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Engaging with you on plans for Victorian Transmission System

October 15, 2021

First look at proposal for VTS 2023-27 access arrangement



Contents

1. Introduction	3
1.1. Purpose of First Look consultation document	3
1.2. Providing feedback on First Look proposals	3
2. Engaging with stakeholders	5
2.1. How we engaged with stakeholders	5
2.2. Key insights and feedback from stakeholders	5
2.3. Questions for stakeholders	9
3. First look at tariffs and what it means for customers	10
3.1. Scenario analysis	10
3.2. Indicative bill impacts	11
4. Assumptions and drivers	12
4.1. Demand and supply conditions in Victoria	12
4.2. Decarbonisation and depreciation	20
4.3. APA cost allocation method for regulated assets	23
4.4. Obligations under Security of Critical Infrastructure framework	24
5. Capital expenditure	25
5.1. Capital expenditure draft forecasts	25
5.2. Capital expenditure actuals, estimates and proposed forecasts	25
5.3. Replacement capital expenditure	28
5.4. Expansion of the South West Pipeline	30
5.5. Western Outer Ring Main	33
5.6. Hydrogen safety and integrity assessment	34
5.7. Non-network expenditure	36
6. Operating expenditure	38
6.1. Base step trend approach	38
7. Other inputs to revenue	39
7.1. Rate of return on assets	39
8. Proposed revenue and tariffs	41
8.1. Indicative tariff impacts	41
8.2. Proposed revenue	44
Glossary	45

1. Introduction

1.1. Purpose of First Look consultation document

APA is preparing a proposal to the Australian Energy Regulator (AER) for the 2023-2027 Access Arrangement for the Victorian Gas Transmission System (VTS). The access arrangement proposal must be lodged with the AER by 1 December 2021.

APA established the VTS Stakeholder Engagement Group to involve stakeholders in preparing the proposal. The engagement group has provided valuable insight, and feedback on matters important to customers and stakeholders and has served to challenge and enhance our consideration of regulatory matters. To date, feedback from stakeholders has been incorporated in information provided to the VTS Board. Further, feedback will be presented to, and considered by, the VTS Board as we finalise our proposals.

At the start of the engagement, there was a request for APA to prepare an early consultation document to allow opportunity for early feedback on our draft proposals. We thought this would be valuable and have produced this ‘easy to read’ First Look consultation document.

The First Look document plays back what we heard from stakeholders and how we have responded; presents key assumptions underpinning the draft proposal; discusses the inputs and forecasts that have been used to calculate the proposed revenue; and sets out tariff impacts under several scenarios for the 2023-2027 access arrangement period.

The information presented here is draft and has not been approved by the VTS Board. They are our first attempt and still subject to the feedback we get from stakeholders.

1.2. Providing feedback on First Look proposals

Feedback from the stakeholder engagement group will be used to inform our final access arrangement proposal to the AER. We welcome your feedback on the information and questions presented in the First Look document. These are intended to be for guidance and we are happy to receive comments on any other matters.

Summary of the questions is set out in the following table.

No.	Questions for stakeholders
1	Do you have any comments on the stakeholder engagement undertaken by APA on the VTS 2023-2027 access arrangement? Did you find it informative? Do you feel your concerns were taken into consideration, so far?
2	Do you have any comments on the summary of what we heard and how we have considered your feedback? In particular, should we give more or less emphasis to key themes that have emerged?
3	Do you have any comments about tariff scenario analysis?
4	Do you have any comments about the indicative bill impacts?
5	Do you have any comments on the adjustments APA has made to the AEMO GSOU analysis and graphs?
6	Do you accept that the SWP expansion would be prudent to meet the demand requirements as we know them today? What timing might you suggest for that project?

7	Do you have any views about the long-term supply term supply adequacy for Victoria?
8	Do you have any comments on APA's proposed approach to risks of decarbonisation by using accelerated depreciation and removing indexation of the regulatory asset base?
9	Do you have views about measures to facilitate orderly transition to meet Victorian Government policy?
10	Do you wish to know more about APA's Cost Allocation Method?
11	Do you have any comments about APA's SOCI requirements?
12	Do you have any suggestions for cost allocation principles related to SOCI?
13	Do you have any comments about APA's replacement capital expenditure proposal?
14	Do you have any comments about APA's proposed approach to the investing in the SWP?
15	How will you or your customers be impacted by the proposed SWP?
16	Do you have any comments about the WORM project?
17	How will you or your customers be impacted by the WORM?
18	Do you have any comments about the proposed assessment for hydrogen?
19	Do you have any views about the role of hydrogen in meeting future energy needs?
20	Do you have any comments about the proposed Transformation and Technology plans?
21	Do you have any comments about the proposed approach to operating expenditure forecasts?
22	Do you have any views about the tariff scenario analysis? Are there other scenarios we should consider?
23	Do you have any comments about the calculation of the draft revenue requirements?
24	Are there any other matters that you wish to raise about the draft VTS access arrangement proposal?

You can provide feedback on this First Look paper to us by:

- Emailing your comments to us preferably before 8 November 2021
- Providing verbal comments during proposed one-on-one meetings
- Providing verbal comments during subsequent roundtables.

Please contact us to arrange a meeting or if you have any comments or questions:

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2. Engaging with stakeholders

2.1. How we engaged with stakeholders

APA is relatively new at stakeholder engagement for regulated assets, and we acknowledge that we are very much learning on the job. VTS stakeholder engagement is an exciting and important initiative for APA and we are pleased with the interest and level of feedback we have received. We hope stakeholders feel the same way.

For the VTS, we mapped out key stakeholders and we deliberately wanted representation by consumer advocates, business advocates, customers (shippers), storage facilities, AEMO and government at our roundtables. It was important also to have AER as observers to ensure the regulator was satisfied with our engagement approach and that we were taking on board stakeholder views. We prepared a draft engagement plan for comment, set out a timeline for a series of roundtable and proposed topics to engage on.¹

Importantly, the engagement plan set out engagement principles (shown below) that guided our approach.

Engagement principles

- **No surprises.** We want stakeholders and the regulator to feel that during the engagement process we have revealed the details, both big and small, of our plans and thinking. We will let you know how feedback has been incorporated into the proposal.
- **Clear, accurate and timely communication.** We will aim to prepare information with sufficient time for you to consider and provide feedback. We intend to hold monthly roundtables before submitting our access arrangement proposal by 1 December 2021.
- **Easy to understand.** We will prepare and provide accessible, non-technical information that can be read and understood by a wide audience. We propose to make this information available on our website.
- **Transparent.** We aim to be transparent about our thinking and plans. But, as an ASX-listed company, there are rules about what we can and can't make public. The information we provide to you will meet the disclosure requirements.
- **Provides for influence.** We aim to be open about what is and what isn't open to stakeholder influence. We will let you know whether we are simply providing you with information or seeking to consult and involve you in developing our plans. For example, our operating and capital expenditure plans are open to influence and we will consult on these, however, rates of return have essentially been predetermined and will be presented for information only.

We considered our approach to engagement as akin to 'thinking out aloud' with stakeholders in the room. We were presenting our thinking as we were developing our draft proposal.

We expected stakeholder engagement group members would be representing the views of their organisations. We valued the broad range of views and we sought to include, where appropriate stakeholder opinions in our draft proposal.

2.2. Key insights and feedback from stakeholders

Over the course of the engagement, there was a shift in the energy policy settings with the Victoria Government flagging the intention to transition from gas use to electrification to help achieve a target

¹ Engagement Plan can be found here. [VTS 2023-27 Access Arrangement Engagement Plan \(apa.com.au\)](https://www.apa.com.au/VTS%202023-27%20Access%20Arrangement%20Engagement%20Plan.pdf)

of Net Zero 2050. The Victorian Government's policy setting contrasts with the Federal Government's pursuing a post-Covid gas-led recovery. APA is attempting to reconcile these contrasting policy positions in considering the access arrangement for the VTS access arrangement proposal.

The key themes that emerged from discussions with stakeholders are summarised in the table below along with how we responded. These themes underpin more detailed feedback on key topics which we discuss in the remaining sections of this paper.

Table 1 Key themes from stakeholder engagement

Discussion topic	What we heard from stakeholders	How we responded	
Stakeholder engagement	<p>In October 2020 we released a draft stakeholder engagement plan proposing timeline, topics, format and principles.</p> <p>We presented our proposed engagement approach and sought feedback from stakeholders.</p>	<p>Stakeholders asked us to provide an indication of where on the IAP2 Spectrum of Public Participation² we were for each roundtable.</p> <p>Stakeholders suggested that we prepare an early consultation document to seek early comment from the stakeholder group prior to submitting our proposal to the AER.</p> <p>Some stakeholders requested that we consider ways to make providing feedback easier without need for formal submissions.</p>	<p>We have sought to be flexible and accessible to make engagement as easy as possible. We have sought to align with principles in the (draft) Engagement Plan (November 2020).</p> <p>We sought to play back to the stakeholder group, what we heard at each previous roundtable and what our response was. Our engagement ranged from inform, consult and inform on the IAP2 spectrum.</p> <p>We have prepared this First Look paper in response to the request for a consultation document. Our positions have been shaped by stakeholder engagement.</p>
Energy policy spectrum	<p>We discussed the key drivers for investment decisions including the gas policy environment, demand and supply forecasts, regulatory requirements, market direction on future fuels and renewables and meeting needs of customers.</p> <p>Meeting these drivers need to be balanced against making sure services are provided at the lowest sustainable cost and are affordable for customers.</p>	<p>Some concerns were raised about the gas substitution plans in Victoria while others supported them. The support was qualified that it was important to explore renewable opportunities and energy efficiency measures.</p> <p>Stakeholders considered APA to be in unique position and could have a positive influence to lower emissions energy.</p>	<p>In the current complex energy market, APA maintains that the lowest cost long-term infrastructure solution is based on efficient expansion and utilisation of existing infrastructure.</p> <p>We have adopted these principles into investment decisions to minimise costs and help with energy affordability for customers as the energy market transitions.</p> <p>This approach has been embedded into our consideration of South West Pipeline expansion taking on board stakeholder feedback.</p>

² Refer to [IAP2 IAP2 Public Participation Spectrum - IAP2 Australasia](#)

Discussion topic	What we heard from stakeholders	How we responded
Energy affordability	<p>We presented preliminary impacts on tariffs of proposed measures to bring forward recovery of investment in VTS.</p>	<p>We heard concerns that while VTS transmission tariff impact may be small, distribution businesses are facing the same issues. Therefore, across the gas supply chain tariff impacts on customers may be significant.</p> <p>We understand that energy, and in particular gas, affordability is a priority across the economy from business through to residential customers.</p> <p>We are preparing business cases and justifications to demonstrate that the capital expenditure program is prudent, efficient and has a benefit for customers.</p>
Intergenerational fairness	<p>APA discussed how its proposed approach helps with energy transition to decarbonisation and recovery of investment (through accelerated depreciation & removal of asset base indexation).</p>	<p>There was discussion for the need to address intergenerational issues.</p> <p>We heard that consideration should be given to the need for, timing of and appropriate path for accelerated depreciation of the current gas assets – to ensure we do not burden future generations.</p> <p>An alternative view was to not load up today's customers when future consumers may benefit from the VTS.</p> <p>APA supports transition to lower carbon economy, and we have a Net Zero 2050 ambition. Transition needs to be orderly to meet energy needs of consumers and businesses without placing undue burden on those not able to transition.</p> <p>Policy uncertainty has brought into sharp focus greater need to give closer scrutiny to investment decisions to not potentially burden future generations as well as minimise investment risk for APA.</p> <p>We are proposing measures to facilitate orderly transition and to not burden future generations.</p>
Investment drivers	<p>We discussed the key drivers for investment decisions including the gas policy environment, demand and supply forecasts, regulatory requirements, market direction on future fuels and renewables and meeting needs of customers.</p> <p>Meeting these drivers needs to be balanced against making sure services are provided at the lowest sustainable cost and are affordable for customers.</p>	<p>There was support for investment to meet security of supply but there was concern about whether long-lived assets were being proposed for short-term problems.</p> <p>This came up in discussions about proposals for the South West Pipeline.</p> <p>The contradictory policy settings create a very uncertain environment for investing in gas in Victoria. Taking on board stakeholder concerns that supply issues are only short-term, we are considering a staged approach to investment decisions on the SWP.</p> <p>Considering the uncertain investment environment, APA is unlikely to risk security holder investment without safeguards which we discuss in more detail in later sections of this paper.</p>

Discussion topic	What we heard from stakeholders	How we responded
Demand and supply		
APA engaged Oakley Greenwood to explore the key issues affecting supply and demand in more detail and take on board stakeholders' thoughts on these issues. APA consulted with the stakeholder engagement group and the terms of reference for the study. We discuss the Oakley Greenwood report in more detail in later sections of this paper.	Stakeholder comments on demand and supply forecasts, noted that the proposed electrification of Victorian residential heating loads could have a significant impact on future gas demand; and that storage facilities and proposed LNG import terminals could be potential sources of supply to alleviate AEMO's forecasts shortages.	Oakley Greenwood final report took on board comments from stakeholders. Oakley Greenwood has used publicly available information and placed more weight on projects that had reached Final Investment Decision. Collaboration on Demand and Supply Report helped shape our demand and supply assumptions.
Efficient costs, allocation of costs between regulated and unregulated		
APA has a diverse portfolio of gas transmission pipelines on mainland Australia as well as electricity transmission and renewable energy assets.	Stakeholders sought to understand how APA allocated costs across its regulated and unregulated assets. The issue was to ensure that APA's allocation method was done on a fair and reasonable basis.	APA's approach to cost allocation is set out the Cost Allocation Methodology (CAM) document prepared for regulatory reporting purposes. The CAM has been developed with reference to the AER's guideline for electricity distribution businesses as set out in "Electricity distribution network service providers, cost allocation guidelines" publish in June 2008. Further information is set out in section 4.3.
Decarbonisation and depreciation		
APA considers that the Victorian Government policy is hastening the transition away from gas, more so than what would occur under market forces. Under the 'regulatory compact', regulated businesses are entitled to recover their investment. APA proposed measures to smooth tariffs in the transition to renewables including accelerating the depreciation of assets by shortening asset lives and removing AER's indexation of the regulatory asset base (subject to technical compliance with the Rules). APA proposed position is to 'start early and start small' while load is still high enough to bear small tariff increases.	We heard that consideration should be given to intergenerational issues. Questions were raised about whether regulated businesses were more entitled than non-regulated businesses to recover their investment. An alternative view was that future fuels such as hydrogen or biogas may potentially result in the economic life of the VTS being extended beyond APA's proposed 25-year asset life.	APA considers that the rate of return set by the AER for regulated assets does not cover the risk being faced by APA in Victoria. We maintain that we should be allowed the opportunity to recover the efficient investment made in the VTS. APA's position is that the feasibility of VTS gas pipelines being used for alternatives to natural gas is not known. Nor is the potential cost of repurposing VTS gas pipelines. We do know however that the Victorian Government has a policy to substitute gas use with electricity. If there are policy changes or the VTS is repurposed then the depreciation profiles can be changed at each five-year access arrangement review.

Discussion topic	What we heard from stakeholders	How we responded
Future fuels – proposed VTS Hydrogen assessment		
In September Energy Ministers agreed on an expedited process to amend the National Gas Law, National Energy Retail Law and subordinate instruments so hydrogen blends, biomethane and other renewable methane gas blends are brought within the national energy regulatory framework.	In discussions prior to the Energy Ministers' announcement, some stakeholders considered there was merit in an assessment being undertaken. Concerns centred on the cost and who should fund such an assessment. More generally there were concerns about costs to customers for changing to hydrogen compatible appliances.	Following the Energy Ministers' announcement, APA's view is that the September announcement indicates that a hydrogen capability assessment is required on safety and integrity grounds.
Tariff structures		
At the start of stakeholder engagement, we flagged whether there was interest from stakeholders in undertaking a review of tariff structures.	<p>Questions were raised about what pricing principles were being proposed, how are costs currently allocated and what incentives /behaviours are we seeking to encourage? There were contrary views about whether tariffs were cost reflective.</p> <p>There was interest in reviewing tariff structures, but some stakeholders raised concerns that any changes to tariff structures would take several regulatory periods to be realised. Thereby, questioning whether the benefits outweighed the costs.</p>	<p>We consider that there may be benefit in undertaking a review of tariff structures at a future point in time. The scale of this task was beyond the time available for this proposal.</p> <p>We will keep stakeholders informed of future consideration of tariff structures.</p>

2.3. Questions for stakeholders

No.	Questions for stakeholders
1	Do you have any comments on the stakeholder engagement undertaken by APA on the VTS 2023-2027 access arrangement? Did you find it informative? Do you feel your concerns were taken into consideration?
2	Do you have any comments on the summary of what we heard and how we have considered your feedback? In particular, should we give more or less emphasis to key themes that have emerged?

3. First look at tariffs and what it means for customers

3.1. Scenario analysis

We have prepared high level scenario analysis of the impact of the proposed revenue requirements for VTS on an average or composite tariff.

In this First Look document, we will express VTS tariffs as a composite average \$/GJ tariff which incorporates both injection and withdrawal tariffs based on an overall system-wide average. In calculating composite average VTS tariffs in this document, we will use an estimate of the average system wide throughput over the relevant period. In estimating tariff impacts in this document, we will assume the VTS transports an average 192 PJ (192,000,000 GJ) of gas per year. Further information is provided in section 8.

As a comparison, the table below shows the composite average VTS tariffs over the current access arrangement period.

Table 2 VTS composite (average) tariff 2018 - 2022

	2018	2019	2020	2021	2022e
Composite VTS tariff (\$/GJ)	\$0.4674	\$0.4760	\$0.4991	\$0.5342	\$0.5513

Starting with a Base Case reflects the current access arrangement we select items to change and observe the tariff impacts. We also include combinations of items. The items tested are:

- Base case: Pipeline asset lives 55 years, with indexation of asset base, with SWP_570; with hydrogen assessment
- Scenario 1. Shorten asset lives to 25 years (accelerated depreciation)
- Scenario 2. Without indexation of the regulatory asset base
- Scenario 3. Without SWP_570 capital expenditure
- Scenario 4. Without hydrogen assessment.

Table 3 VTS scenario analysis of tariff impacts

Scenario	Pipeline asset life (years)	Index asset base	SWP570 security expand	Hydrogen assess.	Composite tariff	Change from base case	Change from base case (%)
Base case	55	Yes	Yes	Yes	0.5976		-
Scenario 1 - shorter lives	25	Yes	Yes	Yes	0.6493	0.0517	8.7%
Scenario 2 - no indexation	55	No	Yes	Yes	0.7423	0.1447	24.2%
Scenario 3 - Without SWP570	55	Yes	No	Yes	0.5940	-0.0036	-0.6%
Scenario 4 - Without Hydrogen	55	Yes	Yes	No	0.5791	-0.0185	-3.1%

Some insights from the scenario testing:

- The impact of capping asset lives at 25 years is about 5¢/GJ
- The impact of stopping indexation of the capital base is about 14.5¢/GJ
- The impact of undertaking the SWP_570 expansion is about 0.4¢/GJ
- The impact of undertaking the VTS hydrogen capability assessment is about 1.8¢/GJ.

3.2. Indicative bill impacts

APA VTS has calculated the standard bill impacts based on the Victorian [Essential Services Commission Victorian Market Update: June 2021](#). This report uses standard measures of residential and small business consumption levels and annual costs as follows:

	Residential	Small business
Annual consumption	54.4 GJ / year	500 GJ / year
Annual cost	\$1,350 / year	\$9,426 / year
Implied cost / GJ	\$24.82 / GJ	\$18.85 / GJ
Average 2021 VTS tariff	\$0.5342 / GJ	\$0.5342 / GJ
Annual VTS costs	\$29.06 / year	\$267.10 / year
VTS tariff as a % of total	2.2%	2.8%

3.2.1. Benefits to customers of our proposal

The draft VTS access arrangement proposal seeks to balance trade-offs between competing factors. We consider that the key benefits of the proposal are:

- **Affordability and a secure and reliable supply.** Keeping tariffs as low as possible while maintaining safety, security and reliability of the VTS
- **Orderly transition.** Starting to transition VTS tariffs early to prevent future price shocks as energy sector transitions to lower carbon energy sources. We are concerned that any future price shocks would have a more concentrated impact on disadvantaged customers.
- **Critical infrastructure.** Maintain system security by safeguarding critical infrastructure against threats in line with obligations under Security of Critical Infrastructure framework and do this in an efficient and proportionate way.

3.2.2. Questions for stakeholders

No.	Questions for stakeholders
3	Do you have any comments about tariff scenario analysis?
4	Do you have any comments about the indicative bill impacts?

4. Assumptions and drivers

4.1. Demand and supply conditions in Victoria

4.1.1. Stakeholder engagement

APA VTS relies heavily on AEMO, as operator of the Declared Wholesale Gas Market (DWGM) and VTS, in developing load and demand forecasts for the VTS access arrangement.

Following the release of AEMO's forecasting information, there were several announcements that in our view were likely to affect the forecasts. These included APA's planned expansion of the East Coast Grid, Origin's contemporaneous supply contract with APLNG, and Esso and Qenos curtailing consumption in Altona. APA wanted to better understand proposed supply projects to bring gas into Victoria from the west of Melbourne and questioned AEMO's flat longer term demand forecast. (That is flat, rather than what we would have expected to be falling - considering Victoria net zero 2050 ambition). A more detailed understanding was required to help us better understand the quickly changing demand and supply dynamics.

APA proposed a study to explore the key issues affecting supply and demand in more detail and take on board stakeholders' thoughts on these issues. Stakeholders asked to be involved in reviewing the terms of reference for the study. APA consulted with the stakeholder engagement group and the terms of reference for the study. APA engaged Oakley Greenwood to investigate factors that are likely to affect the demand and supply in the Victorian gas market and the potential implications for the VTS. Oakley Greenwood provided regular updates and sought feedback during stakeholder engagement.

On the demand side, stakeholders sought to understand the potential impacts of a net zero policy on demand forecasts. It was noted that the proposed electrification of Victorian residential heating loads could have a significant impact on future gas demand. Many customers can simply switch from gas to air conditioning. The Victorian Government is providing incentives to switch. The potential for demand side management was raised.

Oakley Greenwood's final report took on board comments from stakeholders and looked further into to shift to electrification of heating. Oakley Greenwood noted that there was a case for policymakers to consider introducing a market mechanism that would allow demand side participation in the peak of winter to assist in managing the risks of small excess peak demand excursions.

On the supply-side, there was a view from some stakeholders that storage facilities and proposed LNG import terminals could be potential sources of supply to alleviate gas shortages forecast by AEMO. Oakley Greenwood noted that its scope was to use publicly available information and placed more weight on projects that had reached Final Investment Decision (FID).

It was noted that the 2020 GSOO did not envisage the closure of Yallourn Power Station but that the implications for gas powered generation is difficult to assess.³

4.1.2. APA response and proposed approach

The demand forecast underpinning this access arrangement is one of the most uncertain aspects of the proposal package, but investment decisions hinge on them. For example, demand forecasts impact on whether to invest in the proposed expansion of the South West Pipeline.

Further, implications of the Victorian Government's legislated Net Zero 2050 initiatives and Infrastructure Victoria's interim report,⁴ may impact the VTS in the following ways:

- Reduce the time horizon over which prudently invested capital can be returned to investors
- Reduce the gas load over which that capital can be returned without significant tariff impacts
- Reduce the peak day demand requirements, impacting the need to expand the South West Pipeline, and
- Expose any investment made in expanding the South West Pipeline to stranding.

The demand forecast will influence such decisions as the standard and remaining life of assets, the proposed approach to depreciation and indexation, and whether the expansion of the South West Pipeline is required to maintain security of supply.

³ In the 2021 ESOO, AEMO said that since the 2020 ESOO, the planned retirement of Yallourn Power Station (Victoria) was brought forward. AEMO lists possible actions to improve reliability in Victoria include continued generation and storage investment and development of additional DSP resources. This includes the 350 MW, four-hour, large-scale Jeeralang Battery being developed by 2026.

⁴ Infrastructure Victoria, *Towards 2050: Gas infrastructure in a zero emissions economy*, consultation on which closed on Monday 16 August 2021. The executive summary comments: "Under all scenarios that we considered, the opportunity to repurpose existing natural gas infrastructure over the long term (beyond 2040) is limited."

4.1.3. 2021 Demand and supply conditions

Demand side conditions

AEMO's 2021 Gas Statement of Opportunities (GSOO) was published on 29 March 2021. In summary, relevant to the VTS access arrangement, the GSOO 2021 Central case forecast the following levels of demand:

	Industrial	Residential / Commercial	GPG	New Residential Connections	2021 GSOO Central
2020	66	125	18	0	210
2021	65	123	8	2	198
2022	65	120	5	3	193
2023	64	117	5	4	190
2024	63	114	5	6	187
2025	62	112	3	7	183
2026	61	111	2	9	183
2027	60	111	2	11	184
2028	60	110	3	13	186
2029	60	110	4	14	188
2030	59	110	6	16	191

Source: AEMO 2021 Gas Statement of Opportunities report figures and data, Figure 34

There were several announcements after the publication of the GSOO which could impact the GSOO forecasts, notably:

- Esso Altona converting its refinery to an import terminal⁵
- Qenos Altona announcing that it would reduce its production by approximately 50%,⁶ and
- APA announcing that it had reached Final Investment Decision on expansions to the East Coast Grid, to bring more gas into southern markets.⁷

In response to these announcements, we engaged Oakley Greenwood to:

Conduct a survey of:

- The current gas supply and demand dynamics in eastern Australia, and in Victoria in particular, with commentary on whether and how they have been reflected in the GSOO and Victorian Gas

⁵ <https://www.argusmedia.com/en/news/2185554-exxonmobil-australia-to-shut-90000-bd-altona-refinery>

⁶

[http://quenos.com/internet/home.nsf/0/6C29EE4529E9F9BBCA2586DA0005EF13/\\$file/Qenos%20Media%20Release_Qenos%20Reconfigures%20Altona%20Manufacturing%20Facilities.pdf](http://quenos.com/internet/home.nsf/0/6C29EE4529E9F9BBCA2586DA0005EF13/$file/Qenos%20Media%20Release_Qenos%20Reconfigures%20Altona%20Manufacturing%20Facilities.pdf)

⁷ <https://www.apa.com.au/globalassets/asx-releases/2021/apa-commences-25-expansion-of-east-coast-grid.pdf>

Planning Report (VGPR), and the extent the consultant believes AEMO has adequately and reasonably reflected them

- Items announced post the publication of the GSOO and VGPR (e.g., APA – APLNG – Qenos Altona – Esso Altona), and the expected impact on the supply and demand dynamics
- Victoria's decarbonisation and electrification legislation and other policy statements.

and, with a time horizon of 2040 (to align with AEMO longer term forecasts), and a particular focus on the period up to 2030, advise:

- How we might expect this legislation and policy to affect the demand for gas in Victoria going forward – for residential, commercial, industrial, gas powered generation and exports (including from Longford up the Eastern Gas Pipeline)
- The extent to which this legislation and policy has been reflected in the GSOO and VGPR load and demand forecasts
- The extent to which the GSOO and VGPR load and demand forecasts should be adjusted to reasonably reflect this legislation and policy framework

and,

- Considering all those things, develop a load and demand forecast suitable for inclusion in the VTS access arrangement for the purposes of capital expenditure planning and tariff development.

Oakley Greenwood's report found that the Esso and Qenos closures would not have a significant impact on either annual production or peak day demand.

However, the situation surrounding the Victorian decarbonisation legislation was less clear. During the conduct of the Oakley Greenwood engagement, AEMO released its draft 2021 Inputs Assumptions and Scenarios Report (IASR) which forecast, in its Net Zero 2050 scenario, that:

Consumers are (sic) initially continue to heat their homes in the same manner they do today, but by the mid-2030s nearly half the current gas heating has been electrified, and in the final years of the horizon nearly all residential heating is electrified.

Assuming we pick up only half of AEMO's forecast decline (that is, a 25% reduction in gas home heating by mid-2030) and based on AEMO's supply forecasts, Oakley Greenwood found that, there was not a need to augment the South West Pipeline to meet peak day demands.

Oakley Greenwood's terms of reference provided for it to start with AEMO's GSOO forecasts and adjust for announced changes that might impact the supply and demand balance. Its terms of reference did not extend to commenting on the likelihood on the PKGT being deferred. This is discussed further below.

Supply side

On the supply side, production declines in southern fields, particularly the Bass Strait, are well documented. AEMO has consistently noted that it will be necessary to bring more gas into Victoria to offset these known production declines.

A key feature of AEMO's 2021 GSOO was that the Australian Industrial Energy Port Kembla LNG import terminal⁸ was considered to be a "committed project", notwithstanding that it had not, and still has not at time of writing, reached Final Investment Decision.

The GSOO is clear that supply adequacy depends heavily on the Port Kembla Gas Terminal (PKGT) (p5):

The timely commissioning of committed developments, including the PKGT, is critically important given the forecast reduction in maximum daily capacity from southern fields. If delivered to schedule, domestic supply shortfalls during winter peak demand periods are not forecast until at least 2026. If these committed projects are not delivered to schedule, greater reliance would be placed on storages, and gas shortfalls of up to 100 TJ per day may eventuate in winter 2023 under extreme conditions.

The fact that the PKGT has not reached FID (notwithstanding that construction is understood to be continuing) is a factor we have taken into consideration.

In August 2021, Lochard Energy, owner of the Iona Gas Storage facility, announced that it had reached FID on expansions to the Iona Gas Storage facility to enable withdrawals of up to 570 TJ/day. Having been announced after publication of the GSOO, the Iona expansion did not feature in the AEMO supply and demand modelling.

However, it is unclear how much of Iona capacity will be directed to the Victorian market on a given day – this will depend on shipper contracting and DWGM bidding behaviour. The post-WORM eastbound capacity of the South West Pipeline will be 468 TJ/day - less than the expanded Iona deliverability.

The expansion of the APA East Coast Grid will allow northern supply to serve southern markets, particularly in Sydney. Oakley Greenwood noted (p.8):

The estimated impact of this augmentation is that it will allow up to an extra 100TJ/day to flow into Sydney on peak demand days, with a consequent impact on flows to Melbourne, subject to transmission pipeline capacity being available. This is based on the 25% increase in current capacity of ~ 400TJ/day.

Expansion of the East Coast Grid involves the expansion of the Moomba Sydney Pipeline (MSP) which is to be conducted in two stages:

- increment of 29 TJ/day from current capacity. Estimated commissioning date: 1/4/2022
- increment of 119 TJ/day from current capacity (that is, an additional 90 TJ/day). Estimated commissioning date: 1/4/2024

To the extent that the expansion of the East Coast Grid will enable 119 TJ/day of additional gas to meet Sydney demand, this could displace demand currently being met from Longford production travelling northbound to Sydney on the Eastern Gas Pipeline. This would allow an additional 119 TJ/day of Longford production to be redirected to Victorian needs.

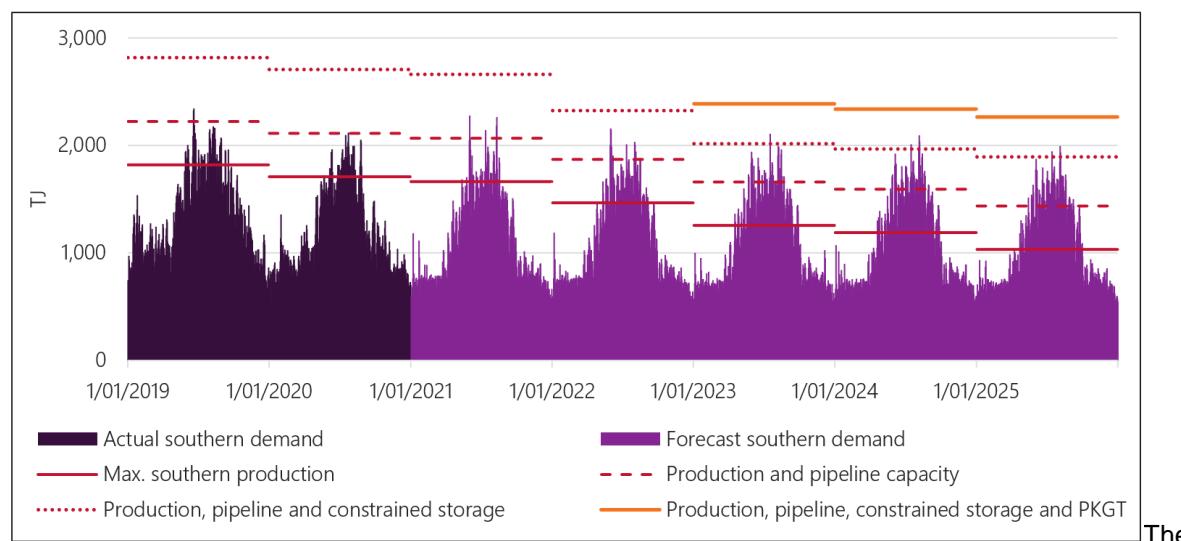
⁸ See <https://ausindenergy.com/our-project/>

Analysis

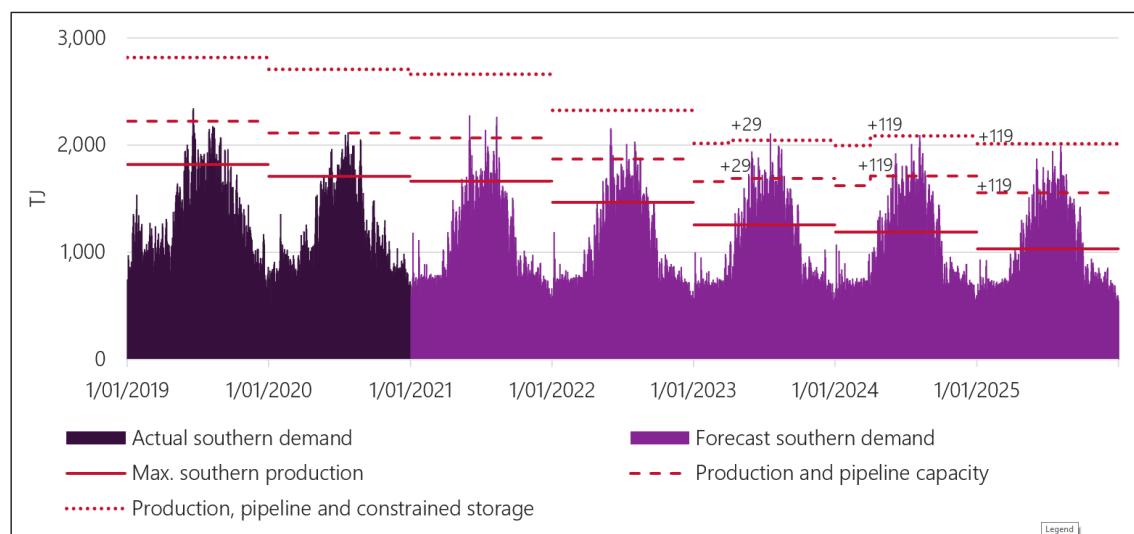
The AEMO GSOO was clear that, if the PKGT is delivered to schedule, domestic supply shortfalls during winter peak demand periods are not forecast until at least 2026. To ascertain the expected impact of the deferral of the PKGT and the increased capacity of the APA East Coast Grid, APA VTS has adjusted the AEMO GSOO forecasts to:

- Remove the additional supply made available by the PKGT; and
- Increase the available pipeline supply by 119 TJ/day.

Where the GSOO originally reported:

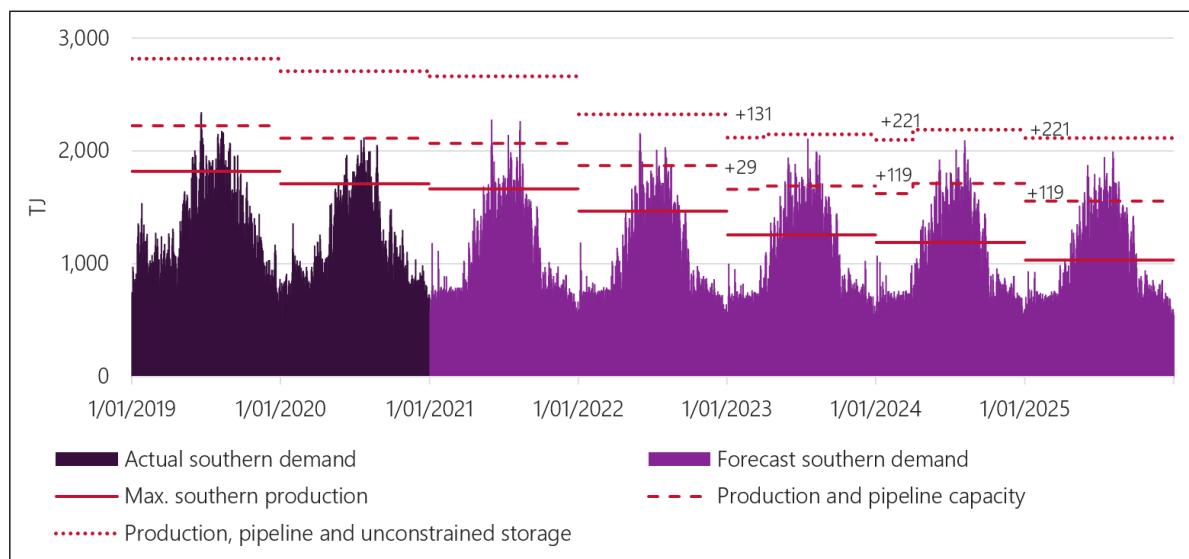


(above stated) adjustments change the picture somewhat:



Allowing 100 TJ/day of Longford production to be redirected from Sydney to Melbourne provides for an adequate, albeit tight, supply and demand balance to be maintained to 2025. With continued declining Longford production, the supply and demand balance may result in shortfalls in the outer years of the access arrangement period.

If we further allow for an additional 102 TJ/day to be delivered from Iona storage,⁹ (shown here from 2023 for illustrative purposes) the picture is clear that there would be adequate supply to serve the Victorian market:



APA VTS proposed position

For the purposes of the 2023-27 VTS access arrangement, APA has taken the following position:

- Having not reached FID, the PKGT cannot be assumed to be completed in a period sufficient to allow the VTS access arrangement to rely on its presence for security of supply
- The expansion of the APA East Coast Grid is assumed to be able to supply more gas consumption in Sydney, some of which would otherwise have been supplied from Longford via northbound flows on the Eastern Gas Pipeline. The gas that would have flowed north to Sydney, particularly on the peak day, will be available for redirection to Melbourne needs
- Even with 100 TJ/day being redirected from Sydney to Melbourne, the supply and demand balance in the outer years of the access arrangement period appears tight. Expansion of the SWP to 570 TJ/day to allow all committed Iona injection capacity to access the market will be sufficient to meet Victoria's peak day demand needs.

4.1.4. Long term supply adequacy

The analysis above surrounding the adjustments to the GSOO forecast and augmenting the SWP to accommodate Iona committed deliverability focuses on the ability of the VTS to meet peak day demand requirements.

⁹ Increasing the capacity of the SWP from a post-WORM capacity of 468 TJ/day to 570 TJ/day.

However there remains a need, considering ongoing declines in Longford production, to get enough gas into Victoria to meet not only peak day needs but also annual supply requirements.

Iona gas storage does not currently have enough capacity to serve as seasonal storage.¹⁰ Its limited storage volumes restrict its role to meeting peak day, rather than seasonal, requirements. There remains a need to source additional gas to meet Victoria's annual needs.

There are projects mooted to bring more gas into Victoria, which, for the purposes of this access arrangement proposal, fall into two general categories: those that require investment outside the VTS and those that require investment both outside and within the VTS. None of these projects has reached Final Investment Decision (FID). In the first category:

- The completion of the PKGT would require investment in the terminal itself, but also bi-directionality and compression on the Eastern Gas Pipeline. However, once that gas reaches Longford, the Longford-Melbourne Pipeline has sufficient capacity, considering the declines in Longford production, that the VTS would not require investment to accommodate this additional gas.
- Additional expansion of the APA East Coast Grid to allow further injections at Culcairn would require additional upstream compression to deliver more gas to Culcairn. However, once at Culcairn, the Victoria-NSW Interconnect would have sufficient southbound capacity to accept significant quantities of gas without further VTS investment.
- Further expansion of the APA East Coast Grid to deliver more gas to Wilton to then be shipped southbound on the Eastern Gas Pipeline would also require investment outside Victoria, but as with the PKGT, the Longford-Melbourne Pipeline has sufficient capacity to accommodate these additional flows without further investment in Victoria.

In the second category, there are three projects proposed to bring more gas into Victoria, which may require some investment in the VTS:

- An LNG import terminal at Geelong, proposed by VIVA Energy. This could provide seasonal injections in the order of 600 TJ/day over the course of the southern winter. Depending on the need to be able to maintain deliverability from Iona, this could require augmentation of the SWP, the Brooklyn-Lara Pipeline and the Brooklyn City Gate.
- An LNG import terminal in deep water off Avalon, proposed by Vopak. This could provide seasonal injections in the order of 600 TJ/day over the course of the southern winter. Depending on the need to be able to maintain deliverability from Iona, this could require augmentation of the SWP, the Brooklyn-Lara Pipeline and the Brooklyn City Gate.
- Further augmentations to the Iona Gas Storage facility proposed by Lochard Energy, which would increase both the amount of gas that could be stored, and also the daily deliverability rate. This project may require additional looping of the SWP, and also upgrades to the Brooklyn City Gate.

While these three projects are the subject of public proposals, none have reached Final Investment Decision, and are not expected to do so before the VTS access arrangement proposal is required to be lodged with the AER on 1 December 2021.

¹⁰ The Iona Gas Storage facility holds approximately 16 PJ of useable gas, compared to an annual VTS load in the order of 200 PJ/year, weighted more heavily to winter than summer. With the completion of the WORM and bi-directionality of the proposed SWP compressors, there may be scope for Iona storage to cycle more frequently over the winter season.

The VTS is unique in that, under the market carriage model, there is no scope to enter into bilateral arrangement with shippers to support investment in pipeline capacity – all such investment must pass through the access arrangement process. This places these last three projects, all potentially requiring investment in the VTS, at a competitive disadvantage relative to those projects only requiring investment outside the VTS, which investment can be undertaken through commercial arrangements.

To maintain a level playing field, APA proposes to lodge an application under Rule 80 of the National Gas Rules, seeking the pre-approval of the AER to consider these projects as conforming capital expenditure if they are built. This is discussed in more detail under the capital expenditure section.

4.1.5. Questions for stakeholders

No.	Questions for stakeholders
5	Do you have any comments on the adjustments APA has made to the AEMO GSOU analysis and graphs?
6	Do you accept that the SWP expansion would be prudent to meet the demand requirements as we know them today? What timing might you suggest for that project?
7	Do you have any views about the long term supply term supply adequacy for Victoria?

4.2. Decarbonisation and depreciation

4.2.1. Stakeholder engagement

The key theme throughout this access arrangement consultation process is the Victorian Government's Net Zero 2050 initiatives and their impact on future gas consumption levels. We presented the view that under the legislated Victorian Government policy there is a risk that the VTS assets will not be in service long enough to recover the value of the assets over what was originally set as their life. That is, the government driven policy change affects the economic life of prudent and efficient investments. We presented the view that these investments need to be recovered from users through accelerated depreciation (which would be reflected in VTS tariffs).

There was mixed response to the proposal to accelerate depreciation. Some stakeholders noted that in the future, VTS may carry hydrogen or other gases therefore maintain economic life of the VTS assets. Other stakeholders considered that future generations should not be burdened with costs of assets that benefit current generations and were not opposed to accelerated depreciation for this reason.

4.2.2. APA response and proposed approach

We are concerned that, as gas consumption levels decline, unit costs will increase. Moreover, as decarbonisation increases pace, those customers with choice will be expected to choose energy efficient or non-gas alternatives, leaving behind a cohort of customers who do not have the ability to exercise choice in their energy solutions. For example, hard to abate manufacturing businesses and low-income family living in rental accommodation. We are concerned that the decisions we make today may have significant adverse impact on some disadvantaged customer groups in the future.

The landmark work by renowned regulatory economists Crew and Kleindorfer¹¹ has proposed a way forward in circumstances such as this. Known as the WOOPS model, Crew and Kleindorfer note that there is a Window of Opportunity (WOO) to return capital to investors and reduce the future revenue requirement through small increases in tariffs while utilisation remains high. Failure to act early may result in the Window of Opportunity being Passed (WOOPS).

Our proposed approach, in line with the WOOPS model, is to start early to recover relatively small amounts of prudently invested capital from users while usage is still high. This will facilitate smoother tariff impacts by reducing tariff impacts in later years as the system usage starts to decline.

Importantly for this access arrangement proposal, our goal is to allow the amount of invested capital to decline in line with reductions in volumes, and to keep tariffs as stable as possible as we transition to a decarbonised energy industry. This approach helps facilitate a more orderly transition by smoothing the price path and avoiding price shocks in the future.

This was discussed at the Stakeholder Forum, Roundtable 9:

Interaction of depreciation, revenues, volumes and prices

Our goal is to create a declining revenue path that will fall in line with volumes, producing stable prices

Under the straight line depreciation framework the return of capital occurs evenly over the asset life.

This causes the revenue requirement to fall over the life of the asset.

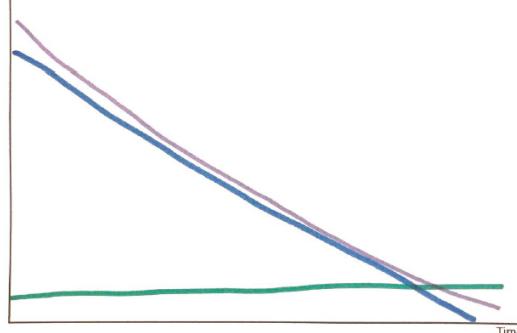
This is better in an environment of declining consumption in response to government policy change.

- AEMO now forecasts that half the home heating load will be electrified by the mid-2030s.

$$\text{Falling revenues} \div \text{falling demand} \\ = \text{more stable prices}$$

Straight line depreciation

- With Straight Line Depreciation, the return of capital occurs evenly over the asset life, resulting in a declining capital base
- This causes the revenue requirement to fall over time
- With falling load, prices remain stable over time



APA proposes to “*start small, start early and monitor*” - to reduce the value of the regulatory asset base through small tariff increases to customers early, while the load is still high, to avoid large increases to disadvantaged customers in the future as load declines. And to monitor progress at every 5-yearly access arrangement review to ascertain whether reductions in the VTS revenue requirement are aligning with reductions in demand, and to adjust the relevant regulatory settings accordingly. We consider this is a more equitable approach – for current customers to contribute rather than leaving later generations to face higher prices.

¹¹ See Crew, M and Kleindorfer, P, 1992, “Economic Depreciation and the Regulated Firm under Competition and Technological Change”, Journal of Regulatory Economics, 4(1), 1992, pp. 51-61.

The regulatory framework provides a limited number of levers to return invested capital to investors, both of which affect the regulatory depreciation building block.

Our first proposal is to reduce the standard and remaining asset lives to align with the Net Zero 2050 time horizon. This will mostly affect the “pipelines” and “compressors” asset classes. The impact of this change on existing assets is quite small, as the “pipelines” class currently has a weighted average remaining life of approximately 34 years, and the current weighted average remaining life of the “compressors” class is about 18 years (shorter than the 2050 horizon). This change will also affect the “buildings” asset class, although this accounts for a relatively small proportion of total invested capital.

The proposal to reduce the standard asset lives does have an impact on the depreciable life of the Western Outer Ring Main (WORM) and the SWP expansion.

In the future, if hydrogen or other renewable gases become viable, for transportation on VTS, then the asset lives can be reviewed. In light of the decarbonisation policies that are in place, we consider that acceleration depreciation is a sensible and less risky approach that will benefit energy consumers, rather than a ‘do nothing’ approach.

The second component of depreciation in the regulatory framework is the indexation of the regulatory asset base. Each year, the value of the invested capital is augmented for the impacts of inflation, and the amount of this indexation is applied to reduce the regulatory depreciation building block – that is, the amount of capital returned to investors. The effect of this indexation approach is to defer the return of capital to investors. While this will keep tariffs more stable in real terms, it will cause tariffs to increase in nominal terms over time.

We consider that this approach acts counter to the objective of returning capital to investors with an aim to maintaining tariff stability in the face of future volume declines.

Unlike the National Electricity Rules, the National Gas Rules do not explicitly require the regulatory asset base to be indexed for inflation. If it meets technical compliance with the Rules, we will consider proposing to remove indexation of the regulatory asset base and adopt a nominal approach to rolling forward the regulatory asset base.

4.2.3. Questions for stakeholders

No.	Questions for stakeholders
8	Do you have any comments on APA’s proposed approach to risks of decarbonisation by using accelerated depreciation and removing indexation of the regulatory asset base?
9	Do you have views about measures to facilitate orderly transition to meet Victorian Government policy?

4.3. APA cost allocation method for regulated assets

4.3.1. Stakeholder engagement

APA operates assets across Australia and provides services that are heavily regulated by economic regulators and services that are more lightly regulated and subject to market condition. Stakeholders sought assurance that APA's costs were efficient and that costs were being allocated between regulated and unregulated businesses on a fair and reasonable basis.

4.3.2. APA response and proposed approach

Being part of a larger energy infrastructure portfolio provides VTS customers with the benefit of the economies of scope and scale associated with the larger asset portfolio. Moreover, because most of APA's assets are operated under a contract carriage model, cost increases are not readily recovered from customers. This places a strong management focus on the level of costs incurred.

APA's approach to cost allocation is set out the Cost Allocation Methodology (CAM) document prepared for APA regulatory reporting purposes. The CAM has been developed with reference to the AER's guideline for electricity distribution businesses as set out in "Electricity transmission network service providers, cost allocation guidelines" published in June 2008. The AER's 2008 Cost Allocation Guideline has been used because there are no cost allocation methodology guidelines available for gas transmission businesses.

The purpose of the CAM is to set out the policy for attributing and allocating cost to services in accordance with the National Gas Rules, and for reporting operating and capital costs information to the AER. The CAM provides guidance for APA management and staff in relation to cost allocation principles, policies, and ongoing obligations as they relate to the operations and delivery of the services.

APA's most recent CAM was submitted to the AER in April 2021 as part of the information submitted for the VTS Annual Regulatory Information Notice. The CAM is owned by APA's General Manager Enterprise Finance and approved at the director and senior management level.

APA's cost allocation methodology is summarised in the following box.

The key cost allocation principles APA has adopted are as follows:

- costs are not allocated more than once
- costs cannot be treated as a directly attributed cost and other directly attributable cost
- costs are allocated on a causal basis, in instances where direct attribution is not possible.

Where costs are not directly attributable, they are allocated among the APA businesses on a revenue basis:

$$\text{Service provider shared support costs} = \frac{\text{Total APA shared support costs}}{\text{Total APA revenue}} \times \text{Service provider revenue}$$

VTS's current CAM has been applied consistently since the second half of the calendar year 2015 and is in line with the CAM applied to APA's other regulated businesses. The method is based on revenue as the allocator.

Draft VTS capital expenditure forecasts for Transformation & Technology, right of use leases (for motor vehicles and building and property) are shared corporate costs that are not directly attributable to VTS. These costs have been allocated to VTS using a revenue-based approach.

4.3.3. Questions for stakeholders

No.	Questions for stakeholders
10	Do you wish to know more about APA's Cost Allocation Method?

4.4. Obligations under Security of Critical Infrastructure framework

4.4.1. Stakeholder engagement

APA's obligations under the SOCI framework and the potential cost impacts on the VTS were presented to stakeholders.

We presented APA's obligations under the Australian Government's Security of Critical Infrastructure (SOCI) framework. The SOCI Act 2018 (SOCI 2018) established a framework to manage national security risks to critical infrastructure assets which includes maintaining and reporting to the Critical Infrastructure Centre on a register of operational or direct interest information.

The Security of Critical Infrastructure Amendment Bill (SOCI 2020) introduces an enhanced framework, significantly expanding the scope of the existing legislation and governance rules requiring formally defined responsibilities and activities that support good risk practice and a greater awareness of threats and vulnerabilities to critical infrastructure assets.

The main concerns raised by stakeholders was about the quantum of costs to be incurred by APA and providing confidence that the costs were fair and reasonable. Further, there was a call for greater clarity on principles for allocating the costs between APA's regulated and unregulated pipelines and that the allocation is a fair and reasonable.

4.4.2. APA response and proposed approach

The quantum of costs to meet the SOCI obligations is a truly relevant and real conversation that we are having internally about what is proportionate to the compliance obligations that we have. We are undertaking bottom-up and top-down modelling to work out the ranges and sensitivity analysis on the category of criticality. In addition, APA is an ASX listed company and faces the intense scrutiny by investors. APA is strongly focused on SOCI costs as a substantial proportion will be borne by APA security holders. The SOCI related cyber-security costs presented to stakeholders were based on our best estimates at the time, noting that APA's assessment of meeting SOCI obligations is continuing.

4.4.3. Questions for stakeholders

No.	Questions for stakeholders
11	Do you have any comments about APA's SOCI requirements?
12	Do you have any suggestions for cost allocation principles related to SOCI?

5. Capital expenditure

5.1. Capital expenditure draft forecasts

5.1.1. Background and context

During engagement with stakeholders, we presented our best available information on an ongoing basis. There were several changes during the engagement including revisions in forecasts for replacement expenditure, revisions for the security of supply-related Western Outer Ring Main (WORM) and options for security of supply-related investment in South West Pipeline. We presented information on the proposed hydrogen assessment which we are proposing to add to the capital expenditure forecasts. The capital expenditure forecasts presented in this section incorporate the proposed safety and integrity assessment of VTS pipelines to carry hydrogen.

5.1.2. Stakeholder engagement

Stakeholders emphasised the need for APA to explain the reasons for the upward revision in the replacement and WORM forecasts and the need to demonstrate that the proposed forecast capital expenditure is fair and reasonable. Further, that we explain how costs are allocated between APA's regulated and unregulated assets to provide assurance that costs were allocated appropriately. Our consideration and response to these concerns is discussed in the following sections.

5.2. Capital expenditure actuals, estimates and proposed forecasts

The trend in capital expenditure from the current period (2018 to 2022) to the next period (2023 to 2027) is shown in Figure 1 and Table 4Table 1 below. Draft proposed total capital expenditure for 2023-2027 of \$343.4 million is 21% higher than the total capital expenditure for the current period.

The increase is driven by an increase in forecasts for replacement expenditure, inclusion of security related expansions and addition of a proposed hydrogen safety and integrity assessment.¹²

The following chart and table show the 10-year trend in capital expenditure for the current period and the draft proposed capital expenditure.

¹² The capital expenditure 10-year trend analysis shown at Roundtable 10 on 6 October did not include the hydrogen assessment as we wanted to get feedback about the proposal before showing it in the forecasts. Note that, the selection of tariff options presented had included the hydrogen assessment as either capital or operating expenditure.

Figure 1 Capital expenditure actual, estimated and forecast (\$millions)

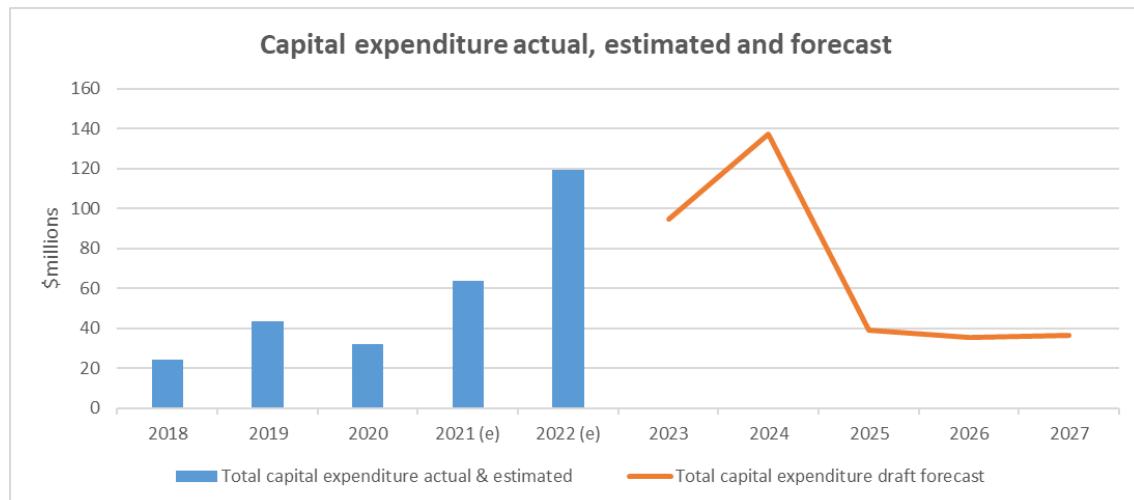


Table 4 Capital expenditure actual, estimated and forecast (\$millions)

Asset category (\$millions)	2018	2019	2020	2021 (e)	2022 (e)	2023	2024	2025	2026	2027
Replacement	4.3	11.6	11.4	28.4	17.9	31.8	44.0	27.8	25.0	24.3
Expansion	12.6	17.0	10.6	30.0	97.3	46.3	73.8	-	-	-
Other - Hydrogen safety	-	-	-	-	-	7.6	7.6	7.6	7.6	7.6
Non-network	7.3	14.7	10.2	5.4	4.0	3.5	3.6	1.7	1.3	3.0
Capitalised overhead	-	-	-	-	-	5.6	8.3	2.0	1.8	1.8
Total capital expenditure	24.3	43.3	32.2	63.8	119.2	94.8	137.3	39.1	35.6	36.6

In the current period there is an uptick in 2021 and 2022 capital expenditure due to ramp up in expenditure on the Western Outer Ring Main (WORM). In the next period, both 2023 and 2024, include continuing expenditure on the WORM and new SWP_570 expansion before flattening out again. The lumpy nature of expansion projects is the reason for the peakiness of the capital expenditure.

Note that we started to split out capitalised overheads (from other capital expenditure) for the next access arrangement period. Up until 2023, APA has been allocating overheads to other asset categories. In the above forecasts, we have included the forecast cost of the proposed hydrogen safety and integrity assessment. The cost of the assessment is \$37.9 million.

Figure 2 Capital expenditure 2018-2022 and 2023-2027

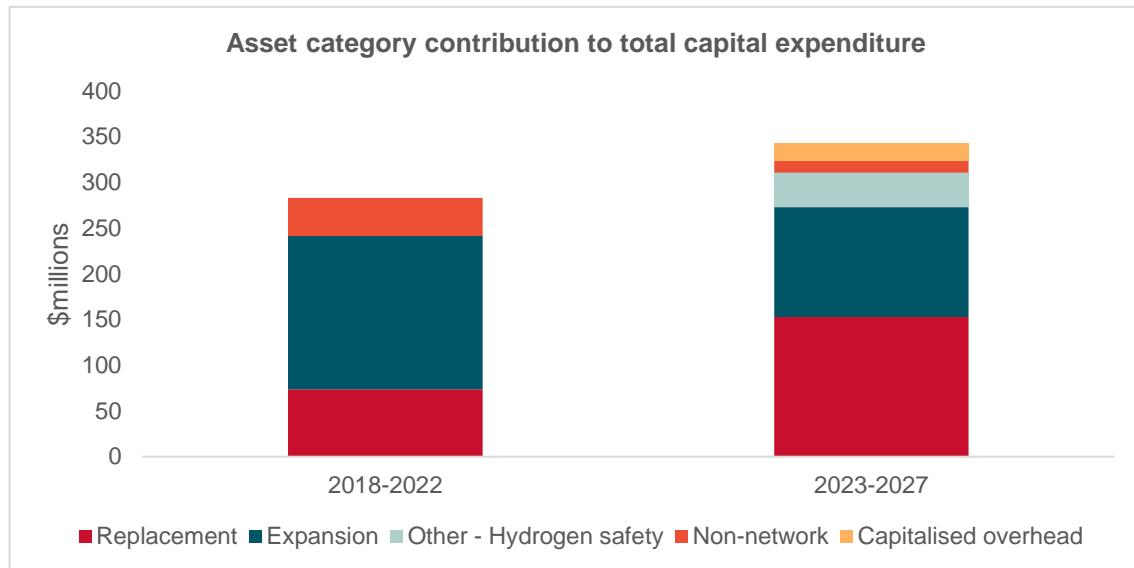


Figure 3 Asset categories as a percentage of total capital expenditure 2018-2022 and 2023-2027

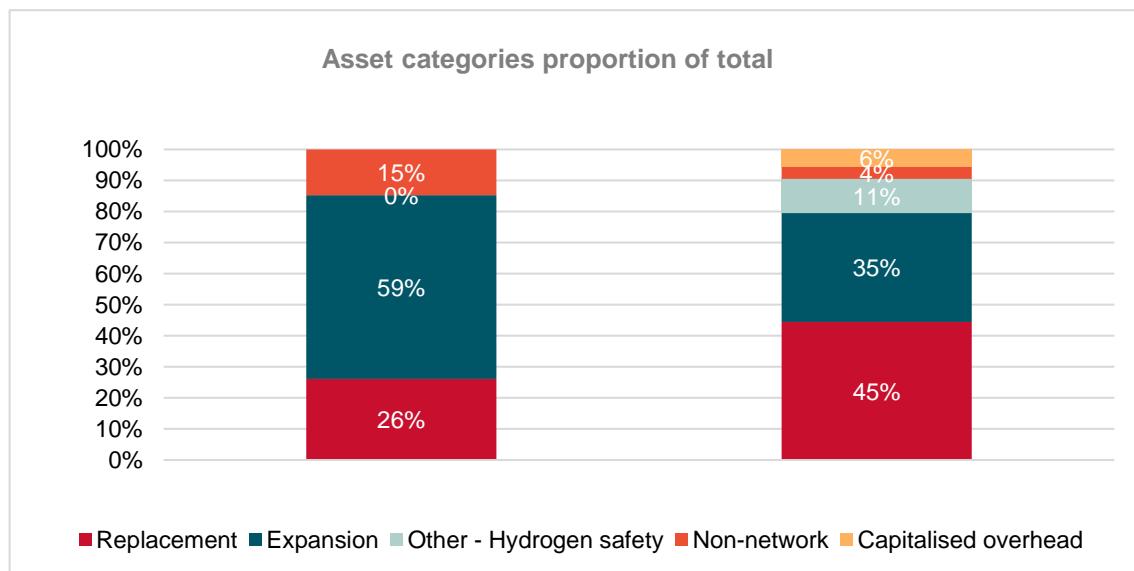


Figure 3 shows that replacement expenditure as a proportion of the total expenditure increases by 19 percentage points. Security-related expansion is lower as expenditure on the WORM is ending. Capitalised overheads are a low proportion (6%) of total capital expenditure.

5.3. Replacement capital expenditure

5.3.1. Stakeholder engagement

We presented APA's asset management framework and lifecycle management plan for the VTS as well as preliminary replacement (stay-in-business) plans and forecasts early in the engagement. The feedback we received on preliminary forecasts questioned the timing of the stay-in-business plans and forecasts. Since the preliminary plans we reassessed the timing of the expenditure to smooth it out over the access arrangement period.

Stakeholders sought to understand the drivers for the increase in the replacement expenditure forecasts and substantiation and justification for them. There was also a concern that projects may have been approved in the previous period but not carried out.

5.3.2. APA's response and draft proposal

APA manages the VTS to ensure that we meet our obligations under the National Gas Rules, Victorian safety obligations, and the Service Envelope Agreement with AEMO. APA's asset management framework provides for systematic and coordinated activities and practices through which we optimally and sustainably manage our assets, their associated performance, revenues, risks, and expenditures over the asset life cycles. We focus on top-down strategic input, bottom-up business planning.

A large proportion of the replacement and stay-in-business programs and projects are ongoing and span several regulatory access periods (over half are ongoing and represent over 80% of the value of the proposed replacement forecast). The replacement program and projects are integral to maintaining and improving safety, security and reliability of transmission services. Most are underpinned by regulatory obligations and standards.

Under APA's asset management approach, risks and priorities are assessed on an ongoing basis. In some cases, programs and projects that formed the AER approved forecasts may not always be the ones that get assessed as a priority as part of the asset management planning, or there may be changes in their scope and cost. At least six projects from the current period were deferred to allow for other priority projects (for example, to fund more work on unpiggables) and have been carried over into the current period. The replacement program and project justifications will form part of the VTS access arrangement proposal.

The proposed replacement capital expenditure program represents a significant increase in over expenditure in the current period. This increase is mostly due to:

- A greater focus on asset integrity
- Increase in high consequence areas
- New obligations under that Security of Critical Infrastructure (SOCI) obligations (as discussed in section 4.4).

Figure 4 Key replacement programs and projects as proportion of total forecast

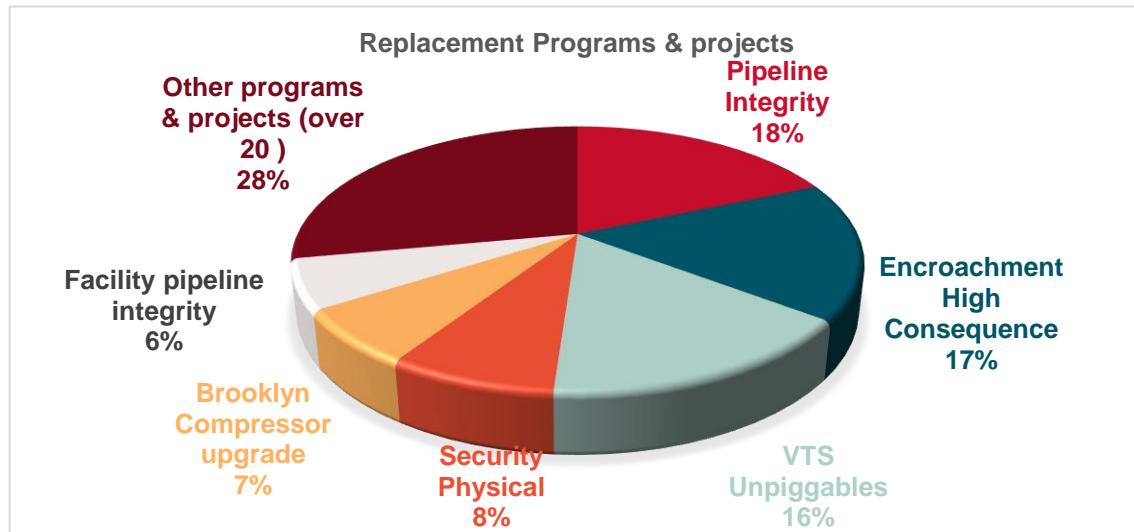


Table 5 Major replacement programs and projects (\$millions)

Major replacement programs & projects (\$millions)	2023-2027
Pipeline Integrity	28.2
Encroachment High Consequence	25.8
VTS Unpiggables	24.1
Security Physical	12.4
Brooklyn Compressor upgrade	10.3
Facility pipeline integrity	9.3
Other programs & projects (over 20)	42.7
Total replacement expenditure	152.8

5.3.3. Drivers for replacement (stay-in-business) programs and projects

Replacement program and projects are driven by the need to maintain and improve the safety, security, reliability and integrity of services. Replacement programs and projects are underpinned by legislative obligations and Australian Standards.

As the VTS ages, there is an increased focus on asset integrity management programs that provide for APA to review the condition of each pipeline. As shown in Table 5, program for pipeline integrity is the highest cost project. The aim of this project is to ensure that VTS buried gas pipelines remain fit for safe and reliable service.

The ‘unpiggable’ pipelines program is the third largest program in the total replacement program. The objective of the unpiggable pipelines program is to enable the inline inspection of historically unpiggable pipelines to conform to APA integrity policy and ensure safe reliable operation of the VTS unpiggable pipelines.

Greater urbanisation, residential development, and urban sprawl (especially around Melbourne and surrounds) has resulted in encroachment near VTS pipelines and equipment. Location of VTS pipelines and equipment have in the past been a lot more isolated. Encroachment has resulted in properties located closer to VTS pipelines and equipment. Encroachment has increased the risk and consequence of a safety incident and in response APA has enhanced focus on measures to reduce these risks and consequences. We will provide further information in the encroachment project justification.

To meet SOCI obligations, we have enhanced physical protection which we forecast will cost \$12.4 million. Other SOCI costs have been included in the Transformation and Technology program discussed in section 5.7.

5.3.4. Questions for stakeholders

No.	Questions for stakeholders
13	Do you have any comments about APA's replacement capital expenditure proposal?

5.4. Expansion of the South West Pipeline

5.4.1. Stakeholder engagement

APA is facing pressure from governments to invest in expansion of capacity on the South West Pipeline (SWP) to provide greater security of supply in Victoria. We heard support from stakeholders for investment in security of supply in the VTS, especially for businesses who relied on gas. Lochard Energy informed the group at the Capital Issues Working Group in July 2021 that it had reached Final Investment Decision (FID) to enable Iona to reach 570 TJ/d of SWP injection capacity from 2023 and that this capacity and the planned increase in gas production from western Victoria will require further SWP capacity expansion beyond 468 TJ/d (post WORM). Lochard said that further expansion of SWP capacity is the key enabler for the incremental swing capacity to reach the demand centres when the market needs it the most. Lochard stated that the requirement of further expansion of SWP must be considered within the 2023-2027 AA process.

As an alternative to investing in SWP, proponents for LNG import terminals claimed that LNG import terminals would not require any investment on SWP suggesting that this may be a preferred course of action. It was noted that AEMO modelling showed that the Viva proposal would increase capacity in VTS by 300TJ per day, without the need for any VTS investment.

Other stakeholders raised concerns that the proposal to invest in SWP was a using long-lived assets to solve a short-term problem - “Is this for system security that may only be needed for five years?” There was a concern that future customers would be left to pay for an asset that may not be required in the longer term.

5.4.2. APA's response and draft proposal

APA is proposing a staged approach to invest in the SWP to balance the need for system security with concerns that the situation on the SWP was a short-term problem.

The first stage would be for APA to invest in enough compression to support Iona Storage capacity to 570TJ/day (SWP_570). Lochard has reached FID for this expansion whereas other LNG proponents had not in time for APA to consider as part of this AA proposal.

If other proponents do reach FID at a later stage, APA would consider lodging a pre-approval under Rule 80 of the NGR.

As discussed in section 4.1, the current supply and demand forecast indicates a need to expand the SWP to meet forecast peak demands. As shown in the charts in section 4.2, this expansion will potentially be required for winter 2024.

There are several options to provide the additional required capacity of the SWP between Iona and Brooklyn, featuring varying combinations of compression and looping.

From the options investigated, we have landed on an option featuring two compressors, one each at Stonehaven (where we own buffer zone land) and one at Pirron (where we would need to acquire buffer zone land). Upgrades to the Brooklyn City Gate may also be required.

The forecast cost and timing of this project are shown in the table below.

Table 6 Proposed capital expenditure for SWP_570¹³

\$million	2023	2024	2025	2026	2027 Total
SWP570					
Option 4	0.0	71.0	0.0	0.0	0.0 71.0

The timing of this investment is not certain at this stage. While the current revenue modelling includes this entire amount in 2024, it may be sensible to stage the investment to follow the declining trend in Longford production to reduce the risk of over investment.

The costs associated with SWP expansion are likely to be allocated to the injection tariff rather than the withdrawal tariff.

5.4.3. Economic conditions for expansion of the SWP

At the highest level, the purpose of the economic regulation framework is to provide a certain and stable investment environment to attract private capital to build public infrastructure. This investment framework is often referred to as the “regulatory compact” – the implicit agreement between regulator and regulated underpinning the provision of capital.

A key element of the regulatory compact is the assurance given to the providers of capital that they will be able to earn a return on, and of, their invested capital. This assurance is a key element in the risk/reward decision-making process for investors to provide capital at regulatory rates of return.

¹³ Direct costs only – not including overheads.

Where the risk/reward balance has been affected by other factors, adjustments must be made to maintain the provision of private capital to public infrastructure.

In this case, the Victoria Government's Net Zero 2050 initiatives have challenged the regulatory compact's expectations around the ability of investors to recover their prudently invested capital. In the case of the SWP expansion, this is manifested in two ways:

1. It is not clear that there will be an ongoing role for the SWP expansion in the context of the Net Zero 2050 horizon, and
2. With mooted demand reductions, the SWP expansion investment may become exposed to the capital redundancy provisions of Rule 85 of the National Gas Rules.

Without adjustment to the regulatory framework to counterbalance the changes in risk introduced by the Net Zero 2050 initiatives, it will be very difficult for the necessary public infrastructure projects to attract private capital.

We consider that there are two avenues to adjust the regulatory framework to re-establish the regulatory compact risk/reward balance:

1. to increase the allowed return *on* capital to accommodate the additional risk associated with the return *of* capital, or
2. to provide greater certainty surrounding the return *of* capital such that the rate of return *on* capital remains appropriate.

The return *on* capital is governed by the AER's binding Rate of Return Instrument. We consider that the more feasible option is to focus on the return *of* capital.

We propose to address this change in risk through adjustments to the return *of* capital provisions under this access arrangement. More specifically, we propose:

1. a maximum 25-year asset life be applied to the SWP expansion investment to align with the Net Zero 2050 horizon, and
2. a Fixed Principle (Rule 99) be included in the access arrangement that the investment in SWP expansion is not subject to the Rule 85 capital redundancy provisions (this would apply on an ongoing basis).

5.4.4. Questions for stakeholders

No.	Questions for stakeholders
14	Do you have any comments about APA's proposed approach to the investing in the SWP?
15	How will you or your customers be impacted by the proposed SWP?

5.5. Western Outer Ring Main

5.5.1. What we heard from stakeholders

We presented on the progress of the WORM which had been approved by the AER for delivery in the current period. Stakeholders supported the project and questions were raised about the progress of building the WORM noting that it will have taken five years from the AER approval to project completion. Concerns were raised about whether it could potentially be a stranding risk in the future considering changes in energy policy.

5.5.2. APA's response and draft proposal

The Western Outer Ring Main (WORM) was proposed by APA (and supported by AEMO) for the 2018-22 access arrangement period capital program to address tightening of supply / demand balance forecast by AEMO in March 2017. The project is a high pressure, buried gas transmission pipeline, 51 kilometres long, which will provide a new connection between existing pipelines at Plumpton in Melbourne's west and Wollert in the north. The project also includes an upgrade to the existing compressor station at Wollert.

In the AER's 2017 Final Decision 2018-22 on the access arrangement for VTS, a total of \$126.7 million (\$2017) was included in the VTS capital program to undertake the WORM project. The WORM was justified based on the need to maintain system security.

In December 2019, the Victorian Minister for Planning determined that an Environment Effects Statement (EES) was required for the WORM. The Inquiry Panel Hearing commenced on 4 October 2021

During the preparation of the EES documentation, several environmental matters were identified that needed to be addressed including, an increase in number and length of horizontal directional drilling. In addition, the cost of meeting biodiversity offset obligations is significantly higher than originally forecast. The updated cost of the WORM is shown in the table below.

Table 7 Capital expenditure for Western Outer Ring Main (\$millions)

\$ millions	2018-2022	2023-2027	Total
Western Outer Ring Main	135.8	49.0	184.8

The key cost variances from the original forecast in 2017 are due to:

- Forecast increase in construction costs (\$24 million) due to the number and length of horizontal directional drilling and rock disposal (the need for this discovered during the EES), additional EES conditions, Department of Transport requirements, and Covid related costs
- Land access and approval costs (\$20 million) including EES process itself, net gain offsets, land access compensation, cultural heritage salvage works
- Materials procurement (\$7.5 million) due to higher steel prices and delays in placement of orders due to EES.

APA is currently preparing to go to market for pipeline and facilities construction. Depending on the planning approvals, we expect the WORM to be completed by mid-2023.

5.5.3. Questions for stakeholders

No.	Questions for stakeholders
16	Do you have any comments about the WORM project?
17	How will you or your customers be impacted by the WORM?

5.6. Hydrogen safety and integrity assessment

5.6.1. Stakeholder engagement

In August 2021, Energy Ministers agreed on an expedited process to amend the National Gas Law, National Energy Retail Law and subordinate instruments so hydrogen blends, biomethane and other renewable methane gas blends are brought within the national energy regulatory framework.

The Energy Ministers' agreement likely places an obligation on the VTS to accept hydrogen blends in the gas stream. The safety and operational consequences of this potential obligation must now be considered.

Over the course of the stakeholder engagement on the VTS access arrangement, we have been discussing the potential to repurpose the VTS to transport hydrogen. At the Capital Issues Workshop in July (prior to the Energy Ministers' announcement), we had suggested undertaking a study of VTS pipelines to ascertain their ability to accommodate hydrogen in the gas stream.

Some stakeholders considered there was merit in an assessment being undertaken but there were concerns about the cost and who should fund such an assessment. Others did not support customers funding the study. There was a request for APA to work with storage facility owners on the implications for them.

More generally there was a question about whether hydrogen 'was the answer' and concerns about costs to customers for changing to hydrogen compatible appliances. There was a general concern at the lack of a policy on energy and climate change overall to drive these types of policy decisions.

APA held an information session to provide more information to stakeholders about hydrogen and work underway by APA. Following this, we presented the scope and costings to assess the impact of hydrogen blends in the VTS.

5.6.2. APA response and proposed approach

Following the Energy Ministers' announcement, APA considers that there is a need to undertake a technical assessment to understand the safety and integrity impacts of hydrogen on the VTS. The current challenge with repurposing the existing natural gas pipeline network is understanding what impact the introduction of hydrogen might have on the pipeline and its operation. When a steel pipeline, like the existing VTS network, is exposed to high pressure hydrogen, hydrogen is absorbed into the steel and can degrade the material properties. This phenomenon is known as hydrogen embrittlement and has the potential to impact the integrity and safe operation of the pipeline if it is not quantified and understood.

Currently, there is no Australian standard for design of new hydrogen pipelines or conversion of existing infrastructure. Plans are in progress that will develop these over the next five years. Work by gas infrastructure companies will provide much-needed technical data to support an evidence-based approach to developing these standards.

The VTS has been built over many years, with a wide range of pipeline extensions and expansions of varying vintages and materials. Absent detailed engineering testing, we do not have sufficient knowledge to understand the scope for the various pipelines comprising the VTS to safely accept hydrogen blends. To maintain safe operation, pressure reduction may be required, which would have a significant effect on VTS capacity.

APA is proposing to undertake an assessment to provide sufficient data to understand the impacts of hydrogen embrittlement on pipelines in the VTS. The information will allow APA to quantify the integrity impacts and suitability for hydrogen blending up to 10% by volume, and any remedial works or changes in operation required to ensure continued safe operation of the VTS.

The findings from the assessment will be used to support VTS strategic network planning by identifying which parts of the network are suitable for hydrogen blending, and which are not.

We propose to undertake an assessment of the VTS pipelines to ascertain their capability to accommodate hydrogen blends in the upcoming access arrangement period. The scoping and costing of the assessment are presented in the table below.

Table 8 Scope and cost of hydrogen safety and integrity assessment

Work scope	Cost est. \$millions	High level description
Line Pipe Sampling	12.8	Excavation and collection of samples from in service pipelines
Line Pipe Testing	4.3	Testing of samples in air and hydrogen to assess material impacts
Lateral In Situ Inspections	5.8	Inspection of laterals (at offtake & delivery stations) for critical material properties
Pipeline Assessment Report	2.0	Collation of test results and assessment recommendations for each pipeline tested
Pipeline Assemblies Assessment	2.6	Pipeline Assemblies include main line valves and scraper stations. Assessment assumed to include site visit and desktop assessment
Facilities Assessment	7.3	Metering and offtake station assessment including type B equipment such as water bath heaters
Complex Facilities Assessment	0.9	Three facilities are assumed to require more complex assessment due to equipment on site (including compressors)
Safety Management Studies (SMS)	1.5	An SMS review for each pipeline involving project team, pipeline engineering, operations engineering, asset management and field services
Final Report	0.7	A final report collating all assessment findings and recommendations for line pipe, pipeline assemblies and facilities
Total	37.9	

This project is significantly informed and advanced by the work that APA has been doing on testing the Parmelia Gas Pipeline for hydrogen conversion. While the costs of the Parmelia project are not borne by VTS customers, the learnings from that project will significantly benefit and reduce the costs of the VTS testing.

5.6.3. Questions for stakeholders

No.	Questions for stakeholders
18	Do you have any comments about the proposed assessment for hydrogen?
19	Do you have any views about the role of hydrogen in meeting future energy needs?

5.7. Non-network expenditure

5.7.1. Transformation & Technology

APA is undergoing a review of the corporate Transformation and Technology (T&T) program. APA has several legacy systems that need to be replaced. However, APA is still in initial stages of preparing business solutions for the replacement technology. APA's Transformation & Technology covers the following core functions:

- Transformation Office. Responsible for ensuring projects deliver optimum business value as early as possible and ensuring a continuous improvement focus
- Operational technology. Ensures APA has appropriate, resilient and high performing real time systems and engineering applications, data and solutions
- Information & Technology. Partners with business units to deliver end to end I&T solutions.

Key drivers impacting the Transformation & Technology program are set out in the following table.

Key drivers impacting T&T	
Replacement of obsolete legacy systems.	<ul style="list-style-type: none"> • APA has several legacy systems that are reaching end of technical life • The need for replacement driven by the condition and obsolescence of system components and the lack of ongoing vendor support.
Cyber security and obligations under Security of Critical Infrastructure legislation	<ul style="list-style-type: none"> • When passed, the SOCI Amendment Bill significantly increases the obligations and effort required by APA to maintain compliance (as discussed in section 4.4).
Migration to cloud-based services	<ul style="list-style-type: none"> • IFRC clarification to accounting standards for cloud migration (Software as a Service and Platform as a Service) has influenced consideration of whether programs were operating or capital expenditure • Due to this accounting clarification, a higher proportion of cloud-based business solution costs are being allocated to operating rather than capital expenditure • Noting that Operational Technology projects would remain as capex.
Routine upgrades and maintenance	<ul style="list-style-type: none"> • Licensing • System upgrades.

VTS is allocated a cost of the T&T budget based on a cost allocation method using a revenue allocation. This allocation is 8.21% of total corporate costs and is shown in the tables below.

Capital expenditure forecasts						
Portfolio (\$millions)	2023	2024	2025	2026	2027	Total
Transformation Office	2.1	2.1	1.2	0.4	0.4	6.2
Operational Technology	1.3	1.1	0.8	0.7	0.7	4.5
Information Technology	0.1	0.0	0.0	0.1	-	0.2
Total	3.4	3.2	2.0	1.2	1.1	10.9

Operating expenditure forecasts						
Portfolio (\$millions)	2023	2024	2025	2026	2027	Total
Transformation Office	4.1	4.7	3.2	2.5	2.5	16.9
Operational Technology	0.1	0.1	0.1	0.1	0.1	0.6
Information Technology	-	-	-	-	-	-
Total	4.2	4.8	3.3	2.6	2.6	17.5

Information on the T&T program, VTS's share of the program, its scope and justification will be submitted as part of the access arrangement proposal to the AER in December.

5.7.2. Questions for stakeholders

No.	Questions for stakeholders
20	Do you have any comments about the proposed Transformation and Technology plans?

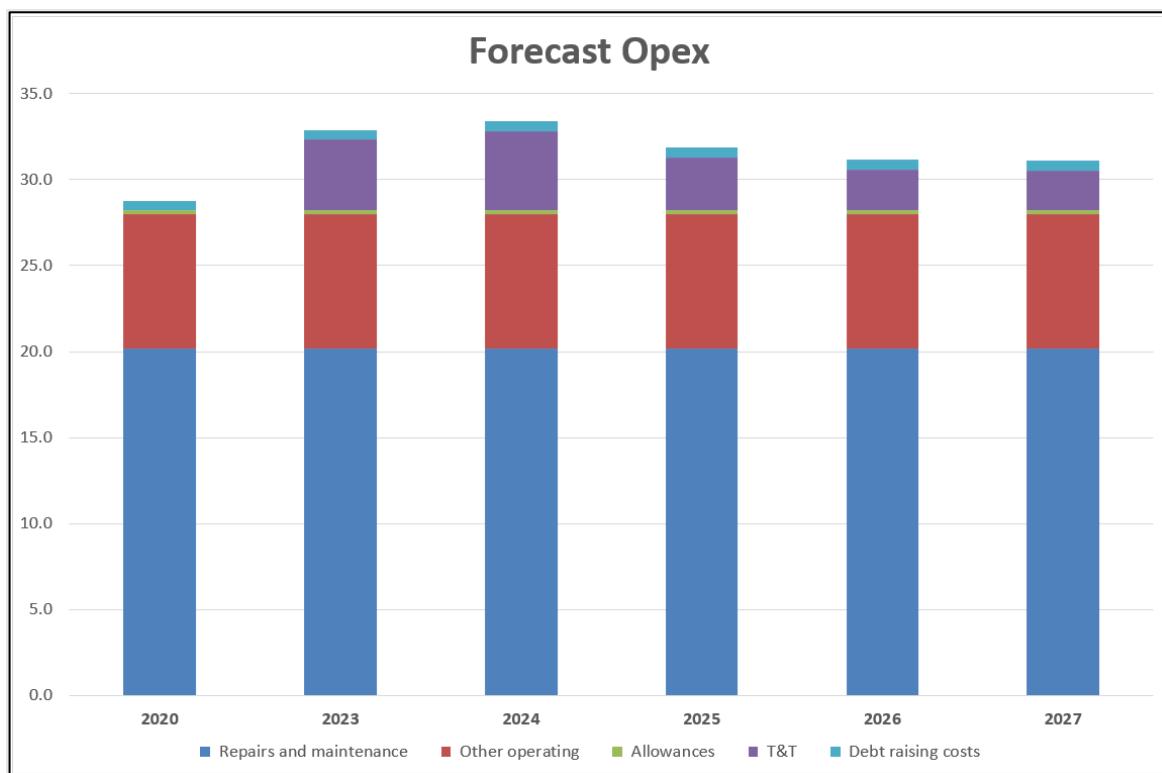
6. Operating expenditure

6.1. Base step trend approach

We have applied the AER's preferred base-step-trend approach to operating expenditure forecasting, using a 2020 base year (the last complete year at time of writing), as reported to the AER in response to the 2020 Annual Reporting Regulatory Information Notice.

At this stage we have forecast that ongoing operating expenditure will remain flat in real terms from the 2020 levels.

Table 9 Forecast operating expenditure (\$millions)



As discussed at the stakeholder roundtables, we have added step changes for the operating expenditure associated with the T&T forecasts, which address both IT systems migration to the cloud, and also operating cost components of the Security of Critical Infrastructure requirements.

VTS customers benefit significantly from being part of the APA Group portfolio of energy infrastructure assets, in two ways:

1. As a larger group, APA achieves significant economies of scale in developing systems and processes at a national level rather than for an individual business. The VTS incurs only a portion of the overall costs, which is less than the costs that would be incurred were the VTS a stand-alone business.

2. VTS customers benefit from the focus on cost efficiency through APA's operation of businesses whose revenues are determined through bilateral contracts. If APA's costs increase, these costs cannot be recovered from bilaterally contracted users. This places a sharp focus on all costs.

Where APA incurs costs nationally, those costs are allocated among the operating businesses using a consistent cost allocation methodology. Importantly, this cost allocation methodology is applied consistently across all of APA's fully regulated, light regulated and Part 23 pipelines. Further information on cost allocation is presented in section 4.3.

No.	Questions for stakeholders
21	Do you have any comments about the proposed approach to operating expenditure forecasts?

7. Other inputs to revenue

7.1. Rate of return on assets

The VTS access arrangement will be subject to the AER's binding [Rate of Return Instrument](#), which specifies the methodology to be applied in determining the costs of debt and equity reflected in the access arrangement proposal.

The 2018 Rate of Return Instrument is currently in effect, which provides for a Weighted Average Cost of Capital (WACC) to be calculated based on a 60% gearing ratio applied to calculated benchmark costs of debt and equity, determined as follows, in summary:

Cost of Equity	Cost of debt
Capital Asset Pricing Model	
Risk Free Rate based on yields of 10-year Commonwealth Government bonds	Based on a 10-year rolling average of BBB+ rated corporate debt with a 10-year maturity, updated annually through the access arrangement period.
Beta = 0.6	
Market Risk Premium = 6.1%	
Gamma = 0.585	

For the purposes of this First Look document, we have applied the Rate of Return Guideline calculating a cost of equity based on the 20 trading days up to 28 September 2021, 1.242%, delivering a Return on Equity of 4.903%.

The cost of debt applied by the AER in its most recent cost of debt update, as reflected in the VTS 2021 tariffs, is 4.31%. This cost of debt has been applied in this first look modelling which, when combined with a forecast cost of debt based on current observations, results in a declining trailing average portfolio return on debt as follows:

	2023	2024	2025	2026	2027
Trailing average portfolio return on debt	3.85%	3.63%	3.40%	3.22%	2.94%
Return on Equity	4.90%	4.90%	4.90%	4.90%	4.90%
Nominal Vanilla WACC	4.27%	4.14%	4.00%	3.89%	3.73%

Consistent with the Rate of Return Guideline, we have applied a Gamma rate of 0.585 and a corporate tax rate of 30%.

We had indicated to stakeholders that the rate of return was a matter on which we would inform them about as there was minimal scope for influence from stakeholders.

8. Proposed revenue and tariffs

8.1. Indicative tariff impacts

Through the stakeholder consultation round table sessions, we have discussed several initiatives and scenarios affecting the VTS access arrangement going forward. The tariff impacts of these initiatives and scenarios are presented below. It should be noted that these calculations are preliminary given the early stage of VTS revenue requirement and tariff modelling.

As discussed in section 3, the tariff analysis below is based on a “composite tariff” calculated based on 192PJ of gas being delivered each year. Tariff impacts are expressed as a “5-year composite tariff” – that is total revenue over the 5 years of the access arrangement divided by total throughput, 5 years x 192PJ/year.

Starting from a “vanilla base case” we discuss the tariff impacts of each of these initiatives, and some combinations of initiatives.

The initiatives whose tariff impacts are discussed in this section are:

- Base case: Asset lives 55 years, with indexation of asset base, with SWP_570; with hydrogen assessment
- Scenario 1. Shorten asset lives to 25 years (accelerated depreciation)
- Scenario 2. Without indexation of the regulatory asset base
- Scenario 3. Without SWP_570 capital expenditure.
- Scenario 4. Without hydrogen assessment.

The vanilla base case features parameters aligned to the current access arrangement, notably a 55-year standard life for pipeline assets and indexation of the regulatory capital base. This case includes the SWP_570 expansion and includes the costs associated with investigations to assess the VTS capability to accept hydrogen. Over the 5 years of the upcoming VTS access arrangement, the revenue requirement associated with this case is \$573.7 million, and the composite average tariff is \$0.5976/GJ.

Our proposed case can be found as Case 7. This features a capped asset life, removing indexation, and undertaking both the SWP_570 expansion and the hydrogen capability testing.

The tariff impacts analysis is conducted as follows:

- Starting from the vanilla base case, we look at the impact of individually changing each of the features on this access arrangement proposal.
- We then examine the impact of combinations of those features

The key features of each case studied, and their tariff impacts, are highlighted below:

	Pipeline asset life (years)	Indexation	SWP_570 capex	H2 testing capex	5-year revenue requirement	Composite tariff	Composite tariff Δ
1	55	yes	yes	yes	573.7	0.5976	0.5976
2	25	yes	yes	yes	+49.6	0.6493	+0.0517
3	55	no	yes	yes	+138.9	0.7423	+0.1447
5	55	yes	no	yes	-3.5	0.5940	-0.0037
6	55	yes	yes	no	-17.8	0.5791	-0.0185
7	25	no	yes	yes	+186.9	0.7923	+0.1947
8	25	no	yes	no	+172.3	0.7771	+0.1795
9	25	no	no	yes	+177.3	0.7822	+0.1846
10	25	no	no	no	+162.6	0.7670	+0.1694
12	25	yes	yes - staged	yes	+46.8	0.6464	+0.0488
13	25	no	yes - staged	yes	+182.0	0.7872	+0.1896

From this analysis, we can see:

The impact of moving from current standard asset lives to capped asset lives is approximately 5¢/GJ:

	Pipeline asset life (years)	Indexation	SWP_570 capex	H2 testing	5-year revenue requirement	Composite tariff	Composite tariff Δ
1	55	yes	yes	yes	573.7	0.5976	0.5976
2	25	yes	yes	yes	+49.6	0.6493	+0.0517

The impact of removing indexation of the capital base is approximately 14.5¢/GJ:

	Pipeline asset life (years)	Indexation	SWP_570 capex	H2 testing	5-year revenue requirement	Composite tariff	Composite tariff Δ
1	55	yes	yes	yes	573.7	0.5976	0.5976
3	55	no	yes	yes	+138.9	0.7423	+0.1447

Indexation of the asset base has the largest impact on tariffs but is also the most effective in returning capital to investors to reduce tariffs in the future. This will be key to ensuring that future customers, particularly vulnerable customers, are not disadvantaged.

The impact of undertaking the SWP_570 expansion is in the order of 0.4¢/GJ:

Pipeline asset life (years)	Indexation	SWP_570 capex	H2 testing	5-year revenue requirement	Composite tariff	Composite tariff Δ
1	55	yes	yes	yes	573.7	0.5976
5	55	yes	no	yes	-3.5	0.5940

The impact of undertaking the VTS hydrogen capability testing is in the order of 1.8¢/GJ:

Pipeline asset life (years)	Indexation	SWP_570 capex	H2 testing	5-year revenue requirement	Composite tariff	Composite tariff Δ
1	55	yes	yes	yes	573.7	0.5976
6	55	yes	yes	no	-17.8	0.5791

The impact of both capping asset lives and removing indexation is in the order of 19.5¢/GJ:

Pipeline asset life (years)	Indexation	SWP_570 capex	H2 testing	5-year revenue requirement	Composite tariff	Composite tariff Δ
1	55	yes	yes	yes	573.7	0.5976
7	25	no	yes	yes	+186.9	0.7923

Staging the SWP_570 expansion to 2026 and 2027 to better match the declines in Longford production saves approximately 0.3¢/GJ over the 5-year period:

Pipeline asset life (years)	Indexation	SWP_570 capex	H2 testing	5-year revenue requirement	Composite tariff	Composite tariff Δ
2	25	yes	yes	yes	+49.6	0.6493
12	25	yes	yes - staged	yes	+46.8	0.6464

8.2. Proposed revenue

As discussed through the stakeholder consultation process, our proposed option features:

- Curtailing all new and remaining asset lives to 25 years to align with the Victoria Net Zero 2050 commitments
- Ceasing to index the regulatory capital base
- Constructing the SWP_570 expansion for security of supply, and
- Conducting a VTS hydrogen capability assessment.

The total (unsmoothed) revenue requirement arising from this suite of proposal is as follows:

Building Block Components (\$m, Nominal)	2023	2024	2025	2026	2027
Return on Capital	48.5	48.8	47.1	46.1	44.2
Return of Capital (regulatory depreciation)	50.5	63.5	72.2	71.4	70.4
Operating Expenditure	33.7	35.1	34.3	34.4	35.2
Revenue Adjustments	-	-	-	-	-
Net Tax Allowance	2.3	3.8	4.7	4.7	5.1
Total Revenue (unsmoothed)	134.9	151.1	158.3	156.6	154.8
	0.7027	0.7870	0.8246	0.8156	0.8062

The building block revenue shown reflects staging the SWP_570 expansion (case 13). Staging the SWP_570 expansion affects the revenue requirement numbers beyond the decimal points shown but has a minor impact on the annual tariff numbers.

8.2.1. Questions for stakeholder

No.	Questions for stakeholders
22	Do you have any views about the tariff scenario analysis? Are there other scenarios we should consider?
23	Do you have any comments about the calculation of the draft revenue requirements?

Glossary

Acronym	Name	Acronym	Name
AA	Access Arrangement	PKGT	Port Kembla Gas Terminal
AEMC	Australian Energy Market Commission	SMS	Safety Management Studies
AEMO	Australian Energy Market Operator	SOCI	Security of Critical Infrastructure
AER	Australian Energy Regulator	SWP	South West Pipeline
CAM	Cost allocation method	T&T	Transformation & Technology
DWGM	Declared Wholesale Gas Market	VGPR	Victorian Gas Planning Report
EES	Environment Effects Statement	VTS	Victorian Transmission System
FID	Final Investment Decision	WACC	Weighted Average Cost of Capital
GSOO	Gas Statement of Opportunities	WOOP	Window of Opportunity
HDD	Horizontal directional drilling	WOOPS	Window of Opportunity being Passed
IASR	Inputs Assumptions and Scenarios Report	WORM	Western Outer Ring Main