

PROPOSED GENEX KIDSTON CONNECTION PROJECT

Corridor Selection Report

PREPARED BY

QUEENSLAND ELECTRICITY TRANSMISSION CORPORATION LIMITED

(ACN 078 849 233) trading as "POWERLINK"



Proposed Genex Kidston Connection Project - Corridor Selection Report

15 FURTHER ASSESSMENTS

15.1 APPROVALS PROCESS

A range of approval mechanisms are available to the project. Irrespective of the major approvals process, a rigorous environmental impact assessment would be required for a project of this scale. This assessment will be targeted toward the specific natural and social values of the project area that may be impacted by an electrical transmission line, many of which were identified during development of this CSR.

It is important to record key commitments from this CSR that require specific treatment in subsequent assessment processes. Key commitments are described in Section 15.4.

Powerlink has a wealth of experience in transmission line development, impact assessment, land acquisition, stakeholder and landholder engagement to support Genex in subsequent phases, whichever process is deemed preferable.

15.2 STAKEHOLDER AND LANDHOLDER ENGAGEMENT

Ongoing engagement in subsequent project phases is recommended to refine the preliminary alignment and continue to develop the relationships established during development of this CSR. Ongoing engagement will ensure that potential impacts are thoroughly understood and can be effectively managed. Powerlink notes and values the contributions of stakeholders and landholders and their time and information in helping develop this CSR.

15.3 EPBC ACT REFERRAL

The third party ecological advice demonstrated negligible risk to Threatened Ecological Communities and the World Heritage Wet Tropics Area, which provides significant comfort around some MNES. Unfortunately database searches returned few results for MNES flora and fauna and follow-up work is required to address the gaps in available information.

Powerlink proactively undertook a likelihood of occurrence assessment for EPBC Act threatened and migratory species and NC Act EVNT flora and fauna. See Section 11.4.1.1. The likelihood of occurrence assessment related mapped vegetation types to fauna and flora species known to be associated with those features in the broader region well beyond the CSR study area, targeting more developed areas where species records are more readily available.

This additional assessment confirmed the initial ecological advice procured for the CSR and identified only a relatively small number of additional EPBC species that may occur in the study area. Importantly, no new Threatened Ecological Communities or World Heritage Values were identified through this additional assessment.

Powerlink has significant experience and relationships in managing the EPBC referral process and designing solutions to minimise potential impacts to MNES. Powerlink projects have generally not been declared controlled actions due to our ability to optimise infrastructure siting to minimise terrestrial impacts.

Based on Powerlink's experience, it is recommended that referral of the project to the DoEE for further approvals in relation to the EPBC Act should occur early in subsequent stages of the project (e.g. Draft EIS phase).

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This approach is recommended as field surveys will be necessary to provide adequate detail for DoEE assessment managers to develop sufficient understanding of any potential issues and, if necessary, develop and apply risk-appropriate controls.

Whilst every reasonable effort has been undertaken to assess potential impacts to MNES flora and fauna at the desktop level for this CSR, the broad scale nature of mapping over the largely undeveloped project area means field surveys will be important in future stages of the project to confirm any potential impacts and allow appropriate mitigation methods to be developed.

Preliminary scheduling by Powerlink indicates that sufficient time is available in Genex's schedule to refer the project and receive a decision under the EPBC Act, even if the project is declared a Controlled Action.

Importantly, field surveys and a better understanding of the presence of threatened habitats and species, may also support an application for a lower level of assessment, such as a declaration of Not a Controlled Action - Particular Manner.

The optimal approach for the project is therefore to undertake field surveys prior to referring the project to DoEE, ensuring that potential impacts to MNES flora and fauna are understood and a proposal for an appropriate level of assessment under the EPBC Act can be formulated. Powerlink will work with closely Genex to manage the assessment of MNES flora and fauna, advising on an appropriate course of action once the likelihood of occurrence assessment is available.

15.4 KEY COMMITMENTS & ACTIONS

A number of key commitments and matters of importance to the project have arisen from the development of this CSR. These matters are summarised in Table 10 and serve as a useful reference for subsequent impact assessment and engagement phases of the project. The matters summarised in Table 10 are project specific and are not intended to be exhaustive.

Topic/ Issue	Comments
Hells Gate Dam	The location of the proposed Hells Gate and Mt Fullstop Dams is an important input to latter assessment phases and further investigation should be undertaken
Planning Act 2016	The emerging Planning Act 2016 should be actively monitored for potential changes to major approvals frameworks
Seek Detailed Landholder Input	Work closely with landholders to fully understand their properties and refine an alignment for the proposed transmission line for further more detailed investigation as part of the EIS process should the project proceed
Resource Tenements	Consultation with mining tenement holders should occur as early as possible in subsequent assessment phases
Mt Fox Site Selection	Undertake a targeted site selection process at Mt Fox based on higher resolution terrain information (and imagery if possible) than that currently available
Biosecurity	Ensure a rigorous biosecurity management plan is prepared before field surveys or field activities commence

Table 10 – Key Commitments and Actions

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Terrain Information	Procure higher resolution terrain information and imagery to inform project development. The ROAMES information held by Ergon may represent an opportunity to procure recent, off the shelf information for a lower capital cost for much of the preferred study corridor
Local Providers	Commence discussions around use of local providers early in the project development process to ensure amendments to existing procurement processes can occur if required
Defence Acquisition	Continue enquiries into the potential Defence Force acquisition of land in the Hinchinbrook/ Charters Towers Council areas (Section 13.7)
Additional engagement	Expand engagement to include broader community groups and associations identified by stakeholders during the CSR phase (e.g. local rural fire brigade, schools etc.). These stakeholders are listed in Section 13.1.

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16 REFERENCES & INFORMATION SOURCES

Bureau of Meteorology (BOM)

http://www.bom.gov.au

Charters Towers Regional Council

http://www.charterstowers.qld.gov.au/

Commonwealth of Australia, Australian Bureau of Statistics

http://www.abs.gov.au

Department of Environment and Energy

http://www.environment.gov.au

Heritage Protection

https://www.ehp.qld.gov.au

Department of Natural Resources and Mines (DNRM)

http://www.nrm.qld.gov.au

Etheridge Regional Council

http://www.etheridge.qld.gov.au/

Hinchinbrook Shire Council

http://www.hinchinbrook.qld.gov.au/

Genex Power - The Kidston Solar Project

http://www.genexpower.com.au/projects/The_Kidston_Project

Queensland Government, Office of Economic and Statistical Research

http://statistics.oesr.qld.gov.au/qld-regional-profiles

Queensland Spatial Catalogue - QSpatial

qldspatial.information.qld.gov.au

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Attachment 1 – Third Party Ecological Advice

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POWERLINK

Initial Desktop Assessment and Preliminary Ecological Constraints Advice

PROPOSED GENEX KIDSTON CONNECTION PROJECT

CONFIDENTIAL

DECEMBER 2016

WSP PARSONS BRINCKERHOFF

Initial Desktop Assessment and Preliminary Ecological Constraints Advice

PROPOSED GENEX KIDSTON CONNECTION PROJECT

Powerlink

Confidential

REV	DATE	DETAILS	
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В	16/12/2016	Final report	

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- Appendix H TEC Distribution map
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1 INTRODUCTION

Powerlink is investigating three potential corridor options for powerline to connect a renewable energy generator (Genex) at Kidston in Far North Queensland, to the electricity transmission grid. The site at Kidston will contain a mix of solar and pumped storage (hydro) technology with a total generation capacity of approximately 400 MW. The pumped storage component of the facility can be rapidly ramped up and down to produce energy at times of peak demand.

The closest connection point to Kidston is at Mount Fox, approximately 200 km east of Kidston. It is most likely that a 275 kV transmission line will be required to provide adequate capacity for the connection over that distance. On this basis, Powerlink has been commissioned by Genex to produce a Corridor Selection Report, to identify a preferred corridor and a preliminary alignment for the connection from a broad study area.

The assessment for the Corridor Selection Report will include engagement with Government agencies, peak bodies and landowners in the study area, as well as high level environmental, land use planning and technical investigations. It builds on a Draft Corridor Selection Report compiled for Genex in mid-2016, which identified three high level corridor options for further assessment.

The Corridor Selection Report will assess a study area based on the two southern most options from the Draft Corridor Selection Report (Options B and C), the northern most option (Option A) having been removed from assessment based on feedback during the development of the report. Part of the rationale for removal of Option A was its potential for greater environmental impacts, which was evident at the Draft Corridor Selection stage.

To validate the higher potential for environmental impact this Initial Desktop Assessment and Preliminary Ecological Constraints Advice considers all options from the Draft Corridor Selection Report. The intention is to validate the removal of the Option A, providing surety that the Corridor Selection Report is focused on the right study area and double checking the corridor refinement process undertaken to date.

This Initial Desktop Assessment and Preliminary Ecological Constraints Advice identifies the Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES) that are of relevance to each corridor option. The findings herein will inform the preferred option selection process of Powerlink's Corridor Selection Report.

Since completion of this assessment, an additional area outside of Options A, B and C, is being considered. The additional area was identified during desktop investigations and allows the opportunity to avoid difficult topography and potentially seek to co-locate with the Gregory Development Road.

This additional area was identified after this report was substantially complete and has therefore not been assessed as part of this assessment. However, based upon the similarities of the MNES and MSES assessed for each alignment, it is unlikely the additional area would include anything that has not already been assessed, nor is it likely to influence the calculations for the MNES and MSES that have been assessed as occurring broadly across all three corridor options. Furthermore, the extent of ecological constraints for each Corridor option would be unlikely to increase or decrease substantially by including the additional area, and the corridor option identified as the option of least ecological constraint would be unlikely to change.

1.1 Purpose

This initial desktop assessment and preliminary ecological advice identifies the matters of national and state environmental significance (MNES and MSES) that may be of potential relevance to each corridor option (A, B and C. It presents the potential ecological constraints and risks associated with each option and provides advice on a preferred option from an environmental perspective, which contains the least amount of MNES and MSES ecological constraints.

It also provides preliminary advice on the possible requirement of significant impact assessments for potential impacts to relevant MNES and MSES within each corridor, and whether the Project should be referred to the Department of the Environment and Energy (DoEE).

A brief discussion on potential Commonwealth and State environmental offset requirements has also been provided.

1.1.1 Terminology

The desktop assessment discusses the corridor options and corridor investigation areas, which are defined as:

- → Corridor options three 1 km wide corridor options as defined in the Draft Corridor Selection Report, and shown on Figure 1.1.
- Corridor investigation areas a 3 km wide corridor investigation area has been applied to the centreline of each 1 km wide corridor option, to inform the Corridor Selection Report of the potential ecological constraints of relevance to each option, as shown on Figure 1.1.



2 DESKTOP ASSESSMENT METHODS

The initial desktop assessment has been designed to inform Powerlink of the MNES and MSES ecological constraints that are of relevance to each of the three corridor options. Powerlink has provided the three corridor options (A, B and C). Each option is 1 km wide. This initial desktop assessment applies database searches and GIS analysis to 3 km wide corridor investigation areas for each corridor option. The main purpose of the assessment is to determine the option of least ecological constraint for the Project. The methods used for the initial desktop assessment have been discussed in more detail in the following Sections 2.1–2.5.

2.1 Database searches

The initial desktop assessment included searches of the following databases:

- → Commonwealth Department of the Environment and Energy's (DoEE) Protected Matters Search Tool (PMST), with a 5 km buffer applied to each 1 km wide corridor option, as indicated on Figure 2.1.
- State Department of Science, Information Technology and Innovation's (DSITI) Wildlife Online, by applying 10 point searches (18 km radius) along a shared centreline of the three options, as indicated in Figure 2.2.

2.2 Data collation and record searches

The data collation process and threatened species records searches for determining the threatened species and/or ecological communities, listed under the EPBC Act and/or NC Act, that are of relevance to each corridor option are discussed in Sections 2.2.1–2.2.2.

2.2.1 Data collation

The data collation process identifies the threatened and migratory species listed under the EPBC Act and/or NC Act for which species record searches are undertaken.

2.2.1.1 PMST

The PMST database results reveals the MNES of potential relevance to each corridor option. The PMST searches are presented in Appendix A. The PMST search results for each corridor option have been collated into a spreadsheet to present the results of relevance to each corridor option. This spreadsheet is available in Appendix B.

2.2.1.2 Wildlife Online

The 10 Wildlife Online database search results were obtained as Excel files so they could be amended to draw attention to the threatened, special least concern and migratory species listed under the NC Act and/or EPBC Act. These amended spreadsheets are presented in Appendix C.

The Wildlife Online database results were taken from 10 centre point searches with an 18 km radius along a shared centreline of the three options, as shown on Figure 2.2. Wildlife Online database is based upon species records. The results of the 10 point searches (18 km radius) were collated into a spreadsheet to identify the endangered, vulnerable, near threatened and special least concern species that have records within the search area. This spreadsheet is available in Appendix D.

Legend		
5km buffer around options Option A1 Option B1 Option C GenexOptions Option A1 Option B1 Option B1 Option B1 Option C Map: 2270434A_GIS_002_A2 Map: 2270434A_GIS_002_A2 Author: VD Date: 11/11/2016		Source: Esrt, DigitalGlobe, Geo Eye, Earthstar Geographios, CNES/Airbus DS, USD Jser Community
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2.2.2 Threatened species records searches

The next step of the process involved undertaking species records searches for each threatened species returned from the combined PMST and Wildlife Online search results. The collated PMST and Wildlife Online search results spreadsheet that was developed to inform species records searches, as presented in Appendix E. The following two databases have been searched for species records:

- 1. State DSITI Species profile search to obtain state wide records for the threatened flora and fauna species listed under the NC Act and/or EPBC Act.
- 2. Commonwealth Government administered Atlas of Living Australia to obtain national records for the threatened fauna species listed under the NC Act and/or EPBC Act.

It is important to note that for some NC Act listed threatened flora and fauna species (e.g. orchids and frogs) are not made available by DSITI, due to the risk of them being illegally captured or removed from the environment.

Once all of the available records were obtained, they were put through the GIS analysis and mapping process.

2.3 GIS analysis and mapping

Using ESRI ArcGIS, a 1 km buffer was applied to the centreline of each 1 km wide corridor option (A, B and C) to create a 3 km wide investigation area. Each 3 km wide investigation area (corridor investigation area) is the basis for quantifying and mapping the MNES and MSES ecological constraints therein. This was done to draw comparisons between each corridor option to inform the option selection process.

2.3.1 Quantification of ecological constraints

The number and/ or extent (hectares) of ecological constraints, within each 3 km wide corridor investigation area (Options A, B and C), has been quantified and mapped using the GIS intersect tool for the following mapping layers:

- → The **number** of DSITI's species records for threatened flora and fauna species listed under the NC Act and/or EPBC Act that have been previously recorded within each corridor investigation area.
- → The **number** of Atlas of Living Australia's species records for threatened fauna listed under the NC Act and/or EPBC Act that have been previously recorded within each corridor investigation area.
- The presence or absence of 'high risk areas' for endangered, vulnerable and near threatened plants (EVNT plants) listed under NC Act on the 'protected plants flora survey trigger map' within each corridor investigation area.
- → The extent (hectares) of MSES regulated vegetation in reference to:
 - Department of Natural Resources and Mine's (DNRM) regulated vegetation mapping (endangered and of concern regional ecosystems)
 - DNRM's regional ecosystem mapping (endangered, of concern and least concern regional ecosystems)
 - Virtual GIS's remote sensing analysis (refer Section 3.1.4) and mapping of woody vegetation predicted and potential extent of remnant, regrowth and non-remnant vegetation
 - regulated remnant watercourse vegetation (endangered, of concern and least concern regional ecosystems), methodology provided below in Section 2.3.1.1
 - regulated remnant wetland vegetation (endangered, of concern and least concern regional ecosystems), methodology provided below in Section 2.3.1.2.
- → The extent (hectares) of other MSES listed under Schedule 2 of the Environmental Offsets Regulation 2014 within each corridor investigation area, including:
 - protected areas (e.g. National Parks and State reserves)
 - wildlife habitats
 - strategic environmental areas

- high ecological significance wetlands
- high ecological value waters (wetland)
- high ecological value waters (watercourses)
- environmental offsets
- connectivity.

2.3.1.1 Regulated remnant watercourse vegetation

The 1:100,000 scale regulated vegetation mapping covers approximately two thirds of each corridor investigation area, while the remaining thirds, toward the western extent of each corridor investigation area, are covered by the 1:250,000 scale mapping.

The 1:250,000 scale mapping does not have stream order attributes. Therefore, the Strahler method has been applied to the 1:250,000 watercourse layer using GIS to appropriately assign the stream orders.

The defined distance for a remnant regional ecosystem along a watercourse has been determined on whether the area of investigation is located in a coastal bioregion and sub-regions or non-coastal bioregion and sub-regions, which are prescribed under Schedule 2 clause 2, subsections (4) and (6) of the Environmental Offsets Regulation 2014, including:

- → Coastal bioregions and sub-regions:
 - Townsville Plains (11.1), Bogie River Hills (11.2) and Marlborough Plains (11.14) Subregions, Brigalow Belt (SBRB) Bioregion
 - Central Queensland Coast (CQC) Bioregion
 - Starke Coastal Lowlands (3.2) Subregion, Cape York Peninsula (CYP) Bioregion
 - Hodgkinson Basin (9.3) Subregion, Einasleigh Uplands (EIU) Bioregion
 - Wet Tropics (WET) Bioregion
 - South East Queensland (SEQ) Bioregion.
- → Non-coastal bioregions and sub-regions:
 - Brigalow Belt (SBRB) Bioregion (excluding Subregions 11.1, 11.2 and 11.14)
 - New England Tableland (NET) Bioregion
 - Northwest Highlands (NWH) Bioregion
 - Gulf Plains (GUP) Bioregion
 - Cape York Peninsula (CYP) Bioregion (excluding Subregion 3.2)
 - Mitchell Grass Downs (MGD) Bioregion
 - Channel Country (CHC) Bioregion
 - Mulga Lands (MUL) Bioregion
 - Einasleigh Uplands (EIU) Bioregion (excluding Subregion 9.3)
 - Desert Uplands (DEU) Bioregion.

The distances for regulated remnant watercourse vegetation from the defining bank of watercourse stream orders in coastal bioregions and sub-regions, is presented in Table 2.1.

Table 2.1Distances for regulated remnant watercourse vegetation from the defining bank of watercourse
stream orders in coastal bioregions

WATERCOURSE STREAM ORDER	DISTANCE FROM THE DEFINING BANK (metres)
1 or 2	10
3 or 4	25
5 or greater	50

The distances for regulated remnant watercourse vegetation from the defining bank of watercourse stream orders in non-coastal bioregions and sub-regions, is presented in Table 2.2.

Table 2.2Distances for regulated remnant watercourse vegetation from the defining bank of watercourse
stream orders in non-coastal bioregions

WATERCOURSE STREAM ORDER	DISTANCE FROM THE DEFINING BANK (metres)
1 or 2	25
3 or 4	50
5 or greater	100

2.3.1.2 Regulated remnant wetland vegetation

The extent (ha) of remnant vegetation (endangered, of concern and least concern regional ecosystems) of relevance to areas of mapped regulated wetland vegetation, is determined by applying a 50 m buffer to the mapped regulated vegetation wetlands.

2.4 Threatened ecological communities assessment

An assessment of the mapped regional ecosystems within each corridor was undertaken to identify the potential presence of regional ecosystems that may potentially constitute threatened ecological communities listed under the EPBC Act.

2.5 Constraint ranking

A ranking system has been applied to each corridor investigation area, for each environmental matter and/or potential ecological constraint, to capture the degree of ecological constraints within each corridor option and to assist with determining the least constrained or preferred corridor.

RED	Greatest amount of potential impact and ecological constraint
ORANGE	Moderate amount of potential impact and ecological constraint
GREEN	Least amount of potential impact and ecological constraint

The ranking system has not been applied to database search results (i.e. Wildlife Online and PMST) because they have been used to inform species record searches and assessment. The ranking system has also not been applied to matters that do not require significant impact assessments or trigger environmental offsets (i.e. least concern regional ecosystems and regrowth and areas of non-remnant).

The 'high risk areas' for endangered, vulnerable and near threatened plants (EVNT plants) listed under NC Act on the 'protected plants flora survey trigger map', have also not been ranked as they are captured as flora species records.