



Powerlink Queensland

Augmenting the transmission network to enable renewable hydrogen production at Gibson Island

Final Report and Determination

June 2023

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Executive Summary

Powerlink Queensland (Powerlink) is a Transmission Network Service Provider (TNSP) in the National Electricity Market (NEM) that owns, develops, operates and maintains Queensland's high-voltage electricity transmission network.

The publication of this Final Report and Determination (Final Report) concludes the funded augmentation consultation process undertaken by Powerlink in accordance with the requirements of the criteria and procedures set out in Sections 5.18 and 8.9 of the National Electricity Rules (Rules).

Queensland's emerging hydrogen industry

The landscape of the energy system in Queensland is shifting, to one underpinned by clean, sustainable and affordable renewable energy. A new industry based on hydrogen is also emerging in Queensland. Potential developments associated with hydrogen and electrification are anticipated to be significant in Queensland, and Powerlink's transmission network is expected to play a central role in enabling the development of both domestic and export hydrogen markets and the decarbonisation of industry.

The proposed Gibson Island project

Gibson Island is located in the Brisbane River, close to the eastern coastal Brisbane suburbs of Pinkenba and Hemmant and is approximately 3km from Powerlink's Murarrie Substation. The proposed project at Gibson Island may include a new approximately 500MW hydrogen electrolysis facility to produce renewable hydrogen, potentially housing one of the largest electrolysers in the world should this eventuate. An associated hydrogen feasibility study announced in October 2022 has been welcomed by the Queensland Government, and has received funding support for completion of Front End Engineering Design (FEED) activities from the Australian Government via the Australian Renewable Energy Agency (ARENA).

Consultation process

The Powerlink scope of works required to enable the production of renewable hydrogen at Gibson Island includes a transmission network augmentation. As funded by the proponent, Fortescue Future Industries, these works are considered to be a funded augmentation under the Rules.

The matter for consultation has been to call for submissions in relation to the scope of works for the proposed funded augmentation of Powerlink's transmission network.

Powerlink commenced the first stage of the consultation process in February 2023, issuing a Notice of Consultation (Notice) and Consultation Paper to the Australian Energy Market Operator (AEMO), Registered Participants and interested parties (Consulted Persons). Submissions closed on 10 March 2023.

In April 2023, Powerlink commenced Stage 2, issuing the Draft Report and Draft Determination (Draft Report). Submissions to the Draft Report closed on 19 May 2023.

This Final Report is the third and final stage of the funded augmentation consultation process.

Proposed transmission network augmentation works

The proposed scope of works for the augmentation to enable renewable hydrogen production at Gibson Island includes:

- construction of approximately 3km of double circuit 275kV overhead transmission line
- 2 x 275kV bay works at Powerlink's Murarrie Substation

- establishment of a two-breaker switchyard at Gibson Island
- associated protection, control and communication works at Gibson Island Substation including remote ends.

It is noted that the project proponent is responsible for engagement, negotiation and approvals with impacted landholders and stakeholders associated with the proposed network augmentation works.

Submissions received

There were no submissions received or meetings held with stakeholders in response to the Notice of Consultation and Consultation Paper (Stage 1) which closed on 10 March 2023.

Powerlink also did not receive any submissions or undertake any meetings with stakeholders in response to the Draft Report which closed on 19 May 2023.

Conclusion

As there were no submissions received in response to the matter for consultation, Powerlink has assessed that there are not any matters in relation to the scope of works which require consideration as part of the proposed transmission network augmentation.

Final determination

Powerlink anticipates that the proposed transmission network augmentation to enable renewable hydrogen production at Gibson Island could provide a range of social, technological, environmental and economic benefits while also supporting Queensland's development as an emerging hydrogen superpower.

Powerlink's draft determination, to undertake a transmission network augmentation to enable renewable hydrogen production at Gibson Island, has been adopted without change as the final determination.

Works are expected to commence in Quarter 4 2023 with completion by October 2025.

KEY HIGHLIGHTS

- The landscape of the energy system in Queensland is shifting to one underpinned by clean, sustainable and affordable renewable energy. A new industry based on hydrogen is also emerging in Queensland.
- This consultation provides details of the proposed transmission network augmentation scope of works required to enable the anticipated production of renewable hydrogen at Gibson Island.
- As the proposed developmental works will be paid for by the project proponent, Fortescue Future Industries (FFI), Powerlink is undertaking a funded augmentation consultation in accordance with the National Electricity Rules (Rules).
- It is anticipated that the proposed development of renewable hydrogen production at Gibson Island could
 - support customers and the community by delivering positive social, environmental and economic benefits
 - help safeguard manufacturing jobs in Queensland in the context of the changing energy system landscape
 - more broadly deliver benefits to Queenslanders by contributing to the development of cutting-edge technology and new low-carbon domestic export markets as part of the global energy transformation
 - support Queensland's development as an emerging hydrogen superpower
 - act as a catalyst for the anticipated decarbonisation of ammonia manufacturing facilities and other processes at Gibson Island
 - potentially bring about opportunities to provide a low-carbon fuel supply to the Port of Brisbane, Brisbane Airport and other heavy transport users.
- This Final Report and Determination (Final Report) is the final stage of the funded augmentation consultation process.

1. Purpose and scope of this consultation

A funded augmentation¹ is a transmission network augmentation for which the Transmission Network Service Provider (TNSP), such as Powerlink Queensland (Powerlink) is not entitled to receive regulated revenue². Given the Powerlink scope of works required to enable the production of renewable hydrogen at Gibson Island includes a transmission network augmentation, and as funded by the proponent, FFI, these works are considered to be a funded augmentation under the Rules.

For clarity, this consultation falls outside the bounds of the Regulatory Investment Test for Transmission (RIT-T) due to the external nature of the funding provided. Unlike the RIT-T, a funded augmentation consultation does not require a cost-benefit analysis to justify the project nor does it seek non-network or alternate solutions to replace or defer the proposed augmentation given the funding source.

The purpose of this consultation has been to inform stakeholders and customers of the project and the matter for consultation.

¹ Refer to definition of 'funded augmentation' in Chapter 10 (Glossary) of the Rules.

² Further information about regulated revenue is available at [Understanding Transmission Pricing](#) on Powerlink's website.

1.1 Matter for consultation

The matter for consultation has been to call for submissions in relation the scope of works for the proposed funded augmentation of Powerlink’s transmission network.

2. Introduction

The landscape of the energy system in Queensland is moving rapidly to one underpinned by clean, sustainable and affordable renewable energy. A new industry based on hydrogen is also emerging in Queensland and a number of businesses have publicly committed to decarbonisation of existing fossil fuelled operations, either through electrification or clean fuel substitution.

Potential developments associated with hydrogen and electrification are anticipated to be significant in Queensland, and Powerlink’s transmission network is expected to play a central role in enabling the development of both domestic and export hydrogen markets and the decarbonisation of industry. Given the proximity of rich solar and wind renewable generation and availability of port facilities, Queensland is well positioned for a future that produces and exports large-scale renewable hydrogen as a global and seaborne energy product.

2.1 Powerlink recognises the importance of engaging with customers

Powerlink operations stretch across Queensland. As such, Powerlink recognises the importance of engaging with a diverse range of customers and stakeholders who have the potential to affect, or be affected by, Powerlink activities and/or investments. Powerlink’s Stakeholder Engagement Framework guides Powerlink’s interactions with individuals and organisations and ensures engagement is meaningful. In particular, Powerlink works collaboratively with its Customer Panel in the normal course of business³.

Powerlink’s Customer Panel provides a face-to-face opportunity for customers and consumer representative bodies to give their input and feedback about Powerlink’s strategic direction, decision making, processes and methodologies. It also provides Powerlink with a valuable avenue to keep customers and stakeholders better informed, and to receive feedback about topics of relevance.

3. Consultation process

Powerlink has undertaken a public consultation in relation to the proposed transmission network augmentation conducted in accordance with the criteria and procedures set out in Sections 5.18 and 8.9 of the Rules (refer to Appendix A).

Powerlink commenced the first stage of the consultation process in February 2023, issuing a Notice of Consultation (Notice) “Augmenting the transmission network to enable renewable hydrogen production at Gibson Island” and Consultation Paper to the Australian Energy Market Operator (AEMO), Registered Participants and interested parties (Consulted Persons).

Powerlink commenced Stage 2, issuing the Draft Report and Draft Determination (Draft Report) in March 2023.

This Final Report is the third and final stage of the funded augmentation consultation process.

In accordance with the Rules, and where applicable, this Final Report includes discussion on:

- the submissions received and any subsequent meetings between Powerlink and stakeholders;
- material issues raised;
- the conclusions and any decisions made regarding the funded augmentation; and
- procedures followed in considering the matter.

³ Refer to the [Stakeholder Engagement](#) page on Powerlink’s website.

4. Submissions received

There were no submissions received or meetings held with stakeholders in response to the Notice of Consultation and Consultation Paper (Stage 1) which closed on 10 March 2023.

Powerlink also did not receive any submissions or undertake any meetings with stakeholders in response to the publication of the draft Final Report and Draft Determination (Draft Report, Stage 2) which closed on 19 May 2023.

5. A range of benefits are anticipated as a result of the development of Gibson Island

Gibson Island is located in the Brisbane River, close to the eastern coastal Brisbane suburbs of Pinkenba and Hemmant (refer to Figure 1) and is approximately 3km from Powerlink's Murarrie Substation. The proposed project at Gibson Island may include a new approximately 500MW hydrogen electrolysis facility to produce renewable hydrogen, potentially housing one of the largest electrolyzers in the world should this eventuate. An associated hydrogen feasibility study announced in October 2022 has been welcomed by the [Queensland Government](#), and has received funding support for completion of Front End Engineering Design (FEED) activities from the Australian Government via the Australian Renewable Energy Agency (ARENA).

Connection to Powerlink's transmission network by means of a network augmentation is required to allow electricity produced by renewable generation to power the proposed project.

Figure 1 Gibson Island, Brisbane



(1) As shown on the FFI website

It is anticipated that the proposed development of renewable hydrogen production at Gibson Island could

- support customers and the community by delivering positive social, environmental and economic benefits

- help safeguard manufacturing jobs in Queensland in the context of the changing energy system landscape
- more broadly deliver benefits to Queenslanders by contributing to the development of cutting-edge technology and new low-carbon domestic export markets as part of the global energy transformation
- support Queensland’s development as an emerging hydrogen superpower
- act as a catalyst for the anticipated decarbonisation of ammonia manufacturing facilities and other processes and industry at Gibson Island
- potentially bring about opportunities to provide a low-carbon fuel supply to the Port of Brisbane, Brisbane Airport and other heavy transport users.

More information on the Gibson Island renewable hydrogen project, the potential for decarbonisation of local heavy industry and support offered by ARENA as part of ARENA’s Advancing Renewables Program, is available on FFI’s dedicated project [website](#).

6. Description of the proposed augmentation works

The proposed scope of works for the augmentation to enable renewable hydrogen production at Gibson Island includes:

- construction of approximately 3km of double circuit 275kV overhead transmission line
- 2 x 275kV bay works at Powerlink’s Murarrie Substation
- establishment of a two-breaker switchyard at Gibson Island
- associated protection, control and communication works at Gibson Island Substation including remote ends.

Works are expected to commence in Quarter 4 2023 with completion by October 2025.

It is noted that the project proponent is responsible for engagement, negotiation and approvals with impacted landholders and stakeholders associated with the proposed network augmentation works.

An overview of the proposed augmentation is shown in Figure 2. Details of the proposed network topography are shown in Figure 3. Further details of the funded augmentation technical requirements are provided in Appendix B.

Figure 2 Overview of the proposed augmentation to provide connection to Gibson Island

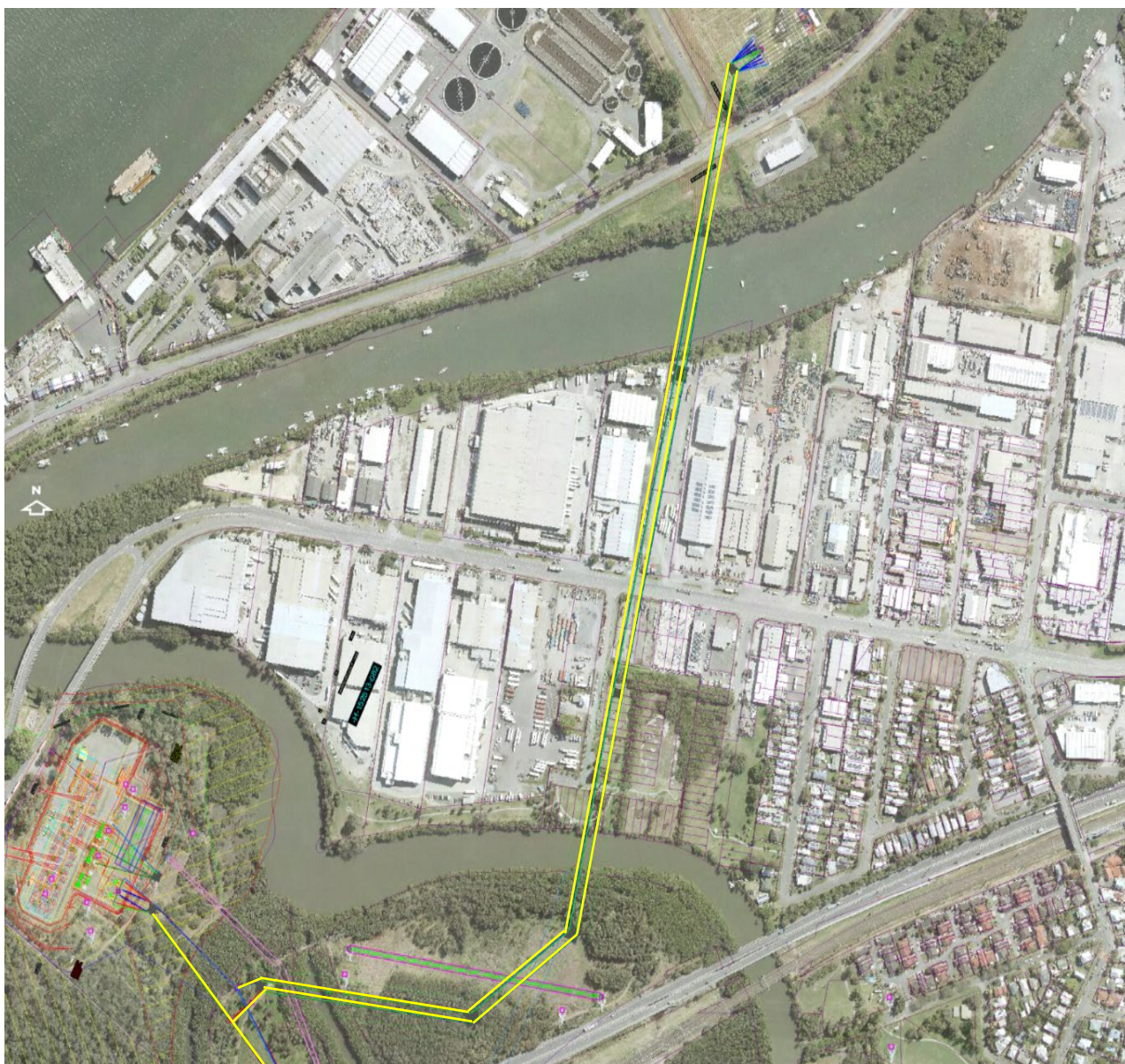
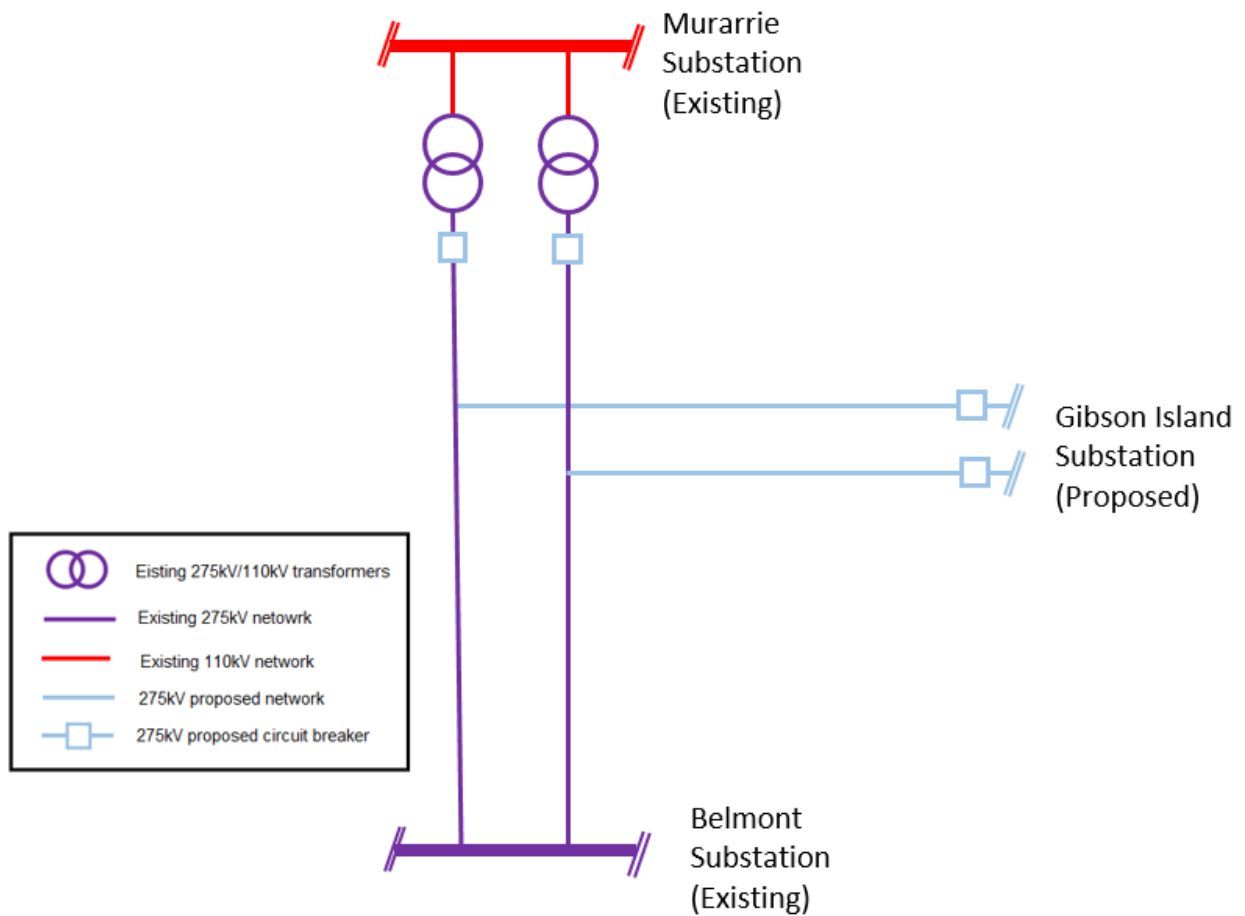


Figure 3 Proposed transmission network topography



7. Conclusion

Taking into consideration this public consultation process, Powerlink has assessed that there are not any matters in relation to the scope of Powerlink works which require consideration as part of the proposed transmission network augmentation.

A summary of Powerlink’s consultation process is provided in Appendix C.

8. Final determination

Powerlink anticipates that the proposed transmission network augmentation to enable renewable hydrogen production at Gibson Island could provide a range of social, technological, environmental and economic benefits while also supporting Queensland’s development as an emerging hydrogen superpower.

Powerlink’s draft determination, to undertake a transmission network augmentation to enable renewable hydrogen production at Gibson Island, has been adopted without change as the final determination.

Works are expected to commence in Quarter 4 2023 with completion by October 2025.

Appendix A: Funded augmentation consultation process



Appendix B: Funded augmentation technical requirements

The proposed augmentation maintains existing compliance obligations

Powerlink considers the proposed augmentation does not result in non-compliance with obligations in relation to other Transmission Network Users under the Rules⁴. It is anticipated that the proposed transmission network augmentation will deliver value to Transmission Network Users⁵ and the broader community generally by facilitating the development of renewable large-scale hydrogen production and drive economic growth in the State.

Assessment of inter-network impacts

Powerlink considers the proposed augmentation will not result in a material inter-network impact⁶ based on AEMO's criteria⁷ and discussion with Transgrid. As a result, an augmentation technical report from AEMO has not been required for this consultation⁸.

Appendix C: Summary of the consultation process

Consultation process	Date
Publication of Notice and Consultation Paper	6 February 2023
Closing date for submissions in response to the Notice and Consultation Paper	10 March 2023
Publication of Draft Report including the Notice of Consultation	14 April 2023
Closing date for submissions in response to the draft Report	19 May 2023
Publication of Final Report	5 June 2023

All reports are made available on Powerlink's [website](#).

⁴ Clause 5.18(b)(2) of the Rules

⁵ Refers to those parties such as customers, generators and Network Service Providers directly connected to the transmission network, defined in Chapter 10 (Glossary) in the Rules.

⁶ Clause 5.18(b)(3) of the Rules

⁷ Section 5.7.7 of the Rules

⁸ Clause 5.18(b)(3) of the Rules