

Executive Summary

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Genex Kidston Connection Project - Ministerial Infrastructure Designation Assessment Report

Executive Summary

Introduction

Genex Power Limited (Genex) is seeking to establish the Kidston Renewable Energy Hub, a combination of solar and pumped storage hydro power generation facility at the old Kidston mine in northwest Queensland. Queensland Electricity Transmission Corporation Limited (trading as Powerlink Queensland) has been engaged by Genex to connect this facility to its existing transmission network at Mount Fox, via a new 275 kilovolt (kV) electricity transmission infrastructure project known as the Genex Kidston Connection Project (the Project).

Powerlink Queensland (Powerlink) is a Transmission Entity under the *Electricity Act 1994*, and owns, operates and maintains Queensland's high voltage electricity transmission network. As a Transmission Network Service Provider in the national electricity market, Powerlink's primary role is to provide a secure and reliable network to transport high voltage electricity from generators to electricity distribution networks.

The Project is proposed as 'Infrastructure' assessable under the *Planning Act 2016* Ministerial Infrastructure Designation (MID) process. In order to obtain a MID, an Infrastructure Entity is required to prepare an MID Assessment Report taking into account the potential environmental, social and economic impacts associated with the construction, operation and maintenance of the Project. This MID Assessment Report has been prepared to support MID of the Project. To demonstrate mitigation and management measures, this MID Assessment Report includes an Environmental Management Plan (EMP) for the relevant built components of the Project.

In early-mid 2018, Powerlink undertook public consultation on the Terms of Reference (ToR) for this MID Assessment Report (previously referred to as Draft Environmental Assessment Report). The ToR is not prescribed by the Ministers Guidelines and Rules for MID, but is an initiative by Powerlink to ensure a robust environmental assessment is undertaken for the Project.

The Project previously underwent detailed assessment through the former Infrastructure Designation process in 2018 under the *Planning Act 2016*. A Draft Environmental Assessment Report (Draft EAR) was lodged with the Ministerial Infrastructure Designations Team (MID Team) in September 2018. Subsequent community and stakeholder consultation and State Interests Review was undertaken on the Draft EAR. A Final EAR was not submitted to the MID Team for final approval due to the Project being put on a temporary hold in early-2019. In April 2021, the Project was re-commenced upon execution of a connection agreement between Powerlink and Genex. This Report presents the updated Draft EAR, in the form of the Ministerial Infrastructure Designation Assessment Report (MID Assessment Report).

Project Justification and Feasible Alternatives

In 2016/17, Powerlink prepared a Corridor Selection Report (CSR) which identified a preferred corridor for the Project. The corridor was selected on the basis that it offers the lowest potential for environmental, social and economic impact and incorporated stakeholder and landholder feedback

A preliminary alignment for the transmission line was identified within the preferred corridor. The preliminary alignment was predominantly co-located with existing Ergon Energy (Ergon) infrastructure in the region to realise a range of social, environmental and economic benefits compared to a 'greenfield' alignment.

Development alternatives were also considered in the CSR, including underground transmission lines. Underground transmission lines were not determined to be feasible based on a range of factors, including (but not limited to) cost; constructability; increased erosion potential; and no ability to span environmentally, or culturally sensitive areas.

The switching station sites outlined in this document have been selected in line with Powerlink's Site Selection Guideline which required a range of factors to be considered including their location relative to the proposed generator and existing network; anticipated development size; site environmental constraints and physical features and surrounding land use. A key design objective for transmission infrastructure is the need to maintain a safe operating environment both for the public and for operational personnel, and achieving a high reliability of electricity supply at the least cost consistent with a low environmental impact.

Project Description

The Project comprises the following components:

- a 275 kV switching station proposed in the locality of Mount Fox, Queensland (the 'Mount Fox switching station')
- an up to 185 kilometre (km) 275 kV single circuit transmission line between Mount Fox switching station and the Kidston Renewable Energy Hub (the 'transmission line').

The Preferred Alignment for the proposed transmission line traverses three Local Government Areas (LGA), being Hinchinbrook Shire Council (HSC), Charters Towers Regional Council (CTRC) and Etheridge Shire Council (ESC).

The Project will be constructed over an 18 month period (approximately), commencing from April 2022. Works on the switching station and transmission line will be undertaken concurrently. The anticipated peak construction workforce will be approximately 370 persons, occurring over a one to two month peak period. Four temporary accommodation camps for the Project workforce are proposed.

Construction of the proposed transmission line will involve a series of field activities which are broadly grouped as follows - mobilisation including establishment of accommodation camps, laydowns and offices; installation of gates, grids, clean down bays and access tracks; vegetation clearing; tower site benching; foundation installation; structure assembly and erection; conductor and earth wire stringing; site rehabilitation and demobilisation.

Land

The topography along the Preferred Alignment ranges from flat low lying land to steep crossings of multiple ranges and mountains, including part of the Pelican Range (70 km west of Mount Fox) and the Great Dividing Range (100 km west of Mount Fox). A range of earthworks will be required for construction of the Project at several relatively small, discrete locations and no other changes to the geomorphic landscape are anticipated. Therefore, construction impacts on existing topography are anticipated to be negligible. No operational impacts to topography are anticipated.

The soil classification of the Preferred Alignment includes vertosols; chromosols; sodosols; tenosols; rudosols, dermosols and kandosols. Any activity which exposes the ground surface, such as vegetation clearing or earthworks, may potentially result in soil erosion or other soil management issues if not appropriately managed. Potential impacts may occur as a result of soil compaction. This may include a decline in soil structural stability, a decrease in water entering the soil either as rain or irrigation, and subsequent issues with poor root growth, soil cultivation and seedbed preparation. Where possible, in preference to creating new tracks, existing access tracks will be used. Erosion and sediment control measures will be implemented, and reinstatement will occur as soon as practicable.

The Preferred Alignment is mapped as having a "high probability" of containing acid sulfate soils (ASS) where the Preferred Alignment crosses the Copperfield River and East Creek near Kidston and the Burdekin River near Greenvale. These high probability areas are mapped as between 100 m and 250 m in width where they intersect the Preferred Alignment. Structures will be located a minimum of 50 m from watercourses, where possible, and it is anticipated that most areas mapped as high probability ASS will be avoided during construction.

Several resource interests governed by the *Mineral Resources Act 1989* have been identified. One Mining Lease is directly traversed by the Preferred Alignment, being the old Kidston gold mine. Where infrastructure is proposed to cross or traverse a resource interest, consent from the respective authority holders may be required for construction of the transmission line, however this is not linked to the Infrastructure Designation process. The Project intersects with 18 Exploration Permits for Minerals (EPM). Exploration activities associated with these EPMs are not sufficiently advanced for possible mining footprints to be considered for potential impacts within this assessment report.

No lots traversed by the Preferred Alignment were identified on the contaminated land register (CLR) during the search. Eight lots were identified on the environmental management register (EMR) for a 'notifiable activity' (activities that have the potential to cause land contamination). For most rural properties only a small area may be affected by the notifiable activity, such as chemicals used in livestock dips and spray races. Prior to construction Powerlink will undertake desktop assessments to

assess all parcels of land listed as containing known or suspected (likely) contamination within the Project area. Powerlink will conduct risk-based assessments off collected data to determine if additional geotechnical investigations and testing will be required.

Air Quality

To characterise the existing air quality values in the Project area a review of available air quality monitoring data was conducted. The nearest available air quality monitoring data is from Townsville, located approximately 100 km south-east of the Preferred Alignment. As the Project area lacks large populations and special industry, Townsville should be considered to be a very conservative estimation of the existing Project area air environment.

The construction and operational phases of the Project are likely to include activities that have the potential to impact the local air quality, mainly resulting from potential dust emissions. A semi-quantitative risk assessment of potential dust impacts on surrounding sensitive receptors was undertaken for the construction phase of the Project. The assessment showed that unmitigated air emissions from the construction phase of the Project pose a low risk of dust soiling and human health impacts. Emissions associated with construction activities are expected to be localised to the immediate area and only present for a short period of time. Nonetheless, active management of dust emissions during the construction phase is recommended to ensure project goals are met.

Potential air quality impacts associated with the operation and maintenance of the Project are also anticipated to be low to negligible. The activities associated with the operational phase that have potential to create emissions are mostly related to vegetation management, use and maintenance of access tracks and exhaust emissions associated with vehicles and machinery. Mitigation and management measures proposed for both the construction and operation phases are in line with Powerlink's Standard Environmental Controls Specification.

Hydrology

The Project involves 31 crossings of a third order (or higher) stream, with five of these in the Gilbert Basin and the remaining 26 crossings in the Burdekin River Basin. All watercourses crossed by the Project are ephemeral and generally cease to flow shortly after the cessation of rainfall. Water flows in the upper Burdekin can persist several months following the wet season, however, flows generally cease in the dry season in this section of the river.

Where practicable, transmission line structures are typically placed on high points in the landscape to maximise span distances. Transmission lines typically avoid drainage lines and depressions in the landscape, minimising their impact on surface water resources.

The flood immunity of the Mount Fox switching station was determined for the 0.5% Annual Exceedance Probability (AEP) event. The Mount Fox switching station lies outside of the flood extents determined for the probable maximum flood as part of the Burdekin Flood Investigation.

Protected Areas

The Project does not impact any protected areas. The nearest identified protected area is the Girringun National Park, approximately 350 m north of the Preferred Alignment at the eastern (Mount Fox) end. All other identified protected areas are located greater than 1.5 km from the Preferred Alignment. Potential impacts on protected areas are therefore anticipated to be limited to minor and indirect impacts on Girringun National Park associated with noise, dust, and visual amenity. Standard mitigation measures will be implemented to minimise potential dust and noise impacts on protected areas.

Flora

The flora values of the Preferred Alignment were assessed via a range of desktop and field survey activities. The Department of Resources Regional Ecosystem mapping showed the Preferred Alignment to primarily comprise remnant vegetation (including heterogeneous polygons) analogous to up to forty-seven (47) Regional Ecosystems.

Based on the status under the *Vegetation Management Act 1994* five of the of the mapped Regional Ecosystems are listed Of Concern and the remaining are Least Concern. No state mapped Regional Ecosystems are listed Endangered under the *Vegetation Management Act 1994*. Results of the field

survey confirmed the presence of twenty (20) of the 47 mapped Regional Ecosystems as well as seventeen additional Regional Ecosystems not previously mapped within the Preferred Alignment.

No Threatened Ecological Communities were encountered during the field surveys. One conservation significant flora species was identified during the field surveys, being *Leptospermum pallidum*, listed as Near Threatened under the *Nature Conservation Act 1992*. This species was discovered approximately 34 m north of the Preferred Alignment.

The greatest risk of potential impact on flora values from the Project will occur during the construction phase. The clearing extent of Project is approximately 575 ha and includes approximately 530 ha of mapped regional ecosystems.

Fauna

Nine dominant habitat types were recorded across the Preferred Alignment. The eastern end (Mount Fox end) of the Preferred Alignment intersects an area mapped as essential habitat for the Sharman's rock-wallaby (*Petrogale sharmani*). Essential habitat for the black-throated finch (southern) (*Poephila cincta cincta*) and the short-beaked echidna (*Tachyglossus aculeatus*) also occurs close to the Preferred Alignment.

The desktop assessment identified 54 conservation significant fauna species with the potential to occur within the Preferred Alignment. This included 32 listed species and 23 migratory species under the *Environment Protection and Biodiversity Conservation Act 1999*; and 29 listed species, and 24 listed special least concern species under the *Nature Conservation Act 1999*. The likelihood of occurrence assessment determined 18 conservation significant fauna species and 14 migratory species that are known, likely or have potential to occur within the Preferred Alignment, based on the fauna and habitat observed during the field surveys.

To mitigate potential impacts to potentially occurring Fauna values, an Environmental Management Plan (Appendix B) has been developed for the Project. Species specific management plans will be developed as required to manage the impacts to conservation significant species through the relevant approval process.

Matters of Environmental Significance

Matters of environmental significance present within the Project area include both matters of national environmental significance (MNES) and matters of state environmental significance (MSES).

MNES identified as potentially present within the Project area include 'nationally threatened species and ecological communities' and 'migratory species' under the *Environment Protection and Biodiversity Conservation Act 1999*.

Powerlink have gone through an extensive impact minimisation process to achieve approximately 50% reduction in direct impacts to MNES through applying avoid, minimise and mitigate principals. The Project has been assessed against the *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* criteria and a Referral has been made to the Commonwealth Government Minister for the Environment to determine whether the Project will be "Controlled" or "Not Controlled".

MSES are defined under the Environmental Offsets Regulation 2014. MSES that are applicable to the Project include 'Of Concern' regional ecosystems and essential habitat managed under the *Vegetation Management Act 1999*; habitat for endangered, vulnerable or special least concern fauna species managed under the *Nature Conservation Act 1992*; and watercourses in high ecological value waters under the *Environmental Protection Act 1994*. The Infrastructure Designation process under the *Planning Act 2016* is not considered a prescribed activity for the purposes of providing an offset under this *Environmental Offset Act 2014*.

Regardless of the above, Powerlink Queensland have employed the 'avoid, minimise, and mitigate' approach throughout the Project, including the corridor selection process; employing mitigation through design (currently being undertaken by Powerlink Queensland to reduce impacts where possible) and mitigating environmental impacts through implementation of Environmental Management Plans.

A significant residual impact (SRI) assessment has been undertaken for the Project in accordance with the criteria provided in the *Significant Residual Impact Guidelines* provided by the Department of State Development, Infrastructure and Planning.

After considering potential impacts, mitigation measures and the state significant residual impact criteria, the Project may have a significant residual impact on MSES values for regulated vegetation; Of Concern REs, REs within the defined distance of a watercourse, and essential habitat. No other MSES were considered to have a significant residual impact.

Biosecurity

The Project area is within three existing biosecurity zones: Cattle Tick Biosecurity Zone; Northern Banana Biosecurity Zone; and Sugar Cane Biosecurity Zone 1. Four restricted plants under the *Biosecurity Act 2014* were identified in the Project area (Parthenium, Lantana, Rubber Vine and Elephant Ear Vine), of which two are also WoNS (Parthenium and Rubber Vine). Nine (9) plants are listed as a priority weed within at least one local government biosecurity plan. Although not recorded during biodiversity surveys in the Project area, the Department of State Development, Manufacturing, Industry and Planning (DSDMIP) advised that Siam weed (*Chromolaena odorata*) has recently been seen in the region.

The field surveys recorded seven introduced fauna species, five of which are restricted under the *Biosecurity Act 2014*. Three further introduced fauna species identified as likely to occur within the Project area are European fox (*Vulpes vulpes*) (priority pest animal: HSC, CTRC), black rat (*Rattus rattus*), and house mouse (*Mus musculus*).

The assessment report has identified a number of potential impacts including the introduction of weed species, edge effects and habitat degradation through exacerbation or introduction of pests and weed. A detailed pre-construction weed survey will be undertaken prior to construction activities commencing and a post-construction weed survey will be undertaken after the first wet season once construction is finalised. A Biosecurity Management Plan will be developed to support construction and operation of the Project and to achieve Powerlink's general biosecurity obligation under the *Biosecurity Act 2014*.

Land Use

The Preferred Alignment currently traverses 22 land parcels. Land tenure arrangements are mainly leasehold land, except for five parcels being freehold land, one Unallocated State Land and one Permit to Occupy. The Preferred Alignment traverses three LGAs, with individualised Local Planning Instruments. Land use intent for rural areas area similar across the three LGAs and includes the maintenance of rural character and amenity.

The existing rural character of the area traversed by the Preferred Alignment is generally typified by rural properties, with large lot sizes, one or two dwellings with supporting agricultural operational buildings, sheds, or structures. Existing built infrastructure includes several gravel roads and existing Ergon powerlines including Single Wire Earth Return (SWER), 66 kV and 132 kV. The rural character is also supported by dense vegetated areas, and natural features such as waterways, valleys, and ridgelines. Co-location of the proposed transmission line with existing electrical infrastructure for large sections of the alignment minimises impacts on the character and amenity of the rural area.

The dominant land use within the Project area is agricultural land, characterised by pastoral or grazing properties for livestock production (predominantly beef cattle), including some areas of Class A and Class B agricultural land. The Preferred Alignment traverses five 'open' stock routes, all classified as minor and unused.

In most instances where the Preferred Alignment traverses Class A or B agricultural land and stock routes, the proposed transmission line has been co-located with existing Ergon Energy 66 kV and 132 kV lines. Between Greenvale and Conjuboy, the Preferred Alignment is not co-located with any Ergon lines and Powerlink has worked closely with affected landholders to determine an alignment which manages property impacts.

Visual Amenity

The visual impact assessment identified one potential impact at Mount Fox, namely Girringun National Park. The high sensitivity of the viewpoint was allocated due to the high sensitivity of viewers (e.g. tourists, visitors, and nearby residents) and its classification as National Park. The assessment

concluded that the structures would form a visible but not defining element of the view. Whilst the structures will be evident, it was determined that they will not change the fundamental visual character of the landscape and will 'blend' with the existing view to a considerable extent, introducing another simple and repetitive element into this large-scale landscape.

During the corridor selection process, the visual impacts on the surrounding visual receptors were considered. The preliminary alignment in the Corridor Selection Report was positioned as far as practicable away from visual receptors and took advantage of screening by existing vegetation and topography where possible. Due to the size of typical structures, which, at around 50 m, are taller than mature trees, it is not possible to fully 'screen' or 'hide' the transmission structures or associated infrastructure within the landscape.

Social and Economic

The Project is unlikely to have significant adverse impacts on the socio-economic profile of the area during the construction or maintenance/operational phases. During construction there will be a temporary influx of workers into the region. The workforce required will be small and will not significantly influence the existing community profile. The operational phase of the Project is not anticipated to have any material impact upon the demographic profile of local and regional populations.

The development of this electricity transmission infrastructure will assist and support the region to develop and prosper through the benefits associated with the Kidston Renewable Energy Hub. Powerlink will continue working closely with affected landholders to ensure they are informed of upcoming project activities and property specific access requirements are incorporated into the construction phase.

Indigenous Cultural Heritage

No known places of Indigenous cultural heritage significance were identified from desktop searches within the Preferred Alignment. A search of the DATSIP database identifies three Aboriginal Parties whose Native Title determinations/claims are intersected by the Preferred Alignment, including Gugu Badhum People #3, Ewamian People #2, and Ewamian People #3. Powerlink has established processes for, and significant experience in, working closely with Traditional Owners for the management of cultural heritage risks in transmission line and switching station development.

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. This is expected to include detailed cultural heritage surveys of the Preferred Alignment with the Traditional Owners and agreement on management requirements.

Non-Indigenous Cultural Heritage

There are no registered historical heritage places within or directly adjacent to the Project area, and so no impacts are anticipated to known non-indigenous cultural heritage values. There is some potential for the Project to impact unidentified historical heritage places. Any such unidentified places are most likely to relate to the pastoral or mining history of the region. This includes five abandoned mines that are thought to be within 500 m of the Project, as well as other, potentially undocumented mine workings or early pastoral complexes.

Archaeological potential is thought to be highest around the former mine workings and present-day camp site on 'Kilclooney', and on the Copperfield leases south of Kidston. Powerlink have sought to minimise impact on the Kilclooney site by locating the Preferred Alignment on the southern side of Ergon 66kV line. However, the potential for heritage impact on the Copperfield leases and the requirement for any mitigation has yet to be established. It is recommended that a site inspection be undertaken in this area to identify any mining heritage places, and to recommend management measures if required.

Residual risk across the remainder of the Project will be mitigated by the following general construction phase environmental management measures, including cultural heritage inductions and unexpected find procedures.

Transport and Traffic

The road network in the vicinity of the Preferred Alignment includes both State-controlled roads and local authority roads. It is anticipated that most of the traffic travelling to the Project area will originate from Brisbane and Townsville. The generated traffic includes the transportation of machinery, materials, equipment, and personnel during both the construction and operation phases. Access to the various work sites for construction materials, plant and personnel will use existing property access tracks where possible. Any new access tracks will be identified in consultation with landholders.

The Preferred Alignment for the proposed transmission line intersects both the Kennedy Developmental Road and the Gregory Developmental Road, being State-controlled roads. The estimated construction traffic volumes will have minimal impact on the proposed route during the construction period except Gregory Developmental Road. The estimated construction traffic exceeds 5% of the background traffic on Gregory Developmental Road (Charters Towers to Project area). Detailed traffic/pavement impact assessment will be necessary to assess the level of impact on this section of roads, in terms of safety, access, intersection delay, road link capacity, pavement, bridges and culverts. A detailed Traffic Management Plan for the Project will also be developed and implemented prior to construction works.

The Preferred Alignment traverses several locally administered major and minor roads, comprised mainly of unsealed roads and roads that have been gazetted, however remain unformed or undeveloped. Based on the assessment, the estimated construction traffic volumes exceed 5% of the background traffic on Craiglee Road and Greenvale Road during construction. However, the traffic operation of these roads is unlikely to be impacted by the Project, given the low background traffic volumes and the temporary duration of the construction works. Powerlink will work with each Council to agree on road use protocols including maintenance and remediation works if damage is caused by project traffic.

No certified aerodromes or regulated air service routes (of regional or State significance) are in close proximity to the Preferred Alignment. Ten (10) airstrips were identified within 8 km of the Preferred Alignment. Powerlink will undertake consultation with the relevant authority or landholder of these airstrips to mitigate and manage any hazards or restrictions potentially created by the Preferred Alignment for landing, aerial spraying, or mustering activities etc.

Noise and Vibration

Noise-generating equipment was identified across fifteen construction activities to determine the potential associated noise levels. Predicted setback distances at which construction noise associated with the Project is expected to comply with relevant limits identified in the *Environmental Protection Act 1994* was calculated, as well as the number of residential receptor locations at which exceedance of the noise limit is predicted to occur.

The construction activities are predicted to generally exceed the noise limits at a single sensitive receptor (a tin mine camp, used for private camping). It is noted that this one receptor is only occasionally used as accommodation.

The heli-stringing construction scenario potentially impacts 20 receptors for Preferred Alignment which are located within the setback distance of 2.4 km. Whilst there are a significant number of exceedances associated with heli-stringing, this is over the entire extent of the Project. The duration of the predicted exceedance at any one receptor will be limited.

The only significant vibration-intensive works expected to take place during the proposed works would be pile boring and the use of vibratory rollers. There are no vibration-sensitive receptors within the structural damage safe working distances for pile boring rigs and vibratory rollers. However, there is a single receptor (the tin mine camp) which is located within the maximum human response safe working distance for vibratory rollers with a rating of greater than 100 kN.

Noise associated with the proposed transmission line itself is primarily due to corona discharge. Noise compliant setback distances have been calculated for operational (switching station shunt reactor; corona discharge) and maintenance (helicopter; mulcher) equipment. There is also a single exceedance of the night-time noise limit associated with corona discharge. This single exceedance is associated with the tin mine camp which lies 10 m within the calculated night-time setback distance. At the distance considered, this approximately equates to a <1 dB(A) exceedance. A difference of up to 2 dB(A) is generally considered to be imperceptible. The conservative approach used in the

calculation of corona discharge noise means that actual noise levels will typically be lower than what has been calculated.

The operational and maintenance activities are predicted to comply with the established noise limits at nearby sensitive receptors across all operational scenarios with the exception of maintenance activities involving the inspection of the transmission line and infrastructure associated with the Project using a helicopter and operation of a mulcher during vegetation clearing maintenance activities. The operation of a mulcher is predicted to result in exceedances at one receptor for both alignments. This exceedance means that maintenance activity requiring a mulcher only exceeds the relevant criterion at a single receptor along the Preferred Alignment (and for a limited duration), hence the overall impact is limited.

Management measures will be implemented in line with Powerlink's Standard Environmental Controls, and best practice construction environmental management plan requirements for noise management.

Hazards, Health and Safety

The Project will comply with the *Electrical Safety Act 2002*, *Work Health and Safety Act 2011* and *Work Health and Safety Regulation 2011*. Risk identification has been done for the Project, and documents only significant or high risk interactions between the Project for the aspects of health, safety and environment during construction, operation, and decommissioning.

The pre-mitigated risks are assessed at this stage and during detailed design. The construction risk assessment will be undertaken to identify critical controls to mitigate risks and maintain residual risk to acceptable levels. This preliminary risk assessment forms part of the larger risk management process which will continue throughout the lifecycle of the Project and has sought to identify hazards which may presently exist prior to construction. The Project will continuously monitor identified risks and conduct future risk assessments to identify and assess emergent risks throughout the Project lifecycle.

Proposed controls will be considered during detailed design and through the construction risk assessment process. The controls will be based on existing Powerlink safety management systems. The management strategies practiced by Powerlink will be in place for the duration of the Project and are not limited to the control measures discussed in this assessment report.

Electric Magnetic Fields

Powerlink has undertaken an electric and magnetic field (EMF) assessment for the proposed transmission line where it is co-located with Ergon Ross-Kidston 132 kV line. The modelling identified that electric and magnetic fields will be significantly below internationally recognised EMF guidelines for established health effects. Where the proposed transmission line is co-located with Ergons Greenvale 66 kV line, EMF levels are lower due to the reduced voltage and line loading.

There is one sensitive receptor within 500 m of the Preferred Alignment. This has been identified as an old tin mine immediately on the north side of the Ergon 66kV line within 'Kilclooney' station, which is occasionally used as a private weekend. The Preferred Alignment is located on the southern side of the 66 kV line and is approximately 100 m from the camp site. Cumulative electric and magnetic fields (EMF) associated with the Project and the Ergon line have been calculated, and it was determined that, at this distance, there will be no measurable increase in EMF over typical background levels.

Powerlink has adopted a policy of prudent avoidance with regards to EMF, and the following mitigation measures are proposed to reflect this.

- Should radio or television interference be identified, Powerlink can assist people experiencing reception problems caused by transmission line by providing advice and, if required, signal amplification equipment.
- Powerlink 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 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 will arrange to undertake any necessary remedial work.

Bushfire Risk

The Preferred Alignment is located in a Medium Bushfire Intensity Bushfire Prone Area. The Regional Ecosystems across the Project area were all identified as Bushfire Prone vegetation classes (Class 1, Class 2, Class 7 and Class 8), with the potential to support a significant bushfire or the potential to be subject to significant bushfire attack.

The assessment of potential impacts indicates that fire risk may potentially increase as a result of the Project, particularly during the construction stage. External environmental conditions within surrounding areas, such as the proximity and density of surrounding vegetation, climatic conditions and land use activities, may also contribute to an increased fire risk.

Powerlink has an overall Bushfire Mitigation Plan (ASM-PLN-A3285085). The purpose of the Bushfire Mitigation Plan is to provide a co-ordinated, integrated and transparent approach to bushfire mitigation that considers the resources and responses needed to manage risk associated with bushfires. A range of mitigation and management measures have been proposed throughout the design, construction, operation and maintenance of the Project.

Waste Management

Anticipated waste streams were identified for the construction, operation and maintenance phases of the Project. Construction activities are expected to produce green waste, general waste, regulated waste, and wastewater. Construction waste will be avoided, minimised and managed in accordance with the waste hierarchy, and Powerlink's Standard Environmental Controls. In addition to these controls a range of additional measures have been included. A detailed Waste Management Plan is to be developed prior to construction, including all actions needed to effectively implement the waste management hierarchy.

The types of waste generated by switching station and transmission line operation and maintenance are similar to those generated as construction wastes, although in much smaller quantities. 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.

Infrastructure

Existing infrastructure within the Project area includes a number of local and state roads, airstrips, electrical infrastructure, water and sewer infrastructure, and private agricultural or renewable energy infrastructure.

During construction, the road network may be impacted through an increase in traffic associated with light vehicle movements, equipment haulage, and machinery movements. The Project may also require additional access points from the existing road network. Minimal access is anticipated during the operational phase and will be limited to maintenance requirements.

No impacts will occur to Ergon infrastructure from construction and operation of the Project. The proposed transmission line is co-located with Ergon's lines and will be separated by a minimum 40m to allow for safe and efficient construction and operation of the electrical infrastructure.

No relocation of existing infrastructure is required to facilitate the Project.

Cumulative Impacts

A number of existing and proposed developments have been identified within the wider area of the Preferred Alignment. Existing developments include the 66 kv and 132 kv Ergons lines. Proposed developments include the Kidston Renewable Energy Hub (partially existing), the Greenvale Training Area, Hells Gate Dam and the Mount Fox Wind Energy Park.

Overlap in construction periods may occur with both the Kidston Renewable Energy Hub, the Greenvale Training Area and Mount Fox Wind Energy Park. Cumulative impacts may include

increases in air quality and noise emissions when the transmission line is being constructed in the same vicinity as these projects, and increased usage of State and local road networks.

Given the large distance of the Project from other existing and proposed projects in the region, cumulative impacts are anticipated to be limited to the road network during construction. Nonetheless, standard environmental controls in line with Powerlink's Standard Environmental Controls Specification will be applied to the Project to minimise potential impacts.

Should all the above-mentioned Projects overlap during construction, positive cumulative impacts for the region may be realised in terms socio-economic benefits.

The operation of the Project will be limited to maintenance activities along the easement and at the switching station. Therefore, any potential impacts, such as dust, noise, and traffic, will be minimal and short term and therefore cumulative impacts will be negligible.

Cumulative EMF associated with the co-location with Ergon 66 kV and 132 kV transmission lines was determined to be significantly below internationally recognised EMF guidelines for established health effects.

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 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.

The construction mitigation and management measures for this Project have been proposed in line with Powerlink's Standard Environmental Controls Specification. Additional measures have been proposed where required to provide further mitigation and management measures specifically for the Project.

An EMP has been prepared to provide a framework for the implementation of project specific impact mitigation measures for the transmission line and switching station components of the Project.

Planning and Approval Requirements

A number of Commonwealth, State and local pieces of legislation and policy applies to the development of the Project. Powerlink have undertaken assessment against the EPBC Act Significant Impact Guidelines and has referred the Project to DAWE for a determination on an action decision.

As the Project is being assessed under the Ministerial Infrastructure Designation (MID) process under the *Planning Act 2016*, a range of typical approvals under this Act will no longer apply to this Project, as MID makes the development 'accepted development'. Approvals outside of the *Planning Act 2016* have been identified and will be obtained by Powerlink in the subsequent stages of the Project.

Community and Stakeholder Consultation

Powerlink is committed to effective and genuine stakeholder and landholder engagement practices. Powerlink's activities are guided by a Stakeholder Engagement Framework which is underpinned by the key principles of integrity, openness, responsiveness, accountability and inclusiveness.

Powerlink has undertaken early and targeted consultation with Federal, State and Local Governments, elected representatives, industry groups and landholders as part of the Project. Engagement activity has been undertaken to help gain meaningful input into social, environmental

and technical matters to be considered during the initial project development phase and subsequent construction phase. A number of engagement activities have been undertaken since March 2016. Key milestone engagement activities have been associated with Draft Corridor Selection Report, Final Corridor Selection Report, Terms of Reference, Draft Environmental Assessment Report, response to submissions on Draft Environmental Assessment Report and reactivation of engagement following the connection and access agreement exchange and notice to proceed with Genex.

Powerlink is continuing its direct engagement activities with stakeholders and landholders as part of the public consultation process for this assessment report. Ongoing engagement with stakeholders and landholders remains a key focus during all phases of Powerlink projects. This delivers Powerlink the opportunity to strengthen and leverage relationships with stakeholders and landholders well into the future for the entire transmission infrastructure lifecycle.

Conclusion

This assessment report has identified that the Project has the potential to impact a range of environmental, social and economic values in the Project area and surrounds, both positively and negatively. However, through the implementation of design mitigation and standard and project-specific mitigation and management measures, these potential impacts can be minimised and mitigated.