# Amadeus Gas Pipeline

# Access Arrangement
# Information

## Effective
## 1 July 2016 – 30 June 2021

January 2016

# 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 APT Pipelines (NT) Pty Limited's (APTNT's) access arrangement for the Amadeus Gas Pipeline. The revised access arrangement is expected to commence on 1 July 2016.

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 APA Group website at [www.apa.com.au](www.apa.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.

APTNT'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 August 2011 to 30 June 2016) 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 2016 to 30 June 2021), 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;

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[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 2015/16 dollars. Nominal values are brought to this basis using the Consumer Price Index (CPI) all groups, eight capital cities average June over June published by the Australian Bureau of Statistics (ABS) up to June 2015 (most recent CPI data available) and then using an annual forecast CPI of 2.5 per cent thereafter.

# 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 below. These costs are based on actual costs in financial years 2011/12 to 2014/15, and forecast costs for financial year 2015/16.

*Table 2.1 – Capital expenditure by asset class over the earlier access arrangement period ($2015/16)*

| $'000 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 E | Total |
|---|---|---|---|---|---|---|
| Pipeline | 2,548 | 14,273 | 1,364 | 1,149 | 9,762 | 29,097 |
| Compression | 0 | 0 | 0 | 0 | 0 | 0 |
| Meter Station | 1,564 | 802 | 846 | 773 | 1,621 | 5,607 |
| SCADA & Communications | 0 | 0 | 184 | 180 | 2,883 | 3,248 |
| Operation & Management facilities | 405 | 1,894 | 1,888 | 2,102 | 558 | 6,846 |
| Building | 0 | 0 | 0 | 0 | 0 | 0 |
| Return Tariff Payment | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | 4,517 | 16,969 | 4,282 | 4,205 | 14,824 | 44,798 |

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[2] As required by Rule 72(1)(a)(i)

## 2.2 Operating expenditure

Operating expenditure by category over the earlier access arrangement period[3] is set out in Table 2.2 below. These costs are based on actual costs in financial years 2011/12 to 2014/15, and forecast costs for financial year 2015/16.

*Table 2.2 – Operating expenditure by category over the earlier access arrangement period ($2015/16)*

| $'000 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 E | Total |
|---|---|---|---|---|---|---|
| Operations & Maintenance | 9,791 | 11,648 | 9,935 | 9,976 | 12,281 | **53,630** |
| Overheads | 4,860 | 4,930 | 4,968 | 5,738 | 5,045 | **25,540** |
| Sales & Marketing | 69 | 69 | 69 | 69 | 69 | **345** |
| **Total** | **14,719** | **16,646** | **14,971** | **15,783** | **17,395** | **79,515** |

## 2.3 Pipeline usage

Pipeline minimum, maximum and average demand figures for each delivery point over the earlier access arrangement period are set out in Table 2.3 below. These values are based on actual demand in years 2011/12 to 2014/15, and forecast demand for year 2015/16.

*Table 2.3 - Minimum, Maximum and average demand, and total volume by delivery point over the earlier access arrangement period*

| Delivery point | Unit | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 E |
|---|---|---|---|---|---|---|
| Alice Springs | Min (TJ/d) | 6.1 | 5.8 | 6.7 | 6.1 | 6.3 |
| | Max (TJ/d) | 13.0 | 13.4 | 14.1 | 12.2 | 13.0 |
| | Average (TJ/d) | 9.5 | 9.6 | 10.0 | 8.9 | 7.3 |
| | Total (TJ/a) | 3,465.6 | 3,505.4 | 3,642.3 | 3,255.7 | 2,673.5 |
| Tennant Creek | Min (TJ/d) | 0.6 | 0.5 | 0.6 | 0 | 0.5 |
| | Max (TJ/d) | 1.7 | 1.7 | 1.6 | 1.7 | 1.7 |
| | Average (TJ/d) | 1.2 | 1.2 | 1.2 | 1.1 | 1.0 |
| | Total (TJ/a) | 443.2 | 436.1 | 431.4 | 413.5 | 382 |

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[3] As required by Rule 72(1)(a)(ii)

| | | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 E |
|---|---|---|---|---|---|---|
| Elliot | Min (TJ/d) | 0.07 | 0 | 0.07 | 0.07 | 0.07 |
| | Max (TJ/d) | 0.1 | 0.1 | 0.2 | 0.15 | 0.15 |
| | Average (TJ/d) | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| | Total (TJ/a) | 35 | 35.1 | 37.1 | 37.1 | 36.9 |
| Daly Waters | Min (TJ/d) | 2 | 0.9 | 1.4 | 1.5 | 1.5 |
| | Max (TJ/d) | 7.9 | 7 | 7.8 | 8.8 | 9.4 |
| | Average (TJ/d) | 6.0 | 6.3 | 6.0 | 7.3 | 8.0 |
| | Total (TJ/a) | 2,203.2 | 2,314.6 | 2,190.5 | 2,671.6 | 2,915.8 |
| Mataranka | Min (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Max (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Average (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Total (TJ/a) | 0 | 0 | 0 | 0 | 0 |
| Katherine | Min (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Max (TJ/d) | 4 | 4.9 | 3.6 | 6.2 | 6.2 |
| | Average (TJ/d) | 0.9 | 1.2 | 0.7 | 0.6 | 1.1 |
| | Total (TJ/a) | 340.7 | 443.5 | 252.5 | 225.9 | 415.8 |
| Mt Todd | Min (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Max (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Average (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Total (TJ/a) | 0 | 0 | 0 | 0 | 0 |
| Pine Creek | Min (TJ/d) | 1.0 | 0.0 | 0.7 | 2.2 | 0 |
| | Max (TJ/d) | 5.9 | 5.7 | 5.8 | 5.9 | 5.8 |
| | Average (TJ/d) | 5.2 | 4.5 | 5.0 | 5.0 | 5.1 |
| | Total (TJ/a) | 1,885.7 | 1,646.7 | 1,820 | 1,808.7 | 1,864.4 |
| Cosmo | Min (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Max (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Average (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Total (TJ/a) | 0 | 0 | 0 | 0 | 0 |
| Ban Ban Springs | Min (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Max (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Average (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| | Total (TJ/a) | 0 | 0 | 0 | 0 | 0 |

| | | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 E |
|---|---|---|---|---|---|---|
| Townend Road[4] | Min (TJ/d) | - | - | 0 | 0 | 0.2 |
| | Max (TJ/d) | - | - | 0.045 | 0.7 | 1.30 |
| | Average (TJ/d) | - | - | 0.0 | 0.3 | 0.6 |
| | Total (TJ/a) | - | - | 0.1 | 124 | 202.8 |
| Darwin City Gate | Min (TJ/d) | 0.002 | 0.0 | 0.02 | 0.02 | 0.01 |
| | Max (TJ/d) | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 |
| | Average (TJ/d) | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 |
| | Total (TJ/a) | 10.4 | 25.6 | 25.8 | 27.3 | 24.4 |
| Weddell | Min (TJ/d) | 0.0 | 0.0 | 0.0 | 2.4 | 0.0 |
| | Max (TJ/d) | 17.3 | 16.6 | 20.8 | 25.7 | 26 |
| | Average (TJ/d) | 9.9 | 10.1 | 10.3 | 13.4 | 14.4 |
| | Total (TJ/a) | 3,595.9 | 3,701.7 | 3,773.1 | 4,892.1 | 5,249.2 |
| Channel Island | Min (TJ/d) | 16.7 | 17.8 | 16.3 | 15.2 | 15.2 |
| | Max (TJ/d) | 44.1 | 44.9 | 47.7 | 45.2 | 46 |
| | Average (TJ/d) | 31.6 | 30.5 | 31.3 | 30.2 | 31.0 |
| | Total (TJ/a) | 1,1520.1 | 11,120 | 11,439.8 | 11,031.1 | 11,323.2 |
| **Total volume** | **Total (TJ/a)** | **23,499.8** | **23,228.7** | **23,612.6** | **24,487.0** | **25,088.0** |

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[4] New AGP delivery point from 2013/14

Pipeline user numbers for each delivery point over the earlier access arrangement period[5] are set out in Table 2.4 below. These figures are based on actual customer numbers in years 2011/12 to 2014/15, and forecast customer numbers for year 2015/16.

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

| Delivery points | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 E |
|---|---|---|---|---|---|
| Alice Springs | 1 | 1 | 1 | 1 | 1 |
| Tennant Creek | 1 | 1 | 1 | 1 | 1 |
| Elliott | 1 | 1 | 1 | 1 | 1 |
| Daly Waters | 2 | 2 | 2 | 2 | 2 |
| Mataranka | 0 | 0 | 0 | 0 | 0 |
| 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 |
| Townend Road | - | - | 1 | 1 | 1 |
| Darwin City Gate | 2 | 1 | 1 | 1 | 1 |
| Weddell | 1 | 1 | 1 | 1 | 1 |
| Channel Island | 1 | 1 | 1 | 1 | 1 |

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

# 3. The capital base

## 3.1 Opening capital base

The opening capital base for the access arrangement period[6] is shown in Table 3.1 below.

*Table 3.1 – Capital base roll forward 2011/12 to 2015/16 ($nominal)*

| $'000 | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 |
|---|---|---|---|---|---|---|
| Opening capital base | 100,484 | 92,107 | 92,726 | 106,147 | 107,635 | 107,385 |
| Plus conforming capex | 5,999 | 4,291 | 16,545 | 4,046 | 4,477 | 15,608 |
| Less disposals | | | | 33 | 291 | 83 |
| Plus indexation | 3,349 | 1,460 | 2,320 | 3,110 | 1,430 | 2,685 |
| Less depreciation | -17,725 | -5,132 | -5,444 | -5,635 | -5,865 | -3,381 |
| Plus speculative capex | | | | | | |
| Plus reused redundant assets | | | | | | |
| Adjustment for previous period | | | | | | -2,718 |
| **Closing capital base** | 92,107 | 92,726 | 106,147 | 107,635 | 107,385 | 119,496 |

## 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 3.2 below.

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

*Table 3.2 – Forecast capital expenditure by asset class over the access arrangement period ($2015/16)*

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019 20 | 2020/21 | Total |
|---|---|---|---|---|---|---|
| Pipeline | 14,338 | 258 | 262 | 264 | 267 | 15,389 |
| Compression | 0 | 0 | 0 | 0 | 0 | 0 |
| Meter Stations | 1,142 | 1,018 | 711 | 668 | 570 | 4,108 |
| SCADA & Communications | 683 | 718 | 634 | 616 | 706 | 3,356 |
| Operation & Management facilities | 847 | 484 | 639 | 719 | 874 | 3,563 |
| Building | 3,099 | - | - | - | - | 3,099 |
| Land and easements | 53 | 53 | 0 | 53 | 0 | 159 |
| **Total** | **20,162** | **2,531** | **2,245** | **2,321** | **2,416** | **29,675** |

APTNT's 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 3.3 below.

*Table 3.3 – Forecast capital expenditure by category over the access arrangement period ($2015/16)*

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|
| Expansion | - | - | - | - | - |
| Replacement | 15,789 | 1,591 | 1,241 | 1,261 | 1,119 |
| Non-system | 4,370 | 939 | 1,003 | 1,059 | 1,296 |
| Gross Total Capital Expenditure | 20,159 | 2,530 | 2,244 | 2,320 | 2,415 |
| Contributions | - | - | - | - | - |
| Asset disposals | 176 | 66 | 110 | 132 | 176 |
| Net Total Capital Expenditure | 19,983 | 2,464 | 2,134 | 2,188 | 2,239 |

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

### 3.2.2. Forecast depreciation

Forecast depreciation by asset class over the access arrangement period[8] is shown in Table 3.4 below.

***Table 3.4 – Forecast straight line depreciation over the access arrangement period ($nominal)***

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019 20 | 2020/21 |
|---|---|---|---|---|---|
| Straight-line depreciation | 3,614 | 4,129 | 4,357 | 4,594 | 4,845 |
| Indexation | 2,987 | 3,499 | 3,550 | 3,589 | 3,626 |
| Regulatory depreciation | 627 | 630 | 808 | 1,006 | 1,219 |

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 3.5 below.

***Table 3.5 – Remaining Economic Lives***

| Asset Class | Economic life (years) | Average Remaining Economic Life (years) |
|---|---|---|
| Transmission Pipeline | 80 | 59.26 |
| Compressor Stations: Rotating Equipment Station Facilities | 30 | 15 |
| Regulation and Metering Stations Odorising Stations | 50 | 36.89 |
| SCADA | 15 | 10.72 |
| O&M Facilities | 10 | 8.22 |
| Buildings | 40 | 31.00 |

### 3.2.3. Forecast disposals

Forecast disposals for the access arrangement period are set out Table 3.6 below.

***Table 3.6 – Forecast disposals over the access arrangement period ($nominal)***

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019 20 | 2020/21 |
|---|---|---|---|---|---|
| Disposals | 176 | 66 | 110 | 132 | 176 |

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

### 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 3.7 below.

*Table 3.7 – Forecast redundant assets over the access arrangement period ($nominal)*

| $ '000 | 2016/17 | 2017/18 | 2018/19 | 2019 20 | 2020/21 |
|---|---|---|---|---|---|
| Redundant assets | 0 | 0 | 0 | 0 | 0 |

### 3.2.5. Projected capital base over the period

The projected capital base for the access arrangement period[9] is shown in Table 3.8 below.

*Table 3.8 – Projected capital base for the access arrangement period ($nominal)*

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|
| Opening capital base | 119,496 | 139,953 | 141,989 | 143,548 | 145,029 |
| Plus indexation | 2,987 | 3,499 | 3,550 | 3,589 | 3,626 |
| Plus net conforming capex | 21,260 | 2,732 | 2,477 | 2,619 | 2,784 |
| Less depreciation | 3,614 | 4,129 | 4,357 | 4,594 | 4,845 |
| Less forecast disposals | 176 | 66 | 110 | 132 | 176 |
| Less forecast redundant assets | - | - | - | - | - |
| **Closing capital base** | 139,953 | 141,989 | 143,548 | 145,029 | 146,418 |

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

# 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 - Minimum, maximum and average demand and total volume by delivery point over the access arrangement period*

| Delivery points | Unit | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|---|
| Alice Springs | Min (TJ/d) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 |
| | Max (TJ/d) | 14.0 | 14.3 | 14.6 | 14.9 | 15.2 |
| | Average (TJ/d) | 7.5 | 7.6 | 7.8 | 7.9 | 8.1 |
| | Total (TJ/a) | 2,730.0 | 2,780.0 | 2,840.0 | 2,900.0 | 2,960.0 |
| Tennant Creek | Min (TJ/d) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| | Max (TJ/d) | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 |
| | Average (TJ/d) | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| | Total (TJ/a) | 386.0 | 390.0 | 394.0 | 398.0 | 402.0 |
| Elliott | Min (TJ/d) | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| | 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) | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 |
| Daly Waters | Min (TJ/d) | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | Max (TJ/d) | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 |
| | Average (TJ/d) | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 |
| | Total (TJ/a) | 2,956.5 | 2,956.5 | 2,956.5 | 2,956.5 | 2,956.5 |
| Mataranka | Min (TJ/d) | - | - | - | - | - |
| | Max (TJ/d) | - | - | - | - | - |
| | Average (TJ/d) | - | - | - | - | - |
| | Total (TJ/a) | - | - | - | - | - |
| Katherine | Min (TJ/d) | - | - | - | - | - |
| | Max (TJ/d) | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 |
| | Average (TJ/d) | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| | Total (TJ/a) | 420.0 | 424.0 | 428.0 | 432.0 | 436.0 |
| Mt Todd | Min (TJ/d) | - | - | - | - | - |
| | Max (TJ/d) | - | - | - | - | - |
| | Average (TJ/d) | - | - | - | - | - |
| | Total (TJ/a) | - | - | - | - | - |

|  |  | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|---|
| Pine Creek | Min (TJ/d) | - | - | - | - | - |
|  | Max (TJ/d) | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 |
|  | Average (TJ/d) | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 |
|  | Total (TJ/a) | 1,860.0 | 1,860.0 | 1,860.0 | 1,860.0 | 1,860.0 |
| Cosmo | Min (TJ/d) | - | - | - | - | - |
|  | Max (TJ/d) | - | - | - | - | - |
|  | Average (TJ/d) | - | - | - | - | - |
|  | Total (TJ/a) | - | - | - | - | - |
| Ban Ban Springs | Min (TJ/d) | - | - | - | - | - |
|  | Max (TJ/d) | - | - | - | - | - |
|  | Average (TJ/d) | - | - | - | - | - |
|  | Total (TJ/a) | - | - | - | - | - |
| Townend Road | Min (TJ/d) | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
|  | Max (TJ/d) | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
|  | Average (TJ/d) | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
|  | Total (TJ/a) | 310.6 | 310.6 | 310.6 | 310.6 | 310.6 |
| Darwin City Gate | 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) | 24.4 | 24.4 | 24.4 | 24.4 | 24.4 |
| Weddell | Min (TJ/d) | - | - | - | - | - |
|  | Max (TJ/d) | 27.0 | 27.6 | 28.2 | 28.8 | 29.5 |
|  | Average (TJ/d) | 14.7 | 15.0 | 15.4 | 15.7 | 16.0 |
|  | Total (TJ/a) | 5,365.0 | 5,483.0 | 5,604.0 | 5,727.0 | 5,853.0 |
| Channel Island | Min (TJ/d) | 15.2 | 15.2 | 15.2 | 15.2 | 15.2 |
|  | Max (TJ/d) | 47.0 | 48.1 | 49.1 | 50.2 | 51.3 |
|  | Average (TJ/d) | 31.7 | 32.4 | 33.1 | 33.8 | 34.6 |
|  | Total (TJ/a) | 11,572.0 | 11,827.0 | 12,087.0 | 12,353.0 | 12,625.0 |
| **Total volume** | **Total (TJ/a)** | **25,661.5** | **26,092.5** | **26,541.5** | **26,998.5** | **27,464.5** |

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

*Table 4.2 - User numbers by delivery point over the access arrangement period*

| Delivery Points | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|
| 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 | 0 | 0 | 0 | 0 | 0 |
| 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 |
| Townend Road | 1 | 1 | 1 | 1 | 1 |
| 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 determined after modelling the current aggregate contracted demands on the pipeline, and then simulating the additional quantity that can be delivered without breaching the physical and contractual constraints on the pipeline.

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 - Pipeline capacity and utilisation over the access arrangement period*

| | Units | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|---|
| **Pipeline capacity** | TJ/day | 120 | 120 | 120 | 120 | 120 |
| **Average utilisation of pipeline capacity** | % | 59 | 60 | 61 | 62 | 63 |

# 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 over the access arrangement period ($2015/16)*

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|
| Operations and maintenance | 8,735 | 8,797 | 8,867 | 8,929 | 8,992 |
| Corporate | 2,808 | 2,825 | 2,844 | 2,862 | 2,879 |
| Sales and marketing | 9 | 9 | 9 | 9 | 9 |
| Intelligent Pigging | 366 | 1,265 | 2,130 | - | 411 |
| Forecast operating expenditure | **11,918** | **12,897** | **13,851** | **11,800** | **12,291** |
| Debt raising costs | 66 | 76 | 75 | 74 | 73 |
| **Total Forecast operating expenditure** | **11,984** | **12,973** | **13,926** | **11,874** | **12,364** |

APTNT has forecast its operating expenditure using a base year approach. The methodology to derive this forecast involves:

- Identification of an efficient base year and base year costs;

- Adjustment for step and scope 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

- Escalation of costs for expected changes in input costs.

# 6. Key performance indicators

Key performance indicators for the access arrangement period[10] are shown in Table 6.1 below.

*Table 6.1 – Key performance indicators for the access arrangement period ($2015/16)*

| Indicator | Unit | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|---|
| Opex per km | $ | 7,371 | 8,176 | 9,000 | 7,859 | 8,391 |
| Opex per mmkm | $ | 22.23 | 24.66 | 27.14 | 23.70 | 25.31 |

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

# 7. Rate of return

The return on the projected capital base included in the total revenue is determined as the product of a rate of return and the projected capital base at the beginning of each regulatory year of an access arrangement period.

The rate of return – the allowed rate of return of rule 87 of the NGR – is a nominal vanilla weighted average of an estimate of the return on equity and an estimate of the return on debt. Rule 72(g) requires the Access Arrangement Information to include:

> (g) the proposed return on equity, return on debt and *allowed rate of return*, for each regulatory year of the *access arrangement period*, in accordance with rule 87, including any departure from the methodologies set out in the *rate of return guidelines* and the reasons for that departure;

## 7.1 Gearing

The weight assigned to the estimate of the return on equity in the weighted average is 40%, and the weight assigned to the estimate of the return on debt is 60%.

## 7.2 Risk free rate of return

The risk free rate of return is an important input into rate of return determination.

The risk free rate is estimated from the yields on Commonwealth Government securities (CGS) with terms to maturity of 10 years.  An estimate of 2.92% has been made from yields on CGS over the 20 trading days to 30 November 2015.

## 7.3 Return on equity

APTNT has departed from the AER's Rate of Return Guideline when estimating the return on equity.

The Rate of Return Guideline requires estimation of the return on equity using the Sharpe-Lintner Capital Asset Pricing Model (SL CAPM).  The SL CAPM provides a simplified representation of the trade-off between systematic risk and return.  It cannot, alone, provide an estimate of the return on equity which can contribute to the achievement of a rate of return 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.

Multiple models, with a different bases – and different strengths and limitations – must be used to estimate the return on equity. In addition to the SL CAPM, the Rate of Return Guideline identifies the Black CAPM, the Dividend Growth Model, and the Fama-French Three Factor Model as models as being relevant to estimating the return on equity.

Through the use of multiple models, factors which are neglected in a single model can be taken into account and, if "convergence" is demonstrated, the result can be interpreted as not being the unique outcome from use of a particular theoretical framework or single data set. Where there are divergent results, the reasons why this is the case should be examined and taken into account in reaching a conclusion on the phenomenon under investigation.

Each of the Sharpe-Lintner CAPM, the Black CAPM, the Dividend Growth Model, and the Fama-French Three Factor Model is used to make a point estimate of the return on equity. The results are used in a considered way to arrive at the estimate of the return on equity required by rule 87.

*SL CAPM*

The SL CAPM represents the expected return, $E(r_j)$, on a particular financial asset $j$, as:

$$E(r_j) = r_f + \beta_j \times [E(r_m) - r_f]$$

where $r_f$ is the risk free rate of return; $\beta_j$ is the beta for asset $j$, and $E(r_m)$ is the expected return on the market portfolio of assets.

APTNT has departed from the AER's Rate of Return Guideline when using the SL CAPM to estimate the return on equity.

At the time the SL CAPM is applied, estimates are made of:

- the rate of return on the risk free asset assumed to be available to investors at that time (the risk free rate); and

- the return those investors expect, at that time, to earn on the market portfolio.

The difference between the estimate of the return on the market portfolio and the estimate of the risk free rate is the estimate of the term $[E(r_m) - r_f]$ in the SL CAPM. This is not the AER's "standard approach", in which the term $[E(r_m) - r_f]$ is estimated as a single parameter. The AER's "standard approach" to estimating the

risk free rate and the term $[E(r_m) - r_f]$ is inconsistent with the assumptions from which SL CAPM is derived.

APTNT has re-estimated the return on equity using the SL CAPM, with the following estimates for the input variables of the model:

- risk free rate: $r_f$ = 2.92%;

- equity beta: $\beta_i$ = 0.8; and

- $E(r_m)$: in the range 10.4% per cent to 11.5% (based on the AER's dividend growth model results).

The estimated return on equity is in the range 8.9% to 9.8%.

*Black CAPM*

Estimation of the return on equity using the Black CAPM requires that values be assigned to its three input variables. These are:

- the return on the zero beta portfolio;

- the equity beta; and

- the return on the market portfolio.

APTNT uses an estimate of 3.34% for the zero beta premium, an estimate of 0.8 for the equity beta, and uses the range 10.4% to 11.5% for the return on the market.

Using these estimates for the input variables, the Black CAPM delivers a range for the estimate of the return on equity of 9.5% to 10.5%.

*Dividend Growth Model*

The Dividend Growth Model provides an estimate of the return on equity for energy infrastructure businesses of 10.8%.

*Fama-French three factor model*

The expected return on equity, $E(r_j)$, from the Fama-French Three Factor Model is:

$$E(r_j) = r_f + beta_j \times [E(r_m) - r_f] + s_j \times SMB + h_j \times HML$$

$s_j$ is the size factor "beta"; $SMB$ is the size factor.

$h_j$ is the value factor "beta"; HML is the value factor.

A suite of estimates for the Fama-French model parameters, recently made by SFG Consulting and which are now in the public domain, is used to estimate the expected return on equity.[11]  These estimated values are summarised in Table 7.1.

*Table 7.1 – Parameters for the Fama-French Three Factor Model*

| Parameter | Australian data | U.S. data |
|---|---|---|
| Market return beta | 0.48 | 0.87 |
| Size factor beta ($s_j$) | 0.03 | -0.07 |
| Size factor (SMB) | -0.43% | 3.58* |
| Value factor beta ($h_j$) | 0.30 | 0.12 |
| Value factor (HML) | 9.97% | 4.81% |

The rate of return on the market portfolio has not been adjusted for any value which might to be attributed to the imputation credits available via Australian taxation law. The resulting estimates of the return on equity, before and after adjustment for the value of imputation credits, are also shown in Table 7.2. The adjustment for imputation credits has been made using the "Officer formula" with a value of 0.25 for the factor gamma (γ).

*Table 7.2 – Application of the Fama-French Three Factor Model*

| Parameter | | |
|---|---|---|
| Risk free rate | 2.92% ||
| Market risk premium | 6.11% ||
| **Return on equity** | **Using Australian factor estimates** | **Using U.S. factor estimates** |
| No adjustment for imputation credits | 8.83% | 8.56% |
| Adjusted for the value of imputation credits | 9.78% | 9.48% |

Applying the weighting 24 per cent Australian data/76 per cent U.S. data, the weighted average of the estimates of the return on equity adjusted for the value of imputation credits is 9.5 per cent.

*Estimates of the return on equity from four models*

Estimates of the return on equity made using the four financial models relevant to estimating equity returns are summarised in Table 7.3.

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[11] SFG Consulting, *The Fama-French model: Report for Jemena Gas Networks, ActewAGL, Ergon, Transend, TransGrid, and SA PowerNetworks*, 13 May 2014

*Table 7.3: Estimates of the rate of return on equity*

| Model | Low estimate | High estimate |
|---|---|---|
| SL CAPM | 8.9% | 9.8% |
| Black CAPM | 9.5% | 10.5% |
| Dividend Growth Model | 10.8% | |
| Fama-French three factor model | 9.5% | |

The four models – the SL CAPM, the Black CAPM, the Dividend Growth Model, and the Fama-French three factor model – deliver estimates of the return on equity which range from 8.9% to 10.8%.

There is no obvious convergence, but the estimates from the four models point to a return on equity exceeding 9.0%.

The Dividend Growth Model may yield an estimate which is "on the high side".

The differences between the estimates obtained reflect differences in assumptions underpinning the four models and their respective positions in the evolution of finance theory. They also reflect differences in the data from which model input variables were estimated. The estimates made using the SL CAPM and the Dividend Growth Model, the earliest of the models in the evolution of finance theory, are, respectively, the lower and upper limits of the range of estimates.

The Black CAPM and the Fama-French Three Factor Model are more recent. They perform better empirically in equity return estimation than the SL CAPM. The Black CAPM indicates a return on equity in the range 9.5 per cent to 10.5 per cent. The Fama-French Three Factor Model indicates an estimate of the return on equity of around 9.5 per cent. This estimate has been made using an estimate of the market risk premium of 6.1 per cent, which is consistent with an estimate of the expected return on the market of 9.0 per cent. A higher estimate of the return on the market should lead to a higher estimate of the return on equity.

A reasonable point estimate of the return on equity is unlikely to be at either extremity of the range; it will fall within the range.

A simple average of the midpoints of the ranges for the SL CAPM and Black CAPM, and of the return estimated using the Fama-French three factor model provides a single point estimate for the return on equity of 9.6 per cent.

## 7.4 Return on debt

APTNT has departed from the AER's Rate of Return Guideline when estimating the return on debt. The Rate of Return Guideline requires that the rate of return on debt be estimated as a prospective and progressively implemented trailing average.

The rate of return on debt is estimated as a simple historical trailing average of estimates of return on debt for each of the last 10 years. The terms of the trailing average are equally weighted, and each of the terms is the sum of the risk free rate and a debt risk premium (as in the Rate of Return Guideline).

The benchmark efficient entity of rule 87(3) is not a regulated entity which would have hedged its debt in a particular way in response to the prevailing regulatory regime as the Rate of Return Guideline proposes. The benchmark efficient entity is a firm of similar scale to the service provider which operates in a workably competitive market. Such a firm would 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 way the Rate of Return Guideline proposes, without any need for concern about hedging arrangements which have to be "unwound". The trailing average approach to estimation of the return on debt can be implemented immediately (without any need for a period of transition).

Reserve Bank of Australia data on the credit spreads of Australian non-financial corporations have been used to estimate the debt risk premiums in the terms of the trailing average (and not an average of Reserve Bank and Bloomberg service credit spreads).

Bond samples used by the Reserve Bank of Australia, for corporations with credit ratings in the BBB band, provide a better "view" of the yields on the bond issues which are relevant to estimating the return on debt of the benchmark efficient entity of rule 87. An estimate made using the data from the RBA samples is more likely to be an estimate which can contribute to achievement of the allowed rate of return objective of rule 87(3). The Reserve Bank's method of curve fitting is transparent, and has yielded a curve which has been shown to be responsive to changes in conditions in financial markets where the Bloomberg curve is unresponsive.

Where necessary, the data are extrapolated or interpolated in the way proposed by the AER so that the estimates of the return on debt obtained (and which are the terms of the trailing average) are for terms to maturity of 10 years consistent with the assumption made in respect of the financing of the benchmark efficient entity.

The last, and most recent, term in the trailing average is an estimate of the return on debt made for an averaging period of 20 business days ending 30 November 2015. The earlier terms of the average are estimated using data for averaging periods which were at intervals of multiples of twelve months prior to the averaging period of the last and most recent term.

Using Reserve Bank of Australia data for an averaging period of 20 business days ending 30 November 2015, and for prior averaging periods in November in each of the previous nine years, an estimate of the return on debt for the benchmark efficient entity is 7.9%.

In making this estimate, APTNT has used Reserve Bank data for August 2007 rather than for November.  August is the closest prior month for which data are available to be used in place of the November 2007 data, which the Reserve Bank advises are unavailable.

This historical trailing average is to be updated, annually, by deleting its earliest term, and adding a new term calculated for the current year.  The equal weighting of the terms are to be retained in the updating process.

## 7.5    Value of imputation credits

APTNT has departed from the AER's Rate of Return Guideline when estimating the value of imputation credits.  The Rate of Return Guideline requires that the value of imputation credits – the factor gamma ($\gamma$) – be estimated as the product of the distribution rate and theta.

The benchmark efficient entity is an entity with 100% Australian income. Such an entity cannot maintain a distribution rate above its earnings distribution rate. Therefore, the distribution rate of listed equity (with material foreign earnings) is not a good proxy for the distribution rate for the benchmark entity.  The all equity rate is a better estimate of the distribution rate of the benchmark efficient entity.  The best estimate possible for the distribution rate is, in the circumstances, 0.7.

The Rate of Return Guideline advises that, when estimating theta:

- significant reliance is to be placed on the equity ownership approach;

- some reliance is to be placed on tax statistics; and

- less reliance is to be placed upon implied market value studies.

But the value to be assigned to imputation credits is their market value.  Accordingly, significant reliance should be placed upon implied market value studies which estimate theta.

The definitive estimate of theta – the market value of distributed credits remains the estimate made by SFG in 2011, using a dividend drop-off study.  This estimate, 0.35, was accepted by the Australian Competition Tribunal in *Energex Limited (No.5)*. Professor Stephen Gray, author of the SFG's 2011 report, has continued to update the work which led to the 2011 estimate, and has recently advised that 0.35 continues to be a conservative estimate of the market value of distributed imputation credits.

Since gamma is estimated as the product of the distribution rate and theta, the best estimate possible in the circumstances is 0.7 x 0.35 = 0.25.

# 7.6 Proposed allowed rate of return

APTNT's estimates of the return on equity and the return on debt are, respectively, 9.6% and 7.9%.

Use of each of these estimates in determining the allowed rate of return for the AGP contributes to achievement of the allowed rate of return objective.

APTNT has calculated a nominal vanilla weighted average of its estimates of the return on equity and the return on debt, with the estimates weighted using the gearing of the benchmark efficient entity.  That weighted average, 8.58%, is a rate of return commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the APTNT in respect of its provision of the reference service using the AGP.

APTNT therefore applies, initially, an allowed rate of return of 8.58% for the AGP. That rate of return is to be updated each year during the access arrangement period as the estimate of the rate of return on debt is progressively updated.

# 8.    Taxation

APTNT 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.

APTNT has rolled forward its TAB using the same principles as the normal asset base rollforward. That is, APTNT 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 8.1 and Table 8.2.

*Table 8.1 – Tax Asset Base as at 30 June 2016 ($nominal)*

| $'000 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 |
|---|---|---|---|---|---|
| Opening tax asset base | 9,251 | 11,757 | 26,039 | 27,949 | 29,962 |
| Plus capex | 4,116 | 15,798 | 3,824 | 4,020 | 14,824 |
| Less tax depreciation | -1,611 | -1,516 | -1,914 | -2,007 | -2,309 |
| Closing tax asset base | 11,757 | 26,039 | 27,949 | 29,962 | 42,477 |

*Table 8.2 – Forecast Tax Asset Base ($nominal)*

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|
| Opening tax asset base | 42,477 | 60,093 | 58,827 | 57,108 | 55,351 |
| Plus capex | 20,485 | 2,590 | 2,300 | 2,416 | 2,534 |
| Less tax depreciation | 2,869 | 3,857 | 4,018 | 4,173 | 4,335 |
| Closing tax asset base | 60,093 | 58,827 | 57,108 | 55,351 | 53,551 |

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 8.3. This calculation of corporate income tax reflects a value for tax imputation credits, gamma, of 0.25.

*Table 8.3 – Corporate income tax allowance ($nominal)*

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|
| Tax allowance | 681 | 623 | 651 | 681 | 712 |

# 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[12].

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[12] 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 APTNT 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 APTNT to recover its revenue requirement from users of the pipeline in proportion to their capacity requirements, which matches the reference service which is an 'any direction' 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 10.1below.

*Table 10.1 – Total revenue requirement ($nominal)*

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|
| AGP building block revenue requirement | 23,845 | 26,891 | 28,638 | 27,110 | 28,363 |

The present value of this revenue requirement, discounted at the WACC of 8.58 per cent, is $105.438 million.

The smoothed revenue requirement is shown in Table 10.2 below.

*Table 10.2 – Smoothed revenue requirement*

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|
| Smoothed Revenue requirement | 25,559 | 26,217 | 26,892 | 27,662 | 28,301 |

The present value of this revenue requirement, discounted at the WACC of 8.58 per cent, is $105.438 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 2016/17 (in $2016/17) and is exclusive of goods and services tax (GST). The 2016/17 tariff that forms the starting point for the access arrangement period is $0.6865 per GJ of Delivery Point MDQ.

## 10.4.1.  Reference tariff variation mechanism

The Reference Tariff for the Firm Service may be varied during the Access Arrangement Period through the operation of the Reference Tariff Variation Mechanism, which is made up of:

- A Scheduled Reference Tariff Variation Mechanism – which applies in respect of each year of the Access Arrangement Period; and

- A Cost Pass-through Reference Tariff Variation Mechanism - under which Service Provider may seek to vary the Reference Tariff as a result of occurrence of a Cost Pass-through Event.

## 10.4.2.  Scheduled reference tariff variation mechanism

A symmetrical annual tariff variation adjustment formula adjusts the reference tariff on each 1 July of the access arrangement period in respect of changes to the Consumer Price Index (CPI) and to the return on debt.

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 regulatory change event;

- a service standard event;

- a tax change event;

- a terrorism event;

- an insurer credit risk event;

- an insurance cap event;

- a natural disaster 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[13], however APTNT 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.

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[13] 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 ($nominal)*

| $'000 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|
| Return on capital | 10,253 | 12,008 | 12,183 | 12,316 | 12,444 |
| Return of capital | 627 | 630 | 808 | 1,006 | 1,219 |
| Operating and maintenance | 12,284 | 13,629 | 14,996 | 13,107 | 13,988 |
| Tax allowance | 681 | 623 | 651 | 681 | 712 |
| **Total allowed revenue** | **23,845** | **26,891** | **28,638** | **27,110** | **28,363** |