



APPENDIX N
Powerlink Proposed Contingent Projects
1 July 2012 to 30 June 2017
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1 Summary

This Appendix presents Powerlink's proposed contingent projects in accordance with clause 6A.8 of the Rules.

Pursuant to clause 6A.8.1(b) of the Rules, contingent projects may be proposed where:

- They are reasonably required to be undertaken in order to achieve the capital expenditure objectives;
- They are not otherwise provided for (either in part or in whole) in the total of the forecast capital expenditure for the relevant regulatory control period;
- They reasonably reflect the capital expenditure criteria; and
- They exceed either \$10 million or 5 per cent of the value of the maximum allowed revenue for the first year of the regulatory period, whichever is the larger amount.

Contingent projects are therefore those which are significant, may arise in the period, but not yet committed and not provided for in the capital expenditure forecast for the relevant regulatory period. Such projects are linked to unique investment drivers such as a major point load rather than to general investment drivers (such as expectations of load growth within a region).

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Therefore, the proposed contingent projects are described by the most likely network development at the trigger level (the event which will result in a transmission network project of value in excess of the contingent project threshold). Detailed planning analyses, project scope, cost estimates and regulatory test consultation will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

Powerlink's MAR for 2012/13 is \$960.6m (refer to Table 11.7 of Powerlink's Revenue Proposal). Five percent of the MAR is \$48.0m, which makes this amount the threshold for a contingent project for the purpose of this Revenue Proposal. The following table summarises the indicative costs of the contingent projects detailed in this Appendix.

Project Name	Indicative cost* \$m
Western Downs to Columboola 275kV 3 rd circuit	58.0
Columboola to Wandoan South 275kV 3 rd circuit	61.7
Mt Isa connection shared network works	72.5
Galilee Basin connection shared network works	86.2
Moranbah area	53.5
Bowen industrial estate	78.7
NEMLink (Queensland component)	768.2
QNI upgrade (Queensland component)	59.1
Gladstone State Development Area connection shared network works	112.8
Callide to Moura transmission line and Calvale transformer	49.5
N-2 security to essential loads (CBD)	112.0
Ebenezer 330/275/110kV establishment	61.1
FNQ 275kV energisation	85.7
Total indicative cost	1,659.0

*Indicative cost provided based on the expected network solution. Actual scope will be determined through a regulatory investment test should the trigger eventuate. There will also be a small incremental cost to operating expenditure.

2 Western Downs to Columboola 275kV 3rd Circuit

Category: Augmentation

Indicative Cost: \$58.0m (\$ 2010/11)

2.1 Background

The northern region of the Surat Basin in south west Queensland contains extensive coal and gas reserves. Recent customer enquires indicate that new gas supply hubs and mining developments may locate in the Columboola-Wandoan area of the Surat Basin in the near future.

To supply this load Powerlink is establishing new 275/132kV substations at Columboola and Wandoan South and 275kV transmission lines from Western Downs to Columboola and Columboola to Wandoan South. Should additional loads connect in the area, or should generation proponents connect in the area, the net import or export may exceed the firm capacity of these 275kV transmission lines.

2.2 Project Overview

This project comprises the construction of a 275kV double circuit transmission line between Western Downs and Columboola substations, with one side to be strung initially.

Powerlink recommends the project be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

2.3 Trigger Event

From a high load perspective, the trigger occurs when the net transfer on the transmission system to the Surat area exceeds 850MW, taking into account existing and future generation including its availability and market dispatch.

From a high generation perspective, the trigger occurs when the amount of generation that must be exported from the Surat area in order for Powerlink to meet their mandated supply obligations exceeds 850MW.

Trigger: Commitment for net demand in the Surat area to exceed 850MW, or net generation export from the Surat area to exceed 850MW.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

2.4 Project Requirement

The proposed expansion of coal and gas mining developments, or generation connections in the area, will result in net transfer in excess of 850MW into / out of the Columboola-Wandoan area of the Surat Basin. The committed transmission system is unable to accommodate this expansion.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time.

If the trigger event occurs, the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

2.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$58.0 million.

This estimate is based on the establishment of a double circuit 275kV transmission line, with one side strung, between Western Downs and Columboola substations.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for the proposed contingent project occur during the regulatory period.

The forecast capital expenditure in the Revenue Proposal does not include any allowance for projects overlapping in scope.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

2.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 2.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 2.4; and
- e) has an appropriately defined trigger event as set out in section 2.3.

3 Columboola to Wandoan South 275kV 3rd Circuit

Category: Augmentation

Indicative Cost: \$61.7m (\$ 2010/11)

3.1 Background

The northern region of the Surat Basin in south west Queensland contains extensive coal and gas reserves. Recent customer enquires indicate that new gas supply hubs and mining developments may locate in the Columboola-Wandoan area of the Surat Basin in the near future.

To supply this load Powerlink is establishing new 275/132kV substations at Columboola and Wandoan South and construction a 275kV transmission line from Western Downs to Columboola and Columboola to Wandoan South. Should additional loads connect in the area, or should generation proponents connect in the area, the net import or export may exceed the firm capacity of these 275kV transmission lines.

3.2 Project Overview

This project comprises the construction of a 275kV double circuit transmission line between Columboola and Wandoan South substations, with one side to be strung initially.

Powerlink recommends that the project be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

3.3 Trigger Event

From a high load perspective, the trigger occurs when the net transfer on the transmission system to Wandoan South exceeds 850MW, taking into account existing and future generation including its availability and market dispatch.

From a high generation perspective, the trigger occurs when the amount of generation that must be exported from Wandoan South in order for Powerlink to meet their mandated supply obligations exceeds 850MW.

Trigger: Commitment for net demand supplied from Wandoan South to exceed 850MW, or net generation export from the Wandoan South area to exceed 850MW.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

3.4 Project Requirement

The proposed expansion of coal and gas mining developments, or generation connections in the area, will result in net transfer in excess of 850MW into or out of the Wandoan South. The committed transmission system is unable to accommodate this expansion.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

3.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$61.7 million.

This estimate is based on the establishment of a 275kV double circuit transmission line, with one side strung, between Columboola and Wandoan South substations.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for the proposed contingent project occur during the regulatory period.

The forecast capital expenditure in the Revenue Proposal does not include any allowance for projects overlapping in scope.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

3.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 3.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 3.4;
and
- e) has an appropriately defined trigger event as set out in section 3.3.

4 Mt Isa Connection Shared Network Works

Category: Augmentation

Indicative Cost: \$72.5m (\$ 2010/11)

4.1 Background

The northwest minerals province around Mt Isa is one of the most significant base and precious metal mining provinces in the world.

CopperString project is a proposal by development company CuString Pty Ltd and construction company Leighton Contractors Pty Ltd to construct an electricity transmission line to connect the Mt Isa region and the northwest Queensland electricity supply network to the national transmission network. This is a private sector initiative with substantial Queensland Government support. Support for the proposal has also been received by local economic development bodies, the regional councils in the area and the Queensland Resources Council.

The federal Government recently announced it would back the CopperString project. Premier Anna Bligh said that the project aims to provide an electricity transmission network “backbone” from north Queensland to the northwest minerals province to bolster its growth potential. This project would join the northwest mineral province to the national energy grid and reduce reliance on its aging power stations that currently power the northwest of the state.

The project involves construction of about 720km of high voltage transmission line from a preferred connection site at Woodstock, approximately 60km south of Townsville, into northwest Queensland plus an additional 400km of tangential lines to connect existing and under-development mines in northwest Queensland.

The project will require significant advancement in investments in transmission shared network works to support the additional load.

4.2 Project Overview

The proposed contingent project comprises the advancement in the transmission shared network works, namely:

- establishment of Woodstock Substation;
- stringing of the 2nd circuit of the Stanwell to Broadsound double circuit line (CP.01156.2 if not already commissioned); and
- if not already commissioned, installation of three 275kV series capacitor banks at Broadsound Substation, on the Stanwell to Broadsound feeders (CP.02271.2).

The load of the northwest mineral province will increase power transfer on the Central to North Queensland (CQNQ) intra-connector. This will advance the timing of network limitations and the need for transmission augmentation. Depending on the ultimate load profile, it is likely that further stages of the CQNQ augmentation, such as CP.02233.2 Nebo to Broadsound series capacitor project, could also be advanced under market benefit analysis.

Powerlink considers that the project should be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

4.3 Trigger Event

Network analysis demonstrates that a load in excess of 200MW connected to the new Woodstock 275kV Substation will trigger the proposed contingent project.

Trigger: Commitment of load in excess of 200MW to be connected to Woodstock 275kV Substation.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

4.4 Project Requirement

The proposed CopperString project would likely add upwards of 200MW of load onto Powerlink's transmission network at Woodstock 275kV. The existing transmission system will require significant augmentation to support this additional load.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time.

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

4.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$72.5 million. This cost is net of the allowance included for projects overlapping in scope in this Revenue Proposal.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

4.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 4.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 4.4; and
- e) has an appropriately defined trigger event as set out in section 4.3.

5 Galilee Basin Connection Shared Network Works

Category: Augmentation

Indicative Cost: \$103.8m (\$ 2010/11)

5.1 Background

The Galilee Basin, 450km west of Rockhampton, is the last remaining major coal province yet to be developed in Queensland. It is also an emerging asset with many significant energy related proposals including multiple coal mines, underground coal gasification and oil and gas exploration.

Mining proponents in the Galilee Basin are proposing to develop several large scale coal mines in the region, which would result in a substantial increase in electricity demand over the next few years. In April 2010, the State Government joined with local authorities to fund a Galilee Economic and Social Impact Study, which is aimed at managing regional growth for the economic and social benefit of the area.

In February 2011, the draft terms of reference for the proposed \$10.1 billion Carmichael Coal and Rail project in the Galilee Basin were released.

In addition Waratah Coal and the Metallurgical Corporation of China plan to build a \$6.15 billion thermal coal project in the Galilee Basin near Alpha.

It is expected that the growth in electricity demand will exceed the capability of the transmission network currently servicing the region. Therefore, to meet this emerging demand growth, Powerlink may need to extend its existing network into the Galilee Basin region to service the future developments in this area.

5.2 Project Overview

This proposed contingent project comprises:

- paralleling of the existing Broadsound to Lilyvale 275kV single circuit feeders (feeder numbers 833 and 850); and
- construction of 110km 275kV double circuit transmission line, single side strung, between Broadsound and Lilyvale 275kV substations.

Additional power transfer on Stanwell – Broadsound circuits would erode capacity available for power transfer to North Queensland. Depending on the Galilee load profile, it is likely that further stages of the Central to North Queensland (CQNQ) intra-connector augmentation, such as CP.02271.2 Stanwell to Broadsound series capacitor project, could be advanced under market benefit analysis.

The planned commissioning of the double circuit 275kV line between Calvale and Stanwell (CP.01705) and the stringing of the 2nd circuit of the double circuit, single side strung, between Stanwell and Broadsound (CP.01156.2) have been assumed to precede this trigger. These augmentations will have to be brought forward if not already in place.

Powerlink considers that the project should be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the projects required to maintain reliability of supply.

5.3 Trigger Event

Network analysis demonstrates that an additional load in excess of 175MW connected to Lilyvale 275kV Substation will trigger the proposed contingent project.

Trigger: Commitment of additional load in excess of 175MW to be connected to Lilyvale 275kV Substation.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

5.4 Project Requirement

Expansion in the Galilee Basin is expected to add load well in excess of the trigger event level. The existing transmission system will require significant augmentation.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time. There is also uncertainty about whether the transmission works to connect the Galilee Basin to the Powerlink network at Lilyvale will be required to provide prescribed transmission services or be limited to negotiated and non-regulated transmission services.

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

5.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$103.8 million. This cost is net of the allowance included for projects overlapping in scope in this Revenue Proposal.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period. The above cost does not include any advancement in timing for CQNG projects which may be proved to be beneficial to the market should the trigger eventuate.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

5.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 5.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 5.4; and
- e) has an appropriately defined trigger event as set out in section 5.3.

6 Moranbah Area

Category: Augmentation

Indicative Cost: \$53.5m (\$ 2010/11)

6.1 Background

The load in the Northern Bowen Basin in the Moranbah area primarily relates to the mining and transportation of coal. The load is concentrated in a band between Newlands and Dysart, which corresponds to a particularly productive coal seam that supplies around half the world's high quality metallurgical coal. Given the importance of metallurgical coal exports to Queensland's and Australia's economies, it is particularly important that a reliable electricity supply is maintained to the region.

The Northern Bowen Basin transmission network comprises the 132kV network south from Strathmore 275kV Substation (excluding the 132kV circuits to Proserpine), west from Nebo 275kV Substation and north from Lilyvale 275kV Substation. Moranbah is the point at which the 132kV circuits from Strathmore, Nebo and Lilyvale intersect, and presently supplies the largest load in the area. A number of 66kV circuits (owned by the DNSP, Ergon Energy, and privately by mining companies) radiate away from Powerlink's 132kV substations to the individual mines located throughout the region.

6.2 Project Overview

This project includes the establishment of a 275/132kV substation at Moorvale South, establishing a 132kV switching station at Peak Downs North, and establishing a 132kV line from Moorvale South to Peak Downs North.

Powerlink considers that the project should be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

6.3 Trigger Event

Committed connections in the Northern Bowen Basin, leading to a total North zone peak demand exceeding 870MW, will lead to an overload of the Nebo – Kemmis and Nebo – Moranbah circuits following the loss of the Moranbah – Broadlea 132kV circuits, and of the Nebo 275/110kV transformers under N-1 conditions.

Trigger: Commitment of additional load in the Northern Bowen Basin increasing peak demand in the North zone to in excess of 870MW.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

6.4 Project Requirement

Expansion and additional connections of mines in the Northern Bowen Basin will add anything upwards of 200MW of load onto Powerlink's transmission network. Taking into account existing augmentations, the 132kV capacity into the area, as well as the 275/132kV capacity at Nebo, will not be able to support these additional connections in the area.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time.

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision

of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

6.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$53.5 million.

This estimate is based on the establishment of Moorvale South 275/132kV Substation, Peak Downs North 132kV switching station, a 132kV double circuit between Moorvale South and Peak Downs North and is net of the allowance included for projects overlapping in scope in this Revenue Proposal.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

6.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 6.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 6.4; and
- e) has an appropriately defined trigger event as set out in section 6.3.

7 Bowen Industrial Estate

Category: Augmentation

Indicative Cost: \$78.7m (\$ 2010/11)

7.1 Background

Electricity demand in the Abbot Point State Development Area is associated with infrastructure for new and expanded mining export and value adding facilities. Located approximately 20 kilometres west of Bowen, Abbot Point forms a key part of the Queensland Government's Northern Economic Triangle Infrastructure Plan 2007-2012.

A key objective of the plan is to develop a new industrial precinct for large scale industries at Abbot Point, which offers an existing deepwater port facility and is close to transport links such as the Bruce Highway and rail infrastructure.

7.2 Project Overview

This project comprises the establishment of a 132kV switching station in the Abbot Point State Development Area (Referred to as Abbot Point SDA), as well as the construction of a 275kV transmission line from Strathmore to Abbot Point SDA, to be initially operated at 132kV.

Powerlink considers that the project should be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

7.3 Trigger Event

An increase in demand in the Abbot Point State Development Area, and the surrounding areas, will result in an overload under N-1 conditions of the Strathmore – Bowen North 132kV feeders. When the committed load to be supplied from the Strathmore – Bowen North 132kV feeders exceeds 215MW, it will trigger this project.

Trigger: Commitment for additional load increasing demand supplied from the Strathmore – Bowen North 132kV feeders to in excess of 215MW.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

7.4 Project Requirement

The proposed Abbot Point SDA expansion will add anything upwards of 180MW of load onto Powerlink's transmission network. The existing transmission system is unable to accommodate the proposed Abbot Point SDA expansion.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

7.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$78.7 million.

This estimate is based on the establishment of a 132kV switching station at Abbot Point SDA, two 132kV feeder bays at Strathmore Substation, and the establishment of a 275kV transmission line from Strathmore – Abbot Point SDA, to be initially operated at 132kV.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

The forecast capital expenditure in the Revenue Proposal does not include any allowance for projects overlapping in scope.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

7.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 7.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 7.4; and
- e) has an appropriately defined trigger event as set out in section 7.3.

8 NEMLink (Queensland Component)

Category: Augmentation

Indicative Cost: \$768.2m (\$ 2010/11)

8.1 Background

The conceptual NEMLink project was developed by AEMO with input from Transmission Network Service Providers to enable large scale power transfers between regions within the National Electricity Market.

The NEMLink augmentation comprises of a high capacity 500kV double circuit backbone connecting the mainland regions within the NEM, and 400kV HVDC link connecting Tasmania to the mainland regions. The project includes a number of intermediate substations, switching stations, and devices for reactive compensation and power flow control.

As part of the 2010 NTNDP, AEMO has calculated market benefits generated by NEMLink under two high growth scenarios and carbon price sensitivities. AEMO has indicated that a broader suite of scenarios and the staged building of NEMLink warrant further analysis given the magnitude of benefits observed under one of the scenarios and uncertainty related to future carbon price.

8.2 Project Overview

The portion of NEMLink connecting Queensland and NSW consists of the high capacity 500kV double circuit line from Western Downs Substation to the Queensland to NSW border.

The Queensland component of NEMLink comprises of:

- Establishment of Western Downs 500kV substation and associated reactive control equipment to facilitate the connection of NEMLink.
- Construction of a new 500kV double circuit transmission line (including series compensation) from Western Downs Substation to an intermediate switching station located on the border of Queensland and NSW.
- Construction of the new 500kV intermediate switching station.

Powerlink considers that the project should be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

8.3 Trigger Event

Application of the Regulatory Investment Test for Transmission (RIT-T) demonstrating that the project delivers positive net market benefits, and that the optimum timing for the project necessitates expenditure during the regulatory period.

Trigger: Successful application of the regulatory test leading to the recommendation of NEMLink with expenditure during the next regulatory period.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

8.4 Project Requirement

The assessment of NEMLink within the 2010 NTNDP was a high level study to investigate potential benefits from significantly increasing power transfer capability across the NEM.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time.

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

8.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$768.2 million.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

The forecast capital expenditure in the Revenue Proposal does not include any allowance for this project.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

8.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 8.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 8.4;
and
- e) has an appropriately defined trigger event as set out in section 8.3.

9 QNI Upgrade (Queensland Component)

Category: Augmentation

Indicative Cost: \$59.1m (\$ 2010/11)

9.1 Background

Powerlink and TransGrid published a Final Report in October 2008 relating to the potential upgrade of the interconnection between Queensland and NSW.

The Final Report detailed outcomes of comprehensive technical and economic assessment of technically feasible upgrade options (each delivering different increments on interconnection transfer capability) carried out in accordance with the AER Regulatory Test.

The Final Report indicated that installation of series compensation provided market benefits which exceeded the capital cost of the upgrade within the medium and high economic growth scenarios.

The optimum timing of the upgrade was 2015/16 under the most plausible scenario (ie medium economic growth using realistic generator bidding behaviour). Based on that timing, Powerlink and TransGrid considered it premature at that time to recommend an upgrade.

Since this joint planning study there have been a number of market developments, including new generation investments, expanded renewable energy targets, and the introduction of the RIT-T. In light of these developments, Powerlink and TransGrid have commenced additional studies to evaluate the economic viability and optimal timing of potential upgrades to QNI based on the principles and methodology of the RIT-T.

9.2 Project Overview

The likely upgrade project comprises the installation of two 330kV series capacitors on the Bulli Creek to Dumaresq feeders (8L and 8M) at a new site near the Queensland / NSW border.

Powerlink considers that the project should be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

9.3 Trigger Event

Application of the Regulatory Investment Test for Transmission (RIT-T) demonstrating that the project delivers positive net market benefits, and that the optimum timing for the project necessitates expenditure during the regulatory period.

Trigger: Successful application of the regulatory test leading to the recommendation of QNI during the next regulatory period.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

9.4 Project Requirement

The AEMO 2010 National Transmission Network Development Plan (NTNDP) found that installation of series compensation on the Armidale to Dumaresq, and Dumaresq to Bulli Creek 330kV circuits delivered net market benefits under five of ten development scenarios and sensitivities and therefore rated it as requiring 'Early Attention'. The modelling suggested an economic timing of 2014/15 under these scenarios.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time.

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

9.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$59.1 million.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

The forecast capital expenditure in the Revenue Proposal does not include any allowance for this project.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

9.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 9.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 9.4;
and
- e) has an appropriately defined trigger event as set out in section 9.3.

10 Gladstone State Development Area Connection Shared Network Works

Category: Augmentation

Indicative Cost: \$120.0m (\$ 2010/11)

10.1 Background

In December 1993, the Queensland Government established the Gladstone State Development Area (GSDA) under the State Development and Public Works Organisation Act 1971 as an industrial park to attract energy intensive industries, given its proximity to globally competitive electric power. The GSDA originally comprised approximately 6,800 hectares of land at Aldoga, north-west of Gladstone, and was extended:

- in 1997 to include the Yarwun Industrial Estate and a materials transportation and services corridor linking the Aldoga and Yarwun areas to Fisherman's Landing and Wiggins Island wharves;
- in December 2001 to include 4,600 hectares of State owned land adjacent to the Aldoga and Yarwun areas;
- in October 2002 to include 7,355 hectares of land at Targinie; and
- to include, as at September 2004, eighty-one other Targinie properties comprising 1,860 hectares.

Since then, an area on Curtis Island has been set aside and designated for the production and export of LNG. As a result, in the medium to long-term, there is substantial potential for large scale electricity supply requirements in the Gladstone area. Given the size of the GSDA and Curtis Island LNG industrial precincts the potential exists for load in the Gladstone area to increase by as much as 2,500 MW over the next 15 to 20 years.

10.2 Project Overview

This project involves the construction of a double circuit 275kV line between Calvale and Larcom Creek substations and the rebuild of the single circuit low capacity 275kV line between Larcom Creek and Calliope River substations.

Powerlink considers that the project should be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

10.3 Trigger Event

Network analysis demonstrates that an additional load in excess of 575MW (above 2010 APR medium outlook forecast levels in summer 2016/17) within the GSDA and/or Curtis Island triggers the proposed contingent project.

Trigger: Commitment of additional load in excess of 575MW within the GSDA and/or Curtis Island.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

10.4 Project Requirement

The transmission line augmentation between Calvale and Larcom Creek and between Larcom Creek and Calliope River is required to ensure that mandated reliability of supply obligations can continue to be met to the customers within the Gladstone zone and beyond to north and south Queensland should loadings in excess of 575MW above forecast levels eventuate within the Gladstone zone.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time.

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

10.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$112.8 million. This cost is net of the allowance included for projects overlapping in scope in this Revenue Proposal.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

10.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 10.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 10.4; and
- e) has an appropriately defined trigger event as set out in section 10.3.

11 Callide to Moura Transmission Line and Calvale Transformer

Category: Augmentation

Indicative Cost: \$49.5m (\$ 2010/11)

11.1 Background

Moura is an existing 132/66kV substation supplied out of Callide Substation via two single circuit 132kV feeders, one of which goes via Baralaba, some 40km further away from Callide. The load around Moura is predominantly associated with coal mining.

New mining projects, or expansion of existing mines in the area, will result in increased demand beyond what can be supported on the existing 132kV network.

11.2 Project Overview

This project comprises the construction of a single circuit 132kV transmission line between Callide and Moura substations.

Powerlink considers that the project should be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

11.3 Trigger Event

Network analysis demonstrates that a load in excess of 80MW on the 132kV network supplying Moura will trigger the proposed contingent project.

Trigger: Commitment of additional load increasing demand supplied from the 132kV network to Moura to in excess of 80MW.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

11.4 Project Requirement

The proposed new mining or mining expansion projects will add anything upwards of 20MW of load onto Powerlink's transmission network. The existing transmission system is unable to support this load.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

11.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$49.5 million.

This estimate is based on the establishment of a single circuit 132kV transmission line from Callide to Moura, the installation of a second 275/132kV transformer at Calvale Substation, with 132kV connection from the new Calvale transformer to the Callide 110kV bus and is net of the allowance included for projects overlapping in scope in this Revenue Proposal.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any

amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

11.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 11.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 11.4; and
- e) has an appropriately defined trigger event as set out in section 11.3.

12 N-2 Security to Essential Loads (CBD)

Category: Augmentation

Indicative Cost: \$112.0m (\$ 2010/11)

12.1 Background

As part of the review to transmission reliability standards undertaken by the Australian Energy Market Commission (AEMC), it has been recommended that a national framework be established governing the reliability of supply from transmission networks to loads.

As part of these reforms, the AEMC has recommended that reliability standards be determined on a jurisdictional basis by a body independent of the transmission asset owner.

The greater Brisbane area incorporates essential commercial and industrial loads including the Brisbane CBD, Brisbane airport, Brisbane Port and Australia TradeCoast precinct.

In the event that a review of transmission standards dictates higher standards of reliability than the existing “N-1” criteria currently prescribed within Powerlink’s Transmission Authority, then the construction of additional transmission infrastructure will be required.

12.2 Project Overview

This project comprises of the construction of a new 275kV cross-river link between Nudgee and Murarrie substations to complete a high capacity transmission ring around the greater Brisbane area. The establishment of the ring substantially increases contingent capacity to meet essential loads within the Brisbane area.

In order to facilitate connection of the Nudgee to Murarrie 275kV transmission circuit, this project includes establishment of a 275kV bus at both Nudgee and Murarrie substations. The project also includes the installation of a third 275/110kV transformer at both Nudgee and Murarrie substations to provide “N-2” reliability to the Brisbane airport, Brisbane Port and Australia TradeCoast loads.

Additional transmission infrastructure to facilitate “N-2” reliability to the Brisbane CBD may be required including the establishment of additional 275/110kV substations or augmenting the capacity of existing transmission circuits. The most economic method to provide higher levels of reliability to the Brisbane CBD will require detailed joint planning studies with ENERGEX.

Powerlink considers that the project should be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

12.3 Trigger Event

The trigger for this contingent project is a change in reliability standards to essential loads within the Brisbane area, including the Brisbane CBD, Brisbane airport, Brisbane Port and Australia TradeCoast precinct.

Trigger: Change in reliability standard for supply to essential loads.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

12.4 Project Requirement

The project involves the construction of transmission infrastructure to provide “N-2” reliability to essential loads within the Brisbane area.

The timing of this trigger is uncertain. If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet

expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

12.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$112.0 million.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

The forecast capital expenditure in the Revenue Proposal does not include any allowance for this project.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

12.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 12.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 12.4; and
- e) has an appropriately defined trigger event as set out in section 12.3.

13 Ebenezer 330/275/110kV Establishment

Category: Augmentation

Indicative Cost: \$61.1m (\$ 2010/11)

13.1 Background

Since 1993 the 5,800 hectare site within Ebenezer/Willowbank area, south west of Ipswich has been identified for future regional business and industry development in Ipswich City Council planning schemes.

Queensland Department of Infrastructure and Planning identifies an urgent need for industries requiring large lots and separation from urban areas in the Western Corridor, stretching from Rocklea in Brisbane through to Ebenezer/Willowbank, to register. The industrial land is anticipated to be allocated by 2013 to 2015.

Ebenezer regional industrial area is being planned by Department of Infrastructure and Planning and Ipswich City Council to be an industrial estate of Regional, State and National significance that:

- connects to Brisbane, Sydney and Melbourne via essential road and rail infrastructure;
- accommodates a range of low to high impact industrial uses;
- allows for a range of well aligned commercial, retail, administration and community uses;
- provides for medium to large allotments of two hectares or greater; and
- is fully serviced.

Three phases of project structure planning are completed. The last phase is underway and the plan is expected to be published in mid-2011.

13.2 Project Overview

This project involves establishing a 330/275/110kV substation at Ebenezer, west of Ipswich, and operating the Middle Ridge to Ebenezer double circuit line at 330kV.

Powerlink considers that the project should be accepted as a contingent project for the regulatory period because of uncertainty about the trigger event occurring and the scope and cost of the project.

13.3 Trigger Event

Network analysis demonstrates that a load in excess of 125MW (above 2010 APR medium outlook forecast levels) in the Ebenezer area will trigger the proposed contingent project.

Trigger: Commitment of load in excess of 125MW around the Ebenezer area.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

13.4 Project Requirement

The establishment of Ebenezer Substation is required to ensure that mandated reliability of supply obligations can continue to be met to the customers in the locality surrounding Ebenezer should new loads in excess of 125MW above forecast levels eventuate.

Both the timing and magnitude of the expansion project and, therefore, the transmission requirements are uncertain at this time

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

13.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$61.1 million.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

The forecast capital expenditure in the Revenue Proposal does not include any allowance for this project.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

13.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 13.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 13.4; and
- e) has an appropriately defined trigger event as set out in section 13.3.

14 FNQ 275kV Energisation

Category: Augmentation

Indicative Cost: \$85.7m (\$ 2010/11)

14.1 Background

Far North Queensland is supplied by a single double circuit 257kV transmission line from Ross to Woree via Chalumbin and a coastal 132kV network. The 132 kV network consists of two 132 kV lines from Yabulu South to Woree.

The Yabulu South to Tully section of the 132kV network includes two circuits on common towers; a straight through circuit constructed at 275kV (F7132) and a circuit constructed at 132kV injecting at Ingham South and Cardwell.

The Tully to Woree section of the 132kV network also includes two circuits on common towers; a straight through circuit constructed at 275kV (F7301) and a 132kV constructed circuit which injects at El Arish, Innisfail and Edmonton.

In the case where a tower or towers on the 275kV lines were lost as a result of a severe weather event (cyclone or electrical storm) or bush fire, supply to Far North Queensland would suffer a prolonged outage. The 132kV network would be unable to cope with the maximum demand of the region due to voltage stability constraints and restoration of the 275kV lines would be delayed due to the difficulty in accessing these lines.

14.2 Project Overview

This project involves energising one side of the coastal 132kV circuits at 275kV. To achieve this, it is necessary to establish 275/132kV transformation at Tully and Yabulu South substations, establish a 275kV bus at Woree, and energising the existing 132kV circuits from Ross to Yabulu South, Yabulu South to Tully and Tully to Woree at 275kV.

14.3 Trigger Event

The trigger for this contingent project is a change in reliability standards to Far North Queensland.

This trigger event is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the capital expenditure forecast.

14.4 Project Requirement

This project is required to provide increased reliability to Far North Queensland in the event of a bush fire or major weather event damaging the 275kV network to Far North Queensland.

Trigger: Change in reliability standard for supply to Far North Queensland.

If the trigger event occurs the proposed contingent project would be reasonably required to meet the Rules capital expenditure objectives to efficiently meet expected demand for prescribed transmission services, comply with all applicable regulatory obligations associated with the provision of prescribed transmission services and maintain the quality, reliability and security of supply of prescribed services.

14.5 Contingent Capital Expenditure

The proposed contingent project is estimated to cost \$85.7 million.

This estimate is based on the establishment of 275/132kV transformation at Yabulu South and Tully substations, establishment of a 275kV switchyard at Woree and energising the existing 132kV Ross to

Yabulu South, Yabulu South to Tully and Tully to Woree transmission lines at 275kV and is net of the allowance included for projects overlapping in scope in this Revenue Proposal.

By definition, it is not possible to accurately define the scope of proposed contingent projects at this early stage. Detailed planning analyses, project scope and cost estimates will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event for a proposed contingent project occur during the regulatory period.

The estimated net contingent capital expenditure exceeds the contingent project threshold of \$48.0 million.

14.6 Demonstration of Rules Compliance

Powerlink considers that the project should be accepted as a contingent project for the regulatory control period as it is:

- a) not otherwise provided for in the total forecast capital expenditure;
- b) reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- c) exceeds the contingent project threshold as set out in section 14.5;
- d) is reasonably required to achieve the capital expenditure objectives as set out in section 14.4; and
- e) has an appropriately defined trigger event as set out in section 14.3.