



EXECUTIVE SUMMARY

INTRODUCTION AND KEY RECOMMENDATIONS

This Environmental Impact Statement (EIS) presents an assessment for a proposed transmission line between the existing Queensland New South Wales Interconnector (QNI) line easement and the proposed Western Downs Substation located in the vicinity of the Kogan Creek Power Station on the Darling Downs near Chinchilla. This forms one component of an overall development project to link the Western Downs Substation to Halys Substation near Tarong.

Powerlink Queensland, a Transmission Network Service Provider, is the Project proponent.

From the detail contained within this EIS, it has been demonstrated that the proposed placement of the transmission line will provide the least overall impact for all of the issues considered.

PROJECT JUSTIFICATION

Through Powerlink Queensland Planning Studies, it is indicated that electricity use in Southern Queensland has exhibited very strong growth during the past ten years, and further growth is expected to continue over the next ten years.

The existing transfer capability of Powerlink's network between Central Queensland and Southern Queensland, as well as between Bulli (between Millmerran and Goondiwindi), South West, and South East Queensland, is described by limit equations which dynamically maximise the transmission capability available to electricity market participants at any time. With projected electricity demand growth, it has been identified that the required power transfer between the Bulli and South West zones will reach the capability of the existing network from summer 2010/11. These limitations can be addressed by augmenting substation plant until 2012/13 after which a major transmission line augmentation is required between these zones. In addition to power transfer limitations, fault level limitations at the Braemar Substation are forecast to coincide. These will impose limits on the capability of that facility to meet system and security limits.

Powerlink is required to develop its network to meet the security and reliability standards of the National Electricity Rules, the *Queensland Electricity Act 1994* and the terms of its transmission licence. Powerlink has undertaken an assessment of options and carried out consultation as required by the National Electricity Rules prior to approving the option which has the lowest net present value cost, in accordance with the Australian Energy Regulator's regulatory test. Under this assessment, it was found that the option which satisfied the Regulatory Test involved establishment of the Western Downs Substation by 2012/13 and subsequent transmission line to join the facility to the existing transmission network near Tarong. A corridor selection and preliminary alignment report was developed as part of this project to determine the most suitable corridor and a preliminary alignment within this corridor for the transmission line between Western Downs and an existing easement adjacent to the QNI.



LEGISLATION AND APPROVALS

Relevant Federal and State legislation, codes and local government planning provisions applicable to the proposed Project have been discussed. In addition, assessment of the relevant approval process and the possible permits, licences and approvals that may be required are also detailed. The transmission line development is considered to be community infrastructure as defined under the *Sustainable Planning Act 2009* and consequently Ministerial designation as 'Community Infrastructure' under that Act will be sought.

SUMMARY OF THE DESCRIPTION OF POTENTIAL IMPACTS AND MITIGATION MEASURES

The impact that the proposed Project may have on a range of physical, biological and social environmental factors was analysed and mitigation measures provided, where necessary. The following provides a summary of the main potential impacts and mitigation measures. More detailed mitigation measures have been provided within the EIS and Environmental Management Plan (EMP).

Geology and Soils

The study alignment is located on Kumbarilla sandstone geology and is contained within an ironbark/ bull oak land resource area. All soils along the study alignment are similar from an agronomic and soil chemistry perspective and are characterised by low water holding capacity with increasing salinity and sodicity with depth. Soils are classified as Sodosol (texture contrast soils with a sodic upper B horizon) with the major difference across the site being a varying depth of the surface A horizon (<15cm to 40cm). The study alignment crosses land classified as Good Quality Agricultural Land. No potential sources of contamination were found throughout the Study Corridor.

The terrain along the study corridor is level to gently undulating with fertile floodplains associated with the Condamine River in the eastern portion of the study corridor.

The primary soils' issue for the transmission line is the management of the sodic subsoils such that earthworks and construction do not initiate tunnel erosion processes. In order to manage these soils, management of clearing, reduction of water flows and the application of gypsum will occur (where required).

Climate and Air Quality

Rainfall in Southern Queensland is considered highly variable and subject to extended periods of drought, followed by intensive rainfall. Maximum temperatures often reach 30°C in the summer months, and minimum temperatures often fall below 5 °C over winter. Annual wind data collected by the Dalby Airport weather station indicated that the study alignment is typically subjected to prevailing easterly winds for most of the year, with the average wind speed of approximately 12km per hour (BoM, 2009).

The data shows that severe storms (including high winds, hail and inundation with flash flooding) are the most common atypical events for the area. The daily average air quality data collected from the Kogan Creek Whyte monitoring station shows that whilst there were 3 PM10 exceedances in ambient guidelines within the 2008-2009 monitoring period, the objective for PM10 allows for an exceedance on 5 days per annum for environmental values to still be protected.



Due to the rural location of the Project, dust and odour are not expected to be a significant nuisance to ecologically sensitive areas, or to the neighbouring residents.

Mitigation measures for reducing dust emissions during both the construction and operational phases include reducing the length of unsealed tracks, use of recycled water during construction on high traffic areas and application of mulch on exposed areas during construction.

Hydrology

The transmission line falls within the Condamine River Catchment and is located 2.5km west of Kogan Creek, a tributary of the Condamine River. Watercourses which are traversed by the study alignment include Braemar Creek and Kogan Creek and a number of associated minor tributaries. Braemar Creek, which is also a tributary of the Condamine River, was identified as being highly modified. These creeks are typically considered ephemeral, flowing only in direct response to rainfall and as such restricting potential impacts to times of extreme flows.

One DERM referable wetland occurs within 100m of the study corridor (DERM, 2009). The existing Kogan to Braemar Transmission Easement traverses the referable wetland at allotment K on SP172844. At the time of the site inspection no discernible wetland features were observed within the location of the mapped wetland. The large non-riverine wetland associated with the Condamine floodplain is located north of the eastern extent of the study alignment, however the mapped wetland is not located within 100m of the study alignment.

Floodplain mapping indicates that the majority of the study corridor is subject to flooding with the exception of a portion west of Kogan Creek. There is potential for erosion of exposed soils if water flows are concentrated and impedance of flows across the study corridor should be minimised and sheet flow conditions (as would naturally occur) maintained as much as possible. The minor floods that can be expected to traverse the study corridor will need to be directed around tower pads and access tracks.

Groundwater is estimated to be moderately deep (>10m) associated with a regional groundwater system. The alignment would not be expected to be at risk of groundwater rise or salinity.

Fire

Bushfire hazard along the transmission line is deemed to be “low to medium” and the prevailing fire regimes are unlikely to be significantly altered due to the Project. The most probable time for a fire to occur is during construction due to fugitive sparks, however the risk of such an event occurring is considered low. Mitigation measures as nominated in a Bushfire Management Plan and use of fire resilient materials during construction where possible, are proposed. The line is unlikely to be at risk from bushfires due to resilient materials and maintenance regimes to limit vegetation regrowth and fuel loads.



Waste Management

Liquid and solid waste sources are likely to be generated during the construction and operational phases of the Project. The majority of the wastes for the Project will be generated by the construction phase of the transmission line. Waste production during the operational phase of the Project will be minimal and associated with scheduled maintenance activities of the transmission line and easements. Mitigation measures to reduce the risk and potential impact from waste sources are provided.

Flora and Fauna

Flora

Approximately 40% of the study alignment runs through mapped remnant Regional Ecosystems (RE). From ecological and conservation perspectives, the most significant RE includes areas of Endangered and Of Concern vegetation on alluvium and clay plains adjacent to the major watercourses that intersect the study alignment (Kogan and Braemar Creeks). The significance of the Endangered remnant on Braemar Creek, immediately below a dam on the creek, is enhanced by the presence of at least one Rare fauna species and an abundance of arboreal mammals. Re-routing of the alignment through this area has avoided this remnant and habitat area.

One significant plant species (*Philotheca sporadica* - classified as Vulnerable under Federal EPBC and State NCA legislation) was known by Powerlink and Conics, prior to this study, to occur in the general vicinity of the study area. Indeed, this species was recorded at two locations within the study area during the field investigations undertaken by Conics. Several other significant species recorded on state and federal databases may also be present but were not detected during this study.

Four declared weed species, listed under the *Land Protection (Pest and Stock Route Management) Act 2002* (LPA), were identified during the ecological assessment.

Fauna

Much of the study area is vegetated with remnant woodlands that provide habitat for a range of fauna species. Whilst historic management activities (e.g. clearing, logging and grazing) have degraded the overall habitat condition in some of the remnant vegetation areas, these habitats remain structurally diverse and retain much of their original species composition. Several previously-cleared areas contain quite dense regrowth woodland that adds to the habitat diversity of the study area and cleared pasture lands provide limited habitat potential for grassland-dependent species.

Despite the diversity of habitats available, particularly from a structural viewpoint, overall fauna diversity appears to be relatively low throughout the study area. 83 vertebrate fauna species were observed in the study area, including: 60 birds, 13 mammals (including 8 bats) and 10 reptiles. Most of these species were found in the native woodland areas, with only a small number of disturbance-tolerant species observed in the developed farming and grazing areas.

One Rare species [Little Pied Bat (*Chalinolobus picatus*)] listed under the NCA, was recorded within the study area during this survey.



Five introduced fauna species were identified in the study area during the field surveys. It is highly likely that two other introduced species also inhabit parts of the study area.

The removal of vegetation to make way for the transmission line easement has the potential to impact upon flora and fauna species, both directly and indirectly, through the disturbance of habitat particularly during increased activity levels during construction. These impacts are discussed as well as potential mitigation measures.

Land Use

Classification of current and future land use was determined from observation, consultation and literature review. The Study Area has historically been predominantly used for stock grazing. There are seven existing residences within 750m of the proposed transmission line.

The Study Area is located within the municipal boundaries of Western Downs Regional Council. On 15th March 2008, Western Downs Regional Council was formed with the amalgamation of Wambo, Dalby Town, Chinchilla, Murilla, Tara and Taroom Shires. Prior to the amalgamation, the Study Area was situated within Chinchilla Shire and Wambo Shire. The Study Area is subject to the *Chinchilla Shire Planning Scheme* and the *Wambo Shire Planning Scheme*.

The proposed transmission alignment is zoned 'Rural' under both the Chinchilla and Wambo Planning Schemes, and does not have any other planning restrictions. The proposal is unlikely to conflict with the strategic directions of the Planning Schemes. Furthermore, the proposal is not considered to compromise the purpose of the *Rural Zone* in both schemes.

Socio-economic Environment

Key demographic characteristics of the Western Downs Regional Council are described in the EIS. Agriculture is the economic base of both the Chinchilla and Wambo Districts. Chinchilla has particular economic strengths in beef and pork production, wool growing, and horticulture being traditional industries in the local economy, whereas Wambo is heavily reliant on cotton and grain production. The energy and resources industry (i.e. coal mining, coal seam gas extraction and associated power generation) is currently developing within the area. The transmission line will potentially impact on 34 allotments. Of these allotments, the majority have a rural zoning and are utilised for farming cattle.

As the existing landholders carry out pastoral enterprises, they are not anticipated to experience significant negative impacts due to the proposed transmission line, as their grazing practices can largely continue. Given the remoteness of the area, the community profile of the surrounding area is not anticipated to be impacted significantly by the development of a transmission line. It is anticipated that development of the proposed transmission line will have little social impact on how the area functions.

The increase in economic activity during construction will be a benefit to the surrounding community by generating additional employment opportunities and enhancing the overall economic capacity of the Western Downs region. This has the potential to generate indirect community benefits through additional economic contribution to the region.



Noise and Vibration

The Study Alignment predominantly passes through rural and rural residential areas with generally acceptable background noise levels. An exception to this is where the Study Alignment traverses close to the existing Kogan Creek Power Station (approximately 1.5km to the north-east). The acoustic environment of this section of the Study Alignment is dominated by the noise of the existing Kogan Creek Power Station. During field investigations, the power station was clearly audible along this section of the Study Alignment. Due to the size of the power station, its associated noise is expected to be significant in comparison to the expected noise emanating from the proposed transmission line. Seven noise sensitive receptors have been identified from aerial photography and regional investigations within 750m of the proposed transmission line. Of these, one house was within 250m of the proposed alignment however it is currently unoccupied.

Noise associated with the Project would mainly arise as a result of the construction phase and would generally be associated with heavy vehicle movements and general construction noise. During maintenance, potential noise sources will include routine inspections (vehicle and helicopter), repairs and vegetation and erosion management activities. Due to the large separation distance to sensitive receptors, and proposed construction works being carried out at appropriate times, there is a low potential for adverse noise impacts during the construction phase.

A number of mitigation measures including effective mufflers for trucks and machinery and keeping the public informed of construction and maintenance schedules have been recommended to minimise the potential noise impact of the proposed Project.

EMF

Electric and magnetic fields (EMF) occur in nature, in all living things and as a consequence of anthropogenic sources. Electric fields are caused by voltages (volts) and can be found near any electrical appliance that is switched on at the power outlet. Magnetic fields are caused by the flow of energy (current) through a conductor.

The transmission of electricity via the proposed Project will produce electric and magnetic fields which may raise public health concerns. The recommended exposure levels set by the Australian Government's Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the National Health and Medical Research Council (Australia) (NHMRC) have been outlined within the EIS along with the predicted EMF levels for the area immediately surrounding the proposed transmission line.

Currently, there are a number of high voltage transmission lines and distribution power lines traversing the area surrounding the proposed transmission line which, together with domestic sources, contribute to the background levels of EMF. Current levels of EMF are well below the ARPANSA Draft Standard as well as the NHMRC limits of exposure and modeling indicates that even with the installation of the proposed transmission line, increases in field levels would be limited to areas immediately adjacent to the transmission line. Taking into account the impact of the proposed transmission line, field levels would remain well below the ARPANSA Draft Standard and the NHMRC limits of exposure with field levels outside the proposed alignment corridor (to 30m either side of the centerline) experiencing only minor increases above current background levels.



Landscape Character and Visual Amenity

The landscape containing and surrounding the study corridor is characterised by:

- Very low density and generally small scale development;
- Long straight rural roads with open or filtered views of the rural landscape;
- The meandering Condamine River, associated floodplains and riparian vegetation;
- Open flat or undulating rural plains comprising cropping land;
- Undulating grazing land and vegetated foothills; and
- Dry eucalypt woodland.

As approximately 40% of the study alignment follows an existing transmission line corridor, only a relatively small amount of existing vegetation will have to be cleared. No significant changes to the existing topography are required. Existing screening vegetation will be retained where possible, particularly where the route crosses existing roads. The development of the proposed transmission line route will not change the overall landscape character or visual amenity of the study area.

The closest point the proposed transmission line route comes to the Warrego Highway and the Kogan Condamine Road will be screened by existing vegetation and intervening topography. Views of the remainder of the proposed transmission lines will be predominantly screened from local trafficked roads by existing vegetation other than at road crossings and sections of road where the corridor travels parallel with the road.

The roads where visual impact will be greatest are generally less trafficked routes so will have very low visual exposure. However, the transmission lines along a short section of the Warra Kogan Road (approximately 2km) will have a moderate level of visual exposure and therefore drivers may experience a moderate visual impact, particularly during the construction phase.

There are 7 houses within 750m of the study alignment which may also be impacted.

Mitigation measures proposed to help reduce visual impacts from the proposed Project include encouraging natural revegetation of buffers and ensuring the removal of existing woodland vegetation outside of the immediate construction site area is minimised.

Transport Infrastructure and Traffic

The proposed transmission line alignment crosses four local roads and one State controlled road.

During the construction phase, a minor increase of traffic volumes on the roads adjacent to the alignment is expected to occur because of the necessary transport of materials, equipment and personnel. Previous projects of this nature generated a maximum of 20–30 vehicle movements per day. These volumes are considered unlikely to affect traffic flows in the area. Traffic during the operational phase will be minimal except where major works are required.

It is anticipated that traffic movements to and from the site will utilise the Warrego Highway, Warra Kogan Road, Dalby Kogan Road, Kogan North Road, Banana Bridge Road, Taylors Road and Healys Crossing Road. Where possible, direct access to the transmission line will be provided via easements.



It is proposed that the anticipated route to be used by construction vehicles must be inspected by both Powerlink and Council prior to the commencement of the construction works. The access to the transmission line must be cleared of any obstacles or constraints and the surface is to be maintained to ensure that access to the site can be achieved even under periods of wet weather.

Non-Indigenous Cultural Heritage

Whilst the region surrounding the study area has numerous sites and places of cultural heritage significance, there is an absence of significant sites in the vicinity of the study alignment. The Project is not expected to impact upon areas or objects of social importance or cultural significance. With consideration of the broader context of the area surrounding the Project corridor, the proposed development is not expected to have an impact on the lifestyle of local residents, or on the appeal of places frequently visited within the region. The likely presence of remnants of cultural heritage has not been dismissed, however.

The impact of the proposed development on matters of cultural significance is expected to be negligible. However, if during construction, historic relics are discovered, work should cease until an appropriately qualified heritage assessor has been afforded the opportunity to assess any objects of possible heritage value, *in situ*.

Powerlink have conducted a separate internal assessment of Aboriginal Cultural Heritage.

Greenhouse Gas Emissions

Greenhouse gas emissions to be generated as a result of this project have been considered. Scope 1 emissions (e.g. fuel use) associated with the project total approximately 34 000t CO₂e. 97% of these emissions are associated with the loss of carbon sink as a result of vegetation clearing. Mitigation measures to help minimise greenhouse gas impacts as a result of this project include management strategies for site preparation, material selections and transport, plant and equipment and auxiliary emissions.

Environmental Management Plan

An EMP has been prepared to prevent or minimise potential environmental impacts identified by the EIS. Environmental management strategies for the Project's potential impacts, including control measures and responsible persons, are included in the EMP.

Environmental Cost-Benefit Summary

An environmental cost-benefit summary has been undertaken for the Project. Short and long-term costs and benefits have been examined including:

- Decreased land use impact;
- Effect on high conservation areas;
- Greenhouse gas emissions; and
- Employment and economic capacity.

The development of this transmission line is considered to have minimal short term and long term environmental impacts both on the properties located along the study alignment and within the surrounding area.



The short term economic benefit related to the proposed transmission line will be an estimated 150 construction related jobs. The long term economic benefits potentially include additional employment related to the ongoing maintenance of the transmission line and an increase in the overall economic value of the region as a result of the operation of the transmission line.

Summary and Recommendations

A broad range of physical, biological and social environmental factors have been considered by this EIS. Overall it is concluded that while the Project may result in localised impacts on some of the factors investigated, the need for the Project has been adequately demonstrated and all feasible alternatives have been explored. In addition, where relevant, potential issues have been identified, quantified and mitigation measures have been developed/recommended for consideration or adoption during the detailed design phase of the Project. An EMP has also been prepared to detail methods and strategies to prevent or minimise the potential for environmental harm.

Provided Powerlink follows the recommendations contained within this EIS and associated EMP and continues to work with the community and other stakeholders to further mitigate potential impacts, there does not appear to be any physical, social or environmental issues that would prevent this Project from being recommended to the Minister for the Department of Employment, Economic Development and Innovation for designation.