N.T. Gas Pty. Limited

In trust for the Amadeus Gas Trust
ABN 68 348 460 818
ACN 050 221 415

Amadeus Gas Pipeline

Access Arrangement
Information

Effective
1 July 2011 – 30 June 2016

May 2011

Contents

1. Introduction

1.1. Purpose of this document

This Access Arrangement Information (AAI) document has been prepared, in accordance with Rule 43(1) of the National Gas Rules 2008 (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 NT Gas' access arrangement for the Amadeus Gas Pipeline. The revised access arrangement is expected to commence on 1 July 2011.

The Amadeus Gas Pipeline spans from the Palm Valley and Mereenie gas fields to Darwin. A more detailed description of the Covered Pipeline, including a map, is available on the NT Gas website at www.ntgas.com.au, which shows key offtakes and inputs for the Pipeline, and intersections with other transmission pipelines.

1.1.1. Layout of this access arrangement information

This document follows the structure of Rule 72[1] setting out the requirements for content of the access arrangement information for a full access arrangement proposal.

NT Gas' 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 July 2001 to 30 June 2011) as required under the Rules. This information is included in Part 2 of the AAI. The remaining parts of this AAI are as follows:

- Part 3 establishes the capital base for the access arrangement period (in this case proposed to span 1 July 2011 to 30 June 2016), including forecast capital expenditure for the access arrangement period;
- Part 4 discusses forecast pipeline demand, capacity and utilisation used to derive the reference tariff;
- 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;

[1] All references to Rules or a particular Rule in this document refer to the National Gas Rules 2008, or part thereof, unless an alternative meaning is expressly stated.

- Parts 9 and 11 discuss historical and proposed incentive mechanisms;
- Part 10 describes the reference service, 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.

1.2. Basis of information in the access arrangement information

Unless otherwise stated, all information in the access arrangement revision proposal is provided in real 2009/10 dollars. Past values are brought to this basis using the Consumer Price Index (CPI) all groups, eight capital cities average March over March published by the Australian Bureau of Statistics (ABS).

2. Information relevant to the earlier access arrangement period

2.1. Capital expenditure

Capital expenditure by asset class over the earlier access arrangement period[2] is set out in Table 2.1 at the end of this chapter. These costs are based on actual costs financial years 2001/02 to 2009/10, and forecast costs for financial year 2010/11.

2.2. Operating expenditure

Operating expenditure by category over the earlier access arrangement period[3] is set out in Table 2.2 at the end of this chapter. These costs are based on actual costs for financial years 2001/02 to 2009/10, and forecast costs for financial year 2010/11.

2.3. Pipeline usage

Pipeline minimum, maximum and average demand figures for each delivery point over the earlier access arrangement period4 are set out in Table 2.3 at the end of this chapter. These figures are based on actual demand for financial years 2001/02 to 2009/10, and forecast demand for financial year 2010/11.

Pipeline user numbers for each delivery point over the earlier access arrangement period[5] are set out in Table 2.4 at the end of this chapter. These figures are based on actual customer numbers for financial years 2001/02 to 2009/10, and forecast customer numbers for financial year 2010/11.

[2] As required by Rule 72(1)(a)(i)
[3] As required by Rule 72(1)(a)(ii)
[4] As required by Rule 72(1)(a)(iii)(A)
[5] As required by Rule 72(1)(a)(iii)(B)

Table 2.1 – Capital expenditure by asset class over the earlier access arrangement period

$ '000 (2010/11)	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11F	Total
Pipeline	22	32	0	0	0	152	0	262	373	3,054	3,894
Compression	0	0	0	0	0	0	0	0	0	0	0
Meter Stations	0	164	509	123	0	0	0	5	117	2,310	3,229
SCADA & Communications	2	2	2,942	89	270	60	4	105	13	0	3,487
Operation & Management facilities	254	274	125	246	307	149	761	248	189	421	2,973
Building	0	0	0	0	0	0	0	0	0	0	0
Total	**278**	**471**	**3,576**	**459**	**577**	**361**	**765**	**620**	**692**	**5,785**	**13,582**

Table 2.2 – Operating Expenditure by category over the earlier access arrangement period

$ '000 (2010/11)	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11F	Total
Operations & Maintenance	6,718	7,332	7,946	6,886	7,147	7,158	7,331	8,501	7,525	8,859	**75,403**
Overheads	1,772	1,980	1,866	1,603	1,629	1,572	1,094	1,421	1,362	1,982	**16,281**
Sales & Marketing	245	130	73	111	56	48	49	39	61	61	**874**
Total	**8,735**	**9,442**	**9,886**	**8,601**	**8,832**	**8,778**	**8,473**	**9,961**	**8,948**	**10,903**	**92,558**

Table 2.3 – Minimum, maximum and average demand and total volume by delivery point over the earlier access arrangement period

		2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11F
Delivery points	**Unit**										
Alice Springs	Min (TJ/d)	0.0	0.0	0.0	3.6	6.2	6.1	4.1	1.3	4.2	5.0
	Max (TJ/d)	7.0	12.0	31.2	12.4	12.7	13.1	13.3	13.4	14.5	15.3
	Average (TJ/d)	2.0	3.2	7.6	8.0	8.9	9.2	9.0	8.7	9.3	9.0
	Total (TJ/a)	738.2	1,162.9	2,789.4	2,933.4	3,247.5	3,356.9	3,280.2	3,186.8	3,381.8	3,300.0
Tennant Creek	Min (TJ/d)	0.4	0.7	0.1	0.3	0.7	0.2	0.6	0.7	0.5	0.5
	Max (TJ/d)	2.7	2.3	1.9	1.8	2.3	1.7	1.7	1.8	1.8	1.9
	Average (TJ/d)	1.5	1.4	1.1	1.2	1.3	1.2	1.2	1.2	1.2	1.3
	Total (TJ/a)	521.9	518.6	414.0	426.4	457.2	432.2	430.0	445.4	452.1	465.0
Elliott	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	Average (TJ/d)	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
	Total (TJ/a)	18.7	27.3	25.5	21.2	21.1	11.8	28.7	37.3	38.7	37.0
Daly Waters	Min (TJ/d)	1.7	0.4	1.6	1.5	0.6	1.3	0.0	0.0	1.2	0.0
	Max (TJ/d)	7.1	9.0	7.3	7.6	6.9	6.4	7.4	10.9	7.7	8.0
	Average (TJ/d)	5.6	5.9	5.9	6.0	5.5	5.3	5.0	5.0	5.7	5.5
	Total (TJ/a)	2,038.2	2,135.8	2,158.7	2,194.3	2,022.0	1,916.5	1,823.5	1,836.7	2,078.5	2,025.0

		2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11F
Mataranka	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.2
	Average (TJ/d)	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
	Total (TJ/a)	26.2	35.4	26.1	32.7	44.9	22.5	9.5	4.0	0.0	50.0
Katherine	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	5.0	3.6	4.3	5.9	5.5	6.2	4.5	5.4	4.2	11.8
	Average (TJ/d)	0.9	0.4	0.5	1.6	0.9	1.4	1.0	0.6	0.6	1.1
	Total (TJ/a)	331.1	149.3	189.1	592.8	314.9	518.1	365.2	226.8	223.9	405.0
Mt Todd	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	3.3	1.6	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
	Average (TJ/d)	0.2	1.6	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
	Total (TJ/a)	68.8	1.6	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Pine Creek	Min (TJ/d)	2.5	1.7	0.5	2.6	1.7	3.1	2.6	2.2	0.5	0.5
	Max (TJ/d)	6.7	6.0	5.8	7.1	6.2	6.9	5.9	7.1	6.4	7.0
	Average (TJ/d)	5.3	5.4	5.4	5.5	5.4	5.7	5.1	5.5	5.2	5.4
	Total (TJ/a)	1,935.1	1,966.6	1,966.1	2,015.4	1,974.3	2,063.5	1,875.0	2,010.3	1,896.8	1,986.0
Cosmo	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	1.3	0.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0
	Average (TJ/d)	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	Total (TJ/a)	23.7	1.0	0.3	27.2	0.0	0.0	0.0	0.0	0.0	0.0

		2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11F
Ban Ban Springs	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	9.0	0.0
	Average (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Total (TJ/a)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	77.7	0.0
Darwin City Gate	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.3	0.0	0.0
	Average (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total (TJ/a)	8.4	8.2	9.1	9.2	8.7	9.0	14.0	12.9	9.6	10.0
Weddell	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	9.3	18.5	17.5	18.0
	Average (TJ/d)	0.0	0.0	0.0	0.0	0.0	0.0	0.8	9.9	7.7	12.8
	Total (TJ/a)	0.0	0.0	0.0	0.0	0.0	0.0	303.7	3,626.4	2,803.9	4,670.0
Channel Island	Min (TJ/d)	19.3	19.6	16.0	15.5	15.7	15.3	14.9	3.4	0.0	9.0
	Max (TJ/d)	50.1	45.3	43.4	51.2	51.2	56.5	51.2	37.2	44.5	52.0
	Average (TJ/d)	30.6	31.1	30.9	31.2	32.9	35.6	33.5	19.4	29.9	26.6
	Total (TJ/a)	11,158.7	11,353.7	11,280.1	11,374.4	12,024.2	13,005.0	12,251.0	7,097.8	10,895.8	9,725.0
Total volume	**Total (TJ/a)**	**16,869.0**	**17,360.4**	**18,858.3**	**19,627.1**	**20,115.4**	**21,335.6**	**20,380.9**	**18,493.0**	**21,858.7**	**22,673.0**

Table 2.4 – User numbers by delivery point over the earlier access arrangement period

Delivery Points	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11F
Alice Springs	1	1	1	1	1	1	1	1	1	1
Tennant Creek	2	2	2	1	1	1	1	1	1	1
Elliott	1	1	1	1	1	1	1	1	1	1
Daly Waters	1	1	1	1	1	1	1	1	1	1
Mataranka	1	1	1	1	1	2	2	1	1*	1
Katherine	2	2	2	1	1	1	1	1	1	1
Mt Todd	1	1	0	0	1	0	0	0	0	0
Pine Creek	1	1	1	1	1	1	1	1	1	1
Cosmo	1	1	1	1	0	0	0	0	0	0
Ban Ban Springs	0	0	0	0	0	0	0	1	1	0
Darwin City Gate	1	1	1	1	1	2	2	2	1	1
Weddell	0	0	0	0	0	0	1	1	1	1
Channel Island	2	2	1	1	1	1	1	1	1	1

- While there was one contracted user at this delivery point in 2009/10, no gas was delivered to this user as gas was to be supplied under an interruptible contract and no gas was available for delivery.

3. The capital base

3.1. Opening capital base

The opening capital base for the access arrangement period[6] is shown in Table 3.8 at the end of this chapter.

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.

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 period[7] is set out in Table 3.1 below.

Table 3.1 – Forecast capital expenditure by asset class over the access arrangement period

$ '000 (2010/11)	2011/12	2012/13	2013/14	2014/15	2015/16	Total
Pipeline	7,814	7,225	879	782	828	17,528
Compression	0	0	0	0	0	0
Meter Stations	11,330	4,860	2,946	971	832	20,938
SCADA & Communications	169	361	490	165	395	1,580
Operation & Management facilities	130	142	138	127	144	681
Building	1	2	2	1	2	8
Total	**19,444**	**12,589**	**4,455**	**2,046**	**2,200**	**40,735**

[6] As required by Rule 72(1)(b)
[7] As required by Rule 72(1)(c)(i)

NT Gas' capital expenditure forecast is has been derived based on purpose in categories as follows:

- *Expansion* capital expenditure, which is required to expand the capacity of the pipeline to meet demand both within the access arrangement period and beyond;
- *Replacement* capital expenditure, which is required to maintain the integrity of the pipeline and includes items such as replacement of instrumentation (for example metering, telemetry, remote terminal units), pipeline hardware (for example pipes, meter valves, regulators and fittings), site capital improvements (for example fencing and security), and specialised major spares; and
- *Non-system* capital expenditure, which relates to capital required for replacement of items such as office furniture and computer equipment.

Forecast conforming capital expenditure by category over the access arrangement period in shown in Table 3.2 below.

Table 3.2 – Forecast capital expenditure by category over the access arrangement period

$ '000 (2010/11)	2011/12	2012/13	2013/14	2014/15	2015/16	Total
Expansion	0	0	0	0	0	0
Replacement	19,336	12,481	4,036	1,938	1,885	39,676
Non-system	108	108	418	108	315	1,059
Total	**19,444**	**12,589**	**4,455**	**2,046**	**2,200**	**40,735**

3.2.2. Forecast depreciation

Forecast depreciation by asset class over the access arrangement period[8] is shown in Table 3.3 over the page.

While the earlier access arrangement indicated an overall economic life of pipeline assets of 65 years, the earlier access arrangement forecast an expected residual value of the pipeline assets and depreciated the pipeline to that residual value over the period ending 30 June 2011. Depreciation over the earlier access arrangement period therefore presented a "kinked" depreciation curve, as shown in the ACCC's 2002 Final Decision.[9]

Going forward, depreciation is calculated by applying the remaining economic life of the assets over the opening capital base value as at 1 July 2011.

[8] As required by Rule 72(1)(c)(ii)

[9] ACCC 2002, Final Decision, Figure 3.1

Table 3.3 – Forecast straight line depreciation over the access arrangement period

$'000 (nominal)	2011/12	2012/13	2013/14	2014/15	2015/16
Transmission Pipeline					
Compressor Stations					
Regulation and Metering Stations					
SCADA					
O&M Facilities					
Buildings					
Total	9,882	5,819	6,222	6,516	4,096

Remaining asset lives reflect the composite remaining economic life of assets in the class, reflecting that new assets will be included in the class at the full economic life, and are shown in Table 3.4 below.

Table 3.4 – Remaining Economic Lives

Asset class	Economic Life (years)	Average Remaining Economic Life (years)
Transmission Pipeline	80	56.6
Compressor Stations: Rotating Equipment Station Facilities	30	20.0
Regulation and Metering Stations Odorising Stations	50	28.0
SCADA	15	6.4
O&M Facilities	10	4.0
Buildings	40	36.0

3.2.3. Forecast disposals

Forecast disposals for the access arrangement period are set out Table 3.5 below.

Table 3.5 – Forecast disposals over the access arrangement period

$ '000 (2010/11)	2011/12	2012/13	2013/14	2014/15	2015/16
Disposals	-	-	-	-	-

3.2.4. Forecast redundant assets

The forecast of assets that will be made redundant in the access arrangement period in set out in Table 3.6 below.

Table 3.6 – Forecast redundant assets over the access arrangement period

$ '000 (2010/11)	2011/12	2012/13	2013/14	2014/15	2015/16
Redundant assets	-	-	-	-	-

3.2.5. Projected capital base over the period

The projected capital base for the access arrangement period[10] is shown in Table 3.7 below.

Table 3.7 – Projected capital case for the access arrangement period

$ '000 (nominal)	2011/12	2012/13	2013/14	2014/15	2015/16
Opening capital base	102,681	116,175	127,114	129,157	128,315
plus indexation	2,639	2,986	3,267	3,319	3,298
plus forecast capex	20,738	13,772	4,999	2,355	2,598
less forecast depreciation	9,882	5,819	6,222	6,516	4,096
less forecast disposals	-	-	-	-	-
less forecast redundant assets	-	-	-	-	-
Closing capital base	**116,175**	**127,114**	**129,157**	**128,315**	**130,115**

[10] As required by Rule 72(1)(c)

Table 3.8 – Opening capital base for the access arrangement period

$ 'm (nominal)	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11F	Total
Opening capital base	228.5	217.1	205.5	191.6	174.1	155.6	142.1	133.4	121.5	109.5	228.5
plus capex	0.2	0.4	3.0	0.4	0.5	0.3	0.7	0.6	0.7	6.1	13.0
plus speculative capex	-	-	-	-	-	-	-	-	-	-	-
plus reused redundant assets	-	-	-	-	-	-	-	-	-	-	-
less depreciation	(18.30)	(19.52)	(20.93)	(22.45)	(24.17)	(17.63)	(15.49)	(15.83)	(16.18)	(16.53)	(187.0)
plus indexation	6.7	7.5	4.1	4.5	5.2	3.8	6.0	3.3	3.5	3.6	48.2
less redundant assets	-	-	-	-	-	-	-	-	-	-	-
less disposals	-	-	-	-	-	-	-	-	-	-	-
Closing capital base	**217.1**	**205.5**	**191.6**	**174.1**	**155.6**	**142.1**	**133.4**	**121.5**	**109.5**	**102.7**	**102.7**

4. Forecast pipeline demand and utilisation

4.1. Forecast demand and user numbers

Forecast demand by delivery point over the access arrangement period is shown in Table 4.1 below.

Table 4.1 – Forecast minimum, maximum and average demand and total volume by delivery point over the access arrangement period

		2011/12	2012/13	2013/14	2014/15	2015/16
Delivery points						
Alice Springs	Min (TJ/d)	5.0	5.0	5.0	5.0	5.0
	Max (TJ/d)	15.6	15.9	16.2	16.5	16.8
	Average (TJ/d)	9.2	9.4	9.6	9.8	10.0
	Total (TJ/a)	3,366.0	3,433.3	3,502.0	3,572.0	3,643.5
Tennant Creek	Min (TJ/d)	0.5	0.5	0.5	0.5	0.5
	Max (TJ/d)	1.9	1.9	1.9	1.9	1.9
	Average (TJ/d)	1.3	1.3	1.3	1.4	1.4
	Total (TJ/a)	472.8	480.7	488.7	496.8	505.1
Elliott	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.2	0.2	0.2	0.2	0.2
	Average (TJ/d)	0.1	0.1	0.1	0.1	0.1
	Total (TJ/a)	37.1	37.2	37.3	37.4	37.6
Daly Waters	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	8.0	8.0	8.0	8.0	8.0
	Average (TJ/d)	5.5	5.5	5.5	5.5	5.5
	Total (TJ/a)	2,025.0	2,025.0	2,025.0	2,025.0	2,025.0
Mataranka	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.2	0.2	0.2	0.2	0.2
	Average (TJ/d)	0.1	0.1	0.1	0.1	0.1
	Total (TJ/a)	50.0	50.0	50.0	50.0	50.0
Katherine	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	11.9	12.0	12.1	12.3	12.4
	Average (TJ/d)	1.1	1.1	1.1	1.2	1.2
	Total (TJ/a)	409.1	413.1	417.3	421.4	425.7

		2011/12	2012/13	2013/14	2014/15	2015/16
Mt Todd	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Average (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Total (TJ/a)	0.0	0.0	0.0	0.0	0.0
Pine Creek	Min (TJ/d)	0.5	0.5	0.5	0.5	0.5
	Max (TJ/d)	7.0	7.0	7.0	7.0	7.0
	Average (TJ/d)	5.4	5.4	5.4	5.4	5.4
	Total (TJ/a)	1,986.0	1,986.0	1,986.0	1,986.0	1,986.0
Cosmo	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Average (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Total (TJ/a)	0.0	0.0	0.0	0.0	0.0
Ban Ban Springs	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Average (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Total (TJ/a)	0.0	0.0	0.0	0.0	0.0
Darwin City Gate	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Average (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Total (TJ/a)	10.0	10.0	10.0	10.0	10.0
Weddell	Min (TJ/d)	0.0	0.0	0.0	0.0	0.0
	Max (TJ/d)	18.5	19.1	19.7	20.3	20.9
	Average (TJ/d)	13.2	13.6	14.0	14.4	14.8
	Total (TJ/a)	4,810.1	4,954.4	5,103.0	5,256.1	5,413.8
Channel Island	Min (TJ/d)	9.0	9.0	9.0	9.0	9.0
	Max (TJ/d)	53.6	55.2	56.8	58.5	60.0
	Average (TJ/d)	27.4	28.3	29.1	30.0	30.9
	Total (TJ/a)	10,016.8	10,317.3	10,626.8	10,945.6	11,273.9
Pipeline Total	**Total (TJ/a)**	**23,182.8**	**23,707.0**	**24,246.1**	**24,800.5**	**25,370.6**

Forecast user numbers by delivery point over the access arrangement period are shown in Table 4.2 below.

Table 4.2 – Forecast user numbers by delivery point over the access arrangement period

Delivery points	2011/12	2012/13	2013/14	2014/15	2015/16
Alice Springs	1	1	1	1	1
Tennant Creek	1	1	1	1	1
Elliott	1	1	1	1	1
Daly Waters	1	1	1	1	1
Mataranka	1	1	1	1	1
Katherine	1	1	1	1	1
Mt Todd	0	0	0	0	0
Pine Creek	1	1	1	1	1
Cosmo	0	0	0	0	0
Ban Ban Springs	0	0	0	0	0
Darwin City Gate	1	1	1	1	1
Weddell	1	1	1	1	1
Channel Island	1	1	1	1	1

4.2. Forecast pipeline capacity and utilisation

Forecast pipeline capacity and utilisation are shown in Table 4.3 below.

Forecast capacity has been calculated based on current injection and load characteristics.

Utilisation of the pipeline has been forecast using an estimate of the non-coincident maximum demand for all delivery points divided by the forecast capacity of the pipeline. The estimate of non-coincident demand has been derived from recent flow data extrapolated for the forecast years with an annual growth rate matching forecast volume growth.

Table 4.3 – Forecast pipeline capacity and utilisation over the access arrangement period

	Units	2011/12	2012/13	2013/14	2014/15	2015/16
Pipeline capacity	TJ/day	104.0	104.0	104.0	104.0	104.0
Utilisation of pipeline capacity	%	79	80	82	84	86

5. Forecast operating expenditure

Forecast operating expenditure by category over the access arrangement period is set out in Table 5.1 below.

Table 5.1 – Forecast operating expenditure by category over the access arrangement

$ '000 (2010/11)	2011/12	2012/13	2013/14	2014/15	2015/16	Total
Operations & maintenance	8,810	10,481	8,940	8,977	11,051	48,258
Overheads	4,373	4,436	4,470	5,163	4,540	22,982
Sales & marketing	62	62	62	62	62	309
Debt raising costs	65	72	77	76	74	365
Total	**13.310**	**15.050**	**13.549**	**14.278**	**15.727**	**71,914**

NT Gas has forecast its operations and maintenance expenditure for the access arrangement period using a base year approach. To derive this forecast, NT Gas has:

- identified an efficient base year and base year costs;
- adjusted for step changes including the removal from the base year of costs that are not indicative of future requirements and adding costs for new expenditures in future years not experienced in the past or embedded in the base year costs; and
- escalated costs for expected changes in input costs.

NT Gas has forecast its overheads expenditure using a combination of base year and zero base approaches, reflecting the nature of components that make up this operating expenditure category. Overheads expenditure in the earlier access arrangement period can be split into:

- Local overheads – administration and management costs incurred in local operations;
- Corporate overheads – allocation of group-level costs associated with service provided to NT Gas by APA Group, such as legal, regulatory, training and group human resources functions;
- Insurance costs; and
- Regulatory costs – costs associated with periodic review of the access arrangement applying to the pipeline.

NT Gas has forecast its local overheads using the base year methodology, selecting 2009/10 as the appropriate base year from which to derive its forecast.

Methodological steps necessary to adjust the base year are identical to those described above in relation to operations and maintenance expenditure.

Corporate overheads, insurance and non-controllable costs have been forecast using a zero base method, based on known allocations and costs.

6. Key performance indicators

Key performance indicators for the access arrangement period[11] are shown in Table 6.1 below.

Table 6.1 – Key performance indicators for the access arrangement period ($2010/11)

Indicator	Unit	2011/12	2012/13	2013/14	2014/15	2015/16
Opex per km	$	7,978	8,999	8,159	7,852	10,281
Opex per mmkm	$	23.39	26.38	23.92	23.02	30.14

[11] As required by Rule 72(1)(f)

7. Rate of return

NT Gas has calculated a nominal weighted average cost of capital (WACC). The formula in is used to derive the nominal WACC is set out below.

$$WACC = K_e \frac{E}{V} + K_d \frac{D}{V}$$

where:

K_e =	the expected rate of return on equity or cost of equity
K_d =	the expected rate of return on debt or cost of debt
$\frac{E}{V}$ =	the market value of equity as a proportion of the market value of equity and debt, which is 1 – $\frac{D}{V}$
$\frac{D}{V}$ =	the market value of debt as a proportion of the market value of equity and debt

The cost of equity, K_e, is calculated with the following formula:

$$K_e = R_f + \beta_e \times MRP$$

where:

R_f =	the nominal risk free rate of return
β_e =	the equity beta
MRP =	the expected market risk premium

The cost of debt, K_d, is calculated with the following formula:

$$K_d = R_f + DRP$$

where:

R_f =	the nominal risk-free rate of return
DRP =	the debt risk premium.

Table 7.1 below sets out proposed input parameters and the calculated rate of return used to derive NT Gas' revenue requirement for the access arrangement period[12].

Table 7.1 – Proposed weighted average cost of capital for the access arrangement period

Parameter	Estimate
Risk-free rate	5.54%
Forecast inflation	2.57%
Debt to value	60%
Debt margin	4.60%
MRP	6.5%
Gamma	0.25
Equity beta	1
Cost of equity	12.04%
Cost of debt	10.14%
Post tax nominal WACC	**10.90%**

[12] As required by Rule 72(1)(g)

8. Taxation

NT Gas 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.

In its 2002 Final Decision for the AGP, the ACCC applied a post tax approach, and therefore included a cost of tax in the regulated revenue requirement. This required the ACCC to estimate a TAB in order to calculate the amount of tax depreciation applied to calculate the tax payable amount to be included in the total revenue requirement.

NT Gas has adopted this TAB and rolled it forward using the same principles as the normal asset base rollforward. That is, NT Gas 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 Table 8.2 at the end of this chapter.

The TAB is then applied to determine the corporate income tax allowance derived from the AER's Post Tax Revenue Model, as indicated in Table 8.1.

Table 8.1 – Corporate income tax allowance

$ 'm (nominal)	2011/12	2012/13	2013/14	2014/15	2015/16
Tax allowance	2.782	1.779	1.910	1.985	1.242

Table 8.2 – Tax Asset Base as at 30 June 2011

$ 'm (nominal)	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11F
Opening TAB	22.3	18.0	14.8	14.6	12.2	10.5	8.9	8.1	7.3	6.8
Additions	0.2	0.4	2.9	0.4	0.5	0.3	0.7	0.6	0.7	5.8
Disposals	-	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-
Tax Depreciation	4.5	3.6	3.1	2.7	2.2	1.9	1.6	1.4	1.2	1.3
Closing TAB	18.0	14.8	14.6	12.2	10.5	8.9	8.1	7.3	6.8	11.2

9. Historical incentive mechanism

There was no incentive mechanism operative in the earlier access arrangement period giving rise to increments or decrements that need to be included in the revenue requirement for the access arrangement period[13].

[13] As required by Rule 72(1)(i)

10. Approach to tariff setting

10.1. Pipeline services

The Pipeline services offered under the access arrangement are as follows:

- Firm service – service for transport from any receipt points to any delivery points on the pipeline;
- Interruptible service – service for transport from any receipt points to any delivery points on the pipeline, where NT Gas is entitled to cease receiving gas from, or delivering gas to, the user when pipeline capacity is constrained/curtailed, or to meet the capacity requirements of other users of the firm service;
- Negotiated service – service negotiated to meet the needs of a user which differ from those of the firm or interruptible service, including potential as available services.

The Firm service is offered as a reference service.

10.2. Tariff structure

The reference tariff for the Firm service is a capacity tariff based on firm Maximum Daily Quantities (MDQs) at each delivery point.

This tariff allows NT Gas to recover its revenue requirement from users of the pipeline in proportion to their capacity requirements, which matches the reference service which is a bidirectional service from between any receipt and delivery point.

10.3. Allocation of revenue to tariffs

The Reference tariff has been designed to recover the total revenue from the Reference Service. There is a single user class and therefore all revenues are allocated to that user class.

The total revenue requirement derived from the building block approach allocated to the Reference tariff is shown in Table 10.1 below.

Table 10.1 – Forecast revenue requirement over the access arrangement period

$ 'm (nominal)	2011/12	2012/13	2013/14	2014/15	2015/16
AGP Building block revenue requirement	34.869	33.109	33.341	35.063	33.880

The present value of this revenue requirement, discounted at the WACC of 10.90 per cent, is $126.2 million.

The smoothed revenue requirement is shown in Table 10.2 below.

Table 10.2 – Smoothed revenue requirement

$ 'm (nominal)	2011/12	2012/13	2013/14	2014/15	2015/16F
Smoothed Revenue requirement	32.520	33.356	34.213	35.092	35.994

The present value of this revenue requirement, discounted at the WACC of 10.90 per cent, is $126.2 million.

10.4. Reference tariffs

The tariff for the reference service is set out in Schedule 1 of the access arrangement. The reference tariff is published for 2011/12 (in $2011/12) and is exclusive of goods and services tax (GST). The 2011/12 tariff that forms the starting point for the access arrangement period is $0.7605 per GJ of Delivery Point MDQ.

10.4.1. Reference tariff variation mechanism

The reference tariff is varied in later years of the access arrangement period through the operation of the reference tariff variation mechanism, made up of:

- an annual reference tariff adjustment formula mechanism – to apply on 1 July 2012 and on each subsequent 1 July which adjusts the reference tariff for changes in CPI; and
- a cost pass-through reference tariff adjustment mechanism – under which NT Gas may seek to vary the reference tariff as a result of a cost pass-through event.

10.4.2. Annual reference tariff variation mechanism

A symmetrical annual tariff variation adjustment formula adjusts the reference tariff on each 1 July of the access arrangement period by the Consumer Price Index (CPI), and an X factor.

These adjustments are intended to ensure an efficient tariff over the access arrangement period. Relevant values and formulae for the above parameters are set out in section 4.7 of the access arrangement.

10.4.3. Cost pass through reference tariff variation mechanism

A symmetrical cost pass through reference tariff variation mechanism is included in the access arrangement to allow the reference tariff to be adjusted to recover (or return) material incremental costs resulting from defined cost pass through events.

The cost pass through events defined in the access arrangement are:

- A Carbon pricing event
- an Insurance cap event;
- an Insurer credit risk event;
- an Insurer insolvency event;
- a Natural disaster event;
- a Regulatory change event;
- a Service standard event;
- a Tax change event;
- a Terrorism event;

Part 4.7 of the access arrangement sets out the tariff variation process the materiality threshold for cost pass-through events.

11. Proposed incentive mechanism

The access arrangement does not include an incentive mechanism of the type described under the Rules[14], however NT Gas faces incentives to reduce costs and increase demand over the access arrangement period compared with the forecast on which the access arrangement is based, as total revenue will not be adjusted to reflect differences between forecast and actual gas demand and/or business costs.

[14] See Rule 98

12. Total revenue

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

Table 12.1 – Total revenue requirement

$ 'm (nominal)	2011/12	2012/13	2013/14	2014/15	2015/16	Total
Return on capital	11.192	12.663	13.855	14.078	13.986	65.775
Return of capital	7.243	2.834	2.955	3.197	0.798	17.027
Operating expenditure	13.652	15.834	14.620	15.803	17.854	77.764
Benchmark tax liability	2.782	1.779	1.910	1.985	1.242	9.697
AGP Building Block revenue requirement	**34.869**	**33.109**	**33.341**	**35.063**	**33.880**	**170.263**