Amadeus Gas Pipeline

Reset RIN response

1 July 2020

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Contents

Abbreviations

AER	Australian Energy Regulator
AGP	Amadeus Gas Pipeline
COAG	Council of Australian Governments
GJ	Gigajoule
kPa	Kilopascal
LNG	Liquefied natural gas
MW	Megawatt
nan	Not a number (the result of attempted division by zero)
NGL	National Gas Law
NGR	National Gas Rules
PV	Photovoltaic
r	Rule
RIN	Regulatory Information Notice
RTU	Remote terminal unit
s	Section
SCADA	Supervisory control and data acquisition
TJ/d	Terajoule per day

List of attachments

1	Amadeus-Lifecycle Management Plan-1_July_2020-public
2	Amadeus-Gas Transmission RFM-1_July_2020-public
3	Amadeus-Gas Transmission PTRM-1_July_2020-public
4	Amadeus-CAPEX model-1_July_2020-public
5	Amadeus-OPEX model-1_July_2020-public
6	Amadeus-Capacity assessment report-1_July_2020-CONFIDENTIAL
7	Amadeus-Averaging Periods-1_July_2020-CONFIDENTIAL
8	Amadeus-Tariff model-1_July-2020-public

Amadeus Gas Pipeline

AGP Access Arrangement revision proposal

The Amadeus Gas Pipeline (**AGP**) is the pipeline system comprising the gas transmission pipelines specified in pipeline licences PL 4 and PL 18 issued under Part III of the Energy Pipelines Act 1981 (NT).

The AGP is a covered pipeline for the purposes of the access regulatory regime of the National Gas Law (**NGL**), which is implemented in the Northern Territory by the *National Gas (Northern Territory) Act 2008*.

APT Pipelines (NT) Pty Limited (ABN 40 075 733 336) (**Amadeus**) is the covered pipeline service provider for the AGP.

Amadeus must submit proposed revisions to the Access Arrangement for the AGP to the Australian Energy Regulator (**AER**), for approval, by 1 July 2020.

The AGP Access Arrangement revision proposal comprises three documents:

- *Proposed Revised Access Arrangement for the Amadeus Gas Pipeline 1 July 2021 to 30 June 2026, 1 July 2020*
- *Proposed Revised Access Arrangement for the Amadeus Gas Pipeline 1 July 2021 to 30 June 2026 (changes tracked), 1 July 2020*
- *Proposed Revised Access Arrangement Information for the Amadeus Gas Pipeline, 1 July 2020*.

A fourth document, *Amadeus Gas Pipeline: 2021-26 Access Arrangement revision proposal overview*, was submitted with the AGP Access Arrangement revision proposal. This document:

- describes the way in which the access arrangement revision proposal was developed in consultation with key stakeholders representing consumers of natural gas and the local community
- summarises the revision proposal.

Reset RIN

On 1 April 2020, the AER issued a Regulatory Information Notice (**Reset RIN**) to Amadeus under Division 4 of Part 1 of Chapter 2 of NGL. The Reset RIN requires that Amadeus keep and provide, to the AER, certain information on the AGP (the covered pipeline).

The information is to be provided in the form of regulatory templates (Microsoft Excel workbooks), which were provided with the Reset RIN, and which are to be completed in accordance with instructions in the Reset RIN.

Paragraph 1.4 of the Reset RIN requires that Amadeus provide the AER with material used for the purposes of preparing the AGP Access Arrangement revision proposal including:

- all consultants' reports commissioned and relied upon in whole or in part
- all material assumptions relied upon
- a table that references each response to a paragraph in Schedule 2 of the notice and where it is provided in or as part of the access arrangement proposal
- a table that references each document provided in or as part of the access arrangement proposal and its relationship to other documents provided.

Paragraph 1.5 of the Reset RIN requires that Amadeus provide for each material assumption identified in the response to paragraph 1.4(b):

- its source or basis
- if applicable, its quantum
- whether, and how, the assumption has been applied and was taken into account
- the effect or impact of the assumption on the capital and operating expenditure forecasts in the next access arrangement period taking into account
    - the actual expenditure incurred during the current access arrangement period

- the sensitivity of the forecast expenditure to the assumption.

All of the information which Amadeus is to provide to the AER, other than the information in the regulatory templates themselves, is provided in the following sections of this **Reset RIN response**.

To facilitate access to this information, the numbering of these sections of the Reset RIN response is the same as the numbering used in Schedule 2 to the Reset RIN. The Reset RIN response, itself, tabulates the responses to the requirements of Schedule 2, and where those responses "fit" within the AGP Access Arrangement revision proposal.

All other documents provided in, or as part of, the AGP Access Arrangement revision proposal are provided as attachments to this Reset RIN response. Each of these documents, and its relationship to other documents provided in or as part of the access arrangement revision proposal, are set out in the appropriate sections of the Reset RIN response. The Reset RIN response is the table required by paragraph 1.4 of the Reset RIN.

Schedule 2 – Reset Information

General Requirements

1 Service provider details and business context

Local agent of a service provider

1.1 Provide all details of any local agent(s) of Amadeus (s. 11 of the NGL)

Amadeus is not a foreign company, and does not have a local agent.

2 Background to the pipeline

Pipeline and pipeline services

2.1 For the current access arrangement period for each pipeline service provided by way of Amadeus' gas transmission pipeline that are other services provided as a covered pipeline in Amadeus' access arrangement proposal, provide in the materials submitted to the AER:

(a) the annual volume of gas metered as having been transported by the gas transmission pipeline; and

(b) the number of users.

For services provided using the covered pipeline which are "other services", the annual volumes of gas metered as having been transported by the AGP are shown in Table 1.

Table 1: Other services: annual volumes metered as having been transported

		2016-17	2017-18	2018-19
Firm transportation service	GJ	20,873,474	21,026,350	30,157,839
Interruptible/As Available/Authorised Overrun Transport	GJ	2,863,749	4,542,608	11,657,144

The numbers of users of those services were as shown in Table 2.

Table 2: Other services: numbers of users

	2016-17	2017-18	2018-19
Firm Transport	1	1	1
Interruptible/As Available/Authorised Overrun Transport	3	3	5

Expenditure Requirements

3 Capital expenditure

3.1 The information required to be provided, prepared, kept or maintained in this part of the notice relates to all pipeline services, including reference services and other services provided as a covered pipeline.

Amadeus has complied with this requirement.

Capital expenditure in the previous and current access arrangement period

3.2 Provide capital expenditure at a project level and at a capital expenditure subcategory level in Workbook 2 – Historical data and Workbook 4 – Annual data, regulatory templates E2 to E13. Where data is either not available to Amadeus or it is not practical to produce the data:

(a) explain why

(b) provide data at the most disaggregated level available.

Project level capital expenditures, for individual projects with total expenditures exceeding $500,000, have been provided in the completed regulatory template Workbook 2 – Historical data. (Workbook 4, which is to provide historical data for 2019-20 is to be provided by 30 November 2020.)

Replacement capital expenditure, by project, is provided in section E2.2.1 of worksheet E2. Repex of Workbook 2.

No volumes have been provided in section E2.2.2 of worksheet E2. Repex. The scales of the projects which Amadeus has undertaken cannot be assessed on the dimension of length. The projects are for specific items of equipment associated with the proper functioning of the pipeline.

3.3 Explain in the materials submitted to the AER:

(a) in terms of the nature of the work undertaken (scope, scale or other deviation from proposed works), the volume and the cost (deviation in unit rates), any material difference for each capital expenditure category between:

(i) the capital expenditure approved by the AER and the actual and/or estimated capital expenditure for the current access arrangement period; and

(ii) the capital expenditure proposed by Amadeus and the actual and/or estimated capital expenditure for the current access arrangement period; and

(b) whether and how Amadeus considers that conforming capital expenditure to be added to the capital base in the current access arrangement period meets the requirements of r. 79 of the NGR.

Comparing AER approved with actual and estimated capital expenditure

In its May 2016 final decision on proposed revisions to the AGP Access Arrangement, the AER approved (gross) capital expenditure of $18.8 million (real, Jun-2021) as conforming capital expenditure for the current access arrangement period.[1]

Amadeus is expecting to incur, during the current access arrangement period, actual and estimated capital expenditure of $26.9 million, which is $8.1 million (43%) higher than the AER allowance.[2] The capital expenditure approved by the AER, actual and estimated expenditures, and the differences by driver are summarised in the Figure 1 and Table 3 below.

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1 Asset disposals that were forecast were not deducted from gross capital expenditure.

2 Actual expenditures are reported for 2016-17, 2017-18 and 2018-19. Expenditures for 2019-20 and 2020-21 are estimates. In this Reset RIN response, the expenditures during the current access arrangement period are referred to as "actual and estimated" expenditures, or as "actual/est.".

Figure 1: CAPEX: actual and estimated compared to AER 2016 approved ($m, real Jun-2021)

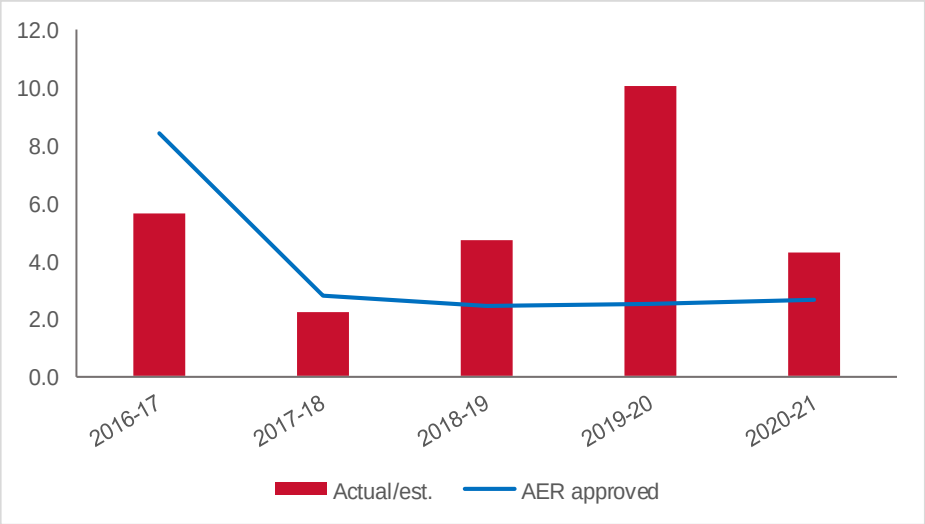


Table 3: AGP CAPEX: actual and estimated compared to AER 2016 approved: by driver ($m, real Jun-2021)

		2016-17	2017-18	2018-19	2019-20 (est.)	2020-21 (est.)	Total
AER, May 2016 approved							
Expansion	$m	0.000	0.000	0.000	0.000	0.000	**0.000**
Replacement	$m	3.576	1.737	1.354	1.373	1.219	**9.259**
Non-network	$m	4.811	1.033	1.096	1.154	1.409	**9.503**
	$m	**8.387**	**2.770**	**2.450**	**2.527**	**2.628**	**18.762**
Actual and estimated							
Expansion	$m	0.144	0.017	0.000	0.000	0.000	**0.161**
Replacement	$m	3.982	1.078	2.761	4.035	2.599	**14.455**
Non-network	$m	1.495	1.118	1.920	6.011	1.712	**12.255**
	$m	**5.620**	**2.213**	**4.681**	**10.046**	**4.311**	**26.871**
Difference: actual/est. - approved							
Expansion	$m	0.144	0.017	0.000	0.000	0.000	**0.161**
Replacement	$m	0.406	-0.659	1.407	2.662	1.380	**5.196**
Non-network	$m	-3.316	0.085	0.824	4.857	0.303	**2.752**
	$m	**-2.767**	**-0.557**	**2.231**	**7.519**	**1.683**	**8.109**
Percentage difference							
Expansion		nan	nan	nan	nan	nan	**nan**
Replacement		11%	-38%	104%	194%	113%	**56%**
Non-network		-69%	8%	75%	421%	21%	**29%**
		-33%	**-20%**	**91%**	**298%**	**64%**	**43%**

nan = not a number (result of attempted division by zero)

Key reasons for the differences between the AER May 2016 approved capital expenditure for the current access arrangement period, and the corresponding actual and estimated expenditures are as follows.

- From 1 July 2019, Amadeus has applied Australian accounting standard AASB 16, Leases. The capitalised value of the lease payments for right-of-use leases has been recognised as an asset and has been added to the capital expenditure for 2019-20. This is a one-off adjustment. The total value of the capitalised lease payments was $4.1 million (real, Jun-2021). Capitalised lease payments have been classed as non-network, as discussed below.
- Differences have arisen as a consequences of ongoing review and assessment of risk, cost and performance in line with the APA's asset management policy and framework
- A number of projects were not foreseen at the time of the 2016 access arrangement revision. In particular, one larger project, pressure control equipment at Warrego (replacement category), was driven by exogenous factors that were not, and could not have been, foreseen by the time the AER May 2016 final decision. This project, and others that were not included in the 2016 approved capital expenditure, are discussed below.
- Capitalised corporate overheads have been included in the actual and estimated expenditures.

Ongoing review and assessment

The AER May 2016 approved capital expenditure was a point-in-time forecast using the best information available when it was made.

The APA Asset Management Policy and Framework, used by Amadeus, embeds continuous review and re-prioritisation of capital projects as more up-to-date information becomes available closer to project delivery. The continuous review of projects results in changes to the capital expenditure requirements compared to those approved in May 2016.

All proposed projects undergo risk assessment during an identification stage which is validated and adjusted, if necessary, during a subsequent concept development stage. Risk assessment is carried out against APA's corporate risk matrix, which is based on AS2885.6 but also incorporates additional APA criteria.[3]

During the access arrangement period project delivery is reviewed each month, and expenditure is re-assessed, by project delivery teams.

Capital projects are closely monitored and scrutinised, ensuring expenditures can be kept to a minimum while meeting APA's preferences for risk.

This process has resulted in:

- prioritisation of projects that had not been anticipated at the time of the 2016 AGP Access Arrangement revision
- differences between the amounts that were included in the AER May 2016 approved capital expenditure and the actual and estimated expenditure for the current access arrangement period.

The more significant of the project differences, by driver, are explained below.

Further information about APA's asset management policy is provided in Amadeus Gas System FY22-FY26 Lifecycle Management Plan, which is Attachment 1 to the Reset RIN response.

Capital expenditure by driver

Expansion

When preparing the AGP Access Arrangement revision proposal in respect of which the AER made the May 2016 final decision, Amadeus did not plan any expansion projects for the current access

[3] The APA corporate risk matrix is provided in Appendix B to the Lifecycle Management Plan Amadeus Gas System FY22 – FY26, which is Attachment 1 to the Reset RIN response.

arrangement period, and did not forecast expansion capital expenditure. The capital expenditure approved by the AER in May 2016 did not include capital expenditure for expansion projects.

Actual capital expenditure on expansion projects is shown in Table 4.

Table 4: AGP CAPEX: expansion projects ($m, real Jun-2021)

		2016-17	2017-18	2018-19	2019-20 (est.)	2020-21 (est.)	Total
Channel Island meter station (unit 7)	$m	0.144	0.017	0.000	0.000	0.000	**0.161**
Expansion projects	**$m**	**0.144**	**0.017**	**0.000**	**0.000**	**0.000**	**0.161**

Actual capital expenditure in the expansion category totalled $0.161 million, all of which was investment in the meter station at the Channel Island delivery point. The Channel Island meter station (unit 7) project was not forecast at the time of the 2016 AGP Access Arrangement revision.

The AGP Asset Management Plan at the time had included a rolling program of Remote Terminal Units (RTU) replacements. RTUs originally installed on the AGP are no longer supported by the manufacturer, and cannot be maintained.[4]

In 2016, following a user request for service modifications, an RTU at the Channel Island meter station was identified as being at risk of premature failure. Gas flows from the AGP, through the meter station, into the Channel Island Power Station. Channel Island is a major power station supplying electricity into the Darwin-Katherine electricity transmission system. Metering failure at Channel Island carried a higher risk of service and community disruption than the at other AGP metering sites. Replacement of the RTU preceded planned replacement in accordance with the sequence established in asset management planning. At the same time, the opportunity was taken to have engineering and technical staff at the site

[4] Remote terminal units (RTU) are a microprocessor controlled device that interfaces field devices such as pressure transmitters, flow meters and valve actuators with the supervisory control and data acquisition (SCADA) system. RTUs are therefore critical in the control and monitoring of gas pipeline facilities.

replace a second RTU which had also been scheduled for later replacement.

Replacement

Actual and estimated replacement capital expenditure for the AGP, during the current access arrangement period, is expected to be $14.5 million, which is $5.2 million (56%) higher than the AER May 2016 approved amount of $9.3 million. Actual and estimated expenditures for a number of replacement projects are close to the 2016 allowances. The exceptions are discussed below.

There were also a number of replacement projects that were not foreseen at the time of preparation of the 2016 AGP Access Arrangement revisions. The most significant of these, investment in pressure control equipment at Warrego, is discussed below.

Cathodic protection

Amadeus has three ongoing cathodic protection work programs for the AGP: new cathodic protection sites, replacement of cathodic protection ground beds, and cathodic protection unit replacement.

Actual and estimated expenditure for cathodic protection unit replacement was 98% higher than the 2016 allowance. The differences, year by year across the current access arrangement period, are shown in Table 5 below.

Table 5: AGP CAPEX: cathodic protection replacement ($m, Jun-2021)

		2016-17	2017-18	2018-19	2019-20 (est.)	2020-21 (est.)	Total
AER, May 2016 approved	$m	0.031	0.031	0.031	0.031	0.031	**0.155**
Actual and estimated	$m	0.070	0.033	0.074	0.079	0.051	**0.307**
Difference: actual/est. - approved	$m	0.039	0.002	0.043	0.048	0.020	**0.152**
Percentage difference		126%	6%	139%	155%	65%	**98%**

Cathodic protection unit replacement involves technically similar work to the replacement of solar PV panels. Where both types of replacement are required at the same location, replacement at the same time is more efficient than replacement at different times. In

consequence, planned cathodic protection unit replacement was accelerated to allow the work to be carried out with the planned replacement of solar PV panels.

Electrical and instrumentation

Expenditures on five electrical and instrumentation programs were included in the total capital expenditure approved by the AER in May 2016. There were significant differences between the 2016 allowance and the actual and estimated expenditures for two of these programs. The differences are shown in Table 6.

Table 6: AGP CAPEX: electrical and instrumentation replacement ($m, real Jun-2021)

		2016-17	2017-18	2018-19	2019-20 (est.)	2020-21 (est.)	Total
Hazardous area assessments and equipment replacements							
AER, May 2016 approved	$m	0.280	0.168	0.000	0.000	0.000	**0.448**
Actual and estimated	$m	-0.014	0.155	0.046	0.247	0.254	**0.688**
Difference: actual/est. - approved	$m	-0.294	-0.013	0.046	0.247	0.254	**0.240**
Percentage difference		-105%	-8%	nan	nan	nan	**54%**
Solar PV panel replacement							
AER, May 2016 approved	$m	0.028	0.041	0.029	0.022	0.027	**0.147**
Actual and estimated	$m	0.052	0.062	0.092	0.117	0.056	**0.379**
Difference: actual/est. - approved	$m	0.024	0.021	0.063	0.095	0.029	**0.232**
Percentage difference		86%	51%	217%	432%	107%	**158%**

As shown in Table 6:

- expenditure on hazardous area assessment and equipment replacement was $0.2 million (54%) above the AER's May 2016 approved allowance
- solar PV panel replacement expenditure was $0.2 million (158%) higher than the 2016 allowance

The difference in hazardous area assessment and equipment replacement was due to a delay in the delivery of the project as a result of turn-over of engineering staff in the Northern Territory. A new

engineering team has picked up the project, and addressed the backlog. This program of work will continue in the next access arrangement period.

The 2016 allowance for solar PV panel replacement was based on replacing panels at two sites per year. Panel replacement is required because the installed panels were of declining efficiency and were no longer being manufactured. Replacement costs have been consistently higher than was previously forecast.

IT infrastructure renewal program

Forecast capital expenditure approved by the AER in May 2016 included allowances for renewing IT desktop and telephony systems to ensure that they continued to support and enhance AGP operations. The projected expenditure was $0.3 million, as shown in Table 7. Amadeus subsequently invested $0.9 million in IT infrastructure renewal.

Table 7: AGP CAPEX: IT infrastructure renewal ($m, real Jun-2021)

		2016-17	2017-18	2018-19	2019-20 (est.)	2020-21 (est.)	Total
AER, May 2016 approved	$m	0.063	0.127	0.000	0.000	0.065	**0.255**
Actual and estimated	$m	0.000	0.345	-0.106	0.000	0.636	**0.875**
Difference: actual/est. - approved	$m	-0.063	0.218	-0.106	0.000	0.571	**0.620**
Percentage difference		-100%	172%	nan	nan	878%	**243%**

The higher than forecast capital expenditure was due to mainly to SCADA system renewal as part of APA's SCADA Satellite Infrastructure Refresh project.

APA Group has progressively moved Northern Territory operational control (and pipeline control in other jurisdictions) to a common SCADA system.

The SCADA system provides data communications for the remote monitoring and operation of facilities located along the AGP. If the SCADA system fails, pipeline operation is directly and adversely affected. A fully functioning and reliable SCADA system is essential

to ensuring the ongoing safety and integrity of the pipeline service provision (consistent with the requirements of NGR rules 79(2)(c)(i) and (ii)).

Move to a corporate-wide SCADA system has allowed the sharing of common and fixed costs across the APA Group, and more effective IT support and cybersecurity. System reliability and integrity are enhanced.

A satellite orbiting the earth is used to transmit AGP site data to APA's Integrated Operational Control Centre via the SCADA system. APA was advised, by the vendor, that it was no longer supporting the SCADA system software in use at the commencement of the current access arrangement period.

In addition, in 2016, the supplier of satellite services advised that the particular satellite used for SCADA data communications transfer would cease to operate from December 2018. Satellite services were to be "repointed" to another satellite (Optus D2).

Loss of support for the then existing SCADA system software, and "tying in" to a new satellite, meant that SCADA system work carried out has been of much greater scope than anticipated.

Unforeseen projects: Warrego pressure control

In January 2019, an interconnection was established between the AGP and the Northern Gas Pipeline, and Amadeus subsequently invested $2.3 million in pressure control equipment at Warrego. Expenditure on this equipment was high relative to other capital expenditure programs, and represented a substantial part of the difference between the AER approved capital expenditure for the current access arrangement period, and actual and estimated expenditure for that period.

At the time the revisions to the current AGP Access arrangement were being prepared, the Northern Territory Government was seeking proposals for building the North East Gas Interconnector (now the Northern Gas Pipeline). There was significant uncertainty

about whether a new pipeline would be built. Amadeus advised, in the submission made with the revision proposal:

One potential area for change for the AGP during the access arrangement period is the possible connection to the south eastern gas market through the mooted North East Gas Interconnector (NEGI). APTNT expects to accommodate the potential connection of the NEGI to the AGP during the access arrangement period through the extensions and expansions policy set out in the prevailing Access Arrangement.[5]

In November 2015, the Northern Territory Government awarded the project to Jemena. Jemena's Northern Gas Pipeline would interconnect the AGP, but the timing and scale of interconnection were not known in time for the AER's May 2016 final decision on revisions to the AGP Access Arrangement.

As Northern Gas Pipeline interconnection was investigated with Jemena, Amadeus saw that it would segment gas flow in the AGP. Gas could flow south from Ban Ban Springs to the interconnection at Warrego, and gas could flow north to Warrego, from Palm Valley and Mereenie (see paragraph 11 (Demand)) below. If the pressure in the section of the AGP north of Warrego were to rise above the pressure in the section south of Warrego, gas from Palm Valley and Mereenie would not be able to be delivered into the Northern Gas Pipeline. Similarly, if pressure in the section of the AGP south of Warrego were to rise above the pressure in the section north of Warrego, gas would not be able to flow south from Ban Ban Springs. Pressure control was required if existing users of the AGP were to be able to use their contracted capacities at the Warrego delivery point. Investment in pressure control equipment was necessary to allow Amadeus to maintain the capacity to meet existing levels of demand for pipeline services. (By the end of 2019, about half of the gas flowing in the AGP was delivered to Warrego, and into the Northern Gas Pipeline.)

5 APA Group, Amadeus Gas Pipeline Access Arrangement Revision Proposal Submission, August 2015, page 4.

Unforeseen projects: AC mitigation and Forrest Hill cathodic protection

Two other, smaller scale, replacement projects were not foreseen at the time of the last AGP Access Arrangement revisions. They were:

- alternating current effects mitigation downstream of Darwin City Gate
- additional cathodic protection at Forrest Hill.

A short extension of the AGP, from Darwin City Gate to a pressure reduction facility at the corner of Wishart Road and Berrimah Road, delivers gas into the Darwin distribution system. This extension runs parallel to high voltage electricity transmission lines for most of its length. Proximity to a high voltage transmission line can induce an electric current in a steel pipeline, which causes the malfunction of pipeline equipment and problems with cathodic protection. The induced current is also a safety risk for personnel working on the pipeline.

A study was undertaken in accordance with Australian standards AS 2885 (pipelines – gas and liquid petroleum) and AS 4853 (electrical hazards on metallic pipelines), and a decision made to install equipment to mitigate the effects of induced currents. The total cost of the work was $0.292 million (real, Jun-2021).

The effectiveness of cathodic protection declines where the AGP traverses black soils (vertosols) between Newcastle Waters and Mataranka. A significant decline in effectiveness was observed between adjacent cathodic protection units around Forrest Hill, and an additional unit was installed at a cost of $0.360 million (real, Jun-2021).

Non-network capital expenditure

AGP capital expenditure approved by the AER in May 2016 included an allowance of $9.5 million for non-network projects. Actual and estimated non-network capital expenditure for the current access arrangement period was $12.3 million, which was $2.8 million (29%) higher than the AER allowance.

From 1 July 2019, Amadeus has applied Australian accounting standard AASB 16, Leases, to right-of-use leases for land and buildings. The leases are not for the pipeline itself, or for equipment directly connected to the pipeline. Their capitalised value is a non-network asset. This capitalised value, which has been determined in accordance with AASB 16, is $4.1 million. It has been recognised as a one-off adjustment – an increase – in capital expenditure for 2019-20. (Further details of this change in accounting policy are provided in paragraphs 4.2 and 9.4 below.)

When the adjustment for leases is removed, actual and estimated non-network capital expenditure was lower than the 2016 allowance due mainly to lower than expected expenditure for building modifications and, to a lesser extent, to lower than expected expenditure on motor vehicles.

Amadeus included, in actual and estimated non-network expenditure, capitalised corporate overheads, which were not included in the AER May 2016 approved expenditure.

Differences between the AER May 2016 approved non-network capital expenditure and the actual and estimated expenditures for the current access arrangement period (excluding the capitalised value of leases in 2019-20) are shown in Table 8.

Table 8: AGP CAPEX: non-network renewal ($m, real Jun-2021)

		2016-17	2017-18	2018-19	2019-20 est.	2020-21 est.	Total
Capitalised corporate overheads							
AER, May 2016 approved	$m	0.000	0.000	0.000	0.000	0.000	**0.000**
Actual and estimated	$m	0.748	1.012	1.194	0.996	0.987	**4.937**
Difference: actual/est. - approved	$m	0.748	1.012	1.194	0.996	0.987	**4.937**
Percentage difference		nan	nan	nan	nan	nan	**nan**
Building modifications							
AER, May 2016 approved	$m	3.419	0.000	0.000	0.000	0.000	**3.419**
Actual and estimated	$m	0.000	0.000	0.000	0.391	0.000	**0.391**
Difference: actual/est. - approved	$m	-3.419	0.000	0.000	0.391	0.000	**-3.028**
Percentage difference		-100%	nan	nan	nan	nan	**-89%**
Motor vehicles							
AER, May 2016 approved	$m	0.635	0.238	0.397	0.476	0.635	**2.381**
Actual and estimated	$m	0.772	0.058	0.000	0.478	0.738	**2.046**
Difference: actual/est. - approved	$m	0.137	-0.180	-0.397	0.002	0.103	**-0.335**
Percentage difference		22%	-76%	-100%	0%	16%	**-14%**

Capitalised corporate overheads

APA Group corporate overheads are allocated across APA operating businesses on a revenue share basis. This revenue share can vary year-by-year depending on the revenues earned by individual business units. Revenue-based allocation makes the forecasting of corporate overhead allocations difficult, and Amadeus did not include capitalised corporate overheads in the capital expenditure forecasts made (in 2015) for the current access arrangement period.

As shown in Table 8 above, actual and estimated capitalised corporate overheads totalled $4.9 million over the current period. The 2019-20 and 2020-21 estimates have been based on year-to-date corporate overhead allocations, which have been adjusted to June 2021 prices.

Capitalised corporate overheads include expenditures on corporate-level IT renewal and infrastructure, corporate buildings, and corporate vehicles.

Building modifications

In the AGP Access Arrangement revision proposal, which was the subject of the AER's May 2016 final decision, Amadeus proposed relocation of its Palmerston office to a new building built to current standards for conditions in the Northern Territory. Palmerston is some 20 km from the centre of Darwin. The new building was to be located closer to the centre of the city, ensuring better access for staff, suppliers and customers. Expenditure of $3.4 million was proposed, and approved by the AER May 2016.

However, the project has not progressed due to difficulties with purchase of a suitable site, and some minor modifications have been made to the existing Palmerston facilities.

Capital expenditure proposed by Amadeus for the current access arrangement period, and actual and estimated capital expenditure for that period

Amadeus proposed, for the current access arrangement period, capital expenditure of $32.9 million (real, Jun-2021).

The AER did not accept the proposal, and approved, in May 2016, a capital allowance of $18.8 million which was $13.1 million (41%) lower than Amadeus had proposed.

Amadeus's proposed, but the AER did not approve in its May 2016 final decision, expenditure of some $12 million to allow in-line inspection of the section of the AGP crossing a bridge to the Channel Island Power Station in Darwin. The AER was not satisfied that the expenditure proposed was conforming capital expenditure.

The AER also revised down, from $3.7 million to $1.9 million, proposed expenditure for the recoating of below-ground station pipework planned for 2016-17.

During the current access arrangement period, Amadeus has not progressed work to allow in-line inspection of the pipeline crossing the Channel Island bridge. Recoating of below-ground pipework proceeded, in 2016-17, to the extent permitted by the AER's allowance for that work.

Capital expenditure in the current access arrangement period is conforming and can be added to the capital base

Conforming capital expenditure is expenditure that:

- would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services
- is justifiable against the criteria of r. 79(2) of the NGR.

The criteria of NGR r. 79(2) are:

- the overall economic value of the expenditure is positive
- the present value of the expected incremental revenue to be generated as a result of the expenditure exceeds the present value of the capital expenditure
- the capital expenditure is necessary to:
  - maintain and improve the safety of services
  - maintain the integrity of services
  - comply with a regulatory obligation or requirement
  - maintain the service provider's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred (as distinct from projected demand that is dependent on an expansion of pipeline capacity).

Amadeus considers that the actual and estimated capital expenditure in the current access arrangement period is conforming capital expenditure in accordance with the requirements of r. 79(2).

Amadeus's asset management approach has complied, and continues to comply, with relevant Australian Standards and Codes representing good industry practice.

Amadeus has in place detailed capital expenditure governance processes to ensure that projects undertaken are prudent, efficient and in line with overall strategy. Prudent asset management involves reviewing expenditure requirements closer to delivery to take into consideration new information, changes in customer requirements and changes in circumstances.

The capital expenditure over 2016-21 reflects what would be incurred by a prudent service provider acting efficiently. APA's asset management approach over the 2016-21 period reflects a reasonable and prudent basis for making efficient decisions about capital investment needs.

Speculative capital expenditure account, reused redundant assets, redundant assets and disposals in the current access arrangement period

3.4 Provide an explanation in the materials submitted to the AER whether and how Amadeus considers the requirements of r. 79 of the NGR are met for any amounts added to or deducted from the opening capital base:

(a) from the speculative capital expenditure account

(b) for the reuse of redundant assets

(c) for redundant assets

(d) for disposals.

No amount from a speculative capital expenditure account has, in the current access arrangement period, been added to the opening capital base for the next access arrangement period.

No amount for the reuse of redundant assets in the current access arrangement period has been added to the opening capital base for the next access arrangement period.

No amount for redundant assets in the current access arrangement period has been deducted from the opening capital base for the next access arrangement period.

The amounts from asset disposals in the current access arrangement period shown in Table 9 have been deducted from the opening capital base for the next access arrangement period. The deduction of these amounts has been effected through their use as inputs into the model, Amadeus-Gas Transmission RFM-1_July_2020-public, which is Attachment 2 to the *Reset RIN response* (**Roll Forward Model**).

Table 9: Actual asset disposals – as incurred ($m, nominal)

		2016-17	2017-18	2018-19	2019-20
Pipelines	$m				
Compressors	$m				
Meter Station	$m				
SCADA	$m				
O&M Facilities	$m	0.124	0.291	0.000	0.105
Buildings	$m				
Corporate Assets (IT Software)	$m				
Land and Easement	$m				
Asset disposals	**$m**	**0.124**	**0.291**	**0.000**	**0.105**

Disposals are assets which have been created at an earlier time by conforming capital expenditure which has been added to capital base. The capital expenditure in question has been found to be conforming because it satisfied the criteria of Rule 79.

Amadeus disposes of assets which can make no future contribution to the provision of pipeline services because they have reached the ends of their designated lives, or because they have prematurely failed. Such assets are not redundant. Their disposal is by sale, or by scrapping.

When such assets are sold, the proceeds from sale are taken as an input into the Roll Forward Model. The amounts input are subtracted from the capital expenditure in the corresponding asset class shown under the heading Actual Capital Expenditure – As Incurred ($m Nominal), which is at row 59 of the Roll Forward Model. In this way,

the amounts are deducted in the process of determining the opening capital base for the next access arrangement period.

If an asset is scrapped, there are, of course, no proceeds from sale: no amount is input into the Roll Forward Model, and no deduction is made in the process of determining the opening capital base for the next access arrangement period.

Forecast conforming capital expenditure in the next access arrangement period

3.5 For each capital expenditure category identified in the Workbook 1 – Reset (forecast) data, regulatory templates E2 to E13, provide in the materials submitted to the AER an overall description including:

(a) a definition and explanation of any materiality threshold test that Amadeus intends to apply to categorise forecast conforming capital expenditure projects

(b) the nature of forecast conforming capital expenditure projects or programs material to each capital expenditure category, including a brief description of the capital expenditure and, where relevant, the location of the expenditure on the transmission pipeline

(c) key drivers of the proposed expenditure

(d) an explanation of how expenditure is distinguished between:

(i) expansion capital expenditure, replacement capital expenditure, non-system capital expenditure and other capital expenditure

(ii) any capital expenditure category or operating expenditure category where Amadeus considers that there is reasonable scope for ambiguity in categorisation or capitalisation.

(e) details as to whether the forecast conforming capital expenditure is to be funded by parties other than Amadeus; and

(f) details of contractual agreements with parties where capital contributions are made by users to new capital expenditure (see r. 82).

Forecast capital expenditure for the AGP, for the next access arrangement period, comprises the forecast costs of the renewal and of upgrading existing assets. No expansion capital expenditure is forecast for the period. The total capital expenditure forecast is $11.1 million (real, Jun-2021).

The requirements for asset renewal and upgrading, and the costs expected to be incurred, are outputs from Amadeus's ongoing asset management planning.

Forecast capital expenditure for the next access arrangement period is compared with the current period allowance approved by the AER, and with actual and estimated expenditure for the current period, in Figure 2 below.

Forecast capital expenditures by driver and asset class for the next access arrangement period are summarised in Table 10.

Amadeus has not used a materiality threshold to categorise forecast conforming capital expenditure projects. The capital expenditure forecasts have been prepared in accordance with APA's asset management policy and framework using a bottom-up, risk based approach.

Figure 2: AGP CAPEX: Allowed, actual/estimated and forecast ($m, real Jun-2021)

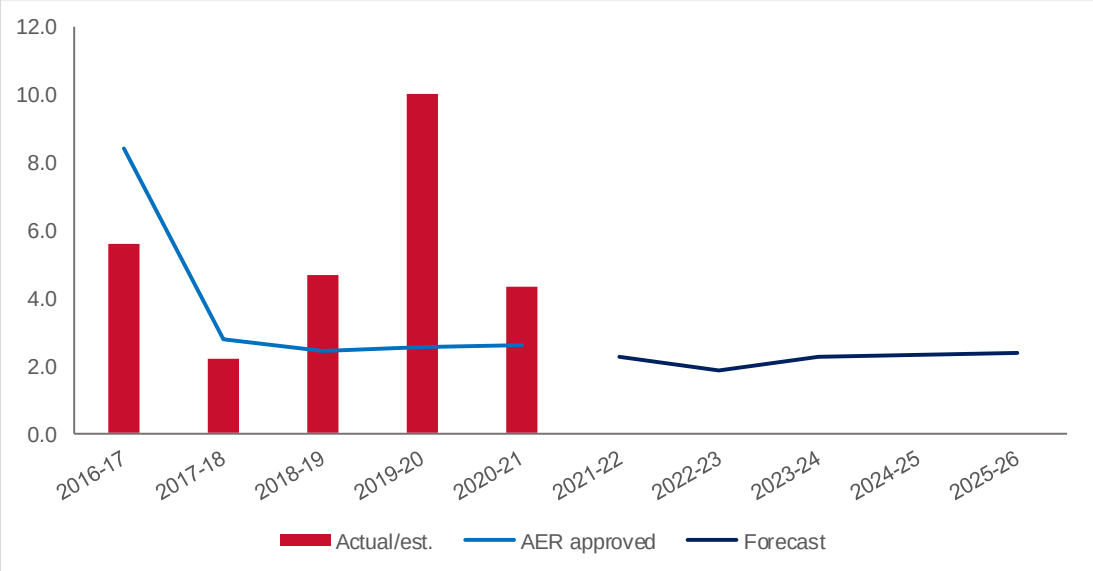


Table 10: AGP forecast CAPEX by driver and asset class ($m, real Jun-2021)

		2021-22	2022-23	2023-24	2024-25	2025-26	Total
CAPEX by driver							
Expansion	$m	0.000	0.000	0.000	0.000	0.000	**0.000**
Replacement	$m	1.440	1.469	1.795	1.567	1.302	**7.574**
Non-system	$m	0.798	0.404	0.465	0.762	1.050	**3.479**
	$m	**2.238**	**1.873**	**2.260**	**2.330**	**2.352**	**11.053**
CAPEX by asset class							
Pipelines	$m	0.429	0.429	0.374	0.409	0.258	**1.898**
Compressors	$m	0.000	0.000	0.000	0.000	0.000	**0.000**
Meter Station	$m	0.809	0.838	1.220	0.956	0.842	**4.665**
SCADA	$m	0.000	0.000	0.000	0.000	0.000	**0.000**
O&M Facilities	$m	1.000	0.606	0.666	0.964	1.252	**4.489**
Buildings	$m	0.000	0.000	0.000	0.000	0.000	**0.000**
Corporate Assets (IT Software)	$m	0.000	0.000	0.000	0.000	0.000	**0.000**
Land and Easement	$m	0.000	0.000	0.000	0.000	0.000	**0.000**
		2.238	**1.873**	**2.260**	**2.330**	**2.352**	**11.053**

A brief description of the nature of each capital expenditure project proposed by Amadeus is provided in Table 11.

As noted above, all of the projects planned require replacement or non-system capital expenditures. No expansion project is planned.

Further details about the proposed capital expenditure projects, including the locations at which work is to be carried out, are provided in Attachment 1, Lifecycle Management Plan Amadeus Gas System FY22-FY26, to the Reset RIN response.

Table 11: AGP forecast CAPEX: projects and descriptions

Driver	Nature of project
Expansion	None planned
Replacement	The nature of the replacement capital expenditure projects is for the most part routine replacement of minor items of plant and equipment typically found on gas transmission pipelines. The types of replacement capital expenditure are listed below: • New cathodic protection sites: locations to be determined from cathodic protection survey data • Cathodic protection ground bed replacements: locations to be determined from cathodic protection survey data • Cathodic protection unit upgrade program: Aileron, Daly Waters, Front Sturt, Helling, Kelly Well, Mereenie, Newcastle Waters, Warrego, Wauchope • Solar panel upgrades: Renner Springs (cathodic protection and uninterruptible power supply), Mataranka, Ti Tree, Tyler's Pass • Battery charger upgrade program: Aileron, Ban Ban Springs, Elliot, Helling, Kelly Well, Mataranka, Newcastle Waters • Battery replacement: Ban Ban Springs, Batchelor, Channel Island, Daly Waters, Darwin City Gate, Fergusson, Forrest Hill, Hayfield, Helling, Kalala, Katherine, Kelly Well, Mereenie, Palm Valley, Pine Creek, Renner Springs, Ross Creek, Tanami Road, Tennant Creek, Ti Tree, Townend Road, Wauchope • Hazardous area equipment upgrades: Ban Ban Springs, Batchelor, Channel Island, Daly Waters, Darwin City Gate, Helling, Katherine, Kelly Well, Mataranka, Newcastle Waters, Palm Valley, Pine Creek, Renner Springs, Tanami Road, Tennant Creek, Ti Tree, Townend Road, Tyler's Pass, Warrego, Wauchope • Remote terminal unit replacement: Aileron, Channel Island, Daly Waters, Darwin City Gate, Elliot, Fergusson, Front Sturt, Hayfield, Helling, Kelly Well, Lake Woods, Mereenie, Newcastle Waters, Pine Creek, Renner Springs, Townend Road, Tyler's Pass, Warrego, Wauchope

	• Heat shrink sleeve upgrade program: pipeline sections: Ban Ban Springs to Darwin City Gate, Darwin City gate to Channel Island, Mataranka to Helling, Helling to Ban Ban Springs, Palm Valley to Tanami Road • Mainline valve actuators upgrade program: Mereenie, Palm Valley, Renner Springs, Tanami Road, Ti Tree, , Warrego, Wauchope • Wizard (pneumatic) controller upgrade program: Darwin City Gate, Katherine, Pine Creek (3 units) • Miscellaneous CAPEX: various locations.
Non-network	Motor vehicles replacement is the largest "line item" in the capital expenditure program. Vehicle replacements are to be in accordance with APA vehicle replacement policy. The policy is has been designed to deliver a vehicle fleet of high standard to ensure the safety of personnel driving long distances, often in remote locations, and to effect cost efficient vehicle replacement when required.

Amadeus treats as expansion and replacement capital expenditures capital expenditure on the pipeline itself, and on the compressor, valves, metering, corrosion protection equipment and other facilities directly attached to the pipeline. Expansion and replacement expenditure includes expenditure on the communications equipment and related software used to transfer data on the operating status of the pipeline, and on gas flows, to pipeline operators, and used to issue control instructions to remotely operated equipment located along the pipeline.

Expansion capital expenditure (none is forecast for the next access arrangement period) is expenditure on pipeline plant and equipment which is required to extend Amadeus's ability to provide services to pipeline users.

Replacement capital expenditure is expenditure which is required to ensure that existing levels of service to pipeline users can be maintained in the future. It includes expenditures to replace items of plant and equipment that have reached end-of-life, and expenditures to prolong the service lives of plant and equipment. Replacement expenditure also includes expenditures on the replacement of equipment required for continued operation which can no longer be maintained because components and technical expertise are no longer available from equipment manufacturers or suppliers.

Non-network capital expenditure is expenditure on assets which are not part of the pipeline system itself (the pipeline and facilities directly connected to the pipeline). Expenditures on buildings and motor vehicles are examples of non-network capital expenditures.

Amadeus includes in its actual capital expenditure corporate capital overheads. These expenditures are allocations of APA Group corporate level expenditures to operating businesses. They comprise, mostly, expenditures on information and communications systems, corporate buildings and corporate vehicles. The allocations are made on a revenue share basis.

No scope exists for ambiguity in the categorisation or capitalisation of expenditures planned for the next access arrangement period.

None of the forecast capital expenditure is to be funded by a party other than Amadeus.

3.6 For forecast conforming capital expenditure, in total and in terms of each capital expenditure category, explain in the materials submitted to the AER:

(a) how it reasonably reflects the new capital expenditure criteria set out in r. 79(1) of the NGR, and how Amadeus has interpreted these criteria

(b) how the forecast conforming capital expenditure is justified under r. 79(2) of the NGR and how Amadeus has interpreted these sub-rules

(c) how any plans, policies, procedures, regulatory obligations or requirements, consultants' reports, economic analysis and assumptions have been used to justify the forecast conforming capital expenditure.

Explanations are provided in the document Lifecycle Management Plan Amadeus Gas System FY 22 – FY 26, which is Attachment 1 to the Reset RIN response.

3.7 If r. 79(2)(a) is relied on to justify the forecast conforming capital expenditure, provide in the materials submitted to the AER:

(a) the calculations of the economic value of the capital expenditure that directly accrues to the service provider, gas producers, users and end users; and

(b) an explanation of the nature and quantification of the economic value that directly accrues to the service provider, gas producer, users and end users (see r. 79(3)).

R. 79(2)(a) has not been relied upon to justify any of the forecast conforming capital expenditure.

3.8 If r. 79(2)(b) is relied on to justify forecast conforming capital expenditure, provide in the materials submitted to the AER:

(a) the information Amadeus relied on to determine the expected incremental revenue to be generated as a result of the forecast conforming capital expenditure;

(b) a description of the incremental service or services (see r. 79(4)(a))

(c) the gross revenue derived from the incremental service (see r. 79(4)(b))

(d) the incremental expenditure (see r. 79(4)(b))

(e) the discount rates that Amadeus used to determine the present value of the incremental revenue.

R. 79(2)(b) has not been relied upon to justify any of the forecast conforming capital expenditure.

3.9 If r. 79(2)(c)(i), (ii) or (iii) is relied on to justify the forecast conforming capital expenditure, provide in the materials submitted to the AER:

(a) an explanation of which item in r. 79(2)(c)(i), (ii) or (iii) is relied on

(b) the relevant regulatory obligation or requirement (if any) and the relevant authority or body enforcing it

(c) an explanation of whether and how Amadeus considers that the forecast conforming capital expenditure satisfies the item in r. 79(2)(c)(i), (ii) or (iii) being relied on

(d) any supporting technical or other external or internal reports about whether and how Amadeus considers that the forecast conforming capital expenditure addresses the relevant item in r. 79(2)(c)(i), (ii) or (iii).

R. 72(2)(c)(i), (ii) and (iii) have been relied upon to justify conforming capital expenditure. The explanations and other information to be

provided are in the document Lifecycle Management Plan Amadeus Gas System FY 22 – FY 26, which is Attachment 1 to the Reset RIN response.

3.10 If r. 79(2)(c)(iv) is relied on to justify forecast conforming capital expenditure, provide in the materials submitted to the AER:

(a) an explanation of how the conforming capital expenditure is necessary to maintain Amadeus's capacity to meet levels of demand for services; and

(b) any reports or other information and documentation that supports whether and how Amadeus considers that the forecast capital expenditure will maintain the capacity to meet the levels of demand for services.

Rule 79(2)(c)(iv) has not been relied upon to justify any of the forecast conforming capital expenditure.

3.11 For the expansion capital expenditure, replacement capital expenditure, non-system capital expenditure and other capital expenditure purpose provide a project list which details for each project in the capital expenditure purpose:

(a) an internal identification code, which will enable Amadeus to report actual capital expenditure against forecast capital expenditure

(b) the project name used internally by Amadeus

(c) the cost and timing of the project capital expenditure

(d) a brief description of the project and its scope.

Project names used internally by Amadeus, the costing and timing of project capital expenditures, and brief descriptions of projects and their scopes are provided in the document Lifecycle Management Plan Amadeus Gas System FY 22 – FY 26, which is Attachment 1 to the Reset RIN response.

The project name is the relevant internal identification code for a project until an Authority for Expenditure is issued, when a financial system identification code is assigned. A system of asset management project codes is being developed. It is not yet ready for implementation.

3.12 Describe in the materials submitted to the AER how the forecast conforming capital expenditure was prepared, including:

(a) the forecasting methodologies used

(b) how its preparation differed or related to budgetary, planning and governance processes used in the normal running of Amadeus' business

(c) processes for ensuring amounts are free of error and other steps in quality assurance; and

(d) if and how Amadeus considered the resulting amounts, when translated into price impacts, were in the long term interest of consumers.

Descriptions are provided in the document Lifecycle Management Plan Amadeus Gas System FY 22 – FY 26, which is Attachment 1 to the Reset RIN response.

The total capital expenditure forecast for the next access arrangement period is in the long term interest of consumers: it is necessary to continued service provision using the AGP. The forecast total capital expenditure increases the firm service reference tariff by approximately 3.7% by the end of the period. This increase is in the context of an overall reduction in the firm service tariff, over the next access arrangement period, of approximately 44%.

3.13 In relation to any source material (including models, documentation or any other items containing quantitative data) used by Amadeus to develop its forecast conforming capital expenditure, provide in the materials submitted to the AER:

(a) a copy of this source material

(b) all calculations that demonstrate how data from the source material has been manipulated or transformed to generate data provided in the regulatory templates.

The source for the forecast conforming capital expenditure is the document Lifecycle Management Plan Amadeus Gas System FY 22 – FY 26, which is Attachment 1 to the Reset RIN response.

The only transformation of the source data to generate data provided in the regulatory templates has been the recasting of the source data from December 2019 prices to prices in June 2021. Amadeus's inflation adjustment of the source data is set out in the spreadsheet model, Amadeus-CAPEX model-1_July_2020-public, which is Attachment 4 to the Reset RIN response.

3.14 Identify which particular items of Amadeus' forecast conforming capital expenditure have been:

(a) derived directly from competitive tender processes;

(b) based upon competitive tender processes for similar projects;

(c) based upon estimates obtained from contractors or manufacturers;

(d) based upon independent benchmarks

(e) based upon actual historical costs for similar projects

(f) are reflective of any amounts for risk, uncertainty or other unspecified contingency factors, and if so, how these amounts were calculated and deemed reasonable.

The capital expenditure forecasts have been derived from actual historical costs for similar projects. Amadeus can draw from a significant database of historical costs, from across APA Group, including costs from original equipment manufacturers, and the costs of projects delivered by independent contractors.

The relatively small scale the projects comprising the capital program has meant that competitive tender processes have not been initiated for the purpose of deriving, directly, expenditure estimates.

There is no contingency built into the forecasts.

3.15 Provide in the materials submitted to the AER any relevant internal decision making documents relating to approval of the forecast conforming capital expenditure and any other internal or external documentation or models that justify the forecast conforming capital expenditure, including but not limited to:

(a) business cases

(b) feasibility studies

(c) forecast demand studies and internal reports

(d) the date of any relevant internal decision making body/management decisions and board decisions.

Business cases are provided in the document Lifecycle Management Plan Amadeus Gas System FY 22 – FY 26, which is Attachment 1 to the Reset RIN response.

3.16 Provide in the materials submitted to the AER all documents which were taken into account and relate to the deliverability of forecast conforming capital expenditure and explain the proposed deliverability.

Capital expenditure forecast for the next access arrangement period is of relatively small scale (approximately $2 million a year), and mainly for replacement of specific items of plant and equipment. The projects which comprise the expenditure program are routine on transmission pipelines, and no issue of deliverability is expected.

Non-conforming capital expenditure in the next access arrangement period

3.17 Provide in the materials submitted to the AER in relation to non-conforming capital expenditure:

(a) details of the mechanism to prevent Amadeus from benefiting, through increased revenue, from the capital contributions by a user in the next access arrangement period (see r. 82(3)).

Section 3.2 of the AGP Access Arrangement recognises that Amadeus may undertake new capital expenditure which is non-conforming. An amount of non-conforming capital expenditure can be added to a speculative capital expenditure account, for subsequent addition to the capital base (when it is found to become conforming), but only to the extent that the expenditure in question is not to be recovered through a surcharge on users or as a capital contribution.

Capital redundancy policy in the next access arrangement period

3.18 If relevant, provide in the materials submitted to the AER:

(a) an explanation of the proposed mechanism to remove redundant assets from the capital base including:

(i) when the mechanism will take effect; and

(ii) whether the mechanism includes a proposal for cost sharing between the service provider and users associated with a decline in demand for pipeline services

(b) an explanation of why the mechanism is being included;

(c) an explanation of what uncertainty the mechanism may cause; and

(d) the effect of this uncertainty on Amadeus.

Section 4.9 of the current AGP Access Arrangement sets out a mechanism for removing redundant assets from the capital base at 1 July 2021.

Amadeus does not propose changing the form of this capital redundancy mechanism, but proposes

- changing the date when the mechanism can next be applied from 1 July 2021 to 1 July 2026
- deleting the words "weighted average cost of capital" from section 4.9, and replacing them with "rate of return".

4 Operating expenditure

Operating expenditure in the current access arrangement period

4.1 For the current access arrangement period in the materials submitted to the AER:

(a) identify all relevant related parties

(b) provide an explanation of any non-recurring expenditures and the expenditure incurred for each non-recurring expenditures each regulatory year.

There were no transactions between relevant related parties resulting in operating expenditure being incurred in the current access arrangement period.

Amadeus has identified, in the total operating expenditure for each regulatory year of the current access arrangement period, the following non-recurrent costs:

- corporate costs
- in-line inspection costs
- excavation costs

Corporate costs – the costs of head office functions – are largely recurrent, but their allocation to operating assets (like the AGP) is on the basis of revenues. Revenues earned by APA assets vary from year to year, resulting in variation in the allocation of corporate costs to individual operating assets. The process of allocation imparts a non-recurrent aspect to corporate costs.

In-line inspection of the AGP is a major activity carried out on a cycle of 10 years (with one section, in soil conditions more conducive to pipeline corrosion, inspected every 7 years). The costs of in-line inspection are non-recurrent.

Excavations are undertaken after in-line inspection to:

- validate the results of the inspection process
- repair defects in the pipe and its protective coating identified by inspection.

The costs of excavation are, then, non-recurrent because in-line inspection is a non-recurrent activity. They are also non-recurrent, because the number of excavations required is not fixed, but is determined from the number of defects identified by the process of in-line inspection. In-line inspections undertaken at different times identify different numbers of defects, requiring different numbers of inspections.

Separate forecasts are made of corporate costs, in-line inspection costs and excavation costs when applying the base, step and trend method to forecast operating expenditure for the next access arrangement period.

Forecast operating expenditure in the next access arrangement period

4.2 For forecast total operating expenditure provide in the materials submitted to the AER:

(a) a description and explanation of the major drivers for the increase/decrease in expenditure for each operating expenditure category between the current access arrangement period and the next access arrangement period

(b) information on any changes to the operations of the pipeline from the current access arrangement period that have resulted in material changes to operating expenditure categories and total operating expenditure in the next access arrangement period, including a definition of the materiality threshold used by Amadeus to identify such changes

(c) the models or methodology used to develop the forecast total operating expenditure

(d) a description of how the forecast was prepared, including:

(i) how forecast operating expenditure reasonably reflects the criteria set out in r. 91(1) of the NGR

(ii) if a revealed cost base year approach was used to forecast total operating expenditure:

(1) what the base year is

(2) why that base year represents efficient, recurrent costs

(iii) if a revealed cost base year approach was not used to forecast total operating expenditure

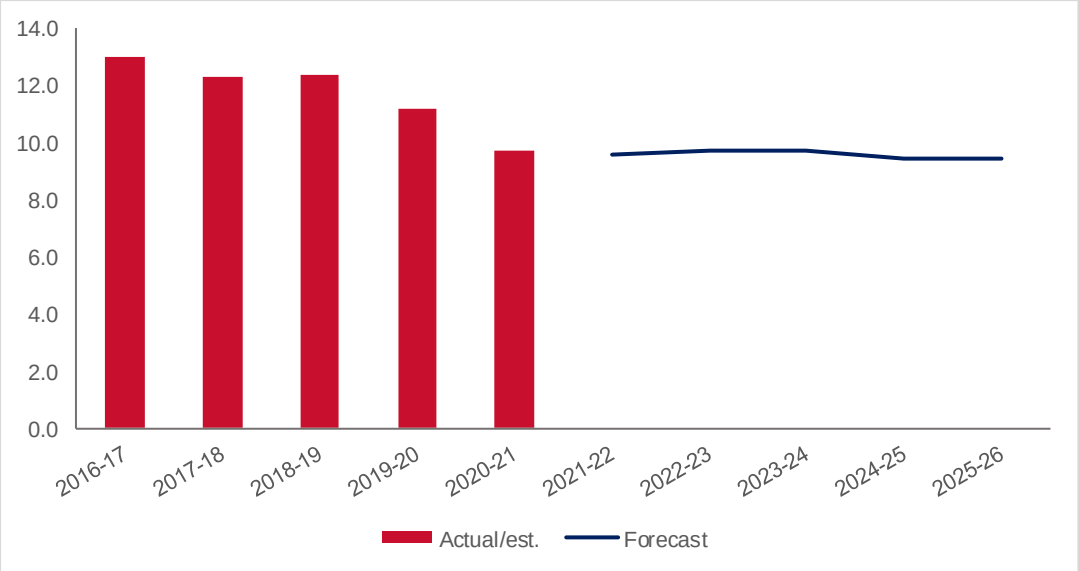
(1) whether there was a year of historical operating expenditure available that represents efficient, recurrent costs

(2) if not, why no year of historical operating expenditure represents efficient, recurrent costs

(iv) any non-recurrent expenditure in the base year and each year of the next access arrangement period.

Total operating expenditures are shown in Figure 3: actual expenditures for 2016-17 to 2018-19, estimates for 2019-20 and 2020-21, and forecasts for 2021-22 to 2025-26.

Figure 3: total operating expenditure ($m, real Jun-2021)



Amadeus's operating expenditures – actual, estimated and forecast – are summarised in the spreadsheet model Amadeus-OPEX model-1_July_2020-public, which is Attachment 5 to the Reset RIN response.

Base operating expenditure (that is, total operating expenditure less non-recurrent costs and lease payments) in 2017-18 was $2.408 million (real, Jun-2021) lower than base operating expenditure in the preceding year.

The removal of lease payments from operating expenditure for the current period facilitates comparison with forecast operating expenditure for the next access arrangement period. From 1 July 2019, Amadeus has applied Australian accounting standard AASB 16, Leases, in respect of certain leases of right-of-use assets, and has reported the capitalised value of the future lease payments as a liability in respect of which depreciation and interest on the liability are reported annually. As noted in paragraph 9.4 below, the capitalised value of the lease payments has been recognised as an asset in the Amadeus Post-tax Revenue model, which is Attachment 3 to the Reset RIN response, for which financing costs are incurred and depreciation is allowed. No lease payments have been included in the forecast of operating expenditure.

Total operating expenditure in 2017-18 included $1.443 million of corporate costs, and $1.601 million of in-line inspection costs. When these, a small amount of excavation costs ($0.067 million), and lease payments ($0.433 million) are removed, base operating expenditure for the year is $8.653 million. This expenditure for 2017-18 was the lowest of the actual base operating expenditures for the period 2016-17 to 2018-19.

Total operating expenditure in 2018-19 was $12.285 million, and approximately the same as it was in 2017-18. When corporate costs of $1.679 million, in-line inspection costs of $0.790 million, and lease payments are removed, base operating expenditure in 2018-19 is some $0.732 million higher than in the base year.

Amadeus has used a revealed cost method – the base, step and trend method – to forecast total operating expenditure for the next access arrangement period. When applying the base, step and trend method, Amadeus chose, as the base year, 2017-18.

Although the volume and the direction of the flow of gas in the AGP have changed (see paragraph 11 (Demand)) below), Amadeus does not expect these changes to lead to material changes in the composition and level of base operating expenditure during the next access arrangement period. The costs of operating the AGP are the largely fixed costs of providing the existing capacity. They do not depend on the volume of gas transported and delivered. Maintenance costs, in particular, are the costs of scheduled preventative maintenance routines. They do not rise with an increase in the volume transported (unless the capacity of the pipeline is expanded to allow that increase).

In these circumstances, the base, step and trend method can provide a forecast of operating expenditure which has been arrived at on a reasonable basis.

In addition to choosing 2017-18 as the base year, Amadeus has, when applying the base, step and trend method:

- removed from the total operating expenditure costs which are non-recurrent, and which must be separately forecast

- removed lease payments to be consistent with the accounting policy change note above
- trended the recurrent base year costs forward across the next access arrangement period (2021-22 to 2025-26), applying a series of indices to reflect expected increases in costs
- adjusted for step changes (as discussed in paragraph 5 - Step Changes – below)
- separately forecast, and added to the forecast of recurrent operating expenditure, forecasts for non-recurrent:
    - inline inspection costs
    - excavation costs
    - corporate costs.

The forecast of total operating expenditure for the next access arrangement period includes a forecast of debt raising costs. This forecast of debt raising costs is the forecast generated by the Post-tax Revenue Model.

Separate forecasts have been made for the non-recurrent costs as follows:

- continuing in-line inspection work, at a relatively low level in the absence of major "intelligent pigging" operations, have been forecast from actual historical costs for similar activity.
- no excavation activity has been planned for the next access arrangement period, and excavation cost have been forecast to be zero in each year of the period
- corporate costs have been forecast at a constant $1.519 million (real, Jun-2021) in each year of the next access arrangement period, based on corporate costs attributable to the AGP during the current access arrangement period.

Actual operating expenditure in the base year (2017-18) was the lowest across the period 2011-12 to 2018-19. It provides a "revealed efficient" level of recurrent expenditure from which efficient

operating expenditure can be forecast, using the base, step and trend method, for the next access arrangement period.

With a mechanism in place to provide incentives for efficiency, use of the base, step and trend method can deliver a forecast which is likely to be the expenditure which would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services. Such an incentive mechanism is in place in the AGP Access Arrangement.

The forecast of operating expenditures for the AGP obtained using the base, step and trend method represents a best possible forecast in the circumstances.

Output growth

4.3 Provide in the materials submitted to the AER:

(a) all output growth drivers included in the forecast;

(b) any economies of scale factors applied to the growth drivers

(c) evidence that the growth drivers explain cost changes due to output growth

(d) any weightings applied if multiple output growth drivers have been used.

When using the base, step and trend method to forecast operating expenditure, Amadeus has not included any output growth driver.

Pipeline capacity is not forecast to change, and there is no plan to extend the AGP, during the next access arrangement period. No new delivery point is to be added to the pipeline.

In these circumstances, the operating costs of the AGP are principally the costs of operating and maintaining the existing assets which comprise the pipeline. These costs are not dependent on the quantity of pipeline capacity contracted to users, and are not

dependent on the volumes of gas which those users decide to transport.

4.4 Explain in the materials submitted to the AER:

(a) how the growth drivers have been applied in the operating expenditure forecast

(b) how the forecast method accounts for economies of scale.

No growth driver has been applied when forecasting operating expenditure, and Amadeus has not needed to account for economies from increased scale of operation.

Real price changes

4.5 Explain in the materials submitted to the AER:

(a) how the real price measures have been applied in the operating expenditure forecast

(b) whether the labour price measure compensates for any form of labour productivity change.

Amadeus has applied a forecast of real labour price change of approximately 0.40% when forecasting operating expenditure for the next access arrangement period.

This forecast of real labour price change has been applied to 66.1% of recurrent operating expenditure. Over the period 2016-17 to 2018-19, the proportion of labour costs in total operating expenditure averaged 66.1%.

Amadeus's application of the forecast of real labour price change is set out in the spreadsheet model, Amadeus-OPEX model-1_July_2020-public, which is Attachment 5 to the Reset RIN response.

The forecast of real labour price change which Amadeus has used is the national forecast for the utilities sector set out in the report Labour Price Growth Forecasts, which was prepared for the AER, by Deloitte Access Economics, in June 2019.

When preparing this forecast, Deloitte Access Economics noted that the growth of labour productivity in the utilities sector "remains sluggish", and attributed the forecast increase in real labour prices to:

- growth in the demand for labour in the utilities sector adding upward pressure to labour prices
- record levels of infrastructure investment, drawing labour from the utilities sector, and placing further upward pressure on utilities sector labour prices
- a possible lift in skill levels required in utilities sector employees, lifting the price of labour in the sector.

The Deloitte Access Economics real labour price forecast for the utilities sector does not seem to compensate for any form of labour productivity change.

Productivity change

4.6 Explain in the materials submitted to the AER:

(a) how the forecast changes in productivity have been applied in the operating expenditure forecast

(b) whether the forecast productivity changes capture the historical trend of cost increases due to new regulatory obligations or requirements and changes to industry best practice

(c) whether the productivity measure used to forecast operating expenditure includes productivity change compensated for by the labour price measure used to forecast the change in the price of labour.

Amadeus has applied a forecast change in productivity of 0.50%. This change has been applied to total recurrent operating expenditure. (The productivity change has not been applied when forecasting non-recurrent in-line inspection, excavation and corporate costs.)

Amadeus's application of the forecast productivity change is set out in the spreadsheet model, Amadeus-OPEX model-1_July_2020-public, which is Attachment 5 to the Reset RIN response.

The forecast change in productivity which Amadeus has used is the forecast from the AER's March 2019 final decision on Forecasting productivity growth for electricity distributors. Amadeus is not, of course, an electricity distributor. But the AER's final decision noted that productivity forecasts for the utilities sector provided by Deloitte Access Economics and BIS Oxford Economics, and productivity estimates for selected non-utilities sectors over multiple periods, as provided by Cambridge Economic Policy Associates, were all between 0.3 to 0.7 per cent.

In the absence of specific productivity forecasts for gas transmission, the AER's forecast of 0.50%, which is in the middle of the range of estimates for utilities and non-utilities, is an appropriate forecast. It is likely to capture at least some the productivity changes due to new regulatory obligations and requirements, and it does not appear to include productivity change compensated for by the forecast the change in real labour prices.

5 Step changes

5.1 For all step changes in forecast operating expenditure (including due to changes in policies, strategies and obligations) provide in the materials submitted to the AER:

(a) a description of the step change, including when the change occurred, or when it is expected to occur, what its driver is, and how the driver has changed (e.g. the change in a regulatory obligation)

(b) a demonstration, including all supporting justifications, for when and how the step change affected or is expected to affect expenditures (historical and forecast), with respect to:

(i) any of the operating expenditure categories

(ii) total operating expenditure.

Amadeus expects that, for each regulatory year of the next access arrangement period, the AER will issue a regulatory information notice requiring that Amadeus keep and provide (to the AER) financial information on the AGP. The information to be kept and provided is expected to be similar to the historical financial information for the each of the years 2011-12 to 2018-2019 which the AER required from Amadeus in response to a regulatory information notice issued on 1 April 2020.

The historical financial information for the years 2011-12 to 2018-2019 which Amadeus has had to keep and provide has been, in the absence of a set of independently audited statutory accounts, drawn from a set of independently audited trial balances.

Amadeus expects that information which it will be required to provide for each regulatory year of the next access arrangement period will, similarly, need to be drawn from independently audited trial balances.

The requirement for independent auditing of trial balances for response to the historical reporting regulatory information notice

issued on 1 April 2020 has caused Amadeus to incur very substantial audit costs.

Amadeus now expects to incur audit costs of approximately $120,000 (real, Jun-2021) in each year of the next access arrangement period to have audited the trial balance to be used in the preparation of a response to a regulatory information notice requiring the keeping and providing (to the AER) of historical financial information for the preceding year.

Audit costs of this type have not been incurred in earlier years, and are not included in the base year costs from which the forecast of operating expenditure has been made for the next access arrangement period. They will be a step change in Amadeus's operating costs for each year of the next access arrangement period.

5.2 For each step change identified in response to paragraph 5.1, explain in the materials submitted to the AER:

(a) why the efficient costs of the step change are not provided by other aspects of the operating expenditure forecast including, for example, base operating expenditure, output growth, real price growth or forecast productivity change

(b) why the step change is required to contribute to a total forecast operating expenditure that reasonably reflects the criteria set out in r. 91(1) of the NGR.

As noted above, audit costs of the type now being proposed as a step change were not included in the base year used for forecasting operating expenditure.

These audit costs are the costs of new activity. This new activity is unrelated to any output growth (Amadeus has forecast none), and is not related to relative price changes, or to changes in the productivity of existing operating and maintenance routines.

The regulatory information notices which are expected to cause the step change in costs are formal, legal instruments made under Part 1

of Division 4 of the NGL. There is a legal requirement to comply with a notice. The costs of compliance, the audit costs, will therefore be costs incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

5.3 For all step changes in forecast expenditure provide:

(a) In Workbook 1 – Reset (forecast) data, regulatory template E17 the step changes expenditure:

(i) forecast for each year of the forthcoming access arrangement period

(ii) expected to be incurred in the current access arrangement period

(b) a description of the step change.

A description of the single step change which Amadeus proposes to include in its forecast of operating expenditure for the next access arrangement period is provided in paragraph 5.1 above.

Forecasts of the step change in expenditure expected to be incurred in the current access arrangement period, and in each year of the next access arrangement period, are provided in worksheet E17. Step changes of completed regulatory template Workbook 1 – Reset (forecast) data.

5.4 For each step change listed in response to paragraph 5.3, provide in the materials submitted to the AER an explanation of:

(a) when the change occurred, or is expected to occur;

(b) what the driver of the step change is;

(c) how the driver has changed or will change (for example, revised legislation may lead to a change in a regulatory obligation or requirement); and

(d) whether the step change is recurrent in nature.

The occurrence and the driver of the step change in operating costs have been explained in paragraph 5.1 above.

Amadeus expects the step change to be recurrent in nature.

5.5 For each step change listed in response to paragraph 5.3, provide in the materials submitted to the AER justification for when, and how, the step change affected, or is expected to affect:

(a) the relevant operating expenditure category

(b) the relevant capital expenditure category

(c) total operating expenditure

(d) total capital expenditure.

The step change is expected to affect total operating expenditure in each year of the next access arrangement period.

The step change is not expected to affect any category of capital expenditure. It is not expected to affect total capital expenditure.

5.6 For each step change listed in response to paragraph 5.3, provide in the materials submitted to the AER the process undertaken by Amadeus to identify and quantify the step change; and the cost benefit analysis that demonstrates Amadeus proposes to address the step change in a prudent and efficient manner, including:

(a) the timing of the step change

(b) if Amadeus considered a 'do nothing' option, evidence of how Amadeus assessed the risks of this option compared with other options.

Amadeus has quantified the step change based on actual historical costs of other audits, of similar scale, undertaken by independent auditors.

If the AER issues a regulatory information notice requiring the audit of historical financial information, Amadeus has a legal obligation to

comply with the notice. As a prudent service provider, Amadeus has not considered a "do nothing" option. Amadeus has not carried out a cost-benefit analysis of possible – non-compliant – alternatives.

5.7 If the step change was due to a change in a regulatory obligation or requirement provide in the materials submitted to the AER:

(a) an explanation of any variations or exemptions granted from a regulatory obligation or requirement during the previous access arrangement period or the current access arrangement period

(b) any compliance audits conducted during the previous access arrangement period or the current access arrangement period.

The step change which Amadeus proposes is due to an expected change in a regulatory obligation as explained paragraphs 5.1 and 5.2 above.

5.8 For each step change listed in response to paragraph 5.7, provide in the materials submitted to the AER, with reference to specific clauses of the relevant legislative instrument(s), the:

(a) previous regulatory obligation or requirement

(b) how the changed regulatory obligation or requirement is driving the step change.

The step change which Amadeus proposes is a result of Amadeus expecting that the AER will continue to use its powers under Part 1 of Division 4 of the NGL to obtain audited historical financial information of the type required by the historical reporting regulatory information notice issued to Amadeus on 1 April 2020.

Category specific operating expenditure

5.9 For all category specific forecasts in forecast operating expenditure provide in the materials submitted to the AER:

(a) a description of the category specific forecast

(b) the process undertaken to identify and quantify the category specific forecast

(c) an explanation of why the efficient costs of the category specific forecast is not provided by other aspects of the operating expenditure forecast including, for example, base operating expenditure, output growth, real price growth or forecast productivity change

(d) an explanation of why the category specific forecast is required to contribute to a total forecast operating expenditure that reasonably reflects the criteria set out in r. 91(1) of the NGR.

Category specific forecasts

Amadeus has included three category specific forecasts in its forecast of operating expenditure for the next access arrangement period. The three category specific forecasts are for:

- in-line inspection costs
- excavation costs
- corporate costs.

In-line inspection of the AGP is an activity carried out on a cycle of 10 years (with one section, in soil conditions more conducive to pipeline corrosion, inspected every 7 years). Inspection is in accordance with a pipeline integrity management plan which derives from Part 3 of AS 2885, the Australian standard for the operation and maintenance of gas and petroleum pipelines.

In-line inspection uses a remotely controlled inspection tool (an "intelligent pig"), which is run through the pipeline to collect data on its internal condition, and on the thickness of the pipe (allowing the identification of damaging sites of corrosion and metal loss).

Excavations are undertaken after in-line inspection to:

- validate the results of the inspection process
- repair defects in the pipe and its protective coating identified by inspection.

Corporate costs are the costs of a range of "head office functions" including:

- executive management and administration
- legal and corporate affairs
- finance: treasury, accounting and tax
- information and communications technology services
- external relations.

The costs incurred by APA, at group level, in providing these corporate functions are costs attributable to the provision of services using the group's operating assets, which include the AGP.

Identification and quantification

In-line inspection of a gas transmission pipeline, and analysis of the inspection data, are technically complex activities. They are carried out by a small number of specialist firms, which operate in a global market. Amadeus estimates its costs for in-line inspection from the historical costs of inspections recently carried out by these specialist firms on other APA Group pipelines.

No excavation is scheduled during the next access arrangement period, and no estimate for excavation costs has been included in forecast operating expenditure.

APA allocates corporate costs across its operating assets. The allocation is based on the revenue share of each asset. Revenue allocation means that corporate costs attributable to a particular asset can vary from year to year depending on the financial performance of group assets.

AGP corporate costs have been estimated as the corporate costs allocated to the AGP by allocating APA Group corporate costs to the AGP on the basis of revenues earned. Corporate costs forecast for the next access arrangement period have been based on the corporate costs attributed to the AGP during the current access arrangement period.

The efficient costs of the category specific activities are not provided by other aspects of the operating expenditure forecast. Because of their non-recurrent nature, they have been specifically excised from base operating expenditure.

Each of the three category specific activities for which cost have been forecast is a discrete and identifiable category of activity undertaken by a prudent service provider. These activities are expected to be undertaken irrespective of whether there is any output growth (Amadeus has forecast none), and they not related to relative price changes, or to changes in the productivity of existing operating and maintenance routines.

Requirement for category specific forecasts

In-line inspection is critical to maintaining the integrity of a gas transmission pipeline. It is essential to ensuring continued pipeline operation at the (high) pressures which sustain the capacity for the provision of gas transportation services, and is essential to ensuring the safety of employees and the public in the vicinity of the pipeline.

Periodic in-line inspection, in accordance with recognised industry standards, is undertaken by a prudent transmission pipeline service provider acting efficiently, in accordance with accepted good industry practice.

If Amadeus had included in its forecast of operating expenditure for the next access arrangement period forecast excavation costs, those costs would have been similarly required for sustaining pipeline capacity for the provision of gas transportation services, and for ensuring the safety of employees and the public. The excavations would have been in accordance with recognised industry standards, is undertaken by a prudent transmission pipeline service provider

acting efficiently, in accordance with accepted good industry practice.

The provision of gas transportation services to pipeline users and, ultimately, the supply of gas to consumers, require both physical assets and organisations to manage the development, operation and maintenance of those assets. Without organisations, there can be no provision of natural gas services for the long term interests of consumers of natural gas.

Amadeus's corporate costs are organisational costs incurred to provide pipeline services using the AGP.

Within APA Group, budgets prepared for corporate functions, and expenditures made against those budgets, are subject to Board review and approval. The Board must act in the interests of shareholders and, in reviewing and approving the costs of corporate functions, is concerned to ensure that both the budgets, and the costs subsequently incurred against those budgets, are not excessive. The costs subsequently incurred are then subject to the scrutiny of external audit. The requirements of corporate governance act to ensure that corporate costs are prudent and efficient.

Furthermore, revenue based allocation ensures that only a portion of corporate costs is allocated to the AGP. There is an efficiency gain to Amadeus from its being part of a larger corporate group.

The corporate costs which Amadeus has included in the forecast of operating expenditure for the next access arrangement period are those that would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

6 Forecast price changes

6.1 Identify in the materials submitted to the AER, the labour and material price changes proposed in the estimation of the forecast capital expenditure and the forecast operating expenditure.

Forecasts of capital expenditure for the next access arrangement period were initially prepared late in 2019 and early in 2020. Amadeus has assumed that the forecasts were initially made at December 2019 prices.

For input into the Post-tax Revenue Model, these expenditures at December 2019 prices must be recast to June 2021 prices. For this recasting to June 2021 prices, Amadeus has applied a single measure of price inflation to the labour and materials components of these expenditures. All labour and materials components of forecast capital expenditure, which were initially forecast at December 2019 prices, have been increased by a factor of 1.0098 to recast them to June 2021 prices.

This factor has been calculated from the forecasts of CPI inflation in the Reserve Bank of Australia Statement on Monetary Policy issued early in May 2020. Results from the calculation are set out in Table 12.

Table 12: Price inflation: December 2019 to June 2021

	Dec-19	Jun-20	Dec-20	Jun-21
RBA year on year forecast of CPI inflation		-1.00%	0.25%	2.75%
Inflation index: base Dec-2019	1.0000	0.9950	0.9962	1.0098

Forecast operating expenditure for the next access arrangement period must, similarly, be expressed in June 2021 prices for input into the Post-tax Revenue Model. Again, Amadeus has applied a single measure of price inflation to all expenditure components.

Amadeus has used as the measure of price inflation the CPI, All Groups Weighted Average Eight Capital Cities, published by the Australian Bureau of Statistics (ABS Catalogue 6401.0), for the period

from June 2016 to June 2019. The CPI series has been extended, using the Reserve Bank of Australia forecast of CPI inflation shown in Table 12 above, to June 2021.

The calculations are set out in the spreadsheet model, Amadeus-OPEX model-1_July_2020-public.xlsm, which is Attachment 5 to the Reset RIN response.

Amadeus has proposed, in addition to the application of single measure of price inflation to the labour and materials components of forecast capital expenditure and forecast operating expenditure, a real increase in the labour component of operating expenditure. This real increase is discussed in paragraph 4.5 above.

6.2 Provide in the materials submitted to the AER:

(a) the model(s) used to derive and apply all price changes assumed in the estimation of the forecast capital expenditure proposal and the forecast operating expenditure proposal, including any proprietary model(s) provided by a third party

(b) in relation to labour escalators, a copy of the current Enterprise Agreement or equivalent agreement

(c) evidence that the price measures explain those cost changes which are attributed to price changes, including evidence of any materials price forecast method which explains the historical change in the price of materials purchased by network service providers.

No model has been developed to derive and apply price changes assumed in the estimation of forecast capital expenditure.

Amadeus has provided, as Attachment 5 to the Reset RIN response, the model it has used to apply all price changes in the estimation of proposed forecast operating expenditure.

No current Enterprise Agreement or equivalent agreement has provided a basis for determining labour cost escalation, and no copies of agreements are provided with the Reset RIN response.

6.3 Explain in the materials submitted to the AER:

(a) the methodology underlying the calculation of each price change, including sources, data conversions, the operation of any models provided under paragraph 6.2(a) and the use of any assumptions, such as lags or productivity gains

(b) whether the same price changes have been used in developing both the forecast capital expenditure proposal and forecast operating expenditure proposal

(c) if the response to paragraph 6.3(b) is no, why it is appropriate for different expenditure escalators to apply.

The way in which Amadeus has applied price changes in forecasting capital expenditure and forecasting operating expenditure for the AGP for the next access arrangement period, and the sources of the data used, have been discussed above. The application of these price changes is set out in the capital expenditure model, which is Attachment 4 to the Reset RIN response, and in the operating expenditure model, which is Attachment 5.

The same price changes have been used in developing the proposed forecast capital expenditure and the proposed forecast operating expenditure (but no real labour price change has been applied to the labour component of capital expenditure, or to the category specific components of operating expenditure.

6.4 If an agreement provided in response to paragraph 6.2(b) is due to expire during the next access arrangement period, explain in the materials submitted to the AER the progress and outcomes of any negotiations to date to review and replace the current agreement.

No agreement has been provided in response to paragraph 6.2(b).

7 Interaction between CAPEX and OPEX

7.1 Identify in the materials submitted to the AER any material interactions between Amadeus' forecast conforming capital expenditure and forecast operating expenditure.

Forecast conforming capital expenditure for the AGP can be categorised as follows:

- replacement of obsolete items, for which parts are no longer available:
  - cathodic protection unit upgrade program
  - remote terminal unit replacement
  - mainline valve actuators upgrade program
- end of life replacements:
  - solar PV panel upgrades
  - battery charger upgrade program
  - battery replacement
  - Wizard (pneumatic) valve controller upgrade program
  - motor vehicles
- replacement of failed items:
  - cathodic protection ground bed replacements
  - heat shrink sleeve upgrade program
  - hazardous area equipment upgrades
- new equipment:
  - new cathodic protection sites

In each case, specific components within an existing, larger technical system are to be replaced, upgraded or extended (new cathodic protection sites). This replacement, upgrading or extension of specific components, rather than replacement, upgrading or extension of the larger technical systems of which the components

are parts, limits the scope for material interaction between forecast conforming capital expenditure and forecast operating expenditure.

When components are replaced, consideration is given to the maintenance requirements of the replacement components. However, without changes to the larger technical systems in which these components are parts, there is little scope to use the capital replacement process to materially reduce operating expenditure, or to avoid the capital cost associated with obsolescence or component failure by incurring additional operating – maintenance – expenditures.

7.2 Explain in the materials submitted to the AER how these interactions have been taken into account when developing forecasts of capital expenditure and operating expenditure, and otherwise in providing responses to items under paragraphs 5 and 6.

No material interaction between forecast conforming capital expenditure and forecast operating expenditure has been taken into account when developing forecasts of capital expenditure and operating expenditure.

Capital Base and Tax Reporting

8 Capital Base

8.1 Provide Amadeus' calculation of the capital base using the AER's RFM and PTRM which are to be submitted as part of the access arrangement proposal, including Amadeus' calculation of the opening and closing capital base for each regulatory year of the current access arrangement period and next access arrangement period.

Following a Final Decision on 7 April 2020, the AER published, in accordance with NGR r. 75A, two financial models:

- Gas Transmission Service Provider Roll Forward Model, version 1
- Gas Transmission Service Provider Post-tax Revenue Model, version 1.

If the AER publishes a financial model under r. 75A, a service provider must use the model.

Amadeus has used the AER's Gas Transmission Service Provider Roll Forward Model, version 1, to calculate the capital base for each regulatory year of the current access arrangement period.

Amadeus has used the AER's Gas Transmission Service Provider Post-tax Revenue Model, version 1, to calculate the capital base for each regulatory year of the next access arrangement period.

The Roll Forward Model and the Post-tax Revenue Model for the AGP are attachments to the Reset RIN response.

Attachment 2 – Amadeus-Gas Transmission Roll Forward Model-1_July_2020-public – is the AER's Gas Transmission Service Provider Roll Forward Model, version 1, with the required input for the AGP.

Attachment 3 – Amadeus-Gas Transmission Post-tax Revenue Model-1_July_2020-public – is the AER's Gas Transmission Service Provider

Post-tax Revenue Model, version 1, with the required input for the AGP (**Post-tax Revenue Model**).

8.2 If Amadeus proposes to change the underlying methods in the AER's RFM and/or PTRM compared with the current access arrangement's AER final decision RFM and/or PTRM for the calculation referred to in paragraph 8.1, describe in the materials submitted to the AER the reasons for the changes.

Amadeus does not propose to change the underlying methods in the AER's Gas Transmission Service Provider Roll Forward Model, version 1, or in the AER's Gas Transmission Service Provider Post-tax Revenue Model, version 1.

8.3 If the opening value of the capital base as at the start of the next access arrangement period is proposed to be adjusted because of re-use of redundant assets or exclusion of redundant assets, provide details in the materials submitted to the AER including relevant supporting information used to calculate that adjustment value.

No adjustment to the opening capital base, for the re-use of redundant assets, or for the exclusion of redundant assets, is proposed for the start of the next access arrangement period.

9 Depreciation Schedules

9.1 Provide in the materials submitted to the AER Amadeus' calculation of the depreciation amounts for the relevant gas transmission pipeline for each regulatory year of:

(a) the current access arrangement period using the AER's RFM, which is to be submitted as part of the access arrangement proposal

(b) the next access arrangement period using the AER's PTRM, which is to be submitted as part of the access arrangement proposal.

Amadeus's calculations of depreciation for the AGP for each regulatory year in the current access arrangement period are in the Roll Forward Model for the AGP, which is provided as Attachment 2 to the Reset RIN response.

Amadeus's calculations of depreciation for the AGP for each regulatory year in the next access arrangement period are in the Post-tax Revenue Model for the AGP, which is provided as Attachment 3 to the Reset RIN response.

9.2 If Amadeus proposes to change the underlying depreciation methods in the AER's RFM and PTRM compared with the current access arrangement's AER final decision RFM and PTRM for the calculations referred to in paragraph 9.1, describe in the materials submitted to the AER the reasons for the changes.

Amadeus does not propose to change the underlying depreciation methods in the AER's Gas Transmission Service Provider Roll Forward Model, version 1, or in the AER's Gas Transmission Service Provider Post-tax Revenue Model, version 1.

9.3 For the standard asset lives applied in the PTRM, identify any changes from the standard asset lives approved in the AER's final decision for the current access arrangement for existing asset classes. Explain in

the materials submitted to the AER the reason/s for the change and provide relevant supporting information.

No change has been made to the standard asset lives applied in the Post-tax Revenue Model from the standard asset lives approved in the AER's final decision for the current access arrangement.

9.4 For any proposed new asset classes, explain the reason/s for using these new asset classes and provide in the materials submitted to the AER the relevant supporting information on their proposed standard asset lives.

Amadeus has proposed, as a new asset class in the Post-tax Revenue Model, the asset class Leased assets.

The asset value recorded as leased assets is the capitalised value of the future lease payments associated with the right-of-use leases listed in *Table 13*.

Table 13: AGP right-of-use leases ($ nominal)

	Lease start	Lease end	Value at 1/07/2019 $	Days to termination
Crown Lease 626 (16 Georgina Crescent Palmerston)	12/12/2011	11/12/2032	946,664	4,913
Lease 628	12/12/2011	11/12/2032	124,814	4,913
Lease 631	12/12/2011	11/12/2032	185,399	4,913
Lease 723	12/12/2011	11/12/2032	47,379	4,913
Lease 913	12/12/2011	11/12/2032	29,806	4,913
Lease 1461	12/12/2011	11/12/2032	12,810	4,913
Access lease				
Else Station (Mangarrayi)	1/05/1999	31/05/2034	270,056	5,449
Muckaty	1/03/1997	30/04/2032	187,548	4,688
Wubalawun	1/12/1992	31/01/2036	200,167	6,059
Palm Valley Darwin Pipeline	1/07/2019	30/04/2032	2,030,792	4,688
Value weighted average remaining duration (days)				**4,882**

From 1 July 2019, Amadeus has applied Australian accounting standard AASB 16, Leases, in respect of these leases, and has reported the capitalised value of the future lease payments as a liability in respect of which depreciation and interest on the liability are reported annually.

In the Amadeus Roll Forward Model (Attachment 2 to the Reset RIN response), the capitalised value of Crown Lease 626 was added to the value of assets in the class Buildings in 2019-20. The capitalised values of the other leases were added to the asset class Pipeline in the same year. This allowed the capitalised value of the lease assets to be rolled forward from 1 July 2019 for inclusion in the capital base at the start of the next access arrangement (1 July 2021).

The asset classes Buildings and Pipeline have, at 1 July 2021, remaining lives of 24.3 years and 58.9 years, respectively. These remaining lives are much longer than the remaining durations of the leases. Forecasts of the depreciation and interest made over these long periods would not be the best forecasts which could be made in the circumstances for the purpose of including the lease costs in the total revenue.

All of the right-of-use leases have similar durations, and their weighted average remaining duration at 1 July 2019 was 13.4 years (see *Table 13*). A better forecast of depreciation and interest would be obtained by creating, in the Post-tax Revenue Model, a new asset class with a remaining life of 11.4 years (from 1 July 2021).

Amadeus has assigned to this new asset class, the written down values of the capitalised lease values which were included in Buildings, and in Pipelines, in 2019-20. The amounts included in the new asset class were removed from the written down values for asset classes Buildings and Pipelines. The amounts are shown in Table 14, which also shows the corresponding tax asset values.

No standard asset life has been proposed.

Table 14: AGP leased assets ($m, nominal)

		Opening Asset Value (Partially As Incurred) 1-Jul-21	Opening Asset Value (As Commissioned) 1-Jul-21	Opening Tax Asset Value 1-Jul-21
PTRM input (from RFM) with capitalised leased asset values included in Pipelines and Buildings				
Pipelines	$m	84.656	84.930	21.634
Buildings	$m	4.348	4.348	1.294
	$m	89.004	89.278	22.928
PTRM input (from RFM) with capitalized leased asset values excluded				
Pipelines	$m	81.496	81.770	18.699
Buildings	$m	3.380	3.380	0.371
Difference: written down value of lease assets				
Pipelines	$m	3.160	3.160	2.934
Buildings	$m	0.968	0.968	0.923
	$m	4.128	4.128	3.857
PTRM input with new asset class - leased assets				
Pipelines	$m	81.496	81.770	18.699
Buildings	$m	3.380	3.380	0.371
Leased assets	$m	4.128	4.128	3.857
	$m	89.004	89.278	22.928

9.5 If existing asset classes approved in the AER's final decision for the current access arrangement are proposed to be removed at the start of the next access arrangement period and their residual values are to be reallocated to other asset classes, explain in the materials submitted to the AER the reason/s for the change and provide relevant supporting information. This should include a demonstration of the materiality of the change on the forecast depreciation allowance.

No existing asset class approved in the AER's final decision for the current access arrangement is proposed to be removed at the start of the next access arrangement period.

9.6 Describe in the materials submitted to the AER the method used to depreciate existing asset classes as at 1 July 2021 and provide

supporting calculations. This may include calculations to estimate remaining asset lives.

The method used to depreciate existing asset classes as at 1 July 2021 is the indexed straight line method of calculating regulatory depreciation used in the AER's Gas Transmission Service Provider Post-tax Revenue Model, version 1. That model, with the required input for Amadeus, is provided as Attachment 3 to the Reset RIN response. Supporting calculations are set out, in full, in the model.

9.7 Explain in the materials submitted to the AER the approach Amadeus used to forecast its immediate expensing capital expenditure for the next access arrangement period, as provided in the access arrangement proposal PTRM.

Forecast capital expenditures at project level were reviewed, and projects with expenditures which had previously been allowed for immediate expensing for tax purposes were identified. Forecast expenditures on those projects were taken as forecasts of immediate expensing capital expenditure for the next access arrangement period, and were used in the Post-tax Revenue Model.

The forecast of immediate expensing capital expenditure is summarised in Table 15 below.

Table 15: Immediate expensing capital expenditure ($, real Jun-2021)

		2021-22	2022-23	2023-24	2024-25	2025-26
Battery Charger upgrade	$m	0.026	0.101	0.020	0.000	0.000
Battery Replacements	$m	0.081	0.018	0.088	0.100	0.135
Heatshrink Sleeve upgrades	$m	0.258	0.258	0.258	0.258	0.252
For immediate expensing	**$m**	**0.365**	**0.377**	**0.366**	**0.357**	**0.388**

All of the immediate expensing capital expenditures shown in Table 15 map to a single asset class, Meter Station, in the Post-tax Revenue Model.

9.8 The AER's PTRM applies the diminishing value (DV) method for tax depreciation purposes to all new depreciable assets except for certain assets. Where Amadeus proposes capital expenditure associated with buildings and in-house software to be exempted

from the DV method of tax depreciation, please confirm that the proposal satisfies the following requirements:

(a) buildings: capital expenditure for buildings may be depreciated using the SL method if it satisfies the definition of a capital work under section 43.20 of the Income Tax Assessment Act 1997 (ITAA)

(b) in-house software: capital expenditure for in-house software may be depreciated using the SL method if it satisfies the definition of in-house software under section 995.1 of the ITAA, and may be depreciated using the SL method, consistent with section 40.72 of the ITAA.

Amadeus has not proposed that any capital expenditures associated with buildings and in-house software be depreciated for tax purposes in ways different from the diminishing value method of tax depreciation as applied within the Post-tax Revenue model.

10 Corporate income tax

10.1 Provide in the materials submitted to the AER Amadeus' calculation of the estimated cost of corporate income tax for the next access arrangement period using Amadeus' PTRM which is to be submitted as part of the access arrangement proposal.

Amadeus has calculated the estimated cost of corporate income tax during the next access arrangement period using the Post-tax Revenue Model, which is Attachment 3 to the Reset RIN response.

10.2 Demonstrate in the materials submitted to the AER that the calculation referred to in paragraph 10.1 complies with r. 87A of the NGR.

R. 87A of the NGR requires that the estimated cost of corporate income tax (ETCt)in each regulatory year of an access arrangement period be estimated in accordance with the formula

$ETC_t = (ETI_t \times r_t)\ (1 - \gamma)$,

where:

- ETIt is an estimate of the taxable income for regulatory year t that would be earned by a benchmark efficient entity as a result of the provision of reference services if such an entity, rather than the service provider, operated the business of the service provider;
- r_t is the expected statutory income tax rate for that regulatory year t
- γ is the allowed imputation credits for the regulatory year.

This calculation is carried out in the worksheet Analysis in the Post-tax Revenue Model which is Attachment 3 to this Reset RIN response.

The estimated taxable income for each regulatory year in the next access arrangement period is calculated in row 54 of the worksheet. The estimate of tax payable on this taxable income is calculated in row 56, the using 30.0% as the expected statutory income tax rate in each regulatory year. The expected statutory income tax rate is in

cells G471 to K471 of the worksheet PTRM input, in the Post-tax Revenue Model which is Attachment 3.

The tax payable is shown in row 34 of the worksheet Analysis in the Post-tax Revenue Model.

Row 35 of the Post-tax Revenue Model shows the negative of the product of the tax payable in row 34, and the allowed value for γ. γ has been set equal to 0.585, which is the value to be given to that parameter in accordance with paragraph 27 of the AER's December 2018 Rate of return instrument

Adding the amounts in rows 34 and 35 of the PTRM, in each regulatory year, adds to total revenue:

TAX PAYABLE – γ x TAX PAYABLE

= TAX PAYABLE x (1 – γ)

= ESTIMATED TAXABLE INCOME x TAX RATE x (1 – γ)

That is, the amount added to total revenue is the amount calculated in accordance with r. 87A.

10.3 Provide in the materials submitted to the AER the details of each departure from the AER's PTRM for the calculations referred to in paragraph 10.1, and the reasons for that departure.

Amadeus has not departed from the calculation of the estimated cost of corporate income tax as carried out in AER's Gas Transmission Service Provider Post-tax Revenue Model, version 1.

10.4 Identify in the materials submitted to the AER any changes to standard tax asset lives for existing asset classes approved for the current access arrangement. Explain the reason/s for the change and provide relevant supporting information, including Federal tax laws governing depreciation for tax purposes.

No change has been made to the standard tax asset lives for existing asset classes approved for the current access arrangement.

10.5 Describe in the materials submitted to the AER the method used to depreciate existing asset classes as at 1 July 2021 for tax purposes and provide supporting calculations, if the approach differs from that in the current access arrangement's AER final decision RFM.

The method Amadeus has used to depreciate existing asset classes as at 1 July 2021 for tax purposes does not differ from that in the AER's May 2016 final decision roll forward model for the current AGP Access Arrangement.

10.6 Provide in the materials submitted to the AER Amadeus' calculation of the tax asset base for each regulatory year of the current access arrangement period and next access arrangement period using Amadeus' RFM, PTRM and/or separate tax depreciation model.

Amadeus's calculation of the tax asset base for each regulatory year of the current access arrangement period is in the worksheet Tax value roll forward in the Roll Forward Model which is Attachment 2 to the Reset RIN response.

Amadeus's calculation of the tax asset base for each year of the next access arrangement period is in the worksheet Assets of the Post-tax Revenue Model which is Attachment 3 to the Reset RIN response.

10.7 If Amadeus proposes to change the underlying methods in the AER's RFM for the calculations referred to in paragraph 10.6 describe in the materials submitted to the AER the reasons for the changes.

Amadeus does not propose to change the underlying methods in the AER's Gas Transmission Service Provider Roll Forward Model, version 1.

10.8 Identify in the materials submitted to the AER any differences in the capitalisation of expenditure for regulatory accounting purposes and tax accounting purposes. Provide reasons and supporting

calculations to reconcile any differences between the two forms of accounts.

The only difference identified by Amadeus is the immediate expensing, for tax purposes, in the next access arrangement period, of certain items of equipment which are treated as capital for regulatory accounting purposes.

Further details are provided in paragraph 9.7 above.

Network Information Reporting

11 Demand

11.1 Provide in the materials submitted to the AER:

(a) an explanation of any trends in demand and volumes over the current access arrangement period and the next access arrangement period

(b) details of the key drivers behind the demand forecasts provided in response to Workbook 1 – Reset (forecast) data, regulatory template N1. Demand

(c) any methodology and models that have been used to develop the demand forecasts

(d) any data sets used as inputs into the models

(e) any key inputs and assumptions that have been used in the models (including in relation to economic growth, user numbers and policy changes) and any associated models or data relevant to justifying these inputs and assumptions and how demand for pipeline services is differentiated

(f) an explanation of any weather normalisation models used by Amadeus and how weather data has been used, as well as an explanation as to how Amadeus' approach to weather normalisation has changed over time

(g) how the forecasting methodology used is consistent with, and takes into account, historical observations (where appropriate), including any calibration processes undertaken within the model (specifically whether the load forecast is matched against actual historical load); and

(h) an explanation of how the demand forecasts have been used to develop Amadeus' capital expenditure and operating expenditure forecasts.

11.2 Provide in the materials submitted to the AER:

(a) evidence that any independent verifier engaged has examined the reasonableness of the method, processes and assumptions in determining the forecasts and has the requisite expertise to undertake a verification of forecasts

(b) all documentation, analysis and models evidencing the results of the independent verification provided in paragraph 11.2(a).

In the following paragraphs, Amadeus details of the key drivers behind the demand forecasts provided in Workbook 1 – Reset (forecast) data, regulatory template N1. Demand. These forecasts are largely based on trends in demand and volumes over the current access arrangement period.

Demand forecasting for the AGP is relatively simple. Forecasts are derived directly from contractual and historical data, and forecasting does not use complex methods or models.

Amadeus does not apply any weather normalisation when forecasting demand.

The use of time series extending over more than 12 months takes account of any seasonal patterns in the demand data.

The forecasting method is consistent with, and takes into account, historical observations, but no explicit model calibration is required.

The forecasts have been discussed with the Amadeus Consumer Reference Group, but no independent verification has been sought.

Key inputs and assumptions, and the data sets used as inputs are described and summarised. These data sets are:

- the historical demand data reported in worksheet N1. Demand of the Regulatory Reporting Statement – Historical Information 2010-11 to 2018-19
- monthly data for 2019, sourced from Amadeus customer information systems, and summarised in the tables of this Reset RIN Response.

Key drivers behind the demand forecasts for the AGP are:

- continued use of firm transportation service under pre-existing agreements for the transportation of gas for power generation in the Northern Territory
- use of firm transportation service under pre-existing agreements for the transportation of gas to Warrego, for delivery into the Northern Gas Pipeline for onwards transportation into the East Coast gas market
- with capacity available for firm transportation service fully contracted, use of interruptible service for the transportation of gas to Warrego for delivery into the Northern Gas Pipeline for onwards transportation into the East Coast gas market.

No new capacity for firm transportation service is planned during the period 2021-22 to 2025-26. In these circumstances, the costs of the AGP are the largely fixed costs of providing the existing capacity. The costs of providing pipeline service are not dependent on the volume of gas transported and delivered. The demand forecasts provide a context for, but do not explicitly determine, forecasts of capital expenditure and operating expenditure.

Background to demand forecasting

The AGP is a transmission pipeline: user demand is principally a demand for pipeline capacity for the provision of firm transportation service. Demand for the transportation and delivery of volumes of gas derive from users' decisions to use their contracted capacities for the transportation of gas each day.

On 10 December 2019, the AER published a reference service proposal decision for the AGP. The decision required that a revised AGP Access Arrangement include, in addition to the firm service reference service, an interruptible service reference service. It recognised, at least in part, prospective user concern that all of the capacity available for the provision of firm transportation service was fully contracted to users with pre-existing agreements.

An interruptible service can be made available using any unused part of the AGP capacity which has been contracted to users with pre-existing agreements. That capacity can be made available to other users subject to recognition of rights, in the pre-existing agreements, for gas to be scheduled ahead of gas scheduled for others.[6]

The service is interruptible because users with pre-existing agreements have higher priority access to pipeline service. It is not interruptible, as is the case with interruptible services on other pipelines, because plant and equipment must be periodically withdrawn for planned maintenance, or because of unexpected plant and equipment failure.

The capacity which might be used to provide an interruptible service is capacity which, in other circumstances, could be accessed under the day-ahead auction provisions of Part 25 of the NGR.

If the day-ahead auction provisions of the NGR were in effect in the Northern Territory, auctioned contracted but un-nominated capacity

6 Like other commercially negotiated agreements, these pre-existing agreement are confidential. However, under the NGL, the AER has access to all of Amadeus's agreements for gas transportation using the AGP. The current AGP Access Arrangement (drafted and approved by the AER) recognises the existence of the pre-existing transportation agreements explicitly, in the note to section 2.1, in the gas scheduling and curtailment priorities of the terms and conditions applying to firm service (Schedule 3), and in the queuing requirements (section 6.4 of the Access Arrangement).

The note to section 2.1 of the Access Arrangement advises that there is currently no capacity available for provision of the firm service reference service. All of the capacity available for the provision of firm transportation services is utilised under pre-existing transportation agreements.

would be scheduled before any AGP interruptible service. However, a derogation has delayed auction implementation.

Under the derogation, no capacity on a gas transportation facility wholly or partly in the Northern Territory can be made available for purchase through the day-ahead auction.

The derogation ceases to apply at the discretion of the Northern Territory Minister, or on a date determined by the COAG Energy Council after the fifth anniversary of the commencement of the capacity trading reform amendments to the NGL.[7] (The capacity trading reform amendments commenced on 1 March 2019.)

Amadeus has assumed, when preparing proposed revisions to the AGP Access Arrangement, that the derogation delaying the implementation of the day-ahead auction in the Northern Territory has effect at the time of the AER's Final Decision on the revisions proposal. That is, at the time revisions to the Access Arrangement are expected to commence, the day-ahead auction for contracted but un-nominated capacity will not operate, and interruptible service, made available as a reference service, will be a viable option for prospective users.

Were the day-ahead auction to be implemented, users would have greater certainty of access to transportation service in the AGP if they sought capacity through the auction rather than contracting for interruptible service.

Trends in demand and volumes over the current access arrangement period and the next access arrangement period

Prior to January 2019, user requirements for capacity in the AGP, and the use of that capacity, were principally for power generation in the Northern Territory. Gas flowed north, from receipt points at Palm Valley, Mereenie and Ban Ban Springs to Darwin, into the Channel Island Power Station, and into the Wickham Point Pipeline for transportation to the Weddell Power Station. These power stations

7 National Gas (South Australia) Regulations, regulation 17.

(with generating capacities of 310 MW and 129 MW, respectively), and smaller stations at Pine Creek (26.6 MW) and Katherine (34.7 MW), supply electricity into the Darwin-Katherine transmission system.

Gas was also delivered from the AGP:

- to small power stations serving remote communities at Elliot and Tennant Creek
- into the Palm Valley to Alice Springs Pipeline for onwards transportation to Alice Springs, where it is used for power generation, and supplied into a small distribution system.

Requirements for capacity and the use of that capacity to transport gas showed some variation with levels of economic activity in the Northern Territory, but were otherwise relatively stable.

This relative stability in demand changed with interconnection of the Northern Gas Pipeline to the AGP, and commercial operation of the Northern Gas Pipeline, in January 2019.

Gas can now flow from the AGP into the Northern Gas Pipeline, at Warrego, near Tennant Creek, about 1,000 km south of Darwin. Gas delivered into the Northern Gas Pipeline flows into Queensland and, via other pipelines, into the East Coast gas market.

The capacity of the Northern Gas Pipeline is reported to be 90 TJ/d.[8] In the 12 months from January 2019, the volume of gas delivered from the AGP into the Northern Gas Pipeline averaged 77.1 TJ/d (see Table 17 below). This volume was approximately 50% of the total volume of gas transported in the AGP.

The volume of gas transported to Warrego, and delivered into the Northern Gas Pipeline, exceeded the total volume which Central Australian gas producers delivered into the southern part of the AGP, at Palm Valley and Mereenie.

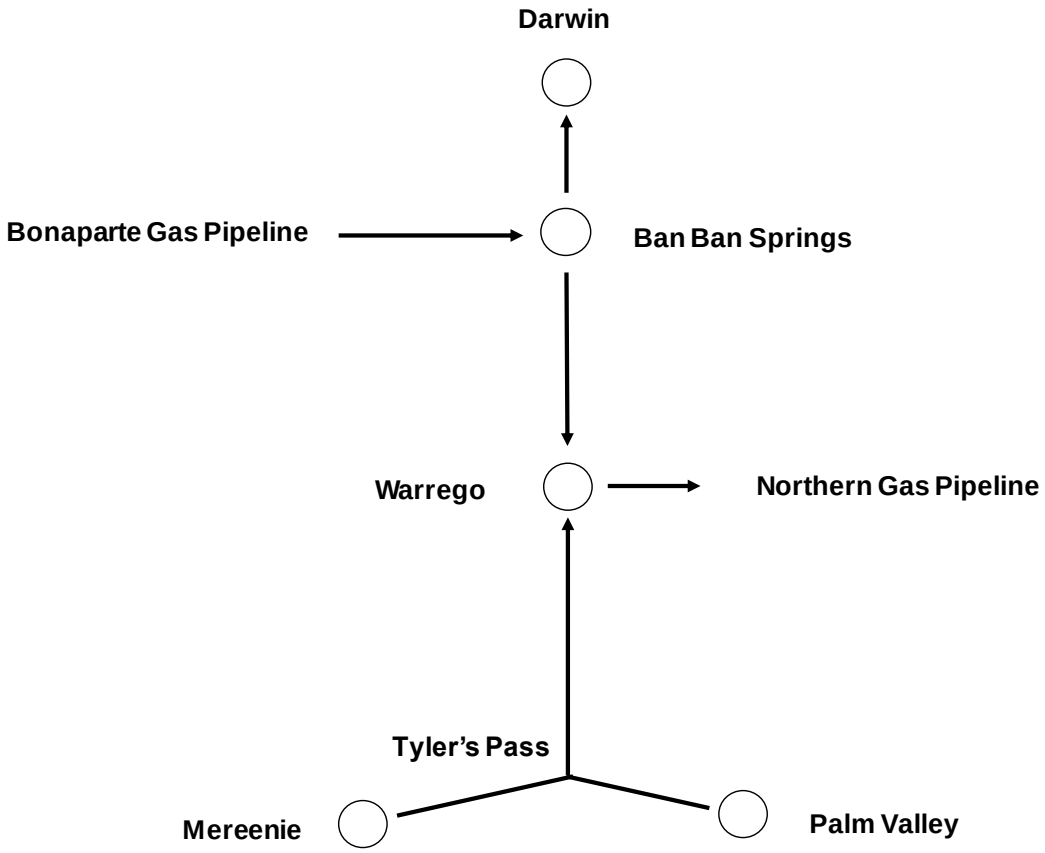
8 https://www.aemo.com.au/energy-systems/gas/gas-bulletin-board-gbb/data-portal.

The direction of gas flow in the central section of the AGP has reversed since January 2019.

Gas received into the AGP, from the Bonaparte Gas Pipeline, at Ban Ban Springs, about 175 km south of Darwin now flows north, to Darwin, and south, to Warrego and into the Northern Gas Pipeline.

Gas flows in the AGP, after January 2019, are shown in Figure 4.

Figure 4: AGP gas flows after January 2019



Interconnection with the Northern Gas Pipeline has segmented the capacity of the AGP.

Pressure reduction facilities at Ban Ban Springs ensure that gas flowing from the relatively high pressure Bonaparte Gas Pipeline is received into the AGP at no more than 9,650 kPa, which is the maximum allowable operating pressure of the AGP mainline.

(Raising pressure above the maximum allowable operating pressure risks rupturing the pipe.)

With this maximum allowable operating pressure, and assuming steady state flows, gas flow into the AGP at Ban Ban Springs has an upper limit of approximately 108 TJ/d. However, transient flows and pressure losses in the pressure reduction facilities, limit the capacity to a practical maximum of about 104 TJ/d.

The capacity of the Northern Gas Pipeline is sustained with AGP gas deliveries to Warrego at pressures above 5,000 kPa. Gas flow modelling has shown that, with a maximum pressure differential of 4,650 kPa between Ban Ban Springs and Warrego, the maximum capacity of the AGP to transport gas south, to the Northern Gas Pipeline interconnection, is approximately 50.4 TJ/d.

The results of the gas flow modelling are from the APA internal report which is provided as Attachment 6 – Amadeus-Capacity assessment report-1_July_2020-CONFIDENTIAL – to the Reset RIN response.

The same gas flow modelling has shown that the maximum capacity of the AGP for gas transportation north to Darwin cannot exceed 91.0 TJ/d. However, if the maximum allowable operating pressure is not to be exceeded, additional gas cannot be received into the AGP at Ban Ban Springs. Furthermore, with gas now flowing from Ban Ban Springs south to Warrego, additional gas from Palm Valley and Mereenie cannot physically flow north to Darwin. With a maximum capacity of 50.4 TJ/d to flow gas south to Warrego, and a maximum capacity for the receipt of gas at Ban Ban Springs of 104.0 TJ/d, the capacity of the Ban Ban Springs – Darwin segment of the AGP is restricted to 53.6 TJ/d.

Although the maximum allowable operating pressure of the pipeline between Mereenie and Tyler's Pass is 10,150 kPa, the maximum pressure at which the AGP can be operated between Palm Valley and Tyler's Pass, and north of Tyler's Pass, is 9,650 kPa. Gas flow modelling has shown that, with a maximum pressure differential of 4,650 kPa between Tyler's Pass and Warrego, the maximum capacity

of the AGP to transport gas north from Palm Valley and Mereenie, to Warrego and the Northern Gas Pipeline, is approximately 61.0 TJ/d.[9]

The segment capacities noted above have been used to derive the nameplate rating of the AGP.

The nameplate rating of a transmission pipeline is the maximum daily capacity of the facility under normal operating conditions (NGR, r. 141(2)).

The nameplate rating of the AGP is its maximum daily capacity to provide firm transportation service under the pipeline's normal operating conditions. Under the operating conditions in effect since interconnection with the Northern Gas Pipeline in January 2019, the maximum daily capacity of the AGP to provide firm transportation service has been 165.0 TJ/d.[10]

The AGP nameplate rating is segmented in the way shown in Table 16.

Table 16: AGP nameplate rating

Pipeline segment		Capacity
Ban Ban Springs - Darwin	TJ/d	53.6
Ban Ban Springs - Warrego	TJ/d	50.4
Mereenie, Palm Valley - Warrego	TJ/d	61.0
Nameplate rating	**TJ/d**	**165.0**

This segmentation of the capacity of the AGP has the implications for the availability of capacity for the firm service reference service explained below.

9 This is the maximum capacity if all gas were to flow from Mereenie. If gas were supplied from Palm Valley, there would be a reduction in Mereenie lateral capacity: I TJ/d supplied from Palm Valley would reduce the capacity of the Mereenie lateral by around 0.5 TJ/d (the lateral is longer than the segment of the mainline between Palm Valley and Tyler's Pass, and has smaller diameter).

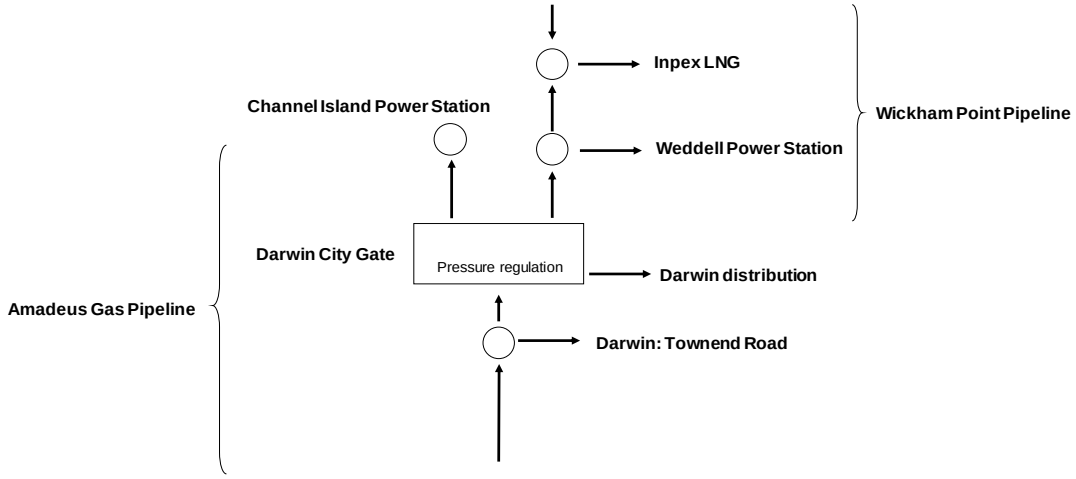
10 https://www.aemo.com.au/energy-systems/gas/gas-bulletin-board-gbb/data-portal.

Pipeline capacity inputs and assumptions

Some 123 TJ/d of pipeline capacity is contracted, under pre-existing agreements, for the provision of firm transportation service to Darwin (to delivery points at Channel Island, Wickham Point Pipeline, and Darwin City Gate).[11]

The Darwin delivery points are shown in Figure 5.

Figure 5: Darwin delivery point schematic



With a maximum capacity of 53.6 TJ/d available for transportation north from Ban Ban Springs, there is no capacity available for the provision of the firm service reference service between Ban Ban Springs and Darwin.

[11] The rights to capacity contracted under pre-existing agreements include rights to capacity at delivery points. The right to capacity at a delivery point is distinct from, and may exceed, the transportation capacity of a pipeline, which is the capability of the pipeline to transport gas between a receipt point and the delivery point.

Gas delivered into the AGP at Ban Ban Springs which flows south must be used to meet the requirements of end-users at the following locations:

- Pine Creek: gas is delivered into power generation for supply of electricity to the local township and into the Darwin-Katherine transmission system
- Katherine: gas is delivered into power generation for supply of electricity to Katherine and into the Darwin-Katherine transmission system
- Daly Waters: gas is delivered into the McArthur River Gas Pipeline for transport to Glencore's zinc, lead and silver mining operations at McArthur River
- Elliot: gas is delivered into power generation for supply of electricity to the local township.

Users with pre-existing agreements for firm transportation services have rights to maximum capacities at these four delivery points which total 25.8 TJ/d.

With a maximum capacity for gas transportation south from Ban Ban Springs of approximately 50.4 TJ/d, the remainder of the capacity available, 24.6 TJ/d, can be used for firm service transportation south to Warrego, and into the Northern Gas Pipeline.

Gas flowing north in the AGP, from Palm Valley and Mereenie, must be used to meet the requirements of end-users:

- on the Tanami Gas Pipeline: the Tanami Gas Pipeline, which interconnects with the AGP at Tanami Road, transports gas to gold mining operations in the Tanami Desert[12]
- at Tennant Creek: gas is delivered into power generation for supply of electricity to the local township and nearby mining operations.[13]

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12 AGP gas deliveries into the Tanami Gas Pipeline commenced in February 2019.

13 Gas flowing north from Palm Valley must also meet the requirements of end users on the Palm Valley to Alice Springs Pipeline. This pipeline connects into the AGP approximately

Users with pre-existing agreements for firm transportation services have rights to maximum capacities at these two delivery points which total 16.1 TJ/d. With a maximum capacity for gas transportation north from Tyler's Pass of approximately 61.0 TJ/d, the capacity remaining for firm transportation north to Warrego is 44.9 TJ/d.

Users with pre-existing agreements for firm transportation services have contracted capacity at Warrego of 80.0 TJ/d, implying that capacity for gas transportation to Warrego, south from Ban Ban Springs (24.6 TJ/d) and north from Mereenie and Palm Valley (44.9 TJ/d), is fully contracted.

Effectively, all of the capacity which might be used to provide firm service in the AGP is fully contracted by users with pre-existing agreements for firm transportation services. None of these agreements is expected to terminate during the access arrangement period, and Amadeus expects the capacity to remain fully contracted.

No pipeline expansion assumed

If a new user requires firm service, the capacity of the AGP will have to be expanded to provide that service.

There is, at the present time, considerable uncertainty around future demand for pipeline services provided using the AGP. There is interest in capacity, primarily for transportation to Warrego and the Northern Gas Pipeline, but those who seem interested are seeking transportation services for relatively short periods (three to five years). Market participants, including Amadeus, are waiting for greater clarity around volumes and timings of potential gas supplies from the undeveloped Beetaloo Basin. At the same time, the increase in gas prices in the East Coast market, seen since 2015, has begun to moderate. There is uncertainty about future prices for delivered gas

2.9 km from the Palm Valley receipt point. The maximum capacity north of Tyler's Pass is the capacity after gas deliveries into the Palm Valley to Alice Springs Pipeline.

in the East Coast market, and about whether gas from the Northern Territory can, in the longer term, compete effectively in that market.

Although prospective users and others have expressed interest in additional transportation service in the AGP, their interest has not yet translated into the long term commitments to capacity necessary to support pipeline expansion.

Until there is clarity around future increased demand for firm services, Amadeus cannot develop a well-defined expansion plan for the AGP. Therefore there is no expansion plan to be incorporated in the access arrangement revision proposal, and there is no associated costing for determining proposed reference tariffs.

The access arrangement revision proposal does not include any proposal for expansion of the capacity of the AGP during the access arrangement period.

Demand for pipeline capacity for firm transportation service

With the AGP fully contracted, and expected to remain fully contracted, Amadeus has forecast the demand for capacity for firm service to be 145.0 TJ/d, in each year of the access arrangement period. This is the aggregate of the capacities which users with pre-existing agreements have for the provision of firm transportation services at pipeline receipt points.

If users with pre-existing agreements make maximum use of the capacity available for firm transportation service at the Ban Ban Springs receipt point (104.0 TJ/d), they can use up to a maximum of 50.4 TJ/d to transport gas south, to Warrego. If users with pre-existing agreements use 104.0 TJ/d for transportation from Ban Ban Springs, they have capacity to flow 41.0 TJ/d north, from Palm Valley and Mereenie. Users with pre-existing agreements can, then, transport, in total, a maximum of 91.4 TJ/d to Warrego, and into the Northern Gas Pipeline.

As noted above, the capacity of the Northern Gas Pipeline is reported to be 90.0 TJ/d. The capacity of the AGP is, in these circumstances, used to the maximum extent when users with pre-existing agreements have access to capacity of 145.0 TJ/d at AGP receipt points. The segment capacities may total 165.0 TJ/d, but the utilisation of those capacities is constrained by capacity at the delivery point into the Northern Gas Pipeline at Warrego. An aggregate receipt point capacity of 145.0 TJ/d in pre-existing agreements effectively uses all of the capacity available for the provision of firm transportation service in the AGP.

Demand for the transportation and delivery of volumes of gas

The transportation and delivery of volumes of gas using the AGP, from 2011-12 to 2018-19, has been summarised in worksheet N1. Demand of the Regulatory Reporting Statement – Historical Information 2010-11 to 2018-19.

Table 17 (below) summarises transportation and delivery of volumes of gas, by month, during the 12 months from Northern Gas Pipeline interconnection in January 2019. Gas received into the AGP during the same period, is summarised, by receipt point, in Table 18.

Forecast demand for the transportation and delivery of volumes of gas using the AGP are provided in worksheet N1. Demand of the Regulatory Reporting Statement 2019-20 to 2025-26.

Table 17: AGP gas transported and delivered: average volumes: January 2019 – December 2019

		Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Average
Darwin Channel Island	TJ/d	31.1	30.3	28.2	30.2	33.4	24.7	23.8	24.9	23.5	32.0	31.9	31.3	**28.8**
Darwin City Gate (distribution system)	TJ/d	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	**0.1**
Darwin City gate (into Wickham Point Pipeline)	TJ/d	13.4	16.5	19.6	12.4	10.9	13.4	17.3	26.3	28.8	20.4	24.0	22.0	**18.7**
Darwin Townend Road	TJ/d	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	**0.2**
Darwin	TJ/d	**44.7**	**47.0**	**48.1**	**42.9**	**44.6**	**38.4**	**41.3**	**51.4**	**52.6**	**52.6**	**56.2**	**53.4**	**47.8**
Pine Creek	TJ/d	4.2	5.4	4.4	2.9	2.9	3.2	5.0	4.2	3.5	2.9	5.0	5.4	**4.1**
Katherine	TJ/d	1.1	1.1	3.0	2.0	1.5	0.7	0.7	1.9	2.4	1.8	1.4	0.9	**1.5**
Daly Waters	TJ/d	8.1	6.9	7.7	8.3	7.8	7.7	8.5	8.1	8.5	7.7	8.4	8.6	**8.0**
Elliot	TJ/d	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**
Warrego	TJ/d	76.4	70.0	76.9	83.2	84.9	82.3	63.8	81.4	72.9	80.8	76.8	76.1	**77.1**
Tennant Creek	TJ/d	1.5	1.3	1.2	1.1	1.0	0.7	0.7	0.6	0.8	1.2	1.4	1.6	**1.1**
Tanami Road	TJ/d	0.0	1.8	4.6	6.7	5.5	5.8	5.8	5.9	5.9	6.5	6.8	7.1	**5.2**
Palm Valley Interconnect	TJ/d	6.7	6.1	4.8	4.5	4.9	5.1	4.9	2.6	0.9	3.2	3.1	4.5	**4.3**
	TJ/d	**142.8**	**139.9**	**150.8**	**151.8**	**153.1**	**144.0**	**130.9**	**156.3**	**147.7**	**156.8**	**159.1**	**157.8**	**149.2**

Table 18: AGP gas received at receipt points: average volumes: January 2019 – December 2019

		Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Average
Wickham Point Pipeline[1.]	TJ/d	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	**0.0**
Ban Ban Springs	TJ/d	94.0	96.6	97.0	95.7	96.7	89.1	85.9	103.5	100.7	103.8	107.0	105.6	**98.0**
Mereenie[2.]	TJ/d	40.4	38.0	45.9	50.5	49.9	44.4	36.7	43.8	39.3	40.6	41.1	40.3	**42.6**
Palm Valley	TJ/d	7.3	7.8	7.1	6.0	8.2	11.8	9.4	10.2	8.5	11.9	12.5	12.1	**9.4**
	TJ/d	**141.7**	**142.3**	**149.9**	**152.2**	**154.8**	**145.3**	**132.0**	**157.6**	**148.7**	**156.3**	**160.5**	**157.9**	**149.9**

Notes:

1. Gas from LNG operations can be delivered, from the Wickham Point Pipeline, into the AGP, but the facility is intended only to provide emergency supplies of gas for Darwin power generation in the event of disruption of other gas supplies.
2. Total received need not be equal to total delivered. One user has contracted to park gas from Mereenie in the AGP.

Gas transported and delivered for power generation

In the 12 months from January 2019, gas delivered into Darwin (Channel Island, Darwin City Gate (distribution), Darwin City Gate (Wickham Point Pipeline) and Townend Road delivery points) averaged 47.8 TJ/d (see Table 17). The largest volumes were to Channel Island Power Station, and into the Wickham Point Pipeline for transportation to the Weddell Power Station.

In 2014-15 and 2015-16, AGP gas deliveries into the Wickham Point Pipeline were 13.4 TJ/d and 13.2 TJ/d, respectively. In 2016-17, gas deliveries were 11.8 TJ/d. Gas deliveries into the Wickham Point Pipeline subsequently increased, with gas delivered into the INPEX LNG plant at Bladin Point (which began LNG production in October 2018). In 2017-18, and in 2018-19, gas deliveries from the AGP into the Wickham Point Pipeline were, respectively, 16.7 TJ/d and 18.6 TJ/d. Gas flows to Weddell Power Station were 11.7 TJ/d and 11.8 TJ/d. Amadeus understands that gas delivered into the LNG plant has been for the commissioning of facilities at the plant, and those deliveries may not continue once commissioning has been completed.

Gas Bulletin Board data indicate an average flow of 10.6 TJ/d at the Bladin Point delivery point on the Wickham Point Pipeline during the six months to the end of December 2019. In January and February 2020, the Bladin Point flow dropped to zero. Gas deliveries from the AGP into the Wickham Point Pipeline during the six months to December 2019 averaged 23.1 TJ/d, implying an average flow to Weddell Power Station of 12.5 TJ/d.

After rising by 2.9% in 2015-16, and by 1.0% in 2016-17, gas delivered to sites generating power for the Darwin-Katherine transmission system declined by 1.2% in 2017-18, and by 5.1% in 2018-19.

The volume of gas delivered to Channel Island, and into the Wickham Point Pipeline for Weddell, increased by around 3.3% annually over the six years from 2011-12 to 2017-18. In 2018-19, it declined by 2.9%.

Gas use at Pine Creek and Katherine declined, by around 2.0% annually, from 2011-12 to 2017-18, but increased by some 12.7% between 2017-18 and 2018-19. The volumes of gas delivered at Pine Creek and Katherine were, however, much less than the volumes delivered to Channel Island and Weddell, and the 12.7% increase only partially offset the reduction in gas deliveries to the Darwin power stations.

The decline in power station gas deliveries appears to have continued during 2019.

A recent and rapid uptake of solar PV generation, displacing gas generation, may have contributed to the decline in gas use for power generation in 2018-19, but extent of the decline for that reason is difficult to quantify.

A fall in power station gas use is consistent with a fall in electricity generation accompanying a recent decline in economic activity in the Northern Territory. The decline in activity is indicated by the falls in Northern Territory gross state product and employment shown in Table 19.

Table 19: Northern Territory gross state product and employment

		2014-15	2015-16	2916-17	2017-18	2018-19
Gross State Product (chain volume)	$m	25,105	25,601	25,977	26,501	26,109
Year on year change			2.0%	1.5%	2.0%	-1.5%
Total employed (June)	'000	136.2	135.2	137.6	138.1	128.6
Year on year change			-0.7%	1.8%	0.4%	-6.9%

Sources: ABS catalogue number 5220.0, Table 8, and ABS catalogue number 6202.0, Table 10

Amadeus has forecast the volumes of gas delivered to power generation sites in 2019-20 as the actual volume from July 2019 to February 2020 (46.2 TJ/d). From 2020-21, power station gas deliveries are forecast to grow at the average rate of growth in gross state product (3.2%) as forecast by the Northern Territory Treasury for the Treasurer's *Mid-Year Report 2019*. The report was dated 18 November 2019; it preceded recession brought on by the Covid-19 pandemic.

These forecasts of gas deliveries to power generation sites expected to supply electricity into the Darwin-Katherine transmission system during the access arrangement period (Channel Island, Wickham Point Pipeline (Weddell), Pine Creek and Katherine) are shown in Table 20.

Gas transported and delivered into the Darwin distribution system

A small number of commercial and light industrial end-users of gas (currently 3) is supplied from the Darwin distribution system. There are no residential end-users in Darwin. Gas flow from the AGP into the Darwin distribution system, at Darwin City Gate, has averaged 0.1 TJ/d over an extended period. Average flow in the 12 months to the end of December 2019 was 0.1 TJ/d.

Amadeus has forecast gas deliveries into the Darwin distribution system to remain at 0.1 TJ/d during the access arrangement period.

Townend Road deliveries

Gas was delivered, via the Townend Road delivery point, to the Livingstone Beef processing facility. The facility owner, Australian Agricultural Company, curtailed and subsequently suspended operations in May 2018, leading to a fall in gas flow at Townend Road in 2018-19.

Amadeus is not aware of any intentions to re-open the beef processing facility, and has forecast gas deliveries to Townend Road to be at the 2019 average of 0.2 TJ/d during the period 2019-20 to 2025-26.

Table 20: Gas delivered to power generation sites: actual volumes to February 2020 and forecasts 2019-20 to 2025-26

		2014-15 Actual	2015-16 Actual	2016-17 Actual	2017-18 Actual	2018-19 Actual	2019-20 Jul-Feb Actual	2019-20 Forecast	2020-21 Forecast	2021-22 Forecast	2022-23 Forecast	2023-24 Forecast	2024-26 Forecast	2025-26 Forecast
Channel Island	TJ/d	30.2	32.1	33.3	33.5	30.2	27.9	27.9	28.8	29.7	30.7	31.7	32.7	33.7
Weddell	TJ/d	13.4	13.2	11.8	11.7	11.8	12.5	12.5	12.9	13.3	13.7	14.2	14.6	15.1
Pine Creek	TJ/d	5.0	5.1	5.2	4.6	4.7	4.6	4.6	4.7	4.9	5.0	5.2	5.3	5.5
Katherine	TJ/d	0.7	0.3	1.0	0.8	1.4	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.5
	TJ/d	**49.3**	**50.7**	**51.3**	**50.6**	**48.1**	**46.2**	**46.2**	**47.7**	**49.2**	**50.8**	**52.4**	**54.1**	**55.8**

Daly Waters deliveries

Expansion of operations at Glencore's McArthur River Mine resulted in increased gas use from 2015-16, and a corresponding increase in volumes delivered into the McArthur River Pipeline at Daly Waters. Over the four years from 2015-16 to 2018-19, this flow averaged 7.1 TJ/d. From January 2019 to December 2019, gas flow to the Daly Waters delivery point was 8.0 TJ/d.

Australian zinc production increased by 30% from 2017-18 to 2018-19. This increase was delivered from a small number of mines, among them, the McArthur River Mine. Production at McArthur River increased 14%. The higher level of zinc production is expected to be maintained over the next two years, sustained by new mining operations and by continued high production at McArthur River.[14]

Amadeus has therefore forecast AGP gas deliveries into the McArthur River Pipeline, at Daly Waters, to remain at around 8.0 TJ/d during the period 2019-20 to 2025-26.

Elliot deliveries

Gas transported in the AGP and delivered to Elliot is for local power generation, and has averaged 0.1 TJ/d during the eight years 2011-12 to 2018-19.

Amadeus expects this use will continue to be around 0.1 TJ/d during the period 2019-20 to 2025-26.

Warrego (Northern Gas Pipeline) deliveries – gas from Ban Ban Springs

Commencement of gas flow in January 2019 makes difficult forecasting the volume of gas transported to Warrego and delivered into Northern Gas Pipeline. The data are insufficient.

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14 Department of Industry, Science, Energy and Resources, *Resources and Energy Quarterly*, December 2019, page 114.

In the 12 months from January 2019, deliveries to Warrego and into the Northern Gas Pipeline averaged 77.1 TJ/d. In December 2019, a well-publicised agreement, for the supply of Northern Territory gas to Incitec Pivot in Brisbane, terminated. During the four months January to April 2020 gas deliveries into the Northern Gas Pipeline averaged only 59.1 TJ/d.

Amadeus understands that at least one market participant is seeking to find new buyers for the gas previously supplied under the now terminated agreement.

Amadeus is, therefore, forecasting gas deliveries at Warrego, and into the Northern Gas Pipeline, to remain at around their 2019 average of 77.1 TJ/d, at least during the period 2021-22 to 2025-26.

A part of this gas is expected to be supplied from Ban Ban Springs, and the remainder is expected to be sourced from Palm Valley and Mereenie. The "mix" will depend on the success of the various parties marketing gas received into the AGP at Ban Ban Springs, and at Palm Valley and Mereenie.[15]

If the maximum capacity for transportation south from Ban Ban Springs is fully utilised, gas deliveries from Ban Ban Springs to Warrego could be as shown in Table 21.

[15] This mix will have implications for the capacity available for the interruptible service which Amadeus is now required to provide as a reference service.

Table 21: Forecast volumes transported and delivered: Ban Ban Springs – Warrego

		2019-20 Forecast	2020-21 Forecast	2021-22 Forecast	2022-23 Forecast	2023-24 Forecast	2024-25 Forecast	2025-26 Forecast
Receipts								
Ban Ban Springs	TJ/d	91.1	92.4	93.7	95.1	96.5	98.0	99.5
Deliveries								
Darw in Channel Island	TJ/d	27.9	28.8	29.7	30.7	31.7	32.7	33.7
Darw in City Gate (distribution system)	TJ/d	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Darw in City gate (into Wickham Point Pipeline)	TJ/d	12.5	12.9	13.3	13.7	14.2	14.6	15.1
Darw in Tow nend Road	TJ/d	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Darw in	TJ/d	40.7	42.0	43.3	44.7	46.1	47.6	49.1
Ban Ban Springs gas transported south	**TJ/d**	**50.4**	**50.4**	**50.4**	**50.4**	**50.4**	**50.4**	**50.4**
Deliveries								
Pine Creek	TJ/d	4.6	4.7	4.9	5.0	5.2	5.3	5.5
Katherine	TJ/d	1.2	1.3	1.3	1.3	1.4	1.4	1.5
Daly Waters	TJ/d	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Elliot	TJ/d	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	TJ/d	13.9	14.1	14.3	14.5	14.7	14.9	15.1
Ban Ban Springs gas delivered at Warrego	**TJ/d**	**36.5**	**36.3**	**36.1**	**35.9**	**35.7**	**35.5**	**35.3**

Table 22: Forecast volumes transported and delivered: Palm Valley, Mereenie – Warrego

		2019-20 Forecast	2020-21 Forecast	2021-22 Forecast	2022-23 Forecast	2023-24 Forecast	2024-25 Forecast	2025-26 Forecast
Receipts								
Mereenie	TJ/d	42.6	42.6	42.6	42.6	42.6	42.6	42.6
Palm Valley	TJ/d	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Additional	TJ/d	0.7	0.8	1.1	1.2	1.5	1.6	1.9
Mereenie, Palm Valley	**TJ/d**	**52.7**	**52.8**	**53.1**	**53.2**	**53.5**	**53.6**	**53.9**
Deliveries								
Tennant Creek	TJ/d	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Tanami Road	TJ/d	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Palm Valley Interconnect	TJ/d	4.3	4.3	4.3	4.3	4.3	4.3	4.3
	TJ/d	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Mereenie, Palm Valley gas delivered at Warrego	**TJ/d**	**40.6**	**40.7**	**41.0**	**41.1**	**41.4**	**41.5**	**41.8**

Tennant Creek deliveries

Gas deliveries to Tennant Creek, for power generation for the local township and nearby mining operations, have been relatively stable at 1.1 to 1.2 TJ/d over the eight years from 2011-12 to 2018-19.

Generation from solar PV installations is becoming an important component of remote area electricity supplies, and could augment gas generation at Tennant Creek, lowering the use of gas delivered from the AGP. However, in December 2018, Territory Generation installed 6 MW of new gas-fired generating plant to allow future retirement of aged diesel units.

Amadeus has, in these circumstances, forecast gas deliveries to Tennant Creek to remain at around 1.1 TJ/d during the period 2019-20 to 2025-26.

Tanami Road deliveries

Gas deliveries from the AGP into the Tanami Gas Pipeline, at Tanami Road, commenced in February 2019 (see Table 17). The gas is used in gold mining operations in the Tanami Desert.

Amadeus has forecast, for the access arrangement period, deliveries to Tanami Road at the average rate during the period from 1 July to 31 December 2019 (6.6 TJ/d), but is well aware that gold mining demand is sensitive to variations in the price of gold in international commodity markets.

Palm Valley Interconnect (Alice Springs) deliveries

Gas deliveries to the Palm Valley Interconnect, for subsequent transportation to Alice Springs, have declined from 9.5 TJ/d in 2011-12 to 5.3 TJ/d in 2018-19. From January 2019 to December 2019, gas deliveries to the Palm Valley Interconnect averaged 4.3 TJ/d.

In Alice Springs, gas is supplied to about 1,100 residential and commercial users through a small distribution network. The principal use of gas in the town is in power generation.

Amadeus understands, from the gas producer, that gas from the Dingo field, south of Alice Springs, has been delivered into the Palm Valley to Alice Springs Pipeline, and into Alice Springs, and has displaced gas delivered from the AGP. Amadeus does not have visibility of gas flows in the Palm Valley to Alice Springs Pipeline.

In 2017, Territory Generation installed about 40 MW of new gas-fired generation in Alice Springs to replace generating units due for retirement. The replacement generation was also to provide support for planned renewables generation.

Territory Generation advises, on its website, that Alice Springs has a highly variable electricity load profile and a high penetration of solar PV into the network. To manage the highly variable load, 5 MW of battery storage was installed late in 2018.[16]

Amadeus does not expect the volume of gas transported to the Palm Valley Interconnect, for use in Alice Springs, to rise during the access arrangement period. Additional solar PV generation could further displace gas-fired generation, but the extent of any displacement is difficult to predict.

Amadeus has, therefore, forecast gas deliveries at the Palm Valley Interconnect to remain at their current level of 4.3 TJ/d during the period 2019-20 to 2025-26.

Warrego (Northern Gas Pipeline) deliveries – gas from Palm Valley and Mereenie

As noted above, Amadeus is forecasting total gas deliveries at Warrego, and into the Northern Gas Pipeline, to remain at around their 2019 average of 77.1 TJ/d during the access arrangement period.

If the maximum capacity for transportation south from Ban Ban Springs is fully utilised, and gas deliveries from Ban Ban Springs to

16 At https://territorygeneration.com.au/major-projects/alice-springs-energy-storage/.

Warrego are as shown in Table 21, then Warrego deliveries from Mereenie and Palm Valley could be as shown in Table 22.

Forecasts of minimum and maximum receipts and deliveries

Amadeus has forecast minimum and maximum receipts and deliveries, shown in worksheet N1. Demand of the Regulatory Reporting Statement 2019-20 to 2025-26, in the ways shown in Table 23.

Variations in volumes of gas transported by users are constrained by the maximum daily quantities and imbalance provisions of their gas transportation agreements, and by the daily nomination and scheduling of gas for transportation. The minima and maxima in Table 23 reflect unexpected variations in the operations of gas producers (receipt point minima and maxima), and unexpected variations in the operations of the end-users for whom gas is transported by users.

Capacity available for interruptible service

With a maximum capacity of 53.6 TJ/d between Ban Ban Springs and Darwin, and forecast deliveries to Darwin increasing from 40.7 TJ/d in 2019-20 to 49.1 TJ/d in 2025-26, there will be, in the Ban Ban Springs – Darwin segment of the AGP, unused contracted capacity of 12.9 TJ/d in 2019-20, falling to 4.5 TJ/d in 2025-26.

This unused contracted capacity could be used to transport, into Darwin, gas sourced from the Bonaparte Gas Pipeline. However, Amadeus understands that Bonaparte Gas Pipeline capacity to deliver gas into the AGP is currently fully contracted.

Amadeus forecasts no interruptible service in the Ban Ban Springs – Darwin segment of the AGP during the period 2019-20 to 2025-26.

Table 23: Forecasting minimum and maximum receipts and deliveries

Receipt point	Forecasting method
Ban Ban Springs	
Minimum	0
Maximum	Maximum 2018-19
Darwin City Gate (fom Wickham Point Pipeline)	
Minimum	0, emergency use only
Maximum	0, emergency use only
Mereenie	
Minimum	0
Maximum	Maximum 2018-19
Palm Valley	
Minimum	0
Maximum	Maximum 2018-19
Delivery point	**Forecasting method**
Darwin Channel Island	
Minimum	Minimum demand 2018-19
Maximum	Maximum demand 2018-19
Darwin City Gate (distribution system)	
Minimum	Minimum demand each year from 2011-12 to 2018-19 was zero
Maximum	Average of maxima 2014-15 to 2018-19
Darwin City Gate (into Wickham Point Pipeline)	
Minimum	Average of minima for 2014-15, 2015-16 and 2016-17
Maximum	Average of maxima for 2014-15, 2015-16 and 2016-18
Darwin Townend Road	
Minimum	Minimum 2018-19
Maximum	Maximum 2018-19
Pine Creek	
Minimum	Minimum 2018-19
Maximum	Maximum 2018-19
Katherine	
Minimum	Minimum 2018-19
Maximum	Maximum 2018-19
Daly Waters	
Minimum	Minimum 2018-19
Maximum	Maximum 2018-19
Elliot	
Minimum	Average of minima 2014-15 to 2018-19
Maximum	Average of maxima 2014-15 to 2018-19
Warrego (NGP)	
Minimum	Minimum 2018-19
Maximum	Maximum 2018-19
Tennant Creek	
Minimum	Average of minima 2014-15 to 2018-19
Maximum	Average of maxima 2014-15 to 2018-19
Tanami Road	
Minimum	Minimum 2018-19
Maximum	Maximum 2018-19
Palm Valley Interconnect (Alice Springs)	
Minimum	Minimum 2018-19
Maximum	Maximum 2018-19

If Bonaparte Gas Pipeline capacity is fully contracted, and if gas from Ban Ban Springs is to be delivered to Warrego using firm transportation service, possibly using the maximum capacity for transportation south (as shown in Table 21), Amadeus forecasts no interruptible service in the Ban Ban Springs – Warrego segment of the AGP during the access arrangement period.[17]

Amadeus has forecast that, on average, no capacity is available in the Ban Ban Springs – Darwin and Ban Ban Springs – Warrego segments of the AGP. In making that forecast, Amadeus has used average daily volumes of gas transported. If, on a particular day, the volume of gas to be transported is less than the average volume used by Amadeus, capacity may be available for interruptible service. Whether that capacity can be used for the provision of interruptible service will, of course, depend on whether potential users are able to contract for gas to be delivered at Ban Ban Springs to be transported in the AGP.

The capacity available for firm transportation service between Tyler's Pass and Warrego is 61.0 TJ/d, and that capacity is, as noted above, fully contracted.

During the four months to April 2020, gas deliveries to Warrego using firm transportation service available under pre-existing transportation agreements increased to 22.6 TJ/d.

If the increase in deliveries to Warrego using firm transportation service available under pre-existing transportation agreements is sustained, there is, potentially, some 38.4 TJ/d of capacity available for interruptible service in the Palm Valley, Mereenie – Warrego segment of the AGP.[18]

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17 Use of the maximum capacity is uncertain because, as noted earlier, it depends on the gas marketing activities of others.

18 A small number of users of the AGP have agreements for transportation service which is "second priority firm": the capacity is firm subject to interruption if capacity must be made available to another user with a pre-existing agreement for firm transportation service.

The capacity potentially available for the provision of interruptible service using the AGP during the period 2019-20 to 2025-26 is, then, as shown in Table 24.

AGP capacity forecast

For the setting of proposed reference tariffs for the revised AGP Access Arrangement, Amadeus has forecast demand for pipeline capacity for the provision of firm service equal to 145.0 TJ/d, the aggregate of the receipt point capacities available to users with pre-existing gas transportation agreements.

Around 38 TJ/d of capacity is expected to be available for the provision of interruptible service (Table 24), but the demand for that capacity is uncertain.

Capacity may be available, but the quantity will vary day by day. This variation in the quantity of capacity available for the interruptible service may limit the extent of the demand for that service. Not all potential end-users are likely to be able to adapt their operations to the uncertainty in gas supply brought about by uncertainty in the availability of pipeline transportation.

Amadeus has pre-existing contracts for interruptible service, and understands that at least two market participants are seeking to market gas previously delivered to fertilizer manufacturer, Incitec Pivot, in Brisbane.[19] However, Amadeus knows little about potential buyers, possible volumes, or terms and conditions of supply. Moreover, one of the market participants may have access to firm transportation capacity. In these circumstances, the volume of interruptible service which is used during the next access arrangement period will be determined by how successful each of a small number of market participants is in marketing gas. The outcome of the "contest" is inherently difficult to forecast.

[19] Gas transportation to Incitec Pivot terminated in December 2019.

Table 24: Forecast of capacity potentially available for interruptible service

		2019-20 Forecast	2020-21 Forecast	2021-22 Forecast	2022-23 Forecast	2023-24 Forecast	2024-25 Forecast	2025-26 Forecast
Ban Ban Springs - Darwin	**TJ/d**	**0.0**	**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**	**0.0**
Capacity: Tyler's Pass - Warrego	TJ/d	61.0	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	22.6
Palm Valley, Mereenie - Warrego	**TJ/d**	**38.4**	**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**	**38.4**

The volume of interruptible service which might be required by prospective users during the period 2021-2026 is, then, uncertain.

This uncertainty, and the difficulties it creates for reference tariff determination, were noted in the Reference Service Proposal for the AGP which was submitted to the AER on 31 July 2019.

Amadeus does not see the demand for the second-priority firm and interruptible services (both currently available to some users under pre-existing transportation agreements) being in excess of about 15 TJ/d during the access arrangement period.

Amadeus put this view on interruptible service to the Amadeus Consumer Reference Group on two occasions. No member of the Reference Group, which included prospective users of the interruptible service reference service, expressed a different view, either on the occasions when Amadeus put its view, or subsequently.

Incentive Schemes and Other Reporting

12 Proposed incentive mechanism

12.1 Provide in the materials submitted to the AER, for each incentive mechanism (including existing incentive mechanisms), details of the forecast revenue referable to increments for efficiency gains or decrements for efficiency losses for the next access arrangement period.

Amadeus has applied the efficiency carryover mechanism of section 8 of the AGP Access Arrangement to calculate increments for efficiency gains, and decrements for efficiency losses, for the next access arrangement period.

The calculation of these increments and decrements is provided in the worksheet ECM of the completed regulatory template Amadeus 2022-26 – Reset RIN – Workbook 3 - ECM (*Workbook 3 – OPEX incentive mechanism*).

The output from the worksheet ECM (row 65, labelled PTRM inputs) has been used, without change, as an input into the Post-tax Revenue Model for calculation of the total revenue for the next access arrangement period. The input is in row 453, Operating Efficiency Carryover Mechanism, of the PTRM inputs worksheet of the Post-tax Revenue Model.

Amadeus notes that no input is shown for Capital Expenditure Sharing Scheme in row 454 of the PTRM inputs worksheet of the Post-tax Revenue Model. There is no capital expenditure incentive mechanism for the AGP, and none is proposed.

12.2 Provide in the materials submitted to the AER, for each proposed incentive mechanism:

(a) an explanation of the operation of the proposed incentive mechanism

(b) an explanation of the rationale for the proposed incentive mechanism

(c) reference to the source documents used to derive exclusions and inclusions to calculate efficiency gains and losses for the next access arrangement period

(d) any relevant analyses or reports that support the proposed incentive mechanism.

Amadeus has retained the Efficiency Carryover Mechanism in section 8 of the AGP Access Arrangement.

No new incentive mechanism is proposed.

13 Rate of return

13.1 Amadeus is required to apply the binding Rate of Return Instrument (December 2018) for determining the rate of return in its access arrangement proposal.

In December 2018, the AER made a rate of return instrument (**Rate of Return Instrument**) which sets out the ways in which the rate of return on capital and the value of the imputation credits available under Australian taxation law are to be determined.

The Rate of Return Instrument is binding on the AER when making a full access arrangement decision, and is binding on Amadeus in the context of its submitting, for AER approval, an access arrangement revision proposal.

Amadeus has applied the binding Rate of Return Instrument when determining the rate of return in its access arrangement proposal.

13.2 The averaging periods nominated by Amadeus in accordance with the Rate of Return Instrument (December 2018) will be kept confidential by the AER.

In accordance with the Rate of Return Instrument, the risk free rate of return and the on-the-day rate of return on debt are to be calculated from current market data. Those data are to be for:

- a period of 20 consecutive trading days;
- a period which is as close as possible to commencement of the access arrangement period; and
- a period which has not commenced at the time of its nomination.

Averaging periods of 20 days, for estimation of the components of the rate of return used in the access arrangement revision proposal, and during the access arrangement period, are set out in the

document Amadeus-Averaging Periods-1_July_2020-CONFIDENTIAL, which is Attachment 7 to the Reset RIN response.

The averaging periods nominated by Amadeus in accordance with the Rate of Return Instrument are to be kept confidential by the AER.

13.3 For the purposes of assessing Amadeus' proposal we require it to nominate 'placeholder' averaging periods which will be made public and have been used to calculate an indicative rate of return in Amadeus' access arrangement proposal.

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

Amadeus has taken, as the placeholder averaging period for its indicative rate of return calculation, the period of 20 trading days to 31 December 2019.

The way in which Amadeus has calculated the indicative rate of return used in the access arrangement revision proposal is set out in the paragraphs which follow.

Rate of return

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

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

where:

- k_t is the rate of return in regulatory year t
- k^e is the rate of return on equity for the access arrangement period
- k_t^d is the rate of return on debt for regulatory year t; and

- G is the gearing ratio.

Indicative rate of return on equity

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

$$k^e = k^f + \beta \times MRP$$

where:

- k^f is the risk free rate of return for the access arrangement period;
- β (beta) is the equity beta; and
- MRP is the market risk premium.

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

The estimate of the risk free rate is 1.21%.

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

Using these values, and the asset pricing model of clause 4 of the Rate of Return Instrument, the indicative the rate of return on equity is 4.87%:

$$1.21\% + 0.6 \times 6.1\% = 4.87\%$$

Indicative rate of return on debt

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

A transition into the trailing average is required, and the first regulatory year of the transition period for the AGP is the period of 12 months from 1 July 2016.

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

$$k^d_{2021\text{-}22} = \left(5 \times k^d_{2016\text{-}17} + \sum_{i=1}^{5} k_i^d \right)$$

where

- $k^d_{2016\text{-}17}$ is 5.56%
- k_i^d, i = 1, 2, 3, are the previously updated rates of return on debt for 2017-18, 2018-19 and 2019-20, respectively, 5.09%, 4.50% and 4.26%
- k_i^d, i = 4, 5, are estimates of the on-the-day rate of return on debt for 2020-21 and 2021-22.

Amadeus has calculated the on-the-day rates of return on debt for 2020-21 and 2021-22 in the way required by clauses 10 to 22 of the Rate of Return Instrument, using data for the placeholder averaging period. The on-the-day rates are each 2.90%.

$k^d_{2021\text{-}22}$ is, then, 4.75%, and Amadeus has used this percentage as the indicative the rate of return on debt for the next access arrangement period.

Gearing

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

Indicative rate of return

Amadeus has used, as the indicative rate of return for the next access arrangement period, 4.79% (see Table 25 below).

Table 25: Rate of return

Component		Value
Rate of return on equity		
Risk free rate	k^f	1.21%
Beta	β	0.60
Market risk premium	MRP	6.1%
Rate of return on equity	$k^e = k^f + \beta \times MRP$	**4.87%** = 1.21% + 0.60 x 6.1%
Rate of return on debt		
Rate of return on debt	$k^d_{2019\text{-}20}$	**4.75%**
Gearing ratio	G	**0.6**
Rate of return	$k = k^e \times (1 - G) + k^d_{2019\text{-}20} \times G$	**4.79%** = 4.87% x (1 – 0.6) + 4.75% x 0.6

Revenue and Pricing

14 Revenues and prices for reference services

14.1 Provide in the materials submitted to the AER Amadeus' calculation of the unsmoothed and smoothed revenues, and prices for the purposes of the reference tariff variation mechanism proposed by Amadeus for the next access arrangement period using the AER's PTRM.

Amadeus has used the AER's Gas Transmission Service Provider Post-tax Revenue Model, version 1 to calculate the unsmoothed and smoothed revenues for setting the proposed reference tariffs of its access arrangement proposal.

That model also calculates the X-factors required for the reference tariff variation mechanism of the AGP Access Arrangement.

The Gas Transmission Service Provider Post-tax Revenue Model, version 1, with the required input for Amadeus, is provided as Attachment 3 to the Reset RIN response.

14.2 If Amadeus proposes to change the underlying methods in its access arrangement proposal PTRM compared with the current access arrangement AER final decision PTRM for the calculations referred to paragraph 14.1 describe in the materials submitted to the AER the reasons for the changes.

The Gas Transmission Service Provider Post-tax Revenue Model, version 1, does not include the worksheet Tariff Calculation, which was included in the Post-tax Revenue Model which the AER provided with its May 2016 final decision on proposed revisions to the AGP Access Arrangement.

Amadeus has provided, as Attachment 8 to this Reset RIN response, a Microsoft Excel spreadsheet model, Amadeus-Tariff model-1_July_2020-public, which calculates the firm service and

interruptible service reference tariffs proposed in the access arrangement revision proposal.

The principal difference between spreadsheet in Attachment 8, and worksheet Tariff Calculation, is the inclusion, in the spreadsheet, of calculations for a proposed reference tariff for the interruptible service required, by the AER's December 2019 reference service proposal decision, to be included as a reference service in the proposed revised AGP Access Arrangement.

15 Tariffs

Total revenue allocation

15.1 Provide in the materials submitted to the AER:

(a) an explanation, including any relevant calculations, of the methods or principles used to allocate relevant cost pools between the reference services and other services provided as a covered pipeline

(b) for rebateable services, provide:

(i) the reasons why the service should be treated as a rebateable service

(ii) a description of the mechanism that Amadeus will use to apply an appropriate portion of the revenue generated from the sale of rebateable services to price rebates (or refunds) to users of reference services (see r. 93 of the NGR).

Rule 93 of the NGR requires the allocation of the total revenue between reference and other services in the ratio in which costs are allocated between reference and other services.

No reference service is currently provided, and no provision of the firm service reference service is forecast for the next access arrangement period. Revisions to the Access Arrangement, approved by the AER in May 2016, assumed that the capacity used for services provided under pre-existing agreements for firm transportation service was capacity that would otherwise be used for the provision of the firm service reference service. All of the total revenue was, then, allocated to the provision of the firm service reference service, and the capacity used for the provision of firm transportation service under pre-existing agreements was assumed to be the capacity available for provision of the firm service reference service. This allowed a reference tariff to be set for the frim

service reference service. Amadeus has retained this approach in setting proposed reference tariffs for the next access arrangement period, modifying it only to recognise the AER's requirement that the revised AGP Access Arrangement include an interruptible service reference service.

For the purpose of setting proposed revised reference tariffs, Amadeus has assumed that all of the total revenue is attributable to provision of the firm service reference service and provision of the interruptible service reference service of the proposed revised AGP Access Arrangement.

Amadeus has not proposed, for the revised AGP Access Arrangement, that any service be treated as a rebateable service.

Tariffs – transmission pipelines (see r. 95 of the NGR)

15.2 For each tariff proposed by Amadeus for the next access arrangement period, in the materials submitted to the AER explain how it has been designed to:

(a) to generate from the provision of each reference service the portion of total revenue referable to that reference service

(b) as far as is practicable consistently with paragraph 15(a), to generate from the user (or class of users), to which the reference service is provided, the portion of total revenue referable to providing the reference service to the particular user (or class of users).

Rule 95 of the NGR requires that a tariff for a transmission pipeline reference service be designed to generate from provision of the reference service the portion of total revenue referable to that reference service.

The portion of total revenue referable to a particular reference service is determined by:

- allocating to each reference service costs directly attributable to that service
- allocating other costs attributable to reference services are to be allocated between those services on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the AER.

The portion of total revenue referable to providing a reference service to a particular user or class of users is determined as follows:

- allocating costs directly attributable to supplying a user or class of users to the relevant user or class
- allocating other costs between users or classes of users on a basis (which must be consistent with the revenue and pricing principles) determined or approved by the AER.

The costs of the AGP are the costs which recover the investment in the pipeline (depreciation), a return on that investment, and the costs of operating and maintaining the pipeline. The costs of operating and maintaining the pipeline are mainly the costs of planned maintenance and other scheduled activities (for example, pipeline operation). Neither the capital costs (depreciation and return), nor the operating and maintenance costs, are directly attributable to provision of either of the reference services. Neither the capital costs, nor the operating and maintenance costs are directly attributable to supplying particular users or particular classes of users.

The portion of the total revenue referable to the firm service reference service has been determined by allocating the total cost – in the case of the AGP, the total revenue – to that service in the ratio of the forecast total volume of the firm service to the total volume of all reference services (the volume of firm service, assuming a load

factor of 100% for that service, plus the forecast volume of interruptible service).

Similarly, the portion of the total revenue referable to the interruptible service reference service has been determined by allocating the total cost – the total revenue – to that service in the ratio of the forecast total volume of the interruptible service to the total volume of all reference services (the volume of firm service, assuming a load factor of 100% for that service, plus the forecast volume of interruptible service).

The allocation of costs in this way provides Amadeus with a reasonable opportunity to recover at least the efficient costs expected to be incurred in providing the firm service and interruptible service reference services. Providing Amadeus with a reasonable opportunity to recover at least its efficient costs provides effective incentives for:

- efficient investment in the AGP (the pipeline used to provide the reference services)
- the efficient provision of pipeline services.

The AER has not previously determined or approved an allocation of costs to the reference services in this way. With only one reference service, as is currently the case, no allocation between services was required.

Calculations showing the way in which Amadeus proposes to allocate costs to the reference services of the revised AGP Access Arrangement are set out in the spreadsheet model which is Attachment 8 to the Reset RIN response.

Prudent discounts (see r. 96 of the NGR)

15.3 Identify in the materials submitted to the AER all prudent discounts that Amadeus proposes for the next access arrangement period and the users to whom they will apply and explain:

(a) how each prudent discount is necessary to respond to competition or maintain efficient use of the pipeline

(b) whether, including relevant calculations, reference tariffs would be higher without the prudent discount than they would be with the prudent discount.

Amadeus has not proposed any prudent discounts in the next access arrangement period.

16 Reference tariff variations

Reference tariff variation mechanism

16.1 Provide in the materials submitted to the AER an explanation of:

(a) the proposed reference tariff variation mechanism for the next access arrangement period and the basis for any parameters used in the mechanism

(b) the administrative arrangements for periodic reviews of tariffs including the timing of notifications to the AER.

The reference tariff variation mechanism in the AGP Access Arrangement allows annual variation of the reference tariff for:

- current inflation
- a change in the rate of return on debt (as required by the Rate of Return Instrument)
- a material increase in costs attributable to one or more of a small number of specified events (including regulatory change, tax change, terrorism and natural disaster).

In the access arrangement revision proposal, Amadeus proposes retaining this mechanism. It can be applied, essentially unchanged, to vary annually both the firm service reference tariff and the interruptible service reference tariff.

In the proposed revised AGP Access Arrangement, Amadeus has:

- extended application of the reference tariff variation mechanism to the reference tariff for the interruptible service reference service
- updated the various formulae of the mechanism so that they refer to the years of next access arrangement period (and not to the years of the current period).

16.2 Identify in the materials submitted to the AER:

(a) the possible effects of the proposed reference tariff variation mechanism on Amadeus' administrative costs and, if known, the administrative costs of users or potential users

(b) all relevant regulatory arrangements Amadeus considers applicable to the relevant reference services before the commencement of the proposed reference tariff variation mechanism.

The changes which Amadeus has proposed to the reference tariff variation mechanism, if implemented, are expected to have little or no effect on Amadeus's administrative costs. Amadeus expects those changes to have little or no effects on the administrative costs of users or potential users, but does not have specific knowledge of those effects.

The only possibly relevant regulatory arrangements Amadeus considers applicable to the reference services of the proposed revised AGP Access Arrangement before the commencement of the proposed reference tariff variation mechanism are:

- the regulatory arrangements which give effect to the current AGP Access Arrangement, and the access arrangement to which those regulatory arrangements give effect
- the regulatory arrangements which give effect to the approved revised AGP Access Arrangement from the date of its approval to date of commencement of the reference tariff variation mechanism, and the approved revised Access Arrangement to which those regulatory arrangements give effect.

Cost pass through mechanism

16.3 For each cost pass through event in Amadeus' access arrangement proposal, provide in the materials submitted to the AER:

(a) a definition and description of the cost pass through event

(b) an explanation of how the cost pass through event is uncontrollable

(c) an explanation of whether the costs of the cost pass through event are already provided for through the operating expenditure or capital expenditure forecasts, the WACC (events which affect the market generally and not just the provider are systemic risk events and are already compensated through the WACC), or any other mechanism or allowance

(d) an explanation of the administrative arrangements for the cost pass through event and their relationship to other periodic reviews for other tariff variation mechanisms including the timing of notifications to the AER.

A definition and a description of each of cost pass through event are given in section 4.7.3 of the proposed revised AGP Access Arrangement.

The administrative arrangements for cost pass through events, including the timing of notifications to the AER, are set out in sections 4.7.2 and 4.7.4 of the proposed revised AGP Access Arrangement.

Variation of the reference tariffs for an approved cost pass through event is to be effected through annual application of the reference tariff variation mechanism of the proposed revised AGP Access Arrangement. The reference tariff variation mechanism is set out in section 4.7.1 of the proposed revised Access Arrangement. Administrative arrangements for the reference tariff variation mechanism are set out in sections 4.7.2 and 4.7.4.

Amadeus does not propose changing any of the cost pass through events in the current AGP Access Arrangement.

16.4 Identify in the materials submitted to the AER:

(a) the materiality threshold Amadeus proposes for cost pass through events

(b) the possible effects of the proposed cost pass through mechanism on Amadeus' administrative costs and, if known, the administrative costs of users or potential users

(c) all relevant regulatory arrangements Amadeus considers applicable to the relevant reference services prior to the commencement of the proposed cost pass through mechanism.

Amadeus does not propose any change to the materiality threshold for cost pass through events, which is set out in section 4.7.3 of the current AGP Access Arrangement, and which is reproduced in section 4.7.3 of the proposed revised Access Arrangement.

17 Non-tariff components

Non-tariff terms and conditions

17.1 Provide in the materials submitted to the AER:

(a) details of any amendments to the non-tariff terms and conditions of the access arrangement that Amadeus proposes for the next access arrangement period

(b) for each amendment identified in paragraph 17.1(a), explain the reasons for the proposed amendment.

The principal amendments proposed to the non-tariff terms and conditions of the AGP Access Arrangement provide for an interruptible service reference service in the next access arrangement period.

Proposed terms and conditions for the interruptible service reference service have been based on the terms and conditions for interruptible service in the APA standard gas transportation agreement. Alignment of the terms and conditions of the interruptible service reference service of the AGP Access Arrangement with the terms and conditions of the standard gas transportation agreement was proposed by the Amadeus Consumer Reference Group.

Amadeus has proposed the interruptible service reference service in response to the reference service proposal decision for the AGP issued by the AER on 10 December 2019. That decision required that a revised AGP Access Arrangement include, in addition to the firm service reference service, an interruptible service reference service.

Other changes which Amadeus has proposed to the AGP Access Arrangement are:

- the services which Amadeus may provide using the AGP have been listed
- the access request process has been updated
- the reference tariff variation mechanism has been updated, but its form has not changed
- changes to the extension and expansion requirements, required by rule changes which came into effect in April 2019.

NGR, r. 48(1)(a) now requires that an access arrangement describe all of the pipeline services that the service provider can reasonably provide on its pipeline. Furthermore, the description must be consistent with the description of services in the AER's prior reference service proposal decision for the pipeline.

Amadeus has provided this description of services in section 2.1.1 of the proposed revised AGP Access Arrangement.

Amendments to NGR, r. 112, made since the last revision of the AGP Access Arrangement, have introduced new steps and new timelines into the access request process.

Amadeus has incorporated these new steps and new timelines into section 2.2 of the proposed revised AGP Access Arrangement.

Amadeus proposes retaining the reference tariff variation mechanism of the AGP Access Arrangement for the variation, annually, of both the firm service reference tariff and the interruptible service reference tariff.

The changes proposed to the reference tariff variation mechanism in section 4.7 of the AGP Access Arrangement:

- extend application of the mechanism to the interruptible service reference service
- update the various formulae of the mechanism so that they can be applied during the next access arrangement period.

NGR, r. 104 has been amended to require, among other things, that an applicable access arrangement state that the access arrangement applies to incremental services provided by any expansion of the pipeline during the access arrangement period. The option for a service provider to propose, to the AER, that the access arrangement not apply to those incremental services has been removed.

Amadeus has proposed an amendment to section 7 of the AGP Access Arrangement so that it accords with the current requirements of r. 104.

Queuing requirements

17.2 Provide in the materials submitted to the AER details of the process or mechanism for determining the order of priority for spare or developable capacity, for example, whether it is to be as a first-come-first-served basis or by auction.

The process for determining the order of priority for spare or developable capacity is first-come, first served.

Other than recognition of the interruptible service reference service, no change has been proposed to the queuing requirements of the AGP Access Arrangement.

Capacity trading requirements

17.3 Identify in the materials submitted to the AER the rules or procedures Amadeus must accord with under r. 105 of the NGR.

R. 105 of the NGR sets out capacity trading requirements. These requirements are in section 5 of the AGP Access Arrangement.

No amendment to the capacity trading requirements of section 5 of the AGP Access Arrangement has been proposed.

Extension and expansion requirements (see r. 104 of the NGR)

17.4 Provide in the materials submitted to the AER:

(a) details of any extension and expansion requirements where that extension and expansion requirement states that the access arrangement will apply to incremental services to be provided as a result of the extension or expansion

(b) details of the effect of those extension or expansion requirements identified in paragraph 17.4(a) on tariffs.

Extension and expansion requirements are set out in section 7 of the AGP Access Arrangement.

Amadeus proposes amending section 7 of the AGP Access Arrangement so that it accords with the current requirements of r. 104.

The amendment has no effect on tariffs.

Change of receipt or delivery point by user

17.5 Explain in the materials submitted to the AER:

(a) how users may obtain consent, including identifying any relevant conditions, to change receipt or delivery points as contemplated under r. 106 of the NGR

(b) where relevant, the technical or commercial considerations and other relevant conditions in the event Amadeus intends to withhold consent to a change in a receipt or delivery point.

Section 5.4 of the AGP Access Arrangement sets out the way in which a user may obtain consent to change a receipt point or a delivery point as contemplated under r. 106 of the NGR.

No amendment to section 5.4 of the AGP Access Arrangement has been proposed.

Section 5.4 of the AGP Access Arrangement states, among other things:

Service Provider may withhold its consent to all or part of the above request on reasonable commercial or technical grounds or make its consent subject to conditions which are on reasonable commercial or technical grounds. An example of such grounds might be if a reduction in the amount of MDQ at the initial Delivery Point will not result in a corresponding increase in Service Provider's ability to provide that service to the alternative Delivery Point.

Miscellaneous Reporting

18. Related Party Transactions

18.1 Identify and describe in the materials submitted to the AER all entities which:

(a) are a related party to Amadeus and contribute to the provision of pipeline services

(b) have the capacity to determine the outcome of decisions about Amadeus' financial and operating policies.

The minimum threshold for these entities are for transactions greater than $1,000,000 in a regulatory year.

No party related to Amadeus contributes to the provision of pipeline services.

18.2 Provide in the materials submitted to the AER a diagram of the organisational structure depicting the relationships between all the entities identified in the response to paragraph 18.1.

No diagram has been provided: no entities were identified in the response to paragraph 18.1.

18.3 Identify:

(a) all arrangements or contracts between Amadeus and any of the other entities identified in the response to paragraph 18.1 currently in place or expected to be in place during the period 2019-20 to 2025-26 which relate directly or indirectly to the provision of pipeline services

(b) the service or services that are the subject of each arrangement or contract.

No entities were identified in the response to paragraph 18.1: there are no relevant arrangements or contracts.

18.4 For each service identified in the response to paragraph 18.3(b):

(a) Provide in the materials submitted to the AER:

(i) a description of the process used to procure the service

(ii) supporting documentation including, but not limited to, requests for tender, tender submissions, internal committee papers evaluating the tenders, contracts between Amadeus and the relevant provider.

(b) explain in the materials submitted to the AER:

(i) why that service is the subject of an arrangement or contract (i.e. why it is outsourced) instead of being undertaken by Amadeus itself

(ii) whether the services procured were provided under a standalone contract or provided as part of a broader operational agreement (or similar)

(iii) whether the services were procured on a genuinely competitive basis and if not, why

(iv) whether the service (or any component thereof) was further outsourced to another provider.

No service was identified in the response to paragraph 18.3(b).

18.5 For each arrangement or contract identified in the response to paragraph 18.3 provide in the materials submitted to the AER:

(a) a copy of the arrangement or contract which sets out the obligations of both the other entity and Amadeus

(b) a breakdown of all services provided as part of that arrangement or contract;

(c) a breakdown of costs for each service provided as part of the arrangement or contract, including separately identifying overheads, any profit margin or management fee and incentive payments;

(d) a breakdown of all costs included in the contract price; and

(e) any methodologies, including consultant's reports, or assumptions used to determine components of those costs included in the contract price.

No arrangement or contract was identified in the response to paragraph 18.3.

Other Information

19. Compliance with section 269A of the NGL

19.1 Amadeus must provide a statement attesting that:

(a) where any expenditure or cost has been incurred or is forecast to be incurred by Amadeus, as a result of or incidental to a review under Part 5 – Merits review and other non-judicial review – of the NGL, that:

(i) Amadeus has not included any of that expenditure or cost, or any part of that expenditure or cost, in its capital or operating expenditures for a access arrangement decision

(ii) Amadeus has not recovered any of that expenditure or cost, or any part of that expenditure or cost, from end users

(iii) Amadeus has not sought to pass through any of that expenditure or cost, or any part of that expenditure or cost, to end users

(b) where no expenditure or cost has been incurred or is forecast to be incurred by Amadeus, as a result of or incidental to a review under Part 5 – Merits review and other non-judicial review – of the NGL.

No expenditure or cost has been incurred, or is forecast to be incurred, by Amadeus, as a result of, or incidental to, a review under Part 5 of Chapter 8 of the National Gas Law (Merits review and other non-judicial review).

Schedule 3 – Historical Information

1 Provide historical financial information

1.1 If not previously provided to the AER, provide in the materials submitted to the AER:

(a) the regulatory accounting principles and policies and the capitalisation policy for the relevant regulatory year

(b) the cost allocation methodology for the relevant regulatory year

(c) a statement of policy for determining:

(i) the allocation of costs of the relevant regulatory year

(ii) the allocation of overheads for the relevant regulatory year.

Regulatory accounting principles and policies, capitalisation policy, methods of cost allocation, and cost allocation policies, relevant to the historical financial information, have been provided to the AER. The documents are submitted along with the Basis of Preparation document which Amadeus was required to complete and submit to the AER in response to the Annual Regulatory Information Notice, issued on 1 April 2020 as varied, requiring the reporting of historical financial information for the regulatory years 2011-12 to 2018-19.

1.2 Identify all material changes in the policies provided in the response to paragraph 1.1(c) compared to information previously provided to the AER. For each change identified:

(a) explain the nature of and the reasons for the change

(b) quantify the effects of the change on the regulatory templates for the relevant regulatory year.

There was no material change in the policies for determining the allocations of costs and overheads referred to in paragraph 1.1(c) for the reported regulatory periods.

2 Compliance with current access arrangement

Cost pass through

2.1 Describe in the materials submitted to the AER the processes and procedures Amadeus has in place to:

(a) identify negative cost pass through events under the current access arrangement

(b) determine the materiality (as defined in clause 3.4(c) of the current access arrangement) of cost decreases.

Administration of the AGP Access Arrangement is the responsibility of the Economic Regulatory and External Policy subunit within APA's Governance and External Affairs business unit. The functional accountabilities of this subunit are:

- APA's economic regulation strategy, standards and processes, and external policy framework
- APA's external policy position advocacy
- Regulatory market monitoring
- Stakeholder engagement strategy
- Regulatory compliance plans
- Business education
- Regulatory advice to business
- Management of access arrangements
- Regulatory compliance reporting and responses.

Members of Economic Regulatory and External Policy subunit meet at least once every week to review and discuss regulatory matters. Were cost pass through events to occur under the current the AGP Access Arrangement, they would be identified by this subunit.

Section 4.7.3 of the Access Arrangement allows, subject to AER approval, cost pass throughs for seven types of cost pass through events. They are:

- regulatory change event
- service standard event
- tax change event
- terrorism event
- insurer credit risk event
- insurance cap event
- natural disaster event

Each of these events is broadly defined, and determination of the increase or decrease in costs on realization of any one of them would require close examination of the specific circumstances of the event.

The Economic Regulatory and External Policy subunit monitors APA Group regulated pipelines, including Amadeus, to determine, initially, whether there have been any "events" which result in costs that may qualify for pass-through treatment.

Should costs be found to change, assessment of whether the change is, or is not, material is in accordance with the criterion (materiality threshold) in the final paragraph of section 4.7.3 of the Access Arrangement:

For the purpose of any defined Cost Pass-through Event, an event is considered to materially increase or materially decrease costs where that event has an impact of one per cent of the smoothed forecast

revenue specified in the access arrangement information, in the years of the access arrangement period that the costs are incurred.

3 Cost allocation to Amadeus

3.1 Identify in the materials submitted to the AER each item in the regulatory templates that is:

(a) not allocated on a directly attributable basis but is allocated on a causation basis to Amadeus

(b) not allocated on a directly attributable basis and cannot be allocated on a causation basis to Amadeus

Four regulatory templates are attached at Appendix A of the Reset RIN. *Workbook 2 – Historical data* provides information relating to the current access arrangement period. This information is in the following worksheets in Workbook 2:

- E.2 Replacement CAPEX, by driver and by project
- E3. Expansion CAPEX, by driver and by project
- E6. Non-network CAPEX, by driver and by project
- E10. Overheads, which also includes OPEX.

- Worksheet E1.3 Other CAPEX – in Workbook 2 may also be used to report historical financial information. However, Amadeus has not reported any "other CAPEX". All of Amadeus's CAPEX is reported as replacement, expansion and non-network CAPEX.

- Based on the agreed approach with the AER, APA has reported all capital and operating expenditures as directly attributable to the service provider and to the reference service.

All expenditure reported in worksheets E.2, E.3, E.6 and E.10 has been reported as directly attributable to Amadeus.

3.2 For each item identified in the response to paragraph 3.1(a):

(a) state the amount of the item that has been allocated to Amadeus

(b) explain the method of allocation and the reasons for choosing that method

(c) state the amount of each allocator used

(d) explain the reasons why it cannot be directly attributable

- Based on the agreed approach with the AER, APA has reported all capital and operating expenditures as directly attributable to the service provider and to the reference service.

As a result, no amount has been reported as not allocated on a directly attributable basis but is allocated on a causation basis to Amadeus.

3.3 For each item identified in the response to paragraph 3.1(b):

(a) state the amount

(b) state whether it was material

(c) explain the method of allocation and the reasons for choosing that method

(d) explain the reasons why it cannot be allocated on a causation basis

No amount has been identified as not able to be allocated on a directly attributable basis and not able to be allocated on a causation basis to Amadeus.

4 Cost allocation to services

4.1 Identify each item in the regulatory template attached at Appendix A that is:

(a) directly attributable from Amadeus to either reference services or other services provided as a covered pipeline

(b) not directly attributable but is allocated on a causation basis from Amadeus to reference services or other services provided as a covered pipeline

(c) not directly attributable and cannot be allocated on a causation basis from Amadeus to reference services or other services provided as a covered pipeline

Four regulatory templates are attached at Appendix A of the Reset RIN. *Workbook 2 – Historical data* provides information relating to the current access arrangement period. This information is in the following worksheets in Workbook 2:

- E.2 Replacement CAPEX, by driver and by project
- E.3 Expansion CAPEX, by driver and by project
- E.6 Non-network CAPEX, by driver and by project
- E.10 Overheads, which also includes OPEX.

All expenditure reported in worksheets E.2, E.3, E.6 and E.10 is directly attributable from Amadeus to the firm service reference service of the Access Arrangement for the Amadeus Gas Pipeline.

4.2 For each item identified in response to paragraph 4.1(a) state the amount of the item that is directly attributable to:

(a) reference services

(b) other services provided as a covered pipeline

All amounts identified in response to paragraph 4.1(a) above are directly attributable to the firm service reference service of the Access Arrangement for the Amadeus Gas Pipeline.

No amount is directly attributable to other services provided using the covered pipeline.

4.3 For each item identified in the response to paragraph 4.1(b):

(a) State the amount of the item that has been allocated to:

(i) reference services

(ii) other services provided as a covered pipeline

(b) explain the method of allocation and the reasons for choosing that method

(c) state the amount of each allocator used

(d) explain the reasons why it cannot be directly attributable

No amount has been identified as not directly attributable but able to be allocated on a causation basis from Amadeus to reference services or other services provided using the covered pipeline.

4.4 For each item in the response to paragraph 4.1(c):

(a) state the amount of the item that has been allocated to:

(i) reference services

(ii) other services provided as the covered pipeline

and whether it was material.

(b) explain the method of allocation and the reasons for choosing that method

(c) explain the reasons why it cannot be allocated on a causation basis.

No amount has been identified as not directly attributable and not able to be allocated on a causation basis from Amadeus to reference services or other services provided using the covered pipeline.