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APA VTS

2023-2028 Access Arrangement Information

December 1, 2021



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1. Introduction

This Access Arrangement Information document has been prepared, in accordance with Rule 43(1) of the National Gas Rules (NGR), to provide Users and Prospective Users with sufficient information to understand the derivation of the Access Arrangement and its compliance with the NGR.

This Access Arrangement Information accompanies the APA VTS Australia (Operations) Pty Limited (ACN 083 009 278) (APA VTS) access arrangement for the Victorian Transmission System (VTS). The revised Access Arrangement commences on 1 January 2023.

A more detailed description of the Pipeline, including a map, is available on APA Group's website at www.apa.com.au, which shows the general location and key points of the Pipeline.

1.1. Structure of this document

This document follows the structure of Rule 72¹ setting out the requirements for content of the Access Arrangement Information for a full Access Arrangement proposal.

APA VTS's Access Arrangement proposal commences at the end of an earlier Access Arrangement Period, and therefore contains information relevant to the earlier Access Arrangement Period (in this case spanning from 1 January 2018 to 31 December 2022) as required under the NGR. This information is included in Part 2 of the Access Arrangement Information. The remaining parts of this Access Arrangement Information are as follows:

- Part 3 establishes the capital base for the Access Arrangement Period (in this case spanning from 1 January 2018 to 31 December 2022), including forecast capital expenditure for the Access Arrangement Period;
- Part 4 discusses forecast utilisation for the Pipeline, including forecast customer numbers, reserved capacity and volumes used to derive tariffs;

¹ All references to Rules or a particular Rule in this document refer to the National Gas Rules, or part thereof, unless an alternative meaning is expressly stated.

- Part 5 outlines forecast operating expenditure for the Access Arrangement Period;
- Part 6 sets out key performance indicators for the Pipeline;
- Part 7 sets out the rate of return used in the Access Arrangement;
- Part 8 outlines the approach to taxation and how the tax asset base has been calculated;
- Parts 9 and 11 discuss historical and proposed incentive mechanisms;
- Part 10 describes the Reference Services, approach to tariff setting and reference tariff variation mechanism; and
- Part 12 sets out the total revenue requirement for the Pipeline for each year of the access arrangement.

All financial information in this document is presented on a calendar year basis.

2. Information relevant to the earlier access arrangement period

2.1. Capital expenditure

Capital expenditure by asset class over the earlier Access Arrangement Period² is set out in 2.1 below. These costs are based on actual costs for calendar years 2018 to 2020, estimated costs for 2021, and forecast costs for financial year 2022.

² As required by Rule 72(1)(a)(i)

2.1

Capital expenditure by asset class over the earlier access arrangement period

\$m nominal	2018	2019	2020	2021(e)	2022(f)
Pipelines	11.7	19.2	14.5	9.5	10.5
Compressors	2.2	1.1	2.5	6.4	1.2
City Gates & Field Regulators	0.1	1.2	1.6	1.7	0.9
Odourant Plants	-	-	-	-	-
Gas Quality	-	-	0.0	0.9	0.5
Other	10.4	14.6	10.4	15.5	13.7
General Building	0.4	8.3	3.8	1.1	-
General Land	-0.4	-	-	-	-
Integrity Inspections	-	-	-	-	-
WORM	-	-	-	30.7	97.1
SWP_570	-	-	-	-	-
Hydrogen safety	-	-	-	-	-
Total	24.4	44.4	32.8	65.8	124.0

2.2. Operating expenditure

Operating expenditure by category over the earlier Access Arrangement Period³ is set out in 2.2 below. These costs are based on actual costs for calendar years 2018 to 2020, estimated costs for 2021, and forecast costs for 2022.

2.2

Operating expenditure by category over the earlier Access Arrangement Period

\$m nominal	2018	2019	2020	2021(e)	2022(f)
Repairs and maintenance	17.1	17.7	20.2	20.7	21.2
Other operating	8.4	7.3	2.0	2.1	2.1
Debt raising	0.1	0.1	0.1	0.1	0.1
Corporate overheads costs	-	-	5.8	5.9	6.1
Total	25.6	25.0	28.0	28.7	29.4

³ As required by Rule 72(1)(a)(ii)

2.3. Pipeline usage

Pipeline minimum, maximum and average demand figures over the earlier Access Arrangement Period⁴ are set out in 2.3 below. These figures are based on actual demand for calendar years 2019 and 2020, and estimated demand for 2021.

2.3

Minimum, average and maximum demand by delivery point

Delivery point Minimum, Maximum and Average Demand (TJ/day)		2019	2020	2021(e)
Ballarat	MIN	8	7	8
	AVG	29	31	34
	MAX	71	78	76
Culcairn	MIN	0	0	0
	AVG	18	21	38
	MAX	107	150	153
Geelong	MIN	22	25	31
	AVG	55	60	63
	MAX	109	127	109
Gippsland	MIN	20	21	19
	AVG	39	40	42
	MAX	74	76	66
GPG	MIN	1	1	1
	AVG	56	21	21
	MAX	319	211	224
Iona Hub	MIN	0	0	0
	AVG	51	42	43
	MAX	150	143	143
Longford Hub	MIN	0	0	0
	AVG	0	0	0
	MAX	0	5	0
Melbourne	MIN	145	158	155
	AVG	366	363	379
	MAX	815	810	753
Northern	MIN	15	17	18
	AVG	54	53	56
	MAX	112	109	111
Western	MIN	5	5	5
	AVG	11	11	11
	MAX	17	17	19

⁴ As required by Rule 72(1)(a)(iii)(A)

2.4

Minimum, Average and Maximum demand by receipt point

Receipt point Minimum, Average and Maximum Demand (GJ)		2019	2020	2021(e)
Culcairn	MIN	0	0	0
	AVG	41	39	10
	MAX	150	152	104
Gippsland	MIN	0	0	0
	AVG	28	29	18
	MAX	47	44	29
Iona Hub	MIN	0	0	0
	AVG	58	32	64
	MAX	377	253	401
Longford Hub	MIN	249	255	293
	AVG	536	530	585
	MAX	856	904	890
Melbourne	MIN	0	0	0
	AVG	18	12	12
	MAX	50	73	38

Pipeline customer numbers in total and by tariff class over the earlier Access Arrangement Period⁵ are set out in 2.4 below. These figures are based on actual customer numbers for calendar years 2018 to 2020, estimated numbers for 2021, and forecast customer numbers for 2022.

2.5

Customer numbers

	2018	2019	2020	2021(e)	2022(f)
Customer numbers	39	43	53	59	59

⁵ As required by Rule 72(1)(a)(iii)(B).

3. The Capital Base

3.1. Opening Capital Base

3.1.1. Opening Capital Base for Access Arrangement Period

The Opening Capital Base for the Access Arrangement Period⁶ is shown in 3.1 below.

3.1

Opening Capital Base for the Access Arrangement Period (\$m nominal)

\$m nominal	2018	2019	2020	2021(e)	2022(f)
opening capital base	971.1	976.3	998.4	996.2	1,034.2
plus net conforming capex	24.4	44.4	32.8	65.8	124.0
plus speculative capex					
plus reused redundant assets					
less depreciation	-36.5	-40.3	-43.6	-47.8	-43.3
plus indexation	17.3	18.0	8.6	19.9	20.7
less redundant assets					
adjustment for previous period					-3.2
closing capital base	976.3	998.4	996.2	1,034.2	1,132.3

3.2. Projected Capital Base

The projected Capital Base for the Access Arrangement Period is made up of the following components:

- Opening Capital Base; plus
- Forecast conforming capital expenditure; less
- Forecast depreciation; less
- Forecast disposals.

⁶ As required by Rule 72(1)(b).

These components are described in the following sections, and the projected Capital Base is provided in section 3.2.5 below.

3.2.1. Forecast conforming capital expenditure for the Access Arrangement Period

Forecast conforming capital expenditure by asset class over the Access Arrangement Period⁷ is set out in 3.2 below.

3.2

Forecast capital expenditure by asset class over the Access Arrangement Period

\$m real 2022	2023	2024	2025	2026	2027
Pipelines	10.8	16.2	4.8	1.5	1.5
Compressors	4.7	4.8	6.2	3.5	4.7
City Gates & Field Regulators	0.1	0.1	0.1	0.1	0.1
Odourant Plants	-	-	-	-	-
Gas Quality	0.3	-	0.9	0.5	0.4
Other	12.7	18.6	14.8	12.8	11.6
General Building	0.1	0.1	-	-	-
General Land	-	-	-	-	-
Integrity Inspections	7.5	6.9	7.4	5.6	2.2
WORM	49.5	3.0	-	-	-
SWP_570	36.9	53.1	7.3	-	-
Hydrogen safety	8.1	8.1	8.1	8.1	8.1
Total	130.6	110.9	49.6	32.2	28.8

APA VTS's capital expenditure forecast is derived based on purpose in categories as follows:

- Refurbishment and Upgrade capital expenditure – routine capital activities targeted at maintaining the Pipeline in good working order in the long term;

⁷ As required by Rule 72(1)(c)(i).

- Augmentation capital expenditure – expenditure required to maintain capacity to meet current customer demand. There is no capital expenditure forecast to provide additional capacity to meet future customer demand.
- Non-system capital expenditure is related to IT systems and software, motor vehicles, and plant and equipment which are not part of the Pipeline, but which are otherwise required to deliver Pipeline Services.

Forecast conforming capital expenditure by category over the Access Arrangement Period is shown in 3.3 below.

3.3

Forecast conforming capital expenditure by category over the Access Arrangement Period

\$m real 2022	2023	2024	2025	2026	2027
Replacement	26.9	35.9	26.0	18.1	16.1
Expansion	80.7	52.4	6.8	0.0	0.0
Non-network	3.1	3.9	2.0	1.3	3.0
Capitalised network overheads	11.4	11.6	11.5	10.7	8.0
Capitalised corporate overheads	8.4	7.1	3.2	2.1	1.7
Other capex	0.0	0.0	0.0	0.0	0.0
Total	130.6	110.9	49.6	32.2	28.8

3.2.2. Forecast depreciation

Forecast depreciation by asset class over the Access Arrangement Period⁸ is shown in 3.4 below.

⁸ As required by Rule 72(1)(c)(ii).

3.4

Forecast depreciation over the Access Arrangement Period

\$m real 2022	2023	2024	2025	2026	2027
Pipelines	23.2	23.5	24.1	24.2	24.3
Compressors	7.8	8.0	8.2	8.4	8.5
City Gates & Field Regulators	2.9	2.9	2.9	2.9	2.9
Odourant Plants	0.0	0.0	0.0	0.0	0.0
Gas Quality	0.1	0.1	0.1	0.2	0.3
Other	11.7	14.2	18.0	17.7	11.8
General Building	0.7	0.7	0.7	0.7	0.7
General Land	0.2	0.2	0.2	0.2	0.2
Integrity Inspections	-	0.8	1.5	2.2	2.8
WORM	-	6.6	6.7	6.7	6.7
SWP_570	-	-	1.6	3.3	3.3
Hydrogen safety	-	1.6	3.3	4.9	6.5
Total	46.6	58.7	67.2	71.4	67.9

Table 3.5 sets out APA VTS' asset economic lives.

3.5

Asset remaining economic lives (years)

	Standard life	Remaining life
Pipelines	30.0	30.0
Compressors	30.0	18.2
City Gates & Field Regulators	30.0	18.1
Odourant Plants	30.0	12.5
Gas Quality	10.0	8.1
Other	5.0	3.7
General Building	30.0	30.0
General Land	30.0	30.0
Integrity Inspections	10.0	10.0
WORM	30.0	30.0
SWP_570	30.0	30.0
Hydrogen safety	5.0	5.0

APA VTS has applied a straight-line methodology in determining future depreciation.

3.2.3. Forecast disposals

Forecast disposals for the Access Arrangement Period are set out in 3.6 below.

3.6

Forecast disposals over the Access Arrangement Period

\$m real 2022	2023	2024	2025	2026	2027
Disposals	0	0	0	0	0

3.2.4. Forecast redundant assets

The forecast of assets that will be made redundant in the Access Arrangement Period is set out in 3.7 below.

3.7

Forecast redundant assets over the Access Arrangement Period

\$m real 2022	2023	2024	2025	2026	2027
Forecast redundant assets	0	0	0	0	0

3.2.5. Projected Capital Base over the Access Arrangement Period

The projected Capital Base for the Access Arrangement Period⁹ is shown in 3.8 below.

3.8

Projected Capital Base for the Access Arrangement Period

\$m nominal	2023	2024	2025	2026	2027
Opening capital base	1,132.3	1,242.1	1,322.4	1,330.6	1,315.1
plus forecast capex	134.7	116.5	53.1	35.1	32.0
less forecast depreciation	-47.6	-61.0	-71.3	-77.3	-74.9
plus indexation	22.6	24.8	26.4	26.6	26.3
less forecast redundant assets					
less forecast disposals					
Closing capital base	1,242.1	1,322.4	1,330.6	1,315.1	1,298.5

4. Forecast network demand and utilisation

4.1. Forecast customer numbers and volumes

Forecast customer numbers and volumes by customer class for the access arrangement period are set out in 4.1 below.

4.1

Forecast customer numbers and volumes by customer class over the Access Arrangement Period

	2023	2024	2025	2026	2027
Total	59	59	59	59	59

⁹ As required by Rule 72(1)(c)

4.2. Forecast network capacity and utilisation

Forecast network capacity and utilisation for the Access Arrangement Period¹⁰ is shown in s 4.2 through 4.5 below.

4.2

Pipeline capacity 2022-2027 – flows towards Melbourne (TJ/day)

Pipeline TJ/day	2022	2027
Longford to Melbourne	1030	1030
South West Pipeline	429	550
NSW Interconnect	195	195

4.3

Pipeline capacity 2022-2027 – flows away from Melbourne (TJ/day)

Pipeline TJ/day	2022	2027
South West Pipeline	298	329
NSW Interconnect	193	193
Western Transmission System	28	28

4.4

Pipeline utilisation – Flows towards Melbourne - 2020

Pipeline	Average	Peak
Longford to Melbourne	55.65%	95.83%
South West Pipeline	14.87%	88.96%
NSW Interconnect	30.14%	92.92%

¹⁰ As required by Rule 72(1)(d).

4.3. Forecast demand

Forecast maximum and average demand for the Pipeline over the Access Arrangement Period is shown in 4.3 below.

4.5

Forecast maximum and average demand for the Pipeline over the Access Arrangement Period

	2023	2024	2025	2026	2027
Annual (PJ)					
Tariffs V&D ¹¹	193.0	190.4	188.5	183.9	185.2
GPG	1.9	1.8	0.9	0.9	0.9
Culcairn export	13.9	13.9	13.9	13.9	13.9
Sub-total	208.8	206.1	203.3	198.7	200.0
UGS/LNG refill	18.1	18.1	18.1	18.1	18.1
Total	226.9	224.2	221.4	216.8	218.1
1-in-2 Peak (TJ/day)					
Tariffs V&D	1,123.2	1,109.4	1,103.0	1,085.6	1,071.9
GPG	59.2	62.8	40.3	47.8	57.6
Culcairn export	114.3	114.0	114.3	114.3	114.3
VicHub					
UGS/LNG refill					
Total	1,296.7	1,286.2	1,257.6	1,247.7	1,243.8
1-in-20 Peak (TJ/day)					
Per AEMO forecasting portal ¹²	1,299.8	1,291.3	1,261.4	1,268.0	1,255.0

¹¹ Includes compressor fuel.

¹² NATIONAL ELECTRICITY FORECASTING (aemo.com.au) Victoria only, excluding exports.

4.4. Forecast weather

Forecast standard weather and sensitivity to changes in weather for the pipeline over the access arrangement period is shown in 4.6 below.

4.6

Effective Degree Days (EDD) and weather sensitivity for the pipeline over the access arrangement period

	2023	2024	2025	2026	2027
Effective Degree Days (EDD)	1340	1340	1340	1340	1340
Weather Sensitivity (TJ/EDD)	44.65	44.65	44.65	44.65	44.65

5. Forecast operating expenditure

Forecast operating expenditure by category over the Access Arrangement Period is set out in 5.1 below.

5.1

Forecast operating expenditure by category over the Access Arrangement Period

\$m real 2022	2023	2024	2025	2026	2027
Repairs and maintenance	24.9	25.7	25.2	25.5	25.6
Other operating	2.5	2.6	2.6	2.6	2.6
Corporate costs	7.2	7.4	7.3	7.3	7.4
Allowances	0.2	0.2	0.2	0.2	0.2
Debt raising	0.6	0.6	0.6	0.6	0.6
Forecast operating expenditure	35.3	36.5	35.9	36.3	36.3

APA VTS's forecast of operating expenditure for the Access Arrangement Period has been prepared using the base year methodology. This methodology involves the following steps:

- Selection of an appropriate base year (2020) in which to measure costs;

- Modification of the base year costs to ensure that all costs required for future operation of the Pipeline are added to the base year costs, and all costs in the base year costs which are not relevant to future operation of the Pipeline are subtracted from the base year costs;
- Modification of base year costs as required to reflect changed consumer numbers, additional Pipeline facilities required to supply gas to these additional consumers, and increased loads from existing consumers;
- Modification of the base year costs to reflect changes in input costs anticipated over the Access Arrangement Period; and
- Modification of the base year costs to reflect appropriate productivity improvements.

6. Key performance indicators

Key performance indicators for the Access Arrangement Period¹³ are shown in 6.1 below.

6.1

Key performance indicators

\$ real 2022	2023	2024	2025	2026	2027
Opex per pipeline km	37,820	39,133	38,449	38,892	38,896

7. Rate of return and value of imputation credits

APA VTS has applied the AER's December 2018 Rate of Return Instrument when determining the allowed rate of return.

For the purpose of preparing the access arrangement revision proposal, Amadeus has adopted a 'placeholder' averaging period, and has calculated an indicative rate of return using market data for that period.

¹³ As required by Rule 72(1)(f)

APA VTS has taken, as the placeholder averaging period for its indicative rate of return calculation, the period of 20 trading days to 28 September 2021.

7.1. Rate of return

The rate of return is to be a nominal “vanilla” weighted average of a rate of return on equity and a rate of return on debt:

$$k_t = k^e \times (1 - G) + k_t^d \times G$$

where:

k_t is the rate of return in regulatory year t

k^e is the rate of return on equity for the access arrangement period

k_t^d is the rate of return on debt for regulatory year t ; and

G is the gearing ratio.

7.2. Indicative rate of return on equity

In accordance with clause 4 of the Rate of Return Instrument, APA VTS has calculated the rate of return on equity component (k^e) of the indicative rate of return using the asset pricing model:

$$k^e = k^f + \beta \times \text{MRP}$$

where:

k^f is the risk free rate of return for the access arrangement period;

β (beta) is the equity beta; and

MRP is the market risk premium.

APA VTS has estimated the risk free rate of return (k^f) as a simple average of the yields on Commonwealth Government Securities with terms to maturity of 10 years over the placeholder averaging period.

The estimate of the risk free rate is 1.243%.

Clause 4 of the Rate of Return Instrument sets a value of beta of 0.6, and sets the market risk premium at an effective annual rate of 6.1%.

Using these values, and the asset pricing model of clause 4 of the Rate of Return Instrument, the indicative rate of return on equity is 4.903%:

$$1.243\% + 0.6 \times 6.1\% = 4.903\%$$

7.3. Indicative rate of return on debt

The return on debt in regulatory year t of the access arrangement period (k_t^d), the Rate of Return Instrument advises, is to be a trailing average of rates of return on debt for a period of 10 years.

A transition into the trailing average is required, and the first regulatory year of the transition period for the VTS is the period of 12 months from 1 January 2018.

APA VTS has calculated the trailing average, which is to be the allowed rate of return on debt until that allowed rate is updated, as:

$$k_{2023}^d = \left(5 \times k_{2018}^d + \sum_{i=1}^5 k_i^d \right)$$

where:

k_{2018}^d is 4.7167%

k_i^d , $i = 1, 2, 3$, are the previously updated rates of return on debt for 2019, 2020 and 2021, respectively, 4.5927%, 3.0775% and 2.4305%

k_i^d , $i = 4, 5$, are estimates of the on-the-day rate of return on debt for 2021 and 2022.

APA VTS has continued to apply the 2021 cost of debt, 2.4305% to 2021 and 2022, and to subsequent years in the forecast period.

k_{2023}^d is, then, 3.85%, and decays to 2.94% by 2027, as the lower 2021 cost of debt features more in the trailing average.

7.4. Gearing

The Rate of Return Instrument requires that the gearing ratio be set at a value of 0.6, and APA VTS has used this value when calculating an indicative rate of return.

7.5. Indicative rate of return

APA VTS has used, as the indicative rate of return for the access arrangement period, 4.27% (see 7.1 below).

7.1

Rate of Return

Component		Value
Rate of return on equity		
Risk free rate	k_f	1.243%
Beta	β	0.60
Market risk premium	MRP	6.1%
Rate of return on equity	$k_e = k_f + \beta \times \text{MRP}$	$4.903\% = 1.243\% + 0.60 \times 6.1\%$
Rate of return on debt		
Rate of return on debt	k_{d2023}	3.85%
Gearing ratio	G	0.6
Rate of return ₂₀₂₃	$k = k_e \times (1 - G) + k_{d2023} \times G$	$4.27\% = 4.9\% \times (1 - 0.6) + 3.85\% \times 0.6$

8. Taxation

APA VTS has adopted a post tax approach. Under this approach, the cash flows of the business include an estimate of the amount of tax payable on regulatory revenues.

APA VTS has rolled forward its TAB using the same principles as the normal asset base rollforward. That is, APA VTS has adopted the opening TAB in the earlier access arrangement period, and rolled it forward using actual capital expenditure. As the TAB is not indexed, it was not necessary to update the rollforward for outturn CPI increases. The TAB rollforward is shown in 8.1 and 8.2.

8.1

Tax Asset Base as at 31 December 2022

\$m nominal	2018	2019	2020	2021	2022F
Opening TAB	498.8	494.0	478.5	469.2	469.2
Net additions	28.6	20.2	27.9	39.7	27.2
Tax depreciation	-33.5	-35.7	-37.1	-39.7	-42.8
Closing TAB	494.0	478.5	469.2	469.2	453.7

8.2

Forecast Tax Asset Base

\$m nominal	2023	2024	2025	2026	2027
Opening TAB	453.7	630.3	646.9	651.3	598.7
Net additions	243.3	110.8	96.0	34.6	31.6
Tax depreciation	-66.6	-94.2	-91.6	-87.2	-81.3
Closing TAB	630.3	646.9	651.3	598.7	549.0

The TAB is then applied to determine the corporate income tax allowance derived from the VTS Post Tax Revenue Model, as indicated in 8.3. This calculation of corporate income tax reflects a value for tax imputation credits, gamma, of 0.585.

In calculating the forecast tax allowance, APA VTS has applied any accelerated depreciation rates embedded in the PTRM, including accounting for immediate tax expensing of some items that would be capitalised for regulatory purposes.

8.3

Corporate income tax allowance

\$m nominal	2023	2024	2025	2026	2027
Tax allowance	0	0	0	0	0

9. Historical incentive mechanism

APA VTS's earlier access arrangement included Efficiency Benefit Sharing Scheme (EBSS) with a methodology for calculating the efficiency benefit sharing allowance to apply in the forecast period.

Under the EBSS, APA VTS retains any benefits (or penalties) for a period of five years after the year in which it was realised. This means that the benefits carry over into the next access arrangement period. The EBSS only applies to the first four years of an access arrangement period as the final year has not been completed when the calculation is made.

The calculation of the efficiency benefit for each year is cumulative, ie, benefits in a year accrue only to the extent that the savings in that year are greater than those already identified in prior years. This means that, especially in the later years of an access arrangement period, a saving from the originally approved operating and maintenance forecast can still generate a negative efficiency benefit.

The proposed carry-over of increments for efficiency gains or decrements for efficiency losses in the previous access arrangement period is shown below:¹⁴

9.1

Incremental EBSS savings

\$m (2022)	2018	2019	2020	2021	2022
Annual Efficiency	1.6	1.3	-2.8	0.7	-0.7

The forecast revenue requirement in 10.1 includes an allowance for these increments or decrements as follows:

¹⁴ As required by Rule 72(1)(i)

9.2

Efficiency carry over

\$m (2022)	2023	2024	2025	2026	2027
\$2022	0.1	-1.5	-2.8	0.0	-0.7

10. Approach to tariff setting

10.1. Reference Services

APA VTS provides one Pipeline Service, the Tariffed Transmission Service.

10.2. Tariff structure

The Tariffed Transmission Service is a zonal-distance-based volume tariff, with no capacity component.

10.3. Allocation of revenue to tariffs

Reference Tariffs are designed to recover the Total Revenue allocated to the Reference Service, in present value terms, over the access arrangement period.

This approach equalises revenue derived from the application of Reference Tariffs with the total Reference Service revenue requirement, assuming that assumptions regarding costs and demand hold.

The forecast revenue requirement for the Access Arrangement Period is shown in 10.1 below.

10.1

Forecast revenue requirement for the Access Arrangement Period

\$m nominal	2023	2024	2025	2026	2027
Return on capital	48.4	51.4	52.9	51.4	49.0
Return of capital	24.9	36.2	44.9	50.7	48.6
plus operating and maintenance	36.0	38.0	38.1	39.3	40.1
plus revenue adjustments	0.1	-1.6	-2.9	-	-0.8
plus net tax allowance	-	-	-	-	-
Building block revenue requirement	109.4	124.0	132.9	141.3	136.9

The net present value of the Reference Tariff revenue stream when discounted at the nominal vanilla WACC of 4.27% is \$569.74 million.

10.2

Reference Tariff revenue stream (\$m nominal)

\$m nominal	2023	2024	2025	2026	2027
Smoothed revenue path	115.5	121.8	128.5	135.5	143.0

The net present value of the Reference Tariff revenue stream when discounted at the nominal vanilla WACC of 7.88% is \$569.74 million which is equal to the present value of the revenue requirement.

10.4. Reference Tariffs

Tariffs for Reference Services are set out in the Access Arrangement. Tariffs are published for 2023 (\$2022) and are exclusive of Goods and Services Tax (GST).

10.4.1. Reference tariff variation mechanism

Reference Tariffs are varied in later years of the Access Arrangement Period through the operation of the Reference Tariff Variation Mechanism, which comprises:

- a Scheduled Reference Tariff Variation Mechanism - which applies in respect of each Regulatory Year of the Access Arrangement Period after the First Regulatory Year; and
- a Cost Pass-through Reference Tariff Variation Mechanism - under which APA VTS may seek to vary the Reference Tariffs as a result of a Cost Pass-through Event.

10.4.2. Scheduled Reference Tariff Variation Mechanism

The Reference Tariffs may be varied during the Access Arrangement Period in accordance with the formula specified in Schedule D of the VTS Access Arrangement. The principles given effect by application of the formula which, in fact, comprises a sequence of interrelated formulae, and the formulae themselves, are as follows.

Revenue control principles

- (a) Individual components of the Transmission Tariffs may be adjusted up or down for a given Regulatory Year after the First Regulatory Year provided that:
 - (i) the NPV of the actual revenues (AR) (determined as outlined in the access arrangement) achieved is no greater than the NPV of the adjusted target revenues (ATR) (determined as outlined in the access arrangement); and
 - (ii) no component of the Transmission Tariffs can be increased by more than $(CPI - X) * (1 + Y)$ for any Regulatory Year, where:
 - (A) X is the tariff path factor prescribed for that Transmission Tariff component in the Access Arrangement; and
 - (B) Y is 2%.
- (b) All monetary calculations and figures used in calculations for the variation of the components of the Transmission Tariffs are to be expressed in real dollar values using a CPI indexed at December 2022, and using the best estimate of the CPI at December of each year of the Sixth Access Arrangement Period.

- (c) All calculations and figures for determination of any price control formula component at any particular time must be the best estimate of that component at the relevant time using reported or actual (as the case may be) values where available and the best estimates of forecast values where required. For the purposes of this paragraph (c), the price control formula components include revenues, volumes, CPI, EDDs, costs passed through under the Cost Pass-through Reference Tariff Adjustment Mechanism, etc).
- (d) The NPV is to be calculated using a discount rate equal to the Real Vanilla WACC as approved for the Sixth Access Arrangement Period.
- (e) Separately report actual injection volume under of the price control model.

The tariff variation mechanism is described more fully in the access arrangement.

11. Proposed incentive mechanism

APA VTS' earlier access arrangement included an incentive mechanism with a methodology for calculating the efficiency benefit sharing allowance to apply in the forecast period.

APA VTS has retained this mechanism in the forecast period, subject to minor amendment.

Under the incentive mechanism, APA VTS retains any benefits (or penalties) for a period of five years after the year in which it was realised. This means that the benefits carry over into the next access arrangement period.

The calculation of the efficiency benefit for each year is incremental, ie, benefits in a year accrue only to the extent that the savings in that year are greater than those already identified in prior years. This means that, especially in the later years of an access arrangement period, a saving from the originally approved operating and maintenance forecast can still generate a negative efficiency benefit.

Operating and maintenance costs for the purposes of the EBSS in Sections 8.2(e) and 8.2(f) of the access arrangement are as shown below:

11.1

Forecast operating expenditure for EBSS purposes over the access arrangement period

\$'000 (\$2022 real)	2020	2021	2023	2024	2025	2026	2027
Controllable Opex	29.3	29.4	35.3	36.5	35.9	36.3	36.3

12. Total revenue

The total revenue requirement to be derived from pipeline services over the access arrangement period is shown in 12.1 below.

12.1

Total revenue requirement

\$m nominal	2023	2024	2025	2026	2027
Return on capital	48.4	51.4	52.9	51.4	49.0
Return of capital	24.9	36.2	44.9	50.7	48.6
plus operating and maintenance	36.0	38.0	38.1	39.3	40.1
plus revenue adjustments	0.1	-1.6	-2.9	-	-0.8
plus net tax allowance	-	-	-	-	-
Building block revenue requirement	109.4	124.0	132.9	141.3	136.9
Smoothed revenue requirement	115.5	121.8	128.5	135.5	143.0
X-factor	0	-3.4%	-3.4%	-3.4%	-3.4%