Draft Decision

APA Victorian Transmission System (VTS)

Access Arrangement 2023 to 2027

(1 January 2023 to 31 December 2027)

Attachment 5
Capital Expenditure

June 2022

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's draft decision on the access arrangement that will apply to APA's Victorian Transmission System (VTS) for the 2023–27 access arrangement period. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 – Services covered by the access arrangement

Attachment 2 – Capital base

Attachment 3 – Rate of return

Attachment 4 – Regulatory depreciation

Attachment 5 – Capital expenditure

Attachment 6 – Operating expenditure

Attachment 7 – Corporate income tax

Attachment 8 – Operating expenditure incentive mechanism

Attachment 9 – Reference tariff setting

Attachment 10 – Reference tariff variation mechanism

Attachment 11 – Non-tariff components

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5 Capital expenditure

Capital expenditure (capex) refers to the capital costs and expenditure incurred in the provision of pipeline services.[1] This investment mostly relates to assets with long lives and these costs are recovered over several access arrangement periods.

This attachment outlines our assessment of APA's proposed conforming capex for the Victorian Transmission System (VTS) over the 2018–22 access arrangement period (2018–22 period), which forms part of its opening capital base.[2] It also outlines our assessment of forecast capex for the 2023–27 period, which forms part of its projected capital base.[3]

5.1 Draft decision

5.1.1 Conforming capex for 2017 and the 2018–22 period

Our draft decision indicates whether we approve the access arrangement proposal as submitted, based on the information that we have available at the time.[4]

We approve $105.5 million ($2022) of total net capex for APA for the 2018–20 period as conforming capex under rule 79(1) of the National Gas Rules (NGR). This includes a placeholder amount for corporate shared assets and network overheads (sections 5.4.1 and 5.4.2.4).

We also approve APA's actual capex of $66.1 million ($2022) in 2017 as conforming capex for the purpose of establishing the opening capital base for the 2018–22 period.[5]

Table 5-1 sets out our approved capital expenditure by category over the 2017–22 period.

Table 5-1 AER approved capital expenditure by category over the 2017–22 period ($2022, millions)

Category	2017	2018	2019	2020	2021[a]	2022[a]	Total (2018–22)
Expansion	50.1	13.6	18.1	11.1	24.0	137.1	203.9
Replacement	8.2	4.7	14.2	13.8	26.6	19.6	78.9
Non-network	7.8	7.9	13.8	8.7	11.6	2.0	44.5
Gross Total Capital Expenditure	66.1	26.2	46.1	33.6	62.2	158.7	327.3
Contributions	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Asset disposals	0.0	0.4	0.0	0.0	0.0	0.0	0.5
Net Total Capital Expenditure	66.1	25.8	46.1	33.6	62.2	158.7	326.9

Source: AER analysis

(a) We have not assessed the 2021 or 2022 amounts as approved capex under this decision. This is because these values are estimates. We undertake an assessment of whether the 2021 amounts

1 NGR, r. 69.
2 NGR, r. 77.
3 NGR, r. 78(b).
4 NGR, r. 59(2).
5 NGR, r. 77(2)

are conforming capex in our final decision and 2022 as part of our next access arrangement decision.

We reviewed APA's submission and supporting material to assess its proposed capex for the 2023–27 period. This included information on APA's reasoning and, where relevant, business cases, responses to information requests and other relevant information. We used this information to identify whether capex over the 2017–21 period was conforming capex and, in turn, whether that capex should be included in the opening capital base.[6] Generally, we use the same approach to assess whether both historical and forecast or estimated capex conforms with the new capex criteria. We have set out this approach in more detail in section 5.3 below. We consider the following when determining the opening capital base for the 2023–27 period:

- 2017 capex – given that the 2017 year was a forecast at the time we made our 2018–22 final decision, we have assessed whether this is conforming capex.[7] We have included conforming capex in the opening capital base for the 2018–22 period.[8]
- 2018 to 2020 capex — since we have actual capex for these years, we have assessed whether this is conforming capex. [9] We have included conforming capex in the opening capital base for the 2023–27 period.[10]
- 2021 and 2022 capex — since we do not yet have actual capex for 2021 and 2022, we must include an estimate in the opening capital base. We have not assessed APA's estimate of capex for 2021 and 2022. We will assess 2021 in our final decision for the 2023-27 access arrangement, but will assess whether APA's actual capex for 2022 is conforming capex under the NGR in the subsequent (2028–32) access arrangement period and adjust for any differences between actual and estimated capex.[11]

5.1.2 Conforming capex for the 2023–27 period

We approve $186.3 million ($2022) of APA's proposed $352.0 million ($2022) total net capex for the VTS for the 2023–27 access arrangement period as conforming capex under the NGR.[12] This is 47 percent less than APA's proposed capex. The approved capex includes placeholder amounts for the South West Pipeline expansion (see section 5.4.2.1) and shared corporate assets and network overheads (see section 5.4.2.4). Most of the reduction in capex is because we consider APA has not provided sufficient information to the AER to justify or demonstrate the efficiency of its forecasts for overheads and a number of projects.

Table 5-2 shows approved capex for the 2023–27 period by category.

6 NGR, r. 77(2)(b).
7 Ibid.
8 Ibid.
9 Ibid.
10 Ibid.
11 NGR, rr. 77(2)(b), 79.
12 NGR, r. 79.

Table 5-2 AER approved capital expenditure by category over the 2023–27 period ($2022, millions)

Category	2023	2024	2025	2026	2027	Total
Expansion	69.1	2.8	0.0	0.0	0.0	71.8
Replacement	22.7	28.3	18.1	12.9	14.3	96.3
Non-system	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0
Network overheads	6.3	2.2	1.3	0.9	1.0	11.6
Shared corporate assets	1.1	1.9	1.0	0.4	2.2	6.5
Gross Total Capital Expenditure	99.1	35.2	20.3	14.2	17.5	186.3
Contributions	0.0	0.0	0.0	0.0	0.0	0.0
Asset disposals	0.0	0.0	0.0	0.0	0.0	0.0
Net Total Capital Expenditure	99.1	35.2	20.3	14.2	17.5	186.3

Source: AER analysis; APA, VTS 2023–27 Access Arrangement – Forecast capex model, December 2021.

Note: Numbers may not add up to totals due to rounding.

Expansion, network overheads, and shared corporate assets are placeholder amounts.

Table 5-3 below shows APA's proposed capex compared with our alternative capex estimate for each category. In coming to our draft decision, we assessed APA's forecast capex compared with our alternative capex estimate taking into account the available evidence and submissions from stakeholders.

Our assessment revealed that some of APA's proposal is conforming capex and we included this expenditure in our alternative estimate. That is, the proposed expenditure is justified and would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services.

In contrast, we found that other aspects of APA's proposal is not conforming capex and we have not included this expenditure in our alternative estimate. There are also areas where we have included the proposed expenditure on the basis that there is insufficient time, or information, for us to derive a better alternative estimate. As such, there might be further adjustments in the capex category in our final decision.

Table 5-3 AER's draft decision and APA's proposal for capex over the 2023–27 access arrangement period ($2022, million)

Category	APA's Proposal	AER's Draft Decision	Difference	Percentage Difference
Expansion	140.0	71.8	-68.1	-48.7%
Replacement	122.9	96.3	-26.6	-21.6%
Non-system	13.3	0.0	-13.3	-100.0%
Other capital expenditure	53.2	0.0	-53.2	-100.0%
Network overheads	22.5	11.6	-10.9	-48.4%
Shared corporate assets	0.0	6.5	6.5	

Gross Total Capital Expenditure	352.0	186.3	-165.7	-47.1%
Contributions	0.0	0.0	0.0	
Asset disposals	0.0	0.0	0.0	
Net Total Capital Expenditure	352.0	186.3	-165.7	-47.1%

Source: AER analysis. Totals may not sum due to rounding.

As shown in Table 5-3, the main differences between APA's proposed capex and our alternative capex estimate for the 2023–27 period concern the following capex drivers:

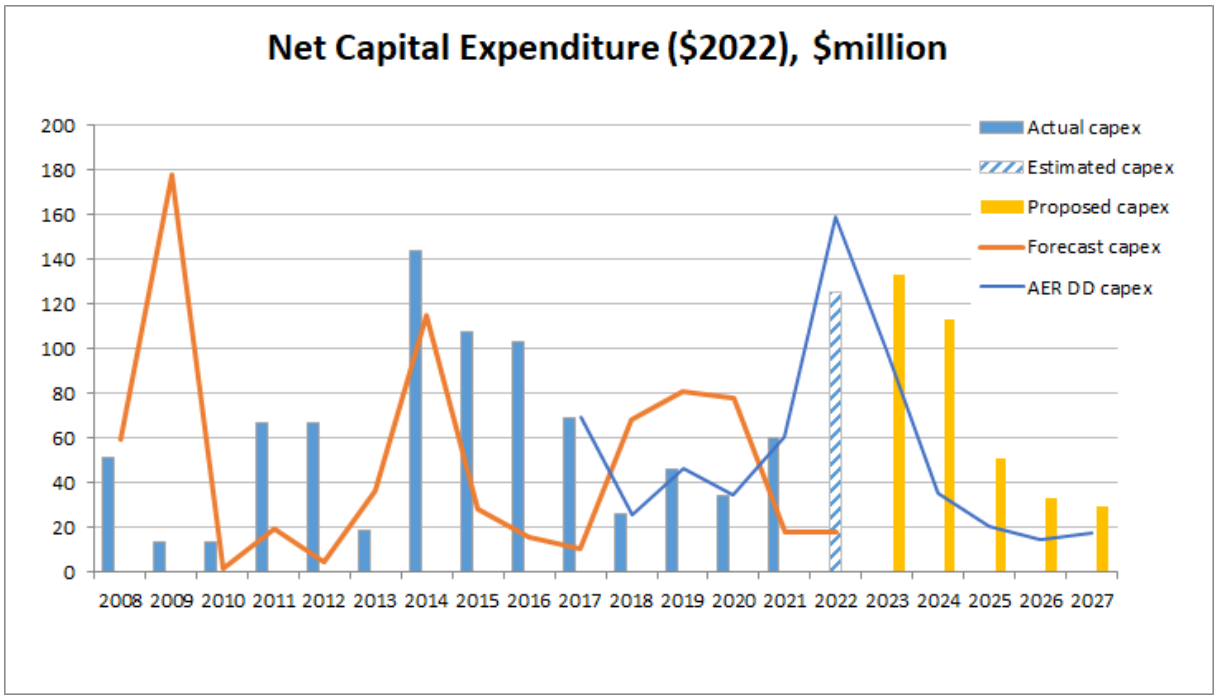
- Expansion – Our draft decision is to include $71.8 million ($2022, direct costs) of expansion capex in our alternative capex estimate. This is 48.7 percent less than APA's forecast capex of $140.0 million. We consider that APA's initial proposal for the expansion of the South West Pipeline is not prudent given the uncertainty in the demand forecasts and the likely location of future supply sources and any consequential constraints on the VTS. In section 5.4.2.1, we set out that we consider a more prudent and efficient solution is to install a second compressor at Winchelsea.
- Other – Our draft decision is to include $0 million of other capex in our alternative capex estimate. This is 100 percent lower than APA's forecast capex of $53.2 million. APA did not provide sufficient information to demonstrate that its Security of Critical Infrastructure Physical Security or its Hydrogen Safety and Integrity are prudent. We have set out in section 5.4.2.3 the information we require to be able to assess these projects.
- Replacement – Our draft decision is to include $96.3 million ($2022, direct costs) of replacement capex in our alternative capex estimate. This is 21.6 percent less than APA's forecast capex of $122.9 million. We have not approved a number of projects associated with upgrading the Brooklyn Compressor Station. We consider that with the completion of the Western Outer Ring Main expected in May 2023, the criticality of the Brooklyn Compressor Station will reduce, with some units no longer being required to operate and the remaining being used mostly for winter demand or high peak demand days.
- Non-network/Shared corporate assets – APA makes an allocation of APA Group assets to the VTS. APA records this as non-network[13] and other capex. For transparency and consistency of reporting across access arrangements, we are reporting this allocation as shared corporate assets. Our draft decision is to include $6.5 million ($2022) of capex for shared corporate assets in our alternative capex estimate. This is 51.1 percent less than APA's forecast non-network capex of $13.3 million.
- Network overheads – APA applies an overhead rate of 6.91 percent to all capex business cases. As we have a lower alternative forecast for expansion and replacement capex, a lower amount of network overheads is calculated. The amount we have included as network overheads is a placeholder amount. At this time we have insufficient information to assess the prudency and efficiency of these overheads (see 5.4.2.4).

[13] APA also included some shared corporate assets as 'other' capex (SoCI cyber and program projects).

5.2 APA's proposal

5.2.1 Capex over the 2017 and 2018–22 period

Figure 5.1 APA's capex trends



Source: AER analysis.

APA proposed total conforming net capex of $296.2 million ($2022) for the VTS for the 2018–22 period, where capex in 2021 and 2022 are estimates (see Table 5-4.[14] This is 12.4 per cent above the AER's approved forecast of $263.6 million ($2022) for the 2018–22 period.[15] Without the estimate of capex for 2021 and 2022, APA has proposed $105.5 million ($2022) as conforming capex (or $171.6 million including the 2017 year). We accept $105.5 million ($2022) as conforming capex for the 2017 to 2020 years, including a placeholder amount for network overheads. We will assess whether capex incurred in 2021 is conforming in our final decision, and whether capex incurred in 2022 is conforming at the next (2028–32) access arrangement review.

Table 5-4 APA's proposed capex by category over the 2017–22 access arrangement period ($2022, millions)

Category	2017	2018	2019	2020	2021[(a)]	2022[(a)]	Total 2018-2022
Expansion	50.1	12.6	17.0	10.6	30.1	97.3	171.3
Replacement	8.2	4.3	13.3	13.2	28.2	19.6	81.5
Non-System	7.8	7.3	13.0	8.3	5.9	3.6	40.1
Other	-	-	-	-	-	3.7	3.7

[14] APA, VTS - RFM - Dec 2021 – Public.xlm.

[15] AER, AER - Draft Decision Capex Model - July 2017.xlsx <https://www.aer.gov.au/system/files/AER%20-%20Draft%20Decision%20Capex%20Model%20-%20July%202017_2.XLSX>

Network overheads	-	-	-	-	-	-	-
Corporate overheads	-	-	-	-	-	-	-
Gross Total	**66.1**	**24.3**	**43.3**	**32.2**	**64.2**	**124.2**	**296.7**
Contributions	-	-	-	-	-	-	-
Asset Disposals	-	0.4	-	0.0	-	-	0.5
Net total	**66.1**	**23.8**	**43.3**	**32.2**	**64.2**	**124.2**	**296.2**

Source: VTS - VTS 2023-27 - Reset RIN - Workbook 2 - Historical expenditure - Dec 2021-Public.xlm; 2017 capex driver category expenditure is from VTS (APA GasNet) 2013-19 - Historical Annual Reporting - RIN Response - Consolidated - 30 April 2021 - PUBLIC.xlsx https://www.aer.gov.au/system/files/VTS%20%28APA%20GasNet%29%202013-19%20-%20Historical%20Annual%20Reporting%20-%20RIN%20Response%20-%20Consolidated%20-%2030%20April%202021%20-%20PUBLIC%20%2312%2C211%2C977.xlsx

Note: (a) is an estimate

5.2.2 Capex over the 2023–27 access arrangement period

For the 2023–27 period, APA forecast a total net capex of $352.0 million (see Table 5-5).[16] This is 18.8 per cent above APA's actual capex for the 2018–22 period.[17]

Figure 5.1 shows actual and estimated capex for the 2013–17 and 2018–22 access arrangement periods compared to the forecast.

Table 5-5 APA's proposed capex by category over the 2023–27 access arrangement period ($2022, millions)

Category	2023	2024	2025	2026	2027	Total 2023-2027
Expansion	80.7	52.4	6.8	-	-	140.0
Replacement	26.9	35.9	26.0	18.1	16.1	122.9
Non-System	3.1	3.9	2.0	1.3	3.0	13.3
Other	11.4	11.6	11.5	10.7	8.0	53.2
Network overheads	8.4	7.1	3.2	2.1	1.7	22.5
Shared Corporate Assets	-	-	-	-	-	-
Gross Total	130.6	110.9	49.6	32.2	28.8	352.0
Contributions	-	-	-	-	-	-
Asset Disposals	-	-	-	-	-	-
Net total	130.6	110.9	49.6	32.2	28.8	352.0

Source: VTS - VTS 2023-27 - Reset RIN - Workbook 1 - Forecast - Dec 2021 - Public v2.xlm; AER analysis.

16 APA, . VTS - PTRM - Dec 2021 – Public.xlm

17 APA's capex for both 2021 and 2022 are estimates only.

The major components of forecast gross total capex over the 2023–27 period are expansion (39.8 per cent), replacement (34.9 percent) and other (15.1 percent).

5.3 Assessment approach

We must make two decisions regarding APA's capex for the VTS.

First, we are required to assess past capex and determine whether it is conforming capex that we should add to the opening capital base.[18]

Secondly, we are required to assess APA's forecast of required capex for the VTS for the 2023–27 period to determine whether it is conforming capex. Capex will be 'conforming' if it meets the NGR's new capex criteria.[19]

The following sections set out our approach and the tools and techniques we employ in forming a view on these two issues. We also need to take into account timing issues associated with the lag between actual capex data being available in the last year of the 2018–22 period and the need to forecast the opening capital base for the 2023–27 period. We explain this in the next section.

5.3.1 Capex in the 2018–22 period

We reviewed APA's submission and supporting material to assess its proposed capex for the VTS for the 2018–22 period. This included information on APA's reasoning and, where relevant, business cases, responses to information requests and other relevant information.

We used this information to identify whether capex over the 2018–22 period was conforming capex and, in turn, whether that capex should be included in the opening capital base.[20]

Generally, we use the same approach to assess whether both historical and forecast or estimated capex conforms with the new capex criteria. We have set out this approach in more detail in section 5.3.2 below.

For the purpose of our draft decision, we have focused our resources on specific areas where there are significant overspends between the allowance and the expected actual. In the 2018–22 period, we have observed significant overspends in replacement and non-system categories.

5.3.2 Capex in the 2023–27 period

We have assessed the key drivers of forecast capex to consider whether APA's proposed capex for the VTS complies with the new capex criteria.[21] In doing so, we relied on the following information, including:

- the access arrangement submission and access arrangement information, which outline APA's capex program and the main drivers of those programs
- business cases that detail the expenditure requirements for specific projects

18 NGR, r. 77(2)(b).

19 NGR, r. 79.

20 NGR, r. 77(2)(b).

21 NGR, r. 79(1)

- APA's Regulatory Information Notice (RIN) responses
- APA's capex forecast model
- responses to information requests
- engineering advice we commissioned from Zincara to help us assess the prudency and efficiency of selected projects
- submissions from interested parties.

For each category of capex we considered the scope, timing and cost of the proposed capex in order to form a view on whether it complies with the new capex criteria. We also considered whether cost forecasts were arrived at on a reasonable basis and represent the best forecast possible in the circumstances.[22]

Our assessment results in an alternative estimate of the business's total capex requirements in the forecast period. If we are satisfied the business's total forecast meets the NGR requirements, we accept the forecast. If we are not satisfied, we substitute the business's forecast with our alternative estimate. In making this decision, we take into account the reasons for the difference between our alternative estimate and the business's forecast, and the materiality of that difference. We also take into consideration the interrelationships between the capex forecast and other constituent components of our decision such that our decision is likely to contribute to the achievement of the National Gas Objective (NGO).[23]

5.3.3 Interrelationships

In assessing APA's total forecast capex for the VTS, we took into account other components of its access arrangement proposal, including:

- possible trade-offs between capex and operating expenditure (opex)
- any differences between capitalisation policies applied in the 2018–22 and 2023–27 periods.

5.4 Reasons for the draft decision

5.4.1 Conforming capex for 2017 and for the 2018–22 period

Conforming capex for 2017

APA has proposed net capex of $66.1 million ($2022) for the 2017 year.[24] We accept $66.1 million ($2022) as conforming capex for 2017.

Conforming capex for the 2018–22 access arrangement period

APA has proposed net capex of $296.2 million for the 2018–22 period ($2022), where capex in 2021 and 2022 are estimates.

22 NGR, r. 74(2).

23 NGL, s. 28(1).

24 APA, VTS - RFM - Dec 2021 – Public.xlm, December 2021, tab: RFM input.

Without the estimate of capex for 2021 and 2022, APA has proposed $105.5 million as conforming capex.

We accept $326.4 million ($2022) as conforming capex for 2018–22, subject to the following:

- APA providing information regarding the efficiency of its proposed expenditure for the expansion of the South West Pipeline (installation of a second Winchelsea compressor)
- APA providing information regarding the network overheads applied for 2018–22
- we will assess whether capex incurred in 2021 is conforming in our final decision, and whether capex incurred in 2022 is conforming in APA's next (2028–32) access arrangement. As such, APA's proposed 2021 and 2022 expenditures are considered to be place holders.

We have accepted a higher amount of capex than proposed by APA in its access arrangement proposal lodged on 1 December 2021. This reflects our decision not to approve APA's proposed expansion of the South West Pipeline in the forecast period, and instead consider AEMO's suggestion of installing a second compressor at Winchelsea. APA subsequently submitted a business case for the second Winchelsea compressor. In order to manage potential demand shortfalls under severe weather conditions from Winter 2023, the installation of the compressor is to occur during 2022 and 2023. Hence, the shifting of the capex from the forecast period into the current access arrangement period accounts for the increase in the amount that we have accepted, which is greater than that proposed by APA in its initial proposal.

In reaching this view, we have considered the factors set out below.

APA's capex is expected to be $32.6 million (12.4 per cent) greater than the $263.6 million ($2022) we approved for the 2018–22 access arrangement period.

We note that APA has not undertaken a significant number of replacement and non-system projects that were approved by the AER in the 2018-22 access arrangement review. The expenditure savings associated with not undertaking these projects has been more than offset by cost increases in approved projects and expenditure on a VTS allocation of APA Group shared corporate assets. We also noted this in the last access arrangement.[25]

The Victorian Community Organisations submission noted the magnitude of APA's actual expenditure compared with the AER approved allowance. It submitted that the overspend has not been adequately justified by APA.[26]

The only underspend in the 2018–22 period occurred in the expansion category, where APA is expected to spend $6.5 million less than AER approved amount of $177.8 million ($2022). APA submitted that this occurred because AusNet Services did not go ahead with the Angelsea Pipeline (Western Route) project ($26.8 million ($2022)) but that there were significant cost increases in the Victorian Northern Interconnector Expansion looping (an

[25] AER, APA Victorian Transmission System - Access Arrangement 2018-22, Attachment 6 – Capital Expenditure, July 2017, p.6-6.

[26] Victorian Community Organisation, Submission VTS Access Arrangement 2023-27 - 18 February 2022, p.18.

$11.0 million ($2022) increase over the AER approved amount) and the Western Outer Ring Mains (WORM) project (a $19.0 million ($2022) increase).[27] In response to our information request regarding the $12.0 million ($2022) capex incurred by APA compared with the $1.6 million ($2022) approved by the AER, APA submitted that the VNIE project[28] was originally proposed to cost a total of $158 million ($2012). It stated that the actual total project capex for the project has been $136 million ($2022).[29] With respect to the WORM, APA submitted that the delayed completion of the project and the increase in costs was due to increased construction costs due to greater lengths of horizontal drilling and rock disposal, the cost of undertaking an Environment Effects Statement, additional EES conditions, Department of Transport requirements, land access and approval costs, and higher steel costs.[30] We have included a placeholder amount of $39.8 million ($2022, including overheads) for 2022 for the South West Pipeline augmentation. While we accept that the project is prudent, we do not have sufficient information at this time to assess whether the project is efficient (see 5.4.2.1). We expect APA to provide this information in its revised proposal.

The largest overspend in the 2018–22 period occurred in the non-system category, where APA spent $21.7 million ($2022) more than the AER approved amount. Of the 24 projects approved by the AER at the 2018-22 access arrangement review, APA only undertook five[31]. APA undertook 55 projects which were not included in the 2018-22 access arrangement proposal, incurring $38.9 million ($2022) in capex. Of these 55 projects, 35 appear to be an allocation of $21.8 million ($2022) of APA Group shared corporate assets to the VTS. APA submitted that this was because of the $10.3 million ($2022) Dandenong refurbishment spend which was not approved by the AER, on the VTS share of APA enterprise-wide Information Technology portfolio ($11.2 million) and the change in the accounting standards for right of use leases for buildings and motor vehicles ($4.8 million ($2022)).[32] We sought further information on the increased Dandenong refurbishment from APA. APA stated that the original project cost submitted at the 2013-17 access arrangement review was $9.2 million, the project commencement was delayed till 2017 and so only $5.1 million in costs were incurred in the 2013-17 period.[33] We have not included expenditure for the IT technology portfolio or the SoCI due to a lack of information to be able to assess the prudency and efficiency of the projects (see 5.4.2.3). APA submitted that the 2018-22 expenditure represents the residual amount that was originally proposed plus increased construction costs since the original proposal of the project.[34] We are waiting for APA to

[27] APA, VTS - 2023-27 Access Arrangement Reset RIN Response - December 2021 - Public v2.pdf, December 2021, pp. 24-25; APA, VTS - VTS Roundtable 6 VGPR & D&S -19.05.21- December 2021 – Public, p.8.

[28] The VNIE project was originally proposed as the 'Gas to Culcairn Project' part of the 2013 to 2017 access arrangement revision.

[29] APA, VTS - Response to AER IR017 - Current period capex - CONFIDENTIAL 12.04.22.pdf, Q1, p.1.

[30] APA, VTS - 2023-27 Access Arrangement Reset RIN Response - December 2021 - Public v2.pdf, December 2021, p. 25.

[31] APA incurred capex of $1.2 million ($2022) for these projects. The AER approved amount for these projects was $7.4 million ($2022).

[32] APA, VTS - 2023-27 Access Arrangement Reset RIN Response - December 2021 - Public v2.pdf, December 2021, pp. 26-27.

[33] APA, VTS - 2023-27 Access Arrangement Reset RIN Response - December 2021 - Public v2.pdf, December 2021, p. 28; AER, APA Victorian Transmission System - Access Arrangement 2018-22, Attachment 6 – Capital Expenditure, July 2017, p.6-17.

[34] APA, VTS - 2023-27 Access Arrangement Reset RIN Response - December 2021 - Public v2.pdf, December 2021, p. 28.

provide information on the shared corporate asset allocations to the VTS. We will review the prudency and efficiency of these allocations when APA provides this information to us.

The next largest overspend was in the replacement category, where APA spent $14.1 million ($2022) more that the AER approved amount. Of the 71 projects approved by the AER at the 2018-22 access arrangement review, APA only undertook 34. It incurred $62.8 million ($2022) for these projects (versus the AER approved amount of $47.1 million ($2022)). APA undertook 48 projects, incurring capex of $18.7 million, which were not approved by the AER. APA submitted that it reprioritised its replacement program, deferring some projects that were approved by the AER and undertaking others that were not proposed in accordance with its assessment.[35] APA identified a $33.4 million overspend for the BC259 Unpiggables project.[36] We sought information on the replacement program overspends. APA submitted that they were due to a lack of detailed project scoping at the time of making the cost forecast, increased material (especially steel) and labour costs, and variation in works due to complexity.[37]

Prior to the 2023-27 access arrangement, APA states that it did not separately report overheads.[38] We have requested that APA provide information on the amount of network overheads and the VTS allocation of shared corporate assets applied in the 2018-22 access arrangement period. We have received limited information from APA, which is inconsistent across APA proposal documents and information request responses. As APA has submitted Part 7 and Part 23 financial reporting to the AER for some of its other subsidiaries, which sets out the overheads and shared corporate asset allocations, we consider that this information should be available for the VTS and so APA should be able to provide it to us.

There is a significant step up in APA's estimated and forecast expenditure for 2021 and 2022 respectively, compared with the 2018 to 2020 actual expenditure reported. We sought information regarding APA's committed expenditure for these years. APA provided this information.[39]

5.4.2 Conforming capex for the 2022–27 period

Set out below are our reasons underpinning our alternative capex forecast. Our discussion of particular projects is under the capex driver category (expansion, replacement, non-system, other) for which APA proposed the capex. In the section on overheads we have explained how APA allocates APA Group overheads to network overheads and shared corporate assets to its subsidiaries for regulatory purposes, including the VTS.

5.4.2.1 Expansion

Expansion capex is capex that is required to expand the capacity of the pipeline to meet forecast demand both within and beyond the access arrangement period.

[35] APA, VTS - 2023-27 Access Arrangement Reset RIN Response - December 2021 - Public v2.pdf, December 2021, pp. 26-27.

[36] APA, VTS - 2023-27 Access Arrangement Reset RIN Response - December 2021 - Public v2.pdf, December 2021, p. 27.

[37] APA, VTS - Response to AER IR017 - Current period capex - CONFIDENTIAL 12.04.22.pdf, pp.4-24.

[38] VTS - A Look at plans for VTS - APA VTS 2023-2027 AA proposal overview - December 2021 – Public.pdf, p.25.

[39] APA, APA VTS – information request #001 – RIN deficiencies and capex business cases – 20211223 – CONFIDENTIAL: #001 Q3 - compare 2021 and 2022 – CONFIDENTIAL, February 11, 2022, Q3, pp.1-4.

Expansion capex is directed at increasing the capacity of the existing network to meet the demand of existing and future customers. Expansion capex may also be required to maintain gas pressure and minimise the risk of gas outages, thereby maintaining the security and integrity of the network.

APA forecast $139.7 million ($2022, excluding overheads) of expansion capex in the 2022–27 period. This expenditure consisted of two projects: the South West Pipeline (SWP) and the Western Outer Ring Main (WORM). APA also proposed the application of a fixed principle which set out that the redundancy provisions would not apply to the proposed SWP and WORM capex.

Based on all the information before us, we do not accept APA's proposed capex.

For the purpose of the draft decision, we propose an alternative capex forecast of $71.8 million ($2022, excluding overheads) comprised of the following:

- $22.8 million for the SWP ($2022, excluding overheads), reflecting our assessment that only one compressor is prudent at this time given AEMO's 2022 GSOO demand forecasts.
- $49.0 million for the WORM project ($2022, excluding overheads), on the basis that it will provide benefits including increased gas supply and faster gas flow between the east and west systems, increased linepack storage capacity close to Melbourne to balance peaking residential and GPG demand, and reduced operating costs.

Our alternative forecast of $71.8 million is a placeholder. We are still reviewing some elements of the SWP costings. To assist us to finalise the assessment we seek the following information from APA in its revised proposal:[40]

- Explanation of, and demonstration of the efficiency of, the 65 percent increase in project management capex in the revised proposal ($3.3 million) compared with APA's initial proposal[41].
- Explanation of, and demonstration of the efficiency of, the increase in land and approvals cost in the revised proposal.

APA also proposed the application of a fixed principle to the proposed SWP and WORM capex. The fixed principle was that the AER would not apply the redundancy provisions to the SWP or the WORM. We have not approved the fixed principle on the basis that we do consider that the SWP and WORM have a short-term use only. Accepting these fixed principles would also represent a departure from the AER's current practice. The AER's preferred method of depreciating assets is to consider all assets with similar economic lives together, determining a common remaining life for the pool of assets, rather than tracking the remaining value and economic lives of individual assets or projects. In this context our

[40] Zincara, Capital Expenditure Review: Western Outer Ring Main, South West Pipeline, Addendum, 8 June 2022, p.7.

[41] The initial business case estimated $4.96 million covering two compressor stations sites and works at Brooklyn city gate and upgrades at Winchelsea.

consideration of accelerated depreciation is relevant to the SWP and WORM as well as other APA assets.

South West Pipeline

APA's initial proposal

APA initially proposed capex of $90.9 million ($2022, excluding overheads) for the installation of two compressors on the SWP – one at Stonehaven in 2024 and another at Pirron in 2025. The objective of this capex was to avert shortfalls forecast by AEMO in the 2021 Gas Statement Of Opportunities (GSOO) and to increase the capacity of the SWP from 468 TJ/day[42] to 570 TJ/day. This expansion would match the output of the Iona storage facility. APA submitted that the capex was justified in order to maintain the integrity of services and to maintain the capacity to meet existing levels of demand for services.

Our assessment of APA's initial proposal

In assessing APA's proposal for the SWP we considered:

- AEMO's demand and supply forecasts, which underpin the timing and location of constraints on the VTS
- The likelihood of LNG terminals supplying gas into the VTS over the forecast period
- Demand management as an alternative solution to APA's proposed capex
- The prudent amount of expenditure to be invested given the forecast uncertainties.

AEMO's 2021 GSOO forecast shortfalls of supply under extreme weather conditions, increased demand for gas-powered generation of electricity, or gas production outages[43] in 2023 and 2024. There were no forecast shortfalls of supply for average conditions[44]. APA adjusted AEMO's 2021 GSOO forecasts, adding some additional supply capacity to take into account stage I and stage II of the East Coast Gas Grid expansion[45]. After APA's adjustments, the shortfalls were one day in 2023 (61TJ) and one day in 2024 (5TJ) over the 2023-25 period[46].

Forecast falling gas demand suggested that the augmentation in capacity would not be needed beyond these two years. However, AEMO forecast that supply from the Gippsland Basin is falling, and predicted it to fall further during the upcoming access arrangement period. AEMO also forecast large increases in gas generation demand during winter.

Alternative supply sources, including from the Otway Basin fields via the SWP, from the north via Culcairn (Queensland, South Australian and New South Wales fields), and potentially,

42 This is post completion of the WORM.

43 Under the 1-in-20 year (i.e. 5% probability of exceedance) maximum demand day forecast.

44 Under the 1-in-2 year (i.e. 50% probability of exceedance) maximum demand day forecast.

45 APA's adjustment added 29TJ/day from 1 April 2023 to 31 March 2024 and 119TJ/day from 1 April 2024 through the remaining forecast period. APA's upgrade to the Moomba Sydney Pipeline (MSP) allows Sydney's demand to be better served by gas supply from Queensland. This reduces the need for Longford gas to flow North, allowing it to be used in the VTS. It also increases the capacity for gas imports via Calcairn due to improved MSP capacity.

46 The AEMO forecasts only extend to 2025.

LNG import terminals are expected to substitute for the Gippsland Basin supply reductions[47]. Depending on the conditions of the day, there are times when there are injection constraints at Culcairn (on the Moomba to Sydney pipeline (MSP)) and the SWP. AEMO has indicated that Iona's storage facility will become more important for managing winter peak demand and for balancing supply across Melbourne. As gas from the Iona storage facility flows into Melbourne along the SWP, the capacity of this pipeline is a constraint in managing Melbourne's demand peaks. APA's proposed capex for the SWP expansion is intended to relieve this constraint, which APA considers prudent and efficient expenditure to ensure system security.

AEMO stated that if the Port Kembla Gas Terminal was operational by 2023, the SWP augmentation would not be required. The supply of LNG via import terminals is more complex than merely whether a gas terminal is constructed and ready to go. We understand from stakeholders that a suite of considerations is leading to a preference for contracting domestic gas over international gas. These considerations include:

- The long term nature of the import terminal contracts
- Tolling fees charged by import terminals
- Competition and Consumer Act requirements when negotiating with other gas purchasers to jointly secure international gas shipments
- Floating terminal availability
- Most prominently, the difference between domestic and international gas prices and price volatility.

Given these factors, we consider that the prospect of gas supplied by an import terminal may not provide sufficient security to meet forecast shortfalls at the present time.

As part of our assessment we considered the implied customer value for the forecast shortfalls. Using the Value of Customer Reliability of the unserved energy in the electricity industry for residential, commercial and industrial customers as a proxy for gas consumers' value, we calculated the value of expected shortfalls over the 2023-25 period would be $20.3 million.[48]

Given this, we explored whether demand management could present an alternative solution to APA's proposed SWP capex. Unlike electricity, there is no demand management scheme for the gas network. Nevertheless, AEMO indicated in discussions with us that demand management is of limited value for gas, outside of curtailing gas generation demand. This is because there is a 6-8 hour delay in realising gas curtailment due to the slow speed of informing retailers who then manually notify their customers of the requirement to curtail gas

[47] A large reduction in Gippsland production capacity is forecast from winter 2022 (1,018 TJ/d) to winter 2023 (724 TJ/d).This is a reduced supply capacity of almost 300 TJ/d (AEMO, 2022 VGPR Update, Table 18, page 56).

[48] The Victorian VCR values for unserved energy in the electricity industry (Residential 22.23$/kWh, Industrial 66.16$/kWh, Commercial 46.18$/kWh, Very large industry 122.39$/kWh) are used as a proxy for the unserved gas energy. The percentage composition of gas demand is assumed to be the same percentage as customer type (Residential 47%, Industrial 20%, Commercial 30%, Very large industry 3%). Gas demand in TJ is converted to MWh of gas consumption (conversion factor 277.77). The value of avoiding the shortfall is the VCR multiplied by the MWh of gas consumption for each customer type. The total value is the sum of the value across all customer types.

use. It also depends on when the supply shortage is identified. If it is identified during late afternoon or the evening peak demand period, there is a likelihood that a lot of customer gas would have already been consumed during the day and that the response time required for other customers means that the curtailment would be realised too slowly to make an impact.

In evaluating APA's proposal it was clear that none of the proposed solutions would address the forecast 2023 shortfall due to the construction lead time required. APA stated that the Stonehaven compressor would be built by winter 2024 (increasing the Iona injection capacity from 468 TJ/day to 517 TJ/day) and Pirron would be built by winter 2025 (increasing the Iona injection capacity to 544 TJ/day).

Some stakeholders were supportive of the proposed SWP expansion to assist in addressing the uncertainty around security of gas supply. AGL supports the expansion of the SWP to 570 TJ/day to allow for an additional 102 TJ/day in delivery from Lochard's Iona LNG facility. It submitted that the expansion would help to address the significant uncertainty arising from changing sources of supply at a minimal tariff cost relative to the market price cap which retailers are exposed to when there is a gas shortfall.[49] The Consortium of East Coast Gas Market Members and Lochard Energy were supportive of the expansion of the SWP. They stated that incremental investment which provides flexibility is warranted because: as Gippsland gas supplied decline it will become less flexible and so less able to respond to sudden increases in demand or supply failures; gas demand for power generation will become more volatile; there is uncertainty regarding the supply roles that may be played by import terminals.[50]

In contrast, some stakeholders were not supportive of the magnitude of investment and raised concerns that the assets may be stranded in the future. The CCP 28 expressed concern that APA had not explored alternative options beyond do nothing, including the potential use of demand management. It noted that a demand management option is likely to be a far more cost-effective solution to a short term supply shortfall than a major investment in new infrastructure. It also noted that the proposed solution would not address the forecast Winter 2023 shortfalls. CCP 28 stated that the major beneficiaries of the SWP expansion – APA, Lochard Energy, other existing and potential gas production facilities, stand to benefit if the proposal is approved without bearing any of the financial risk. It urged the AER to consider more appropriate cost and risk sharing arrangements, including treating the SWP expansion as speculative capex until the need is proven.[51] The EUAA stated that it does not support the business case for the SWP expansion as consumers are likely to bear considerable stranded asset risk, with the costs magnified by accelerated depreciation.[52] Red Energy and Lumo Energy submitted that the expansion of the SWP to 570 TJ/day should be delayed until it is clear that it is required. It stated that consumers should not be required to

[49] AGL, Submission on APA VTS 2023-27 proposal, 18 February 2022, pp.1-2.

[50] Consortium of East Coast Gas Market Members and Lochard Energy, Submission re APA VTS Access Arrangement 2023-2027 – Capacity of the South-West Pipeline, 17 February 2022, p.2.

[51] Consumer Challenge Panel 28, APA: Victorian Gas Transmission System Access Arrangement 2023–27 CCP28 Advice to the AER, 18 February 2022, pp.40-42.

[52] EUAA, Submission on APA Vic Gas Transmission Access Arrangements 2023-27, 18 February 2022, p.2.

underwrite the cost of an expensive long term solution to mitigate a short term system security problem.[53]

After discussions with our stakeholders we consider that a staged approach would best balance the trade-offs between the forecast uncertainty (in the magnitude and location of the forecast supply shortfalls), the augmentation cost (carrying out a lesser cost augmentation to meet the likely short-term location of the supply constraint), and the avoidance of redundant investment (preserving flexibility to locate future augmentation where it is required based on future demand and supply developments).

AEMO suggested that a less expensive, faster short-term solution compared to the Stonehaven/Pirron projects proposed by APA, would be to commission a second compressor at Winchelsea. A second compressor:

- Would increase the SWP to a capacity of approximately 520 TJ
- Is cost effective because it is a brownfield site with existing supporting infrastructure
- Provides about two years to consider demand and supply developments.

Our consultant, Zincara, considers that a single compressor would provide an adequate increase in capacity on the SWP. They advise that a compressor located at either Winchelsea or Stonehaven would provide similar capacity increases. They recommended that an allowance of $45 million would be efficient for the commissioning of the compressor.[54]

Given this advice we formed the view that the prudent amount of expenditure to be invested in expanding the SWP capacity, given the forecast uncertainties, was $45 million, with the location and timing to be decided by APA.

APA's further submission to its initial proposal

On 29 March 2022, AEMO released its 2022 GSOO, providing updated forecasts for gas demand and supply over the 2022-26 period.

In response to the GSOO forecasts APA held discussions with the AER, AEMO and the Victorian Government (Department of Environment, Land, Water and Planning). APA advised that it could secure a second compressor for Winchelsea in order to address the forecast 2023 shortfalls. It provided the AER with an updated business case on 17 May 2022, proposing the installation of the second compressor for Winchelsea.

APA proposed capex of $60.0 million ($37.2 million to be incurred in 2022 and $22.8 million in 2023) for commissioning a second Taurus 60 compressor at Winchelsea in series configuration before winter 2023. The compressor provides for an additional 41 TJ/d, which APA submitted will mitigate the shortfall from winter 2023 to winter 2025[55].

53 Red Energy and Lumo Energy, APA Victorian Transmission System - Access Arrangement 2023-27 - 18 February 2022.

54 Zincara, Capital Expenditure Review: Western Outer Ring Main, South West Pipeline, 8 June 2022, p.31.

55 APA based its proposal on the supply and demand forecasts set out in AEMO's 'progressive' scenario.

Our assessment of APA's further submission

In assessing APA's proposal for the second Winchelsea compressor we considered:

- AEMO's 2022 GSOO updated demand and supply forecasts
- The efficiency of the proposed costs, including any costs associated with expediting the installation prior to winter 2023.

AEMO's 2022 GSOO set out two forecast scenarios for gas consumption:

- The 'progressive change' scenario assumes that action towards net zero emissions is achieved through technological advancements. Change is assumed to be in line with current state and federal government environmental and energy policies. A 1.9% decrease in Victoria's annual total gas consumption is forecast over the next five years. Peak system demand is forecast to remain near current levels.

The 'step change' scenario assumes consumers drive the transformation of the energy sector away from gas towards electricity. It assumes that a rapid decrease in emissions is achieved, via energy efficiency and electrification, over and above what has already been committed. There is some offsetting increase in winter peak day gas generation demand, with an increasingly 'peaky' profile. For this scenario there is a 16.8% reduction in annual gas consumption over the 2022-26 period. Peak day system demands are forecast to reduce by 18%.

We consider that the 'progressive change' scenario for gas consumption is more consistent with the speed of transition that is currently being observed and the absence of any new government regulation directly impacting gas demand and supply. We note that the Victorian Government is expecting to release its Gas Substitution Roadmap in November 2022, which may change this situation.

With respect to supply, AEMO is no longer including the Port Kembla LNG terminal as a committed project. AEMO stated that notwithstanding that the construction of the terminal is committed, it has reclassified the project as anticipated due to the possibility of customer contract volumes being insufficient to support the relocation and operation of the floating storage and regasification units.[56]

AEMO's 1-in-20-year peak day forecasts indicate that there are no shortfalls in winter 2023 when there is sufficient capacity in Dandenong LNG shallow storage for both the Step Change and Progressive Change scenarios.[57] These forecasts also assume there are no net imports from New South Wales.

However, when only Iona storage facility capacity is available and Dandenong LNG is not available there are 6 days of shortfalls of between 28 and 206 TJ forecast for 2023. AEMO has expressed concern that contracted volumes for Dandenong LNG capacity are low and are insufficient to respond to both operational and emergency scenarios. AEMO has identified the low Dandenong LNG inventory as a threat to system security and has sought a

[56] AEMO, GSOO, 29 March 2022, p.56.

[57] AEMO, *Victorian Gas Planning Report Update*, 29 March 2022, pp.3, 9.

market response.[58] It states that if volumes remain low, curtailment is highly likely, especially on high demand days or when there is unforecast gas generation.[59]

The 2022 GSOO forecasts that extreme gas demand (including gas generation) driven by severe cold weather may exceed supply available in Victoria and New South Wales from winter 2023'.[60] Unplanned capacity reductions of production (including the increased risk of Longford Gas Plant supply reductions noted in the 2021 and 2022 VGPR), storage or transmission facility capacity, higher gas generation demands than forecast due to co-incident or prolonged coal-fired generator outages, or the delayed completion of the Western Outer Ring Main (WORM) project may result in insufficient peak day or seasonal supply capacity from 2023.

Absent an alternative solution for winter 2023, AEMO identified that its only available option is to undertake demand management via the electricity market (through the curtailment of gas generation), thereby diverting gas from the electricity network to the gas network.[61]

On 25 May 2022 APA announced that it had reached FID for stage 2 of the east coast gas grid expansion. This provides for an increase in the MSP pipeline capacity by 90 TJ/day. This provision for greater supply from the north of the VTS (via Culcairn) together with Dandenong LNG mitigate the risk of 1-in-20 forecast shortfalls in 2024 through to 2026.[62]

As per our assessment of APA's initial proposal, we consider that it is prudent to approve a second compressor to enable AEMO to manage the security risks associated with supply constraints on the VTS.

Zincara reviewed the efficiency of the proposed capex provided by APA. APA provided cost estimates (see Table 5-6). Zincara provided advice that the design, procurement, construction, commissioning and handover cost estimates were efficient. Zincara recommended that we should seek further information from APA regarding the cost estimates for project management and land and approvals.[63]

Table 5-6 Capital Expenditure – Winchelsea 2nd compressor unit ($2022, millions)

Component	2022	2023	Total
Project Managementt	4.28	3.93	8.21
Land and approvals	2.45	0.53	2.98
Design	4.39	1.23	5.62
Procurement	17.12	2.56	19.69
Construction	8.57	13.91	22.48

58 AEMO contracted 60 TJ of Dandenong LNG storage capacity after issuing a Notice of a Threat to System Security in 2021 and there being an insufficient market response. If there is not a sufficient market response to the 2022 Notice, AEMO will need to further constract Dandenong LNG storage capacity to manage emergency conditions.

59 AEMO, *Victorian Gas Planning Report Update*, 29 March 2022, pp.4, 9, 11-12.

60 AEMO, *Victorian Gas Planning Report Update*, 29 March 2022, p.3

61 AEMO, GSOO, 29 March 2022, p.62.

62 Factoring in the Dandenong LNG capacity but not factoring in the 90 TJ provided by stage 2 of the ECG expansion, for the 1-in20 peak day forecasts, in 2024 shortfalls are forecast for two days (7 and 21 TJ), none in 2025, and three in 2026 (16, 58 and 100 TJ). Therefore the addition of stage 2 of the ECG expansion mitigates shortfalls for all but one day in 2026.

63 Zincara, Capital Expenditure Review: Western Outer Ring Main, South West Pipeline, 8 June 2022, p.31.

Commissioning	0.39	0.64	1.03
Total Direct Cost	**37.20**	**22.81**	**60.01**
Overhead (6.91%)	2.57	1.58	4.15
Total	**39.77**	**24.39**	**64.16**

Source: APA, Business Case AA6 - SWP Expansion Winchelsea 2nd unit – Final, Table 7.1, p.14.

With respect to the project management costs, Zincara noted that the initial business case included $4.96 million ($2022, excluding overheads) for two compressor stations sites and works at Brooklyn city gate and upgrades at Winchelsea. Zincara considered that even after allowing for some additional project management effort in order to deliver the project before winter 2023, the difference between the initial business case and the latest business case is $3.25 million (a 65 percent increase) which it considered to be significant. Zincara recommended that further details and explanation from APA is required to demonstrate why this cost is efficient in the circumstances.[64]

With respect to the land and approvals costs, Zincara noted that the initial business case estimate of $2.97 million ($2022) included works at a number of sites, as well as the acquisition of a new site at Pirron. Stonehaven, which is a site already owned by APA, had costs for this item of $0.9 million. Winchelsea is also already an APA site. Zincara advised that further explanation from APA is required to demonstrate why this cost is efficient in the circumstances. [65]

After considering Zincara's advice, we have made a placeholder forecast of $24.4 million ($2022, excluding overheads) for the commissioning of the second Winchelsea compressor by winter 2023.

As indicated above, at this time we do not have sufficient information to be able to assess the efficiency of the revised WORM capex. We expect APA to provide the following information in its revised proposal:[66]

- Explanation of, and demonstration of the efficiency of, the 65 percent increase in project management capex in the revised proposal ($3.3 million) compared with APA's initial proposal[67].
- Explanation of, and demonstration of the efficiency of, the increase in land and approvals cost in the revised proposal.

We note that in its submission to the AER, AGL suggested that AEMO bring together gas suppliers, shippers and wholesalers/retailers to facilitate joint solutions for the future so that wholesalers/retailers can enter into contracts with supply and shipping simultaneously coordinated. Once this is achieved AGL indicated that augmentation requirements are able

64 Zincara, Capital Expenditure Review: Western Outer Ring Main, South West Pipeline, 8 June 2022, p.31.

65 Zincara, Capital Expenditure Review: Western Outer Ring Main, South West Pipeline, 8 June 2022, p.31.

66 Zincara, Capital Expenditure Review: Western Outer Ring Main, South West Pipeline, Addendum, 8 June 2022, p.7.

67 The initial business case estimated $4.96 million covering two compressor stations sites and works at Brooklyn city gate and upgrades at Winchelsea.

to be better defined and optimised. We concur with AGL's view and encourage AEMO and the industry to convene this meeting.

APA's proposed fixed principle to not apply NGR r.85 capital redundancy provisions

APA proposed to apply a fixed principle[68] that the capital redundancy provisions[69] shall not be applied to the SWP expenditure. It justified this on the basis that it foresees a reduction in natural gas demand due to decarbonisation initiatives (eg electrification) and the introduction of hydrogen into the Victorian distribution networks. APA stated that it is therefore concerned that any augmentation of the SWP may result in redundant assets.

Based on advice received from AEMO and other stakeholders, we do not consider that the augmentation solution on the SWP will be a short-term solution as represented by APA. We consider that it has the potential to support Port Campbell, the Iona storage facility and, if approved, Viva Energy's Geelong floating terminal gas injections into the VTS for at least the period of APA's weighted average depreciation period of 32 years. We therefore consider that the fixed principle is not necessary and do not approve it.

Western Outer Ring Main

APA's proposal

APA proposed $52.4 million ($2022, including overheads) for the Western Outer Ring Main (WORM) in the 2023-27 period. APA's proposal contained no information on the capex forecast for the WORM, other than identifying the amount of expenditure in the capex model. We sought significant additional information from APA to allow us to assess whether the capex was likely to be conforming.

Subsequent to it submitting its proposal, APA sought to apply a fixed principle that the capital redundancy provisions shall not be applied to the WORM expenditure for the current and forecast periods. It justified this on the basis that it foresees a reduction in natural gas demand due to decarbonisation initiatives (eg electrification) and the introduction of hydrogen into the Victorian distribution networks. APA states that accordingly it is concerned that the augmentation of the WORM may become a redundant asset.

We requested that APA submit a business case to justify the proposed WORM capex. In its submission the CCP28 stated:[70]

> *'Despite an increase in project costs of around 45%, we are surprised that there does not appear to be an update to the business case that was prepared for this project in April 2017. We question whether the original project is still justified at this level of expenditure, whether the need remains given the significant delays experienced since the project was initially approved, and whether other lower*

[68] NGR r.99(1) provides that 'A full access arrangement may include a principle declared in the access arrangement to be fixed for a stated period'.

[69] NGR r.85(1) provides that 'A full access arrangement may include (and the AER may require it to include) a mechanism to ensure that assets that cease to contribute in any way to the delivery of pipeline services (redundant assets) are removed from the capital base'.

[70] CCP28, *CCP28 advice to the AER – APA VTS access arrangement proposal*, June 2022, p.43.

cost, feasible options should have been examined to deliver the most cost-effective solution for customers.

The EUAA similarly encouraged the AER to review the decision to approve the WORM.[71]

APA submitted its business case to us on 18 March 2022.

APA has incurred $146.8 million ($2022, including overheads) on the WORM in the current period (with the majority of the expenditure in 2021 ($31.0 million) and 2022 ($97.3 million). The revised total cost is $184.5 million ($2022), higher than the $139.7 ($2022, including overheads)[72] estimated in APA's 2018-22 Access Arrangement . APA submits that the cost increases are attributable to changes to route selection, increased horizontal directional drilling and rock disposal requirements, the requirement to carry out an environmental study and additional EES conditions, Department of Transport requirements, land access and approval costs, and higher materials costs (including higher steel prices).[73]

APA submitted that the WORM capex is justified under NGR r. 79(2)(c)(i), (ii), and (iv). It stated that:[74]

- The primary driver of the WORM is to maintain capacity to meet existing levels of demand for services, especially during periods of peak demand. The WORM will enable larger volumes of gas to be transported across the VTS under higher pressure (10.2MPa) and remove the current bottleneck created by having to move gas at low pressure (2.760 MPa) through the Melbourne CBD.
- The WORM is needed to maintain security of supply for Victorian gas consumers given the expected declines in Longford gas production and AEMO's forecast gas shortfalls from winter 2023. APA submits that the Iona storage facility is the most viable source of gas to meet peak demand and the WORM will increase the capacity to withdraw and inject gas into the SWP.
- It is necessary to maintain the safety (Public safety and APA personnel) and integrity of services on the VTS. The WORM will enable AEMO to operate the VTS in a more flexible way by providing increased linepack to support demand and increased capacity into Melbourne's western and northern regions.

Our assessment

APA first proposed the WORM in the 2013-17 Access Arrangement. The AER did not approve this expenditure as the proposed security of supply benefits did not justify the cost at the time.

APA reproposed the project in the 2018-22 Access Arrangement and we approved $139.7 million ($2022, including overheads). This was on the basis that the WORM would allow better management of the VTS by enabling high pressure gas flow between the east and

71 EUAA, *EUAA Submission: APA VTS Access Arrangements 23-27*, 18 Feb 2022, pp.2, 8.

72 $126.7 million ($2017) was approved in the 2018-22 Access Arrangement.

73 APA, *A look at plans for Victorian Transmission System*, December 1, 2021, p. 33.

74 APA, *APA VTS – Business Case WORM project 2022 Update – PUBLIC*, 18 March 2022, pp.4-6.

west systems and providing linepack storage capacity close to Melbourne to balance peaking residential and GPG demand. The expenditure was to be undertaken in 2018-20.

APA state that the project was delayed because the Victorian Minister for Planning required an Environment Effects Statement in December 2019. The statement was finalised at an Inquiry Panel Hearing in October 2021.

In assessing the WORM capex we considered whether:

- The net benefit of the project would still be positive, given the higher costs, a declining demand outlook and changes in sources of gas supply to the VTS
- The increased cost of the WORM is efficient.

Zincara, our consultant, assessed the benefits of the WORM to be:[75]

- Increased system security in managing changing gas demand patterns and flow paths. The WORM will enable gas supply from/to the north or east of Melbourne to be transported at higher pressure, thereby enabling the Iona storage facility to be filled faster (from 150 TJ/day up to 220 TJ/day). The WORM will also increase the Port Campbell supply capacity from 447 TJ/d on a 1-in-20-year peak day to 476 TJ/d. It will also increase the system linepack, reducing the probability of Dandenong LNG being needed to meet high hourly gas demands including from gas generators.
- Significant fuel gas and compressor operating cost savings (at least $2.8 million per year) by bypassing the low pressure Melbourne Inner Ring Main. The WORM runs at high pressure (10.2 MPa) reducing compressor operating costs.
- Increased security of supply in the event of an outage. In the event of loss of supply from Longford, Port Campbell or Pakenham, it would be possible for alternative supplies to be scheduled via the WORM. Similarly if there were a compressor outage,the WORM provides for gas transportation to/from Port Campbell, thereby providing an avenue to compensate for the outage.
- Operational benefits. A direct connection between the WORM and the Pakenham to Wollert pipeline will allow gas to flow interchangeably between east and west systems with fixed operating set points and without direct operator intervention. This also enables linepack balancing across the systems, along with improved gas powered generation readiness.
- Reduced reliance on the aged and congested Brooklyn Compressor station site. APA notes that Brooklyn is not the optimal location in terms of capacity expansion of the VTS and the site is heavily congested making augmentations technically difficult and expensive.
- Future growth and optionality. The WORM's route and capacity provides future connection provisions for network operations particularly to the northern fringes of Melbourne.

75

- Support for Geelong/ Avalon LNG import terminals. The WORM provide additional capacity (approximately 250 TJ/day) and another pathway for gas from the import terminals to be moved into and around Melbourne. Viva Energy stated that without the WORM they would need to reassess their project's viability.

AEMO stated that it has classified the WORM as a committed project from 2018 and has included the project in all planning analysis since. AEMO submitted that the benefits of the WORM that it identified in its submission to the AER in 2017 still exist currently, and have become more critical.[76] AEMO advised the AER that although alternative solutions exist to the WORM, more than one solution would be required and it would be more expensive than the current proposal. This would include more compression and looping on the SWP and BLP, significant expansion of the Brooklyn city gate capacity, augmentations in the inner ring main particularly adjacent to Dandenong city gate to enable it to operate at a lower pressure, other projects to increase linepack and survivability including increased duplication of the Longford to Melbourne Pipeline, and expansion the Dandenong LNG facility or another LNG facility.

Viva Energy stated that the case for the WORM has been well established. The WORM was included in the assumptions that underpin Viva Energy's planning for the Geelong Gas Terminal Project. If the WORM is not completed the modelling would need to be reviewed, potentially delaying and changing the project's viability.[77] Without the WORM, an LNG receiving terminal is unlikely to materially increase the SWP injection capacity and would back off more of the Port Campbell injection capacity.[78]
Zincara assessed the WORM's cost increases and APA's reasons for the increases. It formed the view that APA's procurement processes, particularly relating to competitive tender processes, would ensure that costs are as efficient as can be expected in the circumstances.

Based on advice from Zincara, we consider that the capex proposed for completing the WORM project is prudent and efficient. Accordingly we have included APA's proposed amount of $49.0 million ($2022, excluding overheads) for the WORM in our capex forecast.

With respect to the fixed principle that APA proposed, we note that similar to the existing eastern Outer Ring Main (Pakenham to Wollert) which currently transports gas from Longford, the WORM completes the "backbone" from the South West Pipeline / Brooklyn-Lara Pipeline to Wollert when the major supply source comes from the south west. This provides additional capacity and an alternative way for gas to be moved into Melbourne. Given AEMO's GSOO forecasts, this flexibility to move gas more quickly and to connect east, west and north supplies has a central role in providing system security and integrity for the VTS. We therefore consider that the WORM will not be a short lived asset. We also note that if the Geelong or Avalon LNG import terminals come online the WORM will support the injection of LNG into the VTS.

Stakeholders did not support the application of the fixed principle. CCP28 stated that it does not support the application for an exemption from capital redundancy provisions as this

[76] AEMO, *Submission on APA VTS Gas Access Arrangement Proposal 2023-2027*, 18 February 2022, p.8.

[77] Viva Energy, *Submission on VTS AA*, 18 February 2022, p.3.

[78] Zincara, *Capital Expenditure Review: Western Outer Ring Main and South West Pipeline*, June 2022, p.35.

represents a transfer of risk for the WORM to customers and would pre-empt the possibility the assets could be repurposed in the future.[79]

We agree that it would represent a transfer of risk of recovery of the WORM capex to customers. For the reasons outlined above, we consider that the fixed principle proposed by APA is not necessary. To the extent that falling demand risks asset stranding longer term, the AER's preferred approach is to consider depreciation of all assets with similar economic lives, determining a common remaining life for the pool of assets, rather than tracking the remaining value and economic lives of individual assets or projects. In this context our consideration of accelerated depreciation is relevant to the WORM as well as other APA assets.

We therefore do not approve the fixed principle.

5.4.2.2 Replacement

Replacement capex is required to maintain the safety and integrity of the pipeline. This category includes the refurbishment and replacement of:

- instrumentation, including metering, telemetry and remote terminal units
- pipeline hardware, including pipes, meters, valves, regulators and fittings
- site capital improvements, such as fencing and security
- specialised major spares

APA's proposal

APA proposed replacement capex of $122.9 million ($2022, excluding overheads) for the VTS for the 2023–27 period. This is an increase of $41.4 million (50.8 per cent) from APA's actual and estimated replacement capex in the 2018–22 period. APA proposed 32 replacement projects.

Our assessment

We assessed APA's replacement projects by considering the requirement for the proposed works, the scope and timing of the proposed works, and whether the input cost of each project represents the efficient, lowest sustainable cost.

We also investigated the relative increase in the estimated 2021 and 2022 forecast capex compared with the 2018-2020 period. We asked APA to provide information which would demonstrate their committed expenditure and capability to deliver the step up in capex over these two years.

We have included $96.3 million ($2022, excluding overheads) in our alternative forecast for replacement capex for the 2023–27 period. We consider this amount is sufficient for APA to maintain the safety, reliability and integrity of the VTS, and is prudent and efficient.[80] Of the

[79] CCP28, *CCP28 advice to the AER – APA VTS access arrangement proposal*, June 2022, p.43.

[80] NGR, rr. 79(1) and 79(2)(c).

31 projects proposed by APA, we have approved 18, provided replacement forecasts for 3 and not approved capex for 10 of these projects (see Table 5-7).

Table 5-7 Replacement capex ($2022, excluding overheads) – APA vs AER

Business case number	Project name	APA proposed capex	AER draft decision – project total 2023-27
BC203	WCS A Process Safety	1.3	0
BC204	Brooklyn CS upgrade	10.3	0
BC211	Iona CS Aftercooler Upgrade	3.2	0
BC212	Battery Charger Upgrades	1.0	0
BC216	Wollert CG & T74/T119 PRS Instrument Air	1.6	0
BC224	Dandenong City Gate Gas Quality	1.4	0
BC239	Emergency Response Equipment	7.6	6.1
BC242	BCS Unregulated Bypass Upgrade	0.3	0
BC260	Liquids Management	0.6	0.3
BC267	BCS Unit 12 Inlet Filter Upgrade	0.6	0
BC275	VTS Mainline Isolation Valve Upgrade	3.7	2.6
BC307	Reliability Centred Maintenance	2.3	0
BC328	VTS Waterbath Integrity	2.0	0

The reasons for our draft decision are set out for each of these programs below.

WCS A Process Safety

For this project APA proposed capex to be undertaken on the Wollert Compressor Station A, including conversion of unit isolation valves from fail-last to fail-safe configuration, retrofitting of check valves to prevent reverse flow and compressor reversal related failures, and conversion from instrument gas to instrument air.[81]

In making our assessment of the prudency and efficiency of the proposed capex we took into consideration AEMO's views. AEMO submitted that 'AEMO does not operate these compressors often anymore, because they are much lower powered than the Wollert B CS units, less operationally efficient, and can be unavailable due to their age'. It stated that currently the Wollert A CS units provide redundancy if one of the Wollert B compressors is

[81] APA, VTS - BC203 AA23-27 WCS A Process Safety - December 2021 – Public.pdf. p.1.

unavailable. AEMO further stated that when the WORM project is complete the Wollert A compressors will effectively be redundant, because the addition of a third Wollert B compressor as part of the project will increase the available capacity and redundancy of Wollert B CS. AEMO stated that it expects minimal future investment to be needed for Wollert A CS once the WORM is commissioned, and it is AEMO's view that APA should be transparent on the expected remaining life of these compressors, including the forecast timing of their decommissioning.[82]

Given this we do not consider that this expenditure would be incurred by a prudent service provider. We therefore reject APA's capex forecast and make a replacement forecast of $0.

Brooklyn CS upgrade

This project proposes the replacement of specific components of Units 8, 9, 10 and 11 of the Brooklyn Compression Station (BCS). This is to maintain the capability of the BCS to compress gas coming out of the Melbourne system for transmission to western Victoria and the Iona storage facility. APA submitted that if there is a failure of the compression facilities (either in part or in full) it will reduce the ability to fill the Iona storage facility and thus may impact the ability to meet winter loads in Melbourne.[83]

However, we note that the primary purpose of the WORM is to transmit gas to western Victoria and the Iona storage facility without having to decompress and then recompress gas as it passes through Melbourne. Accordingly, from May 2023, when APA has stated that it will complete the WORM, there will be a much reduced need for compression facilities at Brooklyn. Furthermore, the impact of a partial or full loss of the BCS on the ability to fill Iona is reduced and possibly eliminated. Additionally, the operating burden on BCS is significantly reduced which may lead to a reduced likelihood of failure.

AEMO supported this view, submitting:[84]

> *The criticality of the Brooklyn CS site will reduce once the WORM project is completed. With the WORM in service, AEMO expects to be less reliant on the Brooklyn CS as the demand in the south-west can be more efficiently supplied from the Outer Ring Main via Wollert. The Brooklyn Centaurs (compressor units 11 and 12) will still be used to support winter demand, especially Ballarat demand, and contribute to the SWP withdrawal capacity on higher demand days. At least two Centaur units will be required to provide this service to ensure redundancy. AEMO envisages that the remaining Brooklyn Centaur (unit 10) may require some upgrades after the WORM is commissioned, however its future operational purpose needs to be considered along with the issues presented by its wet seals (causing oil to enter the DTS).*
>
> *AEMO operation of the Brooklyn Saturns (compressor units 8 and 9) is unlikely to be necessary once the WORM is operational, as the WORM will enable higher pressures to be maintained for Geelong under some supply conditions*

82 AEMO, Submission on APA VTS GAAR 2023-27 Proposal, 18 February 2022, pp.2-3.

83 APA, VTS - BC204 AA23-27 BCS 8,9,10,11 Upgrade - December 2021 – Public.pdf, p.1.

84 AEMO, Submission on APA VTS GAAR 2023-27 Proposal, 18 February 2022, p.3.

without compression at Brooklyn CS. AEMO therefore believes APA should be transparent on the remaining life of these compressors, including the forecast timing of their decommissioning.

At this stage it appears there is no need for any upgrade of BCS. We consider that a prudent service provider would not carry out this project because:

- The criticality of BCS to supply gas to south and south west Victoria is significantly reduced once the WORM is completed.
- The burden on BCS will be significantly reduced once the WORM is completed, reducing the likelihood of failure and extending the life of the equipment.
- While there may be a remaining need for some of the compression functionality at Brooklyn to provide redundancy[85], it is difficult to justify material expenditure on units which are only required rarely and for backup[86].

We therefore reject the proposed expenditure for this project and make a replacement forecast of $0.

In its revised proposal we consider that APA should provide a project that focusses on prudent expenditure for units 11 and 12, and some limited expenditure for unit 10 reflecting its standby role.

Iona CS Aftercooler Upgrade

APA proposed this project to address a power output constraint on the Iona Compressor Station (Iona CS). The capex is for a larger gas aftercooler to enable the realisation of the full power output of the Iona CS.[87]

However, APA did not demonstrate the need for this project, as it would only be required when gas is drawn from Iona in summer. From our discussions with APA, we understand that this situation is rare or does not occur at all.

AEMO submitted that the limitations on the Iona CS operability during summer is expected to have been addressed through an agreement with APA to increase the minimum operating pressure of the SWP at the Iona injection/withdrawal point in Port Campbell from 3,800 kPa to 4,500 kPa. This reduces the likelihood of Iona CS needing to operate during the summer months, and when it does need to operate the compressors do not need to increase the gas pressure as much, so the cooling requirement is reduced. AEMO also stated that the WORM is expected to result in higher gas supply pressures at Port Campbell than the current system configuration, further reducing cooling requirements for Iona CS.[88]

In its response to our information request regarding this project, APA accepted that this project can be removed.[89]

85 Provided via units 11 and 12.

86 Units 8 and 9.

87 APA, VTS - BC211 AA23-27 Iona CS Aftercooler upgrade - December 2021 – Public.pdf, pp.1-3.

88 AEMO, Submission on APA VTS GAAR 2023-27 Proposal, 18 February 2022, p.4.

89 APA, VTS - Response to AER IR015 - Followup capex - 2202 03 17 – CONFIDENTIAL.pdf, 17 March 2022, p.10.

Given this information, we consider that a prudent service provider would not undertake this project. We have therefore rejected this forecast and made a replacement forecast of $0.

Battery Charger Upgrades

APA proposed capex for the replacement of the older, poor integrity battery chargers with the latest design that has inbuilt redundancy at Euroa CS, Springhurst CS, Winchelsea CS, Wandong PRS and Newport.[90]

However, APA have not provided any information on the need for the identified battery chargers to be changed. The age of the battery chargers and the current condition were not provided. We sought this information from APA, who responded that the age of the battery chargers and latest condition inspection report is not readily available. It submitted that historically, battery chargers were not replaced until failure, and this has caused several fail-to-supply issues which is why APA has been conducting a battery charger program. APA outlined that the problem with charger failure is that even if there are no AC power outages, the site is powered by batteries that are fed by the chargers. This means communication and controls are lost until the charger is replaced. [91]

We consider that without data on the current condition of the battery chargers and equipment we cannot assess the prudency of this project and efficiency of this project. We have therefore made an alternative capex forecast of $0.

Wollert CG & T74/T119 PRS Instrument Air

This project proposes to replace the use of Instrument Gas for the operation of regulators and other devices with Instrument Air. The objective is to avoid natural gas venting into the atmosphere causing a safety hazard and unnecessary greenhouse gas emissions.[92]

We consider that the business case provided by APA shows that this project addresses risks which are low to negligible. We therefore assess that this project is not prudent. We have made a replacement forecast of $0 for this project.

Dandenong City Gate Gas Quality

APA has proposed this project to meet a regulatory requirement. Under the National Gas Rule r.288 all injection points into the Victorian Declared Transmission System must meet gas quality requirements. APA submitted that currently there is no gas heating before the pressure regulation at the Dandenong City Gate. Consequently the downstream temperatures are regularly sub zero in winter, which can lead to condensate dropout[93]. APA stated that the absence of gas heating affects AEMO's ability to ensure the quality of the gas entering the T16 pipeline complies with the gas quality standards as set out in the AEMO procedures.[94]

90 APA, VTS - BC212 AA23-27 Battery Chargers - December 2021 – Public.pdf, p.3.

91 APA, VTS - Response to AER IR015 - Followup capex - 2202 03 17 – CONFIDENTIAL.pdf, 17 March 2022, p.11.

92 APA, VTS - BC216 AA23-27 Wollert CG, T74 & T119 PRS Instrument Air - December 2021 – Public.pdf, p.2.

93 The low temperatures cause hydrocarbon condensates to drop out of the gas stream.

94 APA, VTS - BC224 AA23-27 DCG Gas Quality - December 2021 – Public.pdf, p.2.

In its submission AEMO stated that Dandenong City Gate is not a DTS injection point. AEMO submitted that it does not believe that there is justification for this project on the basis of compliance with temperature limits as defined in AEMO's standard for gas quality at DTS injection points.[95]

In response to our information request to APA regarding AEMO's assessment, APA stated that it would remove this project from its proposed capex.[96]

On the basis of AEMO's advice we consider that this project is not prudent and have therefore made an alternative forecast of $0.

Emergency Response Equipment

APA proposed capex for the purchase of emergency spares, including pipe and equipment (hot tap equipment and vents and flares).[97]

We consider that it is a necessary requirement for APA to be able to respond to outages on the VTS in a timely manner, including having access to emergency spares. It is reasonable that APA hold these spares themselves. We therefore consider it is a prudent project.

In assessing this project we explored three issues with efficiency of the proposed expenditure:

- Testing and certifying existing spares prior to purchases, so that additional spares will only be purchased where the current inventory of spares have failed certification.
- Treatment of the earnings from disposal of old spares in the RAB.
- The magnitude of the labour costs (table 5) given the project consists of purchasing materials only.

In response to our information request, APA stated that testing and recertifying of existing pipes will occur where feasible. For example, this will be possible where APA has traceability and can confirm the grade of the material. APA also stated that there is potential for equipment to be retained and used for lower pressure applications, especially for networks assets. APA identified that this will provide additional coverage and availability. APA stated that if a trade-in is considered, the savings will be determined during discussions with potential equipment suppliers.[98]

On this basis, we consider that a 20 per cent reduction of overall costs to take account of the recertification of some of the existing spares constitutes a better estimate of the forecast costs.

An amount should also be taken into account for the disposal value of the equipment. Even where the equipment has no operational value, the metal would still have a scrap value.

95 AEMO, Submission on APA VTS GAAR 2023-27 Proposal, 18 February 2022, p.4.

96 APA, VTS - Response to AER IR015 - Followup capex - 2202 03 17 – CONFIDENTIAL.pdf, 17 March 2022, p.11.

97 APA, VTS - BC239 AA23-27 Emergency Response - December 2021 – Public.pdf, p.2.

98 APA, VTS - Response to AER IR015 - Followup capex - 2202 03 17 – CONFIDENTIAL.pdf, 17 March 2022, p.7.

However, this value is likely to be small compared to the cost of new equipment and we do not have the information to make a reasonable estimate of the value concerned.

With respect to the magnitude of the labour cost, APA stated that it is for the project management and labour to complete hydrotesting of the pipe (including cranes and transport), which is required to ensure the pipe is ready for use in the event of an emergency. We accept this explanation of the labour amount.[99]

While we consider that the capex for this project is prudent, we consider that the overall cost is not efficient as it does not account for the recertification and use of existing spares rather than making all new equipment purchase. Applying a 20 percent reduction in overall costs to account for this, we have made an alternative forecast for this project of $6.1 million ($2022, excluding overheads).

BCS Unregulated Bypass Upgrade

This project is proposed to remove the manual regulation of the Brooklyn Compressor Station (BCS) - Station bypass by disconnecting the station bypass with a valve and blind. APA state that manual regulation has the potential to over-pressurise the 2800Kpa pipeline from the T56 Brooklyn to Ballan Pipeline or T24 Brooklyn to Corio Pipeline which operate at a Maximum Allowable Operating Pressure (MAOP) of 7,400 kPa. It submits that over-pressurisation can lead to pipe rupture. APA states that the manual bypass does not conform with AS2885.1-2012 which requires separation of pipeline sections with different MAOP.[100]

As discussed under the 'Brooklyn CS upgrade' project above, AEMO has stated that the criticality of the Brooklyn CS site will reduce once the WORM project is completed.[101]

We consider it unclear that the proposed work at BCS is prudent and efficient, and seek further information from APA on the criticality of these works. We have therefore made a replacement forecast of $0.

Liquids Management

This project is to upgrade existing liquids management systems to the APA standard design. APA proposed to carry out a Brooklyn liquids management system upgrade and a Wollert liquid level indicator upgrade.[102]

As discussed under the 'Brooklyn CS upgrade' project above, AEMO has stated that the criticality of the Brooklyn CS site will reduce once the WORM project is completed. AEMO have indicated that there will be little need to operate the wet seal compressors at BCS.[103]

On this basis, we consider that this project at Brooklyn CS would not be carried out by a prudent service provider. As Brooklyn CS accounts for 58% of the forecast cost, we have reduced the project proposed cost by this amount. We have therefore made an alternative

99 APA, VTS - Response to AER IR015 - Followup capex - 2202 03 17 – CONFIDENTIAL.pdf, 17 March 2022, p.7.

100 APA, VTS - BC242 AA23-27 BCS Unregulated Bypass - December 2021 – Public.pdf, p.1.

101 AEMO, Submission on APA VTS GAAR 2023-27 Proposal, 18 February 2022, p.3.

102 APA, VTS - BC260 AA23-27 Liquids Management - December 2021 – Public.pdf, pp.1-2.

103 AEMO, Submission on APA VTS GAAR 2023-27 Proposal, 18 February 2022, p.3.

forecast of $0.3 million ($2022, excluding overheads) being for the proposed works excluding Brooklyn CS.

BCS Unit 12 Inlet Filter Upgrade

This project is to replace the filter vessel with an APA standard design, consistent with compressor manufacturer requirements. This is to prevent contaminated gas passing the existing filter, damaging the compressor dry seals and causing a significant outage while repaired.[104]

As discussed under the 'Brooklyn CS upgrade' project above, AEMO has stated that the criticality of the Brooklyn CS site will reduce once the WORM project is completed. Compressor 12 will only be required for peak and winter periods. Hence, the amount of gas going through the compressor will decrease. Also Compressor 11 is a full backup for Compressor 12 once the Worm is completed.[105]

APA stated in the business case that the cost of repairs to the compressor because of 'dirty gas' is $0.3 million. Given the change in operational status of the Brooklyn CS we consider that it is not prudent and efficient to spend $0.6 million to save $0.3 million.

We sought clarifying information from APA. In response APA stated that unit 12 must remain available post WORM so this upgrade will still be required.[106]

We consider that while the issue will still remain after the WORM, the likelihood of occurrence and the consequence will be significantly reduced because the operation of Compressor 12 will be reduced to periods of peak demand and it is fully backed up by Compressor 11.

For these reasons we consider that the proposed capex is not prudent and efficient. We have made a replacement forecast of $0 for this project.

VTS Mainline Isolation Valve Upgrade

The proposed capex will remediate mainline isolation valves in high consequence areas where the valve has internal leaks or friction which prevent the valve from isolating gas flow, the valve has external leaks, or the valve is located in residential property.[107]

APA did not provide any information to support the need for remediation of the valves in its business case. APA therefore had not provided evidence that this project is prudent. APA also implied that because it cannot be totally certain of what parts need to be replaced as part of an overhaul of the valve, then it may as well replace the valve with a new one. We did not consider this to be an efficient approach and sought further information from APA.

In response to our question about the need to carry out the work, APA stated that there are no inspection reports as they are not able to inspect the valves. From 'visual' inspection it is apparent that the valves are leaking externally. It submitted that the upgrade of the mainline valves (pipeline safety isolations) is on live gas transmission pipelines which requires

104 APA, VTS - BC267 AA23-27 BCS Unit 12 Inlet Filter Upgrade - December 2021 – Public.pdf, pp.1-2.

105 AEMO, Submission on APA VTS GAAR 2023-27 Proposal, 18 February 2022, p.3.

106 APA, VTS - Response to AER IR015 - Followup capex - 2202 03 17 – CONFIDENTIAL.pdf, 17 March 2022, p.7.

107 APA, VTS - BC275 AA23-27 Mainline Isolation Valve Upgrade - December 2021 – Public, p.1.

disruptive excavations and two hot tap stopples with a temporary bypass pipe spool before maintenance can commence. APA stated that these valves have been in service since the pipeline was installed and are no longer well supported by the Original Equipment Manufacturer.[108]

With respect to our question on the efficiency of replacement rather than repair, APA submitted that a new valve can be hydrotested and certified giving much higher confidence than repairing the existing valve. APA stated that if the new valve was $250,000 versus $75,000 for in situ overhaul it would still be wiser to go for new as the cost of rework is much greater (if for example the overhaul was unsuccessful). APA stated that replacing the valve is a lower risk and more cost effective approach as it removes the risk of incorrect parts or other faults that increase the maintenance window and cost uncertainty.[109]

We do not agree with this assessment. We consider that removing complexity and the risk of incorrect parts and other faults does not justify a 3.3 fold increase in material costs, and the more efficient approach would be an in situ overhaul.

Based on the costs in the business case and the costs provided by APA in response to our information request, we assess that the total cost of the valve replacement program is $3.7 million while the cost of the in situ overhaul would be $2.6 million, a 29 percent reduction. We have therefore substituted a better estimate of the forecast costs by reducing the overall proposed cost by 29 percent to reflect the more efficient approach of in situ overhaul of the valves. We have made a replacement forecast of $2.6 million ($2022, excluding overheads).

Reliability Centred Maintenance

This project is to 'Apply RCM practices to develop fit for purpose maintenance strategies for the facility based APA operating assets in the VTS'.[110]

We assess that this project is to develop an asset management strategy based on Reliability Centred Maintenance. It is not to carry out any works on assets to extend their lives or utilisation. On this basis we assess that this project does not constitute capex.

We therefore reject this project on the basis that it is not conforming capex. We have made a replacement forecast of $0.

If APA were to propose this project as opex, they would not necessarily qualify for a step change under our opex assessment framework. We consider base opex, trended forward by the forecast rate of change, is sufficient for APA to continue to meet its existing regulatory obligations. APA has indicated that it will realise efficiencies as a result of implementing the RCM practices. We therefore expect that the proposed RCM practices will represent a cost saving over current maintenance strategies. Therefore, we consider that an opex forecast based on revealed costs will provide sufficient total opex for APA to undertake this project in an efficient manner over the access arrangement period.

108 APA, VTS - Response to AER IR015 - Followup capex - 2202 03 17 – CONFIDENTIAL.pdf, 17 March 2022, pp.8-9.

109 APA, VTS - Response to AER IR015 - Followup capex - 2202 03 17 – CONFIDENTIAL.pdf, 17 March 2022, pp.8-9.

110 APA, VTS - BC307 A23-27 Reliability Centred Maintenance - December 2021 – Public.pdf, p.3.

VTS Waterbath Integrity

This project expenditure is for periodic inspection of Waterbath Heaters. This was previously classified as opex but is now being proposed as capex.[111]

We consider that the inspection of waterbaths using a Risk Based Inspection schedule would be done by a prudent service provider. APA use an external contractor to do most of the work. The cost estimates are based on the average cost for previous work. There is sufficient evidence to demonstrate that the cost is efficient.

We consider this project should not be capex as it is a maintenance activity. We consider it should remain in opex. We note that this expenditure is captured in the base opex. If it were to remain in capex then there should be a commensurate reduction in the base opex.

We assess that this project is not conforming capex and make a replacement forecast of $0.

5.4.2.3 Other

Hydrogen safety and integrity

APA's proposal

APA proposed $37.9 million ($2022, excluding overheads) in capex to undertake a technical assessment of the VTS network's ability to withstand exposure to hydrogen blended natural gas. It proposed surveying 39 of the 51 pipelines that make up the VTS (phase I). The residual pipelines are interstate import/export lines (Longford to Dandenong to Wollert (with the VNIE NSW interconnector), and then from Wollert to Brooklyn and onto the Iona gas storage facility) and are expected to remain as natural gas for the next access arrangement. The proposed assessment includes materials testing and facilities screening along the pipelines. The work would occur evenly over the five-year access arrangement period. The proposed capex does not include any mitigation costs.

APA justified the program on the basis that it is required to maintain the safety and integrity of the VTS pipelines. APA submitted that there is a risk that hydrogen injected either upstream or downstream by another gas infrastructure owner/operator could leak into the VTS network. It stated that the impact on the integrity of the pipelines if such a leak were to occur is unknown. When hydrogen is absorbed into the steel of pipelines the ductility, toughness and fatigue life of the steel is reduced. APA submitted that this may lead to premature degradation or failure of pipeline or facilities elements which poses a risk to the safety and integrity of the pipeline.[112]

Our assessment

We consider that the prospect of carrying hydrogen[113] in transmission pipelines poses two possibilities:

- The need to maintain safety of the gas mains if there is hydrogen ingress.

111 APA, VTS - BC328 AA23-27 Waterbath Heater Integrity - December 2021 – Public.pdf, p.1.

112 APA, VTS - BC200 AA23-27. Hydrogen safety and integrity - December 2021 – Public.pdf, p.1.

113 In whatever concentration that evolves.

- Converting transmission lines that are dedicated to carrying natural gas to carrying hydrogen.

The two possibilities raise different questions in considering whether the capex is conforming.

It is the former which APA has described in its business case, ie. the requirement to maintain the network's safety and integrity should there be ingress of hydrogen from adjoining networks. We assess that NGR r. 79(2)(c)(i) and (ii) applies.

For a project proposed on safety or integrity grounds, we would expect that the risk posed to the network would be well defined. Our assessment in these instances consists of a review of the risk, the proportionality of the proposed mitigation measures and the proposed timing.

APA did not provide a risk assessment in its initial proposal. In response to an information request, APA provided the risk assessment underpinning its proposal.[114] This was a generic, high level assessment, which did not identify the specific risks to the VTS network.

APA stated that it 'acknowledges that hydrogen introduced in the low pressure distribution (reticulation) networks cannot flow into the higher pressure systems. However, APA's focus of concern is the introduction of hydrogen into the VTS inner ring mains (not owned by APA) which could impact the greater VTS transmission system'.[115] APA submitted that during pigging operations or non-routine operations, valves at Templestowe and North Melbourne which are normally closed, are opened, allowing gas to flow between the MultiNet and AGN, and AGN and SP AusNet systems respectively. APA stated that injection of hydrogen at any location on the inner ring could result in hydrogen being transported to most parts of the inner ring system.[116]

APA identified that hydrogen could also travel from the inner ring system via Brooklyn Compressor Station (CS) to other parts of the transmission network. It stated that there were risks associated with Brooklyn CS when used to manage linepack and to provide peaking capacity to Snowy Hydro's Laverton North power station on the Corio pipeline. It stated that in summer when the Brooklyn - Corio and Brooklyn - Ballarat pipelines are operated to float with the inner ring mains, hydrogen could be transferred from the inner ring mains into the greater transmission system. [117]

However, while this describes general possibilities of hydrogen moving between networks, it does not describe the risks as requested.

APA did not set out the specific circumstances under which hydrogen could leak into the VTS. We sought evidence of a commitment that a party will be carrying hydrogen to the interface of the VTS network pipelines. APA did not provide this. Darebin Climate Action Now stated that 'A Victorian hydrogen economy is more likely to be based on onsite production and a dedicated small number of pipelines' and 'Large-scale production of hydrogen using renewable energy is not yet viable, although possible on a small-scale'.[118] Lochard Energy similarly commented 'Marsden Jacob note that to our knowledge, (green) hydrogen has not

114 APA, VTS - Response to AER IR014 - Appendix A VTS H2 Risk Register v2 – CONFIDENTIAL, 1 March 2022.

115 APA, Response to IR#015- Follow up capex - Q26 - Hydrogen - Supplementary information, April 22, 2022, p.1.

116 APA, Response to IR#015- Follow up capex - Q26 - Hydrogen - Supplementary information, April 22, 2022, p.1.

117 APA, Response to IR#015- Follow up capex - Q26 - Hydrogen - Supplementary information, April 22, 2022, pp.2-3.

118 Darebin Climate Action Now, Submission re APA Access Arrangement 2023, 21 February 2022, p.24.

yet been proven commercial for conventional domestic gas supply (i.e. in competition with electricity)'.[119] Victorian Community Organisations submitted that carriage of hydrogen in the transmission pipeline may not occur as much of the current gas load will be electrified, it is unclear how hydrogen might be deployed in future, and the short term focus is on distribution scale trials.[120]

APA did not identify the likely timing of hydrogen interfacing with the VTS, the amount of hydrogen that could potentially be leaked, the frequency of any leaks, and whether the amount of hydrogen potentially leaked poses a risk of damage such that mitigation would be required.

We raised the question of whether responsibility for mitigating the risk should lie with the interfacing network carrying hydrogen rather than with APA. APA submitted that it considers that it has responsibility for mitigating the risk of hydrogen entering into its network, rather than the entity carrying the hydrogen on the adjoining network, as it has an obligation to minimise risk on its network to ALARP. [121]

APA failed to outline what alternative risk mitigation strategies could be applied. APA stated 'APA could spend capital to re-configure the system to prevent hydrogen from flowing into APA- owned inner ring mains and also to prevent hydrogen from the inner ring mains to access the outer transmission system' but failed to provide any detail or cost associated with these mitigation measures.

In its submission, AEMO stated that it is unlikely that hydrogen blended into a distribution network will flow upstream into a transmission network. Further APA could introduce engineering controls to prevent the entry of hydrogen into the VTS or determine whether the VTS could accept any percentage of hydrogen and make modifications where it was found that it couldn't. AEMO submitted that if it is accepted that hydrogen is going to form part of the future energy mix, then it may be more efficient to adopt the latter approach. It noted that if hydrogen is expected to be carried in distribution networks by the end of the decade then it is appropriate for this work to be undertaken in this access arrangement period.[122]

In its submission AGL stated that "it is worth considering if this assessment and expense is required in the next regulatory period or whether it can be deferred to subsequent regulatory periods as further information on government policies and viability of using hydrogen becomes available". Energy Safe Victoria (ESV), in providing a response to our information request, stated that at this time it is unaware of any committed hydrogen project interfacing the VTS network that would risk hydrogen ingress to the VTS. We note that while the ESV stated that the APA would need to ensure its network was safe to operate, it did not specify whether the capex described by APA was the only choice or whether mitigation could be considered as appropriate to meet ALARP. The ESV indicated that it is the responsibility of a network wishing to introduce hydrogen to undertake a safety assessment across the whole supply chain, that is, upstream as well as downstream. to ensure risks are identified and minimised.[123]

119 Lochard Energy, AER APA AA Submission, 18 February 2022, p.28.

120 Victorian Community Organisations, Submission VTS Access Arrrangement 2023-27, 18 February 2022, p.10.

121 APA, Response to IR#015- Follow up capex – CONFIDENTIAL March 17, 2022, Qs25-30, pp.12-17.

122 AEMO, Submission on APA VTS GAAR 2023-27 Proposal, 18 February 2022, p.2.

123 Energy Safe Victoria, Response to AER Information Request Hydrogen safety - 17 March 2022, 1 May 2022, pp.1-3.

APA did not provide the information that we need to assess the prudency and efficiency of its proposal in maintaining the safety and integrity of the VTS pipeline. Additionally, APA has not established with sufficient certainty that there is a risk of hydrogen leaks compromising the safety and integrity of the VTS pipelines and facilities in the next access arrangement period, such that they need to carry out the testing work in this period.

We therefore do not approve APA's proposed capex of $37.9 million ($2022, excluding overheads) and instead make a replacement forecast of $0.

As set out above, the other possibility is to convert transmission lines that are dedicated to carrying natural gas to carrying hydrogen. In this instance, we consider that the hydrogen readiness testing is motivated by a change in business model rather than from a maintenance of safety perspective.

Some stakeholders expressed the view that there is no provision under the Rules to recover costs associated with a change in business model. CCP28 submitted that 'All stakeholders interviewed by CCP28 expressed the view that as this is an investment in APA's future business model, customers should not be required to fund the investment'.[124] The EUAA stated 'Consumers should not have to pay to help build a business case for hydrogen producers. If they are so keen to build a business they can pay the assessment cost'.[125]

In any event, the applicable NGR provisions would require APA to demonstrate that the expected benefit should be at least as great as the cost. We consider that in order for the capex to be justified either:

• the overall economic value of the expenditure is positive (r.79(2)(a)); or

• the present value of the expected incremental revenue to be generated as a result of the expenditure exceeds the present value of the capital expenditure (r.79(2)(b)).

At this point APA has not identified any requirement or commitments to the carriage of hydrogen and has not carried out any economic value assessment.

Security of critical infrastructure (SoCI)

At the time of lodging its proposal APA was required to comply with the *Security of Critical Infrastructure Act 2018*, but the Department of Home Affairs had recommended amendments to this Act, as described below. APA has proposed capex is in order to address these amendments.

The original Bill to amend the SoCI 2018 Act was split into two Bills.

The first enacted by Parliament was the *Security Legislation Amendment (Critical Infrastructure) Act 2021* which came into effect on 3 December 2021. This legislation

[124] CCP28, APA: Victorian Gas Transmission System Access Arrangement 2023–27, CCP28 Advice to the AER, 18 February 2022, p.44.

[125] EUAA, *EUAA Submission: APA Victorian Gas Transmission System Access Arrangements 23-27*, 18 Feb 2022, p.9.

introduced positive security obligations for relevant assets, enhanced cyber security obligations and government assistance powers.

The second enacted by Parliament was the *Security Legislation Amendment (Critical Infrastructure Protection) Act 2022*[126] which came into effect on 2 April 2022.[127] This legislation creates a new obligation for responsible entities, such as APA, to create and maintain a critical infrastructure risk management program, and sets out a new framework for enhanced cyber security obligations required for operators of systems of national significance (Australia's most important critical infrastructure assets – SoNS).[128]

Part 2A of the SOCI Act makes provision for the Minister to decide to make enforceable rules in relation to the critical infrastructure risk management program, which is required to be developed by responsible entities. The draft rules cover the specified hazards of cyber and information security hazards, supply chain hazards, physical and natural hazards, and personnel hazards.[129] The provisions of the Act do not come into force until the obligations are "switched on by a rule or by declaration" and the Minister must formally consult prior to making a rule or declaration.

APA's proposal

APA proposed $16.0 million ($2022, including overheads)[130] of capex for the SoCI project, consisting of $11.9 million ($2022, including overheads) for physical security, $1.1 million ($2022, including overheads) for the program components and $3.1 million ($2022, including overheads) for the cyber component.[131] The project was justified by APA on the basis that it is required to meet the requirements of the *Security Legislation Amendment (Critical infrastructure) Bill 2020*.[132]

APA characterised the four elements its Critical Infrastructure Risk Management Program as:[133]

- Physical security and natural hazards: Protecting assets and networks
- Cyber security: Protecting systems and information
- Personnel security: Implementing policies and procedures which seek to mitigate the risk of malicious insiders

126 This superseded the Security of Critical Infrastructure Act 2018.

127 https://www.homeaffairs.gov.au/reports-and-publications/submissions-and-discussion-papers/slacip-bill-2022

128 https://www.homeaffairs.gov.au/reports-and-publications/submissions-and-discussion-papers/slacip-bill-2022

129 https://www.homeaffairs.gov.au/reports-and-publications/submissions-and-discussion-papers/slacip-bill-2022

130 These are the amounts proposed by APA in its updated RIN: *VTS - Reset RIN Workbook 1 - Forecast_Revisions to tabs - capitalised overheads - Jan 2022.xls*, submitted 21 January 2022 in response to AER information request #001 – RIN deficiencies and capex business cases. APA has applied its 6.91 percent rate of network overheads to the SoCI expenditure. These amounts do not correspond with those in the Business Case VTS - VTS AA23-27 Business Case_SoCI Legislation - December 2021 – Confidential.

131 APA, *Access arrangement proposal 2023–27,* VTS - Capex model - Dec 2021 – Public.xls

132 APA, VTS - VTS AA23-27 Business Case_SoCI Legislation - December 2021 – Confidential.pdf, p.7.

133 APA, *Access arrangement proposal 2023–27,* VTS - A Look at plans for VTS - APA VTS 2023-2027 AA proposal overview - December 2021 – Public.pdf, p.38

- Supply chain security: Protecting operations by understanding supply chain risks or compromise.

The physical security capex proposed by APA is specific to the VTS, so it is treated as a direct project cost, that is 100 per cent of the cost is allocated to the VTS.[134]

The program and cyber components are costs incurred at the APA Group level and so allocated to the VTS according to their CAM (as shared corporate assets).[135] The VTS-allocated costs represent 8.2 per cent of the total program and cyber project cost forecasts to be incurred at the APA Group level. The program component is for Enterprise Security Governance, Personnel Security, Supply Chain Security and Program Management.[136] The cyber project cost is for the requirements APA has identified to meet its Security Profile level of the Australian Energy Sector Cyber Security Framework (AESCSF)[137].[138]

AER assessment

In making our assessment of the prudency and efficiency of APA's proposed expenditure we considered whether:

- the regulatory obligation exists
- APA has undertaken a risk assessment
- APA has proposed a risk mitigation strategy which is consistent with the regulatory obligations.

The cyber security component of the SoCI has been legislated under *Security Legislation Amendment (Critical Infrastructure Protection) Act 2021* and *Security Legislation Amendment (Critical Infrastructure Protection) Act 2022.*

The physical security and program components have been legislated under *Security Legislation Amendment (Critical Infrastructure Protection) Act 2022.* However the relevant provisions are subject to being "switched on" by the Minister. As yet they have not been switched on, so at this stage they do not apply. However, it is reasonable to expect that any business subject to the Act, such as APA, would take steps to comply so that if the provisions of the Act are "switched on" they are prepared.

We have assessed APA's proposed cyber component and consider the cyber requirements are prudent. Cyber is a critical and increasing risk across all utilities. This risk is growing in the current global context and is likely to become more material over the next access period.

134 APA, *Access arrangement proposal 2023–27,* VTS - A Look at plans for VTS - APA VTS 2023-2027 AA proposal overview - December 2021 – Public.pdf, p.38

135 APA, *Access arrangement proposal 2023–27,* VTS - A Look at plans for VTS - APA VTS 2023-2027 AA proposal overview - December 2021 – Public.pdf, p.40.

136 APA, *Access arrangement proposal 2023–27,* VTS - A Look at plans for VTS - APA VTS 2023-2027 AA proposal overview - December 2021 – Public.pdf, p.40.

137 These requirements are set out at https://aemo.com.au/initiatives/major-programs/cyber-security/aescsf-framework-and-resources

138 APA, *Access arrangement proposal 2023–27,* VTS - A Look at plans for VTS - APA VTS 2023-2027 AA proposal overview - December 2021 – Public.pdf, p.40.

We do not consider that APA's physical and program components are prudent for the following reasons.

The risk management program fact sheet sets out the definitions of what is a material risk, hazard, relevant impact and the principle of so far as is reasonably practicable.[139] These definitions bound the investments which are needed and economically justified.

The SoCI requirements apply only to 'material risk' which is described in terms of risks that have a substantial impact on the availability, reliability and integrity of the critical infrastructure asset.[140] The notes in the SoCI material state that a risk management program should have regard to consideration of impairment that may prejudice the social or economic stability of Australia or its people; the defence of Australia or the national security of Australia.[141] We assess that the risk level being contemplated here is a very material level of risk. The notes adds further characterisation of a material risk explaining that a hazard would cause the stoppage or major slowdown of a critical infrastructure asset's functioning for an unmanageable period.[142] This reinforces our view that what is contemplated is a very material circumstance.

We assess that APA has not shown that the risks it seeks to manage are material risks that have the relevant impact.

Furthermore, in the *Exposure Draft Security Legislation Amendment (Critical Infrastructure Protection) Bill Explanatory Document* it is noted that the required Risk Management Program 'recognise[s] or build[s] on existing regulatory frameworks to minimise the regulatory burden on industry', and 'maintains the public interest criteria in the proposed Bill to ensure that cost and the need to switch on the obligation through a rule following formal consultation is maintained'.[143] The Explanatory document adds that this 'ensure[s] that if an existing regulation already exceeds the Risk Management Program requirement, there is not a duplicative set of obligations in place'.[144] The intent of the legislation appears to be not to override the NER framework, or materially add to the existing standards of risk management where those standards are appropriate to manage the current level of risk.

SoCI will only be relevant to the extent that a material risk exists that is not adequately managed by the current risk management controls. APA's submission does not demonstrate that this is the case. APA have submitted a plan to upgrade its security arrangements but it

139 Cyber and Infrastructure Security Centre, Risk Management Program, March 2022, p.2. <https://www.cisc.gov.au/critical-infrastructure-centre-subsite/Files/cisc-factsheet-risk-management-program.pdf>

140 Cyber and Infrastructure Security Centre, Risk Management Program, March 2022, p.1. <https://www.cisc.gov.au/critical-infrastructure-centre-subsite/Files/cisc-factsheet-risk-management-program.pdf>

141 Cyber and Infrastructure Security Centre, Draft Risk Management Program Rules, 26 November 2021, p.6. <https://www.homeaffairs.gov.au/reports-and-pubs/files/risk-management-program-rules.pdf>

142 Cyber and Infrastructure Security Centre, Draft Risk Management Program Rules, 26 November 2021, p.6. <https://www.homeaffairs.gov.au/reports-and-pubs/files/risk-management-program-rules.pdf>

143 Cyber and Infrastructure Security Centre, Exposure Draft Security Legislation Amendment (Critical Infrastructure Protection) Bill, Explanatory Document, December 2021, p.5 <https://www.homeaffairs.gov.au/reports-and-pubs/files/explanatory-document-SLACIP.pdf>

144 Cyber and Infrastructure Security Centre, Exposure Draft Security Legislation Amendment (Critical Infrastructure Protection) Bill, Explanatory Document, December 2021, p.5 <https://www.homeaffairs.gov.au/reports-and-pubs/files/explanatory-document-SLACIP.pdf>

has not demonstrated that the existing security arrangements are insufficient to manage the current level of risk.

The lack of a substantive risk analysis as contemplated by the Bill Exposure Draft and now as required by the Act means that we are unable to determine that the proposed expenditure for the physical security and program parts of the SoCI project is prudent and efficient. We therefore do not approve the physical security and program components and have made a replacement forecast of $0.

We consider that in its revised proposal APA will need to submit a risk analysis supported by relevant evidence to show that each of the risks proposed to be managed is a material risk as contemplated by the SoCI Bill, how the proposed reduction in the current level of risk meets the requirement of "so far as it is reasonably practicable" (30AH), and that the proposed risk reduction is efficient in meeting the "so far as it is reasonably practicable" requirement.

With respect to the s.30AH provisions, we expect APA to demonstrate that its proposed response and investment to the identified risks meets the "so far as is reasonably practical" test.

In discussing the "so far as is reasonably practical" principle, the fact sheet makes the following important points (emphasis added):[145]

> *The expectation is not for responsible entities to eliminate risk entirely but to reduce to the extent it is reasonably able to be done the likelihood and consequences of material risks. There is no expectation that entities pursue risk mitigation measures that are disproportionate relative to the likelihood and consequences of a particular risk.*
>
> *The requirement provides responsible entities flexibility to determine how they address material risk and relevant impact in relation to their business size, maturity and income. The intent is for responsible entities to seek to minimise or eliminate material risk where it is reasonably able to do so, in order to secure their critical infrastructure asset.*
>
> *In the annual attestation the Board, council or other governing body (if they have one) are required to approve the risk management plan and in doing so, appropriately balance the costs of risk mitigation measures with the impact of those measures in reducing material risk within their own operational context.*

The Act requires a balance in risk and cost that accord with prudency and economic efficiency principles required by the NGR.

[145] Cyber and Infrastructure Security Centre, Risk Management Program, March 2022, p.2. <https://www.cisc.gov.au/critical-infrastructure-centre-subsite/Files/cisc-factsheet-risk-management-program.pdf>

Information Technology Portfolio

APA's proposal

APA proposed $10.6m of capex for the VTS share of APA Group's Information Technology Portfolio project. These are part of the corporate overhead allocation. The VTS allocation consists of $6.6m for Enterprise Program Management Office (EPMO), $3.8m for the Operational Technology projects and $0.3m for the Information Technology projects.

APA justified the capex on the need to:[146]

• replace obsolete legacy systems and routine upgrades.

• migrate applications to cloud-based services, which APA states is driven by cloud-based services becoming the primary platform for many application vendors and the obsolescence and limited vendor support for business critical technologies used by APA.

APA submitted that the benefits of the EPMO are to provide better services to customers, enhance the digital customer experience, and provide timely and more accurate information.[147] APA stated that EPMO is for managing the upgrades of four programs - Grid customer services, Asset Management, Back Office and Field Mobility. [148] APA stated that '[b]usiness solutions for the programs are currently being prepared but are not ready in time for the VTS proposal. We expect to have better information in early 2022. [149] It has flagged that costs are shifting from capital to operating expenditure. [150]

APA stated that Operational Technology consists of engineering applications, data and solutions to manage assets and assist personnel in the field. [151]

The Information Technology is to enable business units to deliver end to end IT solutions and services. It consists of Enterprise Asset Management and Other.[152]

AER's assessment

While APA described at a high level why it considered the capex was justified, it did not:

- describe or provide evidence of what was obsolete or needing a routine upgrade
- what was required to be cloud based or
- which technologies would no longer be supported.

146 APA, Victorian Transmission System 2023-2027 access arrangement proposal: Information Paper. Information Technology December 1, 2021, p.5

147 APA, Victorian Transmission System 2023-2027 access arrangement proposal: Information Paper. Information Technology December 1, 2021, p.10.

148 APA, Victorian Transmission System 2023-2027 access arrangement proposal: Information Paper. Information Technology December 1, 2021, p.10.

149 APA, Victorian Transmission System 2023-2027 access arrangement proposal: Information Paper. Information Technology December 1, 2021, p.10.

150 APA, Victorian Transmission System 2023-2027 access arrangement proposal: Information Paper. Information Technology December 1, 2021, p.10.

151 APA, Victorian Transmission System 2023-2027 access arrangement proposal: Information Paper. Information Technology December 1, 2021, p.14.

152 APA, Victorian Transmission System 2023-2027 access arrangement proposal: Information Paper. Information Technology December 1, 2021, p.26.

APA stated that '[t]he scope of the programs is subject to ongoing assessment and a better understanding of APA requirements will be available in early 2022'. [153] For EPMO components it stated that a business case is likely to be completed by February 2022. We have not received any further information from APA.

We are of the view that there is a lack of substantive information on the need for the proposed investment and the benefits of the proposed investment. There is no basis provided for the cost estimates. We are therefore unable to conclude that the proposed capex is prudent and efficient. We therefore do not approve the proposed capex and make an alternative forecast of $0 for the IT portfolio project.

In its submission, AEMO questioned whether the allocation of costs was appropriately reflecting IT for DTS functions versus other APA functions. It noted that the APA Grid system refresh appeared to be meeting obligations outside of Victoria and is not related to being the asset owner of the DTS. AEMO supported the communications upgrade proposed under the Lifecycle Management project.[154]

In its revised proposal, we expect the APA to submit a business case for this proposed investment, including details of the scope of work, a detailed cost estimate, details of the expected benefits and the supporting cost benefit analysis.

5.4.2.4 Overheads

APA's proposal

In its proposal APA did not separately identify the overheads applied in the current 2018-22 period. No corporate or network overheads nor overheads in the replacement, expansion, non-network or other capex categories were reported in the RINs.[155]

With respect to the forecast period, APA submitted that 'we started to split out capitalised overheads (from other capital expenditure) for the next access arrangement period. Up until 2023, APA had been allocating overheads to other asset categories'.[156]

APA forecast $53.2m in capital network overheads and $22.5m in capital corporate overheads over the 2023-27 period[157], although the amounts reported varied throughout the RINs, capex model, and proposal documents.

AER's assessment

Methodology applied to allocate APA Group overheads (parent entity) to VTS (and other subsidiaries)

153 APA, A look at plans for Victorian Transmission System, December 1, 2021, p. 43.

154 AEMO, Submission on APA VTS GAAR 2023-27 Proposal, 18 February 2022, p.7.

155 APA, *VTS 2023–27 Access Arrangement*, VTS - VTS 2023-27 - Reset RIN - Workbook 2 - Historical expenditure - Dec 2021-Public.xls, December 2021. This RIN covers the 2016-2020 period. APA, *VTS 2023–27 Access Arrangement*, VTS - VTS 2023-27 - Reset RIN - Workbook 1 - Forecast - Dec 2021 – Public.xls, December 2021. This RIN included 2021 and 2022.

156 APA, VTS - A Look at plans for VTS - APA VTS 2023-2027 AA proposal overview - December 2021 – Public.pdf, p.25.

157 APA, *VTS 2023–27 Access Arrangement*, VTS - VTS 2023-27 - Reset RIN - Workbook 1 - Forecast - Dec 2021 – Public.xls, December 2021, Table E1.1.1

APA did not set out in its proposal how it allocated overhead costs from the APA Group to subsidiaries, including the VTS. APA did not explain the allocation until late in the process (10 May 2022), following a number of information requests.

APA stated that APA Group overheads are only allocated for the purposes of regulatory reporting; they are otherwise not distributed to subsidiaries. APA set out that for regulatory reporting purposes, APA Group overheads are allocated to its subsidiaries, including the VTS, via three classes of overheads.

This allocation consists of:[158]

1) capitalised overheads (capitalised corporate opex) - Costs incurred to support the construction activities recognised as capitalised expenditure. Includes costs incurred by management/service departments involved in construction activities but cannot be directly traced to capital projects. For example: Executive management, Engineering, Human resources and Finance etc.). An allocation of such costs form part of capital expenditure at the individual project level. APA identifies these costs are APA Group profit and loss items allocated to the balance sheet of subsidiaries.[159] APA stated that it allocates these costs to the AER capex driver categories of capitalised network overheads and capitalised corporate overheads. However, in practice APA has allocated these costs to the AER category of 'network overheads'.

2) corporate opex allocated to APA subsidiaries (including the VTS) - Operating expenditure incurred at the APA Group corporate level which support the operations of APA subsidiaries. For example: services provided by CEO, Legal counsel, Finance, Treasury and Human Resources etc. APA identifies these costs as profit and loss items. APA stated that it allocates these costs to the AER opex overheads category.

3) corporate assets or shared support assets allocated to APA subsidiaries (including the VTS) - Assets (balance sheet items) incurred at the APA Group corporate level which support the operations of APA subsidiaries. For example: Development of finance and human resource systems and Maximo improvements. APA identifies these costs as balance sheet items. APA stated that it allocates these costs to the AER category of capital overheads. However, in practice APA has allocated these costs to the AER 'non-system' and 'other' capex driver categories.

1) Allocation of capitalised overheads

APA stated that capitalised overheads includes each 'overhead' department's (human resources, IT and facilities, executive and finance, quality and compliance, procurement, project management and delivery) costs attributed to capital projects. The total cost pool of these overheads is allocated to individual capex projects across all the APA subsidiaries in accordance with the project's share of the total project costs across all the APA subsidiaries. For example, if a particular project's direct costs accounted for 8 percent of the total project direct costs, that project is allocated 8 percent of the total overheads.

APA advised that for forecasting purposes, the percentage overhead allocation is derived by dividing the sum of the total overheads over the six year period FY2016 to FY2021 by the

158 APA, Meeting with AER on OH 10 May 2022 PUBLIC.pdf, slide 3 (confidentiality subsequently claimed by APA over this version). Public version available at https://www.aer.gov.au/system/files/APA%20VTS%20-%20Response%20to%20AER%20Information%20Request%20Overheads%20-%2010%20May%202022.pdf , p.3.

159 APA, Meeting with AER on OH 10 May 2022 PUBLIC.pdf, slide 5 (confidentiality subsequently claimed by APA over this version). Public version available at https://www.aer.gov.au/system/files/APA%20VTS%20-%20Response%20to%20AER%20Information%20Request%20Overheads%20-%2010%20May%202022.pdf , p.5.

sum of the total capex project costs over the same six year period. The percentage overhead allocation arrived at is 6.91 percent.[160]

APA applied this rate of 6.91 percent to all VTS capex business case amounts, which yielded a total forecast capitalised overhead amount of $21.6m for the 2023-27 period.

We have concerns about this allocation including:

- APA stated that each 'overhead' department determines the amount of their costs attributable to capital projects.[161] However the method of allocation to capital versus opex overheads and the quantum of total overheads allocated at the APA Group level is not apparent.
- The table provided by APA to demonstrate its derivation of the 6.91 percent capitalised overhead rate includes amounts for capitalised overheads and total direct project costs. The amounts provided by APA in the table do not correspond with the total direct project costs (capex) reported to the AER for the 2016 – 2021 for the VTS in the capex model nor the updated amounts in the RIN workbook 1 for 2021. We are therefore unable to verify the 6.91 percent allocation.
- The calculation method applies the sum of capitalised overheads over the six year period divided by the sum of the total direct project costs over the six year period. This is not an annual average of the overhead rate over six years (yielding 7.24%). It is not clear why APA is applying this method.
- There is considerable variation in the overhead rate from year to year – with the smallest rate being 6.17 percent and the highest being 10.04 percent. Translated to the access arrangement total direct cost proposed by APA of $329 million, this can result in a difference in capitalised overheads being applied over the period of between $20 million and $33 million.
- The application of a purely ad valorem overhead rate does not reflect our understanding of how overheads scale with changes in the total cost of capex programs. We generally consider that 25 percent of total overhead costs is variable and 75 percent of total overhead costs are fixed. Hence it is the 25 percent proportion of overheads that we expect to scale with a change in the size of the capex program. In applying this methodology APA is assuming that 100 percent of overheads scale with the size of the capex program.
- The overhead rate applied to the VTS is as much a function of the capex program of the other subsidiaries as it is of the VTS capex program. This is borne out by APA's response to our information request: 'APA Group's approach to the allocation of capitalised overheads is attribute them to capital expenditure projects. This means that the amount of capitalised overheads cannot be subject to a meaningful trend analysis, as it will be impacted by the level of capital expenditure activity undertaken across the entire APA portfolio of assets'.
- We requested that APA provide the capitalised overhead percentage applied and implicitly approved at the last access arrangement. APA has not provided this

[160] APA, Meeting with AER on OH 10 May 2022 PUBLIC.pdf, slide 5 (confidentiality subsequently claimed by APA over this version). Public version available at https://www.aer.gov.au/system/files/APA%20VTS%20-%20Response%20to%20AER%20Information%20Request%20Overheads%20-%2010%20May%202022.pdf , p.5.

[161] APA, Meeting with AER on OH 10 May 2022 PUBLIC.pdf, slide 6 (confidentiality subsequently claimed by APA over this version). Public version available at https://www.aer.gov.au/system/files/APA%20VTS%20-%20Response%20to%20AER%20Information%20Request%20Overheads%20-%2010%20May%202022.pdf , p.6.

information. We have therefore been unable to assess how the forecast application of the overhead rate has performed against actuals.

2) Allocation of corporate opex

Corporate opex allocated to APA subsidiaries (including the VTS) includes operating expenditure incurred at the APA Group corporate level which support the operations of APA Subsidiaries. The total cost pool of corporate opex is allocated to the APA subsidiaries in accordance with the subsidiary's share of the total revenue of all the APA subsidiaries.[162] For forecasting purposes, the corporate opex allocation in 2020 is used as the base. This consisted of 8.2 percent of the total corporate opex pool, which is $5.8 million ($2020). After applying the base-step-trend approach to opex forecasting, the total amount of corporate opex over the 2023-27 period is $36.5 million.

3) Allocation of corporate assets/shared support assets

APA stated that the expenditure incurred for corporate assets/shared support assets are allocated to APA subsidiaries (including the VTS) as corporate assets are not recorded in the ledgers of the individual APA subsidiaries, but instead they are recorded in the ledger of the APA Group corporate entity. The total cost pool of corporate assets is allocated to the APA subsidiaries in accordance with the subsidiary's share of the total revenue of all the APA subsidiaries. For forecasting purposes, the corporate assets allocation in 2020 (that is, 8.2 percent) is applied to the corporate assets proposed for the forecast period. This resulted in $18.2m over the 2023-27 period being forecast for corporate assets/shared support assets.

In its submission AGL suggested that where costs are material, different allocation methods such as employee numbers or total direct costs, may be appropriate for different cost categories.[163]

The corporate assets included in APA's proposal are 'share of corporate properties', 'share of corporate motor vehicles', Information Technology Portfolio (Enterprise Program Management Office (EPMO), Operational Technology, Information Technology), and the Security of Critical Infrastructure (SoCI cyber and SoCI program). APA allocated this expenditure to the 'non-system', 'non-network' and 'other' capex driver categories in different parts of its proposal.

We have provided our assessment of the Information Technology Portfolio and the SoCI cyber and program capex at section 5.4.2.3 above. We note that the network overhead rate was applied to these programs. We consider that this is inconsistent with the methodology and principle that described that network overheads are allocated to direct costs. As these costs are shared support assets we do not consider that they should have network overheads applied to them.

We have concerns about this allocation including:

- It is not clear why APA is applying a different averaging method for corporate assets (ie. choice of a single year) compared to capitalised overheads (using six years of data to determine a rate).

[162] APA, Meeting with AER on OH 10 May 2022 PUBLIC.pdf, slides 14-17 (confidentiality subsequently claimed by APA over this version). Public version available at https://www.aer.gov.au/system/files/APA%20VTS%20-%20Response%20to%20AER%20Information%20Request%20Overheads%20-%2010%20May%202022.pdf , pp.14-17.

[163] AGL, AGL - Submission on APA VTS 2023-27 proposal - 18 February 2022, p.2.

- There is a lack of transparency of total forecast and subsequent actual corporate asset costs at an APA Group level as well as at the subsidiary (VTS) level. We have asked APA for evidence of the approval of the allocation of the overheads to the VTS (eg Board minutes, finance sign-off) but APA has not provided this.

Table 5-8 APA's revised overheads ($m, 2018-2022 $nominal, 2023-27 $2022)

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total 2023-27
Network overheads	TBA	TBA	TBA	TBA	TBA	8.2	6.8	3.0	2.0	1.6	21.6
Corporate assets	3.7	5.8	4.1	4.2	3.9	4.6	5.4	3.1	1.8	3.4	18.2
Total overheads	TBA	TBA	TBA	TBA	TBA	12.7	12.2	6.1	3.7	5.1	39.8

Source: AER staff compilation of various APA sources.

Efficiency of the magnitude of APA's overhead allocation

One of the ways we assess the efficiency of overheads is to undertake trend analysis, comparing the forecast overhead expenditure with overhead expenditure incurred over past access arrangements. This enables step changes or trend changes to be investigated.

As indicated above, APA did not report overheads transparently or consistently across access arrangement periods in its proposal.

We requested that APA provide historical and forecast period overheads on the same basis, that is, with overheads separately reported. APA provided updated overhead amounts for 2023-27 due to an allocation error and provided 2021 and 2022 data, but no 2018-20 data.[164] APA reported total network overheads of $22.5m and no corporate overheads for 2023-27 and total network overheads of $3.9m for 2021 and $8.0m for 2022.

From the 2021 and 2022 data provided by APA, we calculated an implied network overhead of 6.91% for 2022. The implied rate varied across the capex categories for 2021 (replacement: 6.02%, expansion: 7.20%, non-network: 4.11%).

For the forecast 2023-27 period, the implied network overhead rate being applied to all capex projects with business cases is 6.91%.[165] In response to our information request APA confirmed that it did apply the 6.91% network overhead rate.[166]

We also sought clarification from APA on the amount of corporate assets/shared support assets in its proposal. APA provided a spreadsheet which identified corporate assets/shared support assets of $21.7m for 2018-22 and $18.2m for 2023-27.[167] No corporate

[164] APA, *VTS 2023-2027 Access Arrangement*, Response to AER Information Request IR#001 - Addendum January 21, 2022, pp.2-3.

[165] This is the difference between the project cost in the business cases and the costs entered into the capex model.

[166] APA, *VTS 2023-2027 Access Arrangement*, Response to IR#011 - Overheads capex – CONFIDENTIAL - March 1, 2022, pp.2-3.

[167] APA, *VTS 2023-2027 Access Arrangement*, Response to IR#011 - Overheads capex – CONFIDENTIAL - March 1, 2022, p.1; VTS -response to IR011 Q2 Attachment for Q2.xls.

assets/shared support assets were proposed or approved in the 2018-22 access arrangement period.

Change in accounting for overheads

If there has been a change in accounting for overheads (for example, between opex and capex or between overheads and other capex driver categories) it makes it difficult to analyse trends in overheads between Access Arrangement periods if the RIN information is not presented on the same basis of preparation.

We requested that APA provide the overheads for the current and forecast access arrangement on the same basis. It submitted that it could not provide this information. It is not clear to us why this information is not able to be provided when other subsidiaries are reporting this information under their Part 7 or 23 reporting obligations.

Information required for assessment of prudency and efficiency

Due to the lack of information provided in APA's proposal and the tardiness in providing subsequent information we have had insufficient time to be able to seek the further information we require to be satisfied that the overheads are prudent and efficient.

We expect the revised proposal to contain the following information:

- Reporting of corporate overheads and shared corporate assets for the VTS on the same basis over the current and forecast access arrangement periods, to enable trend analysis. This should be a consistent set of numbers across the RINs, capex model, business cases, and access arrangement information.
- Provision of APA Group level corporate overheads and shared corporate assets and their allocated amounts to subsidiaries over the current and forecast access arrangement periods. Supporting evidence of the approval of the allocation of the overheads to the VTS (eg Board minutes, finance sign-off). This is to provide assurance that the appropriate proportion of overheads is being allocated to the VTS compared to other subsidiaries.

We have included a placeholder amount for corporate overheads that has been mapped to the AER's capex driver category of 'network overheads' of $11.6 million ($2022). This reflects the 6.91 percent overhead rate applied to the direct capex costs approved for expansion and replacement projects. We have included a shared corporate asset amount of $6.5 million ($2022). This includes the capex for the SoCI cyber component, and share of corporate properties and motor vehicles. We expect the overhead and shared corporate asset amounts to change (higher or lower) in our final decision in response to the information that we receive from APA in addressing our information requirements and in providing updated or changed costings in APA's revised proposal.

5.5 South West Pipeline expansion projects – advanced determination under Rule 80

APA has sought an advanced determination under National Gas Rule (NGR) rule 80 for its proposed further expansion of the South West Pipeline (SWP). Rule 80 provides for the AER to make an advanced determination in relation to future capex.

Our draft decision in relation to the application made under r.80 of the NGR is that the capital expenditure proposed by APA of $230.6 million ($2022, excluding overheads) for the SWP expansion does not meet the new capital expenditure criteria set out in r.79 of the NGR. On this basis we propose to not approve APA's proposed expenditure for two projects to expand the SWP under NGR r.80.

A decision regarding this application made under rule 80 is not part of the AER's access arrangement decision, but is a separate process. The AER is consulting on this rule 80 application. Stakeholders may make submissions on this process in the same way that they can in relation to the access arrangement proposal as set out in the Overview.

APA's proposal

APA proposed capex for two projects under NGR r.80:

- South West Pipeline Expansion – Iona 670 TJ/d Injection (Business Case 602) $215.8 million ($2022, excluding overheads)
- LNG Import Terminal Connection to SWP – Brooklyn Facilities Upgrade (Business Case 603) $14.8 million ($2022, excluding overheads).

South West Pipeline Expansion – Iona 670 TJ/d Injection

APA proposed the expansion of the SWP to allow an increase of 100 TJ/d of gas from Iona UGS to be injected into the VTS during the winter period to reduce the risk of supply shortfall in the VTS. This is in response to Lochard Energy's proposal to increase their injection capacity from 570 TJ/d to 670 TJ/d[168] and increase their storage to 30 PJ by Q4 2024, subject to achieving FID in Q3 2022. As this proposal has not achieved FID, APA is submitting this business case under Rule 80.

The proposed capex consists of 74 km x 20 inch looping (hydrogen ready) on the SWP around the Stonehaven and Pirron compressors, and upgrades of the Brooklyn Lara Pipeline City Gate (BLP CG), the Brooklyn City Gate (BCG) and the Winchelsea CS to increase flowrates into the Melbourne network.[169] It is scheduled to be completed in 2027.

APA submitted that the proposed capex is justified on the basis that it is required to maintain the service provider's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred (as distinct from projected demand that is dependent on an expansion of pipeline capacity). It states that the capex is required due to falling gas supply from Longford, while demand is forecast to remain relatively flat.

LNG Import Terminal Connection to SWP – Brooklyn Facilities Upgrade

Viva Energy and Vopak have independently approached APA about injecting 500 to 600 TJ/day into the VTS.[170] Viva Energy is proposing the connection of an LNG terminal located at Geelong to the SWP at Lara CG. Viva Energy has indicated that it expects to achieve FID in September 2022, with supply available early in 2024. Vopak is proposing the connection of

168 Lochard achieved FID in December 2020 to increase its injection capacity to 570 TJ/d by 1 January 2023.

169 APA, VTS - Application under Rule 80 of the NGR - December 2021 – Public.pdf, p.16.

170 APA, VTS - Application under Rule 80 of the NGR - December 2021 – Public.pdf, p.27.

its LNG terminal at Avalon. Vopak is expected to make FID in 2024, with supply available in 2026.

The proposed capex consists of an upgrade to the Brooklyn City Gate (BCG) and the Brooklyn Lara Pipeline City Gate (BLP CG). This would accommodate an increase in the capacity of the SWP of between 150 to 252 TJ/day should either LNG terminal reach completion. The proposal assumes that the augmentation proposed to the SWP under the Access Arrangement (that is, installation of two new compressor stations at Pirron and Stonehaven) has been approved.[171] APA submitted this business case under Rule 80 as this proposal has not achieved FID.

APA submitted that the proposed capex is justified on the basis that it is required to maintain integrity of services and maintain the service provider's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred.

AER assessment

AER assessment of proposed capital expenditure

We assessed the proposed capital expenditure to determine whether it would be incurred by a prudent operator acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services.[172] We also assessed whether the proposed capital expenditure is justified on the grounds specified in r. 79(2) of the NGR.

The key assumptions APA submitted in support of its proposal are:

- AEMO's 2021 GSOO and 2021 VGPR have forecast shortfalls from winter 2023.[173]
- Lochard's increased storage and injection rates will balance the seasonal gas supply profile by storing gas during low demand periods to use it as peak shaving during the winter period, when the demand is high.[174] The proposed SWP capex will increase capacity to 670 TJ/d, matching the Iona injection capacity.[175]
- The injection volumes from the western LNG projects are limited by SWP capacity constraints. These constraints are created by:
    - the Brooklyn CG (City Gate) maximum flow limit
    - the Sale CG minimum pressure requirements
    - curtailment of western LNG injections by Iona Close Proximity Point (CPP) injections and vice versa.[176]

  The proposed capex for upgrades of the Brooklyn City Gate and Brooklyn Lara Pipeline City Gate would provide for the injection of an additional 150 - 252 TJ/d.

Our draft decision in relation to APA's proposed expansion of the SWP to 570 TJ/d is set out at section 5.4.2.1. We did not approve this augmentation, but a smaller augmentation

171 APA, VTS - Application under Rule 80 of the NGR - December 2021 – Public.pdf, p.27.

172 NGR, r. 79(1)(a).

173 APA, VTS - Application under Rule 80 of the NGR - December 2021 – Public.pdf, p.16.

174 APA, VTS - Application under Rule 80 of the NGR - December 2021 – Public.pdf, p.17.

175 APA, VTS - Application under Rule 80 of the NGR - December 2021 – Public.pdf, p.16.

176 APA, VTS - Application under Rule 80 of the NGR - December 2021 – Public.pdf, pp.13-14.

increasing the SWP injection capacity to 517 TJ/d. This decision is likely to impact the modelled outcomes for APA's proposed r.80 augmentation, which assume that the SWP expansion to 570 TJ/d is completed.

Forecast supply shortfalls on the VTS

In assessing APA's submitted load and demand forecasts, based on the 2021 GSOO and APA's adjustments for stage I and II of the East Coast Grid expansion, we found that under extreme weather conditions, shortfalls were only forecast for one day in 2023 (61TJ) and one day in 2024 (5TJ) over the 2023-25 period[177]. Demand was forecast to fall over the remaining forecast period, however, supply from the Gippsland Basin was also forecast to fall. AEMO indicated at that time that Iona's storage facility will become more important for managing winter peak demand and for balancing supply across Melbourne.

APA has subsequently updated its load and demand forecasts to take into account 2022 GSOO and 2022 VGPR. AEMO's 1-in-20-year peak day forecasts under the progressive scenario indicate that there are no shortfalls in winter 2023 when there is sufficient capacity in Dandenong LNG shallow storage for both the Step Change and Progressive Change scenarios.[178] When only Iona storage capacity is available and Dandenong LNG is not available there are 6 days of shortfalls of between 28 and 206 TJ forecast for 2023. These forecasts did not take into account APA's stage II East Coast Grid expansion.

APA announced FID for stage II East Coast Grid expansion on 25 May 2022, providing an increase the MSP pipeline capacity by 90 TJ/day. This provision for greater supply from the north of the VTS (via Culcairn) together with Dandenong LNG mitigate the risk of 1-in-20 forecast shortfalls in 2024 through to 2026.[179]

Under AEMO's step change scenario peak day system demands are forecast to reduce by 18 percent, hence there are no forecast shortfalls under this scenario.

Given these updated shortfall forecasts we do not consider that expansion of the SWP beyond that provided for by the approved second Winchelsea compressor (discussed at section 5.4.2.1) is justified at this time. AEMO has indicated that there is considerable uncertainty in forecasting gas demand and supply. There are a number of anticipated supply projects expected to develop from 2024. We assess that while there is a high degree of uncertainty regarding market developments, it is difficult to forecast the likely location of binding constraints on the VTS and so whether or which augmentation solution should be undertaken.

AGL in its submission is not supportive of the Rule 80 application on the basis of the uncertainty in the future configuration of gas supply and the market response to injection constraints. It suggested 'that a dedicated working group be established by AEMO to work

177 The AEMO forecasts only extend to 2025.

178 AEMO, *Victorian Gas Planning Report Update*, 29 March 2022, pp.3, 9.

179 Factoring in the Dandenong LNG capacity but not factoring in the 90 TJ provided by stage 2 of the ECG expansion, for the 1-in20 peak day forecasts, in 2024 shortfalls are forecast for two days (7 and 21 TJ), none in 2025, and three in 2026 (16, 58 and 100 TJ). Therefore the addition of stage 2 of the ECG expansion mitigates shortfalls for all but one day in 2026.

through holistically how the market can resolve these issues and to align the pre-approval conditions to the proposed augmentations.

Matching the Iona 670 TJ/d injection capacity to balance seasonal gas supply profile

APA did not provide information or forecasts to support the case for matching SWP capacity with Lochard Energy's storage facility's injection capacity of 670 TJ/day.

Given the uncertainties in the forecast demand and supply outlined above, and in the absence of supporting material for undertaking an augmentation specifically to target 670 TJ/day, we consider that the proposal to augment the SWP as proposed in the South West Pipeline Expansion – Iona 670 TJ/d Injection project is not justified under NGR r.79(2)(c)(iv).

Limit on western LNG injection into the SWP due to the Brooklyn CG maximum flow limit, the Sale CG minimum pressure requirements, and the curtailment of Iona CPP injection by western LNG injection and vice versa

APA identified that the proposed upgrade of the Brooklyn facilities is the minimum amount of capital expenditure required to enable either of the western LNG projects to increase the South West Pipeline capacity by 150 - 252 TJ/d. This is because notwithstanding that the western LNG projects are expected to have an injection capacity of between 500-600 TJ/d, the overall increase in SWP capacity is only 150-253 TJ/d because when gas is being injected from the western LNG terminals into the SWP, it will significantly constrain gas flowing from the Iona storage facility. APA provided a graph showing the maximum volume that could simultaneously be injected from the Iona storage facility and the western LNG terminals into the SWP. Our consultant, Zincara, noted that 'the full benefits of Iona UGS and LNG terminal injection capacities would not be realised without significant capital expenditure investment in infrastructure such as pipeline looping, which in the current climate of supply-demand uncertainty would not appear to be prudent and is not proposed by APA at this time'.

AEMO submitted that 'the upgrades of BCP CG and BBP CG proposed … are an important first step in reducing the back-off effect of LNG injections on Port Campbell supply. AEMO cannot confirm the capacity impact of this augmentation alone as this analysis has not been complete. However, additional augmentations would be required to enable simultaneous injections of Port Campbell supply at the current SWP pipeline capacity and LNG injections at maximum rate'.[180]

The EUAA submitted that it does not support the SWP expansion proposed under r.80. It stated that consumer advocates are concerned about investing in expansion under such uncertain conditions. They are concerned that future customers may be left to pay for an asset that is not required in the longer term and ends up being stranded. It stated that the AER should wait to see the outcomes of the Victorian Government's Gas Substitution Roadmap review and AEMO's 2022 GSOO before making any decision on the Rule 80 application.[181]

APA identified potential issues relating to the issuing of capacity certificates, required as part of the declared wholesale gas market operation. There is uncertainty about how capacity will

180 AEMO, AEMO Submission on APA VTS Gas Access Arrangement Proposal 2023-27,18 February 2022, p.9.

181 EUAA, APA Victorian Gas Transmission System Access Arrangements 23-27, 18 February 2022, pp.7-8.

be allocated between market participants. APA submitted that '[t]hese constructs have profound implications for investment in the VTS'. We consider that this would need to be resolved to ensure smooth operation of flows from Iona UGS and the western LNG terminals into the SWP and to enable optimal outcomes to be realised by market participants.

While APA identified that the Brooklyn CG is a constraint on increasing SWP capacity, it did not provide specific information on the constraint, or how the proposed augmentation would alter the maximum flow limit. We consider that this specific information should be provided to justify APA's application.

APA has identified the supply integrity issue with respect to the Sale CG minimum pressure requirements. This is where for demand above 400 TJ/d, minimum Longford CPP injections are required to maintain Sale CG pressure. This necessitates limits to be placed on the injection volumes from the SWP in order to satisfy the supply-demand balance. From the information provided by APA it is not clear how the proposed capex is managing the supply integrity issue and whether this is an optimal management of the problem.

On the basis of an uncertain demand and supply outlook, the issues relating to constraints with injection capacities, particularly from Iona UGS, and complexities associated with wholesale gas market processes, we do not consider that the proposed augmentation is justified under rr.79(2)(c)(ii) and (iv).

As the proposed capex is not justified under rr.79(c)(ii) or (iv) for the reasons set out above, we do not consider that APA's proposed capex for the South West Pipeline Expansion – Iona 670 TJ/d Injection or the LNG Import Terminal Connection to SWP – Brooklyn Facilities Upgrade projects is conforming capex at this time. We therefore reject the r.80 application for these two projects.

Application for approval of projects outside of the Access Arrangement Review timeframe

APA has not set out forecast shortfalls to establish that the capex is required to meet levels of demand for services existing at the time the capital expenditure is incurred. Given supply and demand uncertainties and the supply opportunities currently under consideration, particularly relating to LNG terminals, staff's initial assessment is that this project is not prudent.

APA raised that under the market carriage model, there is no scope to enter into bilateral arrangement with shippers to support investment in pipeline capacity on the VTS. It submitted that all such investment must pass through the access arrangement process. APA stated that it considered that this places the proposed projects at a competitive disadvantage relative to those projects only requiring investment outside the VTS, where investment can be undertaken through commercial arrangements.[182]

However, we note that NGR r.65 provides for a service provider to submit an access arrangement variation proposal.[183] This can be submitted by the service provider at any time,

182 APA, VTS - Application under Rule 80 of the NGR - December 2021 – Public.pdf, p.4.

183 NGR r.65(1)

except between a review submission date[184] for the applicable access arrangement and the commencement of the new access arrangement period.[185]

Furthermore, a service provider may submit an application to the AER to make an advanced determination, under NGR r.80, at any time. It is not constrained to only making an application during an access arrangement.

5.6 Revisions

We require APA to make the following revisions to its access arrangement proposal consistent with the NGR and NGL.

Revision number	Detail
Revision 5.1	Make all necessary amendments to address the issues raised in our draft decision on conforming capex for the 2023–27 access arrangement period, as set out in Table 5-1 and Table 5-2.
Revision 5.2	Delete the fixed principle at Section 8.3 of APA's proposed Access Arrangement.

184 A review submission date means a date on or before which an access arrangement revision proposal is required to be submitted.

185 NGR r.65(2)

A Shortened forms

Shortened form	Extended form
AER	Australian Energy Regulator
APA / APA VTS	APA VTS Australia (Operations) Pty Ltd and APA VTS Australia (NSW) Pty Ltd
Capex	Capital Expenditure
ICT	Information and communications technology
IT	Information technology
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
NPV	Net present value
Opex	Operating Expenditure
PTRM	Post-tax revenue model
RFM	Roll forward model
RIN	Regulatory Information Notice
VTS	Victorian Transmission System