

**Submission to APA
re VTS 2023-27 Capital Program**



30th June 2021

Scott Young, Nives Matosin

APA

Submitted by email. scott.young@apa.com.au; nives.matosin@apa.com.au

Re: VTS 2023-27 Capital Program

Dear Scott and Nives,

Lochard Energy, owner/operator of the Iona Underground Gas Storage in Western Victoria, wish to provide comments on the VTS 2023-27 Capital Program, and thanks APA for this opportunity.

Both electricity and gas markets are undergoing significant structural evolutions on the journey to net zero emission. The scale of transition the gas market is undergoing, particularly on the supply front, is challenging, especially in the context of infrastructure investment required to address security of supply risks. The 2021 VGPR, GSOO, and the draft National Gas Infrastructure Plan provided some guidance of the years ahead. Lochard Energy's principal concern with APA's Issues Paper on the Capital Program is the need for a process to inform the stakeholders of the implications on the VTS under the various supply scenarios in the 2023-2030 period, the resilience of VTS to address the escalating concerns on security of supply, augmentations and associated capital required, and lead time to deliver the capacity, so that the key concerns and issues can be thoroughly considered and debated leading into the 2023-2027 AA period.

The interim report of the Natural Gas Infrastructure Plan (NGIP), prepared by the Federal Department of Industry, Science, Energy and Resources, has identified priority infrastructure projects that can help to meet supply from 2026, including expansion of Lochard Energy's Iona Storage Facility and corresponding expansion of APA's South-West Pipeline (SWP) capacity (beyond capacity provided by the WORM). To meet the timing requirements for SWP expansion, construction must begin as soon as possible, within the AA period. Consequently, the project must be included in the VTS 2023-27 Capital Program.

We take this opportunity to emphasise the role of storage in supporting Victoria and South Australia energy security and minimising extreme price events. Lochard Energy observes that in addition to meeting peak seasonal demand, Iona Storage is often called upon to meet unexpected increases in demand due to extreme weather events, unplanned supply outages and unplanned generation outages during summer and shoulder periods. Lochard Energy is consulting with Iona customers on the next stage of storage expansions and SWP capacity requirements and will provide further responses in due course.

We urge APA to consider this information and work with stakeholders to reach decisions on further analysis required or commercial conditions to be met to justify inclusion of the required augmentation in the VTS 2023-27 Capital Program and, if inclusion cannot be justified prior to submission of the AA to AER, options for subsequent approval by AER following further developments, e.g. the 2022 GSOO or commercial announcements.

Further evidence for these concerns together with Lochard Energy's responses to APA's questions on the Capital Program are described in the body of this submission. If you wish to discuss any aspect of this submission further, please contact Ee Siew Ong, Senior Commercial Operations Advisor, on 0407 947 567.

Yours Sincerely,



Becky Nguyen

General Manager Commercial

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Appendix A. Abbreviations

Document title: Lochard Energy Submission to the APA re VTS 2023-27 Capital Program

1. Introduction

APA has initiated consultation in support of its preparation of the Access Arrangement for the Victorian Transmission System for the period 2023-2027. APA recently released an Issues Paper on the Capital Program which will form part of the AA and requested responses by 30th June 2021.

1.1 Lochard Energy

Lochard Energy is the owner/operator of the Iona Underground Gas Storage Facility (**Iona**), near Port Campbell in Western Victoria. Iona comprises of, underground gas storage reservoirs, a gas processing plant and associated compressors and connection equipment. Iona is connected to Victorian demand centres by the South West Pipeline, a part of the VTS.

Iona and other depleted gas fields owned by Lochard Energy have significant potential to expand to meet declining supply from traditional sources of gas, subject to expansion of SWP capacity.

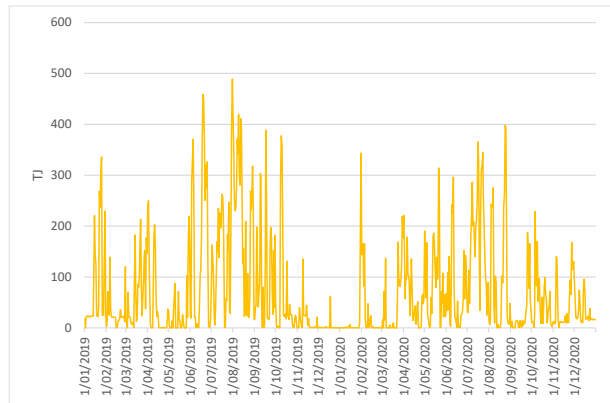
1.2 The Role of Gas Storage Facilities

Iona is a unique asset providing at-call supply of gas and capacity (**swing capacity**) into the southern markets. Its core operation involves injecting natural gas into storage during low demand periods and withdrawing the gas to meet high demand periods, especially during the winter months in Victoria and South Australia, helping to underpin energy security and minimising extreme price events.

Iona has played a vital role in balancing the east coast energy network since 1999. The principal market roles of gas storage are meeting peak seasonal demand that is beyond the aggregate capacity of gas production (**peak supply**) and meeting sudden increases in demand due to extreme weather events, unplanned generations outages and unplanned supply outages that other sources of supply do not have the flexibility or proximity to meet (**flexibility supply**).

The relative magnitudes of storages of the two roles in the south-eastern Australian gas market can be seen in Gas Bulletin Board Data for the period 2019 and 2020. Figure 1 illustrates the aggregate net supply from four storages labelled “Southern Storage” in the 2021 GSOO, Iona, the Dandenong LNG Storage, Newcastle Gas Storage (LNG) and Moomba Storage (underground). The two roles are largely separated by season, with peak supply in winter (May to September) and flexibility supply from October to April, though there is undoubtedly overlap that cannot be separated with this data¹.

Figure 1: Southern Storage Net Supply 2019-2020 (Source: GBB)



In aggregate over the two years, Southern Storage provided 17,416 TJ of peak supply (66% of storage supply) and 8,922 TJ of flexibility supply (34% of storage supply). Iona’s contributions were 14,660 TJ (84% of peak supply) and 6,581 TJ (74% of flexibility supply) respectively.

¹ Moomba Storage operation is atypical. During 2020 Moomba Storage supplied gas at a relatively steady rate through the year, without much refilling, recording a net depletion of 3,574 TJ.

2. Responses to Questions in the APA Issues Paper.

1. Are there any other matters that APA should take into consideration in preparing the capital plan for the 2023-27 VTS?

Both electricity and gas markets are under-going significant structural evolutions on the journey to net zero emission. As set out in the latest Victoria Gas Planning Report (VGPR) and GSOO, the gas market is confronted with changing dynamics in supply, capacity to supply, and demand for gas in the southern states. These changes are compounded by the increasingly peaky demand from gas-fired power generators and the frequent GPG peaks during winter, coinciding with peak demand for heating. In addition to the infrastructure required to meet supply mix change, Lochard considers that it is equally important to adequately address system security and resilience needs in the current round of AA process.

2. Are there potential projects arising from the VGPR that APA should take into consideration in preparing the capital plan for the 2023-27 VTS?

The current phase of Iona expansion works will enable Iona to reach 570 TJ/d of SWP injection capacity from 2023. This capacity and the planned increase in gas production from western Victoria will require further SWP capacity expansion beyond 468 TJ/d (post WORM).

Additionally, Lochard, in conjunction with its current and future customers, is advancing the planning works required for building further capacity at Iona. These works could deliver up to another 130 TJ/d of SWP injection capacity during 2023-2027 period. Further expansion of SWP capacity is the key enabler for the incremental swing capacity to reach the demand centres in time when the market needs it the most. The requirement of further expansion of SWP must be considered within the 2023-2027 AA process.

3. Are there any further matters APA should consider with respect to potential LNG Gas Terminals coming on-line in Victoria?

Both Viva and Vopak LNG Gas Terminals are located on western side of Victoria. The as-is proposed direct connection into SWP will invariably lead to the sharing of the already constrained capacity in SWP and, importantly, result in back-off Iona injection. At a high level, the LNG Gas Terminals should have their dedicated VTS pipeline and connection, as well as its own capacity certificate zone, so that the efficacy of gas supply from LNG Importing Terminal is certain. The sharing of SWP between Iona and LNG Importing terminal and the dependency on offtakers' nomination and market scheduling will create uncertainty and complication for both facilities and compromise security of supply as a result. Lochard is consulting with its customers on this matter and will provide further response in due course.

4. Are there any further matters you wish APA to address about the WORM?

Following on from the comments made under question 3 above and considering WORM being the linchpin channelling gas supply from SWP to the greater Melbourne region, some work will be required to understand what capacity will be required in the WORM, as well as downstream augmentations, to cater for both Iona and LNG Importing Terminal capacity.

5. Are there any other questions about how augmentation or other projects get considered by the AER?

The cost of SWP expansion to users could be compared with the cost of gas shortfalls or curtailment, which the expansion will contribute to reducing. The cost of curtailment could be set at the DWGM price cap (\$800/GJ) or other estimates of the value of lost load to customers, as well as the exposure in electricity market.

6. Are there any other questions about APA's hydrogen initiatives in relation to the VTS?

Lochard proposes that, when appropriate, APA/AEMO keep an open dialogue with VTS facility operators in its planning of VTS on hydrogen/biomethane front, particularly some coordination will be essential between Iona and VTS in transitioning to the new gases.

7. Are there any other matters about the VTS capital program that you wish to raise with APA?

Lochard proposes that the time required to deliver any augmentation projects is a critical factor that needs to be considered by APA in its draft proposal to AER. The time required for a project to reach final investment decision needs to include the lead time for ordering long-lead items, sourcing land/easements, environmental approval and other government requirements. For example, the WORM will have taken five years from the AER approval to project completion in early 2023. Lochard, amongst other users, would like to work with APA to ensure the next stages of SWP expansion can be best positioned and delivered in time to meet the demand.

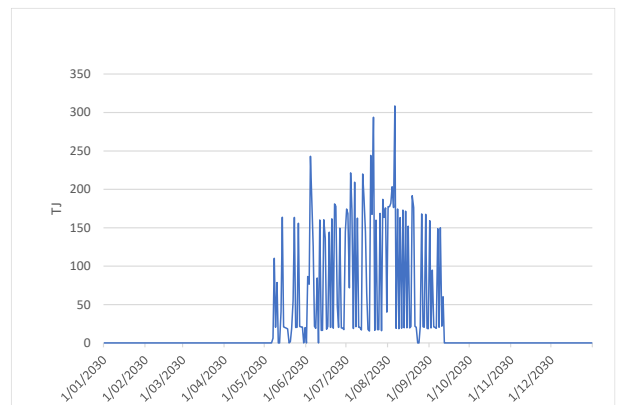
3. Future Storage Requirements

3.1 The Need for Augmentation Works During the 2023-27 Access Arrangement Period

Preparation of the VTS 2023-27 Access Arrangement is taking place in the context of declining Victorian gas supply and increasing reliance upon new sources of gas. According to the 2021 Victorian Gas Planning Report (VGPR), with current and anticipated supply developments, peak supply will rely upon imports from New South Wales from 2023 onwards. The principal source of these imports is the Port Kembla Gas Terminal (PKGT, an LNG import terminal) via the Eastern Gas Pipeline.

As the VGPR only extends to 2025, we look to the 2021 Gas Statement of Opportunities (GSOO) for information on supply adequacy for the final two years of the AA and beyond. The GSOO indicates that even with the PKGT in place the southern states could experience supply shortfalls as early as 2026 and that by 2030 the annual shortfall would be nearly 11PJ in the Central Scenario, with a peak day supply shortfall of 308TJ. All of this shortfall is in Victoria and Tasmania and is primarily in winter (see Figure 2), additional storage would most likely be the lowest cost option provided necessary transmission is in place to transport the supply when needed.

Figure 2: Projected Shortfall in 2030 (TJ) (Source: GSOO 2021)



To reduce the risk of forecasted peak day shortfall from 2026 onwards, Lochard is in the position to further expand the underground storage up to 700 TJ/d. Lochard has a number options to increase both the stored volume and the capacity / rate that can support the southern markets, however a key limitation on the ability of these expansions to be contracted, sanctioned and proceed to implementation in a timely manner is the capacity of the connecting pipeline infrastructure to Iona, primarily the SWP and its ability to get gas to or from Iona.

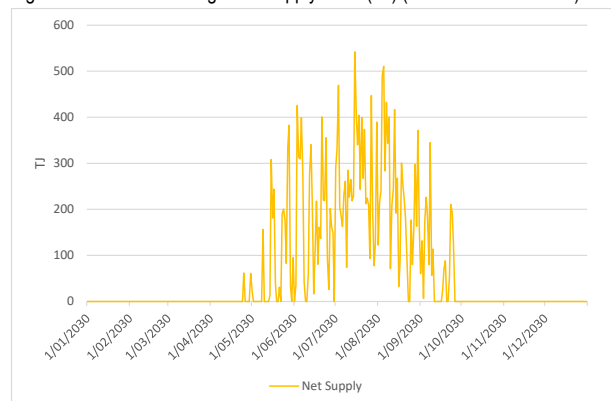
SWP is the bottleneck to the utilisation of Iona’s capacity and is intrinsically linked to Victorian security of supply with a cascading effect on NSW and SA security of supply. Iona CPP can currently inject up to 426 TJ/day into the SWP and withdraw up to 140 TJ/day from the SWP. Once the Western Outer Ring Main (WORM) project completes, it is expected that Iona CPP will be able to inject up to 468 TJ/day and withdrawal 256 TJ/day from early 2023. However, the expanded SWP capacity remains insufficient to meet Iona’s future planned expansion capacity of up to 700 TJ/d with up to 38.5 PJ of storage capacity. This has arisen in response to the gas market needs.

East Coast supply and demand dynamics are constantly changing and remain uncertain. Lochard considers it is necessary to revisit the capacity of South West Pipeline in order to fully utilise the current capacity at Iona, including the future storage expansion opportunities

To meet the timing requirements for SWP expansion, construction must begin as soon as possible within the AA period, consequently the project must be included in the VTS 2023-27 Capital Program.

It is also of some concern that the GSOO notes that storage supply is used only to meet seasonal peaks (see Figure 3) and raises the question whether the flexibility supply currently being provided has been modelled. If not, then this supply must be added to the shortfall. The flexibility requirement is likely to be at least as large as currently, i.e. almost 9 PJ, hence the volume shortfall may be up to 20 PJ. (Note: some of the flexibility supply may be recovered by additional refill outside of winter but it will also reduce the total refill potential). The text box below discusses the potential for greater need for flexibility supply in future.

Figure 3: Southern Storage Net Supply 2030 (TJ) (Source: GSOO 2021)



Consideration of flexible supply by storage could also mean that supply shortfalls may occur earlier than projected in the GSOO.

Changing Requirements for Flexibility Supply

Declining Gas Supply Reliability

The East Coast gas and power markets are evolving rapidly. Gippsland production is in structural decline, both in absolute terms and in terms of increasingly restricted ability to vary production up and down according to season. The Longford gas plant, for many years the sole source of supply in Victoria and still the largest gas supplier, has higher levels of redundancy and consequently reliability than can be expected in new plants supporting smaller gasfield developments.

Gippsland supply is also most likely to be replaced by pipeline supply from Queensland and the Port Kembla Gas Terminal, whose distance from Victoria precludes responses beyond the levels provided by pipeline linepack.

It is therefore reasonable to expect that both planned and unplanned plant outages will be more frequent than in the past and that storage will be called on to respond to them with less support from Longford and new gas supply sources.

Demand Volatility

On the demand side, the growth of renewable energy and retirement of coal-fired generation will increase the need for rapid response generation by gas-fired power generation (GPG). GPG has historically been called upon to meet peak electricity demand. While the gas demand for GPG is ever more determined by how renewable energy is produced, or rather, not produced, expectation that volatility of gas demand by GPG will increase over time.

3.2 Conclusions

We therefore urge APA to consider this information and work with stakeholders to reach decisions on:

1. Further analysis required or commercial conditions to be met to justify including the augmentation in the VTS 2023-27 Capital Program
2. If inclusion cannot be justified prior to submission of the AA to AER, options for subsequent approval by AER following further developments, eg the 2022 GSOO or commercial announcements.

Appendix A. Abbreviations

AA	Access Arrangement
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
APA	Australian Pipeline Trust
GBB	Gas Bulletin Board
GJ, TJ, PJ	Giga-, Tera-, Petajoule (10^9 , 10^{12} , 10^{15} joules)
GSOO	Gas Statement of Opportunities
LNG	Liquefied natural gas (gas cooled to -161C)
SWP	South West Pipeline
VGPR	Victorian Gas Planning Report
VTS	Victorian Transmission System
WORM	Western Outer Ring Main