread of Swap
TAB	Tax Asset Base
TJ/D	Terajoules per Day
USD	United States Dollar
VIX	Volatility Index
WACC	Weighted Average Cost of Capital
WST	Western Standard Time

Appendix 3 Automatic updating formulas for the return on debt

2456. This appendix sets out the method and automatic formulas for updating the debt risk premium (**DRP**) for each regulatory year. The annual update will contribute to the revised tariff that is published at each annual tariff variation. Annual tariff variations for GGT will occur on 1 January 2017, 1 January 2018 and 1 January 2019.¹²³⁷
2457. The Authority has determined that the return on debt will be estimated as the sum of the:
- risk free rate;
 - spread of the bank bill swap rate over the risk free rate (**BBSW** spread);
 - debt risk premium (**DRP**); and
 - relevant debt raising and hedging transactions costs.
2458. The risk free rate and BBSW spread are estimated with the same term as the regulatory period, that is, 5 years. These two components are estimated once every 5 years at the start of the regulatory period, so do not require annual updating.
2459. The **DRP** is estimated using a 10 year trailing average consisting of a **DRP** for the current year and a **DRP** for each of the 9 prior years and so must be updated each year. The **DRP** for each yearly update is based on:
- a term to maturity of 10 years;
 - a BBB band credit rating;
 - the Authority's bond yield approach; and
 - a corresponding 10 year bank bill swap rate estimation.
2460. The bond yield approach uses international bonds that have their country of risk identified by Bloomberg as Australia to estimate the cost of debt each year. The **DRP** represents the risk spread of the cost of debt estimated over the 10 year bank bill swap rate estimation in any given year.
2461. The debt raising and hedging transactions costs, like the 5 year risk free rate and swap spread, are estimated only once, at the start of the regulatory period, and so do not require annual updating.

Averaging period

2462. The **DRP** estimates that are to be included the 2017, 2018 and 2019 tariff variations are to be based on an averaging period of 20 trading days.¹²³⁸ This averaging period must fall within a window at least two months prior to, but no longer than seven months before the regulatory year. Therefore, the Authority determines that the nominated averaging period occur in the period 1 June to 31 October in each year.

¹²³⁷ The tariff variation for 1 January 2016 is not required given that the Final Decision will occur after that date.

¹²³⁸ With the trading days based on the eastern states' public holidays.

For example, the updated DRP for inclusion in the 1 January 2017 tariff variation will be based on an averaging period that falls within the window 1 June 2016 to 31 October 2016.

2463. The averaging periods must be nominated in advance. GGT has nominated the averaging periods for 2017 to 2019, prior to the release of this Final Decision.

Method for estimating the DRP

The simple equally weighted trailing average

2464. The estimate of the DRP for each year will be a simple trailing average.
2465. The trailing average estimate of the DRP will weight the most recent 10 years of annual DRP estimates, which have been estimated consistent with debt with a 10 year term in the BBB credit rating band.
2466. Annually updating the resulting 10 year trailing average will involve adding in the most recent estimate of the DRP and dropping the estimate from 10 years ago. The weights for a simple hybrid trailing average DRP estimate will be 10 per cent each.
2467. The automatic formula for the equally weighted trailing average of the DRP to apply in any regulatory year as shown below:

$$TA\ DRP_0 = \frac{\sum_{t=0}^{-9} DRP_t}{10}$$

Where

$TA\ DRP_0$ is the equally weighted trailing average of the DRP to apply in the following year as the annual update of the estimate used in the current year; and

DRP_t is the DRP estimated for each of the 10 regulatory years

$t = 0, -1, -2, \dots, -9$.

2468. All years are in the same year convention as year 0. For example, if year 0 is the regulatory year 2016, $t = -9$ is the calendar year 2007 because 2016 is a calendar year in this Access Arrangement. Similarly, if year 0 is the regulatory year 2017, $t = -9$ is the calendar year 2008.
2469. For example, the DRP trailing average estimate for the calendar 2016 regulatory year is:

$$\begin{aligned}
 TA\ DRP_{2016} &= 0.1 \times DRP_{2016} + 0.1 \times DRP_{2015} + 0.1 \times DRP_{2014} \\
 &+ 0.1 \times DRP_{2013} + 0.1 \times DRP_{2012} + 0.1 \times DRP_{2011} \\
 &+ 0.1 \times DRP_{2010} + 0.1 \times DRP_{2009} + 0.1 \times DRP_{2008} \\
 &+ 0.1 \times DRP_{2007}
 \end{aligned}$$

2470. In terms of the notation used by the Australian Energy Regulator (but in the Authority's case applying just to the DRP trailing average), the foregoing TA DRP for the 2016 calendar year may be written as follows:¹²³⁹

$$\begin{aligned}
 {}_{2015}kd_{2016} &= 0.1 \times {}_{2006}R_{2007} + 0.1 \times {}_{2007}R_{2008} + 0.1 \times {}_{2008}R_{2009} \\
 &+ 0.1 \times {}_{2009}R_{2010} + 0.1 \times {}_{2010}R_{2011} + 0.1 \times {}_{2011}R_{2012} \\
 &+ 0.1 \times {}_{2012}R_{2013} + 0.1 \times {}_{2013}R_{2014} + 0.1 \times {}_{2014}R_{2015} \\
 &+ 0.1 \times {}_{2015}R_{2016}
 \end{aligned}$$

2471. Equivalently, where 't=0' specifies the year 2016 in this case:

$$\begin{aligned}
 -{}_{1}kd_0 &= 0.1 \times {}_{-10}R_{-9} + 0.1 \times {}_{-9}R_{-8} + 0.1 \times {}_{-8}R_{-7} + 0.1 \times {}_{-7}R_{-6} \\
 &+ 0.1 \times {}_{-6}R_{-5} + 0.1 \times {}_{-5}R_{-4} + 0.1 \times {}_{-4}R_{-3} \\
 &+ 0.1 \times {}_{-3}R_{-2} + 0.1 \times {}_{-2}R_{-1} + 0.1 \times {}_{-1}R_0
 \end{aligned}$$

Post-April 2016 Estimates of the DRP for inclusion in the trailing average DRP estimate

2472. The estimates of the DRP applying to each calendar year will be estimated using the Authority's bond yield approach. Resulting estimates of the DRP will be included in the trailing average.

2473. The first estimate is that made for the 20 day period ending 31 May 2016, which has been included as the estimate of the DRP for calendar year 2016 included in this Final Decision.

2474. The first annual update estimate that will be made for GGT will fall in the period 1 June to 31 October 2016, (DRP_{2017}), and will be incorporated in the trailing average DRP to apply in 2017 (that is, $TA\ DRP_{2017}$).

2475. The following automatic formulas will apply, and will remain unchanged for the duration of the third access arrangement period, and hence will apply for the estimates made for DRP_{2017} , as well as for the estimates DRP_{2018} and DRP_{2019} .

¹²³⁹ Australian Energy Regulator, *Draft Decision: Jemena Gas Networks (NSW) 2015-20*, November 2014, Attachment 3, p. 3-288.

Techniques to estimate the debt risk premium

2476. The Authority's approach to estimating the debt risk premium (DRP) is designed so that a stakeholder can replicate the debt risk premium calculation implemented by the Authority. The process is outlined in sufficient detail such that replicating it should incur minimal research and development costs for stakeholders whilst maintaining transparency and removing discretion in the application. Once the approach has been established in Bloomberg and Excel for the first time the settings and spreadsheet templates do not need to be established again. The estimation process thereafter requires significantly less time and becomes mechanistic. ***The footnotes in this section provide assistance with Bloomberg commands.***

2477. The Bond Yield Approach consists of the following six processes.

- Determining the Benchmark Sample
 - Identifying a sample of bonds based on the benchmark sample selection criteria. This will comprise a 'cross section' of bonds.
- Collecting Data
 - Collecting data for those bonds over the averaging period in question, for example 20 trading days). This represents 'time series' data related to each bond.
- Converting Yields to Australian Dollar Equivalents
 - Converting yields for bonds denominated in foreign currencies into Australian dollar (**AUD**) equivalents so that all yields are expressed as a fixed AUD equivalent.
- Averaging Yields over the Averaging Period
 - Calculating an average AUD equivalent bond yield for each bond in the cross section across the averaging period. For example, where a 20 trading day averaging period applies, each bond will have a single 20 day 'average yield' calculated.
- Estimating 'Curves'
 - Estimating three yield curves based on different methodologies and using the average yield for each bond; its remaining term to maturity; and AUD face value.¹²⁴⁰
- Calculating the DRP
 - Calculating the DRP by subtracting the average of the 10 year AUD interest rate swap (**IRS**) rate from the 10 year cost of debt estimate, with the latter calculated as the average of the three estimated yield curves at the ten year tenor.

Step 1: Determining the benchmark sample

2478. The benchmark sample of bonds should be identified as soon as practicable, but 24 hours after the date identified as the final trading day in the averaging period in order to allow the sample from Bloomberg to 'settle' to its final form.

¹²⁴⁰ The three curves are based on the Gaussian Kernel, the Nelson Siegel and the Nelson Siegel Svensson methodologies. The Gaussian Kernel approach produces a series of point estimates as opposed to a curve. However, each point estimate can be seen as points that compose a curve.

2479. The first step in determining the benchmark sample, or cross section of bonds is to identify the appropriate benchmark credit rating. For Gas Access Arrangements, the Standard & Poors' credit rating for the benchmark firm is outlined in the Economic Regulation Authority's Rate of Return Guidelines and is currently the BBB band.¹²⁴¹
2480. The Bloomberg search SRCH <GO> facility is used to conduct a search for bonds with a Standard & Poors' issue level (as opposed to issuer) rating that matches the benchmark firm's credit rating, and other criteria set out in Table 114.¹²⁴² This is carried out between 24 and 48 hours after the date that marks the final trading day in the averaging period in order to allow global markets to close. The exception here is where this 24 hour period overlaps a Western Australian non-trading day, in which case this process is carried out on the next Western Australian trading day.¹²⁴³

Table 114 Bond Yield Approach Search Criteria – Bloomberg Search Structure

Criteria	ERA's approach
Country of risk	Australia
S&P Rating	BBB+ to BBB-
Currency	Australian Dollar, United States Dollar, Euro Currency and British Pound
Maturity Date	>= 2 years from now
Maturity Type	Bullet or Callable or Putable but not Perpetual
Security Type	Exclude Inflation Linked Note
Sector/Industry Group	Exclude 'Financials' (based on Bloomberg Industry Classification System Level 1 Sector Name)
Was Called	No

2481. A screen shot of how this would look in the Bloomberg SRCH<GO> function is presented in Figure 29. The security status defaults to 'active'. It is important to note that in the top left hand corner of this figure the 'Asset Classes' criteria has been enabled to consolidate duplicate bond issues. The consolidation option is accessed by typing 11 in the top left hand corner to the left of <HELP> and then hitting <GO>. Ensure that *only* the 'Corporate' and 'Consolidate Duplicate Bonds' option is checked before clicking 'Update'. The remaining criteria are entered into the Bloomberg SRCH function as shown in Figure 29 by typing the keywords into the 'Field' column and hitting <GO> after each of the criteria are entered to add new criteria. The criteria in the Bloomberg search panel can be edited by clicking the pencil icon to the right of each criteria.¹²⁴⁴

¹²⁴¹ Economic Regulation Authority, Explanatory Statement for the Rate of Return Guidelines: Meeting the Requirements of the National Gas Rules, 16 December 2013, pp. 44-52.

¹²⁴² <GO> is the Bloomberg equivalent of hitting the enter key after entering commands in the top left hand corner of the screen to the left of <HELP>. For example, type SRCH and then hit the <GO> key.

¹²⁴³ Note that the revised bond yield approach is based on Eastern States trading days for consistency with Commonwealth Government Security data used in risk free rate and inflation calculations.

¹²⁴⁴ For the maturity date change the boundary condition to 'years from now' by selecting 'Y'.

Figure 29 Bloomberg 'SRCH' Function Populated with Sample Selection Criteria.



Source: Bloomberg

2482. The results of this bond search are exported into Microsoft Excel.¹²⁴⁵ The only information that is collected from the search result output into Excel at this stage is the 'Bloomberg ID' or 'ticker' for each bond.¹²⁴⁶ Each ticker needs to be appended with " Corp" so that formulas used in the next step can recognise them as a corporate bond. This can be carried out using the structure in Microsoft Excel below.¹²⁴⁷

¹²⁴⁵ Click the 'Results' button and in the resulting screen click 'Actions' and then 'Export to Excel'.

¹²⁴⁶ It is important to save a copy of this search for future reference if help is requested from Bloomberg Helpdesk.

¹²⁴⁷ It is recommended that formulas presented in these Excel structure tables are copy and pasted from an electronic copy of this document.

Table 115 Appending Bloomberg Bond Tickers for use in Pricing Formulas– Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Pasted value of bond ticker (example)	A2 down	EXXXXXXXXX Corp
Bond ticker appended with “Corp”	B2 down	=A2&" Corp"

2483. The bond tickers in B2 down should be pasted as values (as opposed to Excel commands) into a separate worksheet for use in subsequent calculations.

Step 2: Collecting Data and Conversion of yields into AUD equivalents

2484. Data is collected between 24 and 48 hours after the date that marks the final trading day in the averaging period in order to allow global markets to close. The exception here is if a Western Australian non-trading day falls in this period, in which case this process is carried out on the next Western Australian trading day.¹²⁴⁸

2485. Before data for each of the bond identifiers in the sample (established in the previous section) is retrieved, some ‘pricing source defaults’ need to be set in the Bloomberg terminal, to ensure that data sources are consistent and of similar quality. This determines the source that formula outlined further below use to draw bond pricing from.

2486. Table 116 provides the ‘pricing source defaults’ for bonds issued in the relevant range of currencies.

Table 116 Pricing Waterfall Set in Bloomberg for Retrieving Bond Price Data

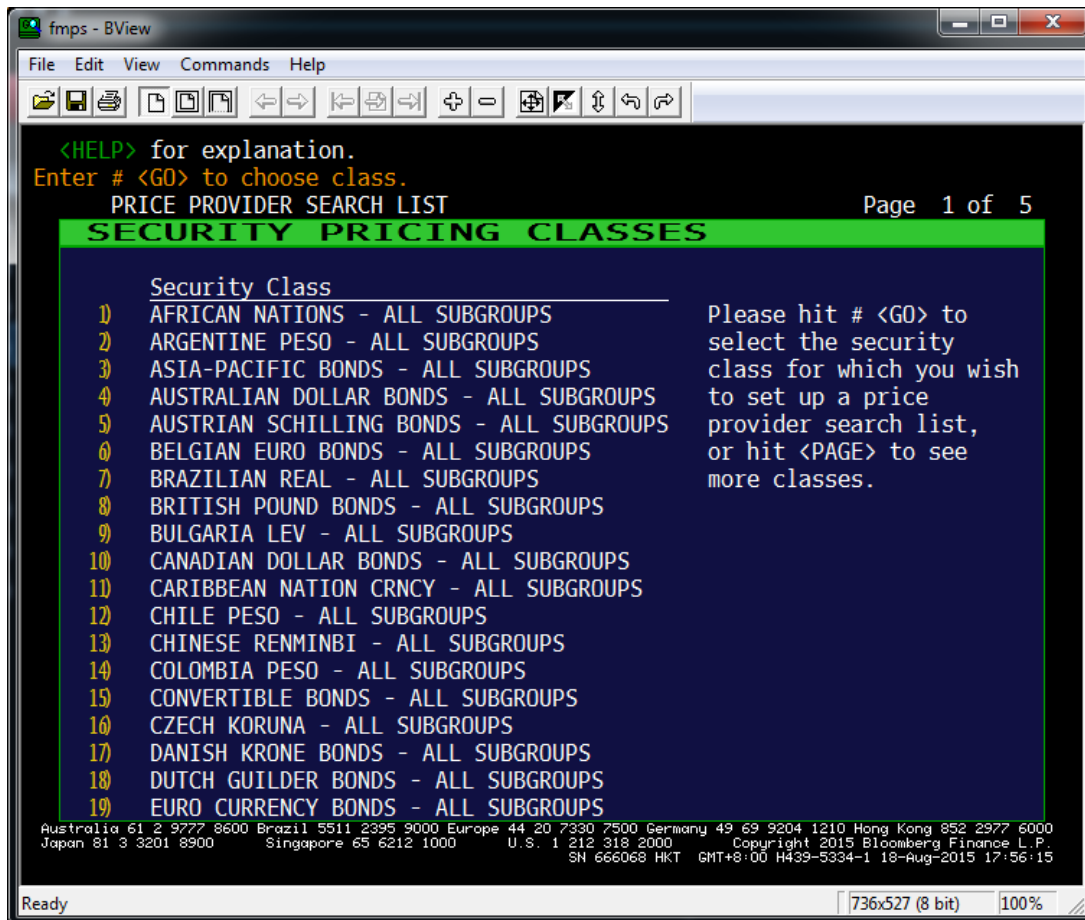
Currency of Issuance	1st Pricing Source	2nd Pricing Source
USD	BVAL	TRAC
EUR	BVAL	BGN
GBP	BVAL	BGN
AUD	BVAL	CBBT

2487. To set these as the default sources in the Bloomberg terminal for each currency use FMPS <GO> shown in Figure 30.¹²⁴⁹ Scroll down to reveal ‘US Denominated Corporate Bonds – All Subgroups’. Select this and in the resulting window select US Denominated Corporate Bonds – All Subgroups’ again.

¹²⁴⁸ Note that the revised bond yield approach is based on Eastern States trading days for consistency with Commonwealth Government Security data used in risk free rate and inflation calculations. The Authority will maintain a copy of the pricing sources used for each bond in the sample so that third parties can replicate the pricing sources for all bond yield observations retrospectively.

¹²⁴⁹ The Authority considers that in practice the BVAL pricing source will find pricing data in the majority of cases. If the first preference contains any observations of historical data FMPS ensures that all observations will rely on this one pricing source for consistency. Events such as US Federal public holidays can result in days within the averaging period where no prices will be returned from the first preference. In these rare cases the bond ticker is manually appended with “@PCS Corp” to hard code the preferred pricing source. For example in Table 117 further below the ticker would be modified to “EXXXXXXXXX@BGN Corp” as second preference for Euro denominated bonds. If no pricing is available from the second preference the observation is left blank. The Authority will maintain a copy of the pricing sources used for each bond in the sample so that third parties can replicate the pricing sources for all bond yield observations.

Figure 30 Security Pricing Classes List



Source: Bloomberg

2488. Figure 31 shows where the pricing source settings in Table 116 should be entered in the pricing source window using the US dollar denominated bonds as an example. In particular, the first pricing source should be entered to the right of '1st' and the second pricing source to the right of '2nd'. Once this is complete select <GO> followed by 1 <GO> to save.

Figure 31 Pricing Source Window Default Setting - US Dollar Corporate Bond Example



Source: Bloomberg

2489. Repeat the steps outlined in paragraphs 2487 and 2488 for the remaining currencies selecting:

- 'Euro Currency Bonds – All Subgroups' > 'Original EUR Issued Bonds and Other Redenominated Bonds' > 'Euro Currency Bonds – All Subgroups' for Euro denominated bonds;
- 'British Pound Bonds – All Subgroups' > 'British Pound Bonds – All Subgroups' for GBP denominated bonds; and
- 'Australian Dollar Bonds – All Subgroups' > 'Australian Dollar Bonds – All Subgroups' for AUD denominated bonds.

2490. Data is collected through a Microsoft Excel spreadsheet that interfaces with Bloomberg through the Bloomberg Application Programming Interface (API). The 'tickers' identifying each bond in the sample selection step above are the key input into this spreadsheet. The bond tickers are appended with "Corp" so that they can be read by the "Bloomberg Data Point" (BDP) or "Bloomberg Data History" (BDH) function in Excel which then retrieves various attributes for each bond in question.¹²⁵⁰ Once the pricing source defaults have been set, some key attributes are exported into Excel:

- Maturity date (MATURITY);
- Currency (CRNCY);

¹²⁵⁰ The space before " Corp" is intentional. BDP retrieves current values while BDH is used to retrieve historical data.

- Amount issued (AMT_ISSUED);
- Issue date (ISSUE_DT);
- Bid price for the bond (px bid);
- Ask price for the bond (px ask); and
- Asset swap spread bid (asset swap spd bid);
- Asset swap spread ask (asset swap spd ask);
- Australian dollar exchange rate with each bond's native currency at date of issue (for example for the US/Australian dollar exchange rate; USDAUD Curncy).

2491. The key formulas for exporting the Bloomberg data into Excel are provided in Table 117. All formulas B2 through to E2 should be filled downward in Excel to retrieve the attributes for the entire cross section of bonds.
2492. Once these key attributes have been exported, the formulas in Table 118 then convert the mid asset swap spread highlighted in K2 into a hedged Australian dollar equivalent. The formulas in Table 117 and Table 118 should be contained in the same spreadsheet. All formulas P2 through to R2 should be filled downward in Excel to retrieve the converted yields for the cross section of bonds.¹²⁵¹
2493. The Excel worksheet based on the formulas in Table 117 and Table 118 provides a template to calculate the hedged AUD bond yields for the entire cross section of bonds in the benchmark sample on any given trading day. Specifically, once a trading date is entered into cell A1, the hedged AUD bond yield is returned in cells R2 downward.¹²⁵² The hedged yields for the entire cross section of bonds are saved as values (rather than excel formulas) for each day in the 20 day averaging period.

¹²⁵¹ The Bloomberg Swaps Toolkit must be enabled so that these formulas can call the swap manager tool in the Bloomberg terminal through Excel. Further information and example templates can be found in the Swaps Toolkit under DAPI <GO> in the Bloomberg terminal.

¹²⁵² Note that this process can take a few minutes to populate. It is important to ensure the yields have populated fully and without error each time the date is changed in cell A1. At times this may require restarting Excel.

Table 117 Formula to Retrieve Bond Prices and Attributes– Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Bond Ticker	From A2 down	EXXXXXXXXXX Corp
Trading day date	A1	mm/dd/yyyy
Currency to convert to	B1	AUD
Payment frequency	C1	Q
Issue date	B2 down	=BDP(A2,"ISSUE_DT")
Maturity date	C2 down	=BDP(A2,"MATURITY")
Currency of bond issue	D2 down	=BDP(A2,"CRNCY")
Amount issued – currency of issuance (bond face value)	E2 down	=BDP(A2,"AMT_ISSUED")
Amount issued – Australian dollars (bond face value)	F2 down	=IF(D2="AUD",E2,E2*BDH(D2&"AUD Curncy","px_last",B2,B2))
Bid Price Label	G1	PX BID
Ask Price Label	H1	PX ASK
Bond bid price ¹²⁵³	G2 down	=BDH(A2, "px bid", \$A\$1, \$A\$1, "QuoteType", "P", "fill", "P")
Bond ask price	H2 down	=BDH(A2, "px ask", \$A\$1, \$A\$1, "QuoteType", "P", "fill", "P")
Asset swap spread bid ¹²⁵⁴	I2 down	=BDP(A2,"asset swap spd bid",\$G\$1,G2,"ASW_SWAP_CURRENCY",\$B\$1,"ASW_SWAP_PAY_RESET_FREQ",\$C\$1,"SETTLE_DT",TEXT(\$A\$1,"YYYYMMDD"),"OAS_CURVE_DT",TEXT(\$A\$1,"YYYYMMDD"))
Asset swap spread ask ¹²⁵⁵	J2 down	=BDP(A2,"asset swap spd ask",\$H\$1,H2,"ASW_SWAP_CURRENCY",\$B\$1,"ASW_SWAP_PAY_RESET_FREQ",\$C\$1,"SETTLE_DT",TEXT(\$A\$1,"YYYYMMDD"),"OAS_CURVE_DT",TEXT(\$A\$1,"YYYYMMDD"))
Asset swap spread mid	K2 down	=AVERAGE(I2:J2)
Determination Date	\$L\$1 down	dd/mm/yyyy

¹²⁵³ The Authority considers that the "fill" "P" option will not return values after the bond has matured, however will ensure a contiguous series whilst the bond is on issue.

¹²⁵⁴ The Authority considers that using the option adjusted spread curve date is an appropriate override in order to explicitly fix this curve date to the trading day date entered through Excel.

Attribute	Cell	Formula or entry
Remaining term to maturity from determination date (dd/mm/yyyy)	L2 down	=YEARFRAC(\$L\$1,C2,)

Source: ERA Research, Bloomberg

Table 118 Formula for Converting to Hedged Australian Dollar Equivalent Yields– Microsoft Excel Template Structure (continued on from Table 117)

Attribute	Cell	Formula or entry
Payment frequency for fixed leg of swap (leg 1)	M1 down	Semiannual
Payment frequency for floating leg of swap (leg 2)	N1 down	Quarterly
Deal type (fixed float)	O1 down	FXFL
Deal Structure ID (called from Bloomberg terminal) ¹²⁵⁶	P2 down	=BSTRUCTURE(\$O\$1,"Leg[2].Currency",\$B\$1,"Leg[1].Currency",\$B\$1,"Leg[2].Spread",K2,"EffectiveDate",\$A\$1,"MaturityDate",C2,"Leg[1].PayFrequency",\$M\$1,"Leg[2].PayFrequency",\$N\$1,"Leg[2].ResetFrequency",\$N\$1)
Valuation ID (called from Bloomberg terminal)	Q2 down	=BPRICE(P2,"Target=Leg[1].FixedCoupon","Premium=0",Leg[2].Spread",K2,"ValuationDate",\$A\$1,"MarketDate",\$A\$1,"headers=false")
Australian dollar equivalent yield	R2 down	=BView(Q2,"Leg[1].FixedCoupon","headers=false")

Source: ERA Research, Bloomberg

Step 3: Averaging yields over the averaging period

2494. The 20 day averaging period is based on eastern states trading days with the last day of the averaging period being on the DRP determination date. A table of AUD equivalent bond yields is established for the cross section of bonds in the sample with observations for every day across the averaging period.¹²⁵⁷ To build up this

¹²⁵⁵ The Authority considers that using the option adjusted spread curve date is an appropriate override in order to explicitly fix this curve date to the trading day date entered through Excel.

¹²⁵⁶ The Authority considers that setting the effective date to the trading date is appropriate to ensure the tenor of the swap matches the remaining term to maturity of the bond.

¹²⁵⁷ This is done by cutting and pasting observations from cell R2 down in Table 118 as values into B2 down in Table 119. To avoid 'overloading' the Excel API only one spreadsheet using the structure in Table 118 should be run on a Bloomberg terminal at a time.

time series, the date entered in cell A1 at Table 117 should be changed to each of the trading days in the averaging period. The series of observations for each bond is then assessed to ensure it has a number of observations equal to at least half of the averaging period. Bonds that do not meet this requirement are deleted from the sample. The sample of yields for each bond is then averaged. This results in one averaged observation for each bond.

2495. The Excel worksheet for calculating the 20 day average bond yield for each bond in the benchmark samples is provided at Table 119.

Table 119 Averaging Yields over the Averaging Period - Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Trading Day Dates	B1:U1	Each trading day date in the averaging period (20 dates for this Decision)
Bond Ticker	A2 down	EXXXXXXXXX Corp
Australian dollar equivalent yields for first trading day	B2 down:U2 down	Bond values from R2 down in Table 118 for the 1 st trading day through to the 20 th trading day.
Average of 20 day yields	V2 down	=AVERAGE(B2:U2)

Step 4: Apply curve fitting techniques

2496. To improve the validity of the yield estimates, three techniques are used to fit curves as part of the automatic formula to estimate the 10 year cost of debt used in the calculation of the annually updated DRP. These are:

- the Gaussian Kernel Methodology;
- the Nelson-Siegel Methodology; and
- the Nelson-Siegel-Svensson Methodology.

2497. For ease of replication by third parties only Microsoft Excel is used for processing the data. Each of these techniques is discussed in turn below.¹²⁵⁸

Gaussian Kernel Methodology

2498. The Gaussian Kernel Methodology is consistent with the approach used by the Reserve Bank of Australia as published in 'New Measures of Australian Corporate Credit Spreads'.¹²⁵⁹

¹²⁵⁸ Microsoft Excel 2013 (15.0.4745.1000) 32 bit as part of Microsoft Office Professional Plus 2013 is the version currently used for these calculations.

¹²⁵⁹ Reserve Bank of Australia, 'New Measures of Australian Corporate Credit Spreads', Bulletin, December quarter 2013.

2499. The Excel worksheet that replicates the Gaussian Kernel Methodology is provided in Table 120. Note that the inputs required for each bond in the benchmark sample are: remaining term to maturity; bond face value in Australian dollars; and Australian dollar equivalent yield. These are the outputs reported in cells L2 and F2 in and cell R2 in Table 118 respectively.

Table 120 Gaussian Kernel Point Estimation Methodology – Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Remaining term to maturity	A1 down	L2 as output in Table 117
Amount issued – Australian dollars (bond face value)	B1 down	F2 as output in Table 117
Australian dollar equivalent yield	C1 down	Values in V2 down in Table 119
Absolute deviation from target tenor	D1 down	=ABS(A1-\$K\$1)
Squared deviation from target tenor	E1 down	=(A1-\$K\$1)^2
Gaussian kernel	F1 down	=(EXP(-E1/(2*\$K\$4)))/\$K\$8
Joint Weighting	G1 down	=F1*B1
Sum of Joint Weighting	Last cell column G	=SUM(G1:\$G\$Second last row)
Weight	H1 down	=G1/(\$G\$Last row)
Weighted yield	I1 down	=C1*H1
Weighted maturity	J1 down	=A1*H1
Sum weighted maturity (effective term to maturity)	Last cell column J	=SUM(J1:\$J\$Second last row)
Target tenor	K1	Input target tenor (eg 10 for 10 years)
Smoothing parameter (sigma)	K2	1.5
Actual sigma	K3	=STDEV(A:A)
Sigma squared	K4	=K2^2
mean	K5	=AVERAGE(A:A)
pi	K6	=PI()
2 x Square root of pi	K7	=SQRT(2*K6)

Attribute	Cell	Formula or entry
2 x Square root of pi x smoothing parameter	K8	=K7*K2
Target tenor yield	K9	=SUM(I:I)

2500. As the Gaussian kernel methodology is non-parametric, and thus requires no estimation of curves, the output for any target tenor input into cell K1 is instantly reported in cell K8.

2501. The target tenor yields are calculated for 3, 5, 7 and 10 year terms. The associated effective term to maturity in the last cell of column J is also recorded for each tenor. A linear extrapolation out to an effective tenor of 10 years and interpolation to 7 years is performed using the following formula.

$$y_i(t) = y_i[et(7)] + \left(\frac{y_i[et(10)] - y_i[et(7)]}{et(10) - et(7)} \right) (t - et(7))$$

Where:

t is the tenor to be interpolated or extrapolated to;

$y_i(t)$ is the semi-annual yield extrapolated out to 10 years;

τ is the input target tenor (for example in cell K1 above);

$y_i[\tau]$ is target tenor yield output from the Gaussian kernel method; and

$et(\tau)$ is the effective tenor output from the Gaussian kernel method.

2502. The Excel Worksheet for calculating the target tenor yields is provided at Table 121.

Table 121 Linear Interpolation and Extrapolation of Gaussian Kernel Estimates – Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Tenor	A1:D1	Values 3, 5, 7 and 10.
3 year target tenor yield (semi-annual basis)	A2	From cell K9 in Table 120.
5 year target tenor yield (semi-annual basis)	B2	From cell K9 in Table 120.
7 year target tenor yield (semi-annual basis)	C2	From cell K9 in Table 120.
10 year target tenor yield (semi-annual basis)	D2	From cell K9 in Table 120.
3 year effective tenor	A3	Last row of column J in Table 120.
5 year effective tenor	B3	Last row of column J in Table 120.
7 year effective tenor	C3	Last row of column J in Table 120.
10 year effective tenor	D3	Last row of column J in Table 120.
3 year target tenor annualized yield	A4	$=((1+A2/200)^2-1)*100$
5 year target tenor annualized yield	B4	$=((1+B2/200)^2-1)*100$
7 year target tenor annualized yield	C4	$=((1+C2/200)^2-1)*100$
10 year target tenor annualized yield	D4	$=((1+D2/200)^2-1)*100$
Interpolated 7 year yield (semi-annual basis)	E2	$=C2+((D2-C2)/(D3-C3))*(7-C3)$
Extrapolated 10 year yield (semi-annual basis)	F2	$=C2+((D2-C2)/(D3-C3))*(10-C3)$
Interpolated 7 year yield annualized	E4	$=((1+E2/200)^2-1)*100$
Extrapolated 10 year yield annualized	F4	$=((1+F2/200)^2-1)*100$

2503. The value for F4 in Table 121 is the Gaussian Kernel cost of debt extrapolated to a tenor of 10 years. This value averaged with the 10 year cost of debt estimate from the other two methods is the Authority's final 10 year cost of debt estimate.

The Nelson Siegel method

2504. The first step in the Nelson Siegel methodology involves the estimation of the value for the decay factor (λ) that provides the tenor at which the medium-term factor (β_{2t}) reaches its maximum influence. Diebold and Li (2006) propose that 30 months (2.5 years) is commonly used as a medium-term tenor.¹²⁶⁰ Setting τ to 2.5 and substituting it into the weighting factor attached to β_{2t} in the Nelson Siegel specification gives:

$$\text{Max} \left(\frac{1 - e^{-2.5\lambda}}{2.5\lambda} - e^{-2.5\lambda} \right)$$

2505. The Excel worksheet and Excel solver settings that are used to determine the value of λ that maximises β_{2t} are provided at Table 122, Figure 32 and Figure 33 respectively. Note that the GRG non-linear solver is used to find the maximum point (or peak) on a non-linear function, hence the selection of 'GRG Nonlinear' and 'Max' in Figure 32.

Table 122 Nelson Siegel Decay Factor Estimation – Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
β_{2t} weighting factor	A1	=(((1-EXP(-\$\$A3*A2)))/(\$A3*A2))-EXP(-\$\$A3*A2))
Tenor (maturity) τ	A2	2.5
Decay factor λ (Starting value used)	A3	0.000000000000001 (that is 1E-14)

¹²⁶⁰ F. Diebold and C. Li, Forecasting the term structure of government bond yields, *Journal of Econometrics*, vol.130, no.2, 2006, pp. 337-364.

Figure 32 Nelson Siegel Decay Factor Estimation – Microsoft Excel Solver Settings

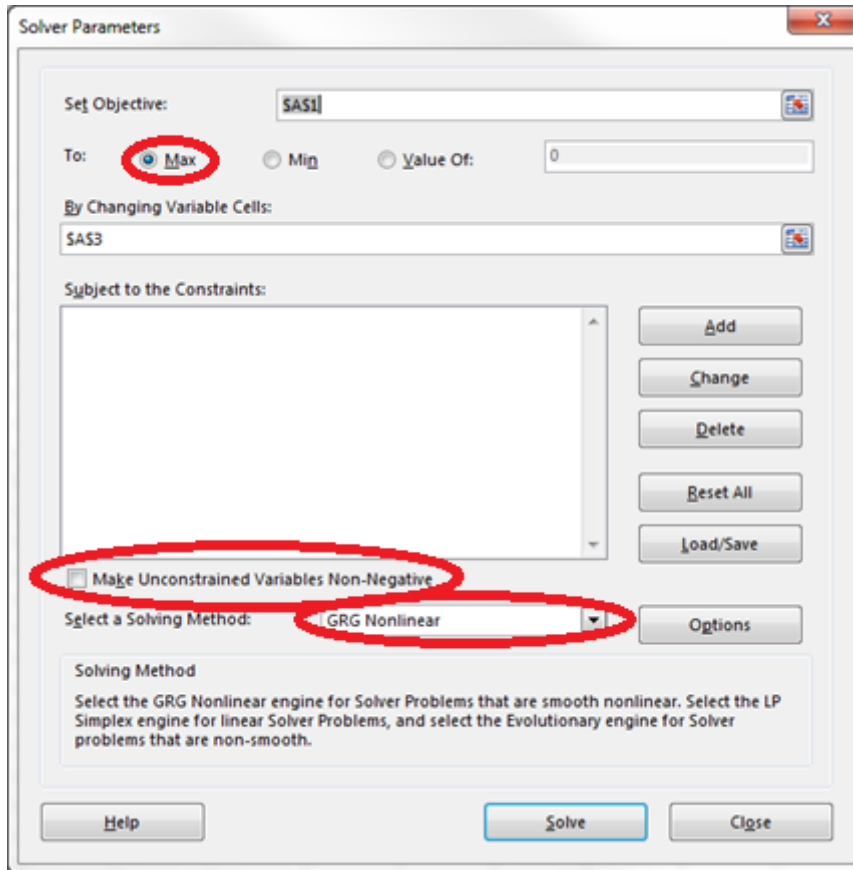
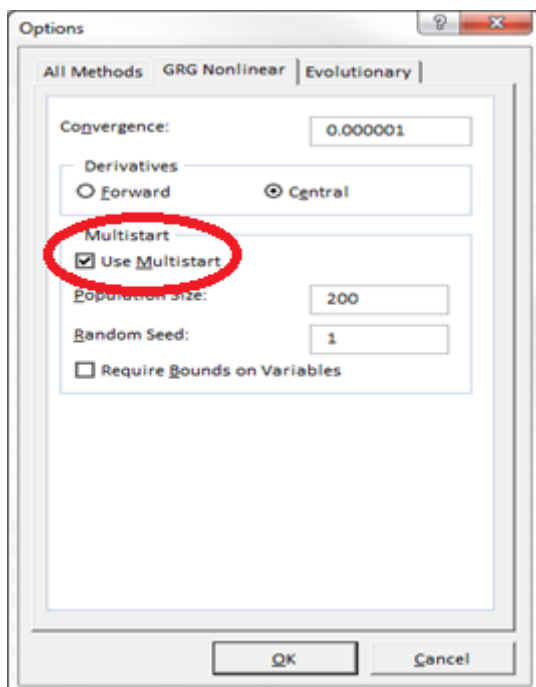


Figure 33 Microsoft Excel GRG Nonlinear Solver Settings



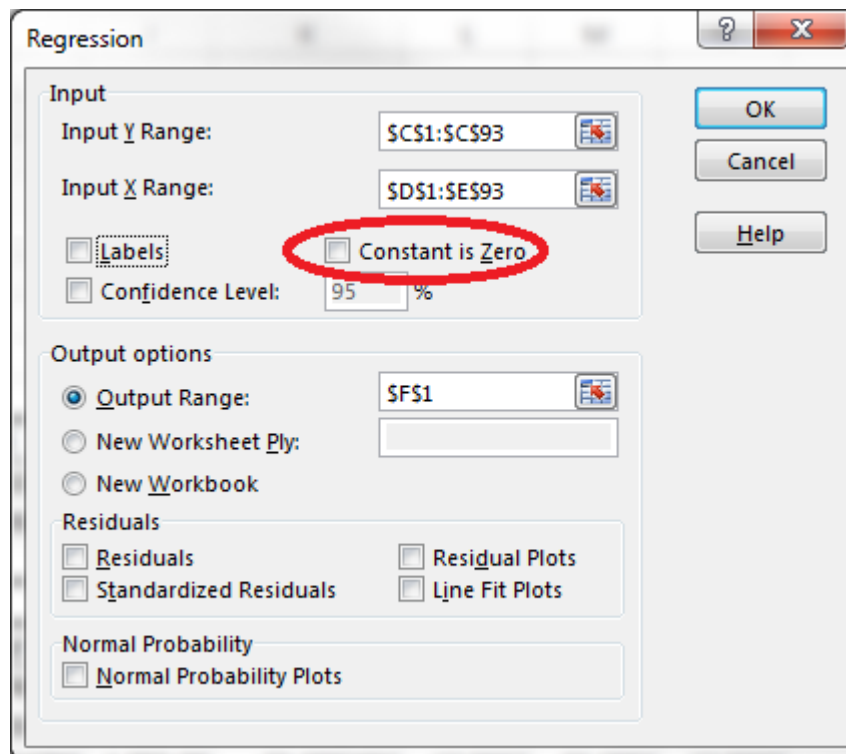
2506. The convergence of 0.000001 is considered precise enough such that the solver will stop when the solution in the last iterations change by this amount.¹²⁶¹ To ensure the peak is a global maximum (as opposed to just local) the solver carries out the optimisation from many different random starting points on the function reflected by the selection of the 'Multistart' option in Figure 33. The number of different starting points is based on the 'Population size' field and setting the 'Random seed' to 'one' ensures that the random selection process is always based on the same seed each time the solver is used. The central difference derivative method is selected for the greatest accuracy. In this case the problem is unconstrained and so no bounds are required on variables.
2507. This estimation process yields a value for λ of 0.71731 which will be used as a starting value in the final fitting of the NS yield curve.¹²⁶²
2508. Starting values are still required for $\beta_{0t}, \beta_{1t}, \beta_{2t}$. These are obtained by:
- substituting the decay factor value (λ) as a constant into the terms attached to $\beta_{1t}, \left(\frac{1-e^{-\lambda\tau}}{\lambda\tau}\right)$ and $\beta_{2t}, \left(\frac{1-e^{-\lambda\tau}}{\lambda\tau} - e^{-\lambda\tau}\right)$;
 - setting these terms as a function of each bond's remaining term to maturity as shown for cell L2 in Table 117, which will provide a β_{1t} weight and β_{2t} weight for every bond in the sample; and
 - performing Ordinary Least Squares (**OLS**) regression using the Excel Data Analysis tools' 'Regression' function. The Excel structure for setting out the data to which the OLS regression is applied is shown in Table 123.
2509. The Excel worksheet and regression settings are provided at Table 123 and Figure 34 respectively. The Y input values are the Australian dollar yield equivalents output for each bond as shown in cell R2 in Table 118. The X input values are the entire series of β_{1t} and β_{2t} weights associated with each of the bonds. Note that the 'Constant is zero' box shown in Figure 34 should be left unchecked so that an intercept term is included in the regression which will serve as a starting value for β_{0t} .

¹²⁶¹ Diebold and Li (2006) published their decay method to 4 decimal places.

¹²⁶² This solution is output in cell A3 in Table 122 once the solver has found a solution.

Table 123 Nelson Siegel Starting Value Regression – Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Decay factor λ	A1	Link to solution in cell A3 in Table 122.
Maturity (τ)	B1 down	The results of from cell L2 in Table 117.
Australian dollar equivalent yield	C1 down	Values in V2 down in Table 119
β_{1t} weight factor	D1 down	$=((1-EXP(-\$A\$1*B1))/(\$A\$1*B1))$
β_{2t} weight factor	E1 down	$=(((1-EXP(-\$A\$1*B1))/(\$A\$1*B1))-EXP(-\$A\$1*B1))$

Figure 34 Nelson Siegel Starting Value Regression – Microsoft Excel Regression Settings

2510. The intercept, X Variable 1 and X Variable 2 that appear under the coefficients in the Excel regression output table are used respectively as the starting value estimates for β_{0t} , β_{1t} and β_{2t} in the Nelson Siegel curve fitting process while the value in cell A1 in Table 123 is used as the starting value for λ .¹²⁶³

2511. The Excel worksheet that replicates the Nelson Siegel curve fitting process is provided at Table 124.

¹²⁶³ This is output into cells G17,G18 and G19 in the example set out above.

Table 124 Nelson Siegel Curve Fitting Methodology – Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Remaining Term to Maturity	A1	Values as calculated by cell L2 in Table 117
Australian dollar equivalent yield	B1	Values in V2 down in Table 119
NS Functional Form	C1 down	=\$E\$1+\$E\$2*((1-EXP(-\$E\$4*A1))/(\$E\$4*A1))+\$E\$3*(((1-EXP(-\$E\$4*A1))/(\$E\$4*A1))-EXP(-\$E\$4*A1))
Squared Residual	D1 down	=(B1-C1)^2
β_{0t}	E1	Starting value for β_{0t} calculated above
β_{1t}	E2	Starting value for β_{1t} calculated above
β_{2t}	E3	Starting value for β_{2t} calculated above
λ	E4	Starting value for λ calculated above ¹²⁶⁴
$\beta_{0t} + \beta_{1t}$	E5	= E1+E2
Sum of Squared Residuals	E6	=SUM(D:D)

2512. The Excel solver settings (including constraints) that are required to minimize the sum of the squared residuals at cell E6 in Table 124 (by changing the values in the cells E1 through to cell E5) are provided in Figure 35. The associated GRG Nonlinear solver settings are provided at Figure 33.

¹²⁶⁴ This cell is linked to the exact solution for the decay factor in order to avoid issues associated with truncating decimal places.

Figure 35 Nelson Siegel Parameter Constraints - Excel Solver Settings

Solver Parameters

Set Objective:

To: Max Min Value Of:

By Changing Variable Cells:

Subject to the Constraints:

SES5 >= 0.000000000000001
 SES1 >= 0.000000000000001
 SES4 >= 0.000000000000001

Make Unconstrained Variables Non-Negative

Select a Solving Method:

Solving Method

Select the GRG Nonlinear engine for Solver Problems that are smooth nonlinear. Select the LP Simplex engine for linear Solver Problems, and select the Evolutionary engine for Solver problems that are non-smooth.

Buttons: Add, Change, Delete, Reset All, Load/Save, Options, Help, Solve, Close

2513. The final solutions for β_{0t} , β_{1t} , β_{2t} and λ in cells E1 to E4 in Table 124 must be entered back into the Nelson Siegel functional form to obtain tenor yields for 3, 5, 7 and 10 year terms.
2514. The Excel Worksheet that calculates the semi-annual yields at each tenor (that is, as if bond interest payment are made every 6 months) is provided at Table 125. The additional Excel calculations that are required to annualise the output values for A2, B2, C2 and D2 in Table 125 so that it represents an effective annual interest rate at each tenor is provided in Table 126.

Table 125 Nelson Siegel Yield Estimation Methodology – Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Tenor	A1:D1	Values 3, 5, 7 and 10.
3 year AUD yield (semi-annual basis)	A2	= $\$E1+\$E2*((1-EXP(-\$E4*A1))/(\$E4*A1))+\$E3*(((1-EXP(-\$E4*A1))/(\$E4*A1))-EXP(-\$E4*A1))$
5 year AUD yield (semi-annual basis)	B2	= $\$E1+\$E2*((1-EXP(-\$E4*B1))/(\$E4*B1))+\$E3*(((1-EXP(-\$E4*B1))/(\$E4*B1))-EXP(-\$E4*B1))$
7 year AUD yield (semi-annual basis)	C2	= $\$E1+\$E2*((1-EXP(-\$E4*C1))/(\$E4*C1))+\$E3*(((1-EXP(-\$E4*C1))/(\$E4*C1))-EXP(-\$E4*C1))$
10 year AUD yield (semi-annual basis)	D2	= $\$E1+\$E2*((1-EXP(-\$E4*D1))/(\$E4*D1))+\$E3*(((1-EXP(-\$E4*D1))/(\$E4*D1))-EXP(-\$E4*D1))$
β_{0t}	E1	Solution for β_{0t} output in cells E1 Table 124.
β_{1t}	E2	Solution for β_{1t} output in cells E2 Table 124.
β_{2t}	E3	Solution for β_{2t} output in cells E3 Table 124
λ	E4	Solution for λ output in cells E4 Table 124

Table 126 Annualising Semi-Annual Bond Yields - Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
3 year AUD yield (annual basis)	A3	= $((1+A2/200)^2-1)*100$
5 year AUD yield (annual basis)	B3	= $((1+B2/200)^2-1)*100$
7 year AUD yield (annual basis)	C3	= $((1+C2/200)^2-1)*100$
10 year AUD yield (annual basis)	D3	= $((1+D2/200)^2-1)*100$

2515. The value for D3 in Table 126 is the Nelson Siegel 10 year cost of debt estimate. This value averaged with the 10 year cost of debt estimate from the other two methods is the Authority's final 10 year cost of debt estimate.

The Nelson-Siegel Svensson Methodology

2516. The Nelson-Siegel Svensson Methodology assumes that the term structure of the cost of debt has the parametric form shown below:

$$\hat{y}_t(\tau) = \beta_{0t} + \beta_{1t} \left(\frac{1 - e^{-\tau/\lambda_1}}{\tau/\lambda_1} \right) + \beta_{2t} \left(\frac{1 - e^{-\tau/\lambda_1}}{\tau/\lambda_1} - e^{-\tau/\lambda_1} \right) + \beta_{3t} \left(\frac{1 - e^{-\tau/\lambda_2}}{\tau/\lambda_2} - e^{-\tau/\lambda_2} \right)$$

Where

$y_t(\tau)$ is the yield at time t for maturity τ ; and

$\beta_{0t}, \beta_{1t}, \beta_{2t}, \beta_{3t}, \lambda_1, \lambda_2$ are the parameters of the model to be estimated from the data.

2517. The Nelson-Siegel Svensson (**NSS**) methodology uses observed data from the bond market to estimate the parameters $\beta_{0t}, \beta_{1t}, \beta_{2t}, \beta_{3t}, \lambda_1$ and λ_2 by using the observed yields and maturities for bonds. A yield curve is produced by substituting these estimates into the above equation and plotting the resulting *estimated* yield $\hat{y}_t(\tau)$ by varying the maturity τ . $\hat{y}_t(\tau)$ has the interpretation of being the *estimated yield* for a benchmark bond with a maturity of τ for a given credit rating.
2518. The NSS methodology uses two decay factors λ_1 and λ_2 . At each annual update the starting values for these parameters are based on the previous years' final estimates. The first estimate will use the values 1.6416 and 4.5834 for λ_1 and λ_2 respectively. The values for these decay factors in the subsequent annual update will use the final values for the decay factors resulting from the process set out below, and so forth for the following years. An exception to this is if the previous years' yield curve estimates are determined to be non-robust as set out in Table 132. In this situation the decay factors λ_1 and λ_2 from the latest set of robust yield curve estimates will be used.
2519. Starting values are still required for β_{1t}, β_{2t} and β_{3t} . These are obtained by:
- substituting the decay factors (λ_1 and λ_2) as substitutes as constants into the terms attached to $\beta_{1t}, \left(\frac{1 - e^{-\tau/\lambda_1}}{\tau/\lambda_1} \right), \beta_{2t} \left(\frac{1 - e^{-\tau/\lambda_1}}{\tau/\lambda_1} - e^{-\tau/\lambda_1} \right)$ and $\beta_{3t} \left(\frac{1 - e^{-\tau/\lambda_2}}{\tau/\lambda_2} - e^{-\tau/\lambda_2} \right)$;
 - setting these terms as a function of each bond's remaining term to maturity as shown for cell L2 in Table 117. This will result in a β_{1t} weight, β_{2t} weight and β_{3t} weight for every bond in the sample.
 - performing an Ordinary Least Squares (**OLS**) regression is carried out using the Excel Data Analysis tools' 'Regression' function. The Excel structure for setting out the data to which the OLS regression is applied is shown in Table 127.

Table 127 Nelson Siegel Svensson Starting Value Regression – Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Decay factor λ_1	A1	Last years' λ_1 .
Decay factor λ_2	A2	Last years' λ_2 .
Maturity (τ)	B1 down	The results of from cell L2 in Table 117
Australian dollar equivalent yield	C1 down	Values in V2 down in Table 119
β_{1t} weight factor	D1 down	$=((1-EXP(-B1/\$A\$1))/(B1/\$A\$1))$
β_{2t} weight factor	E1 down	$=(((1-EXP(-B1/\$A\$1))/(B1/\$A\$1))-(EXP(-B1/\$A\$1)))$
β_{3t} weight factor	F1 down	$=(((1-EXP(-B1/\$A\$2))/(B1/\$A\$2))-(EXP(-B1/\$A\$2)))$

2520. The Excel worksheet and regression settings are provided at Table 127 and Figure 36 respectively. The Y input values are the Australian dollar yield equivalents output for each bond as shown in cell V2 in Table 119. The X input values are the entire series of β_{1t} , β_{2t} and β_{3t} weight factors associated with each of the bonds. Note that the 'Constant is zero' box shown in Figure 36 should be left unchecked so that an intercept term is included in the regression which will serve as a starting value for β_{0t} .

Figure 36 Nelson Siegel Svensson Starting Value Regression – Microsoft Excel Regression Settings

The image shows the 'Regression' dialog box in Microsoft Excel. The 'Input' section contains the following settings: 'Input Y Range' is '\$C\$1:\$C\$92', 'Input X Range' is '\$D\$1:\$F\$92', 'Labels' is unchecked, 'Confidence Level' is '95%', and 'Constant is Zero' is checked (circled in red). The 'Output options' section has 'Output Range' set to '\$G\$1', 'New Worksheet Ply' is unchecked, and 'New Workbook' is unchecked. The 'Residuals' section has 'Residuals', 'Standardized Residuals', 'Residual Plots', and 'Line Fit Plots' all unchecked. The 'Normal Probability' section has 'Normal Probability Plots' unchecked. On the right side, there are buttons for 'OK', 'Cancel', and 'Help'.

2521. The intercept, X Variable 1, X Variable 2 and X Variable 3 that appear under the coefficients in the Excel regression output Table are used respectively as the starting value estimates for β_{0t} , β_{1t} , β_{2t} and β_{3t} in the Nelson-Siegel Svensson curve fitting process while the values in cell A1 and A2 in Table 127 are used as the starting values for λ_1 and λ_2 .¹²⁶⁵
2522. The Excel worksheet that replicates the Nelson-Siegel Svensson curve fitting process is provided at Table 128.

¹²⁶⁵ This is output into cells H17, H18, H19 and H20 in the example set out above.

Table 128 Nelson Siegel Svensson Yield Curve Estimation Methodology – Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Remaining Term to Maturity	A1	Values as calculated by cell L2 in Table 117
Australian dollar equivalent yield	B1	Values in V2 down in Table 119
NSS Functional Form	C1	=\$E\$1+\$E\$2*((1-EXP(-A1/\$E\$5))/(A1/\$E\$5))+\$E\$3*(((1-EXP(-A1/\$E\$5))/(A1/\$E\$5))-(EXP(-A1/\$E\$5)))+\$E\$4*(((1-EXP(-A1/\$E\$6))/(A1/\$E\$6))-(EXP(-A1/\$E\$6)))
Squared Residual	D1	=(B1-C1)^2
β_{0t}	E1	Starting value for β_{0t} calculated above
β_{1t}	E2	Starting value for β_{1t} calculated above
β_{2t}	E3	Starting value for β_{2t} calculated above
β_{3t}	E4	Starting value for β_{3t} calculated above
λ_1	E5	Last years' λ_1 .
λ_2	E6	Last years' λ_2 .
$\beta_{0t} + \beta_{1t}$	E7	= E1+E2
Sum of Squared Residuals	E8	=SUM(D:D)

2523. The Excel solver settings (including constraints) that are required to minimize the sum of the squared residuals at cell E8 in Table 128 (by changing the values in the cells E1 through to cell E6) are provided in Figure 37. The associated GRG Nonlinear Solver Settings are provided at Figure 33.

Figure 37 Nelson Siegel Svensson Parameter Constraints – Microsoft Excel Solver Settings

Solver Parameters

Set Objective:

To: Max Min Value Of:

By Changing Variable Cells:

Subject to the Constraints:

SE\$1 >= 0.0000000000000001
 SE\$5 >= 0.0000000000000001
 SE\$6 >= 0.0000000000000001
 SE\$7 >= 0.0000000000000001

Make Unconstrained Variables Non-Negative

Select a Solving Method:

Solving Method

Select the GRG Nonlinear engine for Solver Problems that are smooth nonlinear. Select the LP Simplex engine for linear Solver Problems, and select the Evolutionary engine for Solver problems that are non-smooth.

Buttons: Add, Change, Delete, Reset All, Load/Save, Options, Help, Solve, Close

2524. The final solutions for $\beta_{0t}, \beta_{1t}, \beta_{2t}, \beta_{3t}, \lambda_1$ and λ_2 output in cells E1 to E6 in Table 128 must be entered back into the Nelson-Siegel Svensson functional form to obtain tenor yields for 3, 5, 7 and 10 year terms.
2525. The Excel worksheet that calculates semi-annual yields at each tenor (that is, as if bond interest payment are made every 6 months) is provided at Table 129. The additional Excel Calculations that are required to annualise the output values for A2, B2, C2 and D2 in Table 129, so that outputs represent an effective annual interest rate at each tenor, are provided at Table 130.

Table 129 Nelson Siegel Svensson Yield Estimation Methodology – Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Tenor	A1:D1	Values 3, 5, 7 and 10.
3 year AUD yield (semi-annual basis)	A2	= $\$E1+\$E2*((1-EXP(-A1/\$E5))/\$E5)+\$E3*(((1-EXP(-A1/\$E5))/\$E5))-(EXP(-A1/\$E5))+\$E4*(((1-EXP(-A1/\$E6))/\$E6))-(EXP(-A1/\$E6))$
5 year AUD yield (semi-annual basis)	B2	= $\$E1+\$E2*((1-EXP(-B1/\$E5))/\$E5)+\$E3*(((1-EXP(-B1/\$E5))/\$E5))-(EXP(-B1/\$E5))+\$E4*(((1-EXP(-B1/\$E6))/\$E6))-(EXP(-B1/\$E6))$
7 year AUD yield (semi-annual basis)	C2	= $\$E1+\$E2*((1-EXP(-C1/\$E5))/\$E5)+\$E3*(((1-EXP(-C1/\$E5))/\$E5))-(EXP(-C1/\$E5))+\$E4*(((1-EXP(-C1/\$E6))/\$E6))-(EXP(-C1/\$E6))$
10 year AUD yield (semi-annual basis)	D2	= $\$E1+\$E2*((1-EXP(-D1/\$E5))/\$E5)+\$E3*(((1-EXP(-D1/\$E5))/\$E5))-(EXP(-D1/\$E5))+\$E4*(((1-EXP(-D1/\$E6))/\$E6))-(EXP(-D1/\$E6))$
β_{0t}	E1	Solution for β_{0t} output in cells E1 Table 128
β_{1t}	E2	Solution for β_{1t} output in cells E2 Table 128
β_{2t}	E3	Solution for β_{2t} output in cells E3 Table 128
β_{3t}	E4	Solution for β_{3t} output in cells E4 Table 128
λ_1	E5	Solution for λ_1 output in cells E5 Table 128
λ_2	E6	Solution for λ_2 output in cells E6 Table 128

Table 130 Annualising Semi-Annual Bond Yields - Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
3 year AUD yield (annual basis)	A3	= $((1+A2/200)^2-1)*100$
5 year AUD yield (annual basis)	B3	= $((1+B2/200)^2-1)*100$
7 year AUD yield (annual basis)	C3	= $((1+C2/200)^2-1)*100$
10 year AUD yield (annual basis)	D3	= $((1+D2/200)^2-1)*100$

2526. The value at D3 in Table 130 is the NSS 10 year cost of debt estimate. This value averaged with the 10 year cost of debt estimate from the other two methods is the Authority's final 10 year cost of debt estimate.

Step 5: Estimate the regulatory debt risk premium

2527. The annualized 10 year cost of debt estimate from each of the three methodologies provided above is averaged to arrive at the Authority's final estimate of the 10 year cost of debt. Specifically, this is the simple average of cell F4 in Table 121, D3 in Table 126 and D3 in Table 130. The DRP is then calculated as the spread between the 10 year cost of debt and the average value of the AUD 10 year IRS rate averaged over the same averaging period used for the observed AUD equivalent bond yields above. The average value of the AUD 10 year IRS rate is obtained by downloading AUD 10 year IRS rate data from Bloomberg for each of the trading days in the averaging period; calculating the average of these observations; and then annualising assuming semi-annual payments. The Excel worksheet that calculates the Authority's final estimate of the 10 year cost of debt is provided at Table 131.

Table 131 Debt Risk Premium Calculation - Microsoft Excel Template Structure

Attribute	Cell	Formula or entry
Trading day date	A1 down	dd/mm/yyyy
AUD 10 year IRS rate ¹²⁶⁶	B1 down	=BDH("ADSWAP10 Curncy","PX_LAST",A1,A1)
Average (20 day averaging period example)	B21	=AVERAGE(B1:B20)
Annualized average AUD 10 year IRS rate	B22	=((1+B21/100/2)^2-1)*100
10 year final cost of debt estimate	B23	=AVERAGE(Table 6!F4,Table 11!D3,Table 15!D3) ¹²⁶⁷
10 year DRP	B24	=B23-B22

2528. The value at cell B24 in Table 131 is the Authority's final 10 year DRP estimate that is used in calculating the return on debt.

¹²⁶⁶ The Authority uses ADSWAP10 Curncy, PX_LAST data from the Bloomberg terminal. This is the average of the bid and ask rate on the 10 year Australian Dollar interest rate swap rate (mid rate). Further details are - Effective: T + 1, Floating side index: BBSW6M, Day Count ACT/365, payment and reset frequency semi-annual. Fixed side: Day Count ACT/365, payment frequency semi-annual. The default pricing source CMPN – the composite with a close time based on the New York market.

¹²⁶⁷ This formula assumes that the Excel worksheets have been named after the tables outlined above. For example, Table 6 Linear Interpolation and Extrapolation of Gaussian Kernel Estimates – Microsoft Excel Template Structure is a worksheet in Excel labelled "Table 6". Table 6!F4 makes reference to cell F4 in Table 6.

Contingency approaches to data related issues

2529. In the event that there are unexpected problems with the data or results of applying the automatic formulas, the Authority will adopt the following actions outlined in Table 132.

Table 132 Contingency approaches to data related issues

Event	Changes to Approach
<p>A) No bonds in the sample – resulting from the application of the bond yield approach criteria in Table 1 – have a remaining term to maturity equal to or greater than 10 years (from the last day of the nominated averaging period).</p>	<p>A linear extrapolation will be carried out using the formula outlined below this table. The yield inputs into that formula will be the averages of all three methods (Gaussian kernel, NS and NSS) at:</p> <ul style="list-style-type: none"> • a 7 year tenor (where this means “effective tenor” when applied to the Gaussian kernel); and • at the effective tenor (where this means “effective tenor” when applied to the Gaussian kernel) that is equal to the effective tenor that results from adopting a target tenor of 10 years in the Gaussian kernel method. <p>The effective tenor is the weighted average tenor of the sample using the Gaussian kernel weights associated with the target tenor.</p>
<p>B) The number of bonds in the sample result in non-robust parametric curve estimates.</p>	<p>Non-robust is defined as the standard deviation between each of the three yield estimates using each method (Gaussian kernel, NS and NSS reported on a semi-annual basis) being equal to or greater than 105 basis points using the ‘=stdev’ formula in Microsoft Excel.¹²⁶⁸</p> <p>Under this circumstance the averaging period will be extended back into the past by 20 trading day increments at a time, back from the earliest day in the averaging period. The averaging period will continue to be extended this way until the standard deviation between the three estimates falls under 105 basis points.</p>
<p>C) Bloomberg bond data becomes inaccessible.</p>	<p>The Reserve Bank of Australia (RBA) ‘Aggregate Measures of Australian Corporate Bond Spreads and Yields’ bond yield data for the BBB band credit rating will take the place of the Authority’s estimates and will be extrapolated to 10 years using the equation outlined below this table.</p>

2530. The linear extrapolation referred to in the third row of Table 132 above is as follows:

¹²⁶⁸ The Authority has added further clarification on this contingency to ensure the yield estimates from the three different methods are used as inputs in the standard deviation formula.

$$y_t(10) = y_t[7] + \left(\frac{y_t[et(10)] - y_t[7]}{et(10) - 7} \right) (10 - 7)$$

where:

$y_t[et(10)]$ is the average of all three methods estimated cost of debt (as per event A in Table 132) or the RBA's data (as per event C in Table 132).

$et(10)$ is the effective tenor resulting from the 10 year target reported by the Authority's Gaussian kernel approach (as per event A in Table 132) or that corresponding to the effective tenor corresponding the RBA's 10 year estimate (as per event C in Table 132).

$y_t[7]$ is the average of all three methods estimated cost of debt at a 7 year tenor (as per event A in Table 132) or the RBA's data at the target tenor of 7 years (as per event C in Table 132).¹²⁶⁹

Estimates prior to *DRP*₂₀₁₆

2531. The Reserve Bank of Australia's (**RBA**) data provides an available source of historic credit spreads for 10 year non-financial corporate bonds. The Authority has determined to adopt the RBA credit spread estimates for the historic *DRP* estimates – up to 30 April 2016 – for incorporation in the trailing averages for this Final Decision.¹²⁷⁰ For the Final Decision, the RBA credit spread estimates up to the beginning of GGT's nominated averaging period will be used.
2532. The RBA monthly estimates for the 10 year BBB spread (the series 'Non-financial corporate BBB-rated bonds – Spread to swap – 10 year') for the period January 2006 to April 2016 will be used for estimating the past *DRP*, prior to the Authority's 31 May 2016 estimate.
2533. The monthly RBA estimates are interpolated to daily estimates, and a simple average of each year of daily observations is then made.
2534. In this case, the DRP_t is estimated as shown below:

$$DRP_t = \frac{\sum_{D=1}^{\text{Days in year}} DRP_D}{\text{Days in year}}$$

Where

DRP_D is the *DRP* for day D in regulatory year t .

¹²⁶⁹ Event A requires the procedure outlined in paragraph 2501 to interpolate the cost of debt at the 7 year tenor for the Authority's Gaussian kernel approach. This is not required for the NS and NSS curve 7 year estimates.

¹²⁷⁰ Reserve Bank of Australia, *Aggregate Measures of Australian Corporate Bond Spreads and Yields - F3*, www.rba.gov.au/statistics/tables/index.html#interest-rates, updated monthly.

2535. So for example:

- the average of daily DRPs for the period 1 January 2007 to 31 December 2007 provides the estimated annual DRP for 2006, which gives the first term DRP_{2007} in the trailing average DRP estimate for 2016, $TA DRP_{2016}$;
- it may be noted here that given the automatic formula for the trailing average, the term DRP_{2007} in the trailing average DRP estimate for 2015 would drop out of the trailing average estimate for 2017, $TA DRP_{2017}$, and be automatically replaced by the term DRP_{2017} ;
- the final term DRP_{2016} in the trailing average DRP estimate for 2016, $TA DRP_{2016}$, is given by the daily interpolated RBA estimates for the period 1 January 2016 to 30 April 2016, with daily estimates for the final period of the financial year for 31 May 2015 to 31 December 2016 given by the Authority's 31 May 2016 on the day estimate of the DRP, which is 2.474 per cent. The month of May is daily interpolated between the 30 April 2016 RBA estimate and the Authority's 31 May 2016 estimate. The resulting year of daily estimates is averaged to give the DRP estimate for 2016 for inclusion in the trailing average estimate to apply for calendar year 2016. This is shown in detail in the next section.

Composition of DRP estimators for the AA3 regulatory period

2536. As noted above, the annual update of the trailing average debt risk premium component of the rate of return in each year of the Access Arrangement Period is to be calculated by applying the following automatic formula:

$$TA DRP_0 = \frac{\sum_{t=0}^{-9} DRP_t}{10}$$

Where

$TA DRP_0$ $TA DRP_0$ is the equally weighted trailing average of the DRP to apply in the following year as the annual update of the estimate used in the current year;
and

DRP_t is the DRP estimated for each of the 10 regulatory years

$t = 0, -1, -2, \dots, -9.$

2015 calendar year

2537. For the 2015 calendar year estimate (which applies in the tariff modelling for 1 January 2015 to 31 December 2015), the following estimates will be included in the trailing average:

- $t=-9$: January to December 2006: DRP_{2006} : simple average of (interpolated daily) RBA DRP estimates for the period;
- $t=-8$: January to December 2007: DRP_{2007} : simple average of (interpolated daily) RBA DRP estimates for the period;

- $t=-7$: January to December 2008: DRP_{2008} : simple average of (interpolated daily) RBA DRP estimates for the period;
- $t=-6$: January to December 2009: DRP_{2009} : simple average of (interpolated daily) RBA DRP estimates for the period;
- $t=-5$: January to December 2010: DRP_{2010} : simple average of (interpolated daily) RBA DRP estimates for the period;
- $t=-4$: January to December 2011: DRP_{2011} : simple average of (interpolated daily) RBA DRP estimates for the period;
- $t=-3$: January to December 2012: DRP_{2012} : simple average of (interpolated daily) RBA DRP estimates for the period;
- $t=-2$: January to December 2013: DRP_{2013} : simple average of (interpolated daily) RBA DRP estimates for the period;
- $t=-1$: January to December 2014: DRP_{2014} : simple average of (interpolated daily) RBA DRP estimates for the period;
- $t=0$: January to December 2015: DRP_{2015} : simple average of (interpolated daily) RBA DRP estimates for the period;.

2538. The DRP_t estimates, consistent with the above, contributing to the calendar 2015 trailing average DRP estimate $TA\ DRP_{2015}$ for this Final Decision, which is 2.526 per cent, are published here as follows:

calendar year 2006: DRP_{2006} : 0.713 per cent;

calendar year 2007: DRP_{2007} : 1.130 per cent;

calendar year 2008: DRP_{2008} : 3.756 per cent;

calendar year 2009: DRP_{2009} : 4.624 per cent;

calendar year 2010: DRP_{2010} : 2.125 per cent;

calendar year 2011: DRP_{2011} : 2.379 per cent;

calendar year 2012: DRP_{2012} : 3.168 per cent;

calendar year 2013: DRP_{2013} : 3.043 per cent;

calendar year 2014: DRP_{2014} : 2.251 per cent;

calendar year 2015: DRP_{2015} : 2.070 per cent.

2016 calendar year

2539. For the 2016 calendar year estimate (which is used as the forward looking return on debt for the rest of 2016, and for 2017, 2018 and 2019 for this Final Decision), the following estimates are included in the trailing average:

- $t=-9$: January to December 2007 : simple average of (interpolated daily) RBA DRP estimates for the period;
- $t=-8$: January to December 2008 : simple average of (interpolated daily) RBA DRP estimates for the period;

- t=-7: January to December 2009 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-6: January to December 2010 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-5: January to December 2011 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-4: January to December 2012 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-3: January to December 2013 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-2: January to December 2014 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=-1: January to December 2015 : simple average of (interpolated daily) RBA DRP estimates for the period;
 - t=0: January to December 2016 : weighted average comprising approximately one third (interpolated daily) RBA DRP estimates for the period January to April 2016 and two thirds the Authority's current (t=0) 31 May 2016 DRP estimate (interpolated daily to the prior 30 April 2016 RBA estimate).
2540. As noted above, the Authority's 31 May 2016 estimate contributes to the t=0 estimate in the 2016 DRP hybrid trailing average, for that period that falls after April 2016 (prior to that date, RBA actual data is available).
2541. The DRP_t estimates, consistent with the above, contributing to the calendar 2016 trailing average DRP estimate $TA\ DRP_{2016}$ for this Final Decision, which is 2.713 per cent, are published here as follows:
- calendar year 2007: DRP_{2007} : 1.130 per cent;
 - calendar year 2008: DRP_{2008} : 3.756 per cent;
 - calendar year 2009: DRP_{2009} : 4.624 per cent;
 - calendar year 2010: DRP_{2010} : 2.125 per cent;
 - calendar year 2011: DRP_{2011} : 2.379 per cent;
 - calendar year 2012: DRP_{2012} : 3.168 per cent;
 - calendar year 2013: DRP_{2013} : 3.043 per cent;
 - calendar year 2014: DRP_{2014} : 2.251 per cent;
 - calendar year 2015: DRP_{2015} : 2.070 per cent;
 - calendar year 2016: DRP_{2016} : 2.582 per cent.

Appendix 4 International Bond Sample

Table 133 Sample of Bonds with Australia as Country of Risk as at 31 May 2016

Bond	Bloomberg ID	ISIN
1	EI6849026 Corp	AU3CB0176485
2	EJ3377821 Corp	XS0822418686
3	EJ8660791 Corp	US68620YAC66
4	EI1562293 Corp	Not Available
5	EJ8818027 Corp	AU3CB0215457
6	EI8834174 Corp	AU3CB0186385
7	EJ7922069 Corp	AU3CB0212652
8	EH7350695 Corp	US980236AE37
9	EJ0949291 Corp	AU3CB0191815
10	EI6030205 Corp	XS0604462704
11	EI6204404 Corp	AU3CB0173201
12	EJ3879651 Corp	XS0841018004
13	EJ4265850 Corp	AU3CB0201697
14	EJ4333419 Corp	AU3CB0201747
15	EK5876389 Corp	AU3CB0225324
16	EK5989620 Corp	AU3CB0225480
17	EI0704078 Corp	US45326TAA60
18	EI1608021 Corp	Not Available
19	EI1592092 Corp	Not Available
20	EJ5984160 Corp	AU3FN0018354
21	EI2000491 Corp	US10510KAA51
22	EJ6468916 Corp	AU3CB0208122
23	EK2849330 Corp	AU3CB0221422
24	EJ6899243 Corp	XS0938014742
25	EK9545295 Corp	AU3CB0230209
26	EK9580078 Corp	AU3FN0027801
27	EI7021476 Corp	Not Available
28	EI3253362 Corp	AU3CB0155133
29	EJ7588209 Corp	AU3CB0211415
30	EJ7646361 Corp	AU3CB0211647
31	EI4044356 Corp	US980888AD39
32	EI4098048 Corp	US04363UAB26
33	EK5107249 Corp	AU3CB0224467
34	EJ8616397 Corp	XS0977502110
35	EJ8798880 Corp	AU3CB0214823
36	EJ6371623 Corp	XS0920705737
37	EJ8893137 Corp	AU3CB0215119
38	EJ9225768 Corp	XS0993259844
39	EI5615311 Corp	XS0589885960
40	EI4214900 Corp	US87124VAA70
41	EK1048710 Corp	AU3CB0219194
42	EK1306886 Corp	AU3CB0219681
43	EI6348474 Corp	US980888AF86

Bond	Bloomberg ID	ISIN
44	EI6641167 Corp	US980236AL79
45	EK2622026 Corp	XS1066869048
46	EK3117976 Corp	AU3CB0221141
47	EK3554137 Corp	AU3CB0222271
48	EI7486208 Corp	XS0650132318
49	EK4152378 Corp	XS1094768469
50	EI8144731 Corp	XS0680309191
51	EJ8598074 Corp	XS0976223452
52	EI8364461 Corp	US68620YAA01
53	EI8703494 Corp	US65120FAA21
54	EG0640763 Corp	AU3FN0001244
55	EK6279310 Corp	AU3CB0225910
56	EK8055148 Corp	XS1205616268
57	EK2690916 Corp	AU3CB0220929
58	EK3157451 Corp	XS1080343277
59	EJ2714362 Corp	XS0803234094
60	EJ3784331 Corp	US65120FAC86
61	EJ3906165 Corp	US00205GAA58
62	EG0219857 Corp	AU3FN0001251
63	EJ4317107 Corp	US52535PAA75
64	EJ4068577 Corp	US87124VAD10
65	EJ5962760 Corp	XS0907606379
66	EJ6105286 Corp	XS0910943983
67	EI6307918 Corp	US04363UAD81
68	EJ3849779 Corp	XS0836488485
69	EJ8324406 Corp	XS0972735533
70	UV3027009 Corp	AU3FN0028205
71	EK1561159 Corp	XS1057783174
72	EK3156859 Corp	XS1028952312
73	EK4655081 Corp	XS1109744778
74	EK4685294 Corp	XS1111428402
75	EJ4508010 Corp	XS0858000606
76	EK6424791 Corp	AU3FN0025987
77	EK7758478 Corp	US980236AM52
78	EK8078215 Corp	US00205GAB32
79	EK8787450 Corp	US87124VAE92
80	EK9072910 Corp	AU3CB0229680
81	EK9118226 Corp	XS1239502328
82	UV8551672 Corp	XS1292950232
83	QJ2217868 Corp	US10510KAC18
84	JV3204296 Corp	XS1338157248
85	QJ4132016 Corp	US89400PAE34
86	JK8763837 Corp	US87124VAF67
87	JK8498749 Corp	US02343UAA34
88	JK9360021 Corp	XS1405797694
89	EK8055387 Corp	XS1205616698
90	EK8055262 Corp	XS1205617829

Bond	Bloomberg ID	ISIN
91	EK8078397 Corp	US00205GAC15
92	EJ3049461 Corp	AU0000CTXHA4
93	EI8704930 Corp	US65120FAB04
94	QJ1896811 Corp	US055451AX66
95	QJ1928531 Corp	US055451AW83
96	JV5237112 Corp	XS1380286663
97	QJ1906909 Corp	XS1309436753
98	QJ1910778 Corp	XS1309437215
99	QJ1908806 Corp	XS1309436910

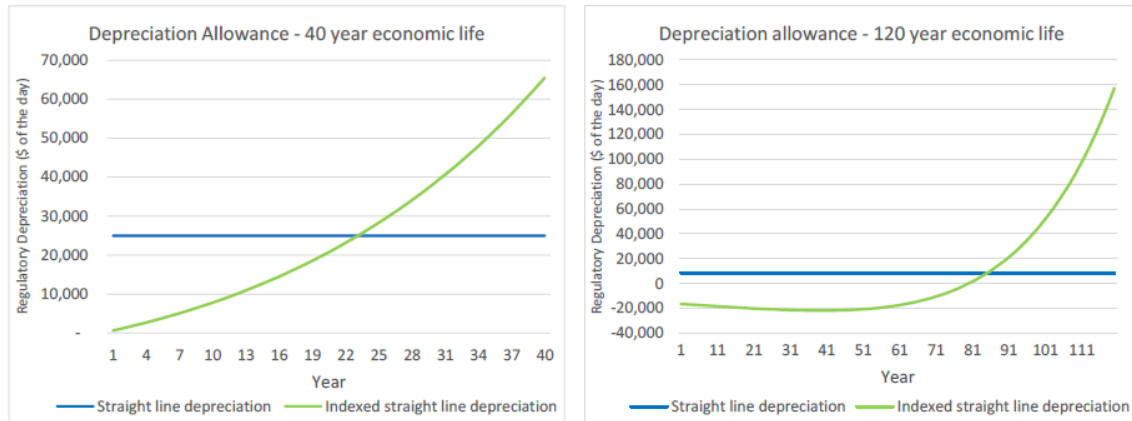
* In order of increasing remaining term to maturity

Source: Bloomberg and ERA Analysis

Appendix 5 Depreciation methods compared

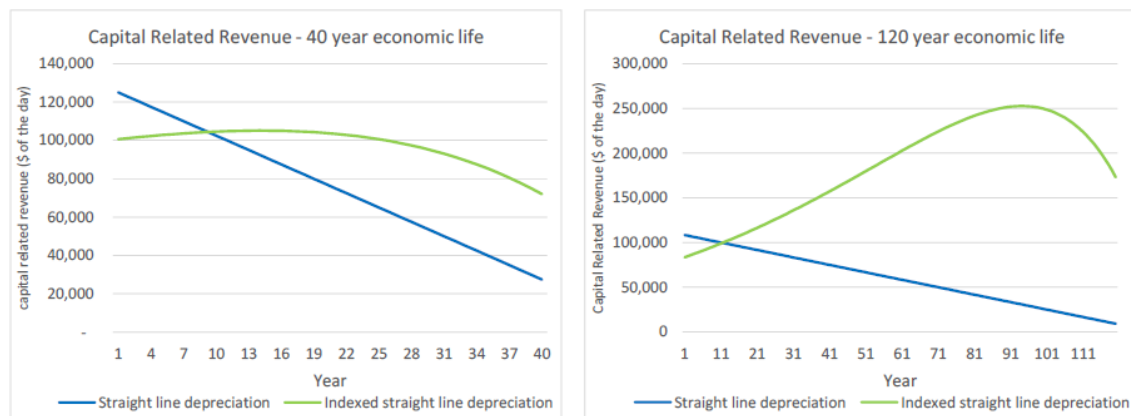
2542. HoustonKemp provided a heuristic chart comparing outcomes for revenue under HCA and CCA depreciation (Figure 38 and Figure 39).

Figure 38 HoustonKemp's nominal depreciation heuristic



Source *Goldfields Gas Transmission, Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information, 15 August 2014, Attachment 4, p. 6.*

Figure 39 HoustonKemp's nominal capital related revenues heuristic



Source *Goldfields Gas Transmission, Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information, 15 August 2014, Attachment 4, p. 7.*

2543. HoustonKemp concluded (our emphasis):¹²⁷¹

Figure [17] above illustrates the time profile of capital-related revenue allowance associated with the two depreciation methods, where capital related-revenue allowance is the sum of the depreciation and return on capital elements of the building block approach referred to in rule 76 of the NGRs.

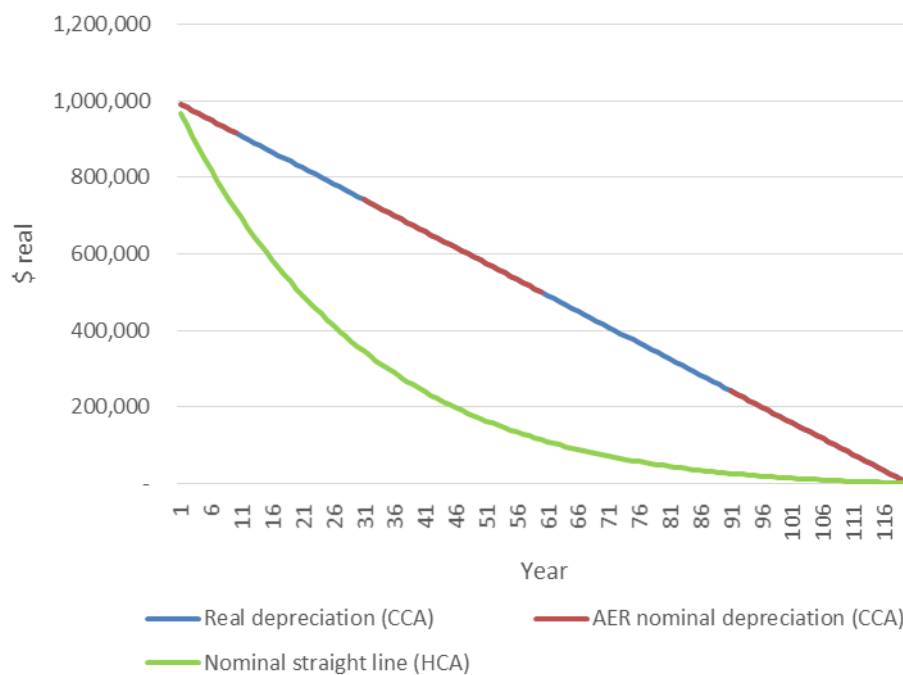
Figure [17] shows that, despite initially lower capital-related revenues, when applied to a single asset, indexed straight line depreciation results in materially higher capital-related revenues in later years, as compared with those under straight line depreciation.

¹²⁷¹ Goldfields Gas Transmission, Goldfields Gas Pipeline Access Arrangement Revision Proposal Supporting Information, 15 August 2014, Attachment 4, p. 7.

To summarise, the application of the building block approach means that a higher depreciation allowance, and so total revenues, in the early years of an asset's life, must be offset by a lower depreciation allowance and total revenues in the future.

It follows that, all else being equal, the depreciation methodology has a potentially significant effect on the time profile of reference tariffs, the level of which is a function of the total revenue allowance in any year, and the number of units of reference service to be provided in the same year.

2544. The Authority agrees with HoustonKemp that the depreciation method can have a significant effect on the time profile of reference tariffs.
2545. However, the Authority considers that HoustonKemp's analysis does not reflect the true picture in terms of the time profile of the two depreciation methods presented, as it is in \$ of the day, and therefore suffers from money illusion associated with the assumed rate of inflation. It is more telling to use real analysis, as this shows the true effect on the time profile of *revenue* being charged to users from the alternate depreciation methods.
2546. The Authority has developed a sequence of figures (Figure 40 to Figure 42) which illustrate the corresponding *real* heuristic analysis in relation to how the HCA and CCA approach impacts on the revenue and cost distribution over time. These illustrations correspond almost identically to HoustonKemp's 120 year asset life nominal analysis in Figure 38 and Figure 39 above (the y axis values are different, but it is the pattern of depreciation and revenue over the 120 year period which matters in this instance – the y axis values can be scaled without loss of exposition).
2547. For the CCA method, two approaches are illustrated in Figure 40 to Figure 42:
- a pure real valued revenue model, giving real values for depreciation, the residual RAB and revenue; and
 - a nominal model with indexed depreciation, as per the Australian Energy Regulator's Post Tax Revenue Model (**PTRM**) method, with the relevant outputs then converted to real terms.
2548. For the HCA method, the nominal outputs are from a pure nominal model, which are then converted to their corresponding real values.
2549. The conversion of all nominal outputs to their real equivalent ensures the comparison is on a like with like real basis, across all three methods.
2550. First, Figure 40 shows that in real terms, CCA provides for constant straight line reduction of the RAB in real terms, whereas the HCA method accelerates depreciation in the early years – the RAB loses value more quickly with the HCA method in real terms. Note that blue line, which is the value of residual RAB in a CCA real model, lies exactly under the red line, which is the value of the residual RAB of an AER style nominal CCA model with indexed depreciation – the two CCA outcomes are identical in real terms on this metric.

Figure 40 Illustrative closing Asset Value under HCA and CCA (real \$)

Source ERA analysis, December 2015

2551. Second, Figure 41 illustrates the outcomes for the real value of depreciation in the three models. It may be noted that the AER-style (nominal) PTRM deducts the dollar value of the inflation – which is added to the RAB in the PTRM each year in order to ‘index’ it – from the nominal value of the resulting depreciation in the model. This deduction results in negative depreciation in the PTRM in real terms in the early years, as may be observed in

- This deduction results in negative depreciation in the PTRM in real terms in the early years, as may be observed in Figure 41.

2552. The deduction is required in order to avoid double counting inflation in the nominal model.¹²⁷²

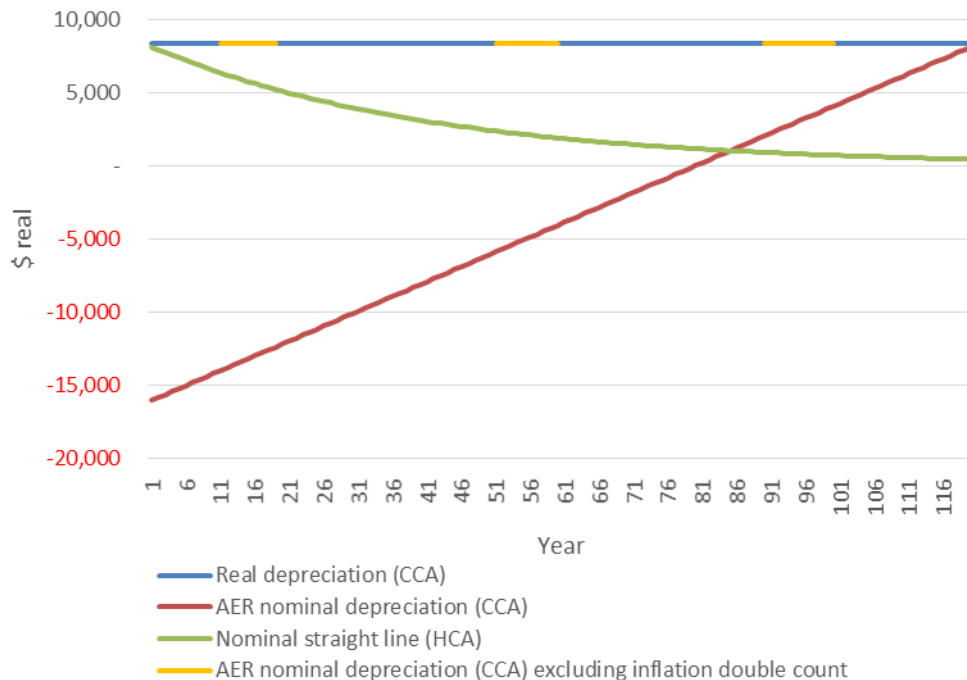
- However, if this double count were deducted elsewhere in the building block model, then the depreciation schedule would align exactly with that derived in a real building block model – this may be observed with the orange line in Figure 41.

2553. This double count issue is a key reason why the impacts of the alternative HCA and CCA depreciation methods cannot be compared on the basis of the depreciation building block impacts alone. The revenue impacts are what matter, given the

¹²⁷² The double count arises in the PTRM because there is an inflation component applied both in the indexing of the RAB and in the application of a nominal WACC used to calculate the ‘return on’ capital. The application of the nominal WACC to the indexed capital base then results in a double compensation for inflation. Hence, there is a need to deduct an amount for that double count somewhere in the building blocks. That deduction can only be effected in the depreciation building block, as the NGR requires that the ‘return on the projected capital base’ building block (NGR 76(a)) must be calculated on a nominal vanilla basis (NGR 87(4)(b)).

effects on the return on capital, which offset the impacts on the return of capital (depreciation).

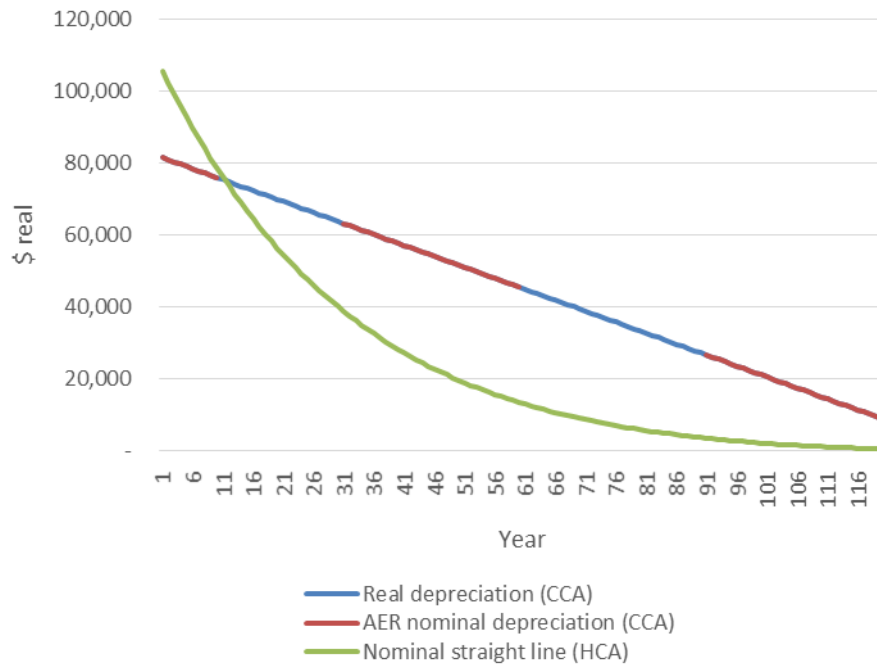
Figure 41 Illustrative depreciation under HCA and CCA (real \$)



Source ERA analysis, December 2015

2554. The ultimate effect of the inflation double count deduction in the nominal PTRM model is to achieve a revenue path that is identical to a fully real model.
2555. Finally, and most importantly, Figure 42 illustrates how both depreciation methods in this simple heuristic result in a real revenue paths that decline over time. It is interesting that this simple heuristic aligns with the overall picture for the GGT (refer to 'Figure 5' at paragraph 1723 in the main body of this Final Decision). This is reasonable, given the assumption underpinning 'Figure 5', that there are no major new investments on the GGP (although the slope in 'Figure 5' is ameliorated, as compared to Figure 42, by the ongoing investments required for 'stay in business', which are shorter lived than the main pipeline).
2556. However, the effect of HCA dragging forward the capital-related revenue relative to CCA in the early years is clearly illustrated in Figure 42 (note that the blue line lies exactly under the red line – both the CCA cases are identical on this metric). Given the impact of discounting – whereby the early years give much of the net present value of a 70 year asset – the effect of the HCA 'drag forward' in real terms is very significant.
2557. Figure 42 thus illustrates how real capital charges are more evenly allocated between current and future consumers of pipeline services under CCA, as compared to HCA, for a single asset. The more even allocation is consistent with the requirements of NGR 89(1)(a) and the NGO, in that it provides for a tariff path that reflects the opportunity costs of the pipeline, does not distort tariffs away from long run marginal cost, and does not lead to unjustified benefits for current consumers, at the expense of future customers.

Figure 42 Illustrative total revenue under HCA and CCA (real \$)



Source ERA analysis, December 2015

Appendix 6 Authority's required amendments to GGT's revised Terms and Conditions applying to the firm service.

In the following table:

- "current terms and conditions" or "current T&Cs" refers to the terms and conditions in place for the access arrangement period 2010-2014 (AA2) and "current clause" has a corresponding meaning.
- "initial terms and conditions" or "initial T&Cs" refers to the terms and conditions attached to GGT's initial proposed revised access arrangement for the period 2015-2019 (AA3) dated 15 August 2014.
- "latest terms and conditions" or "latest T&Cs" refers to the terms and conditions attached to GGT's amended proposed revised access arrangement for AA3 dated January 2016.

Part 1 – Provisions the Authority requires to be amended

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
Term of Transportation Agreement			
D.1.3	N/A	Amendment required to correct drafting error.	In line 2, remove the word "apply" after "D.1.2(c)". In line 3, insert the words "of these" between "D.29" and "Terms and Conditions".
Obligation to provide the Firm Service			
D.2.1	1	Amendment required to correct drafting error.	In line 1 of cl D.2.1, delete the word "General".
D.2.3	4	Amendment required to correct drafting error.	Change the word "Users" to "User" after "Service Provider will provide the Firm Service to....".

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
Prudential Requirements			
D.3.1	5	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>GGT's proposed retention of the requirement for a "minimum of 6 months of Charges payable" was deleted from D.3.1(a) as being inconsistent with cl D.3.2.</p>	<p>Amend cl D.3.1(a) as follows:</p> <p>(a) <u>acting reasonably</u>, require, acting reasonably, the User to provide, prior to commencement of the Firm Service and thereafter as reasonably required, financial security in a form <u>and for an amount</u> acceptable to Service Provider (<u>acting reasonably</u>) for an undrawn amount equal to a minimum of 6 months of Charges payable and User must maintain it for 6 months after termination of the Transportation Agreement, for the performance of the User's obligations under the Transportation Agreement; and</p> <p>In cl D.3.2, change the reference from cl "D.3.1" to cl "<u>D.3.1(a)</u>".</p>
Nominations			
D.4.2	7	Amendment required to correct drafting error.	Remove the word "a" from the first line of cl D.4.2(b).
Scheduling			
D.5.1	11	<p>Amendment required to improve clarity, and to correct drafting error.</p> <p>Global change to use defined term "Gas Day" instead of overlapping defined term "Day" throughout document (see amendments to definitions in Schedule C to access arrangement).</p>	<p>Insert the word "<u>Gas</u>" in front of the word "<u>Day</u>" each time it appears in cl D.5.1 and cl D.5.2.</p> <p>Amend the word "User's" in line 2 of cl D.5.2(c) to read "<u>Users</u>".</p> <p>In the line following subclause (b) in cl D.5.1, insert the word "<u>a</u>" in between the words "in respect of" and "Delivery Point".</p>
D.5.3		<p>Amendment required to correct drafting error.</p> <p>Also, cl D.5.3 requires GGT to notify a user of any scheduling or rescheduling of the user's receipts or deliveries "as soon</p>	<p>In cl D.5.3:</p> <ul style="list-style-type: none"> insert the word "<u>the</u>" between the words "give" and "User".

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		as reasonably practicable, but in any event within 24 hours after" that scheduling or rescheduling occurs. The Authority was concerned that this 24 hr period could potentially lead to users having insufficient notice of a scheduling or rescheduling which could in turn prejudice achievement of the NGO. However, as the primary obligation on GGT is to give notice "as soon as reasonably practicable", the Authority is prepared to accept the reference to 24 hrs as the outside limit.	
Changing delivery and receipt points			
D.6.1 – D6.4	N/A	<p>Amendment required to improve clarity.</p> <p>Global change to use defined term "Gas Day" instead of overlapping defined term "Day" throughout document (see amendments to definitions in Schedule C to access arrangement).</p>	Insert the word " Gas " in front of the word "Day" each time it appears in cl D.6.1 and cl D.6.3.
Curtailment			
D.7.1	15	<p>Draft Decision amendment no longer required. . However, amendments required to improve clarity.</p> <p>The Authority notes GGT has not accepted the ERA's required amendment to include an indemnity from GGT to User for losses etc. suffered where GGT interrupts or reduces the firm service, except in accordance with proposed initial cls 31, 32, 33 and 34 – but not where interruptions or reductions are for:</p> <ul style="list-style-type: none"> • unplanned maintenance or other unplanned activities, • "emergencies" caused by circumstances that were within GGT's reasonable prevention or control, or 	<p>Insert the word "Gas" in front of the word "Day" each time it appears in cl D.7.1.</p> <p>In line 7 of cl D.7.1(d), insert a closed bracket (") ") after "D.7.1(e)".</p> <p>Amend the word "User's" in line 3 of cl D.7.1(c) to read "Users".</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<ul style="list-style-type: none"> planned maintenance or other planned activities exceeding a set number of consecutive days or a set number of days (whether or not consecutive) in any rolling period of 30 days; or except in accordance with proposed initial cls 98-101 (force majeure). <p>GGT claims this indemnity is not accepted as it is most appropriately dealt with under the general liability regime which provides remedies for service failure and breach.</p> <p>The Authority accepts that this issue is best dealt with in latest cl D.34 ("Limitation of Liability Indemnity"). Further, the Authority considers that the reinstatement of current cl 18.5 ("Refunds and Credits") as latest cl D.34.5, together with the mutual indemnity for Gross Negligence and Wilful Misconduct in latest clause D.34.4 and the amendments made to current cls 31, 33 and 34 (now latest cls D.14.2, D.14.4 and D.14.5 respectively), go some considerable way to redressing the balance between GGT and users as regards GGT's rights to interrupt or reduce the firm service.</p> <p>Accordingly, the Authority accepts that, in the above circumstances, its previously proposed further indemnity from GGT to User is no longer required.</p> <p>Global change to use defined term "Gas Day" instead of overlapping defined term "Day" throughout document (see amendments to definitions in Schedule C to access arrangement).</p>	
D.7.2	N/A	Amendment required to correct drafting errors.	Delete the word " <i>this</i> " in the first line and, in the third line, insert "," between the words " <i>receipt</i> " and " <i>transportation</i> ".
Imbalances			

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
D.8.2	18	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>The Authority notes GGT has not accepted the part of the Authority's required amendment that required inclusion of the words "or by exchanging all or part of their imbalances with the other Users". GGT claims this omission is to remove uncertainty created by those words as to a form or methodology of exchange, other than assignment by way of subcontract provided for in the agreement, which GGT has incorrectly stated in cl D.8.2 occurs under cl " D.36.2" (in fact, cl D.36.7 deals with assignment by way of subcontracting).</p> <p>The Authority did not intend that its proposed words "<i>or by exchanging all or part of their imbalances with the other Users</i>" should widen the means of capacity trading permitted by the agreement. However, the Authority also notes that cl D.36.7 does not necessarily represent the only means of capacity trading permitted by the agreement and does not accept that users be limited under cl D.8.2 to just using D.36.7 where other means are available to them under the agreement.</p> <p>Accordingly, the Authority requires that cl D.8.2 be amended to reflect this.</p>	<p>On the third line of cl D.8.2, insert the following words immediately after the word "or":</p> <p><i><u>"by exchanging all or part of their Imbalances with other Users in any way permitted by the User's Transportation Agreement, including"</u></i></p> <p>In cl D.8.2, change the reference from cl "D.36.2" to cl "D.36.7".</p>
D.8.3		Amendment required to improve clarity.	The words "7 days" in new clause D.8.3 should be amended to read " 7 Gas Days ".
D.8.4 –D.8.5		Amendments required to more correctly adopt the required amendment from the Draft Decision to correct drafting errors and to improve clarity.	<p>In clause D.8.4:</p> <ul style="list-style-type: none"> on line seven, delete the word "this" before the words "clause D.8.3";

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>GGT claims it has accepted the Authority's Draft Decision requirement amendments to new clauses D.8.4-D.8.5, however the Authority is unable to locate within GGT's amended revised draft provisions reflecting all of those requirement amendments. Accordingly, with one exception, the Authority requires amendments to implement the previous required amendments.</p> <p>The one exception was the Authority's requirement that where the buyer/seller is in any way related to GGT, the price be not only arm's length and reasonable, but also "fair". The Authority notes that, despite GGT's stated acceptance of the Authority's required amendment, GGT has omitted to include this fairness requirement from its new clause D.8.5(b)(iii). However, the Authority considers that the other requirements for arm's length and reasonableness are probably sufficient protection for users in this situation. The Authority therefore does not propose requiring the inclusion of the words "fair and" before "reasonable" in clause D.8.5(b)(iii).</p> <p>Global change to use defined term "Gas Day" instead of overlapping defined term "Day" throughout document (see amendments to definitions in Schedule C to access arrangement).</p>	<ul style="list-style-type: none"> on line eight, immediately after the words "to the extent that", insert the following words: "Service Provider is compensated for the costs and expenses by some other means (such as, for example, via the Imbalance Charge), or that". <p>In cl D.8.4(a), capitalise the first letter of each of the words "related body corporate".</p> <p>In clause D.8.5(b):</p> <ul style="list-style-type: none"> replace the word "provider" with the word "provide"; immediately after the word "evidencing" insert the words "(to the User's reasonable satisfaction)". <p>In cl D.8.5(b)(iii), insert the word "Gas" before the word "Day".</p>
D.8.6		Amendment required to improve clarity of terms and conditions by moving this provision (which concerns overruns) from the imbalances clause D.8 to the new overruns clause D.8A inserted under Part 2 of this Appendix.	Delete clause D.8.6.
Transportation Tariff and Charges			

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
D.9.1 – D.9.6		<p>Amendment required to correct drafting errors.</p> <p>Amendment also required to correct incorrect clause cross-references.</p> <p>In cl D.9.2(a)-(c) and drafting improvements in cl D.9.3 (which also must be made to the corresponding provision in section 4.1.1 of the access arrangement).</p>	<p>In the heading to cl D.9, delete the word "Transportation" and insert the word "Reference" in its place.</p> <p>Delete cl D.9.1 and consequentially renumber cls D.9.2 – D.9.6.</p> <p>In cl D.9.2(a), (renumbered as D.9.1(a)), change "D.9.2(a)" to "D.9.2".</p> <p>In cl D.9.2(b), (renumbered as D.9.1(b)), change "D.9.2(b)" to "D.9.3".</p> <p>In cl D.9.2(c), (renumbered as D.9.1(b)), change "D.9.2(c)" to "D.9.4".</p> <p>In cl D.9.3 (renumbered as D.9.2) (and also in s 4.1.1 of the access arrangement):</p> <p>on second line, insert brackets around the words "expressed in GJs" so as to read "(expressed in GJs)"; and</p> <p>on the third line, insert a comma (",") immediately after the words "Delivery Point".</p>
Other Charges D.10.1		<p>Amendment required to correct definition.</p> <p>The definition of "Other Tariff Charges" in schedule C currently claims that Other Tariff Charges "has the meaning given in section 4.2.1 of the Access Arrangement." However, while some charges are listed in s 4.2.1 (AA), the term Other Tariff Charges is not defined as such in s 4.2.1 (AA). The definition of "Other Tariff Charges" in schedule C should therefore be changed to define them as the charges <i>listed</i> in s 4.2.1.</p> <p>Further, while the substance of s 4.2.1 (Other Tariff Charges) of the access arrangement should match the</p>	<p>In schedule C, amend the definition of "Other Tariff Charges" as follows:</p> <p>Other Tariff Charges means has the charges listed meaning given in section 4.2.1 of the Access Arrangement, when used in the Access Arrangement, and means the charges listed in clause D.10.1 of the Terms and Conditions when used in the Terms and Conditions;</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>substance of cl D.10.1 (Other Tariff Charges) of the terms and conditions, the definition of "Other Tariff Charge" in schedule C should be amended so that it refers to both s 4.2.1 (AA) and cl D.10.1 (T&Cs) so that the AA and T&Cs can each stand alone.</p>	
D.10.2 Overrun charges	4.2.2(AA)	<p>Amendments required to be made in Access Arrangement.</p> <p>GGT accepted the Authority's required amendment that a description of the Firm Service (including all charges for the Firm Service) should be included in the T&Cs. This should mean that, amongst other things, the description of the Overrun Charges in the T&Cs should match that in the AA. However, they do not match.</p> <p>The description of Overrun Charges in cl D.10.2 of the T&Cs appears to have been taken from s 4.2.2 of the Access Arrangement – however, the following differences exist:</p> <ul style="list-style-type: none"> the words "(or a related body corporate of Service Provider)" have been added in cl D.10.2(a) in place of the word "solely" in s 4.2.2(a) of the AA; and the words "or if the Overrun occurred as a result of circumstances beyond the reasonable control of User" have been added at the end of cl D.10.2(a) that were not in s 4.2.2(a) of the AA; and the words "excluding System use Gas and User's Line Pack" have been added in cl D.10.2(c(ii)) that were not in s 4.2.2(c(ii)) of the AA. <p>These changes to the version in the T&Cs appear acceptable but should also be made to the version in the AA.</p>	<p>Refer to Required Amendment 14 for amendments required to s 4.2.2 of the AA.</p> <p>In cl D.10.2(a), capitalise the first letter of each of the words "related body corporate".</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
D.10.4 Daily Variances Charges	4.2.4(AA)	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>GGT claims it has "accepted" the Authority's Draft Decision required amendment to 4.2.4 of the revised AA and the T&Cs.</p> <p>However, while GGT has added current cl 5.3(c) (as new cl D.10.4(e)) as per the Authority's required amendment, and added current cl 5.3(b) (as new clause D.10.4(d)), GGT has also retained s 4.2.4 of the AA and the 250% "Daily Variance Rate" intact and included the s 4.2.4 provisions in the T&Cs as cl D.10.4(a)-(c). GGT's only apparent concession to the Authority's requirement that users be no worse off than under existing AA, has been to provide that cl D.10.4(a) is "Subject to clause D.10.4(e)". It is uncertain what the outworking of the "subject to" qualification would be in terms of whether or not the user's obligation to pay the Daily Variance Charge under cl D.10.4(b) is also subject to cl D.10.4(e). The Authority notes that GGT has provided no similar qualification in s 4.2.4(a) of the AA from which cl D.10.4(a) is drawn).</p> <p>The Authority considers that GGT's changes do not comply with the Authority's Draft Decision required amendment and that users would be likely to be worse off than under the current AA if GGT's changes were accepted.</p> <p>Accordingly, the Authority requires specific amendments to cl D.10.4 of the T&Cs, s 4.2.4 of the AA and the values for "Daily Variance Rate" and "Daily Variation Allowance" in the Details (sch A) to ensure that users are substantially no worse off than under the current AA.</p>	<p>Amend cl D.10.4 as follows (and make similar amendments to section 4.2.4 of the AA so that it is substantially the same as cl D.10.4):</p> <p>"(a) Subject to clause D.10.4(e), Aa Daily Variance occurs when the quantity of Gas:</p> <p>(i) received from or on behalf of the User at a Receipt Point during a Gas Day is different from the quantity of Gas Scheduled for the User for that Receipt Point; or</p> <p>(ii) delivered to or for the account of the User at a Delivery Point during a Gas Day is different from the quantity of Gas Scheduled for the User for that Delivery Point,</p> <p>the quantity of which at each Delivery Point and Receipt Point (as applicable), in GJ, is the Daily Variance Quantity.</p> <p>(b) If Service Provider, acting as a reasonable and prudent pipeline operator, believes that a Daily Variance has occurred because the User is not making Nominations in good faith, then Service Provider may give a notice to the User ("Variance Notice") requiring the User to nominate in good faith.</p> <p>(bc) If on any Gas Day after the expiry of 21 Gas Days from receipt of a Variance Notice The User must pay to Service Provider the Daily Variance Charge, for each Day on which—the Daily Variance Quantity:</p> <p>(i) at a Receipt Point exceeds the Daily Variation Allowance; and</p> <p>(ii) at a Delivery Point exceeds the Daily Variation Allowance,</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
			<p>excluding any portion of that variation that has been caused by Service Provider or a Force Majeure Event, <u>the User must pay to Service Provider the Daily Variance Charge, for each Gas Day on which such an exceedance occurs until such time as the Variance Notice is withdrawn by Service Provider. If Service Provider has issued the User with a Variance Notice, Service Provider may withdraw that Variance Notice at any time in its discretion and must withdraw that Variance Notice immediately if a period of 3 consecutive Months has elapsed without the User incurring the Daily Variance Charge.</u></p> <p>(d) The Daily Variance Charge for a <u>Gas</u> Day is calculated by multiplying the Daily Variance Rate set out in the Details by the Daily Variance Quantity for that <u>Gas</u> Day for a Receipt Point or a Delivery Point (as applicable) for which the Daily Variance Charge is payable under clause<u>paragraph</u> D.10.4(c) and aggregating the amounts calculated above for each relevant Receipt Point and Delivery Point.</p> <p>(d) If Service Provider acting as a reasonable and prudent pipeline operator believes that the User is not making Nominations in good faith, then Service Provider may give a notice to the User ("Variance Notice") requiring the User to nominate in good faith.</p> <p>(e) If on any Gas Day after the expiry of 21 Gas Days from receipt of a Variance Notice:</p> <p>(i) the quantity of Gas supplied by the User at an Receipt Point on a Gas Day; or</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
			<p>(ii) the quantity of Gas delivered to the User by Service Provider at an Delivery Point on a Gas Day, varies by more than the greater of:</p> <p>(iii) 8% of the User's Nomination at that Receipt Point or that Delivery Point on that Gas Day; and</p> <p>(iv) one TJ;</p> <p>then the User shall pay Service Provider the Daily Variance Charge."</p> <p>Amend the values for "Daily Variance Rate" and "Daily Variation Allowance" in the Details (schedule A) as follows:</p> <p>"Daily Variance Rate 2050% of Toll Tariff + Capacity Reservation Tariff + Throughput Tariff</p> <p>Daily Variation Allowance <u>the greater of:</u></p> <p><u>(a) 5% (either positive or negative) of the MDQ for the applicable Delivery Point or Receipt Point;</u></p> <p><u>(b) 8% of the quantity of Gas Scheduled for the User for the applicable Receipt Point or Delivery Point for the applicable Gas Day; and</u></p> <p><u>(c) 1 TJ."</u></p>
D.10.5		Amendment required to correct drafting error and to improve clarity.	<p>In cl D.10.5(b), capitalise the first letter of each of the words "Connection Charge".</p> <p>In cl. D.10.5, amend the last paragraph of that clause as follows:</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
D.10.6 Quantity Variation Charges		<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>In its Draft Decision the Authority required GGT to</p> <ul style="list-style-type: none"> reinstating current cll 9.6(b), (d) & (e) provisions into T&Cs. GGT's proposed new rates are not accepted unless shown to be reasonable and consistent with the NGR. Amend overruns charging mechanism (including rates) to ensure users are no worse off than under current AA. This includes reinstating current clauses 9.6(b) and 9.6(e) and amending Authorised Overrun Charge rate so it is no worse for users than the rate applicable for SQO under the current AA and providing an Unauthorised Overrun Charge rate which leaves users no worse off than under the current AA. Amend imbalance charging mechanism (including rates) to ensure users are no worse off than under current AA. This includes reinstating current clauses 9.6(b), 9.6(d) and 9.6(e) and imbalance allowance thresholds and charging rates such that users are no worse off. In its response, GGT claimed it had accepted these required amendments. However, it appears GGT has sought to reinstate the Quantity Variation Charges provisions in current cls 9.6(b), (d) and (e) by including cll D.10.6(a), (c), (d) and (e) in addition to its other 	<p>"Clauses D.24.1 of these Terms and Conditions applying to the Firm Service make provision for the addition <u>connection</u> of Delivery Points <u>Facilities</u> and the costs involved."</p> <p>Amend cl D.10.1 as follows:</p> <p>"Other Tariff Charges Subject to clause D.10.6, tThe User may also be required to pay the following charges: (a) Overrun Charges as set out in <u>clause</u> D.10.2; (b) Imbalance Charge as set out in <u>clause</u> D.10.3; (c) Daily Variance Charge as set out in <u>clause</u> D.10.4; and (d) Charges in response of Connection and Delivery Points as set out in <u>clause</u> D.10.5.; and (e) Quantity Variation Charges as set out in section D.10.6."</p> <p>In cl D.10.6(a):</p> <ul style="list-style-type: none"> on line 1, insert the word "<u>only</u>" before "impose"; and on line 2, replace the words "<i>the imbalance or overrun</i>" with "<u>Imbalances or Overruns</u>". <p>In cl D.10.6(b), delete the words "<i>as defined in the appendix 4</i>".</p> <p>In cl D.10.6(d):</p> <ul style="list-style-type: none"> on the first line, delete "<i>may</i>" and replace it with "<u>must</u>"; in the second line, delete the words "<i>as defined in appendix 4</i>";

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>proposed Authorised and Unauthorised Overrun Charges and Imbalance Charges without amending them to ensure users are no worse off.</p> <ul style="list-style-type: none"> • Clauses D.10.1(e) and D.10.6(a) now effectively impose the Quantity Variation Charges from appendix 4 to the current AA (which also include overrun, imbalance and variance charges) in addition to GGT's newly proposed Overrun, Imbalance and Daily Variance Charges, when the Authority's intention was that GGT's proposed overruns, imbalances and daily variance charging mechanisms be amended so that users are no worse off than under the existing Quantity Variation Charges mechanism (i.e. user should have the benefit of the protections offered to users in the Quantity Variation Charges provisions, not be charged both sets of charges). • clause D.10.6(d) does not fully implement current clause 9.6(e) as GGT has changed the requirement in current clause 9.6(e) that GGT "will rebate" (i.e. a mandatory obligation) to "may, upon User's request, rebate" (i.e. only if the user requests, and potentially at GGT's discretion). GGT claims it has proposed these further amendments because the costs to administer the rebate for both parties would outweigh the costs/charges that would be recovered. GGT claims it is therefore appropriate to leave it to the user to determine the value of the rebate and to make a request for it accordingly in appropriate circumstances where there is a benefit to it in doing so. The Authority accepts it makes sense to require that payment of the rebate only occur if the user requests it. However, the Authority 	<ul style="list-style-type: none"> •in the fifth line, amend the words "overruns" to read "<u>Overruns</u>"; and •in the fifth line, amend the word "imbalances" to read "<u>Imbalances</u>". <p>Delete cl D.10.6(e)(ii) and as a consequence of that deletion, remove the colon (":") from the end of the first line of cl D.10.6(e) and the paragraph numbering ("(i)") from the next line, and connect both lines together as a single paragraph, replacing the closing semi-colon (";") with a full stop (".").</p> <p>In cl D.10.6(e), amend the words "overruns" and "imbalances" to read "<u>Overruns</u>" and "<u>Imbalances</u>" respectively.</p> <p>In cl D.10.6(f), amend the word "imbalances" to read "<u>Imbalances</u>".</p> <p>Amend cl D.10.6(g) as follows: "At the conclusion of the Term, <u>each Party will use reasonable endeavours to ensure</u> the Accumulated Imbalance shall be <u>is</u> set to zero. ..."</p> <p>The references to cl "D.10.6(a)(ii)" in cls D.10.6(b) and (c) should be amended to read "<u>D.10.6(a)</u>".</p>

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		<p>considers it should be clarified that GGT <u>must</u> rebate if the user requests; and</p> <ul style="list-style-type: none"> In cl D.10.6(e)(ii), GGT has added that (for the avoidance of doubt) "Authorised Overruns are provided on a take or pay basis". While the Authority did recommend in the Draft Decision that GGT should clarify whether authorized overrun is take or pay, the Authority is of the view that cl D.10.6(e)(ii) does not satisfactorily do that and could be misleading. That is because the substance of the T&Cs does not otherwise seem to provide that authorised overrun is take or pay. On the contrary, the "Authorised Overrun Charge" is calculated based on the "Authorised Overrun Quantity" (see cl D.10.2(c) and s 4.2.2(c) of the access arrangement) and the term "Authorised Overrun Quantity" is defined (in sch C) by reference to an Overrun Quantity which is in turn defined as a quantity of gas "which is delivered" to the user. That is, Authorised Overrun charges are based on <i>actual</i> deliveries of gas, which is not necessarily the same as the full quantity that was authorised as overrun). Under the terms and conditions, the only way that overrun can become take or pay would appear to be where prolonged overrun gives rise to an increase in MDQ in accordance with cl D.8.6 (which effectively converts it from overrun to take or pay capacity). Given that the charging basis for Authorised Overrun does not appear to support a take or pay obligation, the Authority does not consider it appropriate for GGT to include its proposed "for the avoidance of doubt" provision in cl D.10.6(e)(ii). 	

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		The Authority also notes that current cl 7.2(h) has been added as new cl D.10.6(g) to the T&C's.	
D.10.7		Amendment required to correct drafting error.	In line 8 of cl D.10.7(a), amend the word "clause" to read "section".
Adjustments to Rates and Charges/Additional Payments			
D.11.2	23	<p>Amendment required to improve clarity.</p> <p>In its initial T&Cs, GGT claimed it had simply relocated current cl 9.12 to proposed cl 23 (now cl D.11.2) with "no change to content". That was not correct. In its Draft Decision the Authority required GGT to reinstate current cl 9.12 in full (including "subject to" wording and specific clause references). GGT has reinstated a more complete version of current cl 9.12 in cl D.12.3. However, GGT has also retained the incomplete version in cl D.11.2. The Authority therefore considers the incomplete version should be removed (by deleting cl D.11.2) so as to avoid inconsistency and potential confusion.</p>	Delete cl D.11.2.
Basis of Charges			
D.12.1	N/A	<p>Amendment required to correct incorrect clause cross-references.</p> <p>In its Draft Decision the Authority required GGT to reinstate current cl 9.3 and 9.6(d) in full into the T&Cs.</p> <p>It appears GGT has sought to reinstate current cl 9.3 by including cl D.12.1. However, if cl D.12.1 is to match current cl 9.3, then the reference to "<i>D.35.5(a)</i>" should be amended to read "<u>D.14.3(b)</u>".</p>	In cl D.12.1, replace the reference to cl " <i>D.35.5(a)</i> " with " <u>D.14.3(b)</u> ".

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		(The Authority notes that current cl 9.6(d) appears to have been re-instated as new cl D.10.6(c).)	
D.12.3	N/A	<p>Amendment required to correct incorrect clause cross-references.</p> <p>In its Draft Decision the Authority required GGT to reinstate current cl 9.12 in full (including "subject to" wording and specific clause references). It appears GGT has sought to reinstate current clause 9.12 by including cl D.12.3. However, the cross reference to cl "D.14.4" should instead refer to the whole of cl D.14 as that more accurately represents the whole of current clause 8 (which was the corresponding cross-reference in current cl 9.12).</p>	In cl D.12.3, replace the reference to cl "D.14.4" with " D.14 ".
System Use Gas and Line Pack			
D.13.1– D13.6	24-29	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>This issue is further discussed in the Pipeline Services Chapter of the Authority's Final Decision.</p> <p>In particular:</p> <p>(a) GGT's proposed amendments to cll D.13.2, D.13.5 and D.13.6 and the addition of new cl D.13.7, do not adequately cover all the safeguards listed by the Authority in its Draft Decision required amendment.</p> <p>Proposed s 2.2.2(d)(i) of the revised AA does not contain the same exclusion for System Use Gas and User's Linepack as regards receipt of gas as exists in proposed s 2.2.2(d)(ii) (as per the ERA's required amendment).</p>	<p>Amend clauses D.13.1, D13.2, D.13.5 and D.13.6 as follows:</p> <p>"D.13.1 The User must supply, at no cost to Service Provider and at times and in the manner notified by Service Provider (acting reasonably), the quantity of System Use Gas required by Service Provider at that time to operate the Pipeline in accordance with Good Engineering and Operating Practice, as determined by Service Provider (acting reasonably as a reasonable and prudent pipeline operator but at its discretion) in accordance with clause D.13.2."</p> <p>"D.13.2 In making its determination, Service Provider maymust have regard to the total quantity of System Use Gas that is required by Service Provider from time to time in order to operate the Pipeline in accordance with Good Engineering and Operating Practice, the total quantities of Gas to be received or delivered on the Pipeline on account of all Users during the relevant period and compressor fuel, necessary for the management, operation and</p>

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		<p>(b) GGT's proposed amendments to s 2.2.2(d) of the revised AA do not contain the exclusions for System Use Gas and User's Linepack as regards receipt of gas that were required by the Authority's required amendment).</p> <p>(c) While GGT's proposed amendment to cl D.10.2(c)(ii) does exclude System Use Gas and User's Linepack from the calculation of the Authorised Overrun Charge, that amendment is not repeated in the mirror provision in s 4.2.2(c)(ii) of the revised AA (it should be), nor has GGT made any provision for System Use Gas and User's Linepack to be excluded from the calculation of the Unauthorised Overrun Charge (see cl D.10.2(d)(ii) and s 4.2.2(d)(ii)).</p>	<p>maintenance of the Pipeline <u>in accordance with Good Engineering and Operating Practice</u>, which is reasonably <u>and equitably</u> attributable to the User's Services. However, Service Provider must allocate System Use Gas <u>reasonably and</u> equitably using an allocation methodology which is demonstrably fair, reasonable and equitable (that is <u>which subject to the foregoing, may include</u>, on a User pays basis, a total share basis or such other basis as Service Provider reasonably determines) between all Users on the part of the Pipeline to which its determination relates."</p> <p>"D.13.5 The User will provide <u>(and retain ownership of) Line Pack, which is</u> in addition to the Base Line Pack provided by Service Provider, on the first Day the User uses the Firm Service and otherwise when advised by Service Provider from time to time <u>(acting reasonably)</u>, in such proportion, as determined by Service Provider (acting as a reasonable and prudent pipeline operator) from time to time, equal to the proportion that the User's Firm MDQ bears to the total of all Users' MDQs (including the User's Firm MDQ). The Service Provider will provide to the User a monthly statement showing the amount of User's Line Pack."</p> <p>"D.13.6 The User must give Service Provider directions about the delivery of the User's Line Pack on or before 7 <u>Gas Days after</u> the end of the Term otherwise title to the User's Line Pack transfers to Service Provider, and Service Provider must comply, if reasonably able to do so, with such directions at no cost to the User within 7 <u>Gas Days</u> of receiving such directions <u>(or any longer period agreed between the User and Service Provider)</u>."</p> <p>"D.13.7 <u>Service Provider must immediately return the User's Line Pack to the User or as it directs, in</u> the event that Service Provider becomes insolvent and enters external administration, User will be entitled to submit a proof of debt for an amount equal to the loss of value of User's Line Pack contributions."</p>

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			<p><u>Insert a new cl D.13.8 as follows:</u></p> <p><u>"D.13.8 If for any reason Service Provider does not return the User's Line Pack to the User or as it directs under clause D.13.6 or D.13.7, then User may, at its discretion and without prejudice to any other right or remedy it may have, charge Service Provider the price (plus GST) for that gas determined in accordance with this clause, and Service Provider must pay User that price (plus any GST) within 7 Gas Days of receipt of a correct invoice for it. Title to the User's Line Pack transfers to Service Provider upon payment of that price. The price of the User's Line Pack gas is to be as agreed between the User and Service Provider, or if not so agreed within 7 Gas Days (or such longer period as is agreed between the Parties for this purpose), the price which is determined and certified by a reputable accountant engaged by the User for this task who is independent of both Parties and not subject to any conflict of interest in respect of this task (Independent Accountant). The price determined by the Independent Accountant must be a fair and reasonable price based on the cost to the User (including cost of gas plus transport and a reasonable allowance for the User's related overhead costs, if any) of providing the User's Line Pack contributions to the Receipt Point. The Independent Accountant is to examine the User's relevant books and documents on a confidential basis (including without disclosure to Service Provider) and is to make that determination and certification to both Parties as soon as reasonably practicable. The costs of the Independent Accountant will be borne by the Parties equally and the price determined by the Independent Accountant will be treated as Confidential Information of the User."</u></p>

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Operation of Pipeline			
D.14.1	30	Amendment required to correct drafting error.	In line 1 of cl D.14.1, insert the words " <u>and Access Arrangement</u> " immediately after the words "Transportation Agreement".
D.14.2	31-34	Amendments required to more correctly adopt the required amendment from the Draft Decision.	Amend cl D.14.2 as follows: "D.14.2 Subject to clause D.14.3, in addition to the rights of Service Provider otherwise provided for in the Transportation Agreement, Service Provider may without penalty or cost (excluding any penalties, or costs <u>or other amounts</u> which are payable <u>or foregone</u> by Service P provider to User pursuant to any provision in the Transportation Agreement, <u>including any provision</u> which requires Service P provider to indemnify User or excuses User from paying any Charge or other amount to Service P provider <u>where there is an interruption or reduction in service</u>) interrupt or reduce the Service either totally or partially for any period which, in its opinion as a reasonable and prudent pipeline operator, is necessary for the purposes of testing, adding to, altering, repairing, replacing, cleaning, upgrading or maintaining any part of the Pipeline (including without limitation, pipelines, compressors, valves and monitoring equipment) or for any other purpose which in Service Provider 's opinion as a reasonable and prudent operator requires interruption or reduction of the Services."
D.14.4	33	Amendments required to more correctly adopt the required amendment from the Draft Decision.	Amend cl D.14.4 as follows: "D.14.4 Service Provider shall have the right without penalty or cost (excluding any penalties, or costs <u>or other amounts</u> which are payable <u>or foregone</u> by Service P provider to User pursuant to any provision in the Transportation Agreement, <u>including any provision</u> which requires Service P provider to indemnify User or excuses User from paying any Charge or other amount to Service P provider <u>where there is an interruption or reduction in service</u>) to

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			immediately interrupt or reduce the Services in situations of emergency or real and imminent risk of serious injury or damage to any person or property, including the Pipeline, without notice and for such period as in the opinion of Service Provider is necessary, except where such interruption or curtailment occurs as a result of Service Provider's negligence, default or failure to observe Good Engineering and Operating Practice."
Metering			
D.16	37-42	<p>Amendment required to correct definition.</p> <p>A defined term for "Metering Equipment" has been incorporated which links back to what equipment and facilities are required to conform to the "Metering and Measurement Requirements" published by GGT. In effect this means GGT has significant control as to what Metering Equipment is required, so long as it is consistent with Appendix 1 and ensures Good Engineering and Operating Practice (GEOP) is observed (see definition of "Metering and Measurement Requirements").</p> <p>However, given that GGT is expecting users to pay for the installation, operation and maintenance of this metering equipment (see cl D.16.2) the Authority is of the view that the definitions of "Metering Equipment" and "Metering and Measurement Requirements" require amendment to include safeguards for users.</p>	<p>In Schedule C, amend the following definitions as follows:</p> <p>"Metering and Measurement Requirements means specifications published by Service Provider from time to time for metering and measurement in relation to the Pipeline, which have been made available to the User, are consistent with appendix 1 and ensure that Good Engineering and Operating Practices are observed <u>reasonably and efficiently (consistent with achieving the national gas objective set out in section 23 of the National Gas Law)</u>;</p> <p>Metering Equipment means all the equipment and facilities <u>reasonably and efficiently</u> required to be installed or provided at each Receipt Point to conform to the Metering and Measurement Requirements <u>(and consistent with achieving the national gas objective set out in section 23 of the National Gas Law)</u>:"</p>
D.16.1	37	<p>Amendment required to correct drafting errors.</p> <p>While the defined term is "Metering and Measurement Requirements", GGT has used "Metering and Measuring</p>	<p>Amend clause D.16.1 as follows:</p> <p>"D.16.1 The Service Provider will provide reasonable notice to the User of any changes to the Metering and Measurement<u>Measuring</u></p>

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		Requirements" in cl D.16.1 and D.16.4. This needs to be corrected.	Requirements and such changes are to be reasonably determined by the Service Provider."
D.16.2	38	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>GGT has added the words "<i>at the User's costs, acting as a reasonable and prudent pipeline operator</i>".</p> <p>The Authority considers that, as GGT is seeking that the User pays for GGT's installation, operation and maintenance of metering equipment, GGT should be expressly required to observe GEOP and act efficiently consistent with achieving the NGO.</p> <p>Also, the proposed obligation for the user to cause an Interconnect Party to install/upgrade metering equipment should be subject to reasonable endeavors only.</p>	<p>Amend cl D.16.2 as follows:</p> <p>"D.16.2 The Service Provider will, at the User's costs, acting as a reasonable and prudent pipeline operator, <u>in accordance with Good Engineering and Operating Practice and efficiently (consistent with achieving the national gas objective set out in section 23 of the National Gas Law)</u>, install, operate and maintain Metering Equipment required for the purposes of the Transportation Agreement unless otherwise agreed, <u>and the User will reimburse Service Provider's direct costs of doing so, to the extent they are reasonably and properly incurred by Service Provider in accordance with the above requirements.</u> If the User or another Interconnect Party owns equipment used for measuring or monitoring Gas at a Receipt Point or a Delivery Point, the User must, or must <u>use reasonable endeavours to</u> cause the Interconnect Party to, install Metering Equipment or upgrade its equipment to conform to the Metering and Measurement Requirements."</p>
D.16.4	42	<p>Amendment required to correct drafting errors.</p> <p>While the defined term is "Metering and Measurement Requirements", GGT has used "Metering and Measuring Requirements" in cl D.16.1 and D.16.4. This needs to be corrected.</p>	<p>Amend cl D.16.4 as follows:</p> <p>"D.16.4 The Metering and Measurement Measuring Requirements govern the measurement of Gas for the purposes of the Transportation Agreement, unless otherwise negotiated by the Parties."</p>
D.16.5,- D.16.10		<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>In its Draft Decision, the Authority required that GGT reinstate current cl 5.6 (measurement variance), 11.1 and</p>	<p>To reinstate current cl 11.2(b), add the following as new cl D.16.9 in the T&C's:</p> <p><u>"D.16.9 Where more than one User receives Gas in a commingled stream through common Delivery Facilities, each such User</u></p>

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		<p>11.2 ("commingled gas" provisions for inlet and outlet points) in the T&Cs or provide adequate justification why not.</p> <p>GGT responded that this requirement was "Generally accepted". GGT did not explain where or why it had not <i>fully</i> accepted this requirement.</p> <p>Current cl 11.1 has been reinstated in the T&Cs (see cl D.16.5, D.16.6 and D.16.7).</p> <p>Current cl 11.2 has been only <i>partially</i> reinstated in the T&Cs (see cl D.16.8 and D.16.9 which reinstate current clauses 11.2(a) and (c)). Current cl 11.2(b) has not been reinstated.</p> <p>The reference in cl D.16.9 to "D.16.6" is incorrect – it does not make sense to refer to cl D.16.6 (which deals with receipt, not delivery) in cl D.16.9 (which is about delivery). This can be corrected by inserting current cl 11.2(b) into the T&Cs (as GGT was previously required to do) and correcting the cross reference to it.</p> <p>Current cl 5.6 appears in the AA (section 2.2.11) but has not been reinstated in the T&Cs. GGT did not justify why current cl 5.6 has not been reinstated in the T&Cs. The Authority therefore continues to require that current cl 5.6 be reinstated in the T&Cs.</p>	<p><u>(referred to in this clause as the "Common Stream Gas User") shall advise or cause to be advised to Service Provider, on a daily basis or such other basis as may be required by Service Provider from time to time, the quantity of Gas allocated to it at the Delivery Point. Should such advice not be provided within 30 minutes of the end of the Gas Day, Service Provider shall be entitled to determine the daily Gas quantity delivered by each Common Stream Gas User using the allocation procedure set out in clause D.16.10 or as it otherwise deems appropriate, acting as a reasonable and prudent pipeline operator. Service Provider's determination as to quantity and quality shall, in the absence of manifest error, be deemed to be correct.</u></p> <p>Consequential upon the above amendment:</p> <ul style="list-style-type: none"> • renumber existing cl D.16.9 as "<u>D.16.10</u>" and replace the existing reference in it to cl "D.16.6" with a reference to clause "<u>D.16.9</u>" • renumber existing cl D.16.10 as "<u>D.16.11</u>" and replace the existing reference in it to cl "D.16.9" with a reference to cl "<u>D.16.10</u>" <p>For the purpose of reinstating current cl 5.6, add the following as new cl D.5.5:</p> <p><u>"D.5.5 The parties acknowledge and agree that from time to time there may be Measurement Variance. For the purposes of the Transportation Agreement, the quantities of Gas as measured at the Receipt Point or the Delivery Point(s), or as Used Gas, shall be deemed to be the true and correct measure of the quantity of Gas so measured unless it is shown that the measurements are incorrect by more than is allowed by the prescribed limits of accuracy of the meters as set out in Appendix 1."</u></p>

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Check Metering			
D.17	N/A	<p>Amendment required to incorporate GGT's response.</p> <p>In its Draft Decision, the Authority required that GGT reinstate current cl 11.6 (Check metering).</p> <p>GGT has generally reinstated current cl 11.6 in cl D.17. However, GGT has replaced the words "Licensed Area" in current cl 11.6 with the words "on or within the Service Provider's property".</p> <p>In the current T&Cs, "Licensed Area" is defined as follows: "Licensed Area means that area as described in Part 1 of the schedule to the pipeline licence issued to the Owners pursuant to the Petroleum Pipelines Act 1969 (WA)."</p> <p>GGT's proposed new term "Service Provider's property" is not defined and will depend on the particular circumstances. It may overlap with the Licensed Area in some places but is likely to be much narrower. It would therefore appear that GGT is generally narrowing the area in which users are <i>not</i> allowed to install their check metering. The Authority does not object to this change.</p> <p>GGT has also added the words "and as long as the equipment does not interfere with the operation of the pipeline". The Authority considers this is acceptable so long as minor "interference" is not prohibited if the check metering equipment's quality, installation and operation accords with GEOP.</p>	<p>Amend cl D.17 as follows:</p> <p>"Service Provider grants to the User the right to install and maintain check metering equipment subject to this equipment not being installed on or within the Service Provider's property or within Delivery Facilities owned by Service Provider, and so long as the equipment does not interfere with the operation of the Pipeline, to enable the User to check the bulk measuring equipment located at any site provided that such check metering equipment shall not interfere in any way with any measuring equipment (or other equipment) and that the cost of installing and maintaining any such check metering equipment shall be borne by the User and such equipment shall meet the accuracies contained in appendix 1. <u>Provided that the quality, installation and operation of the User's check metering equipment is in accordance with Good Engineering and Operating Practice, the above prohibitions on "interference" shall not prohibit any interference of a minor and materially inconsequential nature that is necessary for the proper operation of the User's check metering equipment.</u>"</p>

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Delivery Facilities			
D.22	N/A	<p>Amendment required to incorporate GGT's response.</p> <p>Clause D.22 (which is based on current cl 6.8) provides that if new Delivery Facilities are required by the User, the Delivery Facilities installed by GGT (at the User's cost) must comply with the technical specifications required by a reasonable and prudent pipeline operator. It does not mention what standard is to apply (or who pays) if someone other than GGT installs the Delivery Facilities.</p> <p>The Authority considers that having appropriate technical specifications for delivery facilities is important, including for achieving the NGO, irrespective of who installs them or pays for that installation. The Authority also notes that the "technical specifications required by a reasonable and prudent pipeline operator" is an evolving concept and likely to change from time to time in accordance with changing standards and other circumstances. The Authority therefore considers the access arrangement should not be overly prescriptive concerning the level of detail of particular technical specifications unless there is some good justification for doing so.</p> <p>GGT has not provided any justification for the inclusion of its proposed Appendix 3 ("Technical Requirements for Delivery Facilities") which sets out a long list of requirements, some very specific and not all of which are necessarily technical specifications that would be required by a reasonable and prudent pipeline operator (although some of them may be).</p>	<p>Amend cl D.22 as follows:</p> <p>"D.22 Delivery Facilities</p> <p><u>D.22.1 Each Party must ensure that all Delivery Facilities for which it is responsible comply (including as to their construction, installation, operation, maintenance, replacement and decommissioning) with all applicable technical specifications, licensing obligations, laws, relevant standards and codes (including, AS2885) and regulatory approval processes, as would be required of or by a reasonable and prudent pipeline operator, acting efficiently, in accordance with Good Engineering and Operating Practice and consistent with achieving the national gas objective set out in section 23 of the National Gas Law.</u></p> <p><u>D.22.2 Unless otherwise agreed with Service Provider, Service Provider is responsible for all existing Delivery Facilities and, subject to clauses D.22.3 and D.22.4, the User is responsible for any new Delivery Facilities.</u></p> <p><u>D.22.3 Where use of any new Delivery Facilities is shared by the User with any other User, then, unless otherwise agreed between those Users and Service Provider, those Users are jointly and severally responsible for those Delivery Facilities.</u></p> <p><u>D.22.4 Service Provider will, if requested by the User, construct, install, operate, maintain, replace or decommission (or do any combination of those things requested by the User) any# new Delivery Facilities</u>are required by the User, the Delivery Facilities installed by Service Provider (at the User's cost, in which case:</p> <p><u>(a) Service Provider will do so in accordance with all applicable technical specifications, licensing obligations, laws, relevant standards and codes (including, AS2885) and regulatory approval processes, as would be required of or by a</u></p>

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		<p>The Authority requires GGT to delete the contents of Appendix 3 ("Technical Requirements for Delivery Facilities") from the T&Cs.</p> <p>The Authority therefore considers that the access arrangement terms and conditions should:</p> <ul style="list-style-type: none"> require delivery facilities (including their construction, installation, operation, maintenance, replacement and decommissioning) to comply with such technical specifications as would be required by a reasonable and prudent pipeline operator, acting efficiently, in accordance with Good Engineering and Operating Practice and consistent with achieving the national gas objective set out in section 23 of the National Gas Law; and specify who is responsible for ensuring this, including where use of particular delivery facilities is shared between users. 	<p><u>reasonable and prudent pipeline operator, acting efficiently, in accordance with Good Engineering and Operating Practice and consistent with achieving the national gas objective set out in section 23 of the National Gas Law; and</u></p> <p><u>(b) the User will reimburse Service Provider's direct costs of doing so, to the extent they are reasonably and properly incurred by Service Provider in accordance with the above requirements.)</u> will comply with the technical specifications required by a reasonable and prudent pipeline operator.</p> <p>Delete the contents of Appendix 3 ("Technical Requirements for Delivery Facilities") from the access arrangement terms and conditions and insert the words "Not used".</p>
Quality			
D.23.4 D.23.6	46 48	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>In its Draft Decision, the Authority required proposed cl 46 (now cl D.23.4) to be amended as follows:</p> <p><u>"Each of User and Service Provider may refuse to accept for transport or delivery, as the case may be, all or any portion of Non-Specification Gas and must advise the User/other as soon as is reasonably practicable after of such refusal. Such refusal If Service Provider has refused to, or has been requested or instructed not to, transport or deliver all or any</u></p>	<p>Amend cl D.23.6 as follows:</p> <p>"If the User instructs the Service Provider in writing not to receive, transport and or deliver any Non-Specification Gas, and Service Provider continues to receive, transport and or deliver the Non-Specification Gas notwithstanding the instruction, <u>then:</u></p> <p><u>(a) User is not required to pay any Throughput Charge, Overrun Charge, Imbalance Charge, Daily Variance Charge or any other tariff or charge based on quantity of Gas received, transported or delivered, in respect of that Non-Specification Gas;</u></p>

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		<p><i>portion of Non-Specification Gas, the User is not required to pay any tariff or charge in respect of that Non-Specification Gas, even if or the Service Provider not transports ing or delivers ing all or any portion of the Non-Specification Gas after acceding contrary to an the User's instruction or request from the User to reject receipts of such Gas, does not relieve the User from its obligation pay any tariff or charge.</i></p> <p>GGT has not accepted the part starting "If Service Provider has...request" of the above amendment.</p> <p>GGT claims that "<i>Under a take-or-pay arrangement, users pay for haulage irrespective of quantities transported or the quality of gas. If non-specification gas is delivered in breach of the agreement, this is appropriately dealt with in the liability regime. If a user tenders non-specification gas which is not transported, that should be user's responsibility (and loss).</i>"</p> <p>The Authority notes that users may have little or no physical control over the quality or flow of gas which their suppliers tender for injection at the receipt point into the GGP. As the operator of the GGP, GGT is likely to be better placed than most users to take physical measures to prevent the continued ingress of non-specification gas into the GGP once GGT has been directed by a user not to accept it.</p> <p>The Authority considers it is unreasonable for users to be required to pay quantity based charges in respect of non-specification gas where the service provider has been specifically directed by the user not to receive, transport or</p>	<p><u>(b) that Non-Specification Gas will not count towards the User's Firm MDQ, MDQ or MHQ or to the calculation of any Overrun, Imbalance or Daily Variance;</u> and</p> <p><u>(c) Service Provider is responsible for and indemnifies and holds harmless the User from and against all and any loss or damage suffered or incurred by itself Service Provider, the User or any other person as a result of the continued receipt, transportation or delivery of the Gas after the time at which the Service Provider, in accordance with Good Engineering and Operating Practice, could reasonably have stopped receipt, transportation or deliveries. The amount of this indemnity will be reduced to the extent the User does not use reasonable endeavours to mitigate its loss. This indemnity is not limited by clause D.34.12."</u></p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>deliver that non-specification gas, but nevertheless does so regardless.</p> <p>The Authority does not agree with GGT's claim that "<i>Under a take-or-pay arrangement, users pay for haulage irrespective of quantities transported or the quality of gas.</i>" (emphasis added)</p> <p>In the case of GGT's proposed AA, the "Toll Charge" and "Capacity Reservation Charge" (which are a form of take-or pay) are payable based on capacity (Firm MDQ and MDQ respectively), not haulage of actual quantities of gas. The Authority therefore accepts those charges will be unaffected by the quantity or quality of gas hauled.</p> <p>However, the "Throughput Charge", "Overrun Charge", "Imbalance Charge" and "Daily Variance Charge" can all depend on the quantities of gas received, transported or delivered. The Authority therefore considers that users should not be prejudiced in respect of those charges (or any like them) where GGT has received, transported or delivered non-specification gas contrary to the user's instructions.</p> <p>Further, the Authority considers that users should not be prejudiced by having the quantities of gas counting towards their Firm MDQ, MDQ and MHQ eroded by non-specification gas which GGT has received, transported or delivered contrary to the user's instructions.</p> <p>Lastly, the Authority notes that GGT's claims in respect of the proposed amendment to cl D.23.4 are inconsistent with what GGT has already accepted in proposed cl D.23.6 and that cl D.23.6 is probably the more appropriate clause in which to deal with these issues. The Authority therefore proposes amending cl D.23.6.</p>	

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
D.23.5	47	Amendment required to correct drafting errors.	Amend cl D.23.5 by: <ul style="list-style-type: none"> • deleting the reference to "D.34.2" and replacing it with "D.34.1". • deleting the word "delivery" and replacing it with "deliver"; • capitalising the first letter of each of the words "related body corporate"; and • capitalising the first letter of the word "gas".
Connection to the Pipeline			
D.24.1 D.24.2 D.24.3	51	Amendment required to improve clarity. In its Draft Decision, the Authority required proposed clause 51 (now cl D.24.1) to be amended to clarify that Connection Charge is the only charge payable for connection (and there is no charge for connecting User's receipt facilities). GGT accepted that required amendment. While new cl D.24.2 now makes clear that the Connection Charge is the "total amount" payable for connecting the Delivery Facilities, the wording should be improved to clarify that it is also the "only amount". Also, there still needs to be a clear statement that there is no charge for connecting User's Receipt Facilities. This can be inserted as a new cl D.24.3 (and the current cl D.24.3 can be deleted as it repeats cl D.21).	Amend cl D.24.2 as follows: "The Connection Charge is the total and only amount payable by User for Service Provider connecting the Delivery Facilities to the Pipeline" Amend cl D.24.3 by deleting the existing content and inserting the following in its place: <u>"Service Provider will, at no charge to the User, connect the User's Receipt Facilities to the Pipeline."</u>
D.24.6 D.24.7 D.25.1	N/A	Amendment required to improve clarity. Clause D.24.6 deals with delivery temperature at the receipt point and cl D.24.7 deals with delivery pressure at the receipt facilities and they are therefore better located in cl D.25 ("Receipt Pressures").	Delete cl D.24.6 and move its content to new cl D.25.4, then amend that content by inserting the words " <u>at a Receipt Point</u> " immediately before "at temperature". Delete cl D.24.7 and move its content to new cl D.25.5, then amend that content by:

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>An incorrect clause cross-reference in cl D.24.7 needs to be corrected to improve clarity.</p> <p>Clause D.25.1 also needs amendment to reflect the pressure limits set by new cl D.25.5 (formerly cl D.24.7).</p>	<ul style="list-style-type: none"> inserting the words "at a Receipt Point" immediately before "at the Receipt Facilities": and replacing the reference to clause "D.21" with a reference to clause "D.24.5". <p>Amend cl D.25.1 by inserting the words "subject to clause D.25.5," on the third line, immediately after the word "but".</p>
Receipt Pressures			
D.25.2	53	<p>Amendment required as GGT accepted the required amendment but did not implement it.</p> <p>In its Draft Decision, the Authority required that GGT delete its proposed cl 53 (a new indemnity for breach of inlet pressure obligation), which is now cl D.25.2.</p> <p>GGT stated it "accepted" that required amendment, but has not in fact deleted the indemnity. GGT has provided no justification for that omission.</p> <p>The Authority therefore requires that cl D.25.2 be deleted as per its original required amendment.</p>	Delete cl D.25.2 and renumber the subsequent provisions in cl D.25 (and any relevant cross-references) accordingly.
Possession of gas responsibility and title			
D.26.2– D.26.7	66	<p>Amendment required to incorporate GGT's response.</p> <p>In its Draft Decision, the Authority required GGT to delete proposed cl 66 (now clauses D.26.2 – D.26.4 and reinstate current cl 14.3 and 14.4 (transferring title to gas from user to GGT). (Draft Decision Required Amendment 2).</p> <p>GGT has not deleted proposed clause 66, nor has it reinstated current cl 14.3 and 14.4.</p>	<p>In the heading to cl D.26, insert a comma (",") immediately after the word "gas".</p> <p>Indent cl D.26.3 and D.26.4 so that they are moved underneath cl D.26.2 and renumber cl D.26.3 and D.26.4 as paragraphs "(a)" and "(b)" respectively of cl D.26.2.</p> <p>Add the following as new clauses immediately after clause D.26.2: "D.26.3 Subject to clause D.26.2 and this clause D.26.3, the User shall retain title to the Gas delivered by that User or in its behalf at</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>GGT does not accept reinstatement of current cl 14.3 (title transfer) and 14.4 (title re-transfer) and has given various reasons in its response to the Draft Decision.</p> <p>The Authority has considered GGT's claims and has decided that the T&Cs must be amended (see the Title to Gas section of the Pipeline Services chapter of the Authority's Final Decision, including Required Amendment 2).</p>	<p><u>the Receipt Point, despite any commingling of that Gas with Gas belonging to any other person in the Pipeline. When the User's Gas is commingled with other Gas in the Pipeline, the User is to retain ownership in common with each other owner of Gas comprised in the commingled Gas in proportion to their respective contributions. Service Provider's obligation to deliver Gas to the User at a Delivery Point is to deliver the same quantities of Gas as received from the User at Receipt Points for transportation (subject to agreed adjustments) that meet the Gas Specification, not to deliver the same molecules of Gas. Accordingly, when a quantity of commingled Gas is allocated to the User upon delivery at the Delivery Point (or otherwise), the User will acquire (and Service Provider must ensure the User acquires) at that time good title to any quantity of that commingled Gas that did not already belong to the User. Similarly, when any quantity of the User's Gas that is commingled with other Gas in the Pipeline is properly allocated to any other User upon delivery or otherwise, the User must at that time relinquish title to that quantity of the User's Gas.</u></p> <p><u>D.26.4 Service Provider must not itself act, or allow any other User of the Pipeline to act, inconsistently with the arrangements in these Terms and Conditions (including clauses D.26.2, D.26.3, D.28, D.16.6, D.16.7, D.16.9 and D.16.10) or the Access Arrangement (including sections 2.2.6 and 2.2.7) regarding title to Gas, supplied by the user, commingling of that Gas with Gas belonging to Service Provider and others and the delivery by Service Provider at Delivery Points of an equivalent quantity of Gas to that originally supplied by the User (excluding System Use Gas contributions).</u></p> <p><u>D.26.5 If, contrary to the intention of the parties expressed in these Terms and Conditions (including clauses D.26.2, D.26.3, D.28, D.16.6, D.16.7, D.16.9 and D.16.10), for any reason (including by operation of law) other than by the express written agreement of the User or as contemplated by clause D.26.2, title to Gas supplied</u></p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
			<p><u>by the User at the Receipt Point does transfer to Service Provider or any owner of the Pipeline, then Service Provider will (and it will procure that each such owner of the Pipeline will), hold all and any right and title to that Gas (and any interest in it) on trust for the User and will keep it free from any third party encumbrances or claims (other than any created by or with the express written agreement of the User itself).</u></p> <p><u>D.26.6 Service Provider takes full responsibility for all Gas supplied by Users into the Pipeline (including for the risk of loss or damage to the Gas or caused by the Gas) while it is in the Pipeline or otherwise in Service Provider's possession and control.</u></p> <p><u>D.26.7 Service Provider warrants to the User that all Gas delivered to the User or on its behalf at a Delivery Point will, when delivered, be free from all and any third party encumbrances or claims (other than any created by or with the express written agreement of the User itself)."</u></p>
Warranties and Representations			
D.27.3	62	<p>Amendment required as GGT accepted the required amendment but did not implement it.</p> <p>In its Draft Decision, the Authority required GGT to delete proposed clause 62 (now cl D.27.3) unless GGT can provide good justification why it requires this obligation under the T&Cs.</p> <p>GGT stated it "accepted" that required amendment but did not delete the clause.</p> <p>Accordingly, the Authority requires cl D.27.3 be deleted.</p>	Delete cl D.27.3 and renumber any subsequent provisions in cl D.27 (and any relevant cross-references) accordingly.
D.27.4 – D.27.5	63-64	Amendment required as GGT accepted the required amendment but did not implement it.	Delete cl D.27.4-D.27.5 and renumber any subsequent provisions in cl D.27 (and any relevant cross-references) accordingly.

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>In its Draft Decision, the Authority required GGT to delete proposed clauses 63-64 (now clauses D.27.4-D.27.5) unless GGT can provide good justification why it requires this obligation under the T&Cs.</p> <p>GGT stated it "accepted" that required amendment, but did not delete these clauses.</p> <p>Accordingly, the Authority requires cl D.27.4-D.27.5 be deleted.</p>	
Allocation of receipts and deliveries			
D.28.1	67	<p>Amendment required to incorporate GGT's response.</p> <p>In its Draft Decision, the Authority required GGT to amend proposed cl 67) now cl D.28.1) to provide that GGT is to allocate any discrepancy first to the user(s) (if any) which GGT is aware caused the discrepancy (to the extent GGT reasonably believes they caused it) and otherwise (if there is any remaining discrepancy that GGT is not reasonably able to attribute to any particular user(s)) pro-rata between all users.</p> <p>GGT accepted that required amendment (adding what is now cl D.28.1(a)) but also added an allocation ground based on suspicion (see cl D.28.1(b)).</p> <p>The Authority accepts this proposed addition provided that GGT has a <i>reasonable</i> basis for its suspicion.</p>	Amend cl D.28.1(b) by inserting the word " reasonably " immediately before the word "suspects".
D.28.3	69	Amendment required to correct drafting errors.	In cl D.28.3, the word " <i>this</i> " in the first line should be amended to read " the ".

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
D.28.4 - D.28.9 (Alternative or additional outlets)	N/A	<p>Amendment required to correct drafting errors.</p> <p>As per the Authority's required amendment, GGT reinstated current clause 6.9(a) – (e), doing so as new clause D.28.4 – D.28.9. However, it would read better renumbered as D.28.4 (a) – (e)</p> <p>Clause D.28.5 should reference D.10.5(a) in addition to clause D.24 with regard to a connection charge.</p>	<p>Indent cl D.28.5 - D.28.9 so that they are moved underneath cl D.28.4 and renumber cl D.28.5 - D.28.9 as paragraphs "(a)" to "(e)" respectively of cl D.28.4.</p> <p>In cl D.28.5 (to be renumbered as D.28.4(a)), delete the word "clause" and insert the words "any of clauses D.10.5(a) and" immediately before "D.24".</p>
D.28.10	N/A	Amendment required to correct drafting errors.	In cl D.28.10 (to be renumbered as cl D.28.5), insert the words " under clause D.28.4 " immediately after the word "notice".
Dispute resolution			
D.29.1	77	Amendment required to correct incorrect clause cross-references.	In cl D.29.1 the reference to "D.29.1" should be amended to read " D.29.2 ".
D.29.2 – D.29.16	N/A	Amendment required to correct incorrect drafting and clause cross-references.	<p>In cl D.29.5, delete "D.30.1 to D.30.10" and insert "D.30".</p> <p>In cl D.29.5, amend the word "clauses" to read "clause".</p> <p>The reference in cl D.29.7 to "D.29.6" should be amended to read "D.29.5".</p> <p>In cl D.29.7, sub-clause (d) should simply be a separate paragraph – not a sub-clause (i.e., remove "(d)").</p> <p>In cl D.29.9, the words "these clauses D.29.2 to D.29.16" should be amended to read "this clause D.29".</p> <p>The reference in cl D.29.14 to "D.22.4(d)(3)" should be amended to read "D.29.10(c)".</p> <p>The reference to "22" in cl D.29.16 should be amended to read "D.29".</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
Arbitration			
D.30.1 – D.30.9	N/A	Amendment required to correct incorrect drafting and clause cross-references.	In cl D.30.1, the words " <i>Arbitration in Accordance with the Commercial Arbitration Act 2012</i> " do not constitute a meaningful clause – they are a heading. Therefore, delete the numbering " <i>D.30.1</i> " and reformat the clause content as a subheading to cl D.30. Renumber the remaining clauses in cl D.30 consequentially (and any cross-references to them). The references to the " <i>Commercial Arbitration Act 2012 (WA)</i> " should be italicised.
Default & Termination			
D.31.1 and D.31.2	84	Amendment required to incorporate GGT's response. In its Draft Decision, the Authority required GGT to amend proposed cl 84 (now cl D.31.1) to clarify: <ul style="list-style-type: none"> the date from when each cure period runs; that only the non-defaulting party can terminate for a financial default that is not remedied within the cure period; and that the "compensation" payment obligation in new cl 84(b) (which is, in effect, a form of indemnity) is to be limited so that it is expressly subject to the limitations of liability in new cll 93 and 94 and so that the defaulting party is not required to compensate (indemnify) the non-defaulting party for any loss to the extent caused by the non-defaulting party or any of its related bodies corporate or any person acting for or on behalf of any of them or by any Force Majeure Event. Also, the amount of compensation is to be reduced to the extent the non- 	In cl D.31.1(b), replace the words " <i>clause D.24.5 and D.24.5(a) of this</i> " with " clauses D.34.1, D.34.2 and D.35 of the ". In cl D.31.2, delete paragraphs (b) and (c) and reform the remaining text as a single cl D.31.2 (removing the colon after "that" and the "(a)" before "only" and replacing the closing semi-colon with a full stop).

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>defaulting party fails to use reasonable endeavours to mitigate its loss arising from the event of default and its consequences.</p> <p>In response, GGT stated it would accept the following further amended clause:</p> <p><i>"For the avoidance of doubt the parties agree that:</i></p> <p><i>(a) only a non-defaulting party can terminate for a financial default;</i></p> <p><i>(b) a defaulting party is not liable to the non-defaulting party under clause 151(b) to the extent (if at all) that the loss suffered by the non-defaulting party is caused by the non-defaulting party's or the non-defaulting party's agent's negligence or default or if the loss suffered is caused by a Force Majeure Event</i></p> <p><i>(c) the amount of compensation payable is to be reduced to the extent that the non-defaulting party fails to use reasonable endeavours to mitigate its loss arising from the event of default and its consequences."</i></p> <p>GGT claimed this is a default clause, not a compensation clause and the deleted paragraphs refer to damages which flow from a breach, which are more appropriately dealt with in the liability clause. GGT claimed inclusion in this clause could produce confusion/ inconsistency.</p> <p>However, despite GGT appearing to reject paragraphs (b) and (c) (deleted above), GGT has actually inserted them into the T&Cs as new clauses D.31.2(b) – (c).</p>	

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		The Authority is of the view that new clauses D.31.2(b) – (c) are inconsistent with the terms of clause D.34.1 and should be removed.	
D.31.3	85	<p>Amendment required as GGT accepted the required amendment but did not implement it.</p> <p>In its Draft Decision, the Authority required GGT to amend proposed cl 85 (now cl D.31.3) to ensure it extends to rights and remedies arising under the Transportation Agreement, at law, in equity or otherwise.</p> <p>GGT stated that it accepted this required amendment but did not make the amendment or justify that omission.</p> <p>The Authority therefore requires the amendment be made.</p>	<p>Amend new cl D.31.3 as follows –</p> <p>"In addition to the above right to terminate or suspend the Transportation Agreement, a non-defaulting Party may also sue for damages or exercise any other available legal or equitable remedy<u>any rights or remedies available to it under the Transportation Agreement, at law, in equity or otherwise.</u>"</p>
Billing & Payment			
D.32.1	87	<p>Amendment required to correct drafting errors.</p> <p>GGT has edited former proposed cl 87 (now cl D.32.1) as required by the Authority in the Draft Decision, but the wording in the clause is wrong and should be amended.</p>	<p>Amend cl D.32.1 to read as follows:</p> <p>"On or before the 10th day of each Month, Service Provider shall render to the User an monthly invoices to the User in the form of a Tax Invoices in respect of the Charges and any other amounts payable to Service Provider under the Transportation Agreement incurred in the immediately preceding Month, together with any outstanding invoiced amounts in respect of any previous Months."</p>
D.32.2	N/A	<p>Amendment required to incorporate GGT's response.</p> <p>In its Draft Decision, the Authority required GGT to reinstate the minimum invoice contents required by current cl 13.2 (now cl D.32.2).</p>	<p>Amend cl D.32.2(f) as follows:</p> <p>"(f) any additional, <u>increased or varied</u> tariffs and charges payable pursuant to the Transportation Agreement for that Billing Period, <u>together with an explanation of the reason for the addition, increase or variation</u>".</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>GGT accepted this, but omitted the invoice content requirement in current cl 13.2(g) ("any Taxes pursuant to clauses 9.9" (sic)), without explanation. Current cl 9.9 is titled "Change in Imposts" and provides "In addition to the tariffs and charges payable under this Service Agreement, the User shall pay to the Owners an amount for any Change in Imposts pursuant to cl 5.3(b) of the Access Arrangement", which in turn refers to cl 5.4 (which allowed GGT to make certain adjustments to tariff for "Change in Imposts").</p> <p>The Authority therefore considers that a comparable provision under the currently proposed AA would be a reference tariff variation for a Cost Pass-through Event under section 4.5.2 of the proposed AA.</p> <p>The Authority considers, this is already covered to some extent by the requirement in cl D.32.2(f) to include "any additional tariffs and charges payable pursuant to the Transportation Agreement for that Billing Period." However, the Authority requires some amendment to cl D.32.2(f) so that it more explicitly covers variations and users are given reasons.</p>	<p>The reference in new cl D.32.2(d) to "0" should be amended to read "D.9".</p>
D.32.3	88	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>In its Draft Decision, the Authority required GGT to amend proposed cl 88 (now cl D.32.3) including by amending the last sentence to read "Late payment will attract an interest charge in accordance with clause [insert number of reinstated current clause 13.8]".</p> <p>GGT has amended the last sentence, but has not changed the wording as instructed by the Authority.</p>	<p>Amend the last sentence in cl D.32.3 as follows:</p> <p>"Late payment will attract an interest charge at the Default Rate in accordance with clause D.32.4".</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		The last sentence in cl D.32.3 should read "Late payment will attract an interest charge in accordance with clause D.32.4".	
D.32.4 D.32.5 D.32.6	N/A 89 90	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>The T&Cs are inconsistent and uncertain concerning the rate of interest that is to apply.</p> <p>Clause 32.4 uses the term "Interest Rate", which is not defined in the proposed AA (AA3), but is defined in the current AA (AA2) as "<i>the Bill Rate plus five percentage points</i>", where "Bill Rate" is also defined as meaning "<i>on any Business Day, the 90 Business Day domestic dealer's bill rate as published in the Australian Financial Review on the last Business Day of the preceding Month, or if that rate is not published, then the rate agreed by the parties or, if either party is a defaulting party, as determined by the non-defaulting party in good faith to be representative of the domestic dealer's bill rate on that Business Day</i>".</p> <p>Clauses 32.5 and 32.6 use the term "Default Rate", which is defined in the proposed AA as "<i>the Commonwealth Bank corporate overdraft reference rate plus two percentage points</i>".</p>	<p>In schedule C, amend the definition of "Default Rate" to read as follows:</p> <p><u>Default Rate means the Bill Rate plus five percentage points, where "Bill Rate" means, on any Business Day, the 90 Business Day domestic dealer's bill rate as published in the Australian Financial Review on the last Business Day of the preceding Month, or if that rate is not published, then the rate agreed by the parties or, if either party is a defaulting party, as determined by the non-defaulting party in good faith to be representative of the domestic dealer's bill rate on that Business Day.</u></p> <p>In cl 32.4, change "Interest Rate" to "<u>Default Rate</u>".</p>
Information Interface			
D.33.1 – D.33.3	91	Amendments required to more correctly adopt the required amendment from the Draft Decision.	<p>Amend cl D.33.1 as follows:</p> <p>"Service Provider retains ownership of and all intellectual property rights in the Information Interface and grants, for the Term of this</p>

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		<p>GGT stated it accepted the amendments to its proposed cl 91 (now clauses D.33.1-D.33.3) required by the Authority in its Draft Decision. However, GGT has not included all of those required amendments and has not provided adequate justification for that omission.</p> <p>The Authority therefore requires the full amendments be made.</p>	<p>Transportation Agreement and for a further term (if extended by Service Provider by notice in writing) <u>and for such period (if any) thereafter as may be reasonably necessary in order for the User to recover User's Line Pack or exercise any other post-termination rights</u>, to the User a non-exclusive, non-assignable, non-transferable right to access and use the Information Interface solely for the purposes of submitting Nominations and for receiving information regarding receipts, deliveries, balances and Gas flows under the Transportation Agreement and for any other purpose for which the User reasonably requires use of and access to the Information Interface in order to exercise its rights and perform its obligations under this Transportation Agreement, <u>including for exchanging imbalances and otherwise trading the User's contracted capacity with other Users in accordance with the Terms and Conditions (including clause D.36.7)</u>"</p> <p>In cl D.33.2, the word "user" should be amended to read "<u>User</u>".</p> <p>Replace the semi-colon (";") at the end of cl D.33.2 with a full stop (".").</p> <p>Amend cl D.33.3 as follows:</p> <p>"Service Provider warrants that, <u>during the term of the licence</u>, the information accessed by <u>the</u> User via the Information Interface is reliable and accurate and that the Information Interface will remain <u>available as reasonably necessary and</u> fit for purpose during the term of the licence."</p>
D.33.4	92	<p>Amendment required to incorporate GGT's response.</p> <p>In its Draft Decision the Authority required GGT to delete proposed cl 92 (now cl D.33.4) which limits use of the interface by the User to only those of its employees who have been authorised to do so and makes the User liable for any loss incurred by the Service Provider resulting from use of</p>	<p>Amend cl D.33.4 as follows:</p> <p>"Only the User's employees <u>or contractors acting on the User's behalf and</u> authorised by the Service Provider may use <u>or access</u> the Information Interface pursuant to the above right of access. The User is liable for any <u>direct</u> loss incurred by the Service Provider resulting from use of the Information Interface <u>by the User's</u></p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>the Information Interface other than to the extent such loss is caused by the negligence of the Service Provider.</p> <p>GGT has not accepted this required deletion.</p> <p>GGT claims that the clause is required so that there is system integrity and security by ensuring it is responsible for approving use of the Information Interface.</p> <p>GGT further claims that "The information interface is a confidential interface between users and GGT which enables users to create binding obligations (such as nominations). Like any proprietary system, its use requires training and good user conduct and, as the owner of the system, GGT must retain the right to admit or exclude individuals at its discretion. The user should always be responsible for the actions of its employees and agents."</p> <p>The Authority has considered GGT's claims and accepts the inclusion of cl D.33.4 subject to some amendments that are consistent with the "system integrity and security" reasoning given by GGT but also set more balanced and reasonable limits on liability GGT is seeking to impose on the User resulting from "use of the Information Interface".</p>	<p><u>employees or contractors acting on the User's behalf</u> other than to the extent such loss is caused by the negligence <u>or misconduct</u> of the Service Provider <u>or any of its directors, officers, employees, agents or contractors.</u>"</p>
Limitation of Liability & Indemnity			
D.34.1	93	<p>Amendment required to incorporate GGT's response.</p> <p>In its Draft Decision the Authority required GGT to amend proposed cl 93 (consequential loss exclusion):</p> <ul style="list-style-type: none"> to make it expressly subject to the liability cap provision (proposed cl 94), but otherwise operate despite any other provision to the <u>contrary in the agreement</u>. 	<p>Amend cl D.34.1 as follows:</p> <p>"Subject to clause D.34.2, unless otherwise agreed by the Parties and <u>expressly</u> set out in the <u>Transportation Agreement Order Form</u>, but otherwise despite any other provision <u>to the contrary</u> in the Transportation Agreement, to the extent permitted by law, neither Party (including Service Provider's and the User's Related Bodies Corporate and their respective directors, officers, employees, agents and contractors) is liable to the other Party for Consequential Loss or for punitive or exemplary damages arising</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<ul style="list-style-type: none"> to extend the protection to related bodies corporate of the User (not just GGT's) and their respective directors, officers, employees, agents and contractors. to replace "Gross Negligence" in paragraph (a) with simple "negligence" (as per the limitation in current cl 18.2(a)). to restrict the carve-out in paragraph (b) expressly to payment liabilities arising in relation to the transportation agreement. to restrict the carve-outs in paragraph (c) to just the User's liability for its obligations to provide gas at the receipt point within the gas specification (GGT's proposed cl 43) and to indemnify GGT where User has requested and GGT has agreed to transport and deliver non-specification gas (GGT's proposed cl 47). All other carve-outs in paragraph (c) should be deleted. by adding as a new carve-out in paragraph (d), GGT's liability arising in respect of its obligations to deliver gas at delivery points within the gas specification (GGT's proposed cl 44) and not to receive, transport or deliver non-specification gas against the User's instructions (GGT's proposed cl 48). (This is the converse of the carve-out for the User's obligation regarding non-spec gas and is also consistent with GGT's stated reasoning that parties should take responsibility for matters "within the control of the relevant party"). by adding as a new carve-out in paragraph (e), GGT's liability arising in respect of its obligations to deliver gas at a delivery point within a specified pressure range (see comments at current cl 6.5 above). 	<p>in respect of the Transportation Agreement except where such Consequential Loss or punitive or exemplary damage arises out of:</p> <p>(a) Gross Negligence or Wilful Misconduct by either the Service Provider or the User; or</p> <p>(b) the Service Provider's or the User's liability relating to payment liabilities arising under the Transportation Agreement."</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>In its response, GGT did not agree to replace “Gross Negligence” in paragraph (a) with simple “negligence”. GGT claims the Authority’s proposed deletion of “gross” is against the interests of both GGT and users given the mutuality of the clause and, leaving mere negligence, undermines the efficacy of the consequential loss exclusion for all parties.</p> <p>GGT claims the (mutual) consequential loss principle should be that if a party breaches the agreement other than by reason of gross negligence or willful misconduct, consequential loss is excluded.</p> <p>GGT also did not agree to restrict the carve-outs in paragraph (c) to just the User's liability for its obligations to provide gas at the receipt point within the gas specification (GGT's proposed cl 43) and to indemnify GGT where User has requested and GGT has agreed to transport and deliver non-specification gas (GGT's proposed cl 47). All other carve-outs in paragraph (c) should be deleted. (This is consistent with the carve-out in current cl 18.2 in relation to current cl 10.4.)</p> <p>GGT decided to delete paragraph (c) altogether. GGT claims that, "given the mutuality, this reflects the principles set out above."</p> <p>The Authority has considered GGT's response and accepts its proposed new cl D.34.1 subject to a few minor amendments. These include making clear that the only part of the User's Transportation Agreement where a provision that is contrary to the limitation in cl D.34.1 can be set out and be effective to limit cl D.34.1 is in the Order Form (which, together with the T&Cs, forms the Transportation Agreement). This is to avoid any suggestion that the other Terms and Conditions (apart from cl D.34.2) can somehow undermine cl D.34.1. Without the replacement of</p>	

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>"Transportation Agreement" by "Order Form" in line 2, such a suggestion could arise because the Terms and Conditions are "agreed by the Parties" and "set out in the Transportation Agreement".</p>	
D.34.2	94	<p>Amendment required to incorporate GGT's response.</p> <p>In its Draft Decision the Authority required GGT to amend proposed cl 94 (liability cap):</p> <ul style="list-style-type: none"> to make it expressly operate despite any other provision to the contrary in the agreement, e.g. by adding the following sentence to new cl 94: "This clause 94 applies despite any other provision of the Transportation Agreement to the contrary, including any contrary provision in clause 93." to make liability cap apply both ways (as per current cl 18.1(c)) and to reinstate liability cap at amount equal to 1 year of charges (as per current cl 18.1(c)(1)) – although some form of assumption presumably needs to be expressly stated in order to quantify what the variable charges would be for this purpose for a year (e.g. assumed full MDQ taken throughout year with no imbalance, variance or overrun charges?). to extend the protection to related bodies corporate of the User (not just GGT's) and their respective directors, officers, employees, agents and contractors (as per limitation in current cl 18.1(c)). to reinstate the principle that neither party is to be liable for any liability or loss suffered by the other to the extent that the negligence of the other party contributed to that liability or loss (as per current cl 18.1(c)(2)). 	<p>Amend cl D.34.2 as follows:</p> <p>"This clause D.34.2 applies despite any other provision of the Transportation Agreement to the contrary, including any contrary provision in clause D.34.1. The aggregate liability of <u>any of Service Provider and User and any of their respective Related Bodies Corporate, directors, officers, employees, agents and contractors</u> in respect of the Transportation Agreement, excluding for the Gross Negligence or Wilful Misconduct of Service Provider or User and their respective Related Bodies Corporate, <u>directors, officers, employees, agents and contractors</u>, will be limited to:</p> <p>(a) <u>be limited to any amount that is no more than whichever is the greater of:</u></p> <p><u>(i) an amount equal to the equivalent of one Year of Toll Charges and Capacity Reservation Charges Capacity Charges</u> which would have been payable for the provision of the Service <u>and</u></p> <p><u>(ii) an amount equal to 10% of Toll Charges and Capacity Reservation Charges which would have been payable for the provision of the Service over the entire Term; or and</u></p> <p>(b) <u>exclude any liability or loss (including consequential loss) suffered by the other Party to the extent that the negligence of the other Party <u>or its Related Bodies Corporate, directors, officers, employees, agents and contractors caused or contributed</u> to that is liability or loss."</u></p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>In its response, GGT proposed "New clause 155 (a) further amended:</p> <p><i>Notwithstanding anything provided in the Transportation Agreement, neither party, its contractors, officers, directors, employees and agents shall be liable for:</i></p> <p><i>(a) any amount that is more than the equivalent of one Year of <u>capacity</u> charges which would have been payable for the provision of the Service"</i></p> <p><i>GGT claims the insertion of "capacity" is for certainty of the cap. Capacity charges comprise the vast (95%+) amount of revenue and the inclusion of variable charges would make it difficult at any time to assess the quantum of the cap.</i></p> <p><i>GGT accepted the remainder of the Authority's proposed amendments.</i></p> <p>However, GGT also stated that "a one year charges cap may be too high for short term contracts and too low for long term contracts (which is why GGT's preference, which has been approved by the AER, is to have a cap at 10% of contract value)." GGT states it is "prepared to accede to the Authority's preference in this instance but reiterates that this may be a sub-optimal result for all parties."</p> <p>The Authority has considered GGT's response.</p> <p>The Authority notes that the current drafting of GGT's clause does not achieve the limitation of liability in the Authority's required amendment and requires amendment to do that.</p> <p>The Authority does not agree with GGT's assertion that "a one year charges cap may be too high for short term</p>	

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		<p>contracts" although the authority accepts that it may be "too low for long term contracts".</p> <p>The Authority therefore considers that a liability cap of whichever is the greater of one year of capacity charges and 10% of "contract value" (based on capacity charges for the full term) should provide a reasonable limit for both longer and shorter term contracts.</p>	
D.34.3	95	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>In its Draft Decision the Authority required GGT to amend its proposed cl 95 (now cl D.34.3):</p> <ul style="list-style-type: none"> • so that indemnity does not apply to liability arising after the termination of the transportation agreement. • so that User's liability is limited by reference to certain <i>specified geographic locations (as per current clause 18.4)</i>. • by inserting the following words (taken from current clause 18.3(b)) immediately after "indemnify" on line four of paragraph (a): "does not apply in respect of any liability to the extent that the liability is unrelated to any fault, action or omission on the part of the User or persons under the direct control of the User and". • by inserting the following words immediately after "Agreement" on line four of paragraph (b): "except that the obligation to indemnify will be reduced in proportion to the extent that the loss or damage is caused by the Gross Negligence or Willful Misconduct of the Service Provider or its Related Bodies Corporate". 	<p>Amend cl D.34.3 as follows:</p> <p>"The User indemnifies Service Provider and its Related Bodies Corporate from and against any liability, claim, action, loss, damage, cost or expense Service Provider or its Related Bodies Corporate sustains or incurs, during the term of this Transportation Agreement, because of any of the following <u>to the extent occurring in or about, or incidental to activities in or about, the locations specified in clause [D.34.8]</u>:</p> <p>(a) a customer or contract counterparty of the User suffers, or claims to suffer, loss or damage in respect of Service Provider's or its Related Bodies Corporate acts or omissions under the Transportation Agreement, except that the obligation to indemnify <u>does not apply in respect of any liability to the extent that the liability is unrelated to any fault, action or omission on the part of the User or persons under the direct control of the User and</u> will be reduced in proportion to the extent that the loss or damage is caused by the Gross Negligence or Willful Misconduct of the Service Provider or its Related Bodies Corporate; or</p> <p>(b) a third party (including another User and a customer or contract counterparty of the User or another User) suffers, or claims to suffer, loss or damage in respect of the User's acts or omissions under the Transportation Agreement, <u>except that the obligation to indemnify will be reduced in proportion to the extent that the loss</u></p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>GGT stated it did not accept the proposed amendment (in dot point 3 above):</p> <p><i>"does not apply on respect of any liability to the extent that the liability is unrelated to any fault, action or omission on the part of the User or persons under the direct control of the User."</i></p> <p>GGT cannot control third parties with which the users contract and should not have a duty of care to them. Users can adequately and expediently manage their risk profile by back-to-back arrangements in their third party contracts; GGT cannot manage that risk.</p> <p>GGT also rejected dot point 2 above. In addition to its claims concerning third party liability, GGT claimed the inclusion of specific locations serves no utility, adds confusion (e.g. damage is not always suffered at a particular location, viz. economic loss) and potentially undermines the general principle that third party claims, where the third party is only involved by reason of the user's contractual arrangements, should not be visited on GGT.</p> <p>GGT claimed the remainder of the Authority's proposed amendments is accepted.</p> <p>The Authority has considered GGT's response and notes that:</p> <ul style="list-style-type: none"> • Dot point 1 of the Authority's Draft Decision required amendments has been accepted. • Dot points 2 – 4 of the Authority's Draft Decision required amendments have not been accepted. <p>The Authority does not accept GGT's claims have justified its rejection of the Authority's Draft Decision required</p>	<p><u>or damage is caused by the Gross Negligence or Wilful Misconduct of the Service Provider or its Related Bodies Corporate."</u></p> <p>Insert the following as new clause D.34.8:</p> <p><u>"D.34.8 The locations specified for the purposes of clause D.34.3 are:</u></p> <p><u>(a) Receipt Facilities;</u></p> <p><u>(b) Delivery Facilities;</u></p> <p><u>(c) the Pipeline;</u></p> <p><u>(d) such other premises, facilities or places used for the storage, transportation, distribution delivery or consumption of Gas, received from or delivered to the User; and</u></p> <p><u>(e) such other premises or places where any of the following:</u></p> <p><u>(i) property of the Owners or Service Provider or persons employed by or dealing with the Owners or Service Provider; and</u></p> <p><u>(ii) property of the User or persons employed by the User; and</u></p> <p><u>(iii) property of persons relying upon the provision of goods or services of the User,</u></p> <p><u>are in proximity with each other."</u></p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		amendments and considers those required amendments should be included in full in new c D.34.3 to ensure users are not materially worse off in this respect than under the current T&Cs.	
D.34.5	N/A	Amendment required to improve clarity.	In cl D.34,5 delete the word "or" and insert a common (",") after "D.14.4". Insert "or D.35.6 " after "D.34.1".
Force majeure			
D.35.2 – D.35.5	99	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>The Authority's required amendment was to amend proposed cl 99 (now cls D.35.2 – D.35.3) to remove GGT's discretion as to the amount of the reduction in Toll Charge or Capacity Reservation Charge where GGT fails to deliver due to FM (i.e. revert to current cl 17.2(b) principle that GGT must credit User with the full value of those charges for the period of FM). While GGT claimed in its response that it accepted this amendment, it has not done so. GGT has simply removed the requirement to reduce the Toll Charge or Reservation Charge. That is not what the ERA's amendment required. The Authority considers the principle in current cl 17.2(b) should be inserted.</p>	<p>Amend cl D.35.2 and D.35.3 as follows and consequentially renumber subsequent clauses in cl D.35 accordingly (an any cross references to them):</p> <p>"D.35.2 Such suspension referred to in clause D.35.1 does not relieve the User of its obligation to pay the Toll Charge or the Capacity Reservation Charge unless during a Month the Service Provider fails to deliver quantities of Gas Scheduled under the Firm Service as a result of a Force Majeure Event affecting the Service Provider in which case</p> <p>D.35.3 <u>the User is relieved of its obligation to pay the Toll Charge and the Capacity Reservation Charges where the User is unable to deliver or accept Gas due to a Force Majeure Event claimed by Service Provider and Service Provider shall include a credit for the value of the Toll Charge and the Capacity Reservation Charges applicable to the period of the Force Majeure Event in the User's next invoice as provided for in clause- D.32, in the same proportion as the number of Days of the Month during any part of which the Service Provider fails to deliver quantities of Gas to the User as a result of the Force Majeure Event bears to the total number of Gas Days in that Month."</u></p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
D.35.6	N/A	Amendment required to correct incorrect clause cross-references	In cl D.35.6, (to be renumbered as D.35.5) amend the reference to "D.35.5" to read " D.35.4(a) ".
Assignment			
D.36.1	102	<p>Amendment required as GGT noted that it had accepted the required amendment but did not actually implement it.</p> <p>In its Draft Decision the Authority required GGT to amend its proposed cl 102 (now cl D.36.1) to make it expressly subject to all of new cls 103-110 (now cls D.36.2-D.36.9).</p> <p>In its response, GGT stated it accepted that required amendment but has not made the required change and has not given any good justification for that omission.</p> <p>The Authority requires that the Draft Decision required amendment be made.</p> <p>A minor amendment is also required to improve the drafting.</p>	<p>In cl D.36.1:</p> <ul style="list-style-type: none"> replace the opening words "A party" with the words "Subject to clauses D.36.2 to D.36.8, a party"; and amend the words "<i>clauses D.36.1 and D.36.2-D.36.9</i>" to read "this clause D.36.1 and clauses D.36.2 to D.36.8".
D.36.6	107	<p>Amendment required as GGT noted that it had accepted the required amendment but did not actually implement it.</p> <p>In its Draft Decision the Authority required GGT to make the following amendment to its proposed cl 107 (now cl D.36.6):</p> <p><i>Add a provision to make clear that not only GGT but also any of the Owners can be an "Affected Party" (i.e. clarify that the change in control restriction applies to GGT and each Owner, not just GGT).</i></p> <p>In its response, GGT stated it accepted that required amendment but has not made the required change. The Authority requires that the Draft Decision required amendment be made.</p>	<p>Amend the opening of cl D.36.6 as follows:</p> <p>"D.36.6 In this clause D.36.6, an "Affected Party" means any Party or Owner. If:</p> <p>(a) there is a Change in Control of an Party (Affected Party) or its ultimate holding company;</p> <p>...."</p>

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D.36.7	N/A	<p>Amendment required to improve clarity.</p> <p>Clause 36.7 effectively duplicates cl D.36.6(d)(ii) and is unnecessary.</p> <p>Both cl D.36.6(d)(ii) and cl D.36.7 appear to have been included by GGT in response to the Authority's required amendment to add a provision as per para 100(e) from the RBP AA T&Cs (which provides that the provision preventing the Affected Party enforcing the transportation agreement before it obtains consent for the change of control "does not affect the Affected Party's obligations under the Transportation Agreement").</p> <p>It is not clear why GGT has added this provision twice.</p>	Delete cl D.36.7 and consequentially renumber subsequent clauses in cl D.36 (and any corresponding cross references).
D.36.8	108	<p>Amendment required to be made in Access Arrangement.</p> <p>In its Draft Decision the Authority required GGT to amend new cl 108 (now cl D.36.8) which GGT accepted and has done.</p> <p>The Authority also required that proposed s 6.2 of the AA be amended to be consistent with this change. GGT has amended s 6.2 of the AA but has not completely reflected the change to cl D.36.8, so that s 6.2(b)(iii) is not exactly the same as cl D.36.8(b)(iii). Specifically, the words "assigned and any other details (other than price) reasonably requested by Service Provider" are included in cl D.36.8(b)(iii), but not in s 6.2(b)(iii).</p> <p>The Authority considers it is important that these provisions in the AA and the T&Cs are consistent. The Authority</p>	<p>Refer to Required Amendment 18 for amendments required to s 6.2(b)(iii) of the AA.</p> <p>Renumber cl D.36.8 as cl D.36.7.</p> <p>Capitalise the term "contracted capacity" as it appears in line 2 of cl D.36.8 (to be renumbered as cl D.26.7) and cl D.36.8(b)(iii) (to be renumbered as cl D.36.8(b)(iii)).</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>therefore requires that s 6.2(b)(iii) is amended to match the substance of cl D.36.8(b)(iii).</p> <p>The Authority also requires minor amendments to cl D.36.8 and D.36.8(b)(iii) to capitalize the term "contracted capacity" as those terms appear in those clauses.</p>	
D.36.9	110	<p>Amendment required to improve clarity.</p> <p>In its Draft Decision the Authority required GGT to amend new cl 110 (now cl D.36.9) including:</p> <p><i>to ensure proposed clause 110(c) is consistent with proposed section 6.3(c) of the revised AA, including by amending proposed clause 110(c) to clarify the meaning of "reasonable requirements";</i></p> <p>GGT stated it accepted this requirement. GGT appears to have:</p> <ul style="list-style-type: none"> added the words "having regard to what would be the reasonable requirements of a prudent pipeline operator" at the end of cl D.36.9(c); and amended section 6.3(c) of the AA by replacing "reasonable requirements" with "reasonable technical and commercial requirements in relation to the assignment of Receipt Point MDQ or Delivery Point MDQ to those different Receipt Points or Delivery Points". <p>As a result of these amendments, there is some inconsistency between the express terms of cl D.36.9(c) and s 6.3(c) of the AA that potentially could lead to confusion. In</p>	<p>Renumber cl D.36.9 as cl D.36.8 (and any corresponding cross-references).</p> <p>Amend the first paragraph of cl D.36.9 (to be renumbered as cl D.36.8) as follows:</p> <p>"Notwithstanding clause D.36.1, User may, with Service Provider's prior written consent which must not be unreasonably withheld, assign <u>all or any of its Receipt MDQ or Delivery MDQ (or both) Contracted Capacity</u>, other than an assignment under clause D.36.8<u>D.36.7</u> provided that:"</p> <p>Amend cl D.36.9(a) (to be renumbered as cl D.36.8(a)) as follows:</p> <p>"(a) User pays Service Provider's reasonable costs and expenses (including, without limitation, legal costs and internal costs) <u>as reasonably determined and which Service Provider has reasonably and properly incurred</u>, in respect of application for consent (whether or not the assignment proceeds to completion) and any assignment which are reasonably and properly incurred .;"</p> <p>Amend cl D.36.9(b) (to be renumbered as cl D.36.8(b)) as follows:</p> <p>"(b) Service Provider and the assignee execute a Transportation Agreement acceptable to Service Provider (acting reasonably, based on reasonable commercial or reasonable technical considerations) in relation to the <u>Contracted Capacity</u> Receipt Point MDQ or Delivery Point MDQ (that is being assigned) <u>in a</u></p>

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		<p>particular, The "prudent pipeline operator" test in cl D.36.9(c) is not expressly reproduced in section 6.3(c).</p> <p>The Authority considers that cl D.36.9(c) and s 6.3(c) of the AA should substantially align. Accordingly, the Authority requires minor changes to both in order to achieve this.</p> <p>The Authority also requires minor changes:</p> <ul style="list-style-type: none"> •to cl D.36.9(a) to make better sense and for better consistency with section 6.3(a) of the AA; •to cl D.36.9(b) for better consistency with section 6.3(b) of the AA; •to cl D.36.9(f) for better consistency with section 6.3(f) of the AA; •to cl D.36.9(j) replacing the word "advise" with "notify",, so as to use terminology more clearly consistent with cl D.40 (Notices) [and replacing "day' with "Gas Day" and "Receipt Point MDQ or Delivery Point MDQ" with "Contracted Capacity", for better consistency with the corresponding new paragraph added at the end of section 6.3(g) of the AA]; and •by adding new cl D.36.9(k) for better consistency with the last paragraph of section 6.3 of the AA and rules 105(3)(a) and 105(5) of the NGR. 	<p><u>similar form to, and on substantially the same terms as, the User's Transportation Agreement:"</u></p> <p>Amend cl D.36.9(c) (to be renumbered as cl D.36.8(c)) as follows: "(c) the <u>Contracted Capacity</u> Receipt Point MDQ or Delivery Point MDQ to be assigned relates to the Receipt Point and Delivery Points <u>under the User's Transportation Agreement</u> or, if different receipt points <u>Receipt Points</u> or delivery points <u>Delivery Points</u> are proposed, the assignee meets Service Provider's reasonable <u>technical and commercial</u> requirements <u>in relation to the assignment of Contracted Capacity to those different Receipt Points or Delivery Points</u> having regard to what would be the reasonable requirements of a <u>reasonable and</u> prudent pipeline operator;"</p> <p>Amend cl D.36.9(f) (to be renumbered as cl D.36.8(f)) as follows: "(f) if the assignment of part or all of the <u>Contracted Capacity</u> Receipt Point MDQ or Delivery Point MDQ (or both) to the assignee requires additional facilities at the Receipt Point or Delivery Point, <u>the</u> User or the assignee (or both) agree to pay Service Provider for the cost of construction on terms and conditions reasonably determined by Service Provider (acting reasonably, based on reasonable commercial or reasonable technical considerations);"</p> <p>Amend cl D.36.9(i) (to be renumbered as cl D.36.8(i)) as follows:: "(i) Service Provider must, within 30 <u>Gas Days</u> of receiving User's request to assign its <u>Contracted Capacity</u> Receipt Point MDQ or Delivery Point MDQ (or both) under clause D.36.8, <u>notify</u> User whether or not it consents to the assignment."</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
			<p>Add a new cl D.36.9(j) (to be renumbered as cl D.36.8(j)) as follows:</p> <p>"(j) Where User assigns its Contracted Capacity in accordance with this clause D.36.8, the User's rights and obligations under or in relation to the Transportation Agreement in relation to such of its Contracted Capacity as is so assigned, will, when that assignment takes effect, transfer to the assignee absolutely (subject only to any modifications or changes made by virtue of the Transportation Agreement executed by Service Provider and assignee referred to in clause D.36.8(b)) and will terminate and be of no further effect as between the User and Service Provider. However, unless expressly agreed otherwise between the User, the assignee and Service Provider, an assignment made under this clause D.36.8 does not affect rights or liabilities that had accrued under, or in relation to, the Transportation Agreement before the relevant assignment took effect."</p>
Insurances			
D.37.1	N/A	Amendment required to improve clarity, and correction of clause cross-references.	<p>In cl D.37.1:</p> <ul style="list-style-type: none"> insert the word "<u>Transportation</u>" immediately before the word "<i>Agreement</i>"; the reference to the "Workers Compensation and Rehabilitation Act 1981" in new cl D.37.1(a) should be italicized. <p>In cl D.37.2:</p> <ul style="list-style-type: none"> amend the reference to cl "8.1(b)" to read "<u>D.37.1(b)</u>"; amend the reference to cl "8.1(c)" to read "<u>D.37.1(c)</u>".
D.39		Amendment required to improve clarity.	<p>In cl D.39.2, the words "<i>Service Agreement</i>" should be amended to read "Transportation Agreement".</p> <p>In cl D.39.2, insert a full stop at the end of the clause.</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
Notices			
D.40.1 and D.40.2	N/A	Amendment required to improve clarity.	<p>Amend D.40.1 as follows:</p> <p>All notices, demands, consents and requests required or permitted to be given or made to either pParty pursuant to the <u>Service Transportation Agreement</u>, shall be in writing and shall be deemed to be sufficiently given or made if personally delivered, if sent by registered mail, or facsimile addressed in the case of Service Provider as set forth in the Service Provider Information Package and in the case of the User to the address or <u>facsimile number</u> specified in the Order Form or in either case to such other address or <u>facsimile number</u> as the pParty to be notified shall designate by written notice given to the other pParty. <u>Each Party must ensure that it includes in the Order Form an address or addresses capable of accepting personal delivery and registered mail delivery between the hours of 9am and 5pm at that place on Mondays to Fridays and a facsimile number, for service of notices, demands, consents and requests on that Party.</u></p> <p>The words "Service Agreement" (as they appear throughout new cls D.40.1 and D.40.2) should be amended to read "<u>Transportation Agreement</u>".</p> <p>The words "party" (as they appear throughout new cl D.40.1) should be amended to read "Party".</p>
GST			
D.41.1 – D.41.6	N/A	Amendment required to improve clarity and correction of clause cross-references.	<p>The reference to the "A New Tax System (Goods and Services Tax) Act 1991 (Cth)" in cl D.41.1 should be italicized.</p> <p>The words "Trade Practices Act 1974 (Cth)" should be replaced</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
			<p>with the words "Competition and Consumer Act 2010 (Cth)" and italicised.</p> <p>The words "<i>Access Arrangement</i>" (as they appear throughout cl D.41.2 to D.41.4) should be amended to read "Transportation Agreement".</p> <p>The reference to "<i>D.29.1</i>" in cl D.41.6 should be amended to read "D.29".</p> <p>The words "<i>Service Agreement</i>" (as they appear throughout cls D.41.2 – D.41.6) should be amended to read "Transportation Agreement".</p>
Refunds and Credits			
D.42.1	N/A	Amendment required to correct incorrect clause cross-references	The references to " <i>D.34 and D.14</i> " should be amended to read " D.14.2, D.14.4 and D.35 ".
Waiver			
D.43		Amendment required to improve clarity.	The words " <i>Service Agreement</i> " should be amended to read " Transportation Agreement ".
Entire agreement			
D.44		Amendment required to improve clarity.	The words " <i>Service Agreement</i> " should be amended to read " Transportation Agreement ".
D.45	N/A	Amendment required to correct drafting error.	In line 6 of cl D.45, the word " <i>this</i> " should be amended to read " the ".
Appendix 2 – Gas Specification			
		<p>Amendment no longer required.</p> <p>In its Draft Decision, the Authority did not accept GGT's</p>	None.

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>proposal to amend the Gas Specification (Appendix Two) to increase the Wobbe index to 46.5 MJ/m³ and the Authority required the previous value of 46.0 MJ/m³ to be reinstated.</p> <p>GGT has accepted the Authority's required amendment to the Wobbe Index.</p> <p>In its response, GGT has also amended the Gas Specification (Appendix Two) to change the maximum value of the minimum 'Gross Heating Value' (reduced from 37.0MJ/m³ to 35. 5MJ/m³).</p> <p>GGT claims in its response to the Draft Decision (p.15) that a minimum higher heating value (HHV) of 35.5MJ/m³ for gas delivered into the GGP is set by the <i>Gas Supply (Gas Quality Specifications) Act 2009</i>. The Authority accepts this change.</p>	
Appendix 3 – Technical Requirements for Delivery Facilities			
		Amendment required to incorporate GGT's response.	Delete the contents of Appendix 3 (“Technical Requirements for Delivery Facilities”) from the access arrangement terms and conditions and insert " Not used "
Appendix 4			
	1.1	Amendment required to delete Appendix 4 as it is not necessary for the definition of Quantity Variation Charges – see the Authority's consideration and comments concerning clause D.10.6 above.	Delete the contents of Appendix 4 and insert " Not used ".
Schedule A - Details			
		Amendment required as GGT accepted the required amendment but did not implement it.	A pro forma for the proposed Order Form/Form of Agreement (including the Details) should be attached to the proposed revised Access Arrangement.

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		In its Draft Decision, the Authority required the Details to be included in the Order Form/Form of Agreement. GGT stated it accepted this requirement but has not produced a copy of the Order Form/Form of Agreement so that compliance can be verified.	
Schedule C - Defined Terms & Interpretation			
			Generally – throughout the Terms and Conditions (and the AA), amend all references to "appendix" [#] to read " <u>Appendix</u> " [#].
			Generally – throughout the T&Cs and the AA, amend all references to "party" and "parties" (where those words in context refer to either the User or the Service Provider or both, but not when referring to a third party or parties) to read " <u>Party</u> " and " <u>Parties</u> " respectively.
			Generally – throughout the T&Cs (and the AA), a reference to a provision of the T&Cs should be to a "clause" (not section) of the T&Cs. Amend all references in the T&Cs (and the AA) accordingly.
			Generally – throughout the T&Cs (and the AA), a reference to a provision of the AA should be to a "section" (not clause) of the T&Cs. Amend all references in the T&Cs (and the AA) accordingly.
		Amendment required as GGT accepted the required amendment but did not implement it. In its Draft Decision, the Authority required that a separate set of Defined Terms and Interpretation clauses is required for the T&Cs to ensure Transportation Agreement is fully standalone. GGT stated it accepted this required amendment, but it does not appear that GGT has inserted a separate set of Defined Terms and Interpretation clauses for the Transportation	Insert as Schedule TC1 a separate set of Defined Terms and Interpretation clauses specifically for the Transportation Agreement that are substantially the same as for the AA (with necessary changes) where covering the same ground. Delete cl D.2.2. of the T&Cs and insert the following as a new cl D.2.2. <u>"Expressions defined in Schedule TC1.1 have those meanings when used in these Terms and Conditions, unless the context</u>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>Agreement as schedule C appears to relate to the Access Arrangement as well.</p> <p>While the Defined Terms and Interpretation clauses do need to be substantially the same where the T&Cs and AA are covering the same ground, it is important that the Transportation Agreement can operate as a standalone package, separate from the AA.</p>	<p><u>otherwise requires. These Terms and Conditions are to be interpreted in accordance with Schedule TC1.2."</u></p>
		Amendment required to correct definition.	A number of definitions have had minor amendments. For example, clause has been replaced by section in a number of definitions.
		Amendment required to correct definition.	<p>Amend the definition of "Capacity" in Sch C as follows:</p> <p>Capacity means the measure of the potential of the Covered Pipeline as currently configured <u>from time to time during the life of the Access Arrangement</u>, to deliver a particular Service between a Receipt Point and a Delivery Point at a point in time ;</p>
		Amendment required to correct definition.	The words " <i>Service Agreement</i> " in the definition of "Commencement Date" should be amended to read " <u>Transportation Agreement</u> ".
		<p>Amendment required as GGT accepted the required amendment but did not implement it.</p> <p>In its Draft Decision, the Authority noted that it seemed unnecessary to have definitions for both "Day" and "Gas Day" when they essentially cover the same ground.</p> <p>GGT stated it accepted this, but GGT has retained both of these definitions (without giving any explanation for this).</p> <p>The Authority considers it makes for better clarity of meaning and efficiency of use if a single defined term is</p>	<p>Retain the existing defined term "Gas Day".</p> <p>Delete the defined term "Day".</p> <p>Consequentially replace all references to "Day" (other than "Gas Day") throughout the AA and T&C's with "Gas Day".</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>used for the same concept throughout the AA and Transportation Agreement.</p> <p>The Authority therefore requires the existing defined term "Gas Day" is retained and the defined term "Day" is deleted and that all references to "Day" (other than "Gas Day") be consequentially amended to "Gas Day" throughout the AA and Transportation Agreement.</p>	
		Amendment required to correct definition.	Covered Pipeline means that part of the Pipeline to which this Access Arrangement relates, and is described in the Access Arrangement Information (System Description <u>Section 1.2</u>);
		Amendment required to correct definition.	Default Rate means <u>the Bill Rate plus five percentage points, where "Bill Rate" means, on any Business Day, the 90 Business Day domestic dealer's bill rate as published in the Australian Financial Review on the last Business Day of the preceding Month, or if that rate is not published, then the rate agreed by the Parties, or if either Party is a defaulting Party, as determined by the non-defaulting Party in good faith to be representative of the domestic dealer's bill rate on that Business Day</u> Commonwealth Bank corporate overdraft reference rate plus two percentage points;
		<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>In its Draft Decision, the Authority required that GGT:</p> <ul style="list-style-type: none"> • define Delivery Point MDQ by reference to the MDQ applicable to the User at a particular Delivery Point (in case the delivery point has multiple users) and • specify how Delivery Point MDQ is to be determined (e.g. as specified in Order Form?) 	<p>Amend the definition of "Delivery Point MDQ" as follows:</p> <p>"Delivery Point MDQ means the MDQ applicable to <u>the</u> User at a particular Delivery Point <u>as set out in the Order Form/Form of Agreement or otherwise agreed in writing by Service Provider and User;</u>"</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>GGT stated it accepted this required amendment, but only the first part of the Authority's required amendment (i.e. reference to the MDQ applicable to the User at a particular Delivery Point) has been made by GGT; the second part (i.e. the specification of how the MDQ is determined) has not been made.</p> <p>The Authority requires the definition should be amended to specify how the MDQ is determined.</p>	
		Amendment required to correct definition.	<p>In schedule C, amend the definition of "Developable Capacity" as follows:</p> <p>"Developable Capacity means <u>an increase in Pipeline Capacity</u> which, in Service Provider's opinion, <u>acting reasonably and to the standard of a reasonable and prudent pipeline operator, is technically and economically feasible to develop consistent with the safe and reliable operation of the Pipeline economic to develop taking into account its operational and technical requirements;</u></p>
		Amendment required to correct drafting error.	Delete the words " <i>Delivery Point</i> ," as it appears in Sch C between the words " <i>Other Tariffs Charges</i> " and " <i>Overrun</i> ".
		Amendment required to correct definition.	<p>In schedule C, amend the definition of "Expansion" as follows:</p> <p>"Expansion means additions of plant or pipeline made by Service Provider to the Covered Pipeline which result in <u>an increase difference</u> in Capacity;"</p>
		Amendment required to correct definition.	<p>In schedule C, amend the definition of "Firm MDQ" as follows:</p> <p>"Firm MDQ means the maximum quantity of Gas which the Service Provider is from time to time obliged to deliver across all Delivery Points to or on account of the User in any Gas Day under the Firm Service <u>as set out in the Order Form/Form of Agreement or otherwise agreed in writing by Service Provider and User from time to time;</u></p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		Amendment required to correct definition.	In schedule C, amend the definition of "Firm MHQ" as follows: "Firm MHQ means the maximum quantity of Gas which the Service Provider is from time to time obliged to deliver across all Delivery Points to or on account of the User in any Hour under the Firm Service <u>as set out in the Order Form/Form of Agreement or otherwise agreed in writing by Service Provider and User from time to time, provided that the MHQ must be no greater than the figure produced by the formula MDQ / 24 x 1.2, where MDQ is the User's Firm MDQ;</u> "
		Amendment required to correct definition.	In schedule C, amend the definition of "Firm Service" as follows: "Firm Service is the Reference Service, and <u>is as described has the meaning</u> in section 2.2 of the Access Arrangement, except in the context of Scheduling and Curtailment under clauses D.5 and D.7.1 of the Terms and Conditions;"
		In its Draft Decision, the Authority required that GGT: "Add definition for Order Form or Form of Agreement (the form of which should be scheduled to the AA)." GGT stated it accepted this required amendment and has inserted definitions of both "Order Form" and "Form of Agreement". However, while the definition of "Form of Agreement" refers to an attachment, there is no form attached to the revised proposed access arrangement.	Provide the attachment referred to in the definition of "Form of Agreement".
		Amendment required to correct definition.	In schedule C, amend the definition of "Incremental Service" as follows: "Incremental Service means <u>pipeline services (as defined in the NGL) provided by means of an Extension or Expansion</u> a Service relating to capacity above the Capacity; "

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		Amendment required to correct definition.	In schedule C, amend the definition of "Metering and Measurement Requirements" as follows: "Metering and Measurement Requirements means specifications published by Service Provider from time to time for metering and measurement in relation to the Pipeline, which have been made available to the User, are consistent with Appendix 1 and ensure that Good Engineering and Operating Practices are observed <u>reasonably and efficiently (consistent with achieving the national gas objective set out in section 23 of the National Gas Law);"</u>
		Amendment required to correct definition.	In schedule C, amend the definition of "Metering Equipment" as follows: Metering Equipment means all the equipment and facilities <u>reasonably and efficiently</u> required to be installed or provided at each Receipt Point to conform to the Metering and Measurement Requirements <u>(and consistent with achieving the national gas objective set out in section 23 of the National Gas Law);</u>
		Amendment required to delete definition which is no longer used in the AA or T&Cs.	Delete the definition of "Notice of Auction for Developable Capacity".
		Amendment required to delete definition which is no longer used in the AA or T&Cs.	Delete the definition of "Open Season Existing Capacity Closing Date".
		Amendment required to improve clarity. In its Draft Decision, the Authority required that GGT: "Consider if the definition of Other Tariff Charges is still required."	In schedule C, amend the definition of "Other Tariff Charges" as follows: "Other Tariff Charges means has the charges listed meaning given in s 4.2.1 of the Access Arrangement, when used in the Access Arrangement, and means the charges listed in clause

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>GGT stated it accepted this required amendment and retained the defined term, which states:</p> <p>"Other Tariff Charges has the meaning given in s 4.2.1 of the Access Arrangement;"</p> <p>While the Authority accepts the retention of this defined term, it requires that the definition should be amended to reflect that cl D.10.1 of the T&Cs also provides a list of "other tariff charges" – see the Authority's consideration and comments on cl D.10.1 above.</p>	D.10.1 of the Terms and Conditions when used in the Terms and Conditions;"
		Amendment required to correct definition.	In schedule C, amend the definition of "Party" as follows: "Party means Service Provider and the User, respectively <u>and Parties means both the Service Provider and the User.</u> "
		Amendment required to correct definition.	In schedule C, amend the definition of "Quantity Variation Charges" as follows: "Quantity Variation Charges are as described in appendix 4 <u>means means all or any of the Overrun Charge, Imbalance Charge and Daily Variance Charge;</u>
		<p>Amendment no longer required.</p> <p>In its Draft Decision, the Authority required that GGT: "Amend definition of Receipt Facilities to better describe the facilities to be caught by the definition e.g. facilities required for or in relation to receipt of Gas into the Pipeline in accordance with Good Engineering and Operating Practice?"</p> <p>GGT has accepted the requirement amendment, but without the words "in relation to".</p>	None.

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		The Authority accepts GGT's amendment.	
		<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>In its Draft Decision, the Authority required that GGT:</p> <ul style="list-style-type: none"> • Define Receipt Point MDQ by reference to the MDQ applicable to the User at a particular Receipt Point (in case the receipt point has multiple users) and • specify how that Receipt Point MDQ is to be determined (e.g. as specified in Order Form?) <p>GGT stated it accepted this required amendment, but (as with the definition of "Delivery Point MDQ" - see above), only the first part of the Authority's required amendment (i.e. reference to the MDQ applicable to the User at a particular Receipt Point) has been made by GGT; the second part (i.e. the specification of how the MDQ is determined) has not been made. GGT has not provided any good justification for this omission.</p> <p>The Authority requires the definition to be amended to specify how the MDQ is determined.</p>	<p>Amend the definition of "Receipt Point MDQ" as follows:</p> <p>"Receipt Point MDQ means the applicable MDQ applicable to the User at the particular Receipt Point <u>as set out in the Order Form/Form of Agreement or otherwise agreed in writing by Service Provider and User;</u>"</p>
		<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>In its Draft Decision, the Authority required that GGT:</p> <p>"Define Receipt Point MHQ by reference to the MHQ applicable to the User at a particular Receipt Point (in case the receipt point has multiple users) and specify how it is to be determined."</p>	<p>Amend the defined term "Receipt Point MHQ" as follows:</p> <p>"Receipt Point MHQ means the applicable MHQ applicable to the User at the particular Receipt Point <u>as set out in the Order Form/Form of Agreement or otherwise agreed in writing by Service Provider and User, provided that the MHQ must be no greater than the figure produced by the formula MDQ / 24 x 1.2, where MDQ is the Receipt Point MDQ for the particular Receipt Point and has the meaning in section 2.2.2 of the Access Arrangement;</u>"</p>

Main clause in GGT's latest T&Cs	Section in GGT's Initial T&Cs	Authority's consideration and comments	Authority's FD required amendment
		<p>GGT accepted this required amendment and amended the definition to read:</p> <p>"Receipt Point MHQ means the applicable MHQ applicable to the User at the particular Receipt Point and has the meaning in section 2.2.2 of the Access Arrangement;"</p> <p>The Authority considers the definition should be amended to specify more clearly how the MDQ is to be determined, render it more standalone from the AA and to clarify the drafting in places.</p>	
		Amendment required to correct definitions.	GGT has inserted a defined term for "Termination Date". However, the reference to " <i>Service Agreement</i> " should be amended to read " Transportation Agreement ".
		Amendment required to correct definitions.	In Sch C.1, delete the definition of "Transportation Tariff" as the term is no longer used.
		Amendment required to correct definitions.	At Schedule C.2 paragraph (f), Insert inverted commas around the words "including" and "for example".

Part 2 – Provisions the Authority requires to be added to GGT's Terms and Conditions

Provisions Missing from T&Cs	GGT's response	Authority's consideration and comments	Authority's FD required amendment
Firm Service	Accepted.	<p>Amendment required as GGT accepted the required amendment but did not actually implement it.</p> <p>GGT has not included a full description of Firm Service in the T&Cs as per current clause 4.3. Amend T&Cs to include full description of Firm Service in the T&Cs as per current clause 4.3.</p>	<p>Insert the following as new clause D.2A in the T&Cs:</p> <p><u>"D.2A Applicability and Character Of Service</u> <u>D.2A.1 The objective of the Firm Service is to transport energy in the form of natural gas between a Receipt Point and Delivery Point(s).</u> <u>D.2A.2 Subject to and in accordance with the terms of the Transportation Agreement, GGT will receive from the User into the Pipeline at the Receipt Point quantities of Gas up to the Receipt Point MDQ and Receipt Point MHQ and deliver from the Pipeline at the Delivery Point(s) quantities of Gas up to the relevant Delivery Point MDQ and Delivery Point MHQ.</u> <u>D.2A.3 The Delivery Point(s) shall be downstream of the Receipt Point where the direction of flow is defined by Service Provider (acting as a reasonable and prudent pipeline operator).</u> <u>D.2A.4 The Firm Service will be provided on a firm basis and not be subject to curtailment or interruption except as expressly provided in the Transportation Agreement."</u></p>
MDQ and MHQ	Accepted.	<p>Amendment required to incorporate GGT's response.</p> <p>GGT has not included MDQ and MHQ provisions in the T&Cs in full.</p> <p>GGT has stated in its response to the Draft Decision that it does not accept amendments to new sections 2.2.2(d)(i) and (iii), but it has instead made its own amendments to those subsections.</p>	<p>Amend the defined term "Firm MDQ" as follows: "Firm MDQ means the maximum quantity of Gas which the Service Provider is from time to time obliged to deliver across all Delivery Points to or on account of the User in any Gas Day under the Firm Service <u>as set out in the Order Form/Form of Agreement or otherwise agreed in writing by Service Provider and User from time to time;</u>"</p> <p>Amend the defined term "Firm MHQ" as follows: "Firm MHQ means the maximum quantity of Gas which the Service Provider is from time to time obliged to deliver across all</p>

Provisions Missing from T&Cs	GGT's response	Authority's consideration and comments	Authority's FD required amendment
		Refer to the Authority's consideration concerning MDQ and MHQ in the Pipeline Services Chapter of its Final Decision.	<p>Delivery Points to or on account of the User in any Hour under the Firm Service <u>as set out in the Order Form/Form of Agreement or otherwise agreed in writing by Service Provider and User from time to time, provided that the MHQ must be no greater than the figure produced by the formula $MDQ / 24 \times 1.2$, where MDQ is the User's Firm MDQ;</u>"</p> <p>Add the contents of s 2.2.2 of the AA (as amended by Required Amendment 2) to the T&Cs, renumbered as new clause D.4A (with the contents of sections 2.2.2(a)-(d) numbered as clauses D.4A.1-D.4A.4 and titled "MDQ and MHQ"</p>
Overruns	Accepted, except for the deletion of the indemnity for unauthorised overruns. A balanced pipeline is critical both to pipeline operability and the ability to meet the requirements of all users. The only practical way to deal with rogue shipper behaviour is to have the flexibility to pull them into line quickly. As all users have a legitimate expectation that GGT will ensure that the pipeline is operated in balance, it is not unlikely that they may seek redress from GGT for failure to provide contracted services resulting from the actions of other shippers. Given that creating an imbalance per se is not a breach of the agreement, the indemnity is necessary to attach liability for such	<p>Amendment required to incorporate GGT's response.</p> <p>1. GGT has not included overrun provisions in the T&Cs in full.</p> <p>Refer to the Authority's consideration concerning Overruns in the Pipeline Services Chapter of its Final Decision. The Authority requires GGT to include the overrun provision in the T&Cs in full. A new clause D.8A is therefore required for the T&Cs that is substantially the same as s.2.2.3 of the AA (as amended by Required Amendment 2)</p> <p>2. With regard to whether or not overrun is take or pay:</p> <p>In cl D.10.6(e)(ii), GGT has added that "Authorised Overruns are provided on a take or pay basis". However, the T&Cs do not otherwise provide that authorised overrun is take or pay. That is, under cl D.10.2(c) and s 4.2.2(c) of the AA and the definition in sch C, Authorised Overrun charges are based on <i>actual</i> deliveries of gas, which is not necessarily the same as the full quantity that was authorised as overrun). Under the T&Cs, the only way that overrun can become take or pay is where prolonged overrun gives rise to an increase in MDQ in accordance with cl D.8.6 (which effectively converts it from overrun to take or pay capacity).</p>	<p>Insert the following as new cl D.8A in the T&Cs:</p> <p>D.8A.1 An Unauthorised Overrun will occur where the User incurs an Overrun Quantity on a Gas Day or in an Hour which is not an Authorised Overrun.</p> <p>D.8A.2 An Authorised Overrun is:</p> <ul style="list-style-type: none"> (a) the receipt by Service Provider at the Receipt Point of quantities of Gas Nominated by the User, in excess of the Receipt Point MDQ, at a rate per Hour Nominated by the User; (b) the transportation of the Gas referred to in subparagraph (a) on an interruptible basis; and (c) the delivery by Service Provider to the User or for User's account at the Delivery Points of quantities of Gas Nominated by the User, in excess of the applicable Delivery Point MDQ or in aggregate exceeding the Firm MDQ, at a rate per Hour Nominated by the User including System Use Gas and User's Line Pack. <p>D.8A.3 An Authorised Overrun is requested by the User as part of the User's Nomination for the Firm Service by the User requesting an amount greater than the User's Firm MDQ or relevant Receipt Point or Delivery Point MDQ (as the case may be).</p>

Provisions Missing from T&Cs	GGT's response	Authority's consideration and comments	Authority's FD required amendment
	<p>rogue behaviour. APA does not benefit from rogue behaviour and should not bear the risk.</p>	<p>Given that the charging basis for Authorised Overrun does not appear to support a take or pay obligation, the Authority does not consider it appropriate for GGT to include its proposed "for the avoidance of doubt" provision in cl D10.6(e)(ii).</p>	<p>D.8A.4 Service Provider is not obliged to provide an Authorised Overrun, or to provide an Authorised Overrun in respect of quantities or at a rate Nominated by the User where:</p> <ul style="list-style-type: none"> (a) the provision of the Authorised Overrun for the transportation of the requested quantities would cause Service Provider to curtail a service under a Transportation Agreement: <ul style="list-style-type: none"> (i) for another User up to its MDQ on that Day; or (ii) already Scheduled for transportation to another User at the time the User's Nomination is received; or (b) clauses D.5.1 to D.5.4 (inclusive) of these Terms and Conditions operate to exclude or reduce the provision of the Authorised Overrun. <p>D.8A.5 If User requests an Authorised Overrun it must give Service Provider a Nomination for that Day. User may, but need not, Nominate its Authorised Overrun with its monthly Nomination for the Firm Service (at least 3 Days before the Month starts) but must nominate its Authorised Overrun by no later than the Nomination Deadline of 4.00pm on the day before the relevant Gas Day.</p> <p>D.8A.6 Upon receipt of the Nomination, Service Provider must review the availability of the Authorised Overrun and must, as soon as possible, advise User that:</p> <ul style="list-style-type: none"> (a) the Authorised Overrun is available; (b) the Authorised Overrun is available for the relevant Day but not as requested, together with the Authorised Overrun that is available on the relevant Day; or (c) the Authorised Overrun is not available for the relevant Day. <p>D.8A.7 If pursuant to paragraph D.8A(6)(a) above, Service Provider advises the User that the Authorised Overrun is available then the User's request constitutes a Nomination for an Authorised Overrun in accordance with this Access Arrangement.</p>

Provisions Missing from T&Cs	GGT's response	Authority's consideration and comments	Authority's FD required amendment
			<p>D.8A.8 Within one hour of receipt of an advice under paragraph D.8A(6)(b) above, the User may request provision of the Authorised Overrun described by Service Provider in its advice under that paragraph and the request constitutes a Nomination for the Authorised Overrun in accordance with this Access Arrangement.</p> <p>D.8A.9 The User acknowledges that Service Provider cannot advise User of the availability of an Authorised Overrun under this clause D.8A prior to Scheduling pursuant to clauses D.5.1 to D.5.4 (inclusive) of these Terms and Conditions for the relevant Gas Day.</p> <p>D.8A.10 The User will be liable to pay Charges for Overruns (whether an Authorised Overrun or Unauthorised Overrun) as set out in clause D.10.2.</p> <p>D.8A.11 If for a period of 30 Gas Days the Daily Overrun Quantity at the Delivery Point for each of those Gas Days is positive then Service Provider may give notice to the User ("Overrun Notice"). If on any Gas Day after the expiry of 7 Gas Days from receipt of the Overrun Notice, the User's Daily Overrun Quantity at the Delivery Point is positive then with effect from the next Gas Day then the User's MDQ will be increased by either:</p> <ul style="list-style-type: none"> (a) the average of the Daily Overrun Quantity at the Delivery Point for a period of 12 months; or (b) if the Transportation Agreement has been in force for less than 12 Months then the average of the Daily Overrun Quantity at the Delivery Point between the Commencement Date and the date of the Overrun Notice, <p>and the Transportation Agreement will be deemed to be amended accordingly.</p> <p>In addition, delete cl D.10.6(e)(ii) and as a consequence of that deletion, remove the colon (":") from the end of the first line of clause D.10.6(e) and the paragraph numbering ("(i)") from the next line, and connect both lines together as a single paragraph, replacing the closing semi-colon (";") with a full stop (".").</p>

Provisions Missing from T&Cs	GGT's response	Authority's consideration and comments	Authority's FD required amendment
Metered Quantities of Gas Used for Purposes of Transportation Agreement	Accepted.	<p>Amendments required to more correctly adopt the required amendment from the Draft Decision.</p> <p>Current cl 5.6 appears in the AA (s 2.2.11) but has not been reinstated in the T&Cs. GGT did not justify why current cl 5.6 has not been reinstated in the T&Cs. The Authority therefore continues to require that current cl 5.6 be reinstated in the T&Cs (refer also to discussion concerning cls D.16.5-D.16.10 in Part 1 of this Table).</p>	<p>Add the following as cl D.5.5:</p> <p><u>"D.5.5 The parties acknowledge and agree that from time to time there may be Measurement Variance. For the purposes of the Transportation Agreement, the quantities of Gas as measured at the Receipt Point or the Delivery Point(s), or as Used Gas, shall be deemed to be the true and correct measure of the quantity of Gas so measured unless it is shown that the measurements are incorrect by more than is allowed by the prescribed limits of accuracy of the meters as set out in the Appendix 1."</u></p>
Other Charges	Accepted.	<p>Amendment no longer required.</p> <p>GGT has included a description of the Firm Service (including all charges for the Firm Service) in the T&Cs - see cls D.9, D.10, D.11 and D.12 (based on s 4 of the AA). <i>GGT's proposed rates are not accepted unless shown to be reasonable and consistent with NGR.</i></p>	<p>None (other than those required amendments referred to elsewhere in this Table or the Final Decision that are relevant to this issue).</p>
Other Charges		<p>Amendment no longer required.</p> <p>GGT has now included all charges provisions in the T&Cs in full - see cls D.9, D.10, D.11 and D.12. The variation mechanism (clause D.11) incorporates the Reference Tariff Variation Mechanism (RTVM) from the AA (and schedule A) by cross reference only. The Authority continues to consider it is appropriate for T&Cs to cross refer to RTVM (including Cost Pass-through Tariff Variation Mechanism) in AA so that each transportation agreement entered into using the T&Cs can have its tariffs varied by whatever RTVM applies from time to time under the AA.</p> <p>Current cl 9.6(b), (d) & (e) have been reinstated into T&Cs at cl D.10.6(a), (c), and (d) respectively – refer consideration of cl D.10.6 and relevant required amendments in Part 1 of this Table.</p>	<p>None (other than those required amendments referred to elsewhere in this Table or the Final Decision that are relevant to this issue).</p>

Provisions Missing from T&Cs	GGT's response	Authority's consideration and comments	Authority's FD required amendment
		GGT's proposed rates are not accepted unless shown to be reasonable and consistent with NGR.	
Rounding	Accepted.	<p>Amendment required as GGT accepted the required amendment but did not actually implement it.</p> <p>GGT has accepted but not actioned the Authority's required amendment that the rounding provision in current cl 9.10 needs to be reinstated into the T&Cs.</p> <p>While GGT has included a rounding provision based on current cl 9.10 in s A3 of sch A, that provision is too limited in its application. In particular, paragraph (a) only applies to "amounts per GJ to be paid pursuant to this Schedule A", and it is unclear whether any amounts (other than for cost pass-through events) are actually payable "pursuant to" sch A (which does not constitute or contain a charging clause, except in section A4 as regards cost pass-through events). Further, to the extent section A3 could have wider application beyond sch A (e.g. paragraph (b)), the T&Cs do not clearly adopt section A3 as a term of the Transportation Agreement (other than, in respect of particular (limited) situations, such as variations to charges, to the extent A3 forms part of the RTVM incorporated by cl D.11). Accordingly, to put the matter beyond doubt, the Authority continues to require that the rounding provision in current cl 9.10 needs to be reinstated into the T&Cs.</p> <p><i>"A3 Rounding</i> <i>(a) All amounts per GJ to be paid pursuant to this Schedule A shall be expressed in dollars to 6 decimal places per GJ of Gas.</i> <i>(b) All quantities of Gas shall be rounded to the nearest whole Gigajoule."</i></p>	<p>Add the following as new cl D.41A</p> <p>"D.41A Rounding <i>(a) All amounts per GJ to be paid pursuant to the Transportation Agreement shall be expressed in dollars to 6 decimal places per GJ of Gas.</i> <i>(b) All quantities of Gas shall be rounded to the nearest whole Gigajoule."</i></p>

Appendix 7 Public Reference Tariff Model

This appendix is published as a separate publication on the ERA's website.