DRAFT DECISION
Amadeus Gas Pipeline
Access Arrangement

2021 to 2026

Attachment 12
Demand

November 2020

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's draft decision on the access arrangement that will apply to APT Pipelines (NT) Pty Ltd (APTNT)'s Amadeus Gas Pipeline for the 2021–2026 access arrangement period. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 – Services covered by the access arrangement

Attachment 2 – Capital base

Attachment 3 – Rate of return

Attachment 4 – Regulatory depreciation

Attachment 5 – Capital expenditure

Attachment 6 – Operating expenditure

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12 Demand

This attachment sets out our assessment of the demand forecasts for APTNT's Amadeus Gas Pipeline (AGP) for the 2021–26 access arrangement period.

12.1 Draft decision

We are satisfied that APTNT's proposed demand forecasts comply with rule 74(2) of the National Gas Rules (NGR).

The reasons for our decision are discussed below.

12.2 APTNT's proposal

12.2.1 Summary

Demand for the AGP is principally used for the provision of firm gas transportation service. Demand for the transportation and delivery of gas volumes is derived from users' decisions to use their contracted capacities for transportation of gas each day.[1] Pre-existing agreements cover all available capacity for firm services for the 2021–26 access arrangement period.[2] APTNT also submitted a proposal for an interruptible reference service in response to AER's reference service proposal decision.

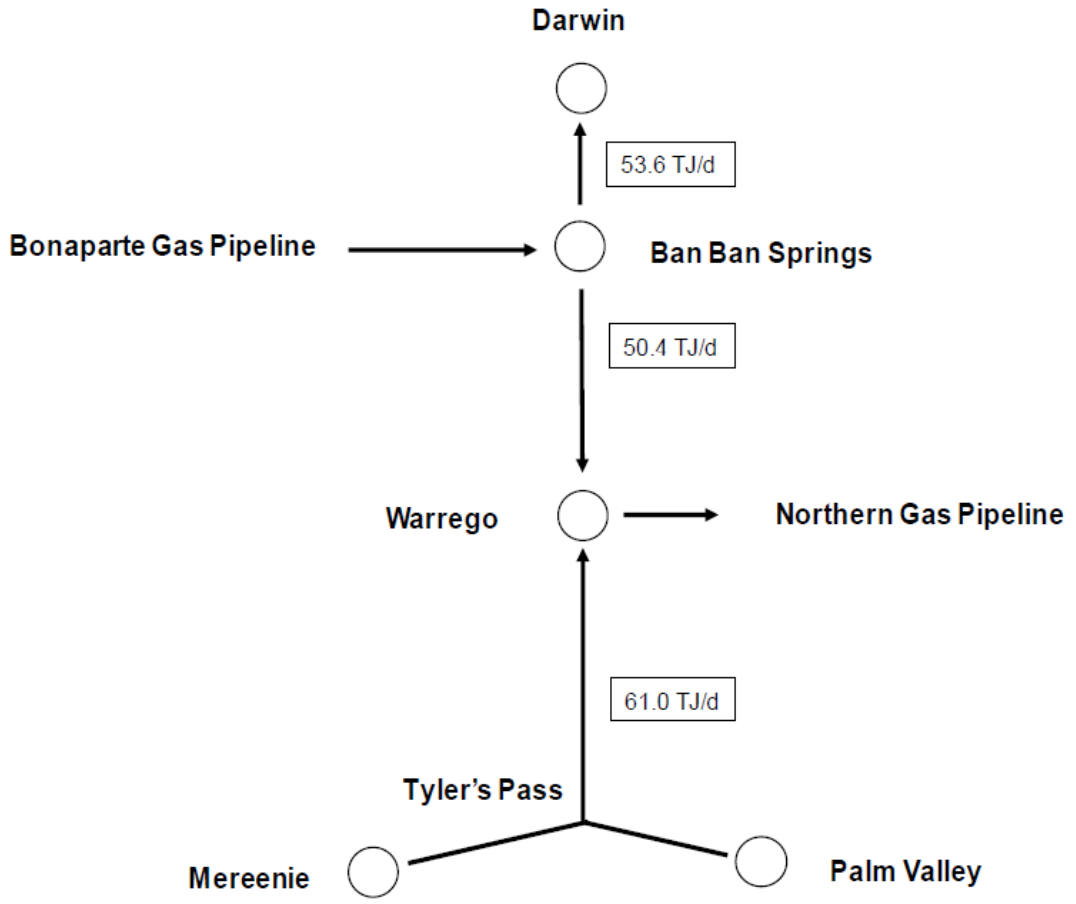
In 2019, the Northern Gas Pipeline (NGP) owned by Jemena was connected to AGP at Warrego, providing transport services to the Carpentaria pipeline at Mt Isa. This significantly changed the gas flow configuration of the AGP. Gas delivered to the NGP flows into Queensland and, via other pipelines, into the East Coast market. The key drivers of demand for gas transportation for the AGP are:

- use of firm transportation service for power generation in the Northern Territory
- use of firm transportation service under pre-existing agreement for delivery of gas to the NGP and onwards to the East Coast gas market
- use of interruptible service for the transportation of gas to NGP for the East Coast gas market.[3]

Figure 12.1 shows the gas flow configuration for the AGP after January 2019.

1 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement – Reset RIN Response*, July 2020, p. 78.
2 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Revision Proposal, Overview*, July 2020. p. 27.
3 APTNT, *Amadeus Gas Pipeline 2021-26 Access Arrangement – Reset RIN Response*, July 2020, p. 78.

Figure 12.1 Amadeus Gas Pipeline gas flow configuration and segmented capacities



Source: APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Revision Proposal, Overview*, July 2020, p. 26.

The AGP has an overall capacity of 165 TJ/d, but utilisation of this capacity is constrained to 145 TJ/d[4] by the delivery point into the NGP at Warrego.[5] Users with pre-existing agreements have access to capacities at receipt points for the provision of firm transportation services.

Maximum capacities in the various sections of the AGP are:

- Ban Ban Springs to Warrego: 50.4 TJ/d
- Ban Ban Springs to Darwin: 91 TJ/d. However, Ban Ban Springs maximum receipt is 104 TJ/d, the available gas to flow north to Darwin is dependent on the requirements flowing south to Warrego (i.e. a 50.4 TJ/d gas flow from

[4] APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Revision Proposal, Overview, July 2020*, p. 26.

[5] APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Information,* July 2020, p.13.

Ban Ban Springs to Warrego will limit Ban Ban Springs to Darwin gas flow to 53.6 TJ/d)

- Mereenie/ Palm Valley to Warrego section: 61 TJ/d, based on all gas from Mereenie (noting that the Mereenie gas plant capacity is 58 TJ/d).

12.2.2 Forecast methodology

APTNT prepared its own demand forecasts for firm services based on:

- historical trends and maximum transportation capacity for users with pre-existing gas transportation agreements,[6] and
- gas capacity assessment of the AGP since connection to the NGP.

APTNT does not apply weather normalisation and use time series extending over more than 12 months to account for seasonal patterns in demand data.[7]

Interruptible gas services at delivery points are forecasted from contractual and historical average daily volumes.[8] An interruptible service is only available from any unused part of AGP capacity after priority access by users with pre-existing agreements.

12.3 Assessment approach

The NGR require access arrangement information for a full access arrangement proposal for a transmission pipeline to include:

- usage of the pipeline over the earlier access arrangement period showing minimum, maximum and average demand for each receipt and delivery point; and user numbers for each receipt and delivery point[9]
- to the extent that it is practicable to forecast pipeline capacity and utilisation of pipeline capacity over the access arrangement period, a forecast of pipeline capacity and utilisation of pipeline capacity over that period and the basis on which the forecast has been derived.[10]

The NGR also require that forecasts and estimates:[11]

- are arrived at on a reasonable basis
- represent the best forecast or estimate possible in the circumstances.

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6 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Revision Proposal, Overview*, July 2020, p. 30.
7 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement – Reset RIN Response*, July 2020, p. 77.
8 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Revision Proposal, Overview*, July 2020, p. 29.
9 NGR, r. 72(1)(a)(iii).
10 NGR, r. 72(1)(d).
11 NGR, r. 74(2).

We consider that there are two important considerations in assessing whether demand forecasts are arrived at on a reasonable basis and whether they represent the best forecasts possible in the circumstances.[12] These are:

- the appropriateness of the forecast methodology – this involves consideration of how the demand forecast has been developed; and
- whether or not relevant factors have been taken into account in developing the demand forecasts.

To determine whether APTNT's proposed demand forecasts are arrived at on a reasonable basis and are the best possible forecasts in the circumstances, we reviewed the data inputs used to implement the forecasting methodology.

In making our draft decision, we relied on:

- information provided by APTNT as part of its proposed access arrangement
- information provided in response to the regulatory information notice (RIN)
- responses to information requests, and
- stakeholder submissions.

12.3.1 Interrelationships

Tariff prices depend on estimates on forecast total demand (TJ/day). Changes in these forecasts will translate into changed tariff prices. In simple terms, tariff prices are determined by cost divided by total demand (TJ/day), such that an increase in forecast demand has the effect of reducing the tariff price and vice versa.

Demand forecasts also affect capital and operating expenditure linked to increased network capacity. APTNT submits that there is no new capacity for firm transportation service planned for the period 2021–22 to 2025–26, and costs to providing current pipeline services are largely fixed and not dependent on gas transportation volume.[13] While there is interest from stakeholders in the expansion of the AGP,[14] APTNT advises in its proposal that long term commitments to demand that are required to support pipeline expansion are still to be secured.[15]

Power and Water Corporation (PWC), as foundation shipper to the AGP, submits that they have an interest in expansion of the AGP and is in discussions with APTNT to investigate compression and possible expansion funding arrangements that place all interested stakeholders on an equal playing field.[16]

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12 NGR, r. 74(2).

13 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement – Reset RIN Response,* July 2020, p. 78.

14 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Revision Proposal, Overview,* July 2020, pp. 11–14.

15 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement – Reset RIN Response,* July 2020, p. 88.

16 PWC, *Submission to AER – AGP Access Arrangement 2021–26,* 24 August 2020.

In addition, Energy Matrix Group also submits that its subsidiary, Project Consultancy Services Pty Limited (PCS), currently acts for prospective pipeline user(s) on project(s) that will require the expansion of AGP capacity.[17]

The access arrangement proposal does not include any proposal for expansion of the capacity of the AGP during the access arrangement period. Should an expansion proposal be forthcoming once commercial negotiations have been finalised, then pending the timing of the proposal we can consider the expansion as part of a revised submission in making the final decision for the next access arrangement, or as part of an advanced capex determination under rule 80 of the NGR. In such scenario, we expect APTNT to re-engage stakeholders, similar to its established Consumer Reference Group, on any key changes in its circumstances prior to our assessment.

12.4 Reasons for draft decision

Rule 74(2) of the NGR requires forecasts in access arrangement proposals to be arrived at on a reasonable basis, and to represent the best forecast possible in the circumstances.

The reasons for our decision are discussed further below.

12.4.1 Forecast methodology and assumptions

We consider that the demand forecast methodology and assumptions adopted by APTNT were arrived at on a reasonable basis in accordance with the NGR for the following reasons:[18]

- the expected average demand for each delivery point is based on an analysis of historic trends in gas volumes and key drivers of demand for each delivery point
- analysis of the maximum demand at each delivery point has taken into account observed historical maximums and the nature of demand at each delivery point (e.g. the demand requirements of the user and whether their demand profile is likely to change over the forecast period).

12.4.2 Minimum, maximum and average demand

Under the NGR, APTNT's access arrangement must include minimum, maximum and average demand for each receipt or delivery point for the earlier access arrangement period.[19] APTNT's access arrangement information and its response to our RIN satisfy these requirements.

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17 Energy Matrix Group, *AGP Revised Access Arrangement Response*, 25 August 2020.

18 NGR rr. 74(1), 74(2)(a).

19 NGR, r. 72(1)(a)(iii)(A).

12.4.3 Forecast pipeline capacity and utilisation

The NGR require that to the extent practicable, the access arrangement information should include forecast pipeline capacity and utilisation of pipeline capacity over the access arrangement period.[20] We consider the information contained within APTNT's submission satisfies the requirement of rule 72(1)(d) of the NGR. We have formed this view on the basis that:[21]

- the capacity forecast has taken into account aggregated contracted demand on the pipeline and any additional capacity that can be delivered within the physical and contractual constraints of the pipeline; and
- utilisation forecast is based transportation and delivery of AGP gas volumes over the 12 month period since the NGP interconnection.[22]

12.4.4 Demand forecasts

Total demand (TJ volumes)

Interconnection with the NGP has significantly changed the gas flows and gas volumes of the AGP. Prior to January 2019, annual gas volume to delivery points were approximately 24,000 TJ.[23] Annual forecast of total volumes are now above 53,000 TJ and is expected to grow by 1 percent each year over 2021–26.[24]

Table 12.1 Forecast total volume: 2021–22 to 2025–26

		2021–22	2022–23	2023–24	2024–25	2025–26
Total demand (pipeline usage)	TJ	53,251.7	53,826.4	54,560.1	55,031.5	55,663.1

Source: APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Information*, July 2020, p.14.

In assessing APTNT's proposed total gas volume forecasts (TJ), we have considered APTNT's forecasts at each delivery point on the pipeline and compared these with historic volumes at each delivery point. APTNT also submitted data from January – December 2019 for the average volume of gas transported and delivered to each delivery point after the connection to NGP.[25] We recognise that given the nature of the end use of the gas at each delivery point, the actual and forecast volume growth differs between each delivery point. We also note that in some instances actual gas delivered

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20 NGR, r. 72(1)(d).

21 APTNT, *Amadeus Gas Pipeline, Access Arrangement Revision Proposal, Submission*, August 2015, pp. 48–49.

22 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement – Reset RIN Response*, July 2020, p. 89.

23 This calculation was derived from APTNT, *Consolidated Pipeline Service Provider Historical Performance Data* 2010–11 to 2018–19_Confidential.

24 This calculation was derived from APTNT, *Amadeus Gas Pipeline 2021-26 Access Arrangement – Reset RIN Workbook 1 – Forecast*, July 2020.

25 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement – Reset RIN Response*, July 2020, p. 90.

at each delivery point has varied significantly from year to year as the end use of gas can be volatile.

Northern Gas Pipeline

Gas flows to the NGP now forms a significant portion of the total volume of gas transported within the AGP. In the 12 months from January 2019, the volume of gas delivered from the AGP into the NGP averaged 77.1 TJ/d, approximately 50% of the total volume of gas transported in the AGP.[26] The capacity of the NGP is reported to be 90 TJ/d.[27] Constraints to the receipt point at Ban Ban Springs limit the gas flow south to Warrego and onwards to the NGP. APTNT forecasts gas deliveries at Warrego to remain at around their 2019 average of 77.1 TJ/d, at least during the access arrangement period.[28] APTNT acknowledges difficulties with forecasting the volume of gas transported to Warrego as 12 months' data from January 2019 is insufficiently robust enough to inform on longer term trends.[29] To this extent, APTNT has provided the best forecasting possible based on available data.

Gas transported for power generation

Gas deliveries into Darwin (Channel Island, Darwin City Gate - Distribution, Darwin City Gate – Wickham Point Pipeline) are used for power generation and form the second largest proportion of gas distribution within the AGP. The volume of gas delivered to Channel Island, and into the Wickham Point Pipeline for Weddell increased by 3.3% annually over the six years for 2011–12 to 2017–18. In 2018–19, gas volumes declined by 2.9%.[30] APTNT states that the decline in power station gas deliveries have continued during 2019, and attributes the decline to recent and rapid uptake of solar PV generation and a fall in electricity generation accompanying a recent decline in economic activity in the Northern Territory.[31]

APTNT forecasts gas volumes to power generation sites to grow from 2020–21 at the average rate of growth in gross state product (3.2%) as forecast by the Northern Territory Treasury within the *Treasurer's Mid-Year Report 2019.* This is consistent with the expectation that growth in gross state product will increase power generation spurring gas usage and transportation requirements of the AGP.

Table 2.2 sets out the economic and population growth estimation from the Northern Territory government.

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26 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement – Reset RIN Response*, July 2020, p. 81.

27 Ibid.

28 Ibid, p. 96.

29 Ibid, p. 95.

30 Ibid, p. 91.

31 Ibid.

Table 12.2 NT Gross State Product and population growth (% change)

	2018–19	2019–20	2020–21	2021–22	2022–23
GSP	-1.5	6.3	4.1	2.9	2.5
Population	-0.7[e]	0.0	0.6	0.7	0.8

Source: https://treasury.nt.gov.au/__data/assets/pdf_file/0011/760583/2019-20-Mid-Year-Report.pdf

Note: (e) estimate

Table 12.3 sets out the actual volumes and forecasts of gas delivered to power generation sites.

Table 12.3 Gas delivered to power generation sites: actual and forecasts

	Actual TJ/d			Forecast TJ/d						
	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22	2022–23	2023–24	2024–25	2025–26
Channel Island	33.3	33.5	30.2	27.9	27.9	28.8	30.7	31.7	32.7	33.7
Weddell	11.8	11.7	11.8	12.5	12.5	12.9	13.7	14.2	14.6	15.1
Pine Creek	5.2	4.6	4.7	4.6	4.6	4.7	5.0	5.2	5.3	5.5
Katherine	1.0	0.8	1.4	1.2	1.2	1.3	1.3	1.4	1.4	1.5
Total	**51.3**	**50.6**	**48.1**	**46.2**	**46.2**	**47.7**	**50.8**	**52.4**	**54.1**	**55.8**

Source: APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement – Reset RIN Response*, July 2020, p. 94.

On the basis that APTNT has considered historical trends and economic variables that correlate to demand growth, we consider that the forecasts of delivery points used for power generation have been arrived at on a reasonable basis and represent the best possible forecast in the circumstances.

Interruptible services

APTNT forecasts no interruptible service availability within the Ban Ban Springs – Darwin and Ban Ban Springs – Warrego segments of AGP, although there may be unused contracted capacity, gas flowing into this segment is gas transported in the Bonaparte Gas Pipeline which is currently fully contracted.[32] The capacity for firm transportation service between Tyler's Pass and Warrego is 61.0 TJ/d which is fully contracted. Utilisation data of four months to April 2020 suggests average deliveries of 22.6 TJ/d, allowing for potentially 38.4 TJ/d capacity for interruptible services in the Palm Valley, Mereenie – Warrego segment of the AGP.[33] Table 12.4 sets out the capacity for interruptible services for 2020–26.

[32] APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Revision Proposal, Overview,* July 2020*, p. 29.*

[33] APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Revision Proposal, Overview*, July 2020*, p. 29.*

Table 12.4 Amadeus Gas Pipeline capacity for interruptible service 2020–26

		2020–21	2021–22	2022–23	2023–24	2024–25	2025–26
Ban Ban Springs – Darwin	**TJ/d**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Ban Ban Springs - Warrego	**TJ/d**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Capacity: Tyler's Pass - Warrego	TJ/d	61.0	61.0	61.0	61.0	61.0	61.0
Firm Transportation Service: Tyler's Pass – Warrego	TJ/d	22.6	22.6	22.6	22.6	22.6	22.6
Palm Valley, Mereenie - Warrego	**TJ/d**	**38.4**	**38.4**	**38.4**	**38.4**	**38.4**	**38.4**
Capacity available for interruptible service	**TJ/d**	**38.4**	**38.4**	**38.4**	**38.4**	**38.4**	**38.4**

Source: APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement Revision Proposal, Overview*, July 2020, p. 29.

Despite the potential capacity available for interruptible services at Palm Valley, Mereenie – Warrego segment, APTNT submits that demand for that capacity is uncertain as quantity of capacity available will vary day by day.[34] APTNT submits that it does not see the demand for second-priority firm and interruptible services being in excess of about 15 TJ/d during the access arrangement period. This view was put forth at stakeholder engagements and prospective users of interruptible services with no disagreement.

On the basis that the evidence outlined above, we consider that the forecasts of interruptible services have been arrived at on a reasonable basis and represent the best possible forecast in the circumstances.

Maximum demand

APTNT submitted that it has forecasted maximum demand at delivery points based on observed historical maximums.[35] We note that APTNT has also provided analysis to gas usage characteristics and drivers of demand at each delivery point.

The change of gas flow configuration through interconnection with the NGP has also changed maximum demand at delivery points. APTNT forecasted maximum demand based on gas flow trends from January 2019.[36]

Noting the limitations of available data after January 2019, we consider that APTNT's proposed forecast maximum demand have been arrived at on a reasonable basis.

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34 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement – Reset RIN Response,* July 2020, p. 104.

35 Ibid, p. 101.

36 APTNT, *Amadeus Gas Pipeline 2021–26 Access Arrangement – Reset RIN Workbook 1* – Forecast, July 2020, N1. Demand tab.

12.4.5 Forecast user numbers

We accept APTNT's forecast user numbers for the 2021–26 access arrangement period and those forecasts have been arrived at on a reasonable basis.

We recognise that others users in addition to the foundation shipper have expressed interest in access to the AGP for firm services, however given that the AGP is expected to be fully contracted for the access arrangement period the likelihood of additional users is limited.

Given the current contractual arrangements of the AGP, we consider that it is unlikely that there will be additional users demanding significant quantities of gas over the 2021–26 access arrangement period without a proposal to expand its capacity.

Shortened forms

Shortened form	Extended form
ABS	Australian Bureau of Statistics
AER	Australian Energy Regulator
capex	Capital expenditure
CD	Chargeable Demand
GFC	Global Financial Crisis
GVA	Gross Value Add
MDQ	Maximum Daily Quantity
NGL	National Gas Law
NGO	National Gas Objective
NGP	Northern Gas Pipeline
NGR	National Gas Rules
NSW	New South Wales
opex	Operating expenditure
TJ	Terajoule
RIN	Regulatory Information Notice
RSA	Reference Service Agreement