Powerlink 2027-32 Revenue Proposal

Project Pack
Traction Supply Infrastructure Replacement Programme

Project Status: Unapproved

Network Requirement

Queensland has two main coal transport railway haulage networks in Central Queensland to efficiently transport coal from inland coal mines to coal export ports on the coast. These two main networks are:

- Blackwater system from the Blackwater / Emerald area to Gladstone; and
- Goonyella system the Moranbah area to Hay Point and Dalrymple Bay, south of Mackay.

The first electrification of both the Blackwater and Goonyella rail networks was completed in the mid-1980's. Powerlink provides 132kV connection to traction supply customers who then utilise 132/50kV transformers to provide overhead two-phase 50kV supply to individual track sections. The two-phase supply arrangement leads to substantial phase voltage unbalance when sections are heavily loaded. Phase balancing Static Var Compensators (SVCs), which include harmonic filtering, serve to maintain quality of supply to other network customers within prescribed standards.

The original substation plant is now 40 years old, and the circuit breakers have condition issues with manufacturer support no longer available and limited spares holdings. There are instrument transformers from the original establishment at end of technical service life including oil filled current transformers with porcelain housings that at this age have increased probability of explosive failure mode. Furthermore, there is a lack of manufacturer support and spares for legacy secondary systems equipment, including the SVC secondary systems.

The driver for reinvestment in the traction supply infrastructure is plant condition risks associated with high voltage and secondary system equipment. Without reinvestment in the traction supply infrastructure an outage or unavailability of high voltage equipment would place traction load at risk and potentially disrupt a significant sector of the Queensland economy. There is a need to take corrective action to continue to meet the supply obligations of the grandfathered prescribed Connection Agreement as well as to ensure that safety and quality of supply standards maintained.

Recommended Option

As the projects that make up the Traction Supply Infrastructure Replacement Programme are currently 'Unapproved', project need and options will be subjected to the public RIT-T consultation process to identify the preferred option closer to the time of investment. The objective is to undertake the minimum works to affect a 20-year life extension to the traction supply infrastructure.

The current recommended option involves selective replacement of primary plant, full replacement of secondary systems and SVC refurbishment (where applicable).

Options considered but not proposed include:

- Do Nothing – rejected due to non-compliance with supply obligations to the customer;
- Partial primary plant replacement, full secondary systems replacement and replacement of the SVC with a new Synchronous Static Compensator (STATCOM) – expected to be greater overall cost;
- Full primary plant and secondary systems replacement – expected to be greater overall cost; and
- Non-network option – no viable non-network options have been identified at this time.

Cost and Timing

The estimated cost of the traction supply infrastructure replacement projects is set out in Table 1 below:

Project	Estimated cost (Real, 2025/26)	Target commissioning date
CP.01162 – Callemondah Substation Reinvestment	$25.6 million	2029
CP.01636 – Wandoo Substation Reinvestment	$24.9 million	2031
CP.01921 – Coppabella Substation Reinvestment	$54.8 million	2031
CP.01922 – Grantleigh Substation Reinvestment	$52.8 million	2034
CP.02320 – Oonooie Substation Reinvestment	$53.3 million	2032
CP.02885 – Blackwater Substation Reinvestment	$21.3 million	2031
Traction Supply Infrastructure Replacement Programme - Total	**$232.7 million**	

Documents in Traction Supply Infrastructure Replacement Programme Project Pack

Documents available to AER on request.