

Project Marinus Feedback Loop Analysis

August 2025

A report published for the Integrated
System Plan feedback loop





We acknowledge the Traditional Custodians of the land, seas and waters across Australia. We honour the wisdom of Aboriginal and Torres Strait Islander Elders past and present and embrace future generations.

We acknowledge that, wherever we work, we do so on Aboriginal and Torres Strait Islander lands. We pay respect to the world's oldest continuing culture and First Nations peoples' deep and continuing connection to Country; and hope that our work can benefit both people and Country.

'Journey of unity: AEMO's Reconciliation Path' by Lani Balzan

AEMO Group is proud to have launched its first [Reconciliation Action Plan](#) in May 2024. 'Journey of unity: AEMO's Reconciliation Path' was created by Wiradjuri artist Lani Balzan to visually narrate our ongoing journey towards reconciliation – a collaborative endeavour that honours First Nations cultures, fosters mutual understanding, and paves the way for a brighter, more inclusive future.

Important notice

Purpose

AEMO publishes this document pursuant to clause 5.16A.5(b) of the National Electricity Rules (NER). This publication has been prepared by AEMO using information available as at 15 August 2025.

Disclaimer

This document or the information in it may be subsequently updated or amended. This document does not constitute legal or business advice, and should not be relied on as a substitute for obtaining detailed advice about the National Electricity Law, the National Electricity Rules, or any other applicable laws, procedures or policies. AEMO has made reasonable efforts to ensure the quality of the information in this document but cannot guarantee its accuracy or completeness.

Accordingly, to the maximum extent permitted by law, AEMO and its officers, employees and consultants involved in the preparation of this document:

- make no representation or warranty, express or implied, as to the currency, accuracy, reliability or completeness of the information in this document; and
- are not liable (whether by reason of negligence or otherwise) for any statements or representations in this document, or any omissions from it, or for any use or reliance on the information in it.

Copyright

© 2025 Australian Energy Market Operator Limited. The material in this publication may be used in accordance with the [copyright permissions on AEMO's website](#).



Contents

| | | |
|-----|--|----|
| 1 | Feedback loop assessment approach | 5 |
| 1.1 | Scope of the assessment | 5 |
| 1.2 | Assessment method | 5 |
| 1.3 | Costs considered in the feedback loop | 6 |
| 2 | Inputs and assumptions | 7 |
| 2.1 | Inputs and assumptions overview | 7 |
| 2.2 | Project scope | 7 |
| 2.3 | Project timing | 8 |
| 2.4 | Project cost | 8 |
| 2.5 | Concessional finance | 10 |
| 3 | Feedback loop assessment | 12 |
| 3.1 | Ranking candidate development paths | 12 |
| 3.2 | Take-one-out-at-a-time analysis | 13 |
| 3.3 | Assessing the benefits of both stages of Project Marinus as actionable | 14 |
| 3.4 | Assessing the benefits of Project Marinus Stage 2 as actionable | 15 |
| 3.5 | Sensitivity analysis | 16 |
| 4 | Feedback loop confirmation | 18 |

Tables

| | | |
|---------|--|----|
| Table 1 | Project Marinus feedback loop inputs and assumptions (costs in real June 2023 \$m) | 7 |
| Table 2 | Project Marinus stage timings applied in the 2024 ISP and feedback loop | 8 |
| Table 3 | Project Marinus feedback loop forecast capital expenditure (real June 2023 \$m) | 10 |
| Table 4 | Feedback loop results of candidate development paths across scenarios (NPV, \$b) | 13 |
| Table 5 | Relative market benefits of Project Marinus stages 1 and 2 in <i>Step Change</i> | 13 |
| Table 6 | Relative market benefits of Project Marinus stage 2 (NPV, \$m) | 14 |
| Table 7 | Comparing net market benefits between CDP14 and CDP13 (NPV, \$b) – Project Marinus stages 1 & 2 | 15 |
| Table 8 | Weighted and worst weighted regrets of CDP14 and CDP13 (NPV, \$b) – Project Marinus stages 1 & 2 | 15 |



| | | |
|----------|--|----|
| Table 9 | Comparing net market benefits between CDP14 and CDP3 (NPV, \$b) – Project Marinus Stage 2 | 16 |
| Table 10 | Weighted and worst weighted regrets of CDP14 and CDP3 (NPV, \$b) – Project Marinus Stage 2 | 16 |
| Table 11 | Ranking candidate development paths across scenarios including concessional finance (NPV, \$b) | 17 |

Figures

| | | |
|----------|--|---|
| Figure 1 | Project Marinus forecast capital expenditure | 9 |
|----------|--|---|

1 Feedback loop assessment approach

This report contains analysis supporting AEMO’s confirmation notice that the feedback loop requirements for Project Marinus are satisfied. That notice is published with this report¹ and includes a brief summary of TasNetworks’ feedback loop request submitted on 11 July 2025. The letter containing the request was co-signed by Marinus Link Pty Ltd (MLPL), which expects to rely on feedback loop outcomes to support the submission of its revised revenue proposal² to the Australian Energy Regulator (AER) in relation to Stage 1 of Marinus Link.

Project cost estimates and the proposed timing of Stage 2 of the project advised in the feedback loop request differ from those tested in the 2024 *Integrated System Plan* (ISP)³. To determine the impact of these differences on selection of the ISP optimal development path (ODP), AEMO updated the 2024 ISP cost benefit analysis (CBA) using the cost estimates and project timing provided in the feedback loop request. For transparency, key assumptions, analysis and commentary supporting AEMO’s assessment are provided below.

1.1 Scope of the assessment

The feedback loop assesses alignment of the preferred option identified in the Regulatory Investment Test for Transmission (RIT-T) and its cost with the ODP in the most recent draft or final ISP. It may require re-running ISP modelling and analysis. Any changes to the proposed project scope, cost or timing of an actionable ISP project as advised in a feedback loop request are assessed by AEMO in the feedback loop. However, the reasonableness of the project scope and the prudence and efficiency of cost estimates relating to that scope are not assessed in the feedback loop – these elements are instead considered by the AER when assessing a contingent project application (CPA).

1.2 Assessment method

National Electricity Rules (NER) 5.16A.5(b) requires AEMO to make an assessment against the ODP in the most recent draft or final ISP. The AER’s *Cost Benefit Analysis Guidelines* (CBA Guidelines) require AEMO to consider re-running the CBA modelling and scenario analysis in the feedback loop, if practicable, using the RIT-T preferred option and cost advised in the feedback loop request where that option or cost differs from that considered by AEMO in the most recent draft or final ISP⁴.

¹ At <https://www.aemo.com.au/-/media/files/major-publications/isp/ISP-FLN/ISP-Feedback-Loop-Notice-PM>.

² More information on the AER’s transmission determination process for Marinus Link is at <https://www.aer.gov.au/industry/registers/determinations/marinus-link-intending-transmission-network-application/revenue-proposal>.

³ At <https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2024-integrated-system-plan-isp>. Appendix 5 details high-level project scope and cost estimates. Appendix 6 contains the ISP cost benefit analysis.

⁴ AER, CBA Guidelines, p.53, at <https://www.aer.gov.au/industry/registers/resources/reviews/2024-review-cost-benefit-analysis-and-regulatory-investment-test-guidelines>.

Consistent with these requirements, for the Project Marinus feedback loop, AEMO reassessed the selection of the ODP identified in the 2024 ISP based on the inputs, assumptions and scenarios used to determine that ODP⁵. This required an update of the CBA for the 2024 ISP using the information provided in the feedback loop request. Based on the information in the feedback loop request, including that the transfer capability of each stage of Project Marinus has not changed since the 2024 ISP, AEMO considered that re-running the market modelling for the 2024 ISP was unnecessary.

The 2024 ISP recognised that the proposed delivery of Project Marinus is in two stages at different timings. The 2024 ISP tested the actionability of each stage separately while identifying Stage 1 as a pre-requisite for Stage 2. The 2024 ISP identified both stages of Project Marinus as actionable, therefore the project was identified as a single actionable ISP project delivered in two stages. The Project Marinus feedback loop similarly re-tested the actionability of each project stage and used the same decision-making approach applied in the 2024 ISP to reconsider whether the ODP remained optimal⁶.

1.3 Costs considered in the feedback loop

The feedback loop must include an assessment of whether the cost of the preferred option changes the status of the actionable ISP project as part of the ODP⁷. The cost of the preferred option, or relevant project stage, set out in a CPA cannot exceed the cost considered in the feedback loop⁸. The AER has provided guidance on the relevant costs to be considered in the feedback loop for staged projects⁹.

Consistent with these requirements and guidance, and recognising that the 2024 ISP varied the timing of Project Marinus stages across different ISP development paths, the Project Marinus feedback loop assessed the cost of each project stage separately while also having regard to the full cost of the project including both stages.

⁵ The inputs and assumptions used to determine the ODP in the 2024 ISP are set out in the 2023 *Inputs, Assumptions and Scenarios Report (IASR)*, at <https://aemo.com.au/consultations/current-and-closed-consultations/2023-inputs-assumptions-and-scenarios-consultation>. On 31 July 2025, AEMO released the 2025 IASR. The impact on the ODP of inputs, assumptions and scenarios contained in the 2025 IASR will be identified in the Draft 2026 ISP scheduled for release in December 2025.

⁶ Analysis relevant to Project Marinus and AEMO's decision-making approach for selecting the project as part of the ODP in the 2024 ISP is set out in Appendix 6 to the 2024 ISP, p.63-71.

⁷ As required by NER 5.16A.5(b)(2).

⁸ As required by NER 5.16A.5(d).

⁹ See Section 4.4 of the CBA Guidelines, and AER, *Guidance Note: Regulation of actionable ISP projects*, at <https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/regulation-of-large-transmission-projects>, Section 3.3.

2 Inputs and assumptions

2.1 Inputs and assumptions overview

As explained in Section 1.2, AEMO updated the 2024 ISP CBA and reassessed the selection of the ODP identified in the 2024 ISP taking into account differences in project scope, cost and timing and other relevant information provided in the feedback loop request. The inputs and assumptions used for this feedback loop assessment and reasoning for their selection are presented in Table 1 below¹⁰.

Table 1 Project Marinus feedback loop inputs and assumptions (costs in real June 2023 \$m)

| Inputs and assumptions | Values and settings | Reasoning |
|--|---|--|
| Base inputs and assumptions set | 2023 IASR Assumptions Workbook v5.2 (5/9/2023)* | These are the inputs and assumptions used to select the ODP in the most recent draft or final ISP (the 2024 ISP). |
| Project Marinus scope | 2024 ISP Appendix 5, Section A5.3.7 | The transfer capability and high-level project scope identified in the 2024 ISP remains consistent with that advised in the feedback loop request (see Section 2.2 below). |
| Project Marinus Stage 1 proposed timing | 2030-31 | Stage 1 timing is consistent with that in the 2024 ISP (see Section 2.3 below). |
| Project Marinus Stage 2 proposed timing | 2034-35 | Stage 2 timing is delayed by two years relative to the 2024 ISP (see Section 2.3 below). |
| Total project cost | \$7,570 | Forecast capital expenditure for stages 1 and 2 (see Section 2.4 below). |
| Total project cost less excluded costs | \$6,985 | Forecast capital expenditure for stages 1 and 2 less costs already incurred, costs relating to early works approved by the AER and grant funding (see Section 2.4 below). |

* At <https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2024-integrated-system-plan-isp/current-inputs-assumptions-and-scenarios>.

2.2 Project scope

Marinus Link is a proposed 1,500 megawatts (MW) capacity undersea and underground electricity interconnection between Tasmania and Victoria delivered by MLPL, which will be operating in parallel with the existing Basslink interconnector. It is proposed to be delivered as two 750 MW high voltage direct current (HVDC) developments between Burnie area in Tasmania and Latrobe Valley in Victoria.

This project also includes high voltage alternating current (HVAC) transmission network developments in Tasmania progressed by TasNetworks, referred to as the North West Transmission Developments (NWTN), to support the interconnector capacity to be provided by Marinus Link.

Collectively, these investments are referred to as Project Marinus.

¹⁰ All costs are escalated to real \$June 2023, consistent with the 2024 ISP.

The feedback loop request confirms that the transfer capability and high-level scope of each stage of the project is consistent with that in the 2024 ISP.¹¹

2.3 Project timing

The proposed timing of Stage 1 in the feedback loop request is also consistent with that in the 2024 ISP, however, the proposed timing and earliest in-service date (EISD) of Stage 2 is delayed by two years when compared to the 2024 ISP, as shown in Table 2.

Table 2 Project Marinus stage timings applied in the 2024 ISP and feedback loop

| Project | ISP assessment | Earliest in-service date and proposed timing | Length of actionable window (years) | Last year of actionable window |
|-------------------------|----------------|--|-------------------------------------|--------------------------------|
| Project Marinus Stage 1 | 2024 ISP | 2030-31 | 6 | 2035-36 |
| | Feedback loop | 2030-31 | 6 | 2035-36 |
| Project Marinus Stage 2 | 2024 ISP | 2032-33 | 6 | 2037-38 |
| | Feedback loop | 2034-35 | 6 | 2039-40 |

The EISD of a project is the earliest date the project can be completed, taking into account project lead times and regulatory approval timeframes, and marks the commencement of the actionable window¹². Project Marinus has an actionable window of six years given it was first identified as actionable in the 2020 ISP¹³. In simple terms, if the feedback loop shows that the benefits of the ODP, which progresses both stages of Project Marinus within their respective actionable windows, exceed the benefits of other development paths that delay one or both stages beyond the relevant actionable window, the analysis will support retaining the ODP as optimal and the status of both stages of Project Marinus within it as actionable.

2.4 Project cost

The feedback loop request includes revised project cost estimates consistent with those reported in AEMO’s 2025 *Electricity Network Options Report*¹⁴. Figure 1 below compares cost estimates for each project stage with those assessed in the 2024 ISP. The feedback loop request separately reports costs already incurred, costs relating to early works approved by the AER and grant funding.

Figure 1 shows the cost estimate for Stage 1 provided in the feedback loop request has increased relative to the 2024 ISP. For the Marinus Link component of Project Marinus, forecast capital expenditure for Stage 1 is informed

¹¹ AEMO notes the feedback loop request adjusts the project scope and cost split across stages 1 and 2 to reflect that Stage 1 allows for facilitation of Stage 2. Importantly, the transfer capability of each stage has not changed since the 2024 ISP, as documented in Section A5.3.7 of Appendix 5 of the 2024 ISP and Section 3.13 of the 2025 *Electricity Network Options Report*, at <https://aemo.com.au/consultations/current-and-closed-consultations/2025-electricity-network-options-report-consultation>.

¹² The EISD is the date of full capacity release of the network augmentation and may differ from the project proponent’s proposed timing. For Project Marinus, the EISD and proposed timing of each stage are the same as advised in the feedback loop request.

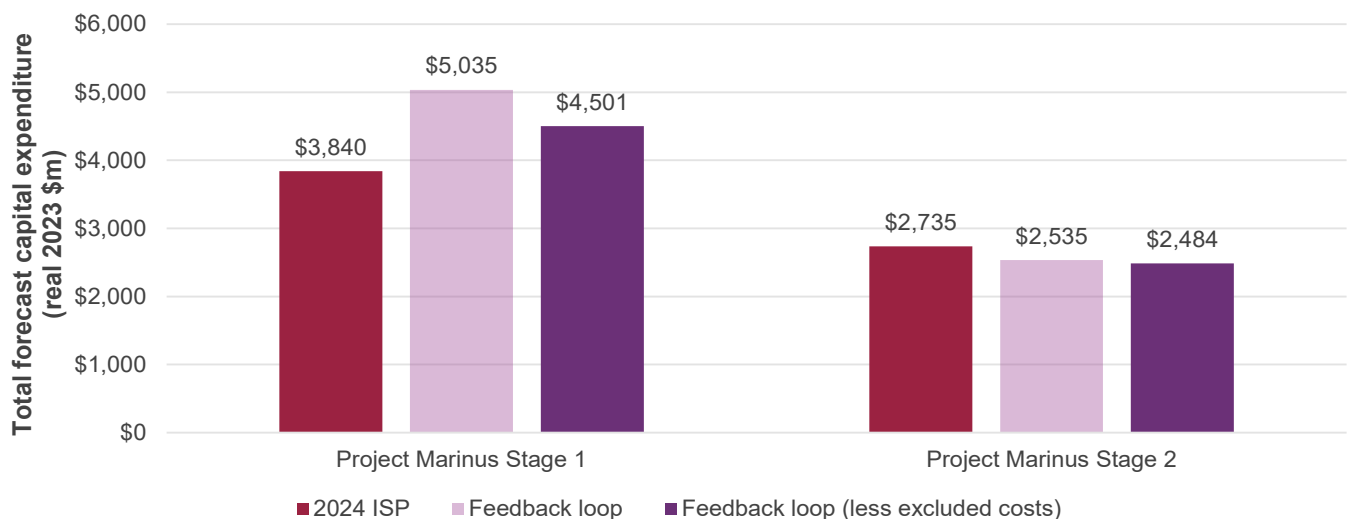
¹³ For an explanation of how actionable windows are calculated and used in the ISP modelling, see Section 6.1 of the *ISP Methodology*, at <https://www.aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2026-integrated-system-plan-isp/isp-methodology>.

¹⁴ See Section 3.13 of the 2025 *Electricity Network Options Report*.

by market-tested costs. The feedback loop request explains that MLPL’s review in August 2024 of Stage 2 costs, informed by executed contracts for Stage 1 cable and converter packages, supported the previous Stage 2 cost estimate, noting the following differences:

- Exclusion of costs for landfall horizontal directional drilling, land cable civils and other Stage 2 enabling works, which are included in the Stage 1 forecast.
- Lower design, approvals and support activities estimate than the Stage 1 forecast due to shared overheads and exclusion of easement compensation, options deed legal fees, integrated delivery team implementation and other items which are incurred during Stage 1 only.
- Synergistic benefits for cable, converter and balance of works packages, given Stage 1 supply chain and design work already undertaken.

Figure 1 Project Marinus forecast capital expenditure



Excluded costs are reported separately in the feedback loop request and presented in Table 3. The AER’s CBA Guidelines allow government funding and certain early works costs approved by the AER to be taken into account in the ISP CBA¹⁵. The feedback loop request describes the nature of the excluded costs as follows:

- Marinus Link Stage 1:
 - \$246 million of design and approvals costs already incurred (early works)¹⁶, which includes grant funding.
 - \$205 million of pre-construction costs, which are committed Stage 1 pre-construction activities incurred before 1 July 2025 and separate from the early works costs above.
- NWT D Stage 1:
 - \$83 million of early works expenditure¹⁷ already incurred, which includes grant funding.

¹⁵ See CBA Guidelines, p.22 and 40.

¹⁶ On 19 December 2023, the AER published its final decision in relation to the Marinus Link Stage 1, part A (early works) revenue proposal, at <https://www.aer.gov.au/industry/registers/determinations/marinus-link-determination-2025-28-stage-1-part-early-works>.

¹⁷ On 21 March 2025, the AER published its final decision in relation to the NWT D Stage 1 early works CPA, at <https://www.aer.gov.au/industry/networks/contingent-projects/tasnetworks-north-west-transmission-developments-stage-1-early-works-contingent-project>.

Table 3 Project Marinus feedback loop forecast capital expenditure (real June 2023 \$m)

| Project | Stage | Total cost | Excluded costs | Total less excluded costs |
|----------------------------|----------|------------|----------------|---------------------------|
| Marinus Link (HVDC) | Stage 1 | 3,891 | 451 | 3,440 |
| | Stage 2* | 2,010 | 51 | 1,959 |
| | Total | 5,901 | 502 | 5,399 |
| NWTD (HVAC) | Stage 1 | 1,144 | 83 | 1,061 |
| | Stage 2 | 525 | 0 | 525 |
| | Total | 1,669 | 83 | 1,586 |
| Project Marinus | Stage 1 | 5,035 | 534 | 4,501 |
| | Stage 2 | 2,535 | 51 | 2,484 |
| | Total | 7,570 | 585 | 6,985 |

* Marinus Link Stage 2 costs are estimated to increase by \$235m if Stage 2 is delayed more than four years after the proposed timing of Stage 1.

The feedback loop assessment tested the cost of each stage less excluded costs. AEMO has tested the project based on the information provided in the feedback loop request and has not assessed the exclusion eligibility of discrete cost components from the total project cost estimate. However, to demonstrate the robustness of the feedback loop outcome, AEMO used sensitivity analysis to test cost estimates for each stage without cost exclusions.

2.5 Concessional finance

The feedback loop request also provided information regarding expected concessional finance agreements with the Clean Energy Finance Corporation (CEFC) for Project Marinus Stage 1. Concessional finance is a below-market interest rate loan offered by a government body. The details of these expected agreements are confidential.

The AER’s CBA Guidelines recommend that AEMO follow the same approach to treating concessional finance in the ISP as RIT-T proponents must follow when applying the RIT-T¹⁸. For RIT-T proponents, where the benefit from the below-market interest rate will be shared with consumers, the guidelines allow the present value of that benefit shared with consumers to be accounted for as a reduction in the cost to the RIT-T proponent. Where a concessional finance agreement is expected to be but is not yet executed, the CBA Guidelines require a RIT-T proponent to provide reasons and evidence to explain why they are confident the agreement is likely to be executed.

Consistent with guideline recommendations, AEMO has considered concessional finance benefits in the Project Marinus feedback loop assessment. AEMO consulted the CEFC regarding the current status of proposed concessional finance agreements. The CEFC advised that it considers it reasonably likely that concessional finance agreements will be executed for Project Marinus Stage 1 and provided information to AEMO to support its advice. AEMO received annualised concessional finance benefits in nominal terms from MLPL and TasNetworks. The CEFC reviewed the concessional finance information provided to AEMO and confirmed that:

¹⁸ CBA Guidelines, p.54.

Inputs and assumptions

- expected concessional finance benefits considered in the feedback loop represent only those benefits intended to be shared with consumers,
- calculation methodologies used by MLPL and TasNetworks are aligned, and
- no material issues with the calculation of annualised concessional finance benefits were identified.

This feedback loop assessment has tested the actionability of Project Marinus with and without concessional finance benefits. To demonstrate the robustness of the outcome, AEMO has first tested project actionability without concessional finance, then used sensitivity analysis to test outcomes including concessional finance.

3 Feedback loop assessment

As described in Section 1.2, the Project Marinus feedback loop reassessed the selection of the ODP identified in the 2024 ISP by updating the 2024 ISP CBA using the information provided in the feedback loop request. The 2024 ISP shortlisted 25 candidate development paths (CDPs) which varied by project inclusion and timing¹⁹. From those CDPs, the 2024 ISP confirmed CDP14 as the ODP on the basis that it provided the highest weighted net market benefits and was generally resilient to sensitivity testing²⁰. CDP14 included Project Marinus Stage 1 and Stage 2 as actionable.

All costs and benefits in this feedback loop assessment are presented in real June 2023 dollars, consistent with the 2024 ISP.

3.1 Ranking candidate development paths

In the 2024 ISP, AEMO assessed the net market benefits of all CDPs across three scenarios and ranked the CDPs using two approaches as detailed in the *ISP Methodology*:

- the ‘scenario-weighted net market benefits’ approach, and
- the ‘least-worst weighted regrets’ approach.

For this feedback loop assessment, AEMO re-applied both approaches to CDP14 (the ODP) using the inputs and assumptions identified above. Table 4 shows the outcomes of the feedback loop assessment for the top seven CDPs across the three 2024 ISP scenarios *Progressive Change*, *Step Change* and *Green Energy Exports*, including CDP13 which delays the timing of both stages 1 and 2 of Project Marinus, ranked in order of highest weighted net market benefits.

The results show CDP14 (the ODP) continues to maximise weighted net market benefits across the CDP selection. CDP14 also ranks highly based on worst weighted regrets and higher than its relative ranking in the 2024 ISP²¹. Consistent with 2024 ISP outcomes, the weighted net market benefits of the top ranked CDPs are similar and the top four ranked CDP are separated by \$37 million. Importantly for this feedback loop assessment, however, those top four ranked CDPs all progress both stages of Project Marinus at an actionable timing.

The highest ranked CDP on weighted net market benefits that does not progress either one or both stages of Project Marinus at an actionable timing is CDP5, which delays the timing of Stage 2²². The weighted net market benefits of CDP14 (the ODP) exceed those of CDP5 by \$227 million. CDP13, which delays the timing of both stages of Project Marinus, is ranked 19 on weighted net market benefits and delivers \$408 million less benefits than CDP14 (the ODP).

¹⁹ A description of each CDP is provided in 2024 ISP, Appendix 6, Section A6.5.

²⁰ 2024 ISP, Appendix 6, Section A6.11.

²¹ CDP 14 (the ODP) is ranked 13 on worst weighted regrets in the 2024 ISP. See 2024 ISP, Appendix 6, Table 22.

²² CDP5 delays the timing of Project Marinus Stage 2 and Sydney Ring South when compared to CDP14 (the ODP).

Table 4 Feedback loop results of candidate development paths across scenarios (net present value [NPV], \$b)

| CDP | Progressive Change (42% weight) | Step Change (43% weight) | Green Energy Exports (15% weight) | Weighted net market benefits (WNMB) | WNMB Rank | Worst weighted regrets (WWR) | WWR Rank |
|----------|---------------------------------|--------------------------|-----------------------------------|-------------------------------------|-----------|------------------------------|----------|
| 14 (ODP) | 13.29 | 16.41 | \$59.17 | \$21.51 | 1 | \$0.32 | 4 |
| 24 | 13.37 | 16.36 | \$58.95 | \$21.49 | 2 | \$0.28 | 2 |
| 21 | 13.33 | 16.42 | \$58.86 | \$21.49 | 3 | \$0.30 | 3 |
| 23 | 13.57 | 16.13 | \$58.95 | \$21.48 | 4 | \$0.25 | 1 |
| 5 | 13.41 | 16.60 | \$56.76 | \$21.29 | 5 | \$0.40 | 13 |
| 18 | 13.35 | 16.56 | \$57.01 | \$21.28 | 6 | \$0.36 | 5 |
| 3 | 13.29 | 16.59 | \$56.98 | \$21.27 | 7 | \$0.37 | 7 |
| ... | ... | ... | ... | ... | ... | ... | ... |
| 13 | 12.84 | 16.70 | \$56.87 | \$21.11 | 19 | \$0.50 | 20 |

3.2 Take-one-out-at-a-time analysis

Take-one-out-at-a-time (TOOT) analysis removes an actionable ISP project (or project stage) from the ODP, including any augmentations along the project route, to provide a guide as to the individual contribution of a project to the ODP market benefits²³. As undertaken in the 2024 ISP, feedback loop TOOT analysis removed both stages of Project Marinus from the ODP and compared its relative market benefits with the ODP in *Step Change*. Additional TOOT analysis removed Project Marinus Stage 2 only, to assess its individual contribution to ODP benefits across all three 2024 ISP scenarios, consistent with the approach for the 2024 ISP.

Table 5 shows the relative market benefits of Project Marinus in *Step Change*. Collectively, stages 1 and 2 deliver about \$3.4 billion in gross benefits over the outlook period, mainly from avoided generator and storage capital costs and fuel costs. Overall, stages 1 and 2 of Project Marinus contribute \$322 million in market benefits to the ODP in the *Step Change* scenario.

Table 5 Relative market benefits of Project Marinus stages 1 and 2 in *Step Change*

| Class of market benefits | Relative market benefits (NPV, \$m) |
|--|-------------------------------------|
| Generator and storage capital deferral | 1,982 |
| Fixed operating and maintenance cost savings | 105 |
| Fuel cost savings | 721 |
| Variable operating and maintenance cost savings | 11 |
| Voluntary and involuntary load shedding reductions | 184 |
| Other network investment (REZ augmentations) | 130 |
| Emissions reduction benefits | 222 |
| Gross market benefits | 3,355 |
| Network (actionable and future ISP projects) | -3,032 |
| Total market benefits | 322 |

²³ Section 6.9.3 of AEMO's *ISP Methodology* describes how TOOT analysis is performed and used in the ISP.

Table 6 shows the relative market benefits of Project Marinus Stage 2 only in all three 2024 ISP scenarios and the relative weighted net market benefits. Stage 2 delivers \$350 million and over \$2.6 billion in market benefits in *Progressive Change* and *Green Energy Exports* respectively, primarily from generator and storage capital deferral and fuel cost savings. In *Step Change*, delivering Stage 2 within its actionable window rather than never results in a reduction in relative net market benefits of \$211 million (compared to a \$313 million reduction in the 2024 ISP). Overall, Project Marinus Stage 2 contributes \$450 million in net market benefits to the ODP, weighted across the three scenarios.

Table 6 Relative market benefits of Project Marinus stage 2 (NPV, \$m)

| Class of market benefits | Progressive Change (42%) | Step Change (43%) | Green Energy Exports (15%) | Weighted net market benefits |
|--|--------------------------|-------------------|----------------------------|------------------------------|
| Generator and storage capital deferral | 503 | 72 | 2,471 | 613 |
| Fixed operating and maintenance cost savings | 55 | 28 | 529 | 114 |
| Fuel cost savings | 603 | 165 | 7 | 325 |
| Variable operating and maintenance cost savings | -19 | 14 | 23 | 1 |
| Voluntary and involuntary load shedding reductions | 27 | 73 | -5 | 42 |
| Other network investment (REZ augmentations) | 4 | -20 | 587 | 81 |
| Emissions reduction benefits | 61 | 99 | 1 | 68 |
| Gross market benefits | 1,234 | \$430 | 3,613 | 1,245 |
| Network (actionable and future ISP projects) | -883 | -642 | -987 | -795 |
| Total market benefits | 350 | -211 | 2,627 | 450 |

3.3 Assessing the benefits of both stages of Project Marinus as actionable

The 2024 ISP assessed the benefits of delivering both stages of Project Marinus within their actionable windows by comparing CDP14 (the ODP) with CDP13. CDP14 delivers both stages of Project Marinus as actionable whereas CDP13 delays delivery of both stages 1 and 2 beyond the end of their respective actionable windows. This assessment made the same comparison based on the information in the feedback loop request. The results are shown in Table 7.

Progressing both stages of Project Marinus as actionable, rather than delaying both stages beyond their actionable windows, delivers \$449 million in market benefits in *Progressive Change* and \$2.3 billion in *Green Energy Exports*. In *Step Change*, delivering both stages as actionable results in a decrease in market benefits of \$291 million. On a weighted net market benefits basis, an actionable Project Marinus results in an increase in weighted net market benefits of \$410 million.

Table 7 Comparing net market benefits between CDP14 and CDP13 (NPV, \$b) – Project Marinus stages 1 & 2

| | CDP14 – with actionable Project Marinus | CDP13 – without actionable Project Marinus | Change in net market benefits associated with not actioning the project* |
|--|---|--|--|
| Step Change | 16.41 | 16.70 | 0.29 |
| Progressive Change | 13.29 | 12.84 | -0.45 |
| Green Energy Exports | 59.17 | 56.87 | -2.30 |
| Weighted net market benefits | 21.51 | 21.11 | -0.41 |
| Ranking based on weighted net market benefits | 1 | 19 | |

* Some rounding differences occur.

Table 8 presents the weighted regrets in each scenario and worst weighted regrets for CDP14 and CDP13. Regrets associated with progressing both stages of Project Marinus after their actionable windows are largest in *Progressive Change*. Delaying both stages raises a risk of under-investment relative to the least-cost development path.

Table 8 Weighted and worst weighted regrets of CDP14 and CDP13 (NPV, \$b) – Project Marinus stages 1 & 2

| | CDP14 – with actionable Project Marinus | CDP13 – without actionable Project Marinus | Change in weighted regrets associated with not actioning the project* |
|--|---|--|---|
| Step Change | 0.13 | 0.00 | -0.13 |
| Progressive Change | 0.32 | 0.50 | 0.19 |
| Green Energy Exports | 0.04 | 0.38 | 0.35 |
| Worst weighted regrets | 0.32 | 0.50 | 0.19 |
| Ranking based on worst weighted regrets | 4 | 20 | |

* Some rounding differences occur.

3.4 Assessing the benefits of Project Marinus Stage 2 as actionable

The 2024 ISP also assessed the benefits of delivering Stage 2 of Project Marinus within its actionable window by comparing CDP14 and CDP3. CDP14 delivers both stages of Project Marinus as actionable, whereas CDP3 delivers Stage 1 as actionable but delays Stage 2 beyond its actionable window. This feedback loop assessment makes the same comparison with relevant updated inputs.

Table 9 shows that progressing Project Marinus Stage 2 as actionable, rather than delaying it beyond its actionable window, delivers almost \$2.2 billion in market benefits in *Green Energy Exports*, around equal market benefits in *Progressive Change*, and a reduction of \$184 million in market benefits in *Step Change*. On a weighted net market benefits basis, an actionable Stage 2 results in an increase in weighted net market benefits of \$248 million.

Table 9 Comparing net market benefits between CDP14 and CDP3 (NPV, \$b) – Project Marinus Stage 2

| | CDP14 – with actionable Project Marinus Stage 2 | CDP3 – without actionable Project Marinus Stage 2 | Change in net market benefits associated with not actioning the project* |
|--|---|---|--|
| Step Change | 16.41 | 16.59 | 0.18 |
| Progressive Change | 13.29 | 13.29 | 0.00 |
| Green Energy Exports | 59.17 | 56.98 | -2.19 |
| Weighted net market benefits | 21.51 | 21.27 | -0.25 |
| Ranking based on weighted net market benefits | 1 | 7 | |

* Some rounding differences occur.

Table 10 presents the weighted regrets in each scenario and worst weighted regrets for CDP14 and CDP3. In CDP14, the regrets associated with progressing Project Marinus Stage 2 are largest in *Progressive Change*. In CDP3, the regrets associated with progressing Stage 2 are largest in *Green Energy Exports*. Delaying Stage 2 results in an increase in worst weighted regrets of around \$51 million.

Table 10 Weighted and worst weighted regrets of CDP14 and CDP3 (NPV, \$b) – Project Marinus Stage 2

| | CDP14 – with actionable Project Marinus | CDP3 – without actionable Project Marinus Stage 2 | Change in weighted regrets associated with not actioning the project* |
|--|---|---|---|
| Step Change | \$0.13 | \$0.05 | -\$0.08 |
| Progressive Change | \$0.32 | \$0.31 | \$0.00 |
| Green Energy Exports | \$0.04 | \$0.37 | \$0.33 |
| Worst weighted regrets | \$0.32 | \$0.37 | \$0.05 |
| Ranking based on worst weighted regrets | 4 | 7 | |

* Some rounding differences occur.

3.5 Sensitivity analysis

As discussed above in sections 2.4 and 2.5, this feedback loop assessment tested the robustness of the ODP selection via sensitivity analysis. The following sensitivity tests were undertaken:

- testing project cost estimates for each stage without cost exclusions, and
- inclusion of concessional finance benefits.

To test the materiality of cost exclusions from project cost estimates, AEMO repeated the feedback loop assessment using the total estimated cost of each stage of Project Marinus as advised in the feedback loop request and presented in Table 3. The total project costs tested were not reduced by costs already incurred, costs relating to early works approved by the AER, grant funding or benefits attributable to concessional finance.

AEMO confirms that testing total project costs without cost exclusions did not change the ranking of the top seven CDPs presented in Table 4. CDP14 continued to maximise net market benefits across the CDP selection.

Regarding concessional finance benefits, to demonstrate the robustness of the ODP selection, AEMO’s feedback loop core analysis tested project actionability without concessional finance, the results of which are presented in sections 3.1 to 3.4 of this report.

Sensitivity testing repeated the feedback loop assessment by including concessional finance benefits for Stage 1 of Project Marinus that are intended to be shared with consumers as a reduction in the cost to the project proponents. Concessional finance benefits were not considered when identifying Project Marinus Stage 1 as potentially actionable within relevant CDPs. AEMO only applied concessional finance benefits to CDPs where Project Marinus Stage 1 is potentially actionable.

AEMO received annualised concessional finance benefits in nominal terms and determined net present values (NPV) by assuming a long-term CPI inflation rate of 2.5% and applying the 2024 ISP real, pre-tax discount rate of 7%. The CEFC’s review of those concessional finance benefits in nominal terms is described in Section 2.5.

The annualised concessional finance benefits received by AEMO extend beyond the 2024 ISP modelling horizon which ends in 2051-52. AEMO’s *ISP Methodology* provides that the ISP does not capture costs and benefits beyond the ISP modelling horizon and conservatively assumes that costs and benefits are neutral for the remaining economic lives of assets beyond that horizon²⁴. Consistent with the *ISP Methodology*, the assessment of concessional finance benefits for Project Marinus Stage 1 only captures annualised benefits up to and including 2051-52.

Table 11 shows the outcomes of the sensitivity test including concessional finance benefits for the top seven CDPs (including CDP13, as was presented in Table 4) across each scenario ranked in order of highest weighted net market benefits. The rankings of the top seven CDPs, both on a weighted net market benefits and worst weighted regrets basis, remains unchanged relative to those in Table 4. CDP14 continues to deliver the highest weighted net market benefits. The increase in the weighted net market benefits of CDP14 if concessional finance benefits for Project Marinus Stage 1 are included is almost \$1.1 billion in NPV terms.

Table 11 Ranking candidate development paths across scenarios including concessional finance (NPV, \$b)

| CDP | Progressive Change (42% weight) | Step Change (43% weight) | Green Energy Exports (15% weight) | Weighted net market benefits (WNMB) | WNMB Rank | Worst weighted regrets (WWR) | WWR Rank |
|----------|---------------------------------|--------------------------|-----------------------------------|-------------------------------------|-----------|------------------------------|----------|
| 14 (ODP) | 14.35 | 17.46 | 60.23 | 22.57 | 1 | 0.32 | 4 |
| 24 | 14.43 | 17.42 | 60.01 | 22.55 | 2 | 0.28 | 2 |
| 21 | 14.38 | 17.48 | 59.92 | 22.54 | 3 | 0.30 | 3 |
| 23 | 14.63 | 17.18 | 60.01 | 22.53 | 4 | 0.21 | 1 |
| 5 | 14.47 | 17.66 | 57.82 | 22.34 | 5 | 0.40 | 13 |
| 18 | 14.41 | 17.62 | 58.06 | 22.34 | 6 | 0.36 | 5 |
| 3 | 14.35 | 17.65 | 58.04 | 22.32 | 7 | 0.37 | 7 |
| ... | ... | ... | ... | ... | ... | ... | ... |
| 13 | 12.84 | 16.70 | 56.87 | 21.11 | 24 | 0.95 | 23 |

²⁴ See *ISP Methodology*, p.94-95, at <https://www.aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp/isp-methodology>.

4 Feedback loop confirmation

This feedback loop assessment confirms that:

- Project Marinus addresses the relevant identified need specified, and aligns with the ODP referred to, in the 2024 ISP, and
- the total cost of the project (\$7,570 million), including Stage 1 (\$5,035 million) and Stage 2 (\$2,535 million), does not change the status of the actionable ISP project as part of the ODP specified in the 2024 ISP.

Consistent with the AER's CBA Guidelines, this feedback loop assessment re-ran the CBA for the 2024 ISP to include changes to project timing and cost estimates advised in the feedback loop request. After including these changes, AEMO tested whether the ODP in the 2024 ISP:

- still delivered a positive net economic benefit in the most likely scenario, and
- is still optimal under the same decision-making approach used in the 2024 ISP.

The 2024 ISP confirmed CDP14, which included Project Marinus stages 1 and 2 as actionable, as the ODP. The comparison of relevant CDPs and the analysis performed in this feedback loop assessment are consistent with those undertaken for the 2024 ISP. The feedback loop analysis results support retention of CDP14 as the ODP, maintaining the actionable status of both stages of Project Marinus within the ODP, and confirm the ODP still delivers significant net economic benefits.

In summary, the feedback loop results demonstrate that CDP14 continues to maximise weighted net market benefits across the CDP selection and also ranks highly based on worst weighted regrets. The top four ranked CDPs by weighted net market benefits all progress both stages of Project Marinus as actionable. The weighted net market benefits of CDP14 are \$227 million higher than the next highest ranked CDP that delays Project Marinus Stage 2 and \$408 million higher than the CDP that delays both stages of Project Marinus.

TOOT analysis shows that delivering both stages of Project Marinus within their actionable windows, rather than never, continues to deliver significant market benefits. Comparisons of CDP14 with CDPs that delay both stages of Project Marinus, or only Stage 2 beyond respective actionable windows, show that retaining both stages of Project Marinus as actionable continues to deliver significantly higher weighted net market benefits.

Sensitivity analysis confirms excluded costs and concessional finance benefits do not change the ranking of the top seven CDPs and CDP14 continues to maximise weighted net market benefits.