November 2025

Annual Information Order

Basis of Preparation

Reporting period – 1 July 2024 to 30 June 2025

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Introduction

This Basis of Preparation (this document) sets out the basis upon which Queensland Electricity Transmission Corporation Limited (Powerlink) has prepared relevant information to meet the requirements of the Annual Information Order (AIO) for the reporting period 1 July 2024 to 30 June 2025 and has been prepared to reflect the requirements of section 5 of the AIO for reporting on Powerlink's prescribed transmission services (regulated services).

Structure of this document

The structure and numbering of this document is aligned with the TNSP – Annual Order 2024-25 Data submission workbook (Workbook).[1] Due to that ordering being out of sequence to both the AIO and the AIO – Electricity TNSPs – Appendix A – Data workbook instructions (Instructions),[2] Powerlink has taken effort to note the relevant sections of the AIO and the Workbook for each section. Accordingly, this document sets out the information source, methodology (including any policies or procedures), assumptions and any additional information in relation to the following categories:

- Category Analysis RIN;
- Economic Benchmarking RIN;
- Information Guideline;
- Reset RIN; and
- Annual Orders.

Schedule 1 of this document sets out how Powerlink has addressed the supporting information requirements under section 4 of the AIO.

Reporting of this AIO return

Where the data has met the AER's definition of actual information, the data has been identified as actual. Where this document provides for actual data, assumptions have been listed as 'nil' on the basis that the information has been sourced by actual data.

All data which did not meet the AER's definition of actual information has been identified as estimated. Where this document provides for estimated data, it is accompanied by an explanation as to why the actual information cannot be provided and why the estimated data is Powerlink's best estimate. This includes information which is materially dependent on historical accounting or other business records and is contingent on judgment, certain assumptions, allocation methodologies or other forms of adjustments for the purpose of responding to the AIO requirements.

The Instructions require that all capital expenditure (capex) and operating expenditure (opex) costs reported in Sheets 2.2 (Repex) to 2.10 (Overheads) be presented net of any allocated overheads. In practice, this means overhead costs must be unburdened (removed) from the figures reported in the Workbooks. We confirm that Powerlink allocates overheads in accordance with its AER-approved Cost Allocation Methodology (CAM), dated 15 August 2008. Overheads are identifiable by unique GL account codes and have been

[1] AIO Data Templates completed as part of this AIO return

[2] Annual Information Order – Electricity TNSPs – Appendix A – Data workbook instructions

allocated to activities via timesheet entries and material cost allocations. To unburden overhead costs, the unique GL account codes have been removed where applicable.

Powerlink has categorised individual capital projects according to the primary reason for investment. For example, the primary reason or driver for a capital project may be replacement due to age, condition or obsolescence. However, that same project may also contain some minor augmentation components. In this example the project would be categorised as replacement.

Confidential Information

In accordance with section 2.4 of the AIO, Powerlink has completed its Confidentiality Template consistent with the AER's *Confidentiality Guidelines* (2017) for specified information in the both the Workbooks and this document.

Security of Critical Infrastructure

Powerlink confirms that it does not consider any information disclosed as part of this AIO return to contain protected information under the *Security of Critical Infrastructure Act 2018* (Cth).

Review and audit

Powerlink confirms that the Workbooks and this document have undergone several lawyers of internal staff and management review and external audit in compliance with the Australian Auditing and Assurance Standards in the manner required by section 6 of the AIO.

Category Analysis RIN

Sheet: 2.1 Expenditure Summary

Table: 2.1.1 Prescribed Transmission Services Capex (as incurred)

Workbook References

DC07 - Capital expenditure | Capex by purpose

AIO Requirements

This section was completed in accordance with sections 6.3.1, 6.3.2 and 6.3.3 of the Instructions.

Data Quality

Table 2.1.1 was populated with actual as incurred data.

Information Source

The as incurred data for capex was sourced from Powerlink's corporate enterprise resource planning database, Systems, Applications and Processing in Data Processing (SAP).

Adjustments have been made outside these systems to ensure accurate inclusion in the Regulatory Asset Base (RAB). Refer to Sheet 2.4 (Hist Capex by Asset Class) of this document for further details about these adjustments.

Methodology

Consistent with section 6.3.3 of the Instructions, Powerlink reconciled the total expenditure reported in Table 2.1.1 with the capex (gross capex) recorded in Tables 3.3.1 (Regulatory Asset Base Values) and 8.6.1 (Indicative Asset Base As Incurred).

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Powerlink's previous Category Analysis Regulatory Information Notice (RIN)[3] (sections 1.10 and 3.1 of the Category Analysis RINs Guidance) required reporting amounts from Sheets 2.2 (Repex) to 2.6 (Non-network) on a project close or as commissioned basis, corresponding to the relevant rows in Table 2.1.1.

Under the AIO, the Workbook requires reporting on an as incurred basis for each corresponding row, which may result in figures that do not reconcile directly with the previously reported Sheets 2.2 (Repex) to 2.6 (Non-network).

[3] Powerlink, Category Analysis – RIN Response – Consolidated, 28 October 2024 (excel spreadsheet).

Table: 2.1.2 Prescribed Transmission Service Opex

Workbook References

DC06 - Operating expenditure | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 5.2.3 of the Instructions.

Data Quality

Table 2.1.2 was populated with actual data.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

The figures presented in Table 2.1.2 are sourced from the opex-related tables within the Workbook, specifically:

- Sheet 2.6 (Non-Network);
- Sheet 2.7 (Vegetation management);
- Sheet 2.8 (Maintenance); and
- Sheet 2.10 (Overheads).

Assumptions

Nil.

Additional Information

The Other category in Table 2.1.2 contains Depreciation and Disposal of fixed assets which are not included in any of the opex-related Workbooks. It removes the non-network expenditure (opex) as it is also included in Table 2.10.2 (Corporate Overheads Expenditure).

Change From Previous Year Basis of Preparation

Nil.

Sheet: 2.2 Repex

Table: 2.2.1 Replacement Expenditure, Volumes and Asset Failures by Asset Category

Workbook References

DC07 - Capital expenditure | Capex by purpose

DC02 - Operational Outputs | Asset replacement activities as commissioned

AIO Requirements

This section was completed in accordance with sections 2.4 and 6.3.4 to 6.3.9 of the Instructions. Consistent with the AIO requirements,[4] Powerlink added the asset groups to Table 2.2.1:

- Substation Buildings, which include control and communications buildings; and
- Substation Site Infrastructure, which includes fences and civil infrastructure.

Data Quality

Table 2.2.1 was populated with both actual and estimated data. Actual data was used for asset replacement and failure volumes. All financial data was estimated.

Estimated Costs

Where Powerlink's asset categories were similar to the AER's previous RIN categories (i.e. cables, transformers, reactive plant and Supervisory Control and Data Acquisition (SCADA), Communication and Protection Systems), the capitalised value of the asset, inclusive of procurement, design and installation was initially identified.

The previous Category Analysis RIN required that overheads, including procurement overheads, be excluded from all reported costs. To enable comparability with previous reporting, Powerlink maintained this approach in this AIO return and removed overheads from reported costs. As these are based on assumptions, the costs reported in this AIO return are estimates.

Powerlink's systems do not record asset expenditure information in the categories required by the AER for the following equipment types:

- Circuit breakers;
- Isolator/earth switches;
- Voltage Transformers (VTs); and
- Current Transformers (CTs).

Accordingly, Powerlink estimated values for these equipment types based on a proportion of the high level asset value capitalised to each project.

To estimate the circuit breakers, isolator/earth switches, VTs and CTs expenditure for each project, Powerlink applied the following approach:

[4] AER, Appendix A of the AIO, sections 6.3.6 to 6.3.7.

For a full switching bay replacement:

- identified two general types of switching bay asset – 275 Kilovolt (kV) and 132kV;
- developed the circuit breaker (live tank)[5], isolator/earth switch, VT and CT cost to total cost proportion for each of these two general types of projects from Powerlink's estimating system;
- estimated the equipment costs for each project to populate the Workbooks by applying the relevant percentage to the total switching bay value recorded in Powerlink's SAP; and,
- decommissioning / dismantling / disposal costs.

For a partial switching bay replacement, Powerlink:

- Used project specific records to identify procurement costs for circuit breakers, isolator/earth switches, VTs and CTs, pro-rated common costs and developed a percentage for each category;
- Estimated the circuit breaker, isolator/earth switch, VT and CT costs for each project to populate the Workbooks by applying the relevant category percentage to the total capitalised value recorded in Powerlink's SAP; and
- Included decommissioning/dismantling/disposal costs are included in these estimates.

Other

Powerlink included assets and equipment in the Other category. Expenditure in this category includes:

- Expenditure that relates to replacement of a sub-component of an asset;
- Expenditure to change the functionality of an asset;
- Expenditure that relates to the relocation of an asset; and
- Assets not separately reported.

Ratings Information

Equipment ratings are calculated using a rating methodology which requires judgement to be exercised on a number of input assumptions and criteria and choice of methodology which relate to the operation of Powerlink assets.

The cyclic transformer ratings, Normal and Emergency, are calculated based on season (summer, winter, shoulder), load profile (site specific), ambient temperature (Southern, Central and Northern) and cooling mode (Oil Natural Air Natural (ONAN), Oil Natural Air Filled (ONAF), Oil Directed Air Natural (ODAN), Oil Directed Air Filled (ODAF)).

Normal cyclic refers to the normal cyclic summer rating. Powerlink identifies normal conditions as per the Australian Standard.[6]

[5] Where Powerlink installed circuit breakers of a dead tank design (i.e. CT integrated) the CB and CT proportions are added together.

[6] Australian Standard, AS 2374.7 -1997, Power Transformers, Part 7: Loading Guide for Oil-Immersed Power Transformers.

Information Source

Financial data was sourced from Powerlink's SAP Project System Module and capitalisation data.

For each project, Powerlink's internal project scope documents were used to provide the high level technical scope of the project and to identify some of the technical asset information required in the Workbooks.

Historical transmission asset outage data from Powerlink's internal network operating systems were used to source the number of asset failures per annum. Powerlink's SAP Plant Maintenance Module was used to source asset details for categorisation of asset replacements and asset failures.

Powerlink sourced ratings data from its internal Transmission Network Ratings Database.

Methodology

Consistent with Accounting Standards, Powerlink defines project close as the year in which the asset is ready for use, i.e. year in which the asset was capitalised. As a result, any post commissioning costs are not reported as part of the project costs.

For specific financial data for Sheet 2.2 (Repex), all project-specific expenditure data was extracted from Powerlink's SAP Project System module at project close and allocated to reportable assets replaced by that project as described in the estimated costs as explained above.

Powerlink adopted the following approach to the preparation of specific technical data:

- The number of assets replaced was sourced from Powerlink's SAP Project System/Plant Maintenance System and individual project scope documents.
- The number of transmission cables replaced are counted as 1 for each 3-phase set.
- The number of towers replaced also includes poles if poles are also replaced.
- The number of towers replaced also includes poles if they are required to facilitate the reconfiguration of entry and exit points of a feeder to a substation.
- The number of Circuit Breakers and Isolators/earth switches are counted as 1 for each 3-phase set.
- The number of VTs and CTs are counted as 3 for each 3-phase set.
- The rating value identified is the summer normal rating and was sourced from Powerlink's ratings database. Ratings have been estimated.

Powerlink adopted the following approach to the preparation of specific technical data:

- Each replacement capital project record was assessed against the AIO definition for repex asset failures.[7]
- Where the replacement capital project was as a result of asset failure, the associated record was included in the count for the number of asset failures.
- Asset group and asset category details of the asset failure were identified, and the number of asset failures for each asset group and asset category was summated for each

[7] AER, Glossary – Annual Information Orders,5 April 2024 (excel spreadsheet).

financial year.

One asset failure was identified in the reporting period. The failed asset relates to the failure of an AC Supply transformer not used for the purpose of electricity transmission.

Assumptions

Nil.

Change From Previous Year Basis of Preparation

Nil.

Table: 2.2.2 Selected Asset Characteristics

Workbook References

DC02 - Operational Outputs | Asset replacement activities as commissioned

DC03 - Network metrics | Length

DC03 - Network metrics | Capacity

AIO Requirements

This section was completed in accordance with sections 2.4, 3.3.3 and 3.4.6 of the Instructions.

Data Quality

Table 2.2.2 was populated with actual data.

Information Source

Table 2.2.2 was populated by data sourced from Powerlink's SAP Project Module, Plant Maintenance data and capitalisation data.

Methodology

Conductor asset volumes and asset replacement values were identified by circuit lengths (km).

Assumptions

Powerlink assumed that harmonic filter equipment contributes to the total reactive capacity.

Additional Information

The decrease in conductors is due to the partial removal of a transmission line between Tarong and Chinchilla and transmission line deviation work.

2024/25 Explanatory Note

An increase in oil filled reactors by 13% driven by the installation of a new reactor. Reactors are classified as a System Service and do not have the function of augmenting the network. As a result, capital expenditure has not been captured in Table 2.3.1 (Augex Asset Data – Substations).

The decrease in conductors is due to the partial removal of a transmission line between Tarong and Chinchilla and transmission line deviation work.

Change From Previous Year Basis of Preparation

Based on the above assumptions, harmonic filter equipment (which is not associated with other reactive plant such as static VAR compensators (SVCs)) was included in the Total Megavar (MVAr) by Capacitors category.

Sheet: 2.3 Augex

Table: 2.3.1 Augex Asset Data – Substations

Workbook References

DC02 - Operational Outputs | Other outputs

AIO Requirements

This section was completed in accordance with sections 2.5.1 to 2.5.3 of the Instructions.

Data Quality

No material or non-material projects have been identified for the reporting period.

Information Source

Financial data was sourced from Powerlink's SAP Project System Module.

For each project, Powerlink's internal project scope documents have been used to provide the high level technical scope of the project and to identify some of the technical project summary and equipment information required in the Workbooks.

Plant data was sourced from Powerlink's SAP Plant Maintenance Module and Transmission Network Ratings Database.

Methodology

Consistent with Accounting Standards, Powerlink defines project close as the year in which the asset is ready for use (i.e. year in which the asset was capitalised). As a result, any post-commissioning costs have not been reported as part of the project costs.

For financial data for Sheet 2.3 (Augex), all project specific expenditure data was extracted from Powerlink's SAP Project System module.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Table: 2.3.2 Augex Asset Data – Lines

Workbook References

DC07 - Capital expenditure | Augex - lines

DC02 - Operational Outputs | Other outputs

AIO Requirements

This section was completed in accordance with sections 2.5.1 to 2.5.3 and 6.5 of the Instructions.

Data Quality

No material or non-material projects have been identified for the reporting period.

Information Source

Financial data was sourced from Powerlink's SAP Project module.

For each project, Powerlink's internal project scope documents have been used to provide the high-level technical scope of the project and to identify some of the technical project summary and equipment information required in the Workbooks.

Methodology

Consistent with Accounting Standards, Powerlink defines project close as the year in which the asset is ready for use (i.e. year in which the asset was capitalised). As a result, any post-commissioning costs have not been reported as part of the project costs.

For financial data for Sheet 2.3 (Augex), all project specific expenditure data was extracted from Powerlink's SAP Project System module.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 2.5 Connections

Table: 2.5.1 Expenditure on Connection Projects

Workbook References

DC07 - Capital expenditure | Capex by purpose

AIO Requirements

This section was completed in accordance with, sections 6.3.10 to 6.3.14 of the Instructions.

Data Quality

No material or non-material projects have been identified for the reporting period.

Information Source

Financial data was sourced from Powerlink's Financial Statements and Powerlink's SAP Project module.

For each project, Powerlink's internal Project Scope documents have been used to provide the high-level technical scope of the project and to identify some of the technical project summary and equipment information required in the Workbooks.

Methodology

Consistent with Accounting Standards, Powerlink defines project close as the year in which the asset is ready for use (i.e. year in which the asset was capitalised). As a result, any post-commissioning costs have not been reported as part of the project costs.

For financial data for Sheet 2.5 (Connections), all project specific expenditure data was extracted from Powerlink's SAP Project System module.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Table: 2.5.2 Description of Connection Projects

Workbook References

DC02 - Operational outputs | Connections (transmission)

AIO Requirements

This section was completed in accordance with section 2.3.2 of the Instructions.

Data Quality

No material or non-material projects have been identified for the reporting period.

Information Source

Financial data was sourced from Powerlink's Financial Statements and Powerlink's SAP Project module.

For each project, Powerlink's internal project scope documents have been used to provide the high-level technical scope of the project and to identify some of the technical project summary and equipment information required in the Workbooks.

Methodology

Consistent with Accounting Standards, Powerlink defines project close as the year in which the asset is ready for use (i.e. year in which the asset was capitalised). As a result, any post commissioning costs have not been reported as part of the project costs.

For financial data for Sheet 2.5 (Connections), all project specific expenditure data was extracted from Powerlink's SAP Project System module.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 2.6 Non-Network

Table: 2.6.1 Non-Network Expenditure

Workbook References

DC06 - Operating expenditure | Regulatory accounts (PTS)

DC07 - Capital expenditure | Capex by purpose

AIO Requirements

This section was completed in accordance with sections 5.2.8 to 5.2.13, and 6.3.15 to 6.3.16 of the Instructions.

Data Quality

Table 2.6.1 was populated with actual (for opex) and estimated (for capex) data.

Why an estimate is required

Since the AIO requires reporting non-network capex as a direct cost[8] and Powerlink used a methodology to remove overheads on as commissioned capital, all reported costs are estimates.

Information Source

The data was sourced from Powerlink's Financial Statements and SAP.

Methodology

Capex related to Information and Communications Technology was reported on a project close basis and was allocated between the AIO categories in line with the AIO definitions.

Capex related to Motor Vehicles was directly allocated to the relevant AIO classification.

Most of the operating expenditure (opex) related to Motor Vehicles was directly allocated to the AIO classification. Opex that could not be directly allocated to the AIO classifications was apportioned across each category in the following manner:

> *(Direct Operating Expenditure per Category / Total Direct Operating Expenditure) * Total Indirect Operating Expenditure*

The resulting data per category is therefore considered to be an estimate while the total amount is actual.

Powerlink allocated its Property and Buildings data into the AIO classification for both opex and capex.

Motor Vehicle opex and capex included in the other asset category represents expenditure incurred on the following:

- trailers;
- work Platforms;
- forklifts;
- miscellaneous; and
- all terrain vehicles.

[8] AER, Appendix A of the AIO, section 6.3.15.

Powerlink nominated an additional other asset category which includes all remaining tools and equipment expenditure.

Assumptions

Key assumptions for reporting data in Table 2.6.1 have been documented in the Data Quality and Methodology sections above.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Opex – In previous years under the former Category Analysis RIN, relevant to Information and Communications Technology Powerlink reported the cost of the IT teams as well as the cost of IT activities, such as IT licenses.

Under the AIO, Powerlink only reported the cost of IT activities, given the IT teams book time directly to such IT activities and the remaining cost is recovered via timesheets through corporate overheads.

Opex and Capex – In previous years under the former Category Analysis RIN, Powerlink reported the total cost of motor vehicles as regulated.

Under the AIO, Powerlink adjusted the RAB to only include vehicles that are regulated.

Table: 2.6.2 Annual Descriptor Metrics – IT and Communications

Workbook References

DC03 - Network metrics | Network assets – volume

AIO Requirements

This section was completed in accordance with section 3.2.1 of the Instructions.

Data Quality

Table 2.6.2 was populated with estimated data.

Why an estimate is required

Powerlink's SAP does not record device information in the form required under the AIO.

How the estimate was produced

Powerlink applied judgment in the allocation of expenditure to the categories required by the AER under the Instructions.

Information Source

The data was sourced from Powerlink's Corporate Information systems.

Methodology

Reporting on the number of devices, Powerlink included the following equipment in the Client Device statistics:

- Desktop Computers;
- Laptop Computers;
- Smart Phones;
- Smart Devices; and
- Thin Client devices (e.g., smart phones, tablets and laptops).

Devices issued to direct Powerlink staff, contractors and contingent staff have been included along with computers used in training facilities, substations and common areas within Powerlink. Those devices which have been decommissioned but are awaiting final disposal have been removed from the final Client Device numbers reported.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Unlike the former Category Analysis RIN, the AIO does not require Powerlink to report on the number of users and employees as part of Table 2.6.2.

Table: 2.6.3 Annual Descriptor Metrics – Motor Vehicles

Workbook References

DC02 - Operational outputs | Other outputs

AIO Requirements

This section was completed in accordance with sections 2.5.4 and 3.2.2 of the Instructions.

Data Quality

Table 2.6.3 was populated with actual and estimated data.

Why an estimate is required

Powerlink uses labor time charged as a casual allocator to apportion fleet costs to regulated activities.

How the estimate was produced

Powerlink applied its judgment to develop, apportion or allocate on the bases described below.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

Powerlink developed estimates for all motor vehicle descriptor metrics applying the following methodology.

The number of purchased vehicles is based on vehicles added to the fixed asset register during the year which were considered to be regulated in nature.

Powerlink does not lease vehicles.

The number of vehicles in fleet is sourced from Powerlink's the fixed asset register. In accordance with section 3.2.2 of the Instructions, vehicles bought within the financial year are reported as an average.

The allocation methodology used to apportion the usage of regulated expenditure was based on labor time charged by employees to regulated activities.

However, consistent with Table 2.6.1 (Non-network Expenditure) above, Powerlink reported the metrics relating to the regulated line of business.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Unlike the former Category Analysis RIN, the AIO does not require Powerlink to report on average kilometres travelled for each motor vehicle category as part of Table 2.6.3.

Sheet: 2.7 Vegetation Management

Table: 2.7.1 Descriptor Metrics by Zone

Workbook References

DC03 - Network metrics | Terrain

AIO Requirements

This section was completed in accordance with section 3.6.1 to 3.6.8 of the Instructions.

Data Quality

Table 2.7.1 (Descriptor Metrics by Zone) was populated with actual and estimated data. Specifically:

- Route line length within zone (km) is actual data.
- Number of maintenance spans is estimated data.
- Length of maintenance spans is estimated data.
- Average number of trees per maintenance span is estimated data.
- Length of vegetation corridors (km) is estimated data.
- Average width of vegetation corridors (metres) is estimated data.
- Average frequency of cutting cycle (years) is estimated data.

Number of Maintenance Spans

Why an estimate is required

Powerlink manages its easements by individual span based on condition. While Powerlink's systems collect information on which individual spans have had maintenance performed over time, an estimate was required in some instances.

How the estimate was produced

A list of work orders relating to vegetation maintenance was sourced from SAP. Each work order was inspected to determine if relevant for this AIO return. Where a specific ground span has not been specified, an estimate of which spans were affected by the work order was made based on the description of the maintenance activity and the costs booked against it. Where more than one maintenance activity occurred on a span, the duplicates were removed to avoid double counting.

Total Length of Maintenance Spans

Why an estimate is required

Powerlink manages its easements by individual span based on condition. While Powerlink's systems collects information on which individual spans have maintenance performed over time, an estimate was required in some instances.

How the estimate was produced

The span count from Number of Maintenance Spans was split by span. Where spans could not be identified, the average span length for the built section was multiplied by the number of maintenance spans to determine the total length.

Average Number of Trees per Maintenance Span (0's)

Why an estimate is required

An estimate was required as Powerlink's vegetation management largely occurs as corridor maintenance. Such maintenance does not include individual tree counts or other inspection duties.

Powerlink considers that its best source of data to estimate this variable is its internal land management inspections data with utilisation of Light Detection and Ranging (LiDAR) and spatial data.

How the estimate was produced

The following methodology was applied to estimate the average number of trees from Powerlink's internal land inspection data:

- Identified maintenance spans with a height category of 4 or greater, which represents an average height of vegetation in the span of 3-5m. This is reasonably consistent with the AER's definition of a tree.[9]
- From this set of spans, adopting the density rating to assign a proportion of the span covered with 100% vegetation of interest. Powerlink uses a density category of 5, to represent 50% coverage.
- Assume 1600 stems per hectare for 100% coverage. A stocking of 1600 stems per hectare equates to a nominal tree spacing of 2 metres x 3 metres. For example, if a span has an area of 2 hectares, a height category of 4 or greater and a density category of 5 – the span is estimated to contain 1600 stems. This number was confirmed with a small number of established plots. Using this hypothesis, Powerlink referred to spatial mapping to produce an average for the network.
- The resulting average number of trees was applied to all zones, with improved data from LiDAR and spatial surveys and targeting higher risk spans.

The methodology assumes that the:

- density category allocated to a span aligns with the number of stems per hectare; and
- number of stems is scalable up to the area of the span and can be averaged over the State.

Powerlink considers that this methodology provides its best estimate of the average number of trees per vegetation maintenance span.

Length of Vegetation Corridors (km)

Why an estimate is required

Powerlink manages its easements by individual span based on condition. While Powerlink's systems collect information on which individual spans had maintenance performed over time, an estimate was required in some instances.

How the estimate was produced

An estimate of the length of vegetation corridors was established by dividing the route line length in the spans by Powerlink's asset management policy cycle time for the particular spans.

[9] AER, Glossary – Annual Information Orders, 5 April 2024 (excel spreadsheet).

Average Width of Vegetation Corridors (m)

Why an estimate is required

Powerlink manages its easements by individual span based on condition. While Powerlink's systems collect information on which individual spans had maintenance performed, an estimate was required in some instances.

How the estimate was produced

A list of all spans and lengths was sourced from Powerlink's spatial database. This information was sorted based on spans.

The attributes associated with each span have identified the width to the left and the right of the center of the span where maintenance is performed. These were added together to get an overall width of vegetation corridor per span.

Powerlink considers that this methodology provides the best estimate of the average width of vegetation corridors.

Average Frequency of Cutting Cycle (Years)

Why an estimate is required

While Powerlink now manages its easements by individual spans, there are intensive spans that require additional condition assessments and treatments.

How the estimate was produced

An estimate of the average frequency of cutting cycles was based on Powerlink's asset management policy cycle time[10] for the particular span.

Information Source

Data for Table 2.7.1 was sourced from Powerlink's SAP. However, in relation to vegetation corridors, Powerlink also sourced data from its LiDAR surveys and its spatial database.

Methodology

Zones

In determining its standard of vegetation management, the primary legislation with which Powerlink must comply include Queensland's *Electrical Safety Act 2002* and *Electrical Safety Regulation 2013* which impose obligations for ensuring public safety. The Regulation includes setting exclusion zone distances from electrical apparatus and section 216 specifically refers to trimming of trees near overhead electric lines. These obligations are taken into account when setting vegetation management activities and maintenance intervals.

Powerlink manages vegetation based on material differences in recognised cost drivers as this aligns better with its Vegetation Management Specification and allows for flexibility in span treatment over time. Powerlink categorised each span based on geographical location and risk factors.

Span maintenance was based on vegetation growth rates, rainfall, terrain and other risk factors. These requirements are reflected in different vegetation cycles and costs.

Powerlink applied different strategies for vegetation management due to differences in easement environments and growth rates. These are facilitated through improved technology

[10] Cycle times may vary depending on local factors.

such as LiDAR, spatial and satellite surveys and are integrated into a risk-based approach.

Route Line Length within Zone (km)

A list of all built sections, spans, their commissioning dates and lengths was sourced from SAP. This information was sorted and separated into regulated only spans.

Assumptions

Nil.

Additional Information

Powerlink notes:

- Number of Maintenance Spans: A 49% increase in maintenance spans observed consistent with the planned cutting program.
- Total Length of Maintenance Spans: A 44% increase in total length of maintenance spans associated with an increase in the number of maintenance spans.
- Average Number of Trees per Maintenance Span: A 20% decrease in the density vegetation on average, which is an indication of long-term treatment programs reducing the number of incompatible species within transmission line easements.

Change From Previous Year Basis of Preparation

Nil.

Table: 2.7.2 Expenditure Metrics by Zone

Workbook References

DC06 - Operating expenditure | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 5.2.4 to 5.2.6 of the Instructions.

Data Quality

Table 2.7.2 (Expenditure Metrics by Zone) was populated with estimated data.

Tree trimming, Vegetation corridor clearance, inspection, contractor liaison expenditure and Other vegetation management costs not specified

Why an estimate is required

Powerlink captures routine vegetation management costs against the activities of tree trimming, chemical treatment, mechanical clearing, vegetation inspection, land costs and vehicle washing. From this information, costs were redistributed to meet the AIO cost categories. As a result, all costs in Table 2.7.2 are considered estimates.

Vegetation audits are undertaken as part of Powerlink's overall maintenance audits. The individual costs associated with the vegetation component of the audit are not captured separately. The total maintenance audit costs were included in maintenance support, see Sheet 2.10 (Overheads). The audit fields in Table 2.7.2 have been assigned a zero value.

How the estimate was produced

Vegetation costs have been sourced from SAP and combined to meet each service sub-category as required in Table 2.7.2. The cost information was aggregated and the regulated portion was extracted based on built section.

Further, expenditure estimates were derived using the methodology to unburden corporate overheads (including procurement overheads) from the cost data using the processes described in relation to Table 2.2.1 (Replacement Expenditure, Volumes and Asset Failures by Asset Category).

Audit Costs

Powerlink's systems do not separately record audit costs.

Other vegetation management costs not specified

For clarification, other vegetation management costs not specified include:

- monitoring of vegetation in spans with known bushfire risk,
- vegetation management in and around structures;
- identification, assessment, monitoring and control of regulated declared and noxious weed areas in corridor and specialist vegetation management work using alternative control methods.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

The methodology for reporting data in Table 2.7.2 was documented in the Data Quality section above.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Table: 2.7.3 Descriptor Metrics Across All Zones – Unplanned Vegetation Events

Workbook References

DC02 - Operational outputs | Other outputs

AIO Requirements

This section was completed in accordance with section 2.5.5 of the Instructions.

Data Quality

Table 2.7.3 (Descriptor Metrics Across All Zones – Unplanned Vegetation Events) was populated with actual data.

Information Source

Data was sourced from Powerlink's internal network operating systems associated with recording the unplanned system outages caused by either vegetation grow-ins or vegetation blow-ins/fall-ins. The records include the occurrence of system outages caused by either vegetation grow-ins or vegetation blow-ins/fall-ins, resulting in an unplanned outage of the transmission network.

Methodology

The unplanned system outages of Powerlink network assets which were caused by either vegetation grow-ins or vegetation blow-ins/fall-ins are included in the count for the number of events irrespective of whether there was a loss of supply. The AIO definition of vegetation grow-ins and vegetation blow-ins/fall-ins refers to an interruption to supply.[11] However, Powerlink assumed that the unplanned vegetation events refer to system outages of Powerlink's network assets and will be counted irrespective of whether there was a loss of supply to customers.

Force Majeure[12] events are excluded in the count for the number of events.

The methodology applied for the system outages caused by either vegetation grow-ins or vegetation blow-ins/fall-ins is as follows:

- Powerlink assessed the cause of each unplanned outage event record against the AIO definition of either vegetation grow-ins or vegetation blow-ins/fall-ins.[13]
- Where an unplanned outage event was caused by either vegetation grow-ins or vegetation blow-ins/fall-ins, the associated record was included in the count for the number of events.
- The number of unplanned outage events caused by either vegetation grow-ins or vegetation blow-ins/fall-ins was summated for each financial year.

The methodology applied for the fire starts[14] caused by either vegetation grow-ins or vegetation blow-ins/fall-ins are as follows:

- Powerlink assessed each unplanned outage event record against the AIO definition of fire starts caused by either vegetation grow-ins or vegetation blow-ins/fall-ins.

[11] AER, Glossary – Annual Information Orders – 5 April 2024 (excel spreadsheet).
[12] As defined in Appendix G of the AER's Final Decision – Electricity Transmission Network Service Providers Service Target Performance Incentive Scheme Version 5 (AER's V5 STPIS), October 2015, page 49.
[13] AER, Glossary – Annual Information Orders, 5 April 2024 (excel spreadsheet).
[14] Ibid.

- Where a fire start was caused by either vegetation grow-ins or vegetation blow-ins/fall-ins, the associated record was included in the count for the number of events.
- The number of fire starts caused by either vegetation grow-ins or vegetation blow-ins/fall-ins was summated for each financial year.

Where a single event results in the criteria being met for more than one AIO category, the event was reported in all relevant AIO categories for this table.

Assumptions

Consistent with the explanations in the Methodology section, Powerlink assumed that the unplanned vegetation events refer to system outages of its network assets and will be counted irrespective of whether there was a loss of supply to customers.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 2.8 Maintenance

Table: 2.8.1 Descriptor Metrics for Routine and Non-routine Maintenance

Workbook References

DC02 - Operational Outputs | Asset replacement activities as commissioned

AIO Requirements

This section was completed in accordance with sections 2.4.1 to 2.4.7 of the Instructions.

Data Quality

Table 2.8.1 (Descriptor Metrics for Routine and Non-routine Maintenance) was populated with estimated data.

Why an estimate is required

Powerlink's systems do not record information in the form required under the AIO categories (i.e. separating inspection and maintenance).

How the estimate was produced

Where applicable, Powerlink allocated activities sourced from its internal records to the activities and categories required by the AER under the AIO.

Estimates were derived using the following methodology:

- Inspection and maintenance activities have been allocated following a review of work orders for each of the listed asset categories.
- Refurbishment projects were excluded from the estimate.

Information Source

All regulated asset data was sourced from Powerlink's SAP.

Methodology

Powerlink adopted the following methodology in relation to the maintenance asset categories and quantities identified in the Workbooks.

General

The Assets Inspected reflects the total number of assets subjected to a maintenance or inspection action in that specific year.

The Asset Maintained reflects the total number of assets that have undergone non-routine maintenance activities such as corrective and condition-based maintenance, consistent with the Instructions.[15]

If an asset had multiple inspection or maintenance activities in any given year, it was only counted as one activity.

[15] AER, AIO Data Reporting Workbooks - Issues Register, Item 148.

Transmission Towers

A list of all regulated transmission tower structures was sourced from SAP. Multiple inspection activities exist for this asset group. The highest cost activity is the annual patrol (inspection) which includes both ground and aerial patrols.

Transmission Tower Support Structures

The highest value (i.e. highest replacement cost) asset type in this asset category is insulator strings. All maintenance activities recorded are those associated with insulator strings.

A list of all regulated insulator strings and their installation date was sourced from SAP. The quantity of strings reported are individual strings as there is no grouping involved.

Multiple inspection activities exist for this asset sub-category. The highest cost activity identified is the in-situ inspection. This inspection requires 5% of the Asset Quantity for each built section to be inspected at a frequency determined by the corrosion region. Therefore, Assets Inspected were based on 5% of the total insulator string quantity divided by the inspection frequency.

Conductors

The route length of all Powerlink conductors was sourced from Powerlink's SAP.

Multiple inspection activities exist for this asset group. The highest cost activity identified is the annual patrol which includes both ground and aerial patrols (inspection).

As information and data within SAP is captured at a span level for conductor, for the assets maintained total length of the span was used for any maintenance activities.

Overhead earth wire and Optical Ground Wire (OPGW) were not captured as part of the conductors category.

Substation Equipment and Property Maintenance

A list of all regulated substation bays containing switching equipment was sourced from SAP.

A list of all regulated power transformers was sourced from SAP.

A list of all regulated reactive plant was sourced from SAP.

Substation Property assets have been captured under the category of Total other TNSP defined as part of this AIO return. A list of all regulated, commissioned substation sites including cable transition sites was sourced from SAP.

SCADA and Network Control and Protection Systems Maintenance

A list of all regulated communications, control and supervisory equipment assets were sourced from SAP.

All equipment of the integrated secondary systems that control, monitor and supervise substation plant and power system network have been accounted for under the SCADA & Network Control category, including communications.

The assets included in this subcategory are:

- protection equipment;
- telecommunications – access and transport equipment (multiplexers, Multiprotocol Label Switching (MPLS) nodes, Dense Wavelength Division Multiplexing (DWDM) sub-racks), microwave radio, Ultra High Frequency (UHF)/Very High Frequency (VHF) equipment;

- SCADA – control and supervisory Intelligent Electronic Devices (IEDs), Human-Machine Interfaces (HMIs), servers, edge routers, access switches; and
- meters.

Assumptions

Powerlink assumed that maintenance activities are only to include non-routine maintenance. As a result, planned preventative maintenance has not been included.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Table: 2.8.2 Cost Metrics for Routine and Non-routine Maintenance

Workbook References

DC06 - Operating expenditure | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with section 5.2.7 of the Instructions.

Data Quality

Table 2.8.2 (Cost Metrics for Routine and Non-routine Maintenance) was populated with estimated data.

How the estimate was produced

Powerlink applied its judgment to allocate costs to the asset categories and sub- categories required under the AIO. Expenditure estimates were also derived using the methodology to unburden corporate overheads (including procurement overheads) from the cost data using the processes described in relation to Table 2.2.1 (Replacement Expenditure, Volumes and Asset Failures by Asset Category.

Information Source

The data was sourced from Powerlink's Financial Statements and its SAP.

Methodology

The direct costs reported in Table 2.8.2 include Powerlink's opex for Maintenance Service Providers, which have been categorised as attributable costs.

Conductors

For the asset subcategory of Conductors no routine maintenance costs apply. As Powerlink determines its inspection activities on the basis of condition assessment, costs have been categorised as non-routine completed by work order.

Transmission Tower Support Structures

In Table 2.8.2, the asset subcategory Transmission Tower Support Structures includes the maintenance costs for insulator strings. While Transmission Tower Support Structures – Insulator Strings was listed as an additional asset subcategory for inspection cycles, the Workbook does not require a breakdown of the corresponding dollar expenditure in this table.

Maintenance expenditure has been reported in $000's.

Assumptions

Nil.

Additional Information

2024/25 Explanatory Note

Battery Impedance Tests (within Substation-Switchbays) have now been included as routine maintenance.

Maintenance expenditure has been reported in $000's.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 2.10 Overheads

Table: 2.10.1 Network Overheads Expenditure

Workbook References

DC06 - Operating expenditure | Audited statutory accounts

DC06 - Operating expenditure | Regulatory accounts

DC07 - Capital expenditure | Audited statutory accounts

DC07 - Capital expenditure | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 5.1.3, 5.2.14, 6.1 and 6.2 of the Instructions.

Data Quality

Table 2.10.1 (Network Overheads Expenditure) was populated with actual data, except for capital overheads which is estimated.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

Opex

For direct costs, Powerlink used expenditure from its Financial Statements for Maintenance Support, Network Operations, and Network Monitoring and Control, excluding overheads.

For indirect costs, Powerlink applied network overheads charged to regulated Operating activities via timesheets, mainly covering management and support costs outside the Corporate Overhead category.

Capex

For indirect costs, Powerlink applied network overheads charged to regulated Capital activities via timesheets, mainly covering management and support costs outside the Corporate Overhead category. The allocation between regulated, non-regulated, negotiated, and not allocated services was determined at the project level by distributing overheads using an as incurred apportionment method.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Historically, Powerlink reported only the cost of Network Support Activities, with one minor adjustment in its internal reporting related to IT. From 2024/25, Powerlink aligned its reporting with Financial Statements. The Workbooks distinguish indirect operating and capex. This has required the reporting of network overheads recovered through timesheet allocations.

Table: 2.10.2 Corporate Overheads Expenditure

Workbook References

DC06 - Operating expenditure | Audited statutory accounts

DC06 - Operating expenditure | Regulatory accounts

DC07 - Capital expenditure | Audited statutory accounts

DC07 - Capital expenditure | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 5.1.3, 5.2.14, 6.1 and 6.2 of the Instructions.

Data Quality

Table 2.10.2 (Corporate Overheads Expenditure) was populated with actual data from Powerlink's SAP, except for capital overheads which was estimated.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

Opex

For direct costs, expenditure data was sourced from Powerlink's Financial Statements for Corporate related activities such as Business Support, IT Support and Insurance, excluding overheads charged via timesheet.

For indirect costs, data was sourced from corporate overheads determined by specific GL accounts charged to regulated Operating activities via timesheets.

Capex

For indirect costs, data was sourced from corporate overheads determined by specific GL accounts charged to regulated Capital activities via timesheets.

Assumptions

Nil.

Additional Information

Consistent with prior years, Powerlink used the proportion of labour time allocated to regulated, non-regulated, and transformation activities to distribute previously unallocated divisional costs.

Change From Previous Year Basis of Preparation

Under the former Category Analysis RIN, Powerlink reported both Corporate Activities costs and corporate team expenses (such as Finance, IT, and HR). From 2024/25, only Corporate Activities will be included under Corporate Overheads, in line with Network Overheads.

The Workbooks distinguish between indirect operating and capex. This has required the reporting of corporate overheads recovered through timesheet allocations.

Sheet: 2.12 Input Tables

Table: 2.12.1 Input Table

Workbook References

DC06 - Operating expenditure | Regulatory accounts

AIO Requirements

This section was completed in accordance with section 5.2.15 of the Instructions.

Data Quality

Table 2.12.1 (Input Table) was populated with actual data.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

Data for Vegetation Management, Routine Maintenance, Non-Routine Maintenance, Non-Network and Overheads was sourced from Tables 2.6.1 (Non-network Expenditure), 2.7.2 (Expenditure Metrics by Zone), 2.8.2 (Cost Metrics for Routine and Non-routine Maintenance), and Sheet 2.10 Overheads and adopts the same methodology and assumptions discussed in the relevant sections of this document.

To separate the direct material expenditure, direct labor expenditure, contract expenditure and other expenditure, Powerlink considered the nature of the expenditure recognised against relevant cost elements. It has then grouped the expenditure by nature into one of the four categories required by the Workbooks.

Assumptions

Direct expenditure (excluding overheads) was reported in Table 2.12.1.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Unlike the former Category Analysis RIN, the AIO does not require capex to be included within the expenditure categories.

Sheet: 5.2 Asset Age Profile

Table: 5.2.1 Asset Age Profile

Workbook References

DC03 - Network metrics | Network assets - volume

AIO Requirements

This section was completed in accordance with section 3.1 of the Instructions.

Data Quality

Table 5.2.1 (Asset Age Profile) was populated with actual data for installed assets.

Information Source

All installed asset data, including the year of commissioning, was sourced from Powerlink's SAP.

For clarification, differences in the timing between this table and Sheets 2.2 (Repex), 2.3 (Augex) and 2.5 (Connections) are due to:

- the commissioning dates being reported in this table, whereas the repex, augex and connections tables reflect capitalisation dates; and
- the original installation dates included in this table, whereas the timing in the repex and augex tables is based on asset transfer (and purchase) dates.

Methodology

Powerlink adopted the following methodologies and assumptions in relation to the specific asset groups identified in the Workbooks.

A list of all transmission tower structures (including poles) providing regulated transmission services, their commissioning year, operating voltage and circuit configuration was sourced from SAP. The data was aggregated based on the number of towers per commissioning year/voltage/circuit configuration. Transmission towers which have undergone line refit (life extension) have been reported under the Other category. Towers in this category have not been included in other categories under transmission towers by highest operating voltage; circuit configurations to ensure that they are only counted once.

To report Transmission tower support structures by highest operating voltage; circuit configuration, a list of all insulator strings providing regulated transmission services, their commissioning year, operating voltage and tower circuit configuration was sourced from SAP. The data was aggregated based on the number of insulators per commissioning year/voltage/tower circuit configuration.

To report on Conductors by voltage; summer normal rating[16], a list of all overhead transmission lines that provide regulated transmission services (measured in circuit kilometers), their commissioning year, operating voltage and feeder identification was sourced from SAP.

For Mega Volt Ampere (MVA) capacity by voltage data, corresponding ratings data was extracted from SAP including total circuit kilometres and maximum continuous MVA.

Powerlink recorded ratings information on system voltage, not rated voltage. Maximum continuous ratings (summer based) have been provided in accordance with section 3.4 of the

[16] Ratings have been estimated, consistent with Powerlink's methodology described in Section 2.3.2 Augex..

Instructions, as Powerlink's transmission network experiences its maximum demand (MD) during summer.

The data was aggregated on the basis of the number of circuit kilometres per commissioning year/voltage/summer normal rating.

Transmission cables by voltage; insulation type

A list of all underground cable feeders providing regulated transmission services, their commissioning year, operating voltage and insulation type was sourced from SAP. The data was aggregated based on the number of underground cable feeder circuit kilometres per commissioning year/voltage/insulation type.

Substation switch-bays by highest operating voltage; switch type

A list of all substation equipment records for hybrid gas insulated switchgear (GIS) modules, circuit breakers, isolators, earth switches, VTs and CTs, grouped by switch-bay associated with the provision of regulated transmission services, was sourced from SAP. As Powerlink's switch-bays may contain one or more of the switch types, a hierarchy was determined in the following order:

- GIS module;
- Air insulated circuit breaker;
- Air insulated isolators/earth switch;
- VT; and
- CT.

Each switch-bay (and the equipment therein) was counted only once based on the highest level component. For example, if a switch-bay contained an air insulated circuit breaker, an air insulated isolator, and a CT, the switch-bay would be counted as an air insulated circuit breaker bay.

The data was aggregated on the basis of the number of switch-bays per switch-type commissioning year/voltage/switch-type.

Substation power transformers by: voltage; MVA rating[17]

A list of all equipment records for power transformers providing regulated transmission services was sourced from SAP. The data was aggregated on the basis of the commissioning year/voltage/MVA rating. The data includes spare transformers to be consistent with Sheet 2.8 Maintenance.

Substation reactive plant by voltage; function

A list of all equipment records for Static Var Compensators (SVCs), capacitor banks, and oil filled reactors providing regulated transmission services was sourced from SAP. The data was aggregated on the basis of the commissioning year/voltage/equipment type.

To report on SCADA, network control and protection systems by function, a list of all communications and secondary systems equipment records was sourced from SAP. The records have been broken down by the following functions:

- Telecommunication network/systems including:

[17] Ratings have been estimated, consistent with Powerlink's methodology described in Table 2.3.2 (Augex).

  - access and transport equipment – multiplexers, MPLS and DWDM sub-racks;
  - microwave radios; and
  - VHF and UHF radios.
- Station SCADA and control systems:
  - control and supervisory IEDs;
  - local control facilities, HMIs;
  - edge routers, access switches;
  - metering systems, including meters; and
  - protection schemes/systems including protection relays.

The data was aggregated on the basis of the commissioning year/function and does not align with the replacement expenditure data in Sheet 2.2 (Repex), which was based on the financial asset capitalisation date.

A list of all network buildings associated with the provision of regulated transmission services was sourced from SAP. The data was aggregated on the basis of the number of buildings per commissioning year.

To report on site infrastructure, a list of all network sites associated with the provision of regulated transmission services was sourced from SAP. The data was aggregated on the basis of the number of sites per commissioning year.

Assumptions

Asset age was determined as the difference between commissioning year and current year.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 5.3 Maximum Demand at Network Level

Table: 5.3.1 Raw and Weather Corrected Coincident MD at Network Level

Workbook References

DC02 - Operational outputs | Maximum demand

AIO Requirements

This section was completed in accordance with sections 2.2.1 to 2.2.5 of the Instructions.

Data Quality

Table 5.3.1 (Raw and Weather Corrected Coincident MD at Network Level) was populated with actual data.

Information Source

Power demand and embedded generation records were sourced from Powerlink's metering database. This contains half hour average demands for each connection point and embedded generator, expressed as Kilowatt (kW) and Kilovolt-Ampere Reactive Power (kVAr). Raw data was provided by registered Meter Data Providers (MDPs) as required under the National Electricity Rules (the Rules).[18]

Methodology

Date and time of raw network coincident MD

This is the date and time when the raw network coincident MD occurs. Note that the times listed in Table 5.3.1 are the time of the half hour ending (e.g. 00:30 corresponds to the half hour period 00:00 to 00:30).

Winter/Summer peaking

This is the season associated with the date when the raw network coincident MD occurs. Powerlink refers to the summer period as corresponding to the period from 1 October to 31 March of the following year, and winter corresponding to the period from 1 April to 30 September of the relevant year.

Embedded Generation

This is the summation of embedded generation at the time of raw network coincident MD. Details on the type of embedded generation are set out below in relation to Table 5.4.1 (Non-coincident & Coincident Maximum Demand).

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Unlike the former Category Analysis RIN template, the Workbooks no longer reports the Raw Network Coincident MD nor any Weather corrected network coincident demand.

[18] National Electricity Rules (Version 236) (October 2025), cl 7.3.2(d)(1).

Sheet: 5.4 Maximum Demand and Utilisation at Spatial Level

Table: 5.4.1 Maximum Demand by Connection Point (Optional Alternative Table)

Workbook References

DC02 - Operational outputs | Maximum demand

AIO Requirements

This section was completed in accordance with section 2.2 of the Instructions.

Data Quality

All variables in Table 5.4.1 (Maximum Demand by Connection point (Optional Alternative Table)) have been populated with actual data except for:

- connection point rating measures, which have been populated with estimated data; and
- Weather Corrected MD measures. While these measures are based on actual data, being the non-weather adjusted maximum demand, it is also materially dependent on judgments and assumptions in developing the methodology for weather adjustment. As there is no independent means of verifying the accuracy of historical weather adjustment Powerlink considers this variable will remain as estimated data in the future.

Information Source

Connection point rating

Data for connection point rating was sourced from Powerlink's SAP.

Raw adjusted maximum demand

Power demand and embedded generation records have been sourced from Powerlink's metering database. Half hour interval energy (kWh and kVArh) values were recorded for connection points. Raw demand and embedded generation data was provided by registered MDPs as required under the Rules.[19]

A statistical outage screening algorithm was used to filter out any transfers to obtain the raw adjusted maximum demand.

Weather corrected maximum demand

Coincident connection point weather corrected 50% PoE and 10% PoE demands have been calculated by scaling the Raw Adjusted maximum demand by the state peak 50% PoE and 10% PoE correction factors consistent with Powerlink's load forecasting tool.

Non-coincident connection point weather corrected 50% PoE and 10% PoE demands for Energex and Ergon Energy connection points were sourced from Powerlink's load forecasting tool.

Why an estimate is required

Equipment ratings were calculated using a rating methodology which requires judgments to be made on a number of input assumptions and criteria and choice of methodology which relate to the operation of Powerlink assets.

[19] National Electricity Rules (Version 236) (October 2025), cl 7.3.2(d)(1).

How the estimate was produced

Ratings for substation equipment and transmission lines were produced on the asset data provided in Powerlink's SAP asset database.

Depending on the electrical configuration of the connection point, the rating was calculated by one of the following methods:

- Where Powerlink owns the step-down transformers that step the voltage down from the 330 kV, 132 kV or 110 kV network, then the connection point rating is the combined Normal Cyclic Capacity (NCC) ratings or limiting bay ratings of the step down transformers. An example of this is Richlands Substation.
- In the situation where the Distribution Network Service Provider (DNSP) or a direct connect customer owns the step-down transformers that step the voltage down from either the 132 kV or 110 kV network and Powerlink does not own a 110 kV or 132 kV outgoing feeder to supply the step-down transformer, then the connection point rating is the combined NCC ratings of the feeder bays. An example of this is Alan Sherriff Substation.
- Where the DNSP or a direct connect customer owns the step-down transformers that step the voltage down from either the 132 kV or 110 kV network (or 275 kV in the case of Boyne (275)) and Powerlink owns part or all of the feeder that supplies the step- down transformer, then the connection point rating is the combined NCC ratings of the feeders. The individual rating of either the feeder or its associated feeder bay, depending on which is the most limiting, are summated. Where the customer's step- down transformer is supplied via a Tee arrangement, then the individual rating of the feeder to be summated, will be the minimum rating of the feeder and both feeder bays. An example of this North Goonyella Substation.
- When there is only one connection point at a 275/132 kV or 275/110 kV injection point, and all outgoing circuits or transformers at 132kV or 110kV are owned by the DNSP, then the connection point rating is the combined NCC ratings or limiting bay ratings of the 275/132 kV or the 275/110 kV transformers. An example of this is Gin Gin Substation.
- When there are multiple connection points that are being supplied by a 275/132 kV or 275/110 kV injection point, or where Powerlink owns outgoing circuits or transformers at 132kV or 110kV, then the connection point rating is the combined NCC ratings of the feeders and/or feeder bays that make up that particular connection point. The individual rating of feeders that are to be summated will include the minimum rating of either the feeder or its associated feeder bay. An example of this is Belmont Substation.
- Where a separate connection is supplied from the tertiary windings of Powerlink owned transformers the nameplate rating of the relevant transformer tertiary windings is summed together.

The table below indicates which method(s) were relevant to each connection point.

Connection Point	Method Type
Abermain (110)	5
Abermain (33)	1
Alan Sherriff	2
Algester	1
Alligator Creek (132)	3
Alligator Creek (33)	1
Ashgrove West (110)	2
Ashgrove West (33)	1
Belmont (110)	5
Belmont (33)	1
Biloela	1
Blackstone	5
Blackwater (66/11)	1
Blackwater (Rolleston 132)	2
Bolingbroke (Rail)	3
Bowen North	1
Boyne Island (132)	3
Boyne Island (275)	3
Bulli Creek (132)	1
Bundamba	2
Cairns	1
Cairns City	3
Callemondah (Rail)	2
Calliope River (Ergon)	3
Cardwell	1
Chinchilla	2
Clare South	1
Collinsville Load	1
Columboola (Ergon)	2
Coppabella (Rail)	3
Dan Gleeson	1
Dysart (66/22)	1
Edmonton	1
Egans Hill	1
El Arish	1
Euroa	3
Garbutt	1
Gin Gin	4
Gladstone South (Ergon 66/11)	1
Gladstone South (QAL)	3
Goodna	1

Connection Point	Method Type
Grantleigh (Rail)	3
Gregory (Rail)	3
Ingham	1
Innisfail	1
Ironbark	3
Kamerunga	1
Kemmis	1
King Creek	3
Lilyvale (132)	2
Lilyvale (66)	1
Loganlea (110)	5
Loganlea (33)	1
Mackay	1
Middle Ridge (Energex)	2
Middle Ridge (Ergon)	2
Mindi (Rail)	3
Molendinar	4
Moranbah (11)	6
Moranbah (66)	1
Moranbah (Broadlea)	2
Moura (66/11)	1
Mt McLaren (Rail)	3
Mudgeeraba (110)	5
Mudgeeraba (33)	1
Murarrie	5
Nebo	1
Newlands	1
North Goonyella	3
Norwich Park (Rail)	3
Oakey	2
Oonooie (Rail)	3
Palmwoods	4
Pandoin (132)	2
Pandoin (66)	1
Peak Downs (Rail)	3
Pioneer Valley	1
Proserpine	1
QNI	3
Redbank Plains	1
Richlands	1
Rockhampton	1
Rocklea	5

Connection Point	Method Type
Ross	2
Runcorn	1
South Pine	5
Stony Creek	2
Sumner	2
Tangkam	2
Tarong (66)	2
Teebar Creek	4
Tennyson (110)	1
Tennyson (33)	3
Terranora Interconnector	3
Townsville East	1
Townsville South (Ergon)	1
Townsville Switchyard (QLD Nickel)	2
Tully	1
Turkinje (132)	2
Turkinje (66)	1
Wandoan South (66)	1
Wandoo (Rail)	3
Woolooga (Energex)	2
Woolooga (Ergon)	2
Woree	2
Yarwun (Ergon)	2

Where ratings were determined by methods 2, 3 or 5 above (as listed above in order), it is likely that the rating will be significantly greater than the maximum demand at the connection point. Unlike transformers, the cost of feeder bay equipment is largely independent of its thermal capacity. Powerlink standardised much of its substation equipment purchases and the same equipment is installed across a wide variety of loading situations.

Where the season in which non-coincident maximum demand occurs varies between summer and winter (i.e. there is no strong seasonality to the demand) the calculation of rating is based on the summer rating of transmission lines, for the given network configuration on the date of the maximum demand. This is due to summer line ratings are materially lower than winter ratings and this difference is greater than the observed variability in demand.

Where connection points are not providing regulated transmission services, the connection point rating was omitted and the cell shaded black.

Methodology

Connection Point Rating

All connection point ratings have been reported on in accordance with section 2.2.7 of the Instructions.

Non-Coincident Raw Adjusted MD

Powerlink used raw unadjusted maximum demand as the basis for calculating the raw adjusted maximum demand, consistent with section 2.2.3 of the Instructions.

Powerlink applied a statistical outage screening algorithm to filter out any transfers when obtaining the non-coincident raw adjusted maximum demand.

Connection points where MVA maximum demand has occurred at a different time to Megawatt (MW) maximum demand:

Connection Point	Date Occurred
Alligator Creek (132)	8/06/2025
Ashgrove West (110)	9/12/2024
[redacted]	[redacted]
Chinchilla	3/09/2024
Collinsville North	15/06/2025
[redacted]	[redacted]
Edmonton	17/02/2025
[redacted]	[redacted]
Lilyvale (132)	10/11/2024
Lilyvale (66)	16/11/2024
[redacted]	[redacted]
Newlands	21/09/2024
[redacted]	[redacted]
Oakey	7/11/2024
[redacted]	[redacted]
Ross	22/01/2025
Townsville East	1/04/2025
[redacted]	[redacted]
Turkinje (132)	30/12/2024
[redacted]	[redacted]
Yarwun (Ergon)	21/06/2025

This table was completed in accordance with section 2.2.8 of the Instructions, which requires the date the maximum demand in MVA occurred to be included in this document.

Coincident Raw Adjusted MD

Powerlink reported the *raw adjusted maximum demand* for each connection point at the time of the coincident peak demand in each year.

Similar to the *non-coincident raw adjusted maximum demand*, Powerlink first looked for raw unadjusted demand records at time of coincident peak that appeared unusually high.

Date MD Occurred

For coincident maximum demand this is the date on which the summated demand across all connection points in a single half-hour was greatest.

For non-coincident maximum demand this is the date on which the maximum adjusted demand (identified using the process described above) for that connection point occurred.

In instances where a new connection point was commissioned but did not supply any load in a year (i.e. the customer did not start to draw power), the date of the non-coincident maximum demand was set to be the same as the coincident maximum demand for that year. No connection points were affected by this in 2024/25.

Half Hour Time Period MD Occurred

For coincident maximum demand this is the half hour in which the summated demand across all connection points in a single half-hour was greatest.

For non-coincident maximum demand this is the half hour in which the maximum adjusted demand (identified using the process described above) for that connection point occurred.

The times listed in Table 5.4.1 are the time of the half hour ending (e.g. 00:30 corresponds to the half hour period 00:00 to 00:30). In instances where a new connection point was commissioned but did not supply any load in a year (i.e. the customer did not start to draw power), the time of the non-coincident maximum demand was set to be the same as the coincident maximum demand for that year. No connection points were affected by this in 2024/25.

Winter/Summer Peaking

For coincident maximum demand this is the season in which the summated demand across all connection points in a single half-hour was greatest.

For non-coincident maximum demand this is the season in which the maximum adjusted demand (identified using the process described above) for that connection point occurred.

Powerlink refers to the summer period as corresponding to the period from 1 October to 31 March of the following year, and winter corresponding to the period from 1 April to 30 September of the relevant year.

Adjustments – Embedded Generation

The table below indicates all embedded generators considered by Powerlink.

Connection Point unloaded by embedded generation	Generator	Type
Chinchilla (132)	Baking Board Solar	Semi-Scheduled
Clare South (66)	Pioneer Mill	Non-Scheduled
Collinsville (33)	Collinsville Solar	Semi-Scheduled
Columboola (132)	Roma	Scheduled
	Dulacca Wind Farm	Semi-scheduled
Dan Gleeson (66)	33% Yabulu 66kV[1]	Scheduled
Garbutt (66)	30% Yabulu 66kV[1]	Scheduled
Lilyvale (132)	Barcaldine Solar	Non-Scheduled
	Longreach	Non-Scheduled
	Clermont Solar	Semi-Scheduled
	Barcaldine	Scheduled
Lilyvale (66)	German Creek	Non-Scheduled
	Middlemount Solar	Semi-Scheduled
	Oaky Creek	Non-Scheduled
	Emerald Solar	Semi-Scheduled
Loganlea (110)	Rocky Point	Non-Scheduled
Middle Ridge (110)	Maryrorough Solar	Semi-Scheduled
	Warwick SF	Semi-Scheduled
	Yarranlea Solar	Semi-Scheduled
Moranbah (11)	Moranbah	Non-Scheduled
Moranbah (66)	Moranbah North	Non-Scheduled
Oakey (110)	Oakey 1 Solar	Semi-Scheduled
	Oakey 2 Solar	Semi-Scheduled
Palmwoods (132)	Valdora Solar	Non-Scheduled
Pioneer Valley (132)	Racecourse Mill	Non-Scheduled
QGC Columboola	Condamine[2]	Scheduled
Ross (132)	Kidston Solar	Semi-Scheduled
	Kennedy Energy Park Solar	Semi-Scheduled
	Kennedy Energy Park Wind	Semi-Scheduled
	Hughenden Solar	Non-Scheduled
Tarong (66)	Kingaroy Solar	Semi-Scheduled
Teebar Creek (132)	Isis Sugar Mill	Non-Scheduled
	Susan River Solar	Semi-Scheduled
	Childers Solar	Semi-Scheduled
Townsville East (66)	13% Yabulu 66kV[1]	Scheduled
Townsville South (66)	24% Yabulu 66kV[1]	Scheduled
Townsville Zinc	Sun Metals SF	Semi-Scheduled
Turkinje (132)	Lakeland Solar	Non-Scheduled

Powerlink notes:

1. The 66kV connected Yabulu unit connects into Ergon Energy's meshed 66 kV Townsville network, which is supplied by multiple Powerlink connection points. The Yabulu 66kV generation is apportioned between the connection points, Dan Gleeson, Garbutt, Townsville East and Townsville South, based on the degree to which Yabulu generation deloads the connection points under system normal conditions.
2. Since 2021/22, generators that are embedded through direct connect industrial customers (not DNSPs) were included. This aligns with the total historical embedded generation recorded by the Australian Energy Market Operator (AEMO).

Weather Corrected MD 10% PoE

Weather correction is only applicable to DNSP connection points, as the large industrial and rail traction loads which connect directly to Powerlink's network are not materially weather-sensitive. For large industrial and rail traction loads, the weather corrected values are the same as the non-weather corrected values.

For the coincident weather corrected maximum demand, Powerlink's load forecasting tool was used to obtain the state peak correction factor, which was used to correct the raw adjusted coincident maximum demand for all weather sensitive loads.

For the non-coincident weather corrected maximum demand, Powerlink's load forecasting tool was used to weather correct the raw adjusted non-coincident maximum demands.

For 10% PoE results, the statistical calculations have been set to calculate the temperature correction corresponding to a probability of 1 in 10-year exceedance.

Weather Corrected MD 50% PoE

This field was populated as per the *Weather Corrected MD 10% PoE*, except using adjusted statistical calculations to calculate the temperature correction corresponding to a 50% probability of exceedance (POE).

For 50% PoE results, the statistical calculations have been set to calculate the temperature correction corresponding to a probability of 1 in 2-year exceedance.

Newly commissioned/decommissioned connection points

New connection points have been added to the bottom of Table 5.4.1 as new connection points are commissioned. For these new connection points, no maximum demand data is available prior to their commissioning date. If the commissioning date occurs during a regulatory year but after the date of coincident maximum demand, then no demand information will be available for that regulatory year for coincident maximum demand. Data for non-coincident maximum demand will still be available for that regulatory year. In 2024/25, no new connection points were commissioned.

As required by the AIO,[20] Powerlink was required to notify instances where connection points have been decommissioned.

In 2024/25, Cairns City connection point was merged with Woree, due to changes in metering points.

[20] AER, Appendix A of the AIO, section 2.2.6(1).

Assumptions

Weather-corrected demand assumptions have been derived from Powerlink's forecasting tool, which incorporates satellite observations, weather station data and advanced numerical models.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Powerlink used the new optional tabular format under the AIO, instead of the spatial arrangement reported under the previous Category Analysis RIN.

Where the connection point MVA maximum demand has occurred at a different time to MW maximum demand, Powerlink has now reported the date it occurred, consistent with section 2.2.8 of the Instructions.

Economic Benchmarking RIN Templates

Sheet: 3.1 Revenue

Table: 3.1.2 Revenue Grouping by Type of Connected Equipment

Variable: *TREV0201 – From Other connected transmission networks*
TREV0202 – From Distribution networks
TREV0203 – From Directly connected end–users
TREV0204 – From Generators
TREV0205 – Other revenue

Workbook References

DC09 - Revenue and financial statements | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 8.2.17 to 8.2.22 of the Instructions.

Data Quality

Table 3.1.2 (Revenue Grouping by Type of Connected Equipment) was populated with actual data.

Information Source

All financial information required to complete this table was sourced from the following:

Variables	Data Source
TREV0201	***Other connected transmission networks*** **–** due to the introduction of inter-regional transmission charging from 1 July 2015, the amount reported is the net Modified Load Export Charge (MLEC)[21] as calculated between Queensland and NSW.
TREV0202	***Distribution networks*** **–** sourced from Powerlink's Grid Revenue Billing System.
TREV0203	***Total revenue from directly connected end users*** **–** sourced from Powerlink's Grid Revenue Billing System.
TREV0204	***Generators*** **–** sourced from Powerlink's Grid Revenue Billing System.
TREV0205	***Other Revenue*** **–** sourced from the following: • Intra and Inter Regional Settlements Residues (IRSRs) from AEMO; and • Powerlink's SAP.

Methodology

Powerlink prepared its response using actual information contained in the sources above.

Assumptions

Nil.

Additional Information

Nil.

[21] MLEC is the charge payable by relevant TNSPs for use of the Queensland electricity transmission network by adjacent regions.

Change From Previous Year Basis of Preparation

The source information for TREV0205 – Other Revenue was changed for the reporting period.

Under the former Economic Benchmarking RIN, it included Intra and Inter Regional Settlements Residues (IRSRs), over/under collections, and other revenue. In the reporting period, only the IRSRs and other revenue have been included in Table 9.2.1 (Other Revenue (Transmission) in the Regulatory Accounts (PTS)). The other revenue amounts have been included to ensure that the sum of Network Charges and Other Revenue (Transmission) in Table 9.2.1 reconciles with TREV02 in Table 3.1.2.

Over/under collections have been captured separately in Table 8.8.1 Revenue Requirements, and other revenues are reported in TREV0303 – Other.

Table: 3.1.3 Revenue (penalties) Allowed (deducted) Through Incentive Schemes

Variable: *TREV0301 – EBSS*
TREV0302 – STPIS
TREV0312 – CESS
TREV0303 – Other

Workbook References

DC09 - Revenue and financial statements | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 8.2.17 to 8.2.22 of the Instructions.

Data Quality

Table 3.1.3 (Revenue (penalties) Allowed (deducted) Through Incentive Scheme) was populated with actual data.

Information Source

The Efficiency Benefit Sharing Scheme (EBSS) and Capital Expenditure Sharing Scheme (CESS) data was sourced from the AER's Powerlink Transmission Determination 2022-27 Post Tax Revenue Model (PTRM)[22] and uplifted by the AER's Consumer Price Index (CPI) escalation method.

The Service Target Performance Incentive Scheme (STPIS) data was sourced from the AER's annual notification of the approval of Powerlink's performance against the STPIS for each calendar year.[23] Figures reflect the year in which the incentive applied to Powerlink's revenues.[24]

Methodology

Powerlink prepared its response using actual information. EBSS and CESS data was uplifted by the AER's CPI escalation method.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Under the former Economic Benchmarking RIN, Variable TREV0303 – Other previously included CESS. As part of the AIO, Powerlink separately reported the CESS in TREV0312.

[22] AER, Final Decision – Powerlink Transmission Determination 2022-27 – Post-tax Revenue Model, April 2022
[23] AER, Annual notification of approval of Powerlink's performance against the STPIS
[24] [24] AER, Appendix A of the AIO, sections 8.2.21 to -8.2.22.

Sheet: 3.2.3 Provisions

Table: 3.2.3 Provisions

Variable: *TOPEX0301 – The carrying amount at the beginning of the period*
TOPEX0302-0304 – Additional provisions made in the period, including increases to the provision
TOPEX0305-0307 – Amounts used (that is, incurred and charged against the provision) during the period
TOPEX0308-0310 – Unused amounts reversed during the period
TOPEX0311-0313 – The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate
TOPEX0314 – The carrying amount at the end of the period

Workbook References

DC09 - Revenue and financial statements | Provisions

AIO Requirements

This section was completed in accordance with section 8.3 of the Instructions.

Data Quality

Table 3.2.3 (Provisions) was populated with estimated data.

All aggregated amounts in the Workbooks have been sourced from Powerlink's Financial Statements and considered to be actual. The split between regulated and non-regulated was estimated based on the approach described in the methodology section below.

Information Source

All financial information required to complete this table was sourced from Powerlink's Financial Statements, Payroll reports and GL. In instances where a difference exists an explanation and reconciliation has been provided.

Methodology

The methodology used to disaggregate the provision balances between regulated and Non-regulated and Opex and Capex are detailed below. In instances where the disaggregation ratio differs from the previous year, the opening balance was amended to reflect the ratio for the current reporting year. This has resulted in instances of the closing balance for the previously reported year differing from the opening balance for the current reporting year. This approach ensures that the movement in the provision balances is preserved for this AIO return.

Employee Entitlements

Powerlink utilised the labour time charged to Regulated, Non-Regulated and Transformation activities to disaggregate the Employee Entitlements provisions between regulated, non-regulated and transformation activities. The regulated provision balances have then been apportioned between Opex and Capex based on the labour time charged to Opex and Capex activities. Transformation activities are connected to the tasks necessary to implement future Priority Transmission Investments. These will be categorised as regulated or non-Regulated as appropriate in the future.

The opening balance differs from the closing balance reported in Powerlink's Economic Benchmarking RIN returns for previous years due to the change in the disaggregation ratio

discussed previously.

For line items TOPEX0311A and TOPEX0312A the increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate, Powerlink used the financial impact of the statutory adjustment as required by Australian Accounting Standards as the basis of reporting.

Other

Other Provisions include provision for easement compensation for which a consistent application of these costs was allocated to regulated Opex.

Dividends

From 2023/24, Dividends are estimated based on allocations between Regulated and Non-Regulated using Net Proft after Tax (NPAT). In 2023/24, the Regulated NPAT was Nil and as such, no dividend provision was reported in the former Economic Benchmarking RIN.

In 2024/25, under the AIO, the opening balance was restated to reflect the movement in Dividends Provision given the positive regulated NPAT in 2024/25.

Assumptions

All relevant assumptions have been described in the methodology section.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 3.3 Assets (Regulated Asset Base)

Table: 3.3.1 Regulatory Asset Base Values

Variable: *TRAB0101 – Opening value*
TRAB0102 – Inflation addition
TRAB0103 – Straight line depreciation
TRAB0104 – Regulatory depreciation (Gross capex)
TRAB0106 – Disposals
TRAB0108 – Capex timing adjustment
TRAB0107 – Closing value for asset value

Workbook References

DC08 - Asset base values | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 7.1.7 to 7.1.12 of the Instruction.

Data Quality

Table 3.3.1 (Regulatory Asset Base Value) was populated with actual data for additions and proceeds from disposals for the total amount reported but estimated data for the asset class breakdown per below.

Internal documents containing an indicative asset class breakdown per project have been used to split the total as incurred amount per project into the required categories.

Information Source

The data regarding actual additions and proceeds from disposals was obtained from Table 2.4.2 (Actual Gross Capital Expenditure - as incurred).

Methodology

Powerlink used Version 4.1 of the AER's Roll Forward Model to calculate the RAB for 2024/25.

In line with the AER's Final Determination for Powerlink's 2022–27 regulatory period, forecast real straight-line depreciation was applied to determine the RAB throughout the period. Accordingly, Powerlink incorporated real forecast depreciation in its 2024/25 RAB calculation.

Consistent with the Final Determination, Powerlink also adjusted 2024/25 capex to reflect movements in provisions.

To complete Sheet 3.3 (Assets (RAB)), Powerlink used the AER's Roll Forward Model (updated for the opening RAB sourced from the latest PTRM Return on Debt (RoD) update), while actual as incurred amounts from Table 2.4.2 have been entered in the *RFM input* section. The model then calculates adjusted additions using the regulated Weighted Average Cost of Capital (WACC) and CPI.

Assumptions

Nil.

Additional Information

Tables 3.3.1 (RAB Values) and 3.3.2 (Asset Value Roll Forward) do not reconcile as Table 3.3.1 is reported on an as incurred basis, while Table 3.3.2 was reported on an as commissioned basis.

Change From Previous Year Basis of Preparation

The RAB was reported as commissioned under the former Economic Benchmarking RIN. However, the AIO requires it to be reported on an as incurred basis.

Table: 3.3.2 Asset Value Roll Forward

Variable: *TRAB0201, 0301, 0401, 0501, 0601 and 0701 – Opening value*
TRAB0202, 0302, 0402, 0502, 0602 and 0702 – Inflation addition
TRAB0203, 0303, 0403, 0503, 0603 and 0703 – Straight line depreciation
TRAB0204, 0304, 0404, 0504, 0604 and 0704 – Gross capex
TRAB0206, 0306, 0406, 0506, 0606 and 0706 – Disposals
TRAB0208, 0308, 0408, 0508, 0608 and 0708 – Capex timing adjustment
TRAB0207, 0307, 0407, 0507, 0607 and 0707 – Closing value

Workbook References

DC08 - Asset base values | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 7.1.7 to 7.1.12 of the Instructions.

Data Quality

Table 3.3.2 (Asset Value Roll Forward) was populated with actual data for additions and proceeds from disposals on a total basis. However, this table was populated with estimated data for the asset class breakdown as outlined below.

Actual life to date assets capitalised per project have been used in determining the asset class split for the reporting financial year commissioned amounts.

Information Source

The data regarding actual additions and proceeds from disposals was obtained from Tables 2.4.1 Actual Gross Capital Expenditure – As Commissioned.

Methodology

The underlying methodology and resulting financial information used to populate Table 3.3.1 RAB Values has formed the basis to complete Table 3.3.2 (Asset Value Roll Forward).

Asset categories used by Powerlink differ from those required to complete Table 3.3.2. As such, Powerlink used the following matrix to align to the AIO requirements:

Template categories	Powerlink's categories	Assumptions
Overhead Transmission Assets	Transmission Lines - Overhead Transmission Lines – Refit	• No assumptions made.
Underground Transmission Assets	Transmission Lines – Underground	• No assumptions made.
Transmission switchyards, substations	Substations Primary Plant Insurance Spares Substations Secondary Systems Land - Substations	• Insurance Spares are classified in the same way as Substations Primary Plant. • Powerlink owned land was disaggregated into three categories being Substations, Other Purposes and Easements.
Easements	Easements Land - Easements	• Powerlink owned land was disaggregated into three categories being Substations, Other Purposes and Easements.

Template categories	Powerlink's categories	Assumptions
Other Assets with long lives	Commercial Buildings Communications Other Assets Comms - Civil Works Network Switching Centres Land – Other Equity raising costs	• These asset classes have a useful life of more than 10 years. • Equity raising costs are recognised as part of the RAB and are amortised over 43 years. • Powerlink owned land was disaggregated into three categories being Substations, Other Purposes and Easements.
Other Assets with short lives	Computer Equipment Office Furniture and Miscellaneous Office Machines Vehicles Moveable Plant	• These asset classes have a useful life of less than 10 years.

Powerlink reviewed its historical allocation of costs from 2022/23 to 2024/25 consistent with its Cost Allocation Methodology. As a result of this review, Powerlink adjusted its allocations between its different types of transmission services retrospectively to reflect the changing nature of its business.

This resulted in negative adjustments being applied in the 2024/25 AIO return to ensure that only assets attributable to prescribed transmission services remain within the RAB.

Assumptions

To complete Table 3.3.2 (Asset Value Roll Forward), Powerlink used as commissioned to align with Table 8.6.2 (Indicative Asset Base – As Commissioned).

Additional Information

Tables 3.3.1 (RAB Values) and 3.3.2 (Asset Value Roll Forward) do not reconcile as Table 3.3.1 is reported on an as incurred basis and Table 3.3.2 was reported on an as commissioned basis.

Change From Previous Year Basis of Preparation

The opening balance for 2024/25 does not align with the closing balance for 2023/24 due to a correction in the 2022/23 values used in the Roll Forward Model to align with the values reported in Powerlink's previous Economic Benchmarking RINs.

Table: 3.3.4 Asset Lives

Variable: *Estimated service life of new assets*
TRAB0901 – Overhead transmission assets (wires and towers/poles etc)
TRAB0902 – Underground transmission assets (cables, ducts etc)
TRAB0903 – Switchyards, substations and transformer assets
TRAB0904 – Other assets with long lives (please specify)
TRAB0905 – Other assets with short lives (please specify)
Estimated residual service life
TRAB1001 – Overhead transmission assets (wires and towers/poles etc)
TRAB1002 – Underground transmission assets (cables, ducts etc)
TRAB1003 – Switchyard, substation and transformer assets
TRAB1004 – Other assets with long lives (please specify)
TRAB1005 – other assets with short lives (please specify)

Workbook References

DC03 - Network metrics | asset age

AIO Requirements

This section was completed in accordance with section 3.5 of the Instructions.

Data Quality

For all variables, Table 3.3.4 (Asset Lives) was populated with estimated data.

Why an estimate is required

It is not possible to provide actual data on the residual service life of assets. The actual service life will not be determined until an asset is finally removed from service at the end of its life. While a new asset might be expected to achieve a certain operating life when it is first placed into service, its life will be subject to the operating environment in which it is placed and the operating stresses to which it is subjected. The AER has recognised this in the previous Economic Benchmarking RIN Instructions and Definitions when it has directed Powerlink to report a current estimation of the residual service life.[25]

How the data was estimated

The method for estimating the average useful life of each type of asset is set out below:

Variable TRAB1001 – TRAB1003

The historical record of the year in which each type of asset was installed was sourced from SAP. A volume weighted average age, based on the count of the number of assets, was then determined for each regulatory year. For example, if there is one substation asset that is one year old, and three assets that are five-year-old the average age of substation assets is ((1 x 1) + (3 x 5)) / (3 + 1) = 4 years. If the estimated service life of new substation assets is 40 years, the estimated residual life of these substation assets is 40 – 4 = 36 years.

The specific physical equipment that comprises the count of assets for each variable is:

[25] AER, Economic Benchmarking RIN for Transmission Network Service Providers, Instructions and Definitions, Queensland Electricity Transmission Corporation Limited, November 2013, p.23.

- TRAB1001 Overhead transmission assets – transmission towers;
- TRAB1002 Underground transmission assets – underground cable sections; and
- TRAB1003 Switchyard, substation and transformer assets – substation switchbays

Variable TRAB1004 – TRAB1005

The individual assets included in these variables are significantly more diverse than the individual assets in the other variables. For this reason, a simple count of asset or equipment numbers is not appropriate and an asset value ($'s) weighted average approach was adopted.

Asset values and an estimated remaining life for the start of the analysis were sourced from the AER's Roll Forward Model (RFM). For each subsequent year the existing assets were rolled forward and aged by one year and any increase in asset value was assumed to have the estimated service life of the corresponding asset type (i.e. variables TRAB0904 – TRAB0905). From this a dollar-weighted average age was determined.

Information Source

Table 3.3.4 was populated using data from Powerlink's Enterprise Resource Planning (ERP) system, SAP, and outputs from the regulated RFM.

Methodology

Variable TRAB0901-TRAB0905

Consistent with the requirements in section 3.5.5 of the Instructions, the weighted average calculation was used and the following assumptions have been made:

- Land and Easements do not have a definite useful life and therefore were excluded from the weighted average calculations.
- In the weighted average asset life calculation provided in the Workbooks, Powerlink applied the following figures:

AIO Requirements	Assumptions
***n* is the number of assets in category j**	Individual asset information is not available within the regulated RFM, as such Powerlink substituted the number of asset classes within a category for *n*.
$X_{i,j}$ is the value of asset *i* in category *j*	The Nominal Opening RAB values calculated from the Regulated RFM were used for $X_{i,j}$.
$EL_{i,j}$ is the expected life of asset *i* in category *j*	The expected useful lives as contained in the Regulated RFM per asset class were used for $EL_{i,j}$.
RC_j is the sum of the value of all assets in category *j*	No assumptions.

Variable TRAB1001-TRAB1005

Estimated residual service life was based on an estimate of the average expended life of each type of asset. This was subtracted from the corresponding estimated service life of new assets (variables TRAB0901–TRAB0905) to derive the estimated residual service life.

Assumptions

All relevant assumptions have been described in the methodology section.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 3.4 Operational Data

Table: 3.4.1 Energy Delivery

Variable: TOPED0101, 0102, and 0113 - Energy grouping by downstream connection type
TOPED0103 to 0112 – Energy delivered to directly connected end users

Workbook References

DC02 - Operational outputs | Energy delivered

AIO Requirements

This section was completed in accordance with section 2.1 of the Instructions.

Data Quality

Table 3.4.1 (Operational Data) was populated with actual data.

Information Source

At each settlement location for transmission networks (TOPED0101), distribution networks (TOPED0102), directly connected end-users (TOPED0103 to TOPED0112) and pumping and Power Station (PS) auxiliaries (TOPEDO113), customers' energy values have been recorded.

These recordings have been stored in Powerlink's metering database as half hour average demands for each connection point, expressed in MW. As required under the Rules, data for TOPED0101 to TOPED0113 was provided by registered MDPs.[26]

Methodology

Numbers provided have been processed from raw meter data and are the sum of half-hour interval average demand values recorded for all connection points over the year. This has then been divided by two thousand to give a net Gigawatt hours (GWh) energy total for each of the variables.

Energy delivered to other connected transmission networks (variable TOPED0101) was calculated as the sum of the absolute value of all energy transfers, consistent with the AIO requirement.[27] That is, gross exported energy plus gross imported energy.

Energy delivered to pumping and PS Auxiliaries (variable TOPED0113) was calculated using only connection points whose auxiliary supply is metered separately from its primary generation connection (i.e. excludes connection points where generation and auxiliary supply is measured on the same meter or the auxiliary supply is measured downstream from an already metered connection point).

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

[26] National Electricity Rules (Version 236), October 2025, cl 7.3.2(d)(1).

[27] AER, Appendix A of the AIO, section 2.1.3.

Table: 3.4.2 Connection Points

Sub-table: Average number of entry points by voltage

Variables: TOPCP0101 to TOPCP0111 - Number of entry points voltage

Workbook References

DC02 - Operational outputs | Connections (transmission)

AIO Requirements

This section was completed in accordance with section 2.3.1 of the Instructions.

Data Quality

For these variables, Table 3.4.2 (Connection Points) was populated with actual data. Powerlink populated five variables in this table for the following voltage levels:

- TOPCP0102: 330 kV
- TOPCP0103: 275 kV
- TOPCP0105: 132 kV
- TOPCP0106: 110 kV
- TOPCP0108: 33 kV

As permitted under the AIO,[28] values of zero have been provided for the following variables as Powerlink does not have any entry points of this voltage:

- TOPCP0101: 500 kV
- TOPCP0104: 220 kV
- TOPCP0107: 66 kV
- TOPCP0109: 22 kV
- TOPCP0110: 11 kV
- TOPCP0111: 6.6 kV

Information Source

For calculating the number of entry points, Powerlink used AEMO's List of Regional Boundaries and Marginal Loss Factors report that is published for each financial year.[29] This documents a marginal loss factor (MLF) for each transmission connected generator in the National Electricity Market (NEM).

Methodology

The number of entry points at the end of a regulatory year was calculated using the number of unique Transmission Node Identifier (TNI) Codes for Queensland transmission connected generators listed in Chapter 1 of AEMO's annual List of Regional Boundaries and MLF report , with the following exceptions:

- Where separate commercial entities share a single TNI Code, the separate commercial

[28] Ibid, section 1.1.6.

[29] Available at: https://aemo.com.au/en/energy-systems/electricity/national-electricity-market- nem/market-operations/loss-factors-and-regional-boundaries. Prior to 1 July 2009, this was reported by the National Electricity Market Management Company Limited (NEMMCO).

entities are counted as separate entry points. For example, Braemar PS, Braemar Stage 2 PS and Darling Downs PS all share the TNI Code of QBRA but are counted as three entry points.

- Where power station auxiliary load connections have the same TNI Code as the generating units they support, they are counted as a single-entry point. For example, Gladstone PS and Gladstone PS Load have the same TNI Code (QGLL) and are counted as only one entry point.
- Generating units not connected directly to Powerlink assets are not counted.
- Wivenhoe Pumps are not counted separately from Wivenhoe Generation.
- Where a connection point is yet to be commissioned within the relevant financial year.

The number of entry points at a voltage level in a given regulatory year is taken as the average of:

- The number of entry points at that voltage level determined from the AEMO MLF Report for that regulatory year; and
- The number of entry points at that voltage level determined from the AEMO MLF Report for the previous regulatory year.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sub-table: Average number of exit points by voltage

Variables: TOPCP0201 to TOPCP0212 – Number of exit points by voltage

Workbook References

DC02 - Operational outputs | Connections (transmission)

AIO Requirements

This section was completed in accordance with section 2.3.1 of the Instructions.

Powerlink also reported interconnectors as exit points in Table 3.4.2 (Connection Points) and not as entry points. Consistent with the AER's approach, regulated and non-regulated connection points are included.

Data Quality

For these variables, Table 3.4.2 was populated with actual data. Powerlink populated eight variables in this table for the following voltage levels:

- TOPCP0202: 330 kV
- TOPCP0203: 275 kV
- TOPCP0205: 132 kV
- TOPCP0206: 110 kV
- TOPCP0207: 66 kV
- TOPCP0209: 33 kV
- TOPCP0210: 22 kV
- TOPCP0211: 11 kV.

As permitted under the AIO,[30] values of zero have been provided for the following variables as Powerlink does not have any exit points of this voltage:

- TOPCP0201: 500 kV
- TOPCP0204: 220 kV
- TOPCP0212: 6.6 kV

Information Source

For calculating the number of exit points at the end of a regulatory year, Powerlink used AEMO's annual List of Regional Boundaries and Marginal Loss Factors report, which documents a MLF for each transmission connected load point in the NEM in that financial year.[31] As noted above, the AER has stipulated that interconnectors must also be treated as exit points.

Methodology

The number of exit points was calculated as the number of unique TNI Codes for Queensland transmission connected load points listed in Chapter 1 of AEMO's annual List of Regional Boundaries and Marginal Loss Factors report (MLF Report), with the following exceptions:

- Where separate TNI Codes have been created under the one location to facilitate Full

[30] Ibid, section 1.1.6.

[31] Available at: https://aemo.com.au/en/energy-systems/electricity/national-electricity-market- nem/market-operations/loss-factors-and-regional-boundaries. Prior to 1 July 2009 this was reported by NEMMCO.

Retail Contestability (where that location may have formerly had a single TNI code), this is still counted as a single exit point. For example, in the 2006/07 report the TNI Code for Woolooga 132kV (QWLG) was replaced with Woolooga Energex (QWLG) and Woolooga Ergon Energy (QWLN).

- Wivenhoe Pumps are not counted as an exit point. The Wivenhoe PS connection is already counted as an entry point.
- The QNI and Terranora interconnectors are included as additional exit points.

The number of exit points at a voltage level in a given regulatory year is taken as the average of:

- The number of exit points at that voltage level determined from the AEMO MLF Report for that regulatory year; and
- The number of exit points at that voltage level determined from the AEMO MLF Report for the previous regulatory year.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Table: 3.4.3 System Demand

Sub-table: 3.4.3.1 Annual system maximum demand characteristics – MW measure

Variable: TOPSD0101 - Transmission system coincident maximum demand (MW)
TOPSD0102 - Transmission system coincident weather adjusted maximum demand 10% PoE (MW)
TOPSD0103 - Transmission system coincident weather adjusted maximum demand 50% PoE (MW)
TOPSD0104 - Transmission system non-coincident summated maximum demand (MW)
TOPSD0105 - Transmission system non-coincident weather adjusted summated maximum demand 10% PoE (MW)
TOPSD0106 – Transmission system non-coincident weather adjusted summated maximum demand 50% PoE (MW)

Workbook References

DC02 - Operational outputs | Maximum Demand

AIO Requirements

This section was completed in accordance with section 2.2 of the Instructions.

Data Quality

For variables TOPSD0101 and 0104, Table 3.4.3.1 was populated with actual data.

For variables TOPSD0102, 0103, 0105 and 0106, Table 3.4.3.1 (Annual system maximum demand characteristics – MW measure) was populated with estimated data. While these variables are based on actual data, the non-weather adjusted maximum demand is also materially dependent on judgments and assumptions in developing the methodology for weather adjustment. As a result, Powerlink considers this data to be estimated.

Information Source

Variables TOPSD0101 and 0104 have been populated with actual information from the same source used for variables in Table 3.4.1 (Energy Delivery).

For variables TOPSD0102 and 0103, weather adjusted coincident maximum demand 10% PoE and 50% PoE values have been sourced from Powerlink's load forecasting tool.

For variable TOPSD0105, non-coincident weather corrected 10% PoE demands for Energex and Ergon Energy connection points have been sourced from Powerlink's weather correction models. The connection points that are non-weather dependent have been populated from the same source used for variables in Table 3.4.1.

For variable TOPSDO106, non-coincident weather corrected 50% PoE demands for Energex and Ergon Energy connection points have been sourced from Powerlink's weather correction models. The connection points that are non-weather dependent have been populated from the same source used for variables in Table 3.4.1.

Methodology

Variable TOPSD0101

The reported value is the build-up of two major components:

- the summation of the actual unadjusted (i.e. not weather normalised) MW demands at Powerlink's downstream connection and supply locations at the time when this summation

is greatest; and

- any export at the time of the coincident maximum for each interconnector (consistent with the definition in the AIO Data Category 02 – Operational Outputs workbook).

Variables TOPSD0102 and 0103

Powerlink's load forecasting tool uses good industry practice for its weather correction techniques such as Bayesian Neural Network (BNN) and Monte-Carlo simulation.

Variable TOPSD0104

The reported value is the build-up of two major components:

- the summation of the maximum actual unadjusted (i.e. not weather normalised) MW demands at Powerlink's downstream connection and supply locations irrespective of when they occurred in the year. These peaks are reported under system normal conditions (excluding periods affected by outages); and
- the highest export value for each interconnector for each year, irrespective of when they occurred (consistent with the definition in the AIO Data Category 02 – Operational Outputs workbook).

Variable TOPSD0105

Weather correction is only applicable to DNSP connection points, as the interconnectors, large industrial and rail traction loads which connect directly to Powerlink's network are not materially weather-sensitive.

For the non-coincident weather adjusted summated maximum demand, Powerlink used its weather correction models to weather correct the raw adjusted non-coincident maximum demands, using local weather data at the connection point.

For 10% PoE results, the statistical calculations have been set to calculate the temperature correction corresponding to a 10% POE.

Variable TOPSD0106

This field was populated in a similar manner with variable Transmission System non-coincident weather adjusted summated maximum demand 10% PoE (MW), except using adjusted calculations to calculate the temperature correction corresponding to a 50% POE.

Assumptions

Weather-corrected demand assumptions have been derived from Powerlink's internal and forecasting tool, which incorporates satellite observations, weather station data and advanced numerical models.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sub-table: 3.4.3.2 Annual system maximum demand characteristics – MVA measure

Variable: TOPSD0201 - Transmission system coincident maximum demand (MVA)
TOPSD0202 - Transmission system coincident weather adjusted maximum demand 10% PoE (MVA)
TOPSD0203 - Transmission system coincident weather adjusted maximum demand 50% PoE (MVA)
TOPSD0204 - Transmission system non-coincident summated maximum demand (MVA)
TOPSD0205 - Transmission system non-coincident weather adjusted summated maximum demand 10% PoE (MVA)
TOPSD0206 - Transmission system non-coincident weather adjusted summated maximum demand 50% PoE (MVA)

Workbook References

DC02 - Operational outputs | Maximum Demand

AIO Requirements

This section was completed in accordance with section 2.2 of the Instructions.

Data Quality

For variable TOPSD0201, Table 3.4.3.2 (Annual system maximum demand characteristics – MVA measure) was populated with actual data.

For variable TOPSD0202, Table 3.4.3.2 was populated with estimated data due to the reasons given for TOPSD0105. This variable is the summation of the 10% PoE weather adjusted coincident MVA maximum demand at each of Powerlink's downstream connection points. The 10% PoE weather adjusted coincident MVA maximum demand at each connection point is the 10% PoE weather adjusted coincident MW maximum demand divided by the power factor at the time of coincident maximum demand.

For variable TOPSD0203, Table 3.4.3.2 was populated with estimated data due to the reasons given for TOPSD0105. This field was populated as per the variable *Transmission System coincident weather adjusted maximum demand 10% PoE (MVA)*, except using 50% PoE values.

For variable TOPSD0204, Table 3.4.3.2 was populated with actual data.

For variable TOPSD0205, Table 3.4.3.2 was populated with estimated data due to the reasons given for TOPSD0105. This variable is the summation of the 10% PoE weather adjusted non-coincident MVA maximum demand at each of Powerlink's downstream connection points. The 10% PoE weather adjusted non-coincident MVA maximum demand at each connection point is the 10% PoE weather adjusted non-coincident MW maximum demand divided by the power factor at the time of non-coincident maximum demand.

For variable TOPSD0206, Table 3.4.3.2 was populated with estimated data due to the reasons given for TOPSD0105. This field was populated as per the variable Transmission System non-coincident weather adjusted maximum demand 10% PoE (MVA), except using 50% PoE values.

Information Source

For variable TOPSD0201, the MW and MVAr values have been sourced from the same data used for Table 3.4.1 (Energy Delivery) and Sub-table 3.4.3.1 (Annual System Maximum Demand Characteristics – MW measure).

For variable TOPSD0204, the MVA values have been sourced from the same data used to

populate variable TOPSD0201 (Transmission System coincident maximum demand MVA).

Methodology

Variable TOPSD0201

MVA figures have been calculated using MW and MVAr values for each half-hour period for the financial year.

The reported value comprises two major components:

- the summation of actual unadjusted (i.e. not weather normalised) MVA demands at Powerlink's downstream connection and supply locations at the time when the summation of the actual unadjusted MW demands is greatest (when variable TOPSD0101 - Transmission system coincident maximum demand, occurs); and
- any export at the time of the coincident maximum demand for each interconnector (consistent with the definition set out in the AIO Glossary).[32]

Variable TOPSD0204

The reported value was comprised of two major components:

- the sum of actual unadjusted (i.e. not weather normalised) MVA demands at the time of non-coincident MW peaks for each of Powerlink's downstream connection and supply locations. These peaks are reported under system normal conditions (excluding periods affected by outages); and
- the highest export value of each interconnector for each year, irrespective of when they occurred, in MVA (consistent with the definition set out in the AIO Glossary).[33]

Assumptions

Weather-corrected demand assumptions have been derived from Powerlink's forecast tool, which incorporates satellite observations, weather station data and advanced numerical models.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

[32] AER, Glossary – Annual Information Orders, 5 April 2024 (excel spreadsheet).

[33] AER, Glossary – Annual Information Orders, 5 April 2024 (excel spreadsheet).

Sub-table: 3.4.3.3 Power factor

Variable: TOPSD0301 - Average overall network power factor conversion between MVA and MW
TOPSD0302 to TOPSD0312: Average power factor conversion at each transmission voltage level

Workbook References

DC03 – Network metrics | Capacity

AIO Requirements

This section was completed in accordance with section 3.4.7 of the Instructions.

Data Quality

For Table 3.4.3.3 (Power factor), all variables TOPSD0301 to TOPSD0312 were populated with actual data.

As permitted under the AIO,[34] values of zero have been provided for the following variables as Powerlink does not have any lines of this voltage:

- TOPSD0302: 500 kV lines.
- TOPSD0305: 220 kV lines.
- TOPSD0308: 88 kV lines.
- TOPSD0312: 6.6 kV lines.

Information Source

For variables TOPSD0302 to TOPSD0312, Table 3.4.3.3 was populated with actual information from the same source used for variables in Table 3.4.1 (Energy Delivery).

Methodology

Variable TOPSD0301

Powerlink's approach to calculate the power factor takes account of the phase-angle at each connection point. The power factor was calculated according to the following formula.

$$PF = \frac{MW\ Coincident\ Maximum\ Demand}{\sqrt{(MW\ Coincident\ Maximum\ Demand)^2 + (MVAr\ Coincident\ Maximum\ Demand)^2}}$$

Where:

- MW Coincident Maximum Demand = a summation of the MW load at each connection point at the time of Transmission System coincident maximum demand. It is calculated in the same manner as TOPSD0101 (Transmission System coincident maximum demand MW), and uses the same data source, but does not exclude interconnector import; and
- MVAr Coincident Maximum Demand = a summation of the MVAr load at each connection point at the time of Transmission System coincident maximum demand. It is calculated in the same manner as MW Coincident Maximum Demand and uses the same data source.

[34] AER, Appendix A of the AIO, sections 1.1.4 to 1.1.6.

Variables TOPSD0302 to TOPSD0312

Each connection point was assigned its voltage level as seen at its respective settlement location (as per AEMO's annual List of Regional Boundaries and Marginal Loss Factors report). This is the same voltage classification as for variables TOPCP0201 to TOPCP0212. Where a connection point has loads at multiple voltages the connection point was split to allocate these different voltage loads to their respective voltage level power factor conversions.

Consistent with TOPSD0301, Powerlink's approach to calculate the power factor takes account of the phase-angle at each connection point. The power factor was calculated according to the following formula.

$$PF = \frac{MW\ Coincident\ Maximum\ Demand}{\sqrt{(MW\ Coincident\ Maximum\ Demand)^2 + (MVAr\ Coincident\ Maximum\ Demand)^2}}$$

Where:

- MW for Voltage at Coincident MD = a summation of the MW load at each connection point of that voltage, at the time of Transmission System coincident maximum demand. It is calculated in the same manner as TOPSD0101 (Transmission System coincident maximum demand MW), and uses the same data source, but does not exclude interconnector import; and
- MVAr for Voltage at Coincident MD = a summation of the MVAr load at each connection point of that voltage, at the time of Transmission System coincident maximum demand. It is calculated in the same manner as MW for Voltage at Coincident MD and uses the same data source.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 3.5 Physical Assets

Table: 3.5.1 Transmission System Capacities

Sub-table: 3.5.1.1 Overhead network length of circuit at each voltage

Variable: TPA0101 to TPA0109

Workbook References

DC03 - Network metrics | Length

AIO Requirements

This section was completed in accordance with section 3.3 of the Instructions.

Data Quality

Table 3.5.1.1 (Overhead network length of circuit at each voltage) was populated with actual data.

As permitted under the AIO,[35] zero values have been provided where the voltage information is not applicable.

Information Source

Information was sourced from Powerlink's SAP. All data was prepared using dates as commissioned.

Methodology

The Workbook was populated with data extracted from Powerlink's SAP. The extraction is based on a list of all in-service, above ground, built sections[36] associated with the provision of regulated transmission services and the as constructed voltage associated with each built section. Data extracted for each built section includes voltage and circuit length.

Assumptions

Powerlink assumed that the voltage used for the variables is the as constructed voltage.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

[35] AER, Appendix A of the AIO, sections 1.1.4 to 1.1.6.

[36] Powerlink uses *built sections* as the basic building block against which transmission line circuit and easement information is recorded. A *built section* is defined as a collection of structures, conductors and easements with common characteristics as listed in SAP.

Sub-table: 3.5.1.2 Underground cable circuit length at each voltage

Variable: TPA0201 to TPA0211

Workbook References

DC03 - Network metrics | Length

AIO Requirements

This section was completed in accordance with section 3.3 of the Instructions.

Data Quality

Table 3.5.1.2 (Underground cable circuit length at each voltage) was populated with actual data.

As permitted under the AIO,[37] zero values have been provided where the voltage information is not applicable.

Information Source

This data was sourced from Powerlink's SAP.

Methodology

The Workbooks have been populated with data extracted from Powerlink's SAP.

The extraction is based on a list of all in-service, underground, built sections[38] associated with the provision of regulated transmission services and the as constructed voltage associated with each built section. Data extracted for each built section includes voltage and circuit length.

Assumptions

Powerlink assumed that the voltage used for the variables is the as constructed voltage.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

[37] AER, Appendix A of the AIO, sections 1.1.4 to 1.1.6.

[38] Ibid.

Sub-table: 3.5.1.3 Estimated overhead network weighted average MVA capacity by voltage class

Variable: TPA0301 to TPA0312

Workbook References

DC03 - Network metrics | Capacity

AIO Requirements

This section was completed in accordance with section 3.4 of the Instructions.

Data Quality

Table 3.5.1.3 (Estimated overhead network weighted average MVA capacity by voltage class) was populated with actual data.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

For actual summer normal MVA capacity by voltage data, corresponding ratings data was extracted from the SAP overhead feeder ratings. SAP span length data was used to source the length of the transmission lines in kilometres. For each line the summer weighted MVA was derived by multiplying total circuit kilometres by the limiting summer normal MVA. For each voltage class, the sum of the summer weighted MVA was divided by the sum of the total circuit kilometres to arrive at the weighted average MVA capacity.

Normal summer ratings have been provided in the Workbooks as Powerlink's transmission network experiences its maximum demand during summer.

The thermal ratings used are based on the summer normal thermal limits applied to individual lines, which is the maximum that would be permitted under normal operating conditions. Transient and voltage stability limits are managed from a system perspective, rather than on an individual line. Constraint equations have been applied to different grid sections of the system, consisting of many lines at different voltages, which may introduce limitations on thermal ratings. Substation internal limitations are not considered for overhead transmission lines.

Assumptions

Powerlink assumed that the voltage used for the variables is the as constructed voltage.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sub-table: 3.5.1.4 Estimated underground network average MVA capacity by voltage class
Variable: TPA0401 to TPA0411

Workbook References

DC03 - Network metrics | Capacity

AIO Requirements

This section was completed in accordance with section 3.4 of the Instructions.

Data Quality

Table 3.5.1.4 (Estimated underground network average MVA capacity by voltage class) was populated with actual data.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

For actual MVA capacity by voltage data, corresponding ratings data was extracted from SAP including total circuit kilometres and maximum continuous MVA. For each underground cable the summer weighted MVA was derived by multiplying total circuit kilometres by maximum continuous MVA. For each voltage class, the sum of the summer weighted MVA was divided by the sum of the total circuit kilometres to arrive at the weighted average MVA capacity.

SAP records information on system voltage, not rated voltage. Maximum continuous ratings (summer based) have been provided in the Workbooks as Powerlink's transmission network experiences its maximum demand during summer.

The thermal ratings used are based on the maximum continuous thermal limits applied to individual underground cables, which is the maximum that would be permitted under normal operating conditions. Transient and voltage stability limits are managed from a system perspective, rather than on an individual cable. Constraint equations have been applied to different grid sections of the system, consisting of many lines at different voltages, which may introduce limitations on thermal ratings. Substation internal limitations are not considered for underground transmission lines.

Assumptions

Powerlink assumed that the voltage used for the variables is the as constructed voltage.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sub-table: 3.5.1.5 Installed transmission system transformer capacity

Variable: TPA0501 – Transmission substations (eg 500 kV to 330 kV)
TPA0502 – Terminal points to DNSP systems
TPA0503 – Transformer capacity for directly connected end-users owned by the TNSP
TPA0505 – Interconnector capacity
TPA0506 – other

Workbook References

DC03 - Network metrics | Capacity

AIO Requirements

This section was completed in accordance with section 3.4 of the Instructions.

Data Quality

For variables TPA0501 to TPA0503, Table 3.5.1.5 (Installed transmission system transformer capacity) was populated with estimated data. For variables TPA0505 and TPA0506, Table 3.5.1.5 was populated with actual data.

Why an estimate is required

Unlike some other jurisdictions, where the TNSP generally connects directly to the DNSP busbar, the Queensland network has many instances where DNSPs take supply from Powerlink at 132kV or 110kV. The DNSPs then own the 132kV or 110kV feeders that supply the DNSPs remote substation. In other instances, an end-user will take supply from a Powerlink 132kV busbar to their own remote substation either via feeders owned by the end- user or by Powerlink-owned feeders that provide non-regulated transmission services.

To compensate for this characteristic of the industry in Queensland, Powerlink developed a methodology to reallocate a proportion of the transformer capacity in variable TPA0501 to variables TPA0502 and TPA0503 to reflect the proportion of this upstream capacity that is used to supply DNSPs and other end-users at voltages below 275kV. This methodology was developed to ensure that there is no double-counting of this reallocated capacity with capacity that would already be reported under variables TPA0502 and TPA0503.

Methodology

Variables TPA0501 to TPA0503

How the estimate was produced

A list of Powerlink-owned transformer equipment records associated commissioning and decommissioning dates, and capacity information was extracted for each power transformer from SAP. For each transformer in the list, Powerlink used its high-voltage system operating diagrams to identify which variable category was appropriate.

The key steps in the methodology to calculate the estimate are:

- Only applies to substations where there is direct transformation from 275kV or higher to 132kV or lower includes 330/132kV, 275/132kV, 275/110kV, and 275/66kV;
- Limited to 132kV and lower connections only;
- Consider multiple bus sections as a single electrical bus when the sections are tied together under system normal conditions;

- Ignore connections of reactive plant at the busbar;
- Ignore connections to the transformation back to the higher voltage;
- Ignore connections to generators;
- Include connections to transformation to a lower voltage;
- Include connections to feeders to remote substations;
- For each included connection categorise it as either Powerlink, DNSP or end-user based on the ownership of the equipment at the remote end of the connection – if Powerlink owns the outgoing feeder but it connects to a DNSP / end-user substation then count as a DNSP /end-user connection respectively;
- Calculate the proportion of the total number of connections that are categorised as DNSP connections and end-user connections;
- Multiply the total transformer capacity from 275kV or higher to that busbar by the proportion of DNSP connections and the proportion of end-user connections at that busbar; and
- These are the capacities that are reallocated from variable TPA0501 to variables TPA0502 and TPA0503 respectively.

Variables TPA0505-TPA0506

A list of Powerlink-owned transformer equipment records, associated commissioning and decommissioning dates, and capacity information was extracted for each power transformer from SAP. For each transformer in the list, Powerlink used its high-voltage system operating diagrams to identify which variable category was appropriate.

Information Source

For all variables, the data was sourced directly from Powerlink's SAP.

Since the network connection from Millmerran to Middle Ridge was established in 2004, Powerlink's 330/275kV transformers are embedded within the transmission network and are included as part of variable TPA0501, not TPA0505. TPA0506 Other reflects both the number of SVC transformers on Powerlink's network, and Battery Energy Storage System transformers.

Assumptions

Powerlink assumed that Battery Energy Storage Systems are to be included as part of installed transmission system transformer capacity, consistent with the AER's guidance.[39]

Additional Information

Transformer capacity for directly connected end-users owned by the TNSP (TPA0503) increased capacity by 31% as a result of the purchase of two transformers located at Bouldercombe and Nebo, replacement of a transformer following failure and a new bay connection at South Pine.

Transformer capacity for directly connected end-users owned by the TNSP (TPA0503) increased capacity by 31% as a result of the purchase of two new transformers located at Bouldercombe and Nebo, replacement of a transformer following failure and a new bay connection at South Pine.

[39] AER, AIO Data Reporting Workbooks - Issues Register, Item 147.

Change From Previous Year Basis of Preparation

Nil.

Sub-table: 3.5.1.6 Cold spare capacity

Variable: TPA06 – Cold spare capacity included in 'installed transmission system transformer capacity

Workbook References

DC03 - Network metrics | Capacity

AIO Requirements

This section was completed in accordance with section 3.4 of the Instructions.

Data Quality

Table 3.5.1.6 (Cold spare capacity) was populated with actual data.

Information Source

The data was sourced directly from Powerlink's SAP.

Methodology

A list of Powerlink-owned transformer equipment records, installation status and capacity information was extracted for each power transformer from SAP to identify the transformers kept as cold spares.

Assumptions

Powerlink assumed that the maximum name-plate rating of each spare transformer forms the basis for determining the total cold spare capacity.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 3.6 Quality of Services

Table: 3.6.1 Service Component

Sub-table: ***Service Parameter 1 – Average circuit outage rate***

Variable: *TQS0101 - Lines outage rate - fault*
TQS0102 - Number of Lines fault outages
TQS0103 - Number of defined Lines
TQS0104 - Transformers outage rate – fault
TQS0105 - Number of Transformer fault outages
TQS0106 - Number of defined Transformers
TQS0107 - Reactive plant outage rate - fault
TQS0108 - Number of Reactive plant fault outages
TQS0109 - Number of defined Reactive plant
TQS0110 - Lines outage rate – forced outage
TQS0111 - Number of Lines forced outages
TQS0112 - Transformer outage rate – forced outage
TQS0113 - Number of Transformers forced outages
TQS0114 - Reactive plant outage rate – forced outage
TQS0115 - Number of Reactive plant forced outages

Workbook References

DC05 - Service Performance | Service component performance

AIO Requirements

This section was completed in accordance with section 4.2 of the Instructions.

Data Quality

Table 3.6.1 (Service Parameter 1 – Average circuit outage rate) was populated with actual data for calendar year 2024.

For clarification, all data reported in Sheet 3.6 (Quality of Services), except for Table 3.6.3 (System losses), relates to calendar year 2024, consistent with the AER's STPIS reporting periods. Table 3.6.3 (System losses relates to financial year 2024/25.

Information Source

Information was sourced from Powerlink's internal network operating systems. Powerlink collects, records and maintains defined transmission circuit outage data and transmission circuit counts, consistent with the AER's STPIS. The information provided in this AIO return was prepared using the actual dataset upon which Powerlink's annual STPIS report from calendar year 2024 was based.

Actual data for calendar year 2024 was used to determine fault outage and forced outage rates.

Powerlink's historic transmission element outage data was used as the source for the number of events per annum.

The total number of elements for each reporting year was determined by averaging the number of elements as at 1 January and 31 December of each reporting year.

For clarification, for calendar year 2024, Powerlink reported on Version 5 of the STPIS (AER's V5 STPIS).

Methodology

The average circuit outage rate data is based on a calendar year measurement period, for consistency with the AER's STPIS reporting years.

The AER requires that transmission element outage records exclude any outages of elements as per the STPIS unplanned outage circuit event rate parameter definition exclusions.[40]

Powerlink assessed each element outage record against the AER's V5 STPIS criteria for a fault outage or forced outage using the following approach:

- A Fault Outage is:
    - Any element outage that occurs as a result of unexpected automatic operation of switching devices. That is, the element outage did not occur as a result of intentional manual operation of switching devices.
- A Forced Outage is:
    - Any element outage that occurs as a result of intentional manual operation of switching devices based on the requirement to undertake urgent and unplanned corrective activity where less than 24 hours' notice was given to affected customers and/or AEMO. The notification time is determined by:
        - Time between Actual Element Outage Start Time and time advised to AEMO and/or time advised to affected customers, as identified in Powerlink's internal network operating systems.

The total number of elements for each reporting year was determined by averaging the number of elements as at 1 January and 31 December of each reporting year.

The actual number of fault outages per annum and the actual number of element counts were used to calculate the fault outage rate for each of the element transmission types – line, transformer and reactive plant.

The actual number of forced outages per annum and the actual number of element counts were used to calculate the forced outage rate for each of the element transmission types – line, transformer and reactive plant.

Assumptions

Nil.

Additional Information

The value of the S-factor and financial incentive both before and after any proposed exclusions were reported as part of Powerlink's Annual STPIS report to the AER.[41]

Change From Previous Year Basis of Preparation

Nil.

[40] AER, V5 STPIS, Note – for clarity, given that the AER's STPIS references to *circuits* actually comprise various *elements* (e.g. lines, transformers and reactive plant), Powerlink referred to these as *elements* in this document, October 2015, page 27.

[41] This explanation was included in accordance with section 4.7.1(b) of the AIO.

2024/25 Service Performance Overview

In accordance with sections 4.6.1 and 4.7.1 of the AIO, Powerlink reports the primary drivers of service performance for the 2024 calendar year as set out below, including explanations for any material year-on-year change in performance outcomes under Version 5 of the STPIS.

The Fault outage performance of Lines, Transformers and Reactive Plant categories remained within expected ranges based on long term trends and are consistent with annual environmental and equipment performance variability and volatility.

The Forced outage performance of Lines and Transformers categories remained within expected ranges based on long-term trends and are consistent with annual environmental and equipment performance variability and volatility. The Forced outage performance of Reactive plant category was influenced by opportunistic corrective work undertaken when operational conditions allowed. With alternative reactive plant available, activities such as weed removal, alarm investigations, and gas top-ups could be carried out without affecting network operations.

Sub-table: Service Parameter 2 – Loss of supply event frequency

Variable: TQS0116A - Number of events greater than 0.05 system minutes per annum
TQS0117K - Number of events greater than 0.4 system minutes per annum

Workbook References

DC05 - Service Performance | Service component performance

AIO Requirements

This section was completed in accordance with section 4.2 of the Instructions.

Data Quality

Table 3.6.1 (Service Parameter 2 – Loss of supply event frequency) was populated with actual data for calendar year 2024.

Information Source

Information was sourced from Powerlink's internal network operating systems. Powerlink collects, records and maintains defined transmission circuit outage data and transmission circuit counts, consistent with the AER's V5 STPIS. The information provided in the Workbooks was prepared using the actual dataset upon which Powerlink's annual STPIS report from calendar year 2024 was based.

Powerlink's historic transmission circuit outage data was used as the source for the number of events per annum.

For clarification, for calendar year 2024, Powerlink reported on the AER's V5 STPIS.

The loss of supply event records was used as the source for the megawatt hours (MWh) unsupplied for the loss of supply event and event counts.

Methodology

The AER requires that loss of supply event records exclude any outages of circuits as per the STPIS Loss of supply event frequency parameter definition exclusions.[42]

Each loss of supply event record contains a System Minutes Lost value. If the value of System Minutes Lost of any loss of supply event exceeds the x system minute and/or y system minute thresholds, then a count of 1 is added to each applicable threshold, indicating one count for the applicable reportable loss of supply event threshold. Powerlink's historic loss of supply event Number of Events data were used to count the number of reportable events for each loss of supply event frequency threshold category that is required by the Instructions.

The V5 STPIS loss of supply event frequency thresholds the AER set for Powerlink are as follows:

(x) system minutes = 0.05 system minutes

(y) system minutes = 0.4 system minutes.

Assumptions

Nil.

[42] AER, V5 STPIS, October 2015, p.29.

Additional Information

The value of the S-factor and financial incentive both before and after any proposed exclusions were reported as part of Powerlink's annual STPIS report to the AER.[43]

Change From Previous Year Basis of Preparation

During the reporting period, Powerlink transitioned from Version 4 to Version 5 of the STPIS. This change was due to the updated reporting requirement, shifting from the AER's Economic Benchmarking RIN to the AIO.

As part of this transition, the loss of supply event frequency thresholds set by the AER for Powerlink were updated as follows:

From Version 4 thresholds:

- (x) system minutes = 0.10 system minutes
- (y) system minutes = 0.75 system minutes

To Version 5 thresholds:

- (x) system minutes = 0.05 system minutes
- (y) system minutes = 0.4 system minutes.

2024/25 Service Performance Overview

No loss of supply events exceeded the system minute thresholds set by the AER for Powerlink under Version 5 of the STPIS (0.05 and 0.4 system minutes).[44]

[43] This explanation was included in accordance with section 4.7.1(b) of the AIO.

[44] This explanation was included in accordance with section 4.7.1(a) of the AIO.

Sub-table: Service Parameter 3 – Average outage duration

Variable: TQS0118 – Average outage duration

Workbook References

DC05 - Service Performance | Service component performance

AIO Requirements

This section was completed in accordance with section 4.2 of the Instructions.

Data Quality

Table 3.6.1 (Service Parameter 3 – Average outage duration) was populated with actual data for calendar year 2024.

Information Source

Information was sourced from Powerlink's internal network operating systems. Powerlink collects, records and maintains defined transmission circuit outage data and transmission circuit counts, consistent with the AER's V5 STPIS. The information provided in this the Workbooks was prepared using the actual dataset upon which Powerlink's annual STPIS report from calendar year 2024 was based.

Powerlink's historic transmission loss of supply event records have been used as the source for the loss of supply event duration and the number of loss of supply events per annum.

For clarification, for calendar year, 2024 Powerlink reported on the AER's V5 STPIS.

Methodology

Powerlink's loss of supply event records exclude any outages of elements as per the AER's STPIS Average outage duration parameter definition exclusions.[45]

The loss of supply event data contains Supply Outage Duration in minutes data and the longest duration record for each event was used to sum all reportable loss of supply outage event duration times annually. This record was also used to count the number of all reportable loss of supply outage events annually.

The annual average outage duration was calculated by dividing the cumulative summation of the loss of supply event duration time for the period by the number of loss of supply events.

Assumptions

Nil.

Additional Information

The value of the S-factor and financial incentive both before and after any proposed exclusions were reported as part of Powerlink's annual STPIS report to the AER.[46]

Change From Previous Year Basis of Preparation

The following three loss of supply events contributed to Powerlink's performance of the 2024 average outage duration parameter:

[45] AER, V5 STPIS, October 2015, p.30.

[46] This explanation was included in accordance with section 4.7.1(b) of the AIO.

- Two feeder trips resulted in losses of a single mine load – one event for 100 minutes and the other was restored after 58 minutes.
- One feeder trip resulted in a loss of Energy Queensland load from Newlands substation for about six minutes.

None of the events exceeded the system minute thresholds set by the AER for Powerlink.[47]

[47] This explanation was included in accordance with section 4.7.1(a) of the AIO.

Sub-table: Service Parameter 4 – Proper operation of equipment – number of failure events

Variable: TQS0119 – Failure of protection systems
TQS0120 – Material failure of Supervisory Control and Data Acquisition (SCADA) system
TQS0121 – Incorrect operational isolation of primary or secondary equipment

Workbook References

DC05 - Service Performance | Service component performance

AIO Requirements

This section was completed in accordance with section 4.2 of the Instructions.

Data Quality

For these variables, Table 3.6.1 (Service Parameter 4 – Proper operation of equipment – number of failure events) was populated with actual data for calendar year 2024.

Information Source

Variable TQS0119

Information was sourced from Powerlink's internal network operations systems. Powerlink analyses the performance of protection systems as part of its analysis of unplanned outage events. The performance of the protection systems is recorded with the associated unplanned outage event data.

The unplanned outage event records provided in response to Table 3.6.1 (Service Parameter 1 – Average circuit outage rate) of the Workbooks were used as the source for the protection system failure event counts.

Variable TQS0120

Powerlink receives the SCADA Minutes Lost report from AEMO on a monthly basis. The number of SCADA failure event counts from the AEMO report was used as the source for the SCADA system failure event counts.

Variable TQS0121

Data was sourced from Powerlink's internal network operating systems associated with recording the incidence of incorrect operational isolation. The records include:

- The occurrence of incorrect operational isolation resulting in an unplanned outage of the transmission network; and
- The occurrence of incorrect operational isolation that did *not* result in an unplanned outage of the transmission network.

Methodology

Variable TQS0119

The methodology applied for the failure of protection and control system data is as follows:

- Any recorded failure/s of a protection or control system in an unplanned outage event record associated with assets that are not providing regulated transmission services were excluded as per the STPIS Proper operation of equipment parameter definition

exclusions.[48]

- Any recorded failure/s of a protection or control system in an unplanned outage event record associated with a force majeure event were excluded as per the STPIS Proper operation of equipment parameter definition exclusions.[49]
- As part of Powerlink's unplanned outage event analysis and recording process, the operation of systems providing a protection or control function to high voltage plant and equipment is analysed and recorded. This protection and control system operation analysis data was used to identify the protection and control system failure event counts in accordance with the following definition in the AER's V5 STPIS Final Decision:
  - … 'protection system failure events' are those events where the relevant protection equipment does not operate for a fault event as designed or where the relevant equipment operates when there is no relevant fault event.[50]
- The unplanned outage event records were used to identify the counts of the number of protection and control system failures for each event.
- Any failure of primary equipment such as circuit breakers to respond to signals sent by protection or control equipment was not counted as a protection system failure event, as per the Failure of protection system parameter exclusions.[51]
- The annual number of protection system failure events was calculated by summing the number of protection system failure events for that year identified for this AIO return unplanned outage events.

Variable TQS0120

Powerlink populated the cell for the 2024 calendar year with data directly from AEMO's SCADA Minutes Lost report.

Variable TQS0121

The methodology applied for the incorrect operational isolation of primary or secondary equipment data is as follows:

- Powerlink assessed each incorrect operational isolation incident record against the AER's definition below:

  … 'incorrect operational isolation events' are those events where primary or secondary equipment has not been properly isolated during scheduled or emergency maintenance, irrespective of whether an outage occurred as a result.[52]
- Where incorrect operational isolation occurred during primary or secondary isolation sequences, the associated record was included in the count for the number of events.
- The number of incorrect operational isolation events was summated for each year.

Assumptions

Nil.

[48] AER, V5 STPIS, October 2015, page33.

[49] Ibid.

[50] Ibid, p.32.

[51] Ibid, p.33.

[52] Ibid, p.32.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

The reporting period service performance of all Proper Operation of Equipment measures was in line with annual environmental and equipment performance variability and volatility.[53]

Table: 3.6.2 Market Impact Component

Variable: TQS02 - Market impact parameter

Workbook References

DC05 - Service Performance | Market impact component

AIO Requirements

This section was completed in accordance with section 4.1.3 of the Instructions.

Data Quality

Table 3.6.2 (Market Impact Component) was populated with actual data for calendar year 2024.

Information Source

For clarification, for calendar year 2024 Powerlink reported on the AER's V5 STPIS.

Data that was prepared as part of Powerlink's annual STPIS reports to the AER for the Market Impact Component (MIC) of the STPIS, forms the basis of the data for this AIO return.

Historic network constraint equation records have been sourced from AEMO's Market Management System (MMS). The historic network constraint equation records have been used as the source for the MIC data.

Methodology

The AER requires that MIC performance records exclude any events, consistent with the Version 5 STPIS MIC definition exclusions[54] and the AER's STPIS guidance note - Market Impact Component data period and exclusions clarification document.[55]

The historic network constraint equation records from AEMO were reviewed in conjunction with AEMO's Network Outage Scheduler (NOS), Market Notices published by AEMO and Powerlink's internal network operating systems.

This dataset was assessed against the Version 5 STPIS MIC exclusion criteria to prepare the market impact parameter value that is required by the Instructions.

Assumptions

Nil.

Additional Information

The value of the S-factor and financial incentive both before and after any proposed exclusions were reported as part of Powerlink's annual STPIS report to the AER.[56]

Change From Previous Year Basis of Preparation

During the reporting period, Powerlink transitioned from Version 4 to Version 5 of the STPIS. This change was due to the updated reporting requirement, shifting from the AER's annual Economic Benchmarking RIN to the AIO.

As part of this transition, the applicable MIC definitions were updated as follows:

[54] AER, V5 STPIS, October 2015, pages 36-38.

[55] AER, STPIS Guidance Note – Market Impact Component Data Period and Exclusion Clarification, April 2023, pages 11-13.

[56] This explanation was included in accordance with section 4.7.1(b) of the AIO.

- From Version 4 - The AER required that MIC performance records exclude any events, consistent with the Version 4 STPIS MIC definition exclusions and the AER's Scenario Reference Guide document.[57]
- To Version 5 - The AER requires that MIC performance records:
    - to have a cap of 171 events applied for unplanned outage events; and
    - exclude any events, consistent with the Version 5 STPIS MIC definition exclusions and the AER's STPIS guidance note - Market Impact Component data period and exclusions clarification document.[58]

2024/25 Service Performance Overview[59]

Powerlink's MIC performance under STPIS V5 for 2024 (667 events) improved relative to 2023 (2,239 events). This was driven primarily by a reduced volume of network constraints associated with outages — 2024 recorded the second-lowest number of overall outage-related network constraints in Queensland since 2017.

Overall, the unpredictable nature of the MIC performance is consistent with the factors outlined in the AER's Final Decision on STPIS Version 6,[60] which notes the inherent volatility and limited controllability of MIC outcomes.

[57] AER, Scenario Reference Guide, December 2013.

[58] AER, STPIS Guidance Note – Market Impact Component Data Period and Exclusion Clarification, April 2023), pages 11-13.

[59] This explanation was included in accordance with section 4.7.1(a) of the AIO.

[60] AER, Final Decision, Electricity Transmission Network Service Provider Service Target Performance Incentive Scheme (Version 6), April 2025.

Table: 3.6.3 System Losses

Variable: TQS03 – System losses

Workbook References

DC05 - Service Performance | System losses

AIO Requirements

This sub-section was completed in accordance with section 4.3 of the Instructions.

This requires system losses to be calculated as:[61]

$$\frac{(Electricity\ inflows - Electricity\ outflows)}{Electricity\ inflows} \times 100$$

Electricity inflows are the total electricity inflow into Powerlink's transmission network including from generation, other connected TNSPs at the connection point, directly connected end- users, and connected DNSPs as measured by revenue meters.

Electricity outflows are the total electricity outflow into the networks of connected distribution network service providers, other transmission networks and directly connected end-users, including Battery Energy Storage System (BESS) charging load and Pumped Hydro Energy Storage (PHES) pumping load, as measured by revenue meters.[62]

Data Quality

Table 3.6.3 (System Losses) was populated with actual data.

Information Source

The data for electricity inflows was comprised from three calculable components:

- the total electricity inflow into Powerlink's transmission network including from generation, directly connected end-users;
- other connected TNSPs at the connection point; and
- Pumping, battery load, and PS auxiliaries.

The first component comprises all transmission connected scheduled, semi-scheduled and non-scheduled generators, as well as any metered inflow from connected DNSPs and directly connected end users. The second component is the gross import component of variable TOPED0101. This represents the total electricity inflows from non-Queensland based sources of energy. The third component comprises Wivenhoe Pump units 1 and 2, as well as battery storage (BESS) and metered remote auxiliary loads associated with AEMO-registered generators.

BESS are treated like pumping loads, so they are included in the third component.

The addition of the first and second components and subtraction of the third component represents the total electricity inflows into Powerlink's transmission network.

The data for electricity outflows comprised of the following calculable components:

- the total electricity outflow into the networks of connected distribution network service providers as well as and directly connected end-users; and

[61] AER, Appendix A of the AIO, section 4.3.1.

[62] Ibid.

- other connected TNSPs at the connection point.

The first component comprises all outflows from connected DNSPs as well as directly connected end users.

The second component is the gross export component of variable TOPED0101. This represents the total electricity outflows to non-Queensland based consumers of energy.

The addition of the first and second components represents the total electricity outflows to Queensland-based consumers of energy.

Numbers provided are the sum of half-hour interval energy values recorded over the year from raw meter data (in kWh) divided by one million to give a GWh energy total for each component.

Methodology

Losses have been calculated in accordance with the formula set out in section 4.3 of the Instructions.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

As explained in the Information Source section, System Losses is calculated including both BESS and PHES.

Table: 3.6.4 Energy Not Supplied

Variable: No variable identifier provided

Workbook References

DC05 - Service Performance | Energy not supplied

AIO Requirements

This section was completed in accordance with section 4.4 of the Instructions.

Data Quality

Table 3.6.4 (Energy Not Supplied) was populated with actual data for calendar year 2024.

Information Source

Information was sourced from Powerlink's internal network operating systems. Powerlink collects, records and maintains defined transmission loss of supply event records, consistent with the AER's STPIS. The information provided in this AIO return was prepared using the actual dataset upon which Powerlink's annual STPIS report from calendar year 2024 was based.

Actual data for calendar year 2024 was used to determine required value.

For clarification, for calendar year 2024 Powerlink reported on the AER's V5 STPIS.

Methodology

Energy not supplied (ENS) is reported where it matches the MWh of unsupplied energy used to calculate Service Parameter 2 – Loss of supply event frequency under the transmission STPIS for the reporting period.

To clarify, Powerlink included in its reported value, the unsupplied energy for all applicable outages after exclusions, not just those that exceed the x or y thresholds.

The momentary faults (supply restored within 1 minute) were excluded consistent with the AER's V5 STPIS.[63]

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Table 3.6.4 was not part of the AER's previous annual Economic Benchmarking RIN template. However, the AER requested Powerlink to provide this value annually outside of the RIN returns process.

The 2024/25 reporting year is the first time that Powerlink is required to provide this document for the AIO requirement.

2024 Service Performance Overview[64]

The significant reduction in Energy Not Supplied (ENS) from 126.62 MWh in 2023 to 4.97 MWh in 2024 was primarily due to the absence of material loss of supply events. Historical

[63] AER, V5 STPIS, October 2015, page 29.

[64] This explanation was included in accordance with section 4.7.1(a) of the AIO.

data demonstrate high volatility in this measure (ranging from 0 to > 1,000 MWh over 19 years), reflecting the inherently stochastic nature of major system events. The 2024 result therefore represents a year of stable network performance with no major disturbances.

2023: Five loss of supply events occurred, with two exceeding the AER's system minutes threshold (the detail provided to the AER as part of Powerlink's 2023 annual STPIS report). One notable event with a loss of load to the Townsville and surrounding areas contributed over 100 MWh to the ENS total for the year.

2024: No material load loss events occurred. Three minor incidents collectively accounted for less than 5 MWh.

Sheet: 3.7 Operating Environment

Table: 3.7.1 Terrain Factors

Variable: TEF0104 – Average number of defects per vegetation maintenance span
TEF0105 – Tropical proportion
TEF0106 – Standard vehicle access
TEF0107 – Altitude
TEF0108 – Bushfire risk

Workbook References

DC03 - Network metrics | Terrain

AIO Requirements

This section was completed in accordance with section 3.6 of the Instructions.

Variable TEF0108

This section was completed in accordance with section 3.6.11 of the Instructions.

The data was based on Queensland Government bushfire hazard mapping (updated in 2016) and identified vegetation maintenance spans within the high bushfire hazard areas.

Data Quality

For variables TEF0104 to TEF0106 and TEF0108, Table 3.7.1 (Terrain Factors) was populated with estimated data. For variable TEF0107, Table 3.7.1 was populated with actual data.

Variable TEF0104

Why an estimate is required

Powerlink manages its easements by individual span based on condition. While Powerlink's systems and delivery transition, an estimate is required in some instances. This estimate of the average number of defects per vegetation maintenance span used vegetation span data and defect notification information, which required judgement in interpreting the work order and notification information.

How the estimate was produced

A list of defect notifications was sourced from SAP with defect codes for risk 4 and risk 5. Each notification was inspected to determine relevance according to the definition of defects (vegetation) in the AIO Glossary.[65] The total number of defects was divided by the total number of vegetation maintenance spans as determined in variable TEF0101 in Table 3.7.3 (Service Area Factors).

Variable TEF0105

Why an estimate is required

Variable TEF0101 from Table 3.7.3 was sourced as an input to this calculation. As it is an estimate, the output for this variable is also an estimate.

How the estimate was produced

Powerlink's regulated transmission network, including vegetation maintenance spans, was

[65] AER, Glossary – Annual Information Orders, 5 April 2024 (excel spreadsheet).

overlaid with the Australian Bureau of Meteorology's Australian Climatic Zones map.

Variable TEF0106

Why an estimate is required

Powerlink's systems apply a standard of access to most transmission line structures by 4WD in dry weather. Therefore, no internal data is available on accessibility to assets by 2WD vehicles.

How the estimate was produced

An estimate was derived by estimating regulated built section spans from commissioning dates and overlaid with road information from Powerlink's geospatial information system.

Variable TEF0108

Why an estimate is required

Variable TEF0101 from Table 3.7.3 was sourced as an input to this calculation. As it is an estimate, the output for this variable is also an estimate. Powerlink records for vegetation management have been booked against spans, but some estimates are required.

How the estimate was produced

Powerlink's regulated transmission network was overlaid with the QSpatial data set provided by the Queensland Fire Department. Each vegetation maintenance span was filtered by the highest fire risk and then subsequently filtered until all spans directly interacted with their highest potential fire risk category. The identified vegetation maintenance spans are sourced from TEF0101 (Table 3.7.3).

Information Source

Variable TEF0104

The data was sourced from Powerlink's SAP.

Variable TEF0105

The data was sourced from the Australian Bureau of Meteorology's Australian Climatic Zones map. Vegetation spans have been sourced from variable TEF0101 in Table 3.7.3.

Variable TEF0106

The data is sourced from Powerlink's geospatial information system.

Variable TEF0107

Data was sourced from Geoscience Australia and Powerlink's geospatial information system.

Variable TEF0108

The bushfire hazard mapping was sourced from the Department of Natural Resources and Mines QSpatial Catalogue (December 2016) and is consistent with previous RIN return reports to the AER.

Methodology

Variable TEF0105

Powerlink's regulated transmission network was overlayed geospatially onto the Australian Bureau of Meteorology's Climatic Zones Map, based on temperature and humidity. This has allowed Powerlink to develop a count of vegetation maintenance spans that fall within the Hot

Humid Summer and Warm Humid Summer regions, consistent with the AIO Glossary.[66]

Variable TEF0106

Powerlink applied the following methodology:

- Powerlink's approach was underpinned by Queensland road network data from the former Queensland Department of Environment and Resource Management (DERM), which was publicly available.[67]
- Using its geospatial information system, Powerlink determined what parts of the road network could be considered 2WD accessible, based on whether it was classified as a highway, motorway, main road, secondary road or named local road.
- It was then necessary to determine proximity from these roads to the infrastructure. Spans that were more than 100 metres from the roads identified above were considered not accessible (i.e. not in a reasonable walking distance or for carrying equipment etc).

Variable TEF0107

Powerlink applied the following methodology:

- Geoscience Australia produces a robust 1 second Digital Elevation Map (DEM).[68] It records elevation in areas (or cells) of 30mx30m. Powerlink considers that a more appropriate estimate can be obtained by dividing each 30x30m cell further into 10mx10m cells.
- Powerlink developed an approach to effectively interpolate between adjacent 30mx30m cells, providing altitude estimates for each of the 10mx10m areas within each of the DEM's 30mx30m cells.
- The contour of an area is relevant to planning the location of network infrastructure. Therefore, Powerlink developed appropriate contour representations, consistent with the definition of altitude in the AIO Glossary.[69]
- The contour map was also cross-checked against a Qspatial 10-metre contour map produced by the Department of the Environment, Tourism, Science and Innovation, which showed that Powerlink's map was fit-for-purpose.
- Using data from Powerlink's geospatial information system, Powerlink's regulated transmission network was overlaid to all cells with terrain contours with a height above sea level of 600 metres or greater. The result is the combined length of spans across these cells.

Variable TEF0108

Powerlink applied the following approach:

- The number of vegetation maintenance spans in high fire bushfire risk areas was identified from a count of spans which directly interact with the Queensland Fire Department's Potential Bushfire Risk dataset.

[66] Ibid.

[67] DERM, QLD_RD_Polyline v.6.1.3.

[68] Geoscience Australia, see http://www.ga.gov.au/topographic-mapping/digital-elevation-data.html.

[69] AER, Glossary – Annual Information Orders, 5 April 2024 (excel spreadsheet).

- Each span was filtered by the highest fire risk and then subsequently filtered until all spans directly interacted with their highest potential fire risk category.
- The identified maintenance spans are those from TEF0101 for each regulatory year.

Assumptions

Powerlink assumed that the external maps and layers referenced in the Methodology section are of sufficient accuracy and quality.

Additional Information

Powerlink notes:

- TEF0104: A 63% decrease in the average number of defects per vegetation maintenance span was observed reflecting the increased focus on vegetation management practices.
- TEF0105: A 55% increase in the maintenance spans within the tropical zones was observed, consistent with the vegetation maintenance plan.
- TEF0108: A 19% increase in the spans maintained in the bushfire prone areas was observed, consistent with the vegetation maintenance plan.

Change From Previous Year Basis of Preparation

Nil.

Table: 3.7.2 Network Characteristics
Variable: TEF0202 - Variability of dispatch
TEF0203 - Concentrated load distance
TEF0204 Total number of spans

Workbook References

DC03 - Network metrics | Terrain

AIO Requirements

This section was completed in accordance with section 3.6.12 of the Instructions.

Data Quality

Table 3.7.2 (Network Characteristics) was populated with actual data.

Information Source

Variable TEF0202

This data was sourced from:

- Powerlink's metering database for historical sent out energy from transmission connected generation sources metered at the transmission network connection point;
- Powerlink's data historian[70] of SCADA telemetered data for historical sent out energy from distribution connected generation sources;
- AEMO's NEM Generation Information publication for historical generator scheduled status, technology type, capacity, and end date;[71]
- Powerlink's metering database for historical transmission connected generator start and end dates; and
- Powerlink's data historian system of SCADA telemetered data for historical distribution connected generator start and end dates.

Variable TEF0203

Data for route line length was obtained from the same source as variable TEF0101 – Route Line Length. Data on sizes of generation and load was obtained from Powerlink's Transmission Annual Planning Report 2024 (TAPR 2024).[72]

Generation and load connection points have been taken from the source data used to determine variables TOPCP0101 to TOPCP0111 (Number of entry points at each transmission voltage level) and TOPCP0201 to TOPCP0212 (Number of exit points at each transmission voltage level), respectively.

Variable TEF0204

Powerlink's SAP.

[70] Powerlink's data historian is a time-series database designed to efficiently collect and store data.

[71] AEMO, Generation Information - NEM Generation information publications (available at: https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information).

[72] Powerlink, Transmission Authority Planning Report 2024, October 2024.

Methodology

Variable TEF0202

Powerlink's methodology is aligned with the definition in the AIO Glossary.[73]

To reporting on variability of Dispatch % - Energy methodology and assumptions: For historical data, interconnector energy inflows and storage plant (large-scale batteries, pumped hydro, and Virtual Power Plant batteries) have not been included as the dependent generation technology cannot be determined.

Historical energy was compiled by aggregating all 30-minute energy intervals for scheduled and semi-scheduled transmission connected and embedded generators (operational generators) by thermal and non-thermal fuel types for each financial year. The fuel types classified as thermal include black coal, Combined Cycle Gas Turbine (CCGT) and Open Cycle Gas Turbine (OCGT). The fuel types classified as non-thermal include hydro, wind, and solar PV.

To derive the proportion of dispatch from non-thermal generators for energy, the total sum of non-thermal generation is divided by the total sum of both thermal and non-thermal generation.

Variable TEF0203

This variable is defined in the AIO Glossary.

From the generation capacities in Table 7.1 of Powerlink's TAPR 2024, there is no concentrated generation source greater than 30% of the total. The largest concentrated source is Stanwell PS, as the Gladstone PS capacity is distributed across two different connection points.

From Tables C.1 to C.5 of Appendix C of Powerlink's TAPR 2024, there is no concentrated load greater than 30% of the total. The largest concentrated load is South Pine 110kV. The Boyne Island aluminium smelter load, while slightly larger in total, is distributed across two different connection points.

Having established the source and load nodes, the shortest transmission line circuit length between the two points was identified as Stanwell – Calvale – Halys – Tarong – South Pine.

Variable TEF0204

This variable was populated with data extracted from SAP. The extraction is based on a list of regulated active ground spans.

Assumptions

Powerlink assumed that all connected generators are available at full capacity for the purposes of calculations associated with Variable TEF0203.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

[73] AER, Glossary – Annual Information Orders, 5 April 2024 (excel spreadsheet).

Table: 3.7.3 Service Area Factors

Variable: TEF0101 – Total route line length

TEF0102 – Total number of vegetation maintenance spans

Workbook References

DC03 - Network metrics | Terrain

AIO Requirements

This section was completed in accordance with section 3.6 of the Instructions.

Data Quality

For variable TEF0101, Table 3.7.3 (Service Area Factors) was populated with actual data.

For variable TEF0102, Table 3.7.3 was populated with estimated data.

Why an estimate is required

Powerlink manages its easements by individual span based on condition. While Powerlink's systems collect information on which individual spans have maintenance performed over time, an estimate was required in some instances.

How the estimate was produced

Refer to Table 2.7.1 (Descriptor Metrics by Zone) of this document in Sheet 2.7 (Vegetation management). The Workbook for Table 3.7.3 (Service Area Factors) is populated based on the input in Table 2.7.1.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

The same methodology as Table 2.7.1 was applied.

Assumptions

The same assumptions as Table 2.7.1 have been applied.

Additional Information

2024/25 Explanatory Note

Number of Maintenance Spans: A 49% increase in maintenance spans was consistent with the planned cutting program (which is currently a cyclical profile).

Change From Previous Year Basis of Preparation

Nil.

Information Guideline Templates

Sheet: 2.4 Historical Capex by Asset Class

Table: 2.4.1 Actual Gross Capital Expenditure – As Commissioned

Workbook References

DC07 - Capital expenditure | Capex by asset class

AIO Requirements

This section was completed in accordance with section 6.4 of the Instructions.

Data Quality

Table 2.4.1 (Actual Gross Capital Expenditure – As Commissioned) was populated with actual data for the total amount reported, but with estimated data for the asset class breakdown as outlined below.

A life to date asset capitalisation per project was used in determining the asset class split for the commissioned amounts in the current financial year.

Information Source

The data was sourced from Powerlink's SAP. Adjustments have been made outside these systems to ensure accurate inclusion in the RAB as described in the Methodology.

Methodology

Powerlink reported the data for capex as commissioned and disposals as commissioned from Powerlink's SAP without modifications, except the manual adjustments as follows.

Powerlink reviewed its historical allocation of costs from 2022/23 to 2024/25 consistent with its Cost Allocation Methodology. As a result of this review, Powerlink adjusted its allocations between its different types of transmission services retrospectively to reflect the changing nature of its business.

This resulted in negative adjustments being applied in this AIO return to ensure that only assets attributable to the prescribed transmission services remain within the RAB. Disposals as Commissioned of $32.3 million was included to adjust capitalised values by asset class.

In line with the AER's Final Determination for Powerlink's current 2022-27 period,[74] movement in provisions has now been separately reported and sourced from Table 3.2.3 (Provisions). It was calculated as Employee Benefits provisions times regulated capital hours over total hours booked in 2024/25.

Assumptions

Following the establishment of a third line of business for transformation projects and the rapid growth in non-regulated connections, a review of historical allocations from 2022/23 to 2024/25 has identified several enhancements that should be applied retrospectively to ensure an accurate allocation between different lines of business. The adjustments are intended to ensure the accuracy and prudency of amounts recorded in the RAB.

For this AIO return, as at 30 June 2025, records have been adjusted to ensure that only assets directly attributable to the regulated business remain within the RAB. Key adjustments for 2024/25 include fleet, IT systems (SAP and infrastructure) and a reclassification of in-house

[74] AER, Final Decision – Powerlink Determination 2022-27, Final decision, 29 April 2022.

software assets.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Table: 2.4.2 Actual Gross Capital Expenditure – As Incurred

Workbook References

DC07 - Capital expenditure | Capex by asset class

AIO Requirements

This section was completed in accordance with section 6.4 of the Instructions.

Data Quality

Table 2.4.2 (Actual Gross Capital Expenditure) was populated with actual data for the total amount reported, but with estimated data for the asset class breakdown as outlined below.

For the as incurred data, internal documents containing an indicative asset class breakdown for each project were used to apportion the total as incurred amount per project into the relevant asset categories.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

While data was sourced from Powerlink's SAP, adjustments have been made outside these systems to ensure accurate inclusion in the RAB.

Powerlink reported the data for capital as incurred and disposals as incurred from Powerlink's SAP without modifications, except adjustments as follows.

Powerlink reviewed its historical allocation of costs from 2022/23 to 2024/25 consistent with its Cost Allocation Methodology. As a result of this review, Powerlink adjusted its allocations between its different types of transmission services retrospectively to reflect the changing nature of its business.

This resulted in negative adjustments being applied in this AIO return to ensure that only assets attributable to regulated prescribed transmission services remain within the RAB. These adjustments have resulted in a negative entry in some categories.

In line with the AER's Final Determination for Powerlink's current 2022-27 period, movement in provisions is now separately reported and sourced from Table 3.2.3 (Provisions). It is calculated as Employee Benefits provisions times regulated capital hours over total hours booked in 2024/25.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 8.5 Disaggregated (DISAGG) Opex

Table: 8.5.1 DISAGG Opex – Operations and Maintenance Expenditure – Audited Financial Statements

Workbook References

DC06 - Operating expenditure | Audited statutory accounts

DC06 - Operating expenditure | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 5.1.1 to 5.1.2 of the Instructions.

Data Quality

Table 8.5.1 (DISAGG Opex – Operations and Maintenance Expenditure – Audited Financial Statements) was populated with actual data.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

The disaggregated classifications have been determined by the Business Area codes from the detailed trial balance produced in Powerlink's SAP.

All indirect network and corporate overhead expenses have been categorised under Allocated Opex, as overheads are not directly attributable opex.

Assumptions

Nil.

Additional Information

Nil

Change From Previous Year Basis of Preparation

Nil.

Table: 8.5.2 DISAGG Opex – Operations and Maintenance Expenditure – Regulatory Accounts

Workbook References

DC06 - Operating expenditure | Audited statutory accounts

DC06 - Operating expenditure | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 5.2.1 to 5.2.2 of the Instructions.

Data Quality

Table 8.5.2 (DISAGG Opex – Operations and Maintenance Expenditure – Regulatory Accounts) was populated with actual data.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

The total amounts have been derived from Table 8.5.1 (DISAGG Opex – Operations and Maintenance Expenditure – Audited Financial Statements), incorporating the regulatory adjustments detailed in Table 9.2.1 (RFS Income Statement) applicable to Operations and Maintenance Expenditure.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 9.1 DISAGG Income

Table: 9.1.1 DISAGG Income Statement

Workbook References

DC09 - Revenue and financial statements | Audited statutory accounts

AIO Requirements

This section was completed in accordance with sections 8.1.1 to 8.1.3 of the Instructions.

Data Quality

Table 9.1.1 (DISAGG Income Statement) was populated with actual data.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

The aggregated amounts in the RFS have been derived from the audited financial statements using the disaggregated classifications (regulated transmission services, negotiated transmission services, non-regulated transmission services and not allocated). The disaggregated classifications have been determined using the business area codes from the detailed trial balance produced by Powerlink's SAP.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 9.2 Regulatory Financial Statements (RFS) Income

Table: 9.2.1 RFS Income Statement

Workbook References

DC09 - Revenue and financial statements | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 8.2.1 to 8.2.3 of the Instructions.

Data Quality

Table 9.2.1 (RFS Income Statement) was populated with actual data.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

Powerlink reported the data from Powerlink's SAP without modifications.

Assumptions

The total amounts have been derived from Table 9.1 DISAGG Income Statement, incorporating the regulatory adjustments outlined below.

Additional Information

Consistent with section 4.3 of the AIO, the following regulatory adjustments have been made:

Account Debited ***Account Credited***	**Debit $'000**	***Credit $'000***	**Explanation**
Insurance *Self-Insurance Provision*	(96)	*(96)*	Provision for self-insurance was provided in the Powerlink Queensland Transmission Network Revenue Cap 2022/23 to 2026/27. This provision was made in regulatory accounts due to AASB 137 – Provisions, Contingent Liabilities and Contingent Assets not allowing any provision for unidentifiable or unmeasurable costs.
Other Revenue *Net – Disposal of fixed assets* *Insurances*	4,201	*2,039* *2,162*	Transfer of revenue and costs related to Self-Insurance from Other Revenue and Disposal of Fixed Assets in the Statutory Accounts to Insurance Expense within this AIO return.
Other Revenue *Corporate / Business Support*	45	*45*	Transfer of Foreign Exchange Gains / Losses from Corporate Business Support to Other Revenue in line with Powerlink's previous RFS.
Depreciation *Corporate / Business Support*	14,816	*14,816*	Transfer of Depreciation expense for Prescribed Non-Network Assets charged via labour rates from Corporate / Business Support to Depreciation.
Corporate / Business Support *Corporate / Business Support*	13,030	*13,030*	Transfer of the regulated portion of unrecovered Divisional costs from Not Allocated to regulated to reflect the regulated share of costs within Corporate Business Support.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 7.6 Prescribed Transmission Services (PTS) Price Reduction

Table: 7.6.1 Price Reduction/Recovery

Workbook References

DC09 - Revenue and financial statements | Other financial information

AIO Requirements

This section was completed in accordance with section 8.4.12 of the Instructions.

Data Quality

Table 7.6.1 (Price Reduction/Recovery) was populated with actual data.

Information Source

All financial information required to complete this table was sourced from Powerlink's regulated pricing and revenue workbooks.

Methodology

Powerlink prepared its response using actual information contained in its regulated pricing and revenue workbooks.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 7.7 Inferred Related Party Transactions

Table: 7.7.1 Related Party Transactions

Workbook References

DC09 - Revenue and financial statements | Other financial information

AIO Requirements

This section was completed in accordance with section 8.4.11 of the Instructions.

Data Quality

Table 7.7.1 (Related Party Transactions) was populated with actual data.

Information Source

The data was sourced from Powerlink's SAP.

Methodology

Sales/Purchases of Goods and Services

Powerlink conducts an annual review of its customer and vendor accounts to identify related parties under the Australian Accounting Standard (AASB 124 – Related Party Disclosures). Identified related parties have been classified in SAP for reporting purposes.

The sale / purchase of Goods and Services is GST inclusive.

Interest Income / Borrowing Costs

Interest Income reflects all sources of interest income received by Powerlink. For reporting purposes, only the interest income from Queensland Treasury Corporation was included. All other sources have been excluded.

Borrowing Costs also relate solely to Queensland Treasury Corporation.

Dividends to Shareholders

Dividends have not been considered Related Party Transactions as they are returns to shareholders and not transactions that involve the exchange of goods, services, or obligations.

Other related party transactions

This relates to the transfer of equity relating to CopperString. Equity payments are considered payments from shareholders, as they are not considered Related Party Transactions that involve the exchange of goods, services, or obligations.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Reset RIN Templates

Sheet: 7.9 Market Impact Component

Table: 7.9.4 Market Impact Component

Workbook References

DC05 - Service Performance | Market impact component

AIO Requirements

This section was completed in accordance with section 4.1 of the Instructions.

Data Quality

Table 7.9.4 (Market Impact Component) was populated with actual data for calendar year 2024.

Information Source

For clarification, for calendar year 2024 Powerlink reported on the AER's V5 STPIS.

Data that was prepared as part of Powerlink's annual STPIS reports to the AER for the MIC of the STPIS forms the basis of the data for this AIO return.

Historic network constraint equation records have been sourced from \'s MMS.[75]

The historic network constraint equation records have been used as the source for the MIC data.

Methodology

Powerlink applied the following methodology:

- The AER requires that MIC performance records exclude any events, consistent with the Version 5 STPIS MIC definition exclusions[76] and the AER's STPIS guidance note - Market Impact Component data period and exclusions clarification document.[77]
- The historic network constraint equation records from AEMO were reviewed in conjunction with AEMO's NOS, Market Notices published by AEMO and Powerlink's internal network operating systems.
- This dataset was assessed against the Version 5 STPIS MIC exclusion criteria to prepare the market impact parameter value that is required by the Instructions.

Assumptions

Nil.

Additional Information

The value of the D-factor and financial incentive both before and after any proposed exclusions were reported as part of Powerlink's annual STPIS report to the AER.[78]

Change From Previous Year Basis of Preparation

Table 7.9.4 was not required for the AER's previous Economic Benchmarking RIN.

[75] AER, V5 STPIS, October 2015, page 36.
[76] AER, V5 STPIS, October 2015 pages 36-38.
[77] AER, STPIS Guidance Note – Market Impact Component Data Period and Exclusion Clarification, April 2023,, pages 11-13.
[78] This explanation is included in accordance with section 4.7.1(b) of the AIO.

During the reporting period, Powerlink transitioned from Version 4 to Version 5 of the STPIS. This change was due to the updated reporting requirement, shifting from the AER's Economic Benchmarking RIN to the AIO.

As part of this transition, the applicable MIC definitions were updated as follows:

- From Version 4 - The AER requires that MIC performance records exclude any events, consistent with the Version 4 STPIS MIC definition exclusions and the AER's Scenario Reference Guide[79] document.
- To Version 5 - The AER requires that MIC performance records to have a cap of 171 events applied for unplanned outage events and exclude any events, consistent with the Version 5 STPIS MIC definition exclusions and the AER's STPIS guidance note - Market Impact Component data period and exclusions clarification.[80]

2024/25 Service Performance Overview[81]

Refer to the overview provided for Table 3.6.2 (Market Impact Component).

[79] AER, Scenario Reference Guide, December 2013.

[80] AER, STPIS Guidance Note – Market Impact Component Data Period and Exclusion Clarification, April 2023pages 11-13.

[81] This explanation is included in accordance with section 4.7.1(a) of the AIO.

Annual Orders Templates

Sheet: 7.5 Large Projects

Table: 7.5.1 Large Project Operating Expenditure

Workbook References

DC06 - Operating expenditure | Large projects

AIO Requirements

This section was completed in accordance with section 5.3 of the Instructions.

Data Quality

No large operating projects have been identified for the reporting period.

Information Source

Financial data was sourced from Powerlink's SAP Project System Module.

Methodology

Powerlink adopted the following approach to identify projects (which were identified as nil) to report in Table 7.5.1:

- calculated the threshold based on the requirements as outlined in the definitions in the AIO Data Category 07: Capital Expenditure Workbook;
- selected active projects where the regulated approved cost was greater than the threshold; and
- extracted the actual regulated costs on the project for the reportable year.

Assumptions

Powerlink included projects that were in execution or those which have been commissioned in the 2024/25 reporting year.

Sheet 7.5 (Large Projects) requires reporting direct costs only (excluding overheads) for each large project within the current financial year. The unburdening process involves removing overhead-related GL accounts to isolate and report the direct portion of project costs. The adjusted figures are treated as the actual amount for the purpose of overhead removals, similar to the approach used in the opex Workbooks.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Table: 7.5.2 Large Project Capital Expenditure

Workbook References

DC07 - Capital expenditure | Capex by purpose

AIO Requirements

This section was completed in accordance with section 6.3.17 of the Instructions.

Data Quality

The financial data in Table 7.5.2 was populated with actual data.

Information Source

Financial data was sourced from Powerlink's SAP Project System Module.

Methodology

Powerlink adopted the following approach to identify projects to report in Table 7.5.2:

- calculated the threshold based on the requirements as outlined in the definitions in the AIO Data Category 07: Capital Expenditure Workbook;
- selected active projects where the regulated approved cost was greater than the threshold; and
- extracted the actual regulated costs on the project for the reportable year.

Assumptions

Powerlink included projects that were in execution or those which have been commissioned in the 2024/25 reporting year.

Sheet 7.5 Large projects requires reporting direct costs only (excluding overheads) for each large project within the current financial year. The unburdening process involves removing overhead-related GL accounts to isolate and report the direct portion of project costs. The adjusted figures are treated as the actual amount for the purpose of overhead removals, similar to the approach used in the opex Workbooks.

Additional Information

Section 4.19 of the AIO requires supporting information on large project expenditure. As a result, the table below was populated with estimated data, since the data presented are forecasts. The projects outlined in the table below have been identified based on the process set out in the assumptions section.

Refer to Table 2.4.2 (Actual Gross Capital Expenditure – As Incurred) of this document for further information on the accounting treatment of the Advanced Energy Management System project.

Project Name	Regulatory period	Contingent Project	2024/25 Forecast Total Regulated Expenditure	2024/25 Forecast Direct Regulated Expenditure	Variance to Direct Actual	Driver of the difference
Nebo Secondary Systems Replacement	2017-22	No	$2,118,061	$1,617,655	($1,377,675)	Reprioritising delivery schedule
Lilyvale Selected Primary Plant Replacement	2022-27	No	$12,203,077	$11,583,056	$3,471,270	Opportunistic acceleration

Project Name	Regulatory period	Contingent Project	2024/25 Forecast Total Regulated Expenditure	2024/25 Forecast Direct Regulated Expenditure	Variance to Direct Actual	Driver of the difference
Advanced Energy Management System	2017-22	No	$43,906,549	$35,011,375	($10,349,599)	Reprioritising delivery schedule
Davies Creek – Bayview Heights 275kV Refit	2022-27	No	$17,978,981	$17,790,802	$8,341,895	Opportunistic acceleration

Change From Previous Year Basis of Preparation

Nil.

Sheet: 8.6 Indicative Asset Base Roll Forward

Table: 8.6.1 Indicative Asset Base as Incurred

Workbook References

DC08 - Asset base values | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 7.1.1 to 7.1.6 of the Instructions.

Data Quality

Table 8.6.1 (Indicative Asset Base as Incurred) was populated with actual data for additions and proceeds from disposals. Other variables have been populated with information calculated using the functionality contained within the AER's Roll Forward Model.

Information Source

The data related to actual additions and proceeds from disposals was sourced from Table 2.4.2 Actual Gross Capital Expenditure – As Incurred.

Methodology

Consistent with Sheet 3.3 (Assets – (RAB)), Powerlink used Version 4.1 of the AER's Roll Forward Model[82] to calculate the RAB for 2024/25. In line with the AER's Final Determination for Powerlink's 2022–27 regulatory period, forecast real straight-line depreciation was applied to determine the RAB throughout the reporting period. Accordingly, Powerlink incorporated real forecast depreciation in its 2024/25 RAB calculation.

Consistent with the Final Determination, Powerlink also adjusted 2024/25 capitalisations to reflect movements in provisions.

To complete Table 8.6.1, Powerlink used the AER Roll Forward Model, updated the opening RAB sourced from the latest PTRM RoD update,[83] while the actual as incurred amounts sourced from Table 2.4.2 (Actual Gross Capital Expenditure – As Incurred) have been entered in the RFM input section. The model has then calculated adjusted additions using the regulated WACC and CPI.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

[82] AER, Appendix A – Amended transmission roll forward model – v4.1, May 2022.
[83] AER. Electricity transmission post-tax revenue model – amendment, March 2025.

Table: 8.6.2 Indicative Asset Base as Commissioned

Workbook References

DC08 - Asset base values | Regulatory accounts (PTS)

AIO Requirements

This section was completed in accordance with sections 7.1.1 to 7.1.15 of the Instructions.

Data Quality

Table 8.6.2 (Indicative Asset Base as Commissioned) was populated with actual data for additions and proceeds from disposals. Other variables have been populated with information calculated using the functionality contained within the AER's Roll Forward Model.

Information Source

The data related to actual additions and proceeds from disposals was sourced from Table 2.4.1 (Actual Gross Capital Expenditure – As Commissioned).

Methodology

Consistent with Sheet 3.3 (Assets – RAB), Powerlink used Version 4.1 of the AER's Roll Forward Model[84] to calculate the RAB for 2024/25. In line with the AER's Final Determination for Powerlink's 2022–27 regulatory period,[85] forecast real straight-line depreciation was applied to determine the RAB throughout the period. Accordingly, Powerlink incorporated real forecast depreciation in its 2024/25 RAB calculation.

Consistent with the Final Determination, Powerlink also adjusted 2024/25 capitalisations to reflect movements in provisions.

To complete Sheet 8.6 (Ind Asset Base Roll Fwd), Powerlink used the AER Roll Forward Model, updated for opening RAB sourced from the latest PTRM RoD update, while actual as commissioned amounts sourced from Table 2.4.1 have been entered into the RFM input section. The model has then calculated adjusted additions using the vanilla WACC and CPI.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

[84] AER, Appendix A – Amended transmission roll forward model – v4.1, May 2022.
[85] AER, Powerlink – Determination 2022-27, Final decision, 29 April 2022.

Sheet: 8.7 Profitability – Tax Data

Table: 8.7.1 Profitability Tax Data and 8.7.2 Profitability Measures

Workbook References

DC09 - Revenue and financial statements | Regulatory accounts (PTS)

DC09 - Revenue and financial statements | Other financial information

AIO Requirements

This section was completed in accordance with sections 8.2.4 to 8.2.16 of the Instructions.

Data Quality

Tax Related Information

The information was based on actual data.

Interest Expense

The reported interest bearing liabilities and interest expense for the regulated services have been based on actual data from defined regulated debt facilities (as described below). As a result, no further allocation calculations have been required.

Information Source

Powerlink used the information from the Tax Asset Roll Forward Balances within the Roll Forward Model (RFM) for the 2022-27 regulatory period.

The Interest Expense section was populated using information sourced from Powerlink's SAP.

Methodology

Powerlink ownership structure was identified as being a National Tax Equivalent Regime (NTER) entity. The group structure was previously provided in the AER's voluntary request for Tax Regulatory Information Notice on 17 September 2018.[86]

Tax related information for this table have been sourced from Powerlink's NTER returns.

- Tax asset base depreciation: This figure was sourced from Tax Asset Roll Forward Balances within the RFM for the period 2022/23 to 2026/27 based on the AER's Final Determination.[87]
- Tax Rate: The corporate tax rate applicable to Powerlink is 30%.
- Taxable income adjustments:
    - Tax loss carried forward: Powerlink currently has no tax losses which it has carried forward.
    - Adjustment to tax expense for value of gifted assets: Powerlink has not made any adjustment to tax expense for the value gifted assets.
    - Permanent differences due to disallowed interest expense: Powerlink does not incur non-deductible interest expenditure for tax purposes pursuant to the *Income Tax Assessment Act 1997* (Cth). Interest expense was incurred in gaining or producing assessable income and is not of a capital, private or domestic nature.

[86] AER, Regulatory tax approach review, 2018.
[87] AER, Final Decision – Powerlink Transmission Determination 2022-27 – Post-tax revenue Model, April 2022.

- Permanent differences due to adjustments to prior year returns: Powerlink does not have any permanent differences due to adjustments to prior year returns.

In relation to interest bearing liabilities and interest expenses, Powerlink undertook a debt restructure in 2020 to align its debt facilities between regulated and non-regulated assets. After the debt restructuring, Powerlink's regulated debt portfolio now incorporates two debt facilities provided by Queensland Treasury Corporation.

The two facilities are:

- Core Debt Facility: A funding profile that mirrors the pricing of the trailing average return on debt which approximate the AER's trailing average debt methodology. This applies to 60% of Powerlink's RAB.
- Equity Facility: Established in 2016, this comprises a five-year debt facility designed to achieve an appropriate capital funding structure for the overall Powerlink business. For the regulated business this facility applies to debt in excess of 60% of Powerlink's RAB and is a substitute for equity.

Following the debt restructuring, Powerlink's SAP have the capability to record interest expense by debt facility. As a result, the interest-bearing liabilities and interest expense information is based on a direct allocation of specific debt used to fund the operation of, and investment into the core regulated services (prescribed transmission services).

No related party interest expenses have been identified.

Balance Sheet Items and Other:

- Interest bearing liabilities (end of period balance): Refer to the above discussion relating to interest bearing liabilities and interest expense.
- Tax asset base depreciation: Refer to the above discussion relating to tax asset base depreciation.
- Total taxable revenue and/or income for customer contributions and/or gifted assets: Refer to the above discussion.
- Permanent differences due to disallowed interest expense: Refer to the above discussion.
- Permanent differences due to adjustments to prior year returns: Refer to the above discussion.

Assumptions

Nil.

Additional Information

Nil.

Change From Previous Year Basis of Preparation

Nil.

Sheet: 8.8 Revenue Requirements

Table: 8.8.1 Revenue Requirements

Workbook References

DC09 - Revenue and financial statements | Other financial information

AIO Requirements

This section was completed in accordance with sections 8.4.3 to 8.4.10 of the Instructions.

Data Quality

The following variables have been populated with actual data:

- adjusted allowed revenue;
- revenue recoveries;
- revenue unders/overs; and
- revenue reconciliation (T-2).

The following variables have been populated with estimated data:

- revenue from regulated transmission services; and
- budgeted revenue from customers.

Information Source

The table below outlines the information source of each variable in Table 8.8.1 (Revenue Requirements).

Variable	Source
Adjusted Allowed Revenue	Powerlink's regulated Pricing and Revenue Workbooks
Revenue from Regulated Services	Powerlink's regulated Pricing and Revenue Workbooks
Budgeted Revenue from Customers	Calculated based on Revenue from Regulated Transmission Services
Revenue Recoveries	Powerlink's Grid Revenue Billing System
Revenue Unders/Overs	Powerlink's Grid Revenue Billing System
Revenue Reconciliation (T-2)	Powerlink's Grid Revenue Billing System

Methodology

The methodology to determine the Revenue from Regulated Transmission Services and Budgeted Revenue from Customers is consistent with the requirements of Part J of Chapter 6A of the Rules and Powerlink's Pricing Methodology.[88]

Assumptions

Nil.

Additional Information

The Revenue from Regulated Services does not equate to the Adjusted Allowed Revenue as required in the Instructions,[89] as it includes further adjustments required under the Rules and

[88] Powerlink, Pricing Methodology – Proposed Amended Pricing Methodology (1 July 2022 to 30 June 2027), approved by the AER in January 2023.

[89] AER, Appendix A of the AIO, sections 8.4.3 to 8.4.10.

Powerlink's Pricing Methodology.[90] Incorporating these adjustments is necessary to ensure the Budgeted Revenue from Customers is calculated correctly.

Change From Previous Year Basis of Preparation

The source information for TREV0110 – Revenue from Other Sources has changed for the current reporting period. Under the former Economic Benchmarking RIN, this variable previously included Intra and Inter Regional Settlements Residues (IRSRs), over/under collections and other revenue.

In this reporting period, only the IRSRs are included in TREV0110. The over/under collections are captured in Table 8.8.1, and other revenues are captured in TREV0303 – Other in Table 3.1.3 (Revenue (penalties) allowed (deducted) through Incentive Schemes).

[90]Powerlink, Pricing Methodology – Proposed Amended Pricing Methodology (1 July 2022 to 30 June 2027), approved by the AER in January 2023.

Schedule 1: Supporting Information Requirements

Schedule 1 of this document explains how Powerlink addressed the Supporting Information requirements under section 4 of the AIO.

Section: 4.1 Requirements to provide supporting information under this order

AIO Requirements

This section was completed in accordance with section 4.1 of the AIO.

Information

Refer to the Powerlink – Annual Order – 2024-25 – Attachment 1 – Supporting Information Requirement List – PUBLIC.

Section: 4.2 Policies and procedures

AIO Requirements

This section was completed in accordance with section 4.2 of the AIO.

Information

Regulatory Accounting Policies and Overhead Allocation Procedures:

For information regarding regulatory accounting policies and overhead allocations procedures, please refer to Powerlink's CAM, V2, approved by the AER on 15 August 2008.

Powerlink's Capitalisation Framework (Version 3.0)

Powerlink's Capitalisation Framework (Version 3.0, May 2024) outlines consistent principles for distinguishing capital and opex in line with Australian Accounting Standards. It ensures that only qualifying costs are capitalised and depreciated over time, while others are expensed immediately.

Purpose and Scope

The framework applies to all asset-related expenditure across Powerlink's regulated, non-regulated, negotiated and unallocated business areas. Capitalisation thresholds are set at $1,000 for most assets and $5,000 for software. Aggregation is permitted for bundled upgrades exceeding $10,000.

Capex vs Opex

Capex includes costs that create or significantly improve assets—such as new builds, major replacements, or upgrades that extend life or capacity. Investigative work using known technology that supports future asset creation is also capitalised. Opex covers routine maintenance, servicing, and general overheads.

Work In Progress (WIP)

Costs for assets under construction are recorded as WIP and transferred to fixed assets upon commissioning. If a project is abandoned, WIP is written off. Quarterly reviews ensure timely asset recognition.

Asset Classes and Creation

Assets are grouped into classes based on function and useful life. The framework defines roles and processes for asset creation, ensuring accurate classification and compliance with financial controls.

Compliance and Governance

The framework aligns with Australian Accounting Standards (AASB 116) and is supported by internal procedures and oversight. It promotes transparency, consistency, and regulatory compliance, ensuring Powerlink's asset base is accurately presented for financial and regulatory reporting.

Section: 4.3 Regulatory Adjustments

AIO Requirements

This section was completed in accordance with section 4.3 of the AIO.

Information

Refer Sheet 9.2 within this document, which provides a summary table containing all regulatory adjustments.

Section: 4.4 Discretionary row descriptors

AIO Requirements

This section was completed in accordance with section 4.4 of the AIO.

Information

Row descriptors align with prior-year RIN reporting templates where applicable with additions where required based on new AIO requirements. As 2024/25 is the first reporting year using the Workbooks, several row descriptors have been introduced. Definitions for these new row descriptors have been included in this document for the relevant tables.

Section: 4.5 Allocation of revenues and expenditures to service segments

AIO Requirements

This section was completed in accordance with section 4.5 of the AIO.

Information

In relation to section 4.5.1 of the AIO, Powerlink applied its CAM embedded in its SAP to distribute costs across types of transmission services. This primarily pertains to overhead costs, which are allocated based on labour hours.

In addition, Powerlink made one regulatory adjustment using causal allocations derived from chargeable labour hours to determine the regulatory adjustment for assigning previously unallocated divisional costs to regulated transmission services.

	Regulated transmission services	Total
Chargeable Labour Hours	952,000 hours (49%)	1,943,000 hours
Unallocated Divisional Costs	$13,030,068	$26,591,976

In relation to section 4.5.2 of the AIO, Powerlink has not used any non-causal allocations in preparing its AIO.

Section: 4.6 Material Differences

AIO Requirements

This section was completed in accordance with section 4.6 of the AIO.

Information

Service Target Performance Incentive Scheme (Section 4.6.1 of the AIO)

The calendar year 2024 performance results reported under Service Parameter 1 of Table 3.6.1 Service Component, except for TQS0112, are over (+/-) 10% variance from the STPIS targets. Refer to Table 3.6.1 (Service Component) of this document for explanation.

Opex (Section 4.6.2 of the AIO)

While the AER opex allowance is broken down into categories for reporting purposes, the overall allowance is managed as a single pool of funds. Allocations between categories can shift as required, providing flexibility to respond to changing priorities of the transmission network that delivers regulated transmission services.

Powerlink's opex for the 2024/25 period was $289.6 million (including debt raising costs), which was $51.3 million (22%) higher than the AER's allowance of $238.4 million. This was primarily due to:

- Skilled Labour Cost Increases: Labour costs increased sharply due to high demand for skilled workers and new enterprise agreements, contributing to approximately 70% of controllable opex and driving most of the overspend.
- Increased System Complexity: More frequent interventions, alarms, and complex network operations increased costs for network operations and asset management.
- New Regulatory and Compliance Obligations: Compliance with the *Security of Critical Infrastructure Act 2018* (Cth) and higher cyber security standards resulted in significant new costs.
- Insurance and Non-Controllable Costs: Insurance premiums were higher than forecast due to a challenging insurance market and increased risk exposure.

Category $m, nominal	AER Forecast [1]	Actual	Variance	Variance %
Maintenance	138.7	166.0	27.3	20%
Asset Management	49.0	72.2	23.3	48%
Corporate Support	46.9	49.4	2.5	5%
Network / Grid Support	0.0	1.9	1.9	N/A
Debt Management	3.8	0.1	(3.7)	(98%)
Total	**238.4**	**289.6**	**51.3**	**22%**

[1] AER Allowance escalated by CPI

Capex (Section 4.6.3 of the AIO)

While the AER capex allowance is broken down into categories for reporting purposes, the regulatory framework provides the network with a total capex allowance. Powerlink's overall allowance is managed as a single pool of funds in the normal course of business. Actual expenditure and forecast allocations between categories can vary as required, to enable the business to respond to changing priorities of the transmission network.

Powerlink's capex for the 2024/25 period was $151.1 million (including disposals), which was $31.6 million (17%) lower than the AER's allowance of $182.7 million. The underspend is primarily due to a review of historical allocations from 2022/23 to 2024/25 which adjusted allocations between its different types of transmission services retrospectively to reflect the changing nature of its business.

Excluding the adjustments relating to prior years, Powerlink would have been higher than the allowance. The primary reasons for the notional overspend are:

- Global Cost Increases: Major increases in the cost of transformers, materials, and skilled labour due to global supply chain disruptions and inflation.
- New Regulatory Requirements: Unplanned investment in system strength (synchronous condensers) and cyber security, which were not included in the original allowance.
- Asset Reinvestment: Higher-than-expected costs for replacing or upgrading ageing and obsolete network assets, including urgent replacements for safety.
- Project Delivery Challenges: Delays, expanded project scopes, and longer lead times increased costs for key projects.
- Non-Network Investments: Additional spending on IT and business systems, mainly for cyber security and technology upgrades.

Category $m, nominal	AER Forecast [2]	Actual	Variance	Variance %
Augmentation	1.3	8.0	6.8	535%
Easement	3.9	4.3	0.3	9%
Connection	0.0	0.0	0.0	N/A
Replacement	153.7	125.7	(28.1)	(18%)
Security and Compliance	3.4	5.3	2.0	59%
System Services	0.0	7.0	7.0	N/A
Other	3.3	12.4	9.1	272%
Information Technology	11.0	22.9	11.9	108%
Buildings	14.1	(6.5)	(20.6)	(146%)
Motor Vehicles	3.6	11.4	7.8	219%
Tools	1.7	3.0	1.3	76%
Disposals	(13.3)	(42.3)	(29.0)	(219%)
Total (incl disposals)	**182.7**	**151.1**	**(31.6)**	**(17%)**

[2] AER Allowance escalated by CPI.

Section: 4.7 Service performance information

AIO Requirements

This section was completed in accordance with section 4.7 of the AIO.

Information

Refer to Tables 3.6.1 (Service Component) to 3.6.2 (Market Impact Component), 3.6.4 (Energy Not Supplied) and Sheet 7.9 (MIC) of this document.

Section: 4.8 Third party benefit transactions

AIO Requirements

This section was completed in accordance with section 4.8 of the AIO.

Information

No third-party benefit transactions have been identified.

Section: 4.9 Demand management innovation allowance mechanism

AIO Requirements

This section was completed in accordance with section 4.9 of the AIO.

Information

This requirement is not applicable, as the Demand Management Innovation Allowance Mechanism does not apply to Powerlink's 2022-27 regulatory period.

Section: 4.10 Tax standard asset lives

AIO Requirements

This section was completed in accordance with section 4.10 of the AIO.

Information

All tax standard asset lives applied to asset classes have been aligned to those contained in the AER-approved PTRM for the reporting period.[91]

Section: 4.11 Tax reporting – immediate expensing

AIO Requirements

This section was completed in accordance with section 4.11 of the AIO.

Information

No immediate expensing of capex was identified.

Section: 4.12 Regulatory Investment Test Expenditure

AIO Requirements

This section was completed in accordance with section 4.12 of the AIO.

Information

The Regulatory Investment Tests for Transmission (RIT-Ts) outlined in the table below have been identified based on incurred expenditure on projects that were in execution or commissioned in the 2024/25 reporting year.

The RIT-Ts associated with system services have been excluded from this list, as they do not fall within the definition of section 4.12.1(b) of the AIO.

RIT-T Name	Completion Date	Expenditure Classification
Addressing the secondary systems condition risks at Tarong Substation	14/01/2019	Replacement
Maintaining reliability of supply at Kamerunga Substation	18/08/2019	Replacement
Maintaining reliability of supply at Townsville South Substation	5/04/2019	Replacement

[91] AER. Electricity transmission post-tax revenue model – amendment, March 2025.

RIT-T Name	Completion Date	Expenditure Classification
Maintaining power transfer capability and reliability of supply at Ross Substation	10/05/2019	Replacement
Addressing the secondary systems condition risks at Woree Substation	10/05/2019	Replacement
Expanding NSW-Queensland transmission transfer capacity (Joint Consultation with TransGrid)	22/01/2020	Augmentation
Maintaining reliability of supply between Clare South and Townsville South	30/12/2019	Replacement
Maintaining power transfer capability and reliability of supply at Lilyvale	28/11/2019	Replacement
Maintaining reliability of supply in the Blackwater area	14/11/2019	Replacement
Addressing the secondary systems condition risks at Mt England	7/05/2020	Replacement
Addressing the secondary systems conditions risks in the Gladstone South area	6/08/2020	Replacement
Addressing the secondary systems condition risks at Cairns	19/09/2020	Replacement
Addressing the secondary systems condition risks at Innisfail	2/04/2022	Replacement
Maintaining reliability of supply in the Cairns region - Stage 1	6/07/2022	Replacement
Maintaining reliability of supply to the Tarong and Chinchilla local areas	26/08/2022	Replacement
Addressing the secondary systems condition risks at Chalumbin	26/09/2022	Replacement
Maintaining power transfer capability and reliability of supply at Redbank Plains	19/05/2023	Replacement
Addressing the secondary systems condition risks at Tangkam	8/10/2023	Replacement
Maintaining power transfer capability and reliability of supply at Kemmis	8/03/2024	Replacement
Addressing the reliability of supply at Nebo	8/03/2024	Replacement
Addressing the secondary systems condition risks at Sumner	19/08/2024	Replacement
Maintaining reliability of supply to Mansfield	3/05/2025	Replacement

Section: 4.13 Related party information

AIO Requirements

This section was completed in accordance with section 4.13 of the AIO.

Information

Refer to Sheet 7.7 (Inf Rel Part Trans) of this document.

Section: 4.14 Compliance

AIO Requirements

This section was completed in accordance with section 4.14 of the AIO.

Information

Powerlink's process involves the identification and confirmation of potential pass-through events under the Rules (positive or negative change events) by relevant Managers and the Legal team, respectively. This occurs on at least a quarterly basis.

The materiality threshold of 1% or more of the Maximum Allowed Revenue (MAR) in any regulatory year is determined and communicated to relevant Managers (as required) by Powerlink's Network Regulation Group.

Section: 4.15 Reconciliation of expenditure

AIO Requirements

This section was completed in accordance with section 4.15 of the AIO.

Information

Refer to Table 2.1.2 (Prescribed Transmission Service Opex) of this document.

Section: 4.16 Benchmarking asset base

AIO Requirements

This section was completed in accordance with section 4.16.1 of the AIO.

Information

Powerlink has not reported benchmarking asset values under the AER's optional approach.

Section: 4.17 Taxable income adjustments

AIO Requirements

This section was completed in accordance with section 4.17 of the AIO.

Information

Refer to Sheet 8.7 (Profitability – tax data) of this document.

Section: 4.18 Interest expense

AIO Requirements

This section was completed in accordance with section 4.18 of the AIO.

Information

Refer to Table 8.7.1 (Profitability Tax Data) of this document for:

- a description and explanation of the methodology used to allocate the interest expenditure; and
- details of the characteristics of the portfolio of debt being allocated to Powerlink.

Section: 4.19 Large projects

AIO Requirements

This section was completed in accordance with section 4.19 of the AIO.

Information

Refer to Table 7.5.2 (Large Project Capital Expenditure) of this document.

List of Acronyms and Terms

AEMO	Australia Energy Market Operator
AER	Australian Energy Regulator
AIO	Annual Information Order – Electricity TNSPs issued by the AER, 5 April 2024
BESS	Battery Energy Storage System
BNN	Bayesian Neutral Network
CAM	Cost Allocation Methodology
Capex	Capital Expenditure
CCGT	Combined Cycle Gas Turbine
CPI	Consumer Price Index
CT	Current Transformer
DNSP	Distribution Network Service Provider
DWDM	Dense Wavelength Division Multiplexing
EBSS	Efficiency Benefit Sharing Scheme
ENS	Energy Not Supplied
GIS	Gas Insulated Switchgear
GL	General Ledger
GWh	Gigawatt hours
HMI	Human-Machine Interface
IED	Intelligent Electronic Device
Instructions	Annual Information Order – Electricity TNSPs – Appendix A – Data workbook instructions
kV	Kilovolt
kVAr	Kilovolt-Ampere Reactive Power
kW	Kilowatt
LiDAR	Light Detection and Ranging
MAR	Maximum Allowed Revenue
MD	Maximum Demand
MDP	Meter Data Provider
MIC	Market Impact Component
MLF	Marginal Loss Factor
MMS	Market Management System
MPLS	Multiprotocol Label Switching

MVAr	Megavar
MW	Megawatt
NCC	Normal Cyclic Capacity
NEM	National Electricity Market
NEMMCO	National Electricity Market Management Company Limited
NOS	Network Outage Scheduler
NPAT	Net Profit after Tax
OCGT	Open Cycle Gas Turbine
ODAF	Oil directed air forced
ODAN	Oil directed air natural
ONAF	Oil natural air filled
ONAN	Oil natural air natural
Opex	Operating Expenditure
OPGW	Optical Ground Wire
PHES	Pumped Hydro Energy Storage
POE	Probability of Exceedance
PS	Power Station
PTRM	Post Tax Revenue Model
PTS	Prescribed Transmission Services
QNI	Queensland-New South Wales Interconnector
RAB	Regulatory Asset Base
RIN	Regulatory Information Notices, which were: • Category Analysis RIN issued by the AER, 7 March 2014; and • Economic Benchmarking RIN issued by the AER, 28 November 2013
RFS	Regulatory Financial Statements
Rules	National Electricity Rules
SAP	Powerlink's corporate enterprise resource planning database
SCADA	Supervisory Control and Data Acquisition
STPIS	Service Target Performance Incentive Scheme
SVC	Static Var Compensator
TAPR	Transmission Annual Planning Report
TNI	Transmission Node Identifier
TNSP	Transmission Network Service Provider

UHF	Ultra High Frequency
VHF	Very High Frequency
VT	Voltage Transformer
WACC	Weighted Average Cost of Capital
Workbook	AIO Data Templates completed as part of this AIO return.

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