January 2026

Powerlink 2027-32 Revenue Proposal

Project Pack

Telecommunications Network Consolidation and Equipment Replacement Programme

Project Status: Unapproved

Network Requirement

Clauses 4.8.1.and 4.8.2 of the National Electricity Rules (NER) requires a Network Service Provider to inform AEMO of any circumstance that has the potential to adversely affect the secure operation of the power system. Powerlink must maintain a general situational awareness of its network and connected equipment to be able to comply with these requirements and also maintain compliance with the Power System Security Guidelines more broadly.

Powerlink's telecommunications network enables communications between substations, Corporate offices and the Business Continuity Site (BCS) to support a wide range of real time and business support services including Supervisory Control and Data Acquisition (SCADA), protection, remote monitoring and voice services. The current network consists of several network 'layers' consisting of Plesiochronous Digital Hierarchy (PDH), Synchronous Digital Hierarchy (SDH), Multiprotocol Label Switching (MPLS) and Dense Wave Division Multiplexing (DWDM) technologies.

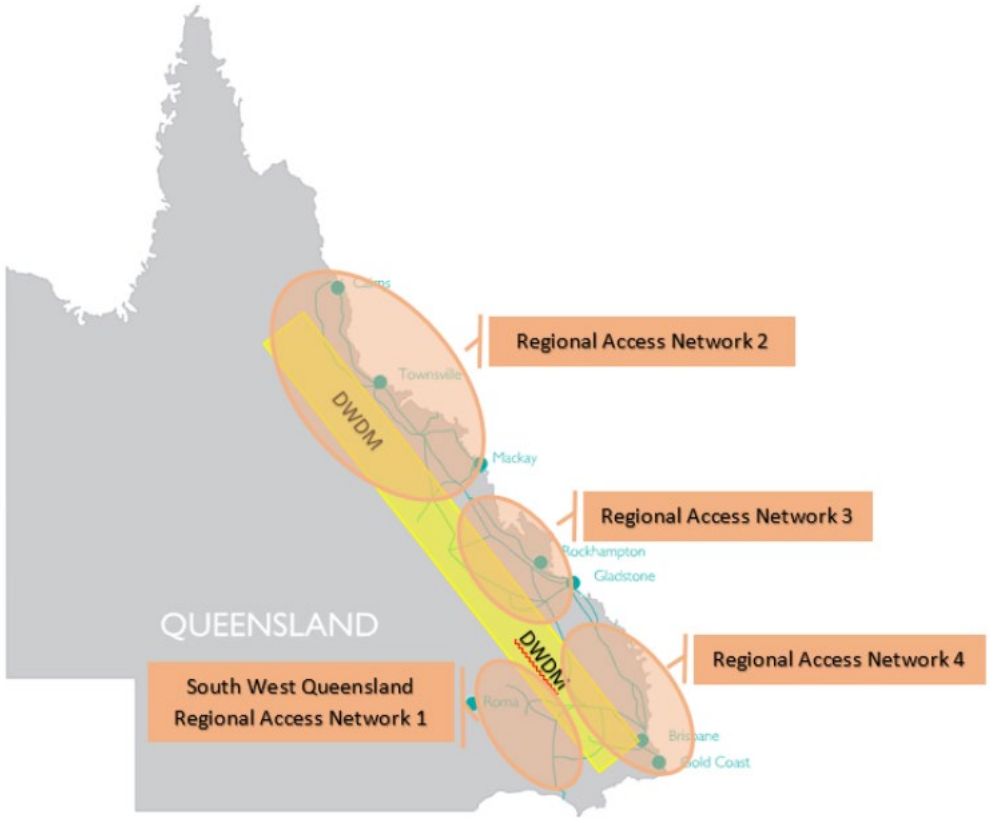
The main telecommunications network is complemented by Powerlink's Operational Wide Area Network (OpsWAN) which supports services within the substation environment such as high voltage network operation decision support, asset condition monitoring and maintenance activities

The electricity network sector employs telecommunications hardware and protocols used in the broader telecommunications sector, which has traditionally been based on time division multiplexing (TDM) technology. As the telecommunications sector has migrated to internet protocol (IP) technology the availability and suitability of TDM technology to support electricity networks has diminished.

PDH technology has been employed in the network since the late 1980s, with only one remaining vendor. SDH was installed between 2011 and 2016 while MPLS has been deployed since 2014. The current telecommunications platforms are approaching end of life with manufacturer support expected to end progressively between 2023 and 2027.

The market was engaged to determine the equipment available that will meet Powerlink's requirements into the future, which resulted in the telecommunication network redevelopment strategy to consolidate and regionalise the telecommunication network. The strategy comprises the establishment of four Regional Access Networks (RANs). The proposed architecture is shown in Figure 1.

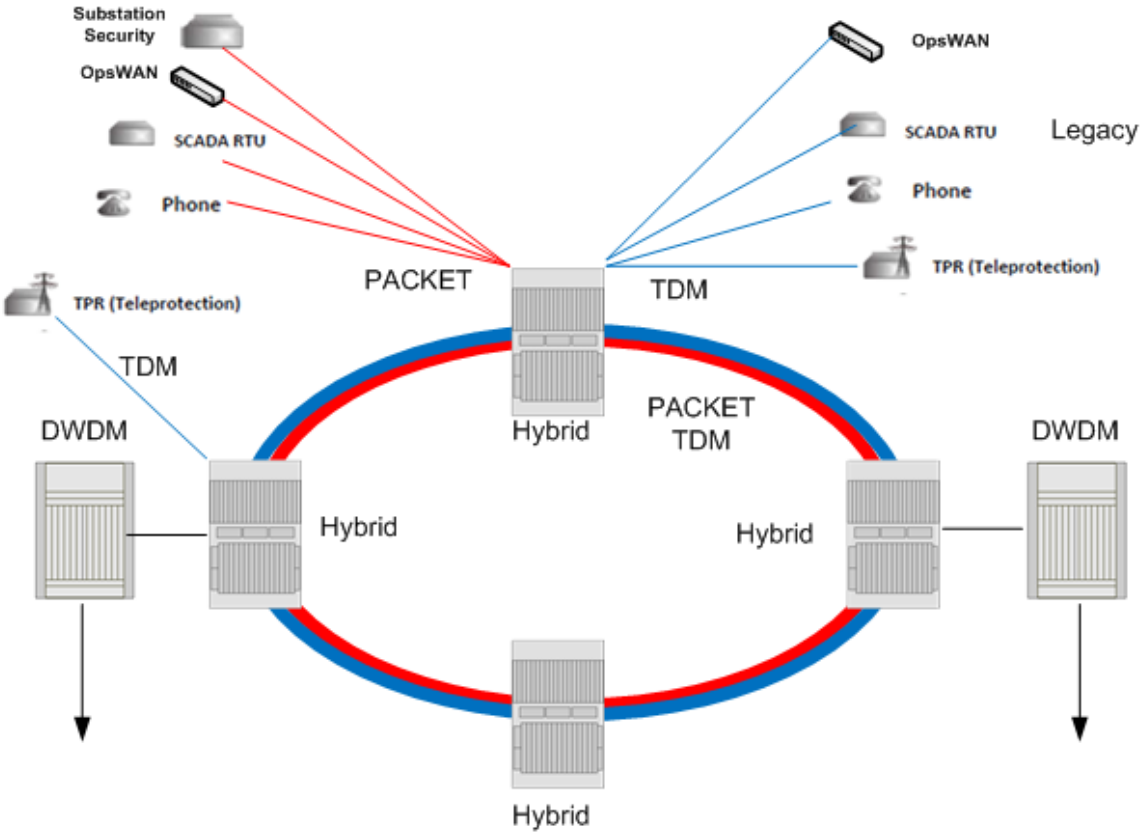
Figure 1 – Proposed Architecture



Recommended Option

In line with this strategy, the Telecommunications Network Consolidation projects involve the replacement of the PDH and SDH equipment with single consolidated hybrid devices that will provide MPLS-TP and an emulated TDM capability [1]. In conjunction with the telecommunications network consolidation the OpsWAN and MPLS Replacement projects will replace the legacy IP/MPLS and OpsWAN equipment so that OpsWAN will become a service over the core network rather than remain a separate network in its own right [2]. The conceptual architecture is shown in Figure 2.

Figure 2 Conceptual Architecture



This network consolidation and equipment replacement strategy will support the use of legacy devices within the substation environment that rely on older technologies while supporting broader use of IP technology in the future. It will also reduce Powerlink's reliance on TDM technology where possible.

Powerlink does not consider non-network options are likely to be able to meet the identified need to provide secure telecommunications network services to the critical national infrastructure that comprises Powerlink's electricity transmission network.

Cost and Timing

The estimated cost to consolidate the telecommunications network and replace MPLS and OpsWAN equipment across the remaining three stages of the work programme is set out in Table 1 below:

Regional Access Network	Projects	Estimated cost[1] (Real, 2025/26)	Target commissioning date
2 – North Queensland	CP.02811	$42.2 million [3]	June 2029
	CP.02513	$22.2 million [4]	June 2029
3 – Central Queensland	CP.02812	$34.2 million [5]	December 2030
	CP.02514	$16.9 million [5]	June 2030
4 – Southern Queensland	CP.02813	$54.0 million [5]	June 2032
	CP.02822	$25.1 million [5]	June 2032

Notes:

1. Adjusted to reflect the proportion of the project cost that relates to prescribed services assets.

Documents in Telecommunications Network Consolidation and Equipment Replacement Programme Project Pack

Public Documents

1. CP.02811 Telecommunications Network Consolidation RAN 2 – Project Scope Report
2. CP.02513 OpsWAN and MPLS Replacement RAN 2 – Project Scope Report
3. CP.02811 Telecommunications Network Consolidation RAN 2 – Concept Estimate
4. CP.02513 OpsWAN and MPLS Replacement RAN 2 – Concept Estimate
5. *Documents available to AER on request*

Project Scope Report

CP.02811

Telecommunication Network Consolidation - RAN 2

Proposal – Version 3

Document Control

Change Record

Issue Date	Revision	Prepared by	Reviewed by	Approved by	Background
20/11/2023	1	[redacted]		[redacted]	Initial Issue
30/01/2025	2	[redacted]		[redacted]ro	Attachment 1 – Site list updated to transfer Stony, King Creek and North Goonyella works to secondary system replacement projects. Section 4.3 updated.
5/6/25	3	[redacted]			Attachment 1 – Site list updated to transfer Alan Sherriff and Garbutt works to secondary system replacement projects. Section 4.3 updated. PIF reference updated.
7/10/25	4	J[redacted]			Updated related projects to capture potential interface with DC System Replacement scope of works.

Related Documents

Issue Date	Responsible Person	Objective Document Name
May 2025	[redacted]	Project Initiation Form – Telecommunications Network Consolidation Stage 2 (A5868594)

Issue Date	Responsible Person	Objective Document Name
May 2018		PP180015 - Registration of Interest for Network Equipment Consolidation (PDH, SDH, MPLS networks) (A2873983)

Document Purpose

The purpose of this Project Scope Report is to define the business (functional) requirements that the project is intended to deliver. These functional requirements are subject to Powerlink's design and construction standards and prevailing asset strategies, which will be detailed in documentation produced during the detailed scoping and estimating undertaken by DTS (or OSD), i.e. it is not intended for this document to provide a detailed scope of works that is directly suitable for estimating.

Project Contacts

Project Sponsor	[redacted]	
Connection & Development Manager	[redacted]	
Strategist – HV/Digital Asset Strategies	[redacted]	
Planner – Main/Regional Grid		
Project Manager	[redacted]	
Design Coordinator		

Project Details

1. Project Need & Objective

Powerlink's telecommunications network enables communications between substations, Virginia and the Business Continuity Site (BCS) to support a wide range of real time and business support services including Supervisory Control and Data Acquisition (SCADA), protection, remote monitoring and voice services. The current network consists of several network 'layers' consisting of Plesiochronous Digital Hierarchy (PDH), Synchronous Digital Hierarchy (SDH), Multiprotocol Label Switching (MPLS) and Dense Wave Division Multiplexing (DWDM) technologies.

PDH technology has been employed in the network since the late 1980s, with only one remaining vendor. SDH was installed between 2011 and 2016 while MPLS has been deployed since 2014. The current telecommunications platforms are approaching end of life with manufacturer support expected to end progressively between 2023 and 2027.

The market was engaged to determine the equipment available that will meet Powerlink's requirements into the future, which resulted in the telecommunication network redevelopment strategy to consolidate and regionalise the telecommunication network. The strategy comprises the establishment of four Regional Access Networks (RANs). The proposed architecture is shown in Figure 1.

In line with this strategy, the Telecommunications Network Consolidation projects involve the replacement of the PDH and SDH equipment with single consolidated devices.

The objective of this project is to replace the PDH and SDH equipment with single consolidated devices at 61 sites in North Queensland by June 2027. Refer Attachment 1.

This project will follow the two (2) stage approval process.

2. Project Drawing

Figure 1 – Proposed Architecture

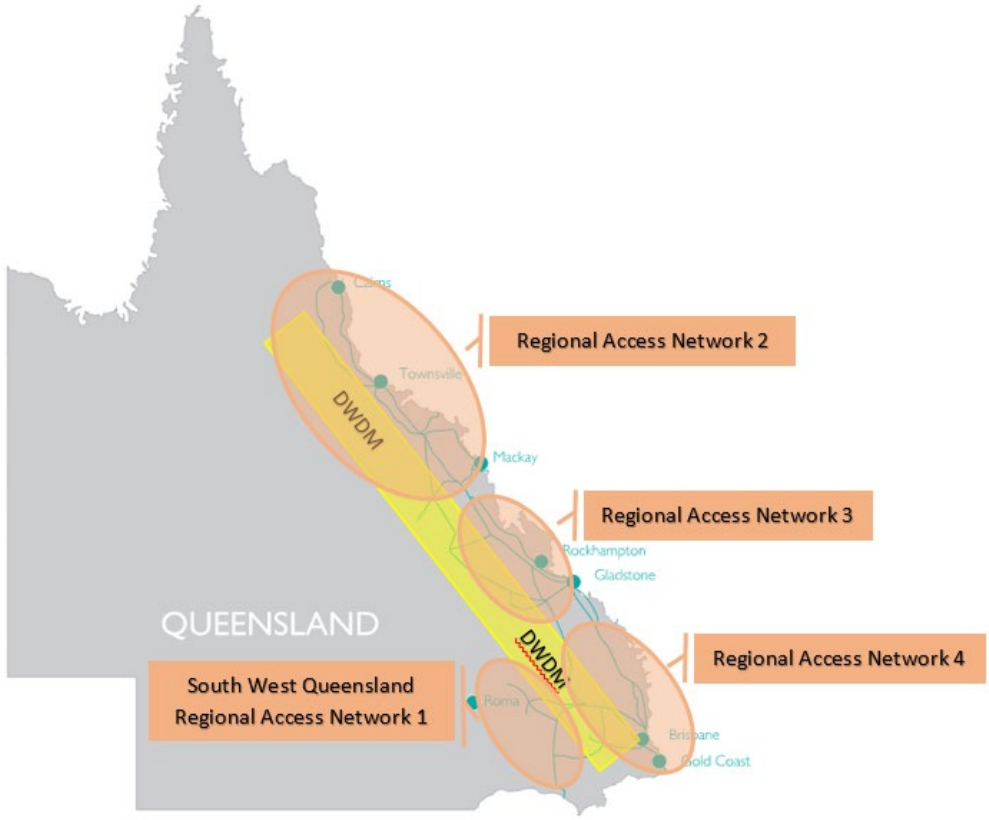
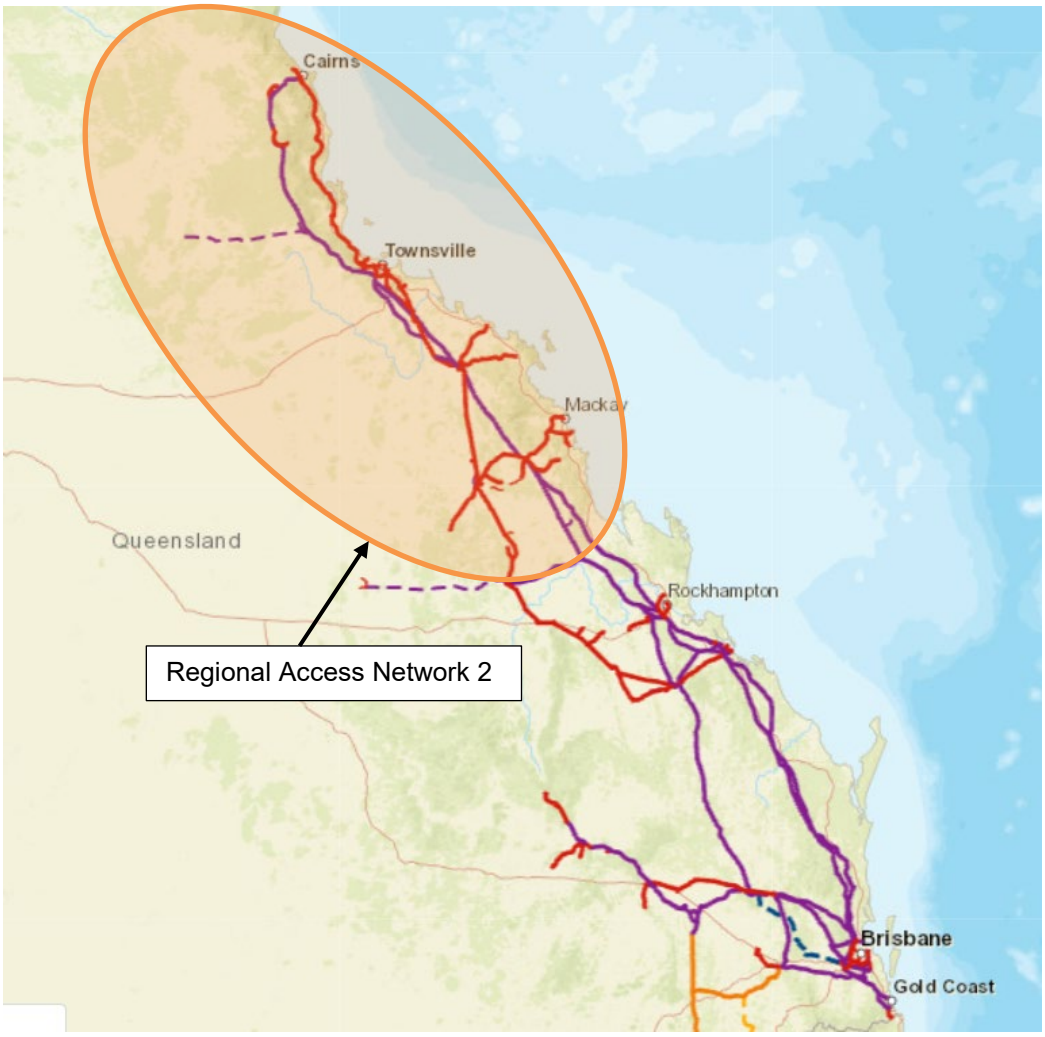


Figure 2 – Geographic Location:



3. Deliverables

The following deliverables must be provided in response to this Project Scope Report:

1. A report (e.g. Project Proposal) detailing the works to be delivered, proposed staging of delivery, resource requirements and confirmation of availability, and outage requirements

2. A class 3 estimate (minimum), based upon published design advices detailing key design elements

3. A basis of estimate document and risk table, detailing the key estimating assumptions and delivery risks

4. A detailed project staging and outage plan that includes primary plant, secondary systems and telecoms outages

4. Project Scope

4.1. Original Scope

The following scope presents a functional overview of the desired outcomes of the project. The proposed solution presented in the estimate must be developed with reference to the remaining sections of this Project Scope Report, in particular *Section 6 Special Considerations*.

Briefly, the project consists of the replacement of the PDH and SDH equipment with single consolidated devices at 61 sites in North Queensland detailed in Attachment 1.

4.1.1. Telecoms Works

The telecom works are to be performed in two stages as follows:-

Deliverable 1 – Equipment Testing and Validation

The proposed architecture and equipment procurement relies on the satisfactory completion of Proof of Concept and Interoperability Testing. The scope of the testing shall include:

- Procurement of the equipment to be tested
- Training
- Proof of Concept Testing
- Interoperability Testing
- OSS Equipment/Service Modelling (Netcracker development)

To ensure continuity of services the deployed solution will be installed in parallel to the existing SDH and PDH networks, and therefore a validation report is required for each site to determine supporting infrastructure requirements for:-

- Floor space availability in both communications and control buildings;

- Rack Space availability in both communications and control buildings;
- DC Battery System capacity in both communications and control buildings;
- Any perceived or known issues;

Deliverable 2 – Deployment

For the sites in the identified RAN 2 (Refer Attachment 1):-

- Install and configure the solution determined in Deliverable 1;
- Migrate services to the new solution and decommission existing equipment;
- Network is to be fully modelled in OSS;
- Network management system is to be integrated into OSS

Decommission and recover all redundant equipment, and update drawing records, SAP records, config files, databases etc. accordingly.

4.1.2. Easement/Land Acquisition & Permits Works

Not applicable

4.2. Key Scope Assumptions

The following assumptions should be included in the estimating of this scope:

- All procurement activities will be conducted in accordance with Powerlink's procurement procedures;
- At the conclusion of the work the deployed solution is to fully modelled in the OSS;
- SAP is to updated to reflect the delivered solution and the decommission assets and equipment;
- Treatment of alarms from the delivered solution should be in accordance with operational requirements;
- Any training required on the delivered solution and it's component equipment should be included in the estimate;

4.3. Variations to Scope (post project approval)

The list of sites provided in attachment 1 has been updated to transfer the telecommunications works to the following co-requisite projects:

- CP.02400 Alan Sherriff Secondary Systems replacement
- CP.02841 Garbutt Secondary Systems replacement
- CP.03035 King Creek Secondary System and CVT Replacement
- CP.03036 Stony Creek Secondary System and CVT Replacement
- CP.01581 North Goonyella Secondary Systems Replacement

It is anticipated the core network will be established prior to the commissioning of the new secondary systems.

5. Key Asset Risks

Asset risk management shall be in accordance with the Asset Risk Management Process Guideline (A4870713).

6. Project Timing

6.1. Stage 1 Approval Date

The anticipated date by which the project will be approved is 30 April 2024.

6.2. Site Access Date

Access to all Powerlink substation sites will be immediately available.

6.3. Commissioning Date

The latest date for the commissioning of the new assets included in this scope and the decommissioning and removal of redundant assets, where applicable, is 30 June 2027.

7. Special Considerations

The following issues are important to consider during the implementation of this project:

- the estimate should consider the implications of relevant workplace health & safety legislation in delivering the proposed solution, and identify any alternative solutions that meet the functional requirements included in the scope whilst having the potential to facilitate improvements in safety during construction, or as built, and:
    - include an assessment of the risks associated with each option identified, after all available and applicable mitigating actions have been implemented; and
    - include an allowance for any specific safety related activities required in the delivery phase of the project;
- Any existing assets to be removed and disposed of as part of this scope must be identified within the Project Proposal together with the forecast asset write off amounts at time of disposal;
- Plant and equipment identified to be recovered for use as spares or returned to stores should be packaged and transported to Powerlink's storage location. Costs to be included in the estimate;
- The estimate should include an allowance for the requirements of Safety in Design to be fully satisfied during project design;
- A high level project implementation plan including staging and outage plans should be considered and produced as part of the Project Proposal;

- Ensure coordination with projects CP.02771, CP.02513 & CP.02269 taking into account interdependencies including but not limited to interfacing and compatibility of hardware and software systems, staging and programming of interrelated projects, and outages and resources constraints. The estimate shall include a provision for co-ordination meetings and activities.
- Ensure the Data Communications Network (DCN) is modified accordingly.

8. Asset Management Requirements

Equipment shall be in accordance with Powerlink equipment strategies.

Unless otherwise advised Deni Mauro will be the Project Sponsor for this project. The Project Sponsor must be included in any discussions with any other areas of Network and Business Development including Asset Strategies & Planning.

Max Samarski will provide the primary customer interface. The Project Sponsor should be kept informed of any discussions with the customer.

9. Asset Ownership

The works detailed in this project will be Powerlink Queensland assets.

10. System Operation Issues

Operational issues that should be considered as part of the scope and estimate include:

- interaction of project outage plan with other outage requirements;
- likely impact of project outages upon grid support arrangements; and
- likely impact of project outages upon the optical fibre network.

11. Options

Not applicable

12. Division of Responsibilities

Not applicable.

13. Related Projects

Project No.	Project Description	Planned Comm Date	Comment
Pre-requisite Projects			
CP.02424	DWDM Replacement	Dec 2024	
Co-requisite Projects			
CP.03036	T178 Stony Creek Secondary System and Trench CVT Replacement	June 2028	
CP.03035	King Creek Secondary System and CVT Replacement	June 2027	
CP.01581	North Goonyella Secondary Systems Replacement	June 2027	
CP.02400	Alan Sherriff Secondary Systems Replacement	Oct 2028	
CP.02841	Garbutt Secondary Systems Replacement	Oct 2028	
Other Related Projects			
CP.02771	Telecommunication Network Consolidation RAN 1	Oct 2024	
CP.02812	Telecommunication Network Consolidation RAN 3	Oct 2026	
CP.02813	Telecommunication Network Consolidation RAN 4	Oct 2027	
CP.02512	OpsWAN and MPLS Replacement RAN 1	Dec 2024	
CP.02513	OpsWAN and MPLS Replacement RAN 2	Dec 2025	
CP.02514	OpsWAN and MPLS Replacement RAN 3	Dec 2026	
CP.02822	OpsWAN and MPLS Replacement RAN 4	Dec 2027	
CP.02977	DC System Replacement 2024 & 2025	Dec 2025	Known interaction at Edmonton regarding issue with like-for-like battery replacement under CP.02977.
CP.02978	DC System Replacement 2026 & 2027	June 2027	

Attachment 1 – RAN Sites Stage 1

Sites	
H011	Nebo Substation
H013	Ross Substation
H032	Chalumbin Substation
H035	Strathmore Substation
H039	Woree Substation
H044	Bayview Height Repeater
H056	Yabulu South Substation
H060	Walkamin Substation
H091	Haughton River
KMTR	Kelly Mountain Microwave Repeater
MFXR	Mt Fox Fibre Optic Repeater
MSVR	Mt Seaview (Ergon)
MBLR	Mount Blackwood Radio Repeater
SMHR	Smith's Hill (Telstra)
T034	Moranbah Substation
T036	Invicta Sugar Mill Substation
T037	Collinsville Power Station Switchyard
T038	Mackay Substation
T039	Proserpine Substation
~~T046~~	~~Garbutt Substation~~
T048	Tully Substation
T049	Kareeya Power Station Switchyard
T050	Innisfail Substation
T051	Cairns Substation (Hartley Street)
T053	Kamerunga Substation
T054	Barron Gorge Power Station
T055	Turkinje Substation
T056	Townsville South Substation
T065	Alligator Creek Substation
T067	Kemmis Substation
T069	Newlands Substation
T092	Dan Gleeson Substation
T094	Townsville East
T105	Oonooie (QR)
T107	Coppabella Substation
T110	Peak Downs Substation
T112	Mt McLaren
T129	Edmonton Substation
T134	Cardwell Substation
~~T137~~	~~North Goonyella~~
T139	Burton Downs Substation
T140	Townsville Zinc Smelter Substation (Korea Zinc)
T141	Pioneer Valley Substation

T143	Stuart Gas Turbine and Substation
T145	Townsville GT Switchyard (Yabulu Sub)
~~T150~~	~~Alan Sherriff Substation~~
T157	Ingham South Substation
T171	El Arish Substation
T172	Mindi Substation (Joint QR)
T175	QR Bolingbroke
~~T177~~	~~King Creek~~
~~T178~~	~~Stony Creek~~
T181	Bowen North
T192	QR Mackay Ports Substation
T193	Clare South Substation
T212	Goonyella Riverside Substation
T215	Eagle Downs Substation
T220	Collinsville North
T221	Wotonga Substation
T245	Moranbah Plains
WRLR	Wrights Lookout
H108	Tumoulin
T256	Greenland*
H097	Arumfield*
H093	Guybal Munjan*
QRMC	Queensland Railways, Mackay

* Under Construction

Project Scope Report

CP.02513

OpsWAN and MPLS Replacement RAN 2

Proposal – Version 3

Document Control

Change Record

Issue Date	Revision	Prepared by	Reviewed by	Approved by	Background
20/07/2020	1	[redacted]	[redacted]	[redacted]	PSR created
13/02/2025	2	[redacted]	[redacted]	[redacted]	Section 4.2 broken into two portions of work
5/10/25	3	S[redacted]	[redacted]	[redacted]	Attachment 2 – Site list updated to transfer Alan Sherriff and Garbutt works to secondary system replacement projects. PIF reference updated.

Related Documents

Issue Date	Responsible Person	Objective Document Name
30/05/2025	[redacted]	Project Initiation Form – OPSWAN Replacement Stage 2 (A5872150)

Document Purpose

The purpose of this Project Scope Report is to define the business (functional) requirements that the project is intended to deliver. These functional requirements are subject to Powerlink's design and construction standards and prevailing asset strategies, which will be detailed in documentation produced during the detailed scoping and estimating undertaken by DTS (or OSD), i.e. it is not intended for this document to provide a detailed scope of works that is directly suitable for estimating.

Project Contacts

Project Sponsor	[redacted]	
Connection & Development Manager	Tba	
Strategist – HV/Digital Asset Strategies	[redacted]	
Grid Planner	tba	
Manager Projects	tba	
Project Manager	tba	
Design Coordinator	tba	

Project Details

1. Project Need & Objective

Powerlink's Operational Wide Area Network (OPSWAN) enables data communications between Powerlink's corporate head office, the BCS, remote substations and telecommunications sites. This data network supports a wide range of real time and business support services such as the HV network operation decision support, HV asset condition monitoring and maintenance, and Corporate Services and as such is critical to the operation of the HV network.

The provision of the OpsWAN network has typically been deployed within the scope of substation refurbishments and secondary systems replacements, and as such has varied in architecture dependent on the design standards in place at the time of implementation.

This has resulted in different LAN architectures and varying equipment and whilst the majority of the switches in the LAN have been replaced over time, the devices that perform the routing functionality can no longer be procured, and are either beyond manufacturer support or in a support mode.

Powerlink will be replacing the SDH and PDH network with a consolidated hybrid multiplexer device that will provide MPLS-TP and emulated TDM capability. The IP/MPLS layer will continue to be provided in a separate device to the hybrid multiplexer.

The objective of this project is to provide the functionality within the substation environment determined under CP.02512 OpsWAN and MPLS Replacement RAN 1. This will include the replacement of all the legacy MPLS equipment with a new IP/MPLS and OpsWAN solution. The project will be completed by December 2027.

2. Project Drawing

Not applicable

3. Deliverables

The following deliverables must be provided in response to this Project Scope Report:

1. A report (e.g. Project Proposal) detailing the works to be delivered, proposed staging of delivery, resource requirements and confirmation of availability, and outage requirements

2. A class 3 estimate (minimum), based upon published design advices detailing key design elements

3. A basis of estimate document and risk table, detailing the key estimating assumptions and delivery risks

4. A detailed project staging and outage plan that includes primary plant, secondary systems and telecoms outages

4. Project Scope

4.1. Original Scope

The following scope presents a functional overview of the desired outcomes of the project. The proposed solution presented in the estimate must be developed with reference to the remaining sections of this Project Scope Report, in particular *Section 6 Special Considerations*.

The scope of this project will provide functionality within the substation environment that will replace that currently provided by the IP/MPLS and OpsWAN routers and allow the eventual migration of all services to IP.

OpsWAN routers will be decommissioned and services migrated to the new solution. OpsWAN will become a service over the network rather than a network in its own right.

As this project will be delivered in parallel but not necessarily in conjunction with the network consolidation projects, design shall consider the ultimate network architecture with a view to facilitating future cutover works where feasible.

It is also intended, within the scope of this project, to reduce the amount of equipment required within the substation where it is feasible to do so.

Briefly, the project consists of the replacement of the OpsWAN and MPLS equipment at sites as identified in Attachment 1 and 2. The project will be separated into two portions to facilitate the early works at the aggregation sites to support the major projects.

4.2. Communications Deployment

The scope of work includes the design, procurement, installation, testing and commissioning of new OpsWAN and IP/MPLS solution determined by CP.02512 OpsWAN and MPLS

Replacement RAN 1. The sites included in the replacement are provided in Attachment 1 and 2.

The project will be separated into two portions of work to help facilitate the execution of non-regulated projects.

Portion 1: Aggregation sites – Attachment 1

This portion of the project is to deliver an early works package to facilitate the construction at aggregation sites listed in Attachment 1, and provisioning of services over the DWDM network. This will assist future projects by providing a link from the regions to the head end sites at Virginia and the Business Continuity site.

Within the scope of work:

- Testing activities for the remainder of the proposed solution used in RAN 2 sites;
- Procure the required MPLS equipment;
- Install and test the new MPLS equipment;
- Procure additional cards for the DWDM network, if required;
- Provision services over the DWDM network;
- Test and Commission of new services;
- Update drawing records, SAP records, and any other records, as required.

Note – Decommissioning, recovery of spares, and service migration activities will be excluded in this portion of works. The deployment of the OpsWAN solution at these sites will be included in Portion 2.

Portion 2: Remainder sites – Attachment 2

Within the scope of work:

- Procure the required equipment;
- Install and test the new equipment;
- Migrate “OpsWAN” to the new solution and decommission the existing OpsWAN routers. Ensure the solution addresses cut over requirements;
- Migrate any services that are provided by the [redacted]’s to the new system;
- OpsWAN switches that do not comply with the current standard are to be replaced with a POE capable device;
- Where a POE switch is installed, IP telephone handsets are to be provided and OTN lines are to be delivered natively over the IP network;
- Where possible a minimum of 100Mbit is to be provisioned for OpsWAN services at the substation;
- Devices and their logical connections are to be modelled in nexus in line with the solution provided by CP.02512;
- Decommission and recover all redundant equipment, and update drawing records, SAP records, configuration files, etc. accordingly;
- All records across systems are to be updated and in alignment with each other;

4.3. Key Scope Assumptions

The following assumptions should be included in the estimating of this scope:

- The solution will be developed within the scope of CP.02512. The scope of this project includes the deployment of the solution to the sites per Attachment 1 and 2.
- The DWDM replacement at the relevant sites will have been completed prior to replacement of the MPLS equipment identified in Attachment 1.
- The OpsWAN and MPLS equipment installed in CP.02512 was successful and lessons learnt have been documented to assist with the deployment in RAN 2.

4.4. Variations to Scope (post project approval)

Not applicable

5. Project Timing

5.1. Project Approval Date

The anticipated date by which the project will be fully approved is 31 December 2025.

5.2. Site Access Date

The scope of works is at existing Powerlink sites. As a result site access is already available.

5.3. Commissioning Date

The latest date for the commissioning of the new assets for portion 1 sites is the 31 December 2025. The latest date for the commissioning of the new assets included in portion 2, and the decommissioning and removal of redundant assets, where applicable, is 31 December 2027.

6. Special Considerations

The following matters are important to consider during the implementation of this project:

- to facilitate the early works package, the project estimate can be separated into the two portions to facilitate the early works package.
- the estimate should consider the implications of relevant workplace health & safety legislation in delivering the proposed solution, and identify any alternative solutions that meet the functional requirements included in the scope whilst having the potential to facilitate improvements in safety during construction, or as built, and:
    - include such alternative solutions as a fully costed option for further investigation;

- include an assessment of the risks associated with each option identified, after all available and applicable mitigating actions have been implemented; and
- include an allowance for any specific safety related activities required in the delivery phase of the project;

- comments during the project proposal stage are also invited on, but not limited to:
  - proposed technical solutions including any alternatives;
  - replacement sequence of legacy equipment;
  - one time solution at each site where practical;
  - space and power supply limitations;
  - the proposed timing and identification of critical lead time for orders;
  - effects of other projects occurring around the same time and ways of minimising any competition for resources; and
  - outage management and any critical outages envisaged;
- any existing assets to be removed and disposed of as part of this scope must be identified within the estimate together with the forecast early asset write off amounts at time of disposal;
- plant and equipment identified as suitable to be recovered for use as spares or returned to stores should be packaged and transported to an appropriate storage location, with a suitable allowance for the cost included in the estimate.

7. Asset Management Requirements

Equipment shall be in accordance with Powerlink equipment strategies.

Unless otherwise advised Deni Mauro will be the Project Sponsor for this project. The Project Sponsor must be included in any discussions with any other areas of Strategy and Business Development.

Business Development will provide the primary customer interface as required. The Project Sponsor should be kept informed of any customer discussions.

8. Asset Ownership

The works detailed in this project will be Powerlink Queensland assets.

9. System Operation Issues

Operational issues that should be considered as part of the scope and estimate include:

- interaction of project outage plan with other outage requirements;
- likely impact of project outages upon grid support arrangements; and

- likely impact of project outages upon the optical fibre network.

10. Options

Not applicable

11. Division of Responsibilities

Not applicable

12. Related Projects

Project No.	Project Description	Planned Comm Date	Comment
Pre-requisite Projects			
CP.02512	OpsWAN and MPLS Replacement RAN 1	Apr 2026	
CP.02771	Telecommunication Network Consolidation RAN 1	Jun 2026	
CP.02424	DWDM Replacement	Dec 2025	
Co-requisite Projects			
CP.03035	King Creek Secondary System and CVT Replacement	Jun 2027	
CP.03036	T178 Stony Creek Secondary System and Trench CVT Replacement	Jun 2028	
CP.01581	North Goonyella Secondary Systems Replacement	Jun 2027	
CP.02400	Alan Sherriff Secondary Systems Replacement	Oct 2028	
CP.02841	Garbutt Secondary Systems Replacement	Oct 2028	
Other Related Projects			
CP.02811	Telecommunication Network Consolidation Stage 2	Jun 2027	
CP.02812	Telecommunication Network Consolidation Stage 3	Jun 2028	
CP.02813	Telecommunication Network Consolidation Stage 4	Jun 2029	
CP.02514	OpsWAN Replacement Stage 3	Apr 2028	
CP.02822	OpsWAN Replacement Stage 4	Dec 2028	

Attachment 1

Sites for Portion 1:

- H011 NEBO SUBSTATION **
- H013 ROSS SUBSTATION **
- H018 TARONG****
- H024 CALVALE SUBSTATION ***
- H029 STANWELL SUBSTATION ***
- H036 BLACKWALL****
- T034 MORANBAH SUBSTATION **
- T051 CAIRNS SUBSTATION (Hartley Street)**
- T056 TOWNSVILLE SOUTH SUBSTATION **

** MPLS only installed at the sites with remaining work to be cover in Portion 2.

*** MPLS only installed at these sites with the remaining work to be included in CP.02514.

****MPLS only installed at these sites with the remaining work to be included in CP.02822.

Attachment 2

Sites for Portion 2:

- H032 CHALUMBIN SUBSTATION
- H035 STRATHMORE SUBSTATION
- H039 WOREE SUBSTATION
- H044 BAYVIEW HEIGHTS REPEATER
- H056 YABULU SOUTH SUBSTATION
- H060 WALKAMIN SUBSTATION
- H084 MT EMERALD WIND FARM
- H087 CRUSH CREEK SUBSTATION
- H091 HAUGHTON RIVER
- KMTR KELLY MOUNTAIN MICROWAVE REPEATER
- MFXR MT FOX FIBRE OPTIC REPEATER
- MSVR MT SEAVIEW (ERGON)
- MTBR MOUNT BLACKWOOD RADIO REPEATER
- SMHR SMITHS HILL (TELSTRA)
- T036 INVICTA SUGAR MILL SUBSTATION
- T037 COLLINSVILLE POWER STATION SWITCHYARD
- T038 MACKAY SUBSTATION
- T039 PROSERPINE SUBSTATION
- T046 GARBUTT SUBSTATION – To be installed under CP.02841
- T048 TULLY SUBSTATION
- T049 KAREEYA POWER STATION SWITCHYARD
- T050 INNISFAIL SUBSTATION
- T053 KAMERUNGA SUBSTATION
- T054 BARRON GORGE POWER STATION
- T055 TURKINJE SUBSTATION
- T065 ALLIGATOR CREEK SUBSTATION

- T067 KEMMIS SUBSTATION
- T069 NEWLANDS SUBSTATION
- T092 DAN GLEESON SUBSTATION (EX CONDON)
- T094 TOWNSVILLE EAST
- T105 OONOOIE (QR)
- T107 COPABELLA SUBSTATION
- T110 PEAK DOWNS SUBSTATION
- T112 MT MCLAREN (QR)
- T129 EDMONTON SUBSTATION
- T134 CARDWELL SUBSTATION
- T137 NORTH GOONYELLA – To be installed under CP.01581
- T139 BURTON DOWNS SUBSTATION
- T140 TOWNSVILLE ZINC SMELTER SUBSTATION (Korea Zinc)
- T141 PIONEER VALLEY SUBSTATION
- T143 STUART GAS TURBINE and SUBSTATION
- T144 TOWNSVILLE GAS TURBINE PS
- T145 TOWNSVILLE GT SWITCHYARD (YABULU SUB)
- T150 ALAN SHERRIFF SUBSTATION – To be installed under CP.02400
- T157 INGHAM SOUTH SUBSTATION
- T158 YALKULA SUBSTATION (ERGON)
- T171 EL ARISH SUBSTATION
- T172 MINDI SUBSTATION (Joint QR)
- T175 QR BOLINGBROKE
- T176 LOUISA CREEK SUBSTATION (ERGON)
- T177 KING CREEK – To be installed under CP.03035
- T178 STONY CREEK – To be installed under CP.03036
- T181 BOWEN NORTH
- T192 QR MACKAY PORTS SUBSTATION
- T193 CLARE SOUTH SUBSTATION
- T212 GOONYELLA RIVERSIDE SUBSTATION
- T215 EAGLE DOWNS SUBSTATION
- T220 COLLINSVILLE NORTH SUBSTATION
- T221 WOTONGA SUBSTATION
- T240 CLARE FRV SOLAR FARM
- T241 ROSS RIVER SOLAR FARM
- T245 MORANBAH PLAINS
- T255 RUGBY RUN SOLAR FARM
- WRLR WRIGHTS LOOKOUT
- Z005 HAYMAN SOLAR FARM
- Z006 DAYDREAM SOLAR FARM
- Z015 HAUGHTON SOLAR FARM

Concept Estimate CP.02811 – Telecoms Network Consolidation RAN 2

Record ID	A5898060	
Policy stream	Asset Management	
Authored by	[redacted]	Project Manager

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1. Executive Summary

Powerlink's telecommunications network enables communications between substations, Virginia and the Business Continuity Site (BCS) to support a wide range of real time and business support services including Supervisory Control and Data Acquisition (SCADA), protection, remote monitoring and voice services. The current network consists of several network 'layers' consisting of Plesiochronous Digital Hierarchy (PDH), Synchronous Digital Hierarchy (SDH), Multiprotocol Label Switching (MPLS) and Dense Wave Division Multiplexing (DWDM) technologies.

PDH technology has been employed in the network since the late 1980s, with only one remaining vendor. SDH was installed between 2011 and 2016 while MPLS has been deployed since 2014. The current telecommunications platforms are approaching end of life with manufacturer support expected to end progressively between 2023 and 2027.

The market was engaged to determine the equipment available that will meet Powerlink's requirements into the future, which resulted in the telecommunication network redevelopment strategy to consolidate and regionalise the telecommunication network. The strategy comprises the establishment of four Regional Access Networks (RANs).

In line with this strategy, the Telecommunications Network Consolidation projects involve the replacement of the PDH and SDH equipment with single consolidated devices.

The objective of this project is to replace the PDH and SDH equipment with single consolidated devices at 61 sites in Far North Queensland shown in Section 2.2 by June 2029

1.1 Project Estimate

Total	Cost	%
Overheads	$3,661,440	6%
Design	$7,622,860	13%
Procurement	$15,517,515	26%
Construction	$23,015,009	38%
Commissioning	$3,489,477	6%
Post Commissioning	$1,013,508	2%
NETOPS	$5,937,321	10%
Estimate Total (inc Project Allowance)	**$60,257,129**	**100%**

1.2 Risk & Contingency

Estimate Class	Class 5	
Estimate accuracy (+% / -%)	**+20% / - 20%**	**Base Cost $**
Base Estimate		$60,257,129
Proposed Release Budget		
Mitigated Risk (Known Risk)	20%	$12,051,426
Contingency (Unknown Risk)	20%	$12,051,426
	Total Risk (40%)	$24,102,852
	TOTAL	$84,359,981

1.3 Project Financial Year Cash Flows

Financial Year	Unescalated Cost
To June 2023	$0
To June 2024	$612,687
To June 2025	$6,894,798
To June 2026	$8,061,285
To June 2027	$15,259,605
To June 2028	$15,259,605
To June 2029	$13,300,430
To June 2030	$868,721
To June 2031	$0
Total	**$60,257,129**

2. Project Dependencies & Sites

2.1 Project Dependencies & Interactions

This project is dependent on the completion delivery of the following projects:

Project No.	Project Description	Planned Comm. Date
Pre-requisite Projects		
CP.02512	OpsWAN and MPLS Replacement RAN 1	Oct 2026
CP.02771	Telecommunication Network Consolidation RAN 1	Oct 2026
CP.02424	DWDM Replacement	Dec 2025
Co-requisite Projects		
CP.03035	King Creek Secondary System and CVT Replacement	Jun 2027
CP.03036	T178 Stony Creek Secondary System and Trench CVT Replacement	Jun 2028
CP.01581	North Goonyella Secondary Systems Replacement	Jun 2027
CP.02400	Alan Sherriff Secondary Systems Replacement	Oct 2028
CP.02841	Garbutt Secondary Systems Replacement	Oct 2028
Other Related Projects		
CP.02513	OpsWAN & MPLS Replacement RAN 2	Jun 2029
CP.02812	Telecommunication Network Consolidation Stage 3	Jun 2030
CP.02813	Telecommunication Network Consolidation Stage 4	Jun 2032
CP.02514	OpsWAN & MPLS Replacement RAN 3	Jun 2030
CP.02822	OpsWAN & MPLS Replacement RAN 4	Jun 2032

2.2 Sites

61 sites to be completed as part of this project detailed below:

H011	Nebo Substation
H013	Ross Substation
H032	Chalumbin Substation
H035	Strathmore Substation
H039	Woree Substation
H044	Bayview Height Repeater
H056	Yabulu South Substation
H060	Walkamin Substation
H091	Haughton River
KMTR	Kelly Mountain Microwave Repeater
MFXR	Mt Fox Fibre Optic Repeater
MSVR	Mt Seaview (Ergon)

MBLR	Mount Blackwood Radio Repeater
SMHR	Smith's Hill (Telstra)
T034	Moranbah Substation
T036	Invicta Sugar Mill Substation
T037	Collinsville Power Station Switchyard
T038	Mackay Substation
T039	Proserpine Substation
T048	Tully Substation
T049	Kareeya Power Station Switchyard
T050	Innisfail Substation
T051	Cairns Substation (Hartley Street)
T053	Kamerunga Substation
T054	Barron Gorge Power Station
T055	Turkinje Substation
T056	Townsville South Substation
T065	Alligator Creek Substation
T067	Kemmis Substation
T069	Newlands Substation
T092	Dan Gleeson Substation
T094	Townsville East
T105	Oonooie (QR)
T107	Coppabella Substation
T110	Peak Downs Substation
T112	Mt McLaren
T129	Edmonton Substation
T134	Cardwell Substation
T139	Burton Downs Substation
T140	Townsville Zinc Smelter Substation (Korea Zinc)
T141	Pioneer Valley Substation
T143	Stuart Gas Turbine and Substation
T145	Townsville GT Switchyard (Yabulu Sub)
T157	Ingham South Substation
T171	El Arish Substation
T172	Mindi Substation (Joint QR)
T175	QR Bolingbroke
T181	Bowen North
T192	QR Mackay Ports Substation
T193	Clare South Substation
T212	Goonyella Riverside Substation
T215	Eagle Downs Substation
T220	Collinsville North
T221	Wotonga Substation
T245	Moranbah Plains
WRLR	Wrights Lookout
H108	Tumoulin
T256	Greenland*

H097	Arumfield*
H093	Guybal Munjan*
QRMC	Queensland Railways, Mackay

* Under Construction

Project Scope

2.3 Original Scope

2.3.1 Scope

The following scope presents a functional overview of the desired outcomes of the project. Briefly, the project consists of the replacement of the PDH and SDH equipment with single consolidated devices at 61 sites in Far North Queensland detailed in Section 2.2.

The proposed architecture and equipment procurement relies on the satisfactory completion of Proof of Concept and Interoperability Testing. The scope of the testing shall include:

Deliverable 1 – Equipment Testing & Validation

- Procurement of the equipment to be tested
- Training
- Proof of Concept Testing
- Interoperability Testing
- OSS Equipment/Service Modelling (Netcracker development)

To ensure continuity of services the deployed solution will be installed in parallel to the existing SDH and PDH networks, and therefore a validation report is required for each site to determine supporting infrastructure requirements for:

Deliverable 2 – Deployment

- Install and configure the solution determined in Proof of Concept and Interoperability Testing.
- Migrate services to the new solution and decommission existing equipment.
- Network is to be fully modelled in OSS.
- Network management system is to be integrated into OSS.

  Decommission and recover all redundant equipment, and update drawing records, SAP records, config files, databases etc. accordingly.

Network Overview:

2.3.1.1 Substations Works

Install new Hybrid Multiplexer solution at the Substation sites shown in Section 2.2. With this equipment being installed into existing Telecoms Building/Room or Control Building/Room on these sites.

Install new fibre optic tie cables between Control Buildings/Rooms to Telecoms Buildings/Rooms on Substation sites as required.

2.3.1.2 Telecommunication Works

- Complete Telecommunications Bearer and Data Design for all sites and handover.
- Complete Secondary Systems Design (Automation) for all sites and handover.
- Upgrade of 48VDC battery systems as required.
- Upgrade of Fibre Optic tie cable capacity between Control Buildings/Rooms and Telecoms Buildings/Rooms on Substation sites as required to allow migration of services.
- Installation of Hybrid equipment at 36 sites as identified in Section 2.2.
- Installation of GPS Clocks for Network Synchronisation as required.
- Connection of the hybrid equipment to the Data Communications Network (DCN) for the remote access or provisioning of services.
- Configuration, test and commissioning of the Hybrid equipment.
- Migration of existing services from the legacy network to the new Hybrid network.
- Decommissioning of the legacy SDH, and PDH equipment and return to stores as spares.
- SAP Data Capture and Functional Location Modelling.
- Model the Hybrid equipment and network in Nexus.

2.3.2 Major Scope & Estimate Assumptions

The following assumptions should be included in the estimating of this scope:

- Field resourcing will be utilised from the local region to limit the travel time spent and facilitate an efficient delivery. Multiple field crews will be required for the delivery in the timeframes provided.
- The schedule is dependent on the availability of resources including Project Management, Construction Management, Design, Field Services and Commissioning resources.
- This estimate includes the cost to complete the procurement, design, installation and commissioning at all sites.
- The completion of the Interoperability Testing completed under CP.02811 will determine if the proposed solution will have the capability to integrate with the existing equipment installed at customer sites.
- The migration of services will be on a like-for-like basis.
- The DC Battery Systems at all sites will not be correctly sized and it has been assumed that 15% of sites will be required to be upgraded to maintain capacity requirements.
- Fibre optic tie cable capacity between Control Buildings/Rooms to Telecoms Buildings/Rooms at all Substation sites will not have enough spare core capacity for migration of services. So it has been assumed that most sites will need to be upgraded.
- Air Conditioning at each site is suitable; and
- Space is available inside the Telecoms Buildings/Rooms at all the sites to construct the proposed solution alongside the existing network equipment. With no new Telecoms Buildings being allowed for as part of this estimate.

2.3.3 Scope & Estimate Exclusions

- The replacement of equipment at all customer sites connected to Powerlink assets has been excluded.
- Modifications to buildings and Air Conditioning systems;
- The installation/construction of new telecommunication buildings;

2.3.4 Project Schedule

Project Stage	Date
Project Approval / PAN Issued (Deliverable 1)	Completed
Project Approval / PAN Issued (Portion 2)	Apr 2025
Design Advices Complete	Jun 2026
Site Designs Commenced (handed over in stages)	Jul 2026
Procurement Commence (staged)	Jul 2026
Site Work Commenced	Sep 2026
Project Commissioned	Jun 2029
Post Commissioning Completed	Jun 2030

2.3.5 Project Risk

No	Category	Risk Description	Impact	Consequence (L/M/H)
1	Supplier	Netcracker development costs increase due to scope change.	Minor	M
2	Design	Design is delayed and in-complete	Minor	M
3	Weather	Inclement weather can restrict site access	Moderate	M
4	Technical	Customer interconnection to Powerlink network	Minor	L
5	Resourcing	OSD Resources may not be available when required	Minor	H
6	Delivery	Project scope changes lead to additional delivery costs e.g. Noise mitigation, Cyber security requirements.	Minor	M
7	Delivery	Inadequate infrastructure at site (AC/DC Power, Air Con, Panel/Floor Space, Fibre Cores)	Minor	H
8	Industrial Relations	Need to engage with Employee Association before the introduction of new equipment into the network	Minor	L

3. References

Document name and hyperlink (as entered into Objective)	Rev	Date
Project Scope Report CP.02811 Telecommunication Network Consolidation RAN 2	3	05/06/2025

Concept Estimate CP.02513 – OpsWAN and MPLS Replacement RAN 2

Record ID	A5859000	
Policy stream	Asset Management	
Authored by	[redacted]	Project Manager

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1. Executive Summary

Powerlink's Operational Wide Area Network (OPSWAN) enables data communications between Powerlink's corporate head office, the BCS, remote substations and telecommunications sites. This data network supports a wide range of real time and business support services such as the HV network operation decision support, HV asset condition monitoring and maintenance, and Corporate Services and as such is critical to the operation of the HV network.

The provision of the OpsWAN network has typically been deployed within the scope of substation refurbishments and secondary systems replacements, and as such has varied in architecture dependent on the design standards in place at the time of implementation.

This has resulted in different LAN architectures and varying equipment and whilst the majority of the switches in the LAN have been replaced over time, the devices that perform the routing functionality can no longer be procured and are beyond manufacturer support both for hardware and software.

Powerlink will be replacing the SDH and PDH network with a consolidated hybrid multiplexer device that will provide MPLS-TP and emulated TDM capability. The IP/MPLS layer will continue to be provided in a separate device to the hybrid multiplexer.

The objective of this project is to provide the functionality within the substation environment determined under CP.02512 OpsWAN and MPLS Replacement RAN 1. This will include the replacement of all the legacy MPLS equipment with a new IP/MPLS and OpsWAN solution. The project will be commissioned by June 2029.

Briefly, the project consists of the replacement of the OpsWAN and MPLS equipment at 72 Powerlink Substation and Communication sites identified in Section 2.2.

1.1 Project Estimate

Estimate Summary	Base $	%
[redacted]	[redacted]	[redacted]
Total Base Estimate	$31,643,095	100%

1.2 Risk & Contingency

Estimate Class	Class 5	
Estimate accuracy (+% / -%)	**+20% / - 20%**	**Base Cost $**
Base Estimate		$31,643,095
Proposed Release Budget		
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]

1.3 Project Financial Year Cash Flows

Financial Year	Unescalated Cost
To June 2026	$4,673,046
To June 2027	$15,392,124
To June 2028	$5,479,321
To June 2029	$5,584,173
To June 2030	$514,431
To June 2031	$0
Total	**$31,643,095**

2. Project Dependencies & Sites

2.1 Project Dependencies & Interactions

This project is dependent on the completion delivery of the following projects:

Project No.	Project Description	Planned Comm. Date
Pre-requisite Projects		
CP.02512	OpsWAN and MPLS Replacement RAN 1	Oct 2026
CP.02771	Telecommunication Network Consolidation RAN 1	Oct 2026
CP.02424	DWDM Replacement	Dec 2025
Co-requisite Projects		
CP.03035	King Creek Secondary System and CVT Replacement	Jun 2027
CP.03036	T178 Stony Creek Secondary System and Trench CVT Replacement	Jun 2028
CP.01581	North Goonyella Secondary Systems Replacement	Jun 2027
CP.02400	Alan Sherriff Secondary Systems Replacement	Oct 2028
CP.02841	Garbutt Secondary Systems Replacement	Oct 2028
Other Related Projects		
CP.02811	Telecommunication Network Consolidation Stage 2	Jun 2029
CP.02812	Telecommunication Network Consolidation Stage 3	Jun 2030
CP.02813	Telecommunication Network Consolidation Stage 4	Jun 2032
CP.02514	OpsWAN & MPLS Replacement RAN 3	Jun 2030
CP.02822	OpsWAN & MPLS Replacement RAN 4	Jun 2032

2.2 Sites

72 sites to be completed as part of this project split across two portions of work detailed below:

Sites for Portion 1:

- H011 NEBO SUBSTATION **
- H013 ROSS SUBSTATION **
- H024 CALVALE SUBSTATION ***
- H029 STANWELL SUBSTATION ***
- T034 MORANBAH SUBSTATION **
- T056 TOWNSVILLE SOUTH SUBSTATION **
- T051 CAIRNS HARTLEY ST **
- H036 BLACKWALL SUBSTATION ****
- H018 TARONG SUBSTATION ****

** MPLS only installed at the sites with remaining work to be cover in Portion 2.

*** MPLS only installed at these sites with the remaining work to be included in CP.02514.

**** MPLS only installed at these sites with the remaining work to be included in CP.02822.

Sites for Portion 2:

- H032 CHALUMBIN SUBSTATION
- H035 STRATHMORE SUBSTATION
- H039 WOREE SUBSTATION
- H044 BAYVIEW HEIGHTS REPEATER
- H056 YABULU SOUTH SUBSTATION
- H060 WALKAMIN SUBSTATION
- H084 MT EMERALD WIND FARM
- H087 CRUSH CREEK SUBSTATION
- H091 HAUGHTON RIVER
- KMTR KELLY MOUNTAIN MICROWAVE REPEATER
- MFXR MT FOX FIBRE OPTIC REPEATER
- MSVR MT SEAVIEW (ERGON)
- MTBR MOUNT BLACKWOOD RADIO REPEATER
- SMHR SMITHS HILL (TELSTRA)
- T036 INVICTA SUGAR MILL SUBSTATION
- T037 COLLINSVILLE POWER STATION SWITCHYARD
- T038 MACKAY SUBSTATION
- T039 PROSERPINE SUBSTATION
- T046 GARBUTT SUBSTATION – To be installed under CP.02841
- T048 TULLY SUBSTATION
- T049 KAREEYA POWER STATION SWITCHYARD
- T050 INNISFAIL SUBSTATION
- T051 T053 KAMERUNGA SUBSTATION
- T054 BARRON GORGE POWER STATION
- T055 TURKINJE SUBSTATION
- T065 ALLIGATOR CREEK SUBSTATION
- T067 KEMMIS SUBSTATION
- T069 NEWLANDS SUBSTATION
- T092 DAN GLEESON SUBSTATION (EX CONDON)
- T094 TOWNSVILLE EAST
- T105 OONOOIE (QR)
- T107 COPABELLA SUBSTATION
- T110 PEAK DOWNS SUBSTATION
- T112 MT MCLAREN (QR)
- T129 EDMONTON SUBSTATION
- T134 CARDWELL SUBSTATION
- T137 NORTH GOONYELLA – To be installed under CP.01581
- T139 BURTON DOWNS SUBSTATION
- T140 TOWNSVILLE ZINC SMELTER SUBSTATION (Korea Zinc)
- T141 PIONEER VALLEY SUBSTATION
- T143 STUART GAS TURBINE and SUBSTATION
- T144 TOWNSVILLE GAS TURBINE PS
- T145 TOWNSVILLE GT SWITCHYARD (YABULU SUB)
- T150 ALAN SHERRIFF SUBSTATION – To be installed under CP.02400
- T157 INGHAM SOUTH SUBSTATION
- T158 YALKULA SUBSTATION (ERGON)
- T171 EL ARISH SUBSTATION
- T172 MINDI SUBSTATION (Joint QR)
- T175 QR BOLINGBROKE
- T176 LOUISA CREEK SUBSTATION (ERGON)
- T177 KING CREEK – To be installed under CP.03035

- T178 STONY CREEK – To be installed under CP.03036
- T181 BOWEN NORTH
- T192 QR MACKAY PORTS SUBSTATION
- T193 CLARE SOUTH SUBSTATION
- T212 GOONYELLA RIVERSIDE SUBSTATION
- T215 EAGLE DOWNS SUBSTATION
- T220 COLLINSVILLE NORTH SUBSTATION
- T221 WOTONGA SUBSTATION
- T240 CLARE FRV SOLAR FARM
- T241 ROSS RIVER SOLAR FARM
- T245 MORANBAH PLAINS
- T255 RUGBY RUN SOLAR FARM
- WRLR WRIGHTS LOOKOUT
- Z005 HAYMAN SOLAR FARM
- Z006 DAYDREAM SOLAR FARM
- Z015 HAUGHTON SOLAR FARM

Project Scope

2.3 Original Scope

2.3.1 Scope

The Scope of the Project is to replace the legacy IP/MPLS and OpsWAN equipment that provides the networking functionality in the substation environment with a new solution and allow the eventual migration of all services to IP. Work includes the design, procurement, installation, testing and commissioning of new OpsWAN and IP/MPLS solution determined by CP.02512 OpsWAN and MPLS Replacement RAN 1.

OpsWAN routers will be decommissioned and services migrated to the new solution. OpsWAN will become a service over the network rather than a network in its own right.

As this project will be delivered in parallel but not necessarily in conjunction with the network consolidation projects, design shall consider the ultimate network architecture with a view to facilitating future cutover works where feasible.

The project will replace the IP/MPLS and OpsWAN equipment at all sites identified in section 2.2. The project will be separated into two portions to facilitate the early works at the aggregations sites to support the delivery of the major projects.

Portion 1 of the project is to deliver an early works package to facilitate the construction at aggregation sites listed in Section 2.2, and provisioning of services over the DWDM network. This will assist future projects by providing a link from the regions to the head end sites at Virginia and the Business Continuity site.

Network Overview:

2.3.1.1 Substations Works

Install new IP/MPLS solution at the Substation sites shown in Section 2.2. With this equipment being installed into existing Telecoms Building/Room or Control Building/Room on these sites.

2.3.1.2 Telecommunication Works

- Procure the required equipment.
- Install and test the new equipment.
- Migrate “OpsWAN” to the new solution and decommission the existing OpsWAN routers. Ensure the solution addresses cut over requirements.
- Migrate any services that are provided by the [redacted]s to the new system.
- OpsWAN switches that do not comply with the current standard are to be replaced with a POE capable device.
- Where a POE switch is installed, IP telephone handsets are to be provided and OTN lines are to be delivered natively over the IP network.
- Where possible a minimum of 100Mbit is to be provisioned for OpsWAN services at the substation.
- Devices and their logical connections are to be modelled in nexus in line with the solution provided by CP.02512.
- Decommission and recover all redundant equipment, and update drawing records, SAP records, configuration files, etc. accordingly.
- All records across systems are to be updated and in alignment with each other.

2.3.2 Major Scope & Estimate Assumptions

The following assumptions should be included in the estimating of this scope:

- Field resourcing will be utilised from the local region to limit the travel time spent and facilitate an efficient delivery. Multiple field crews will be required for the delivery in the timeframes provided.
- The technical solution developed under CP.02512 remains the approved solution for use.
- The schedule is dependent on the availability of resources including Project Management, Construction Management, Design, Field Services and Commissioning resources.
- The Telecommunications Network Consolidation solution at the relevant sites will have been completed prior to replacement of the OpsWAN MPLS solution as part of this project.
- The migration of services will be on a like-for-like basis.
- The DC Battery Systems at each site are of suitable sizing to allow for the connection of the new equipment until the existing equipment is decommissioned and removed from service.
- Any DC Battery Systems that do require upgrading due to capacity restraints, it has been assumed that this upgrade will take place as part of the coinciding Telecoms Network Consolidation RAN project.
- Air Conditioning at each site is suitable.
- Space is available inside the communications rooms at all the sites to construct the proposed solution alongside the existing network equipment.
- The equipment deployed at each site under the Telecommunications Network Consolidation project RAN 2 will have the capacity available for the MPLS to carried over this network between sites.
- Any fibre optic tie cables that do require upgrading due to capacity restraints, it has been assumed that this upgrade will take place as part of the coinciding Telecoms Network Consolidation RAN project.
- It has been assumed that no further testing or implementation will be required on the NMS or OSS introduced under CP.02512.

2.3.3 Scope & Estimate Exclusions

- The replacement of equipment at all customer sites connected to Powerlink assets.
- Upgrade of DC Battery Systems.
- Modifications to buildings and Air Conditioning systems.
- The installation/construction of new telecommunication buildings.
- New Fibre Optic infrastructure between buildings or between substations.

2.3.4 Project Schedule

Project Stage	Date
Project Approval / PAN Issued (Portion 1)	Dec 2025
Project Approval / PAN Issued (Portion 2)	Apr 2026
Design Advices Complete	Jun 2026
Site Designs Commenced (handed over in stages)	Jul 2026
Procurement Commenced (staged)	Jul 2026
Site Work Commenced	Sep 2026
Project Commissioned	June 2029
Post Commissioning Completed	Dec 2030

2.3.5 Project Risk

No	Category	Risk Description	Impact	Consequence (L/M/H)
1	Supplier	Netcracker development costs increase due to scope change.	Minor	M
2	Design	Design is delayed and in-complete	Minor	M
3	Weather	Inclement weather can restrict site access	Moderate	M
4	Technical	Customer interconnection to Powerlink network	Minor	L
5	Resourcing	OSD Resources may not be available when required	Minor	H
6	Delivery	Project scope changes lead to additional delivery costs e.g. Noise mitigation, Cyber security requirements.	Minor	M
7	Delivery	Inadequate infrastructure at site (AC/DC Power, Air Con, Panel/Floor Space, Fibre Cores)	Minor	H
8	Industrial Relations	Need to engage with Employee Association before the introduction of new equipment into the network	Minor	L

3. References

Document name and hyperlink (as entered into Objective)	Rev	Date
Project Scope Report CP.02513 OpsWAN and MPLS Replacement RAN 2 (A3400817)	3	06/06/2025