Prepared for
Powerlink Queensland
ABN: 82 078 849 233

Chapter 26

Environmental Management

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Genex Kidston Connection Project - Ministerial Infrastructure Designation Assessment Report

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26.0 Environmental Management

26.1 Powerlink Commitment to Environmental Management

Powerlink is committed to the protection of the environment and management of adverse environmental impacts as a result of Powerlink activities. Every Powerlink individual is responsible and accountable for environmental management, and Powerlink leaders are active role models of this commitment.

Powerlink's Health, Safety and Environment Policy outlines the commitment to delivering environmental outcomes for everyone, everywhere and everyday by the following.

- Setting objectives and targets to monitor performance aimed at the elimination or minimisation of work-related injury, illness, and environmental harm.
- Systematically identifying, assessing, and managing as far as reasonably practicable the health and safety risks and environmental impacts which may arise from our activities.
- Ensuring health, safety and environmental responsibilities are clearly defined and individuals are accountable for performance within their scope of responsibility.
- Consulting and communicating with employees and other stakeholders on relevant health, safety and environmental matters.
- Ensuring the planning, design, construction, operation and maintenance of the network assets is safe, including electrically safe.
- Applying a continuous improvement framework to the development, implementation and review of standards, procedures and supporting documentation which complies with health, safety and environmental statutory obligations; is fit for purpose; drives improved health and safety performance, protection of the environment and prevention of pollution.
- Providing the necessary resources to meet these commitments.

26.2 Construction Environmental Management

The mitigation and management measures for this Project have been proposed in line with Powerlink's Standard Environmental Controls Specification. All construction measures proposed for the Project are documented in the Environmental Management Plans (EMP) (Appendix B). The EMP contains:

- roles and responsibilities
- performance criteria
- monitoring and compliance, including audits
- training and competency.

The EMP is capable of being read as a stand-alone document without reference to other parts of this assessment report.

26.3 Environmental Design

Powerlink has implemented the hierarchy of management principles in the design of the Project to date. These principles and the order in which they have been applied is as follows.

- Avoid: locating activities to avoid direct and indirect impacts on environmental values.
- Minimise: minimising direct and indirect impacts where they cannot be completely avoided.
- Mitigate: implementing mitigation and management measures to reduce direct, indirect and cumulative impacts.

Using the principles above, Powerlink have gone through an extensive impact minimisation process to achieve approximately 50% reduction in direct impacts to vegetation clearing. Key actions have included the following.

- Review of preliminary design to increase ground clearance where possible and hence reducing the amount of vegetation required to be cleared for the safe operation of the transmission line (i.e. required to maintain electrical clearances). This included:
  - adjustments in tower placements along the alignment (utilising topography)
  - addition of towers along the alignment in locations to minimise span lengths
  - raising of tower heights.
- The transmission line design was reviewed in relation to existing vegetation on the Preferred Alignment to determine how much vegetation is required to be removed to construct, operate and maintain the transmission line. The following clearing areas were applied.
  - Full Width Clearing: where vegetation is required to be removed across the easement corridor (60 metres wide).
  - Draw Wire Path Clearing: where vegetation is required to be removed in the centre of the corridor (16 - 21 metres wide).
  - Restricted clearing (RC) – Clearing of incompatible vegetation only (generally nominated in sensitive areas to minimise habitat removal).
  - Tower pad sites: require a 30 x 30 metre or 40 x 40 meter pad to be cleared.

In addition, to vegetation clearing there are a range of management and mitigation measures relevant to design and operation of the Project which have been applied or committed to. These are provided detailed in the following sections.

26.3.1 Design

Table 27-1 Design environmental management measures

Measure	Section Reference
Rainwater tank(s) will be provided at each switching station site for general use excluding drinking water. Water tanks will be enclosed and provided with first flush devices in order to improve quality of rainwater caught and stored on site for use. All roads into the switching station compound and equipment area will be either gravelled or bitumen sealed.	Section 3.6.1, Section 3.6.3
Any required consents from resource interest holders will be sought once detailed design is completed and prior to construction activities commencing.	Section 3.3, Section 4.2.4
The location of access tracks on each property will be confirmed closer to the construction phase in consultation with each landholder.	Section 3.5.1.2
Where transmission lines crossroad reserves, approval will be sought from the relevant road authority under Section 102 of the *Electricity Act 1994*.	Section 3.5.2.7, Section 24.1.1

Measure	Section Reference
Where possible: • structures will be located 50 m from watercourses. • where transmission lines cross watercourses, previously cleared tracks for existing crossings will be preferentially used to minimise new watercourse crossings and ground disturbance. • Where possible, these existing access tracks will include established and maintained erosion and control measures (culverts, whoa boys and spoon drains), minimising vegetation clearing and disturbance to soil structures.	Section 3.5.2, Section 4.2.3, Section 4.3, Section 7.3.1
Where bed level crossings for new access tracks are required, design will be required to comply with the *'Accepted Development Requirements for Operational Work that is Constructing or Raising Waterway Barrier Works'*.	Section 3.5.2.8, Section 7.2.3
Geotechnical assessments will be undertaken prior to construction to determine the appropriate foundation type for each structure and the switching station. The choice of foundation type is dependent on the specific nature of the soil and rock and takes into account soil/concrete friction strength, water levels, soil bearing capacity, construction constraints, rock levels, and soil properties.	Section 4.3
Prior to construction Powerlink will undertake desktop assessments to assess all parcels of land listed as containing known or suspected (likely) contamination. Testing for the presence of contamination prior to excavation or other earthworks will be undertaken based upon a risk assessment for sites listed on the EMR and where known or suspected contamination exists. Excavated soil material will be reused where possible and any contaminated material unable to be remediated must be disposed of by an appropriately licensed waste contractor to a licensed waste facility.	Section 4.3
The electricity transmission infrastructure will be designed and constructed to reasonably withstand severe weather events, including potential cyclonic conditions near the North Queensland coast.	Section 5.3
Flood extents for the Burdekin River for the 1% AEP are extensive and transmission lines will not be able to span this entire extent. Therefore, transmission lines will be required to be installed in the Burdekin River floodplain. The structures will aim to be sited outside of overland flow channels, where possible. Foundations are generally designed in accordance with AS7000:2010 (Overhead Line Design) and AS2159:2009 (Piling – design and installation).	Section 7.3.1.1
The switching station is required to be installed above the 0.5% AEP water level in accordance with the Planning for stronger, more resilient electrical infrastructure guidelines. A Switching Station Stormwater Drainage Management Plan will be developed as part of the detailed design phase. The plan will provide the stormwater drainage strategy, drainage system and any pre-treatment proposed prior to discharge of surface water runoff.	Section 7.3.1
Management measures for groundwater impacts will be required if water is sourced from bores for construction. This will be determined at the detailed design phase and will include consultation with landholders.	Section 7.3.1.4

Measure	Section Reference
The volumes of water required for the Project and their locations will be determined at the detailed design phase. If water is to be sourced from a watercourse, Powerlink Queensland will extract water in accordance with the '*Exemption requirements for constructing activities for the take of water without a water entitlement (OSW/2020/5467 Version 4.01 updated 05/02/2021* or any later revision). If Powerlink Queensland cannot meet the exemption requirements of the above document, a water licence application will be required.	Section 7.3.1.5
Co-locating the Project with existing electricity infrastructure where possible. Where possible, adjusting structure locations to minimise impacts to property operations. Positioning of towers within stock route will be discussed and agreed between Powerlink and the relevant stock route manager in order to minimise any impacts to the functionality of the stock route network. Where the Project access may require improvement to existing landholder infrastructure, additional or replacement will be provided for items such as gates, grids, culverts or signage to mitigate impacts on access and infrastructure to the properties.	Section 13.3
To the greatest extent possible, seek to avoid tower placement in locations that are potentially visually prominent from residences and public viewing points on local roads, including the 'Great Inland Way' Tourist Drive. Retain existing vegetation, where possible around the corridor or associated with roads and properties near the corridor to the greatest extent compatible with safety.	Section 14.3
Powerlink has negotiated cultural heritage management agreements (CHMAs) with the relevant Native Title parties (the Aboriginal Parties) in accordance with the *Aboriginal Cultural Heritage Act 2003* and intends to manage any Aboriginal cultural heritage risks through the implementation of these agreements. The CHMAs include agreed methodology for the identification and management of Aboriginal cultural heritage sites and values within, and in the vicinity of, the Preferred Alignment. This is expected to include detailed cultural heritage surveys of the Preferred Alignment with the Traditional Owners and agreement on management requirements. The locations and significance of the sites identified from database searches will be confirmed through surveys conducted under the CHMAs.	Section 16.0
The Project will not impact on any known registered historical cultural heritage values. There is, however, some potential for impact on currently unrecorded places, principally on the Copperfield leases. It is recommended that site inspection be undertaken in this area to identify any mining heritage places, and to recommend management measures if required.	Section 17.3

Measure	Section Reference
A detailed Traffic Management Plan for the Project to be developed and implemented prior to construction works commencing. Ensure that the movement of major vehicles carrying oversized components (such as transmission structure components) will be outside the times that school bus movements will occur and all key stakeholders are included in the communications regarding changed or impacted bus routes, including school bus operators, school bus committees, schools/parents and local authorities. Obtain local authority (i.e. local Council) approval for potential road closures or traffic delays to emergency services and the local community. Any temporary road closures will involve on site traffic management, so that in the event of emergency service vehicles needing to pass through the areas where stringing is occurring, passage will be provided. Apply for appropriate approvals and permits under the *Transport Infrastructure Act 1994* from DTMR for any permanent or temporary access to state control roads, including associated roadworks for access, the transport of over dimensioned equipment and materials on state control roads and for ancillary works and encroachments. Detailed planning to be undertaken for conductor stringing across State controlled and other regional roads in consultation with DTMR and relevant local authorities. All necessary approvals required from DTMR and local authorities for undertaking these works will be applied for and received prior to works commencing. Consultation with the relevant authority or landholder of local airstrips and risk assessment maybe necessary to implement controls to minimise hazards or restrictions created by the Preferred Alignment for landing, aerial spraying or aerial mustering activities etc.	Section 18.4
Corona discharge noise at the tin mine camp has the potential to exceed the night noise limit nominated. To minimise the impacts, additional mitigation measures could be applied by Powerlink Queensland such as additional line fittings and insulator arrangements, designed for the purpose of further minimising corona discharge in the vicinity of the tin mine camp.	Section 19.2.4
The design of the Project corridor will ensure adequate emergency service access. Consideration will be given to the provision for first response firefighting, accessible and sufficient water supply for firefighting purposes and the development of safe evacuation plans. The positioning of towers adjacent to identified abandoned mine site will be investigated and assessed prior to construction so as to minimise any conflict with mine shafts, mine waste and water hazards. Investigations and assessments may include but are not limited to the following. • Desktop assessments based of historical data, geological and topographical mapping. • Field inspections of the identified mine sites to determine the mine shaft direction in relation to the positioning of the transmission structures and overall Preferred Alignment. Geotechnical investigations on adjacent structures which may have potential to conflict. The location in which switching station will be located will ensure sufficient setback to other land uses, specifically residential areas in accordance with the *Powerlink Functional Policy for Substation Site Selection*.	Section 20.4 Section 20.4

Measure	Section Reference
The switching station will be surrounded by a large cleared buffer area for protection in the event of a fire. Queensland has adopted the Australian Standard for the Construction of Buildings in Bushfire Prone Areas - AS3959 – 2009. AS3959 sets out the requirements for the construction of buildings in bushfire prone areas in order to improve their safety when they are subjected to burning debris, radiant heat or flame contact generated from a bushfire. Project buildings constructed will be consistent with the Standard. As per Powerlink's Bushfire Mitigation Plan (ASM-PLN-A3285085) Powerlink has a specific Guideline for the Design of Transmission Lines for Bushfires (A544415) which will be applied to the design of the Project. The transmission line design will include all current design principles and safeguards to avoid arcing and line breakage. Allow additional tower height clearances in areas with high fuel loads, where practicable.	Section 22.2, Section 22.3
The Project will be designed to ensure sufficient separation distance between the proposed and existing transmission/sub transmission lines. The Project will be designed to consider the requirements of private infrastructure within the Project area. This may include the installation of visual marker balls on the transmission line near landing airstrips, where deemed necessary for safety.	Section 24.3

26.3.2 Operation and maintenance

Table 27-2 Operation and maintenance environmental management measures

Measure	EAR Chapter Reference
Vegetation regrowth control within the switching station compound and under the incoming power supply transmission lines will be undertaken to maintain electrical safety clearances between the conductors and vegetation.	Section 3.6.3
Monitoring of erosion during routine service maintenance. Regular routine service maintenance of vegetation for transmission line easements and switching station buffer.	Section 5.4
Dust mitigation methods should be utilised whenever possible to minimise local impacts, especially during dry periods. To minimise potential exhaust emissions, all equipment used should be well maintained and fit for purpose.	Section 6.4.2

Measure	EAR Chapter Reference
Measures to be implemented in the operational phase of the Project to protect water resources include the following. • Ongoing implementation of erosion and sediment controls for areas where required. • All vehicles and equipment is to be maintained. • Spills are to be cleaned up immediately. • Routine maintenance of vehicles is to occur in designated areas with appropriate infrastructure. Routine maintenance of vehicles, including refuelling is not to occur within 100 m of the high bank of a watercourse or drainage line. • Scour protection, beds and banks at watercourse crossings to be regularly inspected and maintained. • The hydraulic capacity of any cross-drainage infrastructure is to be regularly inspected for blockage, sediment, vegetation etc. Where flows are being inhibited by such processes, remedial actions are to occur. • Liaise with regulatory authorities where required prior to disturbing the bed and banks of any watercourse, including for remedial works.	Section 7.3.3,
A Biosecurity Management Plan will be developed to support operation of the Project and to achieve Powerlink Queensland's general biosecurity obligation under the *Biosecurity Act 2014*.	Section 12.4
Monitoring of weather and identification of severe weather events in areas of operation will be carried out. Regular easement inspections will be carried out to monitor and identify the introduction or spread of identified weeds or pests on easement and access tracks. If maintenance work requires access to landholders' property, Powerlink will communicate with landholders and agree upon the biosecurity management strategies, including the use of any chemicals to ensure ongoing effectiveness.	Section 20.4
Should radio or television interference be identified, Powerlink Queensland can assist people experiencing reception problems caused by transmission line by providing advice and, if required, signal amplification equipment. Powerlink Queensland will assess the potential for induced charge in proximal metal objects, and propose mitigation measures for any objects in or near the easement that may be affected. Where the possibility that a transmission line could cause interference with the operation of an electric fence running parallel to the line, Powerlink Queensland will provide mitigation measures to assist the owner of any electric fence installation that might be adversely affected. Powerlink have prepared a short information sheet (Appendix G) which outlines recommended separation distances and fence hardware, and most importantly, it encourages landholder to contact Powerlink regarding their proposed electric fencing arrangement so that technical advice can be provided. In the event that corona–induced interference becomes a problem, Powerlink Queensland will arrange to undertake any necessary remedial work.	Section 21.5

Measure	EAR Chapter Reference
Operation and maintenance of the Project will be undertaken in line with Powerlink's Bushfire Mitigation Plan (ASM-PLN-A3285085). Powerlink Queensland adopts an asset risk management approach that considers potential fire starts from network components (e.g. insulator and instrument failures). High consequence areas and the likelihood of failures are assessed to determine the optimal investment in the network. Flammable and combustible liquids (i.e. fuel) will be stored within facilities designed to AS1940–2004 'The Storage and Handling of Flammable and Combustible Liquids'. Burning of vegetation is prohibited, unless a permit is obtained by a local fire authority and Powerlink Queensland. Powerlink Queensland maintains its easement through routine vegetation maintenance to ensure vegetation remains outside of untrained exclusion zones and incompatible species do not interfere with the safe operation of the transmission line. Cleared vegetation will not be placed in a location which may increase any fire hazard and impact on the Project in the event of a fire.	Section 22.3
A detailed Waste Management Plan is to be developed prior to operation and maintenance, including all actions needed to effectively implement the waste management hierarchy and a waste monitoring program. Ablution facilities will require regular servicing and all waste transport must be undertaken by a licensed regulated waste transport contractor, with waste tracking certificates to be completed. Regulated wastes must only be disposed of at an appropriately licensed facility (e.g. sewage treatment plant).	Section 23.3.2

26.3.3 Decommissioning

Table 27-3 Decommissioning environmental management measures

Measure	EAR Chapter Reference
All necessary permits and/or approvals which are required to undertake decommissioning works will be sought and received prior to decommissioning works commencing. Prior to decommissioning of the transmission line, a Decommissioning Management Plan which provides detail regarding the proposed decommissioning works, environmental risks associated with decommissioning and management and mitigation measures will be prepared.	Section 3.5.4
Dust mitigation methods should be implemented during decommissioning to minimise any potential ait quality impacts.	Section 6.4.2