Australian Government

Department of Sustainability, Environment, Water, Population and Communities

Referral of proposed action

Project title: Loganlea to Jimboomba 110kV Network Upgrade

1 Summary of proposed action

1.1 Short description

Energex is a government-owned corporation supplying electricity to South East Queensland. Energex manages an electricity network that distributes electricity to more than 1.3 million residential, industrial and commercial customers across a population base of around 3.1 million. To meet growing energy demands within the region Energex continually invests in its extensive supply network including major power line augmentations such as the Loganlea to Jimboomba 110kV Network Upgrade (the Project). Energex's commitment to environmental management is demonstrated by its certification under ISO 14001.

The proposed development involves the construction and operation of a 110 kV sub transmission line between the Powerlink Loganlea 275/110 kV substation and the Energex Jimboomba substation via the existing Kingston substation. The Project is in response to the projected load increase, and need for improved reliability, in the electricity load over the coming years in the Mount Lindsay North Beaudesert (MLNB) region.

The Project has been the subject of environmental and social impact assessment in accordance with the Queensland Community Infrastructure Designation process under the *Sustainable Planning Act 2009* (SP Act). Significant public consultation was carried out during the development and finalisation of the Initial Assessment Report (IAR) (Aurecon 2009), the Supplementary Initial Assessment Report (SIAR) (Aurecon 2010a) and the Final Initial Assessment Report (FIAR) (Aurecon 2010b). The FIAR is the assessment document on which designation of the Project was sought and is presented at **Appendix B**. It can also be viewed online at http://www.energex.com.au/the-network/major-projects/loganlea-to-jimboomba-network-upgrade/final-iar. A copy of the Guidelines about Environmental Assessment and Public Consultation Procedures for Designating Land for Community Infrastructure (CID) can be found at http://www.dsdip.qld.gov.au/resources/ipa/infrastructure/guidelines/061130-guidelines.pdf. The Project was designated as CID by the Queensland Minister for Energy and Water Supply on 28 November 2012.

The Project is currently in design phase and construction is proposed to commence in 2014. An alternative alignment option exists in the southern most area of the Project, also covered by this referral. The alternative is for approximately 2.3 km, which if adopted, the approved alignment will be altered to co-locate with Camp Cable Road, rather than existing Energex easements, equating to a shift of 100 m at most from the designated route.

1.2 **Latitude and longitude**

The latitude and longitude co-ordinates of the proposed Project corridor (as approved in the CID of November 2012) are provided for each turn and are listed in **Table 1**.

Table 1: Latitude and Longitude at turning points within the proposed Project corridor

Latitude			Longitude		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
-27	48	32.2	153	2	40.02
-27	48	11.23	153	5	19.85
-27	48	9.8	153	5	21.95
-27	46	15.12	153	6	21.02
-27	46	7.02	153	6	6.69
-27	45	32.08	153	6	3.22
-27	45	16.21	153	6	22.37
-27	45	10.6	153	6	18.68
-27	44	34.98	153	7	5.75
-27	44	17.89	153	7	7.95
-27	43	59.61	153	6	45.85
-27	43	53.75	153	6	52.34
-27	43	37.33	153	6	48.13
-27	40	49.5	153	7	17.34
-27	40	40.66	153	7	16.46
-27	40	36.78	153	7	14.3
-27	40	33.92	153	7	8.58
-27	40	5.16	153	7	9.16
-27	39	56.73	153	7	14.3
-27	39	47.62	153	7	30.39
-27	39	48.42	153	7	43.78
-27	39	54.54	153	7	48
-27	39	55.9	153	7	57
-27	39	49.24	153	7	56.2

1.3 **Locality and property description**

The proposed development is located within the Logan City Council (LCC) Local Government Area (LGA) in South East Queensland (SEQ). The corridor commences at the existing Powerlink owned Loganlea substation in the suburb of Meadowbrook and, via the existing Energex substation at Kingston, continues through Waterford West, Waterford, Logan Reserve, Buccan, Chambers Flat and Logan Village and finishes in the suburb of Jimboomba where the proposed sub transmission line will connect into the existing Energex Jimboomba substation.

A locality plan of the proposed development has been provided in **Figure 1.** The figures illustrate the proposed sub transmission line corridor (including indicative pole locations) and the location of the substations which the Project will connect into.

1.4 **Size of the development footprint or work area (hectares)**

The Project is approximately 23.3 km long. The majority of the Project is to be constructed using steel and concrete poles supporting approximately 17.6 km of 110 kV overhead powerline (including the existing 2.5 km section between Loganlea substation and Kingston substation). There are approximately 90 poles placed along the route. The first 5.7 km (approximately) of this alignment will be placed underground, from Kingston Substation to Glen Road.

An easement is preferred to ensure safe operation of the proposed line, keeping vegetation and man-made structures separated from the line in accordance with the *Electrical Safety Regulation 2002*. The typical easement width on the overhead sections of the Project will be 40 m, being 20 m either side of the Project centreline. No easement will be granted where the infrastructure is to be placed in existing road reserve.

The Project has a total easement footprint of 64.8 ha of which 23.8 ha includes existing easements.

No expansion of substation facilities is required.

Section G(A) represents an alternative alignment option to the alignment designated under the CID process in November 2012 (**Figure 2**). Should Energex proceed with the alternative alignment, it will not materially alter the footprint of the Project.

1.5 **Street address of the site**

Due to the linear nature of the proposed development, no single street address can be provided. A brief description of the proposed corridor path has been provided below.

The project corridor runs from the Loganlea bulk supply substation along the route of the existing 110 kV feeder via Kingston substation. The corridor then heads south along a section of Kingston Road and then follows Logan Reserve Road. The proposed corridor follows Logan Reserve Road and Glen Road south before following the Logan River floodplain.

It follows the Logan River floodplain until it meets the Geoff Phillip Bridge and Anzac Avenue. The route then crosses Anzac Avenue and heads south along Waterford Tamborine Road. The corridor then follows an existing, cleared 33 kV sub transmission line easement, exiting Waterford Tamborine Road around Pioneer Drive. This existing easement then crosses over Hotz Road and Camp Cable Road at which point it heads west and runs parallel to Camp Cable Road until it reaches the Jimboomba substation. It should be noted that the existing easement is partially cleared and will be widened to accommodate the proposed sub transmission line. A locality plan of the proposed development has been provided in **Figure 1.**

1.6 **Lot description**

The lot and plan descriptions of the proposed development are provided in **Appendix A**. When measured by area, approximately 60% of land within the proposed development area is in private ownership, while the balance is owned or controlled by the State or Local Government (40%). Lot and plans are provided for the alignment approved under the CID process only. Alternative alignment option shown as Section G(A), if adopted, will result in two fewer properties directly impacted. All lots intersected by Section G(A) are freehold or road reserve.

1.7 **Local Government Area and Council contact (if known)**

The Project is located within the Logan City Council area.

1.8	**Time frame** At this stage construction is planned to commence in early 2014 and continue for approximately 18 months. Full commissioning is expected by the end of 2016, after which the Project enters its operational/maintenance cycle.		
1.9	**Alternatives to proposed action**		No
		✓	Yes, you must also complete section 2.2
1.10	**Alternative time frames etc**		No
		✓	Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	**State assessment**		No
		✓	Yes. The project was subject to State environmental assessment under the *Sustainable Planning Act 2009 (Qld)* to support a request for a Ministerial Designation for the Project (for operating works under the *Electricity Act 1994*). The impact assessment (FIAR) was submitted for Ministerial consideration in September 2010. The Project (No. 833) was designated by the Queensland Minister for Energy and Water Supply on 28 November 2012. The IAR documents investigations undertaken to consider the potential environmental, social and economic impacts of the proposed development. The IAR considers potential impacts on areas likely to be directly or indirectly affected by the proposed works at all stages of the development (i.e. planning, construction and operation). The IAR also considers any potential immediate and cumulative impacts. Alternative alignment option G(A) was not part of the designated route under the CID process.
1.12	**Component of larger action**	✓	No
			The Project is part of the overall electricity reticulation network for the region but is not part of any singular, larger project.
1.13	**Related actions/proposals**	✓	No
			Yes, provide details:
1.14	**Australian Government funding**	✓	No
1.15	**Great Barrier Reef Marine Park**	✓	No
			Yes, you must also complete Section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

2.1 Description of proposed action

Construction

The Project will involve the construction of a 110 kV sub transmission line between the existing Loganlea and Jimboomba substations. The proposed sub transmission line will be approximately 23.3 km long (5.7 km underground and 17.6 km overhead using concrete or steel poles). The initial 2.5 km section between the Powerlink owned Loganlea substation on Meakin Road and Energex owned Kingston substation on Chambers Flat Road contains infrastructure capable of supplying the forecast increase in demand and will require no new land acquisition or construction as existing infrastructure can be reconfigured to provide adequate capacity for this section.

Major land uses along the corridor include rural, rural residential, urban residential (around Loganlea and Kingston substations) and existing Energex easements. The Logan River floodplain between Buccan and Logan Village has been largely cleared of vegetation as a result of past land uses including for agriculture.

Key characteristics of the Project and the corridor within which the infrastructure will be located are described below and presented in **Figure 1**.

Section A - Existing Energex easement. This section is approximately 2.5km long and will utilise an existing concrete pole and overhead network between the Loganlea to Kingston Substations. This was previously constructed to a 110 kV standard and currently is operating at 33 kV. Although there is no new construction the existing 33 kV line will be replaced by a new 110 kV line. As this section is predominately within a cleared easement there is minimal vegetation clearing required.

Section B - Underground section along Kingston, Logan Reserve and Glen Roads. This section is approximately 5.7 km long and will be entirely undergrounded. The upper section of the proposed sub transmission line from the Kingston substation is located in an existing urbanised part of Meadowbrook, Loganlea and Waterford West. The urbanisation and electrical services in this area allow insufficient room for expansion of the overhead transmission line. This means approximately the first 2.2 km of this alignment will be placed underground to achieve the required separation distances from existing residences. Underground sections of the powerline will be laid in a trench and the trench will then be backfilled.

An additional 3.5 km of the alignment will also be undergrounded beneath Logan Reserve Road through to the end of Glen Road, Logan Reserve. At this point there will be a transition pole and the alignment will revert to an overhead arrangement before crossing the Logan River).

Section C - Transition structure to Henderson Street Park. This section is approximately 950 m long and involves the first overhead river crossing of the Logan River immediately after the transition structure. Using concrete poles and a single 110 kV line the alignment continues to traverse close to the Logan River and behind a sporting field before crossing into private property. From here a second crossing of the Logan River is made with the line ending at the Henderson Street Park. This alignment was selected due mainly to it avoiding the need to clear any mature or protected vegetation on either bank, and minimising both the need for costly bends and the visual impact of the alignment.

Section D - Henderson Street Park to Anzac Avenue. This section is approximately 5.4 km long and from Henderson Street Park the alignment follows the western side of Logan River for approximately 3.1 km. The line crosses Chambers Creek adjacent to the Logan River and approximately 700 m south-west of this point crosses back to the eastern side of the Logan River. It then follows the river for approximately 600 m before crossing the Logan River to avoid the more dense development at Logan Village before ending in the vicinity of the western side of the Geoff Philip Bridge.

Section E - Waterford-Tamborine Road. This section is approximately 2.1 km long and crosses the Logan River for a fifth and final time at Anzac Avenue. This crossing co-locates the line with the existing Geoff Philip Bridge where it continues east along Anzac Avenue. From the intersection of Anzac Avenue and Waterford-Tamborine Road the line heads in a south-westerly direction. Here it parallels and finally crosses the disused Bethania to Beaudesert rail corridor before it crosses back to the western side of Waterford-Tamborine Road just north of Pioneer Drive.

Section F - Waterford-Tamborine Road to Powerlink easement. This section is also approximately 2.1 km long. From Pioneer Drive it follows an existing 33 kV easement in a south-westerly direction through a predominately rural residential area and ends where it is bisected by an existing Powerlink easement. The

existing 33 kV power line is currently on timber poles and will be replaced with new concrete poles to carry both the new 110 kV line and the existing 33 kV line. This configuration will further be used for the remainder of the proposed alignment. The use of the 33 kV easement will reduce the amount of overall land take and sterilisation.

Section G - Camp Cable Road. This section is approximately 4.5 km long. After crossing the Powerlink easement the line continues to follow the existing 33 kV easement for approximately 250 m before crossing Camp Cable Road. The line then traverses in a westerly direction and continues through a rural residential area along the existing 33 kV easement before ending at the Jimboomba Bulk Supply substation. As with Section F, there is a need for some vegetation clearing.

Section G(A) – Camp Cable Road Alternative. Energex is considering an alternative alignment in the southern reaches of the Project. The alternative alignment is for approximately 2.3 km to co-locate with Camp Cable Road, rather than existing Energex easements and equates to a shift of 100 m at most from the current route (**Figure 2**). The alternative alignment occurs generally between Travis Road and Edelsten Road. Section 2.3 discusses the alternative alignment in detail.

Construction details

Construction activities for the sub-transmission line will include:

- Vegetation clearing for:
  - Sub-transmission line alignment – up to 40 m wide at the centre of the span (vegetation clearing will utilise 'scalloping' – i.e. narrowest clearing near poles, widest clearing in centre of span, to reduce both visual impact and extent of vegetation clearing). Clearing will include the complete removal from ground of trees and undergrowth that has the potential to grow into restricted access areas (i.e. in this case has the potential to grow higher than approximately 4 m). The majority of shrubs and groundcover will be retained;
  - Pole locations – approximately 20 m x 20 m cleared to bare earth; and
  - New access tracks – approximately 8.6 m wide (6.6 m formation width, including batters, table-drains and running surface, plus 1 m either side) cleared of all trees, shrubs, undergrowth, dumped building material and surface boulders in formation and cleared of trees and shrubs outside the formation.
- Access track development;
- Foundation establishment (footings for poles);
- Structure erection (placement of poles); and
- Conductor and earth wire stringing.
- Open trenching, cable laying, laying of bedding material and backfilling with part of the excavated soil.

Chapters 8 (Natural Resources) and 11 (Conservation values) of the FIAR (**Appendix B**) detail the potential impacts of the Project on natural and conservation values. Of the 64.8 hectares of easement required for the Project, vegetation clearing will be required for up to 26.9 ha if the original alignment is taken, and 26.0 ha if the alternative alignment at Section G(A) is taken. This includes a potential impact of 2.4 ha on Regional Ecosystems, and 23.63 ha on high value regrowth. Much of this clearing consists of widening the existing corridor along which an existing 33 kV powerline currently runs.

Access for construction will generally be via existing local tracks or along the easement. Mitigation measures have been developed for the Project and are detailed in Chapter 18 'Environmental management' of the FIAR (**Appendix B**).

Trenching will be used for all underground sections of the line. This is the most common method used to underground powerline infrastructure. Trenches are excavated in the underground location/alignment to the trench dimensions specified on construction drawings. In some instances careful excavation of trial holes is necessary to determine in advance the alignment and depth of services prior to excavating with machinery. Trenches are not to be exposed to water flows as this can create serious erosion problems.

Once conduits are laid, bedding material is placed around cables, conduits, joints and any other buried Energex plant such that a minimum separation between bales and conduits is maintained and is lightly compacted prior to backfilling the remainder of the trench. Bedding material with appropriate thermal conductive properties for heat dissipation will be used. Excavated material is not used for bedding material unless appropriate.

Operation and Maintenance Details

Following completion of construction activities and energising of the sub-transmission line, operation and maintenance activities are generally minimal.

Typical maintenance for overhead power lines will include the following:

- Visual assessment of the structures and line every one to three years;
- Maintenance of vegetation buffers as required, but generally every five years; and
- Possible replacement of insulators every 15-20 years.

Access to the alignment for maintenance activities will generally be achieved via existing roads and along the alignment. Where access is required via existing property access ways, access agreements will be negotiated with landholders. Details of these requirements will be finalised during the detailed design phase of the Project.

Underground cables are generally maintenance free as there are fewer components to inspect and maintain in comparison to overhead power lines, however 110 kV conduits require some testing or condition monitoring. Underground cable corridors are normally kept cleared of vegetation for the life of the cable. This is necessary to ensure the cable is not damaged by tree roots, other vegetation or other activities.

Decommissioning

The design life of sub transmission lines is typically in excess of 50 years. After that time, it would be reasonable to expect that replacement/refurbishment work would occur to bring the equipment to the required level of performance and reliability. It is not anticipated that most lines of this scale would be decommissioned. Instead they are likely to be continually refurbished for the foreseeable future.

2.2 Alternatives to taking the proposed action

Currently the Mount Lindesay North Beaudesert (MLNB) region is supplied by a single circuit 110 kV sub transmission line that runs from a 275/110 kV substation operated by Powerlink in Loganlea to the Energex Beaudesert 110/33 kV substation via Jimboomba 110/33kV substation. Additional electricity supply infrastructure is required to support the MLNB region that is predicted to undergo rapid population growth in the next few years. The region contains seven of the state's identified future urban growth areas. Without augmentation of the sub-transmission network in the region Energex will be unable to meet mandated network security and reliability criteria in the short to medium term. The do nothing option was discounted.

No non network alternatives (i.e. demand management measures or on-site generation) were identified that would delay or remove the requirement for the proposed development. Energex sought submissions for alternatives through its prescribed process under the Australian Energy Regulator (AER).

A Corridor Selection Report (CSR) was prepared to determine the preferred alignment for the proposed sub transmission line based on a suite of social, environmental and economic indicators. To inform the stakeholders about the project, in December 2008, the CSR was published on the Energex website, a flyer was distributed to approximately 15,000 local residents and advertisements were placed in the local press. The CSR is included as an Appendix to the FIAR, which is at **Appendix B** to this Referral. The preferred corridor was determined as Option 2 (Logan River). The proposed corridor along the Logan River floodplain represents the best balance of social, environmental and economic outcomes.

2.3 Alternative locations, time frames or activities that form part of the referred action

Energex is considering an alternative alignment to the alignment designated in November 2012 in Section G, referred to as Section G(A) (**Figure 3**). The alternative alignment under consideration has been developed in response to feedback received from landowners during and after the CID process. The alternative alignment is approximately 2.3 km long and is co-located with Camp Cable Road, rather than existing Energex easements, equating to a shift of 100 m at most from the designated route. The alternative alignment occurs between Travis Road and Edelsten Road.

2.4 Context, planning framework and state/local government requirements

State and local government requirements relevant at the time of the designation of the project are presented in **Table 2**. The project area is wholly located within Logan City Council (LCC) Local Government Area and

includes the old Beaudesert Shire Council referred to in the FIAR and was subsequently absorbed during the Local Government amalgamations on 15 March 2008.

Table 2: Planning Framework

Type of Development	Aspect of Development	Approval Required
Material Change of Use *Sustainable Planning Act 1999*	110 kV sub transmission line	Exempt under SPA; section 203
Operational Works (made assessable under a Planning Scheme) *Sustainable Planning Act 1999*	110 kV sub transmission line	Exempt under SPA; section 203
Operational Works (Vegetation Clearing) *Vegetation Management Act 1999*	110 kV sub transmission line	Exempt under SPA Schedule 24 and s.112A *Electricity Act 1994*
Protected Plants and Breeding Places *Nature Conservation Act 1992*	110 kV sub transmission line	*Nature Conservation Act 1992* and Energex class exemption will apply
Operational Works (Tidal Works) *Sustainable Planning Act 1999 Coastal Protection and Management Act 1995*	110 kV sub transmission line	Assessable under Schedule 3 of the SP Regulation
Operational Works (Marine Plant Permit) *Fisheries Act 1994*	110 kV sub transmission line	Assessable under Schedule 3 of the SP Regulation
Building Works (Preliminary Approval Only) *Sustainable Planning Act 1999 Building Act 1975*	110 kV sub transmission line	Self-Assessable under Schedule 3 of the SP Regulation

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

An IAR, SIAR and FIAR were prepared by Aurecon in 2009/2010 to support an application for designation of the Project as Community Infrastructure under the SP Act. The FIAR is presented at **Appendix B**. The impact assessments went through the process for electricity distribution entities set out in the Community Infrastructure Designation Guidelines made under section 760 of the SP Act (http://www.dlgp.qld.gov.au/integrated-planning-act/environmental-assessment-and-public-consultation-guidelines.html).

The FIAR contains the results of a public consultation process which is outlined in Section 2.6 below. No referral of the Project under the EPBC Act has previously taken place. The FIAR did not specifically include Section G(A) due to this option not existing at the time. No new properties would be impacted by Section G(A). The survey and assessment undertaken for the FIAR covered a general corridor of varying width including the land between Section G and Camp Cable Road, thereby covering Section G(A) (Aurecon 2010b, Figure 11.3a).

2.6 Public consultation (including with Indigenous stakeholders)

As part of the community infrastructure designation process, public consultation was carried out which included the following:

- Notification in a public newspaper circulating in the locality
- Directly-impacted landowners were sent a public notice and an electronic copy of the IAR
- Public displays were set up at major shopping centres and community halls in the region on 28 and 30 May 2009, between 15 June and 3 July 2009 and 17 March and 8 April 2010, and on 11 and 13 March 2010 to provide the general community with information on the Project, display draft impact assessment documents for public feedback and to answer queries relating to the Project
- Information on how to make a formal submission was provided to stakeholders, interested parties and the general community.

The FIAR details the submissions made along with Energex responses to them (Appendices L1 and L2 of the FIAR).

A Draft Aboriginal Cultural Heritage Duty of Care Assessment (Appendix J of the FIAR (**Appendix B** to this referral)) was undertaken. Further work to complete the Aboriginal Cultural Heritage Assessment has been commissioned and will be completed in conjunction with the geotechnical survey prior to construction.

2.7 A staged development or component of a larger project

The proposed development will not be a staged development or a component of a larger project.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

AMEC undertook an EPBC Act Protected Matters Report search on 11 February 2013 for an area extending along the length of the Project corridor plus a 1 km buffer in all directions (search co-ordinates in **Table 1**). Section G(A) is 100 m from the current alignment at most and is therefore satisfactorily assessed under the database searches undertaken for the existing alignment. A list of potential MNES was prepared which included a number of flora and fauna species (including migratory bird species). The probability of occurrence of each of these MNES was assessed using the following information sources:

- The DSEWPaC Protected Matters Search Tool
- A search of the Department of Environment and Heritage Protection (DEHP) Wildlife Online database (and other relevant databases) to identify MNES species previously recorded in the Project area (a search with a 1 km radius was undertaken on each of the coordinates listed in **Table 1** to ensure project specific results were returned)
- A review of the Department of Environment and Resource Management (DERM) Essential Habitat mapping prepared under the *Vegetation Management Act 1999* to determine where Project infrastructure or activities intersect or adjoin areas mapped as Essential Habitat for MNES species
- DERM RE mapping (from DEHP)
- Essential Habitat mapping (identifies essential habitat for NC Act-listed fauna)
- DERM Ecologically Sensitive Areas mapping (from DEHP)
- Biodiversity Planning Assessment mapping (identifies areas of biodiversity significance)
- EPBC Act protected matters database (DSEWPaC search February, 2013)
- Results of field surveys and desktop assessments undertaken for the IAR, SIAR and FIAR.

Those MNES considered known or likely to occur are addressed in **Section 3.1** of this assessment. The following matters have been considered when assessing the significance of impacts on MNES:

- The sensitivity of the environment which will be impacted
- The timing, duration and frequency of the action and its impacts
- All on-site and off-site impacts
- All direct and indirect impacts
- The total impact which can be attributed to the action over the entire geographic area affected and over time
- Existing levels of impact from other sources
- The degree of confidence with which the impacts of the action are known and understood.

Energex engaged environmental consultants RPS in May 2013 to undertake a specific koala impact assessment (including targeted field survey) in accordance with the *Interim Koala Referral Advice for Proponents* and *EPBC Act Matters of National Environmental Significance (MNES) Significant Impact Guidelines 1.1.* The RPS Report is attached as **Appendix C** (RPS Australia East Pty Ltd, 2013). The RPS Report also includes information relating to the potential occurrence of additional MNES fauna, which have been used to inform relevant parts of this referral.

3.1 (a) World Heritage Properties

Description

The Australian Heritage Database and the EPBC Protected Matters Search Tool identified no World Heritage properties within the proposed development area. Lamington and Springbrook National Parks are located approximately 40 km to the south of the development area and form part of the World Heritage listed, Australian East Coast Sub-tropical and Temperate Rainforest Parks.

Nature and extent of likely impact

The proposed development will not impact directly on any World Heritage properties. There will also be no indirect impact to any World Heritage property due to significant geographic separation, the low terrestrial impact of the proposed development (aerial infrastructure) and the application of environmental management measures to be articulated through a Construction Environmental Management Plan (CEMP), as outlined in Chapter 18 of the FIAR.

3.1 (b) National Heritage Places

Description

The Australian Heritage Database and the EPBC Protected Matters Search Tool identified no National Heritage properties within the project area.

Nature and extent of likely impact

The proposed development will not impact directly on any National Heritage places. There will also be no indirect impacts to any National Heritage places.

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

An EPBC Protected Matters Search conducted for a 1 km buffer around the project area identified the proposed works as occurring within the catchment of Moreton Bay which is a Ramsar wetland under the EPBC Act. The development area is located downstream of the limit of tidal influence in the Logan River, which eventually flows to Moreton Bay. The proposed works are located within the catchment of the Logan River which flows into the southern end of Moreton Bay. The project area itself is located approximately 25 km upstream of Moreton Bay at the projects most eastern point.

Nationally important wetland sites within the Moreton Bay catchment area include Greenbank Army Training Area C and Karawatha Forest Area. These wetlands however are not within the development area and are upstream of the project.

Nature and extent of likely impact

Any potential impacts to the Logan River will be highly localised and will be managed through the implementation of the CEMP. Targeted revegetation of various sections along the Logan River should result in a decrease in erosion and sediment loads flowing into this watercourse from current conditions. Therefore the overall environmental values of the Logan River will not be further degraded and any indirect or secondary impacts to Moreton Bay from the proposed development are considered unlikely.

3.1 (d) Listed threatened species and ecological communities

Threatened Ecological Communities (TECs)

EPBC Protected Matters Search tool identified the potential occurrence of two TECs within or adjacent to the project area; Lowland Rainforest of Subtropical Australia TEC and Swamp Tea-tree (*Melaleuca irbyana*) Forest of South-east Queensland. The likelihood of occurrence of these TECs is discussed below.

Description

The Lowland Rainforest of Subtropical Australia TEC is a Critically Endangered TEC occurring between Maryborough in Queensland and the Clarence River (near Grafton) in New South Wales. The ecological community also includes isolated areas between the Clarence River and Hunter River such as the Bellinger and Hastings Valleys. The TEC occurs in the South Eastern Queensland Bioregion and NSW North Coast Bioregion (DSEWPaC 2012c).

The Swamp Tea-tree Forest TEC is a Critically Endangered TEC characterised by the presence of the *Melaleuca irbyana* (Swamp Tea- tree) in thickets about 8-12 m high with or without an emergent tree layer of eucalypts species. Common tree species which penetrate above the canopy of *Melaleuca irbyana* include *Eucalyptus crebra* (Narrow-leaved Ironbark), *E. melanophloia* (Silver-leaved Ironbark), *E. moluccana* (Grey Box) and the *E. tereticornis* (Forest Red Gum). The community has a sparse understorey of grasses, sedges and herbs with few shrubs and vines present. A variety of plant and animal species are associated with the Swamp Tea-tree Forests including the nationally threatened *Marsdenia coronata* (Slender Milkvine plant) (DEWHA 2008c).

No remnant vegetation was identified that was consistent with either TEC in the FIAR. The Swamp Tea-tree Forest TEC was identified approximately 1 km east of Jimboomba substation along the southern side of the existing 33 kV easement, adjacent to the alignment. The detailed terrestrial survey methodology is available in the FIAR (Aurecon 2010b).

Nature and extent of likely impact

The Lowland Rainforest of Subtropical Australia TEC was not identified during ecological assessments and is not likely to be impacted by the proposed development. The Swamp Tea-tree Forest TEC was identified approximately 1 km east of Jimboomba substation 43 m south of the proposed corridor, however it will not be impacted by the proposed development. Section G(A) was traversed as part of the initial survey area of the FIAR (Aurecon 2010b, Figure 11.3a) and neither TEC was identified. Further field verification was undertaken by RPS in 2013 during targeted koala surveys for both Section G and G(A). The TEC was not identified.

Threatened Flora Species

The Protected Matters search identified 14 MNES flora species that may occur within, or have habitat within, the Project area. Each of these species has been assessed in terms of the habitat recorded on site and the potential for each to occur. These species are included in **Table 3**.

Description

The likelihood of occurrence of species listed in **Table 3** has been assessed using the following categories which are based on the availability of suitable habitat and records within the locality:

- Moderate – Identified in desktop searches, suitable habitat exists within the project corridor and/or prior investigations by others may have located this species within the area. However, the species was not observed during the current field survey period.
- Low – Identified in desktop searches, however no suitable habitat exists within or directly adjacent to the project corridor.

Existing habitat assessments for threatened flora species are adequate and cover both Section G and Section G(A) because the initial survey area of the FIAR extended to both (Aurecon 2010b , Figure 11.3a). Further field verification was undertaken by RPS in 2013 during targeted koala surveys for both Section G and G(A) and no threatened flora species were identified.

Table 3: MNES plant species identified in the Protected Matters search

Species Name	EPBC Act	Habitat Association	Likelihood of Occurrence
Arthraxon hispidus (Hairy-joint Grass)	V	**Grass.** In Queensland the species is found in or fringing rainforest and in wet Eucalypt forest near creeks and swamps. It is associated with four TECs, however none of the associated TECs were identified in field survey or through desktop searches for the project. The project area contains little suitable habitat for the species.	**LOW:** While the project area is within the species distribution range there is no suitable habitat for this species within the project area. Significant impact is therefore not likely.
Bosistoa selwynii (Heart-leaved bosistoa)	V	*Bosistoa selwynii* has been absorbed into the classification *Bosistoa transversa s. lat (DECC 2005b).* Consequently this report has treated *Bosistoa selwynii as Bosistoa transversa s. lat.*	
Bosistoa transversa (Three-leaved bosistoa)	V	**Tree to 22 m.** *Bosistoa transversa s. lat.* combines *Bosistoa transversa* and *Bosistoa selwynii*. *Bosistoa transversa s. lat.* is a tall tree which is predominately found in lowland subtropical and dry rainforest areas. The species distribution ranges between Mount Larcom (Queensland) and Mullumbimby (New South Wales) (DECC 2005c).	**LOW:** While the project area is within the species distribution range there is no suitable habitat for this species within the project area. Significant impact is therefore not likely.
Cryptocarya foetida (Stinking Cryptocarya, Stinking Laurel)	V	**Tree to 10 m.** *Cryptocarya foetida* is a medium sized tree which is associated with littoral rainforest and occasional subtropical rainforest areas. The species has been recorded between Ballina, New South Wales and Cooloola, Queensland (DECC 2005d).	**LOW:** The project area occurs within the distribution range of this species however does not contain suitable habitat with the majority of vegetation communities within the project area dominated by dry sclerophyll species. Significant impact is therefore not likely.

Species Name	EPBC Act	Habitat Association	Likelihood of Occurrence
Cryptostylis hunteriana (Leafless tongue-orchid)	V	**A saprophytic, leafless ground orchid**. *Cryptostylis hunteriana* is a saprophytic, leafless terrestrial orchid which has been recorded from a variety of habitats. Whilst the species is generally associated with swamp heaths and sandy soils the species has been recorded from open forest and areas boarding swamps. In Queensland four coastal populations of *Cryptostylis hunteriana* have been recorded between the Glasshouse Mountains and Tin Can Bay. Additionally a single plant has been recorded near the village of Tinnanbar. The distribution of this species is not known to overlap with any EPBC Act-listed threatened ecological communities (DSEWPaC 2013).	**LOW**: The project area is outside of the identified locations of the species It is considered unlikely the species will be present within or directly adjacent to the project area. Significant impact is therefore not likely.
Fontainea venosa (Bahrs Scrub Fontainea)	V	**Small tree to 15 m.** *Fontainea venosa* is a small shrub which occurs in Araucarian microphyll vine forest and vine thicket area. The specs can often been found on rocky outcrops or along creeks and is often associated with *Araucaria cunninghamii*, *Barklya syringifolia*, and *Diospyros fasciculosa* (Leiper *et al* 2008).	**LOW**: It is considered unlikely that this species would occur within the project area due to the lack of suitable habitat. There were not microphyll vine forest, vine thicket areas or rocky outcrops recorded within the project area. Those creeks lines present within the project area did not appear to support any vine forest species or the commonly associated species listed above. Significant impact is therefore not likely.
Gossia gonoclada (Angle-stemmed myrtle)	E	**Tree to 18 m** *Gossia gonoclada* is considered to be locally significant to the Logan region and is associated with remnant lowland riparian rainforest situated along watercourses subject to tidal influence. The species has been recorded from nine sites along the lower reaches of the Logan and Brisbane Rivers and their tributaries (Aurecon 2010b).	**LOW**: There are no remnant lowland riparian rainforest communities within the Project area. *Gossia gonoclada* is therefore unlikely to occur. Significant impact is therefore not likely.

Species Name	EPBC Act	Habitat Association	Likelihood of Occurrence
Hydrocharis dubia (Frogbit)	V	**Aquatic perennial** with emergent and floating leaves. Often found in mud near the water's edge in small shallow freshwater bodies or swamps (LRB S.G.A.P. 2005). There are two populations one in southeast Queensland and northern New South Wales the other near Townsville (DEWHA 2008b)	**MODERATE**: There are water bodies within and directly adjacent to the project area which would provide suitable habitat for this species. A thorough search of a perennial wetland and other freshwater bodies present within the project area did not identify this species. While the species may occur significant impact is not likely. Preferential habitat for the species will be retained, with aerial infrastructure spanning over water bodies.
Macadamia integrifolia (Macadamia nut)	E	**Tree to 18 m** *Macadamia integrifolia* is considered to be locally significant to the Logan region and is associated with remnant lowland riparian rainforest situated along watercourses subject to tidal influence. The species has been recorded from nine sites along the lower reaches of the Logan and Brisbane Rivers and their tributaries (Logan City Council undated).	**MODERATE**: *Macadamia integrifolia* has been recorded from sites surrounding the project area however the species has not been recorded within the project area itself. The exception is a small plantation of the species at the end of Natalie Rd Buccan. This plantation is not natural and will not be impacted by the Project, which adjoins it's western verge. The presence of the man-made plantation does not mean that the species is any more or less likely to occur elsewhere along the alignment. The project area does not appear to contain areas of riparian rainforest however due to the close proximity of recorded individuals it is possible the species may exist within the project area. While the species may occur significant impact is not likely.
Notelaea ipsviciensis (Cooneana Olive)	CE	**Shrub to 2 m.** Highly localised to the Ipswich area with a total known distribution of just 2 km^2 and 17 mature plants. Grows as an understorey plant in open woodlands.	**LOW:** While open woodlands are common in the region the highly constrained distribution means it is unlikely the species will occur in the proposed disturbance area.
Phaius australis (Lesser Swamp-orchid)	E	**Orchid to 2 m.** Typically constrained to coastal wetlands, swampy grassland, swampy forest or fringing open forest. Known from coastal regions and Stradbroke, Fraser and Moreton Islands. Little suitable habitat was identified in the project area	**LOW:** Little wetland habitat was identified. The species is unlikely to occur in the proposed disturbance area.

Species Name	EPBC Act	Habitat Association	Likelihood of Occurrence
Phebalium distans (Mt Berryman Phebalium)	CE	**Tree to 8 m.** Found in semi-evergreen vine thicket or communities adjacent to that vegetation type. No suitable habitat was identified in the project area (DSEWPaC 2013a).	**LOW:** Suitable habitat was not identified. The species is unlikely to occur in the proposed disturbance area.
Streblus pendulinus (Siah's Backbone, Sia's Backbone, Isaac Wood)	E	**Large shrub to 6 m.** Typically found in warmer rainforest. Prefers well developed rainforest, gallery forest or drier seasonal rainforest. No suitable habitat identified in the project area (DSEWPaC 2013a).	**LOW:** Suitable habitat was not identified. The species is unlikely to occur in the proposed disturbance area.
Taeniophyllum muelleri (Minute orchid)	V	**Tiny leafless epiphytic orchid.** *Taeniophyllum muelleri* is a small, leafless epiphytic orchid which grows predominately on the outer branches and branchlets of rainforest trees. The species has also been recorded within sheltered areas of open forest, humid gullies and along waterways (Leiper *et al.* 2008).	**LOW**: As there were no rainforest trees identified within the project area it is considered unlikely that *Taeniophyllum muelleri* would occur within the project area. Significant impact is therefore not likely.

Where there is no commonly accepted common name these have been omitted
Status V= Vulnerable E= Endangered R= Rare M= Migratory S= Significant (locally to former LCC LGA)

Nature and extent of likely impact

No significant impact is likely to occur to any MNES flora species. No species was identified during field survey and only *Hydrocharis dubia* (Frogbit) had suitable habitat identified in the Project corridor. A targeted search of that habitat did not identify any Frogbit and the terrestrial impact in those areas of potential habitat (freshwater bodies) will be limited due to the aerial nature of the majority of the development. It is highly unlikely that a significant population of the species will be present or affected, despite a moderate chance of occurrence according to the categories adopted above.

In the unlikely event Frogbit is identified by Environmental Officers during construction appropriate controls and management measures will be included in the CEMP to manage the presence of the species.

Threatened Fauna Species

The Protected Matters search identified a total of 24 separate fauna species where:

- Species or species habitat may occur within the area
- Breeding is known to occur within the area
- Foraging, feeding or related behaviour is known to occur within the area
- Foraging, feeding or related behaviour may occur within the area; or
- Roosting is known to occur within the area.

Description

Each of these species has been assessed in terms of the habitat recorded on site and the potential for each to occur. The likelihood of occurrence of species listed in **Table 4** has been assessed using the following categories based on the availability of suitable habitat and records within the locality:

- Known - recorded within the Project corridor
- Likely – suitable habitat present and species known in the Project area
- Potential – suitable habitat present but species not known in the Project area
- Not likely – no suitable habitat present within the Project corridor or outside known species range.

Existing habitat assessments for threatened fauna species are adequate and apply to both Section G and Section G(A) because the initial survey area of the FIAR extended to both (Aurecon 2010b , Figure 11.3a). Further field verification for both Sections G and G(A) was undertaken by RPS in 2013 during targeted koala surveys.

Table 4: MNES fauna species identified in Protected Matters search

Scientific Name	Common Name	EPBC Status	Presence (as indicated in Protected Matters Search)	Observed during IAR survey or other records	Comment
Birds					
Anthochaera phrygia	Regent honeyeater	E	Species or species habitat may occur within area	No	**Not likely to occur**. Morecombe (2004) places the project area outside the species' current main distribution range, with no recent records (i.e. last 10 years) from within the local project area. There are DERM Wildnet records for this species adjacent to the project area in the FIAR of 2009; however the species does not occur in the latest Wildnet search for the project area of June 2013.
Botaurus poiciloptilus	Australasian bittern	E	Species or species habitat known to occur within area	No	**Not likely to occur**. There will be no significant impact to this species. No suitable habitat exists in the project area. No freshwater habitats with sufficient dense vegetation were identified. The species is rarely found in estuarine environments and the Logan River does not contain the requisite saltmarsh vegetation, grasslands or shallow water.
Cyclopsitta diophthalma coxeni	Coxen's fig parrot	E	Species or species habitat may occur within area	No	**Not likely to occur**. This species is considered unlikely to inhabit the project area. Whilst in the known range the project area contains limited food sources and is highly disturbed. Significant impact is therefore not likely.
Dasyornis brachypterus	Eastern bristlebird	E	Species or species habitat likely to occur within area	No	**Not likely to occur**. The species distribution is well understood. While the species is known to South-east Queensland the population is limited to a number of discreet National Park areas. The species is sensitive to fragmentation caused by urban and per-urban land uses (DSEWPaC 2013ba) and is highly unlikely to occur in areas dominated by these activities.

Scientific Name	Common Name	EPBC Status	Presence (as indicated in Protected Matters Search)	Observed during IAR survey or other records	Comment
Erythrotriorchis radiatus	Red goshawk	V	Species or species habitat likely to occur within area	No	**Not likely to occur**. Whilst the Logan River within the project area provides a permanent water source for this species, severe land clearing and habitat degradation within the riparian zone and the general local area is likely to have removed any suitable habitat for this species. It is possible, given the species' large home range, that individuals might utilise the area for foraging, however there are no records for the local area (Aurecon 2010).
Geophaps scripta scripta	Squatter pigeon	V	Species or species habitat likely to occur within area	No	**Potential to occur**. The species may occur in the project area due to its generalist nature. Significant impact is however not likely as the species was not identified by survey and it is highly adaptable, moving to similar habitat in adjacent areas where new disturbance occurs. The terrestrial disturbance of the proposed development is also minor, limited to pole bases. The squatter pigeon is free to forage beneath and around the constructed line.
Lathamus discolor	Swift parrot	E	Species or species habitat likely to occur within area	No	**Potential to occur**. Non-breeding habitat within SEQ consists of Narrow leaved red ironbark, Blue gum forests and Yellow box forest. A reduction in non-breeding feeding habitat is the most likely impact associated with this species however it is considered unlikely that the project area provides important habitat for this species. As such the impact is not considered significant.
Poephila cincta cincta	Black-throated finch (southern)	E	Species or species habitat may occur within area	No	**Not likely to occur**. The species is locally extinct in Brisbane and surrounds, last recorded in the 1930's. (DSEWPaC 2013da). It is unlikely to occur in the Project area.

Scientific Name	Common Name	EPBC Status	Presence (as indicated in Protected Matters Search)	Observed during IAR survey or other records	Comment
Rostratula australis	Australian painted snipe	V	Species or species habitat likely to occur within area	No	**Potential to occur**. The species may occur in permanent/ephemeral waterbodies (dams and swamps). Significant impact to this species is considered unlikely as limited suitable habitat occurs. Where suitable habitat does occur it is generally retained and spanned by aerial infrastructure.
Turnix melanogaster	Black-breasted button-quail	V	Species or species habitat likely to occur within area	No	**Not likely to occur**. This species occurs in dry rainforest habitat. No vegetation consistent with this description occurs in the Project area. The species is therefore unlikely to occur.
Amphibians					
Mixophyes iterates	Giant barred frog	E	Species or species habitat may occur within area	No	**Not likely to occur**. Given that no suitable habitat for this species occurs within the project area and there are no Wildnet records for the local area, it is highly unlikely that this species inhabits the project area and will therefore not be impacted by the project.
Mammals					
Chalinolobus dwyeri	Large-eared pied bat	V	Species or species habitat may occur within area	No	**Not likely to occur**. This species prefers rainforest and moist eucalypt forest habitats at high elevation within south-east Queensland (DSEWPaC 2013b), usually found at higher altitude moist tall open forest adjacent to rainforest (Duncan *et al*. 1999). Availability of suitable roost sites, generally sandstone cliffs or escarpments, are also a limiting factor. No suitable habitat is present within the Project area.

Scientific Name	Common Name	EPBC Status	Presence (as indicated in Protected Matters Search)	Observed during IAR survey or other records	Comment
Dasyurus hallucatus	Northern quoll	E	Species or species habitat may occur within area	No	**Not likely to occur**. The species has a southern distribution limit in Queensland of Gracemere and Mount Morgan, south of Rockhampton based on population surveys of 2008. This limit represents a refinement of the previous, broader distribution (DSEWPaC 2013bb). It is therefore highly unlikely to occur in the Project area.
Dasyurus maculatus maculatus	Spotted-tailed quoll	E	Species or species habitat may occur within area	No	**Potential to occur**. This species prefers mature, wet forest with relatively little disturbance but uses a range of habitats, including in coastal areas and adjacent ranges (DSEWPaC 2012a). Suitable habitats are present within the Project corridor, however none are considered ideal for the species and no significant impact is likely to occur as a result of the proposed development. The FIAR (Aurecon 2010b) shows confirmed sightings from historical sources in the vicinity of the project.
Petrogale penicillata	Brush-tailed rock-wallaby	V	Species or species habitat may occur within area	No	**Not likely to occur**. The Brush-tailed rock-wallaby inhabits rocky areas in a wide variety of habitats, including rainforest gullies, wet and dry sclerophyll forest, open woodland and rocky outcrops in semi-arid country (Strahan, 1995). No suitable habitat for this species occurs within the project area.
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	V	Species or species habitat known to occur within area	No	**Known to occur**. Recorded within the Project corridor by RPS in recent targeted survey.

Scientific Name	Common Name	EPBC Status	Presence (as indicated in Protected Matters Search)	Observed during IAR survey or other records	Comment
Potorous tridactylus tridactylus	Long-nosed potoroo (SE mainland)	V	Species or species habitat may occur within area	No	**Not likely to occur**. Occurs across a range of vegetation types. Its main requirement is thick groundcover, such as that found in rainforests. Little potential habitat occurs in the Project area, with vegetation containing little to no complex groundcover. Potential impacts are not significant because the existing habitat in the project area is not optimal and the expansion of the existing easements is marginal in the context of the habitat available in the region.
Pteropus poliocephalus	Grey-headed flying-fox	V	Foraging, feeding or related behaviour known to occur within area	No	**Potential to occur**. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops (Aurecon 2010b). There is suitable habitat for this species within the project area however no species were recorded during the field investigations. The *Bat Care Brisbane* association state that there is a flying-fox colony approximately 3 km to the north of the project area. There are Wildlife Online records for the project area. Impacts are not significant to the species the expansion of the existing easements is marginal in the context of the habitat available in the region and no colony is directly affected. Electrocution risk is reduced by replacement of the existing 33kV line with a higher voltage line with greater separation between conductors.

Scientific Name	Common Name	EPBC Status	Presence (as indicated in Protected Matters Search)	Observed during IAR survey or other records	Comment
Reptiles					
Coeranoscincus reticulatus	Three-toed snake-tooth skink	V	Species or species habitat may occur within area	No	**Not likely to occur**. This species is known to inhabit rainforest and occasionally moist eucalypt forest, on loamy or sandy soils (DSEWPaC 2013a). Suitable habitat is absent from the Project area.
Delma torquata	Collared delma	V	Species or species habitat may occur within area	No	**Not likely to occur**. This species is found in eucalypt-dominated woodland and open forest where it is associated with suitable micro-habitats (exposed rocky outcrops). The ground cover is predominantly native grasses (DSEWPaC 2013c). No suitable rocky outcrops were identified within the Project corridor.
Furina dunmalli	Dunmall's snake	V	Species or species habitat may occur within area	No	**Not likely to occur**. This species is found in the Brigalow Belt and Nandewar bioregions and has not been recorded in the Project area (DSEWPaC 2013d). It is highly unlikely to occur in the Project locality and therefore significant impact is considered highly unlikely.

Nature and extent of likely impact

The following species are known to occur within the Project area, or are considered likely to occur or potentially occur within the Project area. Each of these is assessed in terms of potential impacts resulting from the Project and the significance of those impacts using the following considerations:

- The sensitivity of the environment which will be impacted
- The timing, duration and frequency of the action and its impacts
- All on-site and off-site impacts
- All direct and indirect impacts
- The total impact which can be attributed to the action over the entire geographic area affected and over time
- Existing levels of impact from other sources
- The degree of confidence with which the impacts of the action are known and understood.

Birds

Squatter pigeon (*Geophaps scripta scripta*)

The squatter pigeon is a highly-mobile species that nests and forages on the ground in grassy woodlands and open forests (DSEWPaC 2012b). This species has also been observed in disturbed habitats and has the potential to occur in remnant and regrowth areas and disturbed areas. The species may occur in the project area due to its generalist nature. Significant impact is however not likely as the species was not identified by survey and it is highly adaptable, moving to similar habitat in adjacent areas where new disturbance occurs. The terrestrial disturbance of the proposed development is also minor, limited to pole bases. The squatter pigeon is free to forage beneath and around the constructed line.

Swift parrot (*Lathamus discolor*)

This species may utilise the project area for foraging, particularly within areas surrounding drainage lines. Both the Narrow leaved red ironbark and the Blue gum occur throughout the project area. There is a DERM Wildnet record for this species adjacent to the project area from habitat similar to that within the project area however this was recorded in 1988 (Aurecon 2010b). No records occur in the recent project specific Wildnet searches of June 2013. Non-breeding habitat within SEQ consists of Narrow leaved red ironbark, Blue gum forests and Yellow box forest (Department of Primary Industries, Water and Environment, 2001). A reduction in non-breeding feeding habitat is the most likely impact associated with this species. There is no breeding habitat in the immediate project area and the foraging opportunities identified are prevalent in the region. Coupled with the use of existing easements in the vegetated southern reaches of the project the impact is not considered significant.

Australian painted snipe (*Rostratula australis*)

The species may occur in permanent/ephemeral waterbodies (dams and swamps). Significant impact to this species is considered unlikely as limited suitable habitat occurs. Where suitable habitat does occur it is generally retained and spanned by aerial infrastructure.

Mammals

Grey-headed flying fox (*Pteropus poliocephalus)*

The species occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops (Aurecon 2010b). There is suitable habitat for this species within the project area however no species were recorded during the field investigations.

The *Bat Care Brisbane* association state that there is a flying-fox colony approximately 3 km to the north of the project area. There are Wildlife Online records for the project area. Impacts are not significant to the species because the expansion of the existing easements is marginal in the context of the habitat available in the region and no colony is directly affected. Electrocution risk is reduced by replacement of the existing 33kV line with a higher voltage line with greater separation between conductors.

Koala (*Phascolarctos cinereus*)

The koala is known to occur in the Project area, being positively identified in surveys supporting the FIAR (Aurecon 2010b) and the RPS report of August 2013, appearing in database searches and being anecdotally reported to Energex on a regular basis during discussions with project stakeholders. Energex engaged environmental consultants RPS to undertake a targeted evaluation of koala populations and koala habitat. RPS produced an impact assessment, supported by targeted koala and koala habitat survey that provides:

- A discussion of the distribution and demographics of resident koalas, and whether they are likely to be 'important populations' under the EPBC Act
- Details of the extent and condition of koala habitat occurring within close proximity to the designated power line corridor (including assessment of both Section G and G(A)), and whether it comprises 'Critical Habitat', as defined in the *Interim Koala Referral Advice*
- A preliminary assessment of potential impacts of the 'Project' to koala populations and habitat in accordance with the *Interim Koala Referral Advice*
- A preliminary evaluation of the nine significant impact criteria for Vulnerable species outlined in the *EPBC Act Matters of National Environmental Significance (MNES) Significant Impact Guidelines 1.1*.

The report produced by RPS is attached as **Appendix C.**

The RPS report was based on targeted koala field survey undertaken over a total of five days (17, 28, 29 May and 7, 13 June 2013) by four RPS ecologists. The survey methodology was developed in accordance with the *Interim Koala Referral Advice* and Policy 4 of *the Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006-2016*. RPS's detailed survey methodology is provided in **Appendix C.** Assessment of potential impacts of the 'Project' to Koala populations and habitat was undertaken in accordance with the *Interim Koala Referral Advice* and *EPBC Act Matters of National Environmental Significance (MNES) Significant Impact Guidelines 1.1*.

Koala Populations
RPS concluded that three distinct koala populations exist in the Project area, confined to broadly identifiable geographies. None of these populations was identified as an 'important population' according to the *EPBC Act Matters of National Environmental Significance (MNES) Significant Impact Guidelines 1.1*. Key indicators of an 'important population' are:

- Significant source populations for dispersal or breeding
- Populations imperative to maintaining the genetic diversity of a species
- Populations at the edge of the species range.

RPS identified that genetic dispersal between these populations is unlikely due to significant natural and anthropogenic barriers to movement across the landscape, namely the Logan River and Logan Motorway. RPS further identified that none of these populations are likely to be imperative to maintaining genetic diversity of the species. Due to the presence of similar landscape barriers across the region six genetically distinct clusters of koala are known across South East Queensland. All three populations identified in the Project area belong to the Beaudesert cluster, which is similar only to the Ipswich cluster. The Beaudesert cluster occurs across a broad geographic area and is considered secure. None of the populations identified in the vicinity of the Project occur on the edge of the species known distribution.

Habitat Value
RPS identified a range of habitat values across the Project, which comprises a highly variable landscape heavily modified by urban, agricultural and rural residential land uses. RPS's detailed assessment methodology is provided in **Appendix C.** Medium value habitat value was identified in the north of the Project between Loganlea and Kingston substations. No new disturbance is proposed in this area, with existing infrastructure capable of supplying future demand already existing and works confined to switching operations in the existing substation footprints. Koala habitat values are therefore unaltered in this section. The underground section from Kingston substation to the first crossing of the Logan River is entirely underground in urban areas and therefore does not impact koala habitat values.

Koala habitat value along the Logan River floodplain ranges from low to medium. Koalas were identified along the river floodplain, however broad scale clearing for agricultural purposes has reduced habitat value and connectivity significantly across the area. The Project has been carefully located to avoid remaining vegetation, which is generally limited to the immediate river bank. Crossings of the river have been optimised to target

those areas where clearing has already occurred up to the river bank, ensuring minimal disturbance to existing koala habitat values.

Koala habitat value from Anzac Avenue to the Jimboomba substation is generally higher, with these southern reaches of the Project being more heavily vegetated. RPS identified varying habitat values in this area ranging from very low to high. Energex has co-located the Project with existing roads and powerlines throughout this section to ensure potential impacts to koala habitat values is minimised. With an average existing cleared 33 kV easement of 20 – 30 m and significant disturbance of Anzac Avenue and Waterford-Tamborine Road the proposed Project easement (40 m) represents a marginal widening of significant existing disturbances. Section G(A) similarly represents a marginal landscape impact, co-locating with the heavily disturbed road corridor of Camp Cable Road.

RPS undertook an assessment of 'Critical Habitat' as defined in the *Interim Koala Referral Advice* across the Project area (inclusive of both Section G and G(A)). RPS adopted a definition for 'Critical Habitat' based on areas deemed to contain medium to high koala habitat values during their koala impact assessment. This approach differs from that suggested in the Interim Guidelines in that it includes a range of additional criteria to define habitat critical to the survival of the species. The amount of 'Critical Habitat' impacted by the Project could not be definitively quantified because detailed design is not complete. In lieu of detailed design RPS adopted an extremely conservative estimate of the amount of 'Critical Habitat' potentially impacted, leaving State mapped vegetation across the existing easement in the south of the Project as part of the assessment.

The total amount of 'Critical Habitat' available in the geographic area occupied by the three identified koala populations was estimated at 10,911 ha. The Project has the potential to impact only 20.1 ha of the available 'Critical Habitat', equating to 0.18% of the regional balance. This assessment applies to either the designated alignment or the potential deviation for Section G(A), which have largely identical terrestrial footprints. Actual impacts will be significantly lower as the existing power easements comprising a large proportion of the Project alignment are already heavily cleared, despite the inaccuracies in State vegetation mapping.

Threatening Processes
Existing koala populations are heavily fragmented and under continuing threat by a range of processes, including:

- Destruction of habitat by clearing for urban development, roads, agriculture and mining
- Fragmentation of habitat, resulting in barriers to movement that isolate individuals and populations leading to impeded gene flow and lowered recruitment levels
- Unsustainable mortalities caused by dog attacks and vehicle collisions
- Mortalities caused by Chlamydial disease, which usually impacts populations already under stress
- Mortalities caused by stochastic events such as fire or drought
- Degradation of habitat through poor management, selective logging of Koala food trees, fire or pest and weed infestations.

Within the Project area there is significant and pervasive threat resulting from clearing and fragmentation, a heavy presence of dogs, fencing, (particularly barbed wire) and vehicles, particularly higher speed environments such as the Logan Motorway, Waterford Tamborine Road and Camp Cable Road. The Project will not directly exacerbate these existing threats.

Koala Impact Assessment Conclusions
RPS has concluded that there will not be a significant impact to the koala as a result of the Project whether the designated alignment or Section G(A) is adopted. The Project co-locates heavily with existing anthropogenic disturbances and threats (roads, power lines, domestic dogs, heavily cleared areas) and is optimised to minimise vegetation clearing. Koala is present in the Project area; however no 'important population' occurs in the area according to the *EPBC Act Matters of National Environmental Significance (MNES) Significant Impact Guidelines 1.1*. While "Critical Habitat' was identified the potential impact of the Project is minimal in the regional context. RPS undertook an assessment of the Project against the Significance Criteria outlined in the *EPBC Act Matters of National Environmental Significance (MNES) Significant Impact Guidelines 1.1* for Vulnerable species. This assessment is provided in **Table5**. The RPS report is at **Appendix C**.

RPS determined that the Project is not a 'controlled action' on the basis of potential impact to the koala.

Table 5: Assessment against the Significant Impact Criteria for Vulnerable Species (RPS 2013)

Significance Criteria	Assessment of Impact
The action has potential to lead to a long-term decrease in the size of an important population of a species	Koala populations occurring in close proximity to the designated power line corridor do not meet Significant Impact Guidelines criteria for being Important Populations, as discussed in Section 4.3. Neither are they connected to any other population that may be considered as being Important (refer Section 4.2.2).
The action has potential to reduce the area of occupancy of an important population	Koala populations occurring in close proximity to the designated power line corridor do not meet Significant Impact Guidelines criteria for being Important Populations (Section 4.3). Although there will be some loss of habitat, the amount of vegetation requiring clearing is "negligible" and not significant in the context of the broader landscape (Section 5.2). This is largely a result of the Project utilising existing power line easements where possible, reducing the amount of habitat to be cleared. It is therefore unlikely the 'area of occupancy' would be significantly reduced.
The action has potential to fragment an existing important population into two or more populations	Koala populations occurring in close proximity to the designated power line corridor do not meet Significant Impact Guidelines criteria for being an Important Population (Section 4.3). It is also unlikely that the Project would fragment an existing population into two or more populations. The average width of the corridor is to be 40 m, which is easily navigated by a Koala. Revegetation of the corridor would mitigate the potential increased risk from dog attacks on Koalas crossing open areas. Moreover, existing power line infrastructure already occurs along much of the length of the designated alignment and therefore in these areas impacts would be limited to only a slight widening of an already existing corridor.
The action has potential to adversely affect habitat critical to the survival of a species	The Project area contains critical habitat, as discussed in Section 5.2. Although the exact amount of vegetation to be cleared is not known, it is unlikely to be significant in the context of the broader landscape. Table 5.2 presents the approximate amount of critical habitat available to Koalas within each of the three identified population areas, showing that critical habitat makes up between 18.5 and 29.6 % of the total area available to Koalas. Of this available habitat, less than 0.05% would be cleared within any of the population areas (Table 5.2). It is therefore unlikely that clearing of critical habitat from the Project would be significant.
The action has potential to disrupt the breeding cycle of an important population	Koala populations occurring in close proximity to the designated power line corridor do not meet Significant Impact Guidelines criteria for being Important Populations (Section 4.3). It is unlikely the proposed action would impact on the breeding cycle of Koalas as any loss of habitat or increase in habitat fragmentation would be minimal in the context of the broader landscape and existing disturbances.
The action has potential to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Although there will be some habitat loss, the amount of vegetation clearing is minimal and not significant in the context of the broader landscape (Section 5.2). It is unlikely that loss of habitat as a result of this project would see the decline of the species.
The action has potential to result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	It is unlikely that the Project would result in the introduction of any weed or pest animal species. The Project occurs within a highly fragmented area that has already been subject to invasion by many weed and pest species. However, a CEMP that addresses weed and pest management would be developed

Significance Criteria	Assessment of Impact
	and implemented for the construction phases of the Project.
The action has potential to introduce disease that may cause the species to decline	It is unlikely the Project will result in the introduction of disease to species within the Site or adjacent areas. Any loss of habitat or increase in habitat fragmentation would be minimal in the context of the landscape, and it is therefore unlikely to cause Koalas to become stressed and susceptible to disease.
The action has potential to interfere substantially with the recovery of the species	The Project is considered to not interfere with recovery of Koalas due to the small area of impact, existing levels of disturbance and the larger extent of habitat available within the broader landscape.

Note: Section and table references in the table above refer to **Appendix C** (RPS 2013)

Spotted-tailed quoll (*Dasyurus maculatus)*

The Spotted-tailed quoll occurs in densely vegetated areas ranging from rainforest, to woodland to coastal heathland. Transient males are sometimes seen in more open areas. This species' habitat requirements include suitable den sites (such as hollow logs, tree hollows, rock outcrops or caves) and an abundance of food (such as birds and small mammals). Individuals also require large areas of relatively intact vegetation in which to forage. Suitable habitats are present within the Project corridor, however none are considered ideal for the species due to a lack of complexity and no significant impact is likely to occur as a result of the Project.

3.1 (e) Listed migratory species

The Protected Matters search identified 14 migratory species where:

- Species or species habitat may occur within the area
- Breeding is likely to occur within the area
- Roosting is known to occur within the area.

Description

The majority of migratory shore birds identified as potentially occurring within the Project corridor travel to Australia from the northern hemisphere using the East Asian-Australasian flyway. Birds travel from breeding grounds in northern China, Mongolia, Siberia and Alaska between July and October each year before returning around March to early June. Birds start arriving in August however the largest numbers are present between October and March (DEWHA 2009).

The Moreton Bay/Great Sandy Strait region is identified in *Migratory Shorebirds of the East Asian - Australasian Flyway* (Bamford 2008) as a significant area which supports a number of species throughout the year and at least ten species overall. The Project corridor is located near these wetland areas however assessment in this referral determined that there would be no impact on either wetland as a result of the proposed action. The impacts on identified species as a consequence of the proposed action are addressed in this section.

Table 6 lists those species identified within the Protected Matters search and indicates the likelihood of occurrence of each. Species listed separately in the previous table of threatened fauna are not included in this table.

Table 6: EPBC Act listed migratory fauna species identified in the Protected Matters search

Scientific Name	Common Name	Presence (as Indicated in Protected Matters Search)	Observed During EIS Survey or Other Records	Comment
Anseranus semipalmata	Magpie goose	Not listed in desktop searches	Yes	Potential to occur in the dams present within the Project corridor. No breeding colony was recorded or is likely in the limited habitats available. Also likely to utilise cleared areas and farmlands.
Apus pacificus	Fork-tailed swift	Species or species habitat likely to occur within area	No	Potential to occur. This species forages over a wide range of habitats and could use all of the habitats provided within the Project corridor. This species is almost entirely aerial.
Ardea alba	Great egret	Species or species habitat may occur within area	Yes	Known to occur in the man-made and natural water bodies and creek/ draining lines present on site.
Ardea ibis	Cattle egret	Species or species habitat may occur within area	Yes	Known to occur in the man-made and natural water bodies and creek/ draining lines present within the Project corridor. No breeding colony was recorded. Also likely to utilise cleared areas and farmlands. Also observed during the RPS survey in 2013.
Ardea modesta	Eastern great egret	Not listed in desktop searches	Yes	Known to occur in the man-made and natural water bodies and creek/ draining lines present on site.
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	Species or species habitat likely to occur within area	No	Potential to occur. Prefers lowland subtropical rainforests such as those found in the foothills west of Brisbane and lowland rainforests north to the Mary River). Within these forests, alluvial areas where figs and other fleshy-fruited trees are prevalent are probably preferred.
Gallinago hardwickii	Latham's snipe	Roosting known to occur within area	No	Potential to occur. This species uses freshwater wetlands with low dense vegetation. Suitable habitat is present within the Project area around Scrubby Creek. This species does not breed in Australia.
Haliaeetus leucogaster	White-bellied sea-eagle	Species or species habitat likely to occur within area	No.	Potential to occur. This species occurs generally in coastal areas associated with permanent water bodies. This species may use the Logan River for hunting, however the heavily cleared and degraded nature of the land adjacent the river reduces opportunities significantly. No nest was recorded within the Project corridor.

Scientific Name	Common Name	Presence (as Indicated in Protected Matters Search)	Observed During EIS Survey or Other Records	Comment
Hirundapus caudacutus	White-throated needletail	Species or species habitat known to occur within area	No	Potential to occur. However this species is almost entirely aerial.
Merops ornatus	Rainbow bee-eater	Species or species habitat may occur within area	Yes	Known to occur. Observed in the RPS survey of 2013. This species forages over a wide range of habitats and could use all of the habitats provided within the Project corridor.
Monarcha melanopsis	Black-faced monarch	Species or species habitat known to occur within area	No	Potential to occur. This species could use the eucalypt communities within the Project corridor.
Myiagra cyanoleuca	Satin flycatcher	Species or species habitat known to occur within area	No	Potential to occur. This species could potentially use the woodland communities within the Project corridor where they incorporate taller vegetation and a well formed shrub layer, particularly along watercourses.
Rhipidura rufifrons	Rufous fantail	Species or species habitat known to occur within area	No	Potential to occur. This species could potentially utilise the moist Eucalypt forest within the Project corridor, though the extent of this habitat is small.
Xanthomyza phrygia	Regent Honeyeater	Species or species habitat may occur within area	No	Potential to occur. Found in *Eucalypt* forest within 300 km of the coast, though records in Queensland are now uncommon.

Nature and extent of likely impact

The significant impact guidelines suggest that a proposed action is likely to have a significant impact on a migratory species if it will:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species;
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or
- Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

The area of potential habitat in the project corridor is minor when compared to the broader areas of each type of habitat available in the region and no important habitat for any of the identified Migratory species was identified (in either Section G or G(A)). A significant impact against the first criteria will therefore not occur. The coastal area within Moreton Bay and the Great Sandy Strait (to the north) are identified as significant areas for migratory birds and offer exponentially more important foraging and roosting habitats than those present within the Project corridor. The habitat areas provided within the Project corridor are likely to be used by vagrants and do not support any major colonies.

The proposed action is unlikely to result in the introduction of any predatory species; however feral cats and foxes are noted as common in the Project corridor. The removal of vegetation is unlikely to significantly alter movement patterns for these introduced species or result in increased predation.

Due to a lack of important habitat in the Project footprint no ecologically significant proportion of the population of any migratory species will be impacted. No ecologically significant proportion of the population of any migratory species is likely to be present. The Project will therefore not seriously disrupt the lifecycle of such a population and no significant impact occurs on those grounds.

The majority of migratory species do not breed in this locality or in Australia however are dependent on feeding and rest behaviours to survive the return migration. There is potential for vagrants of some species to be disturbed during construction, potentially affecting the ability of species to adequately prepare for the return migration. It is likely however those vagrants will simply find food and rest opportunities in adjacent environments, which are widespread in the region.

As environmental best practice construction works adjacent to potential roosting or foraging areas for international species (primarily the man-made and natural waterbodies) should be timed to avoid peak residency times for these species (between October and March). Whilst no significant impact is likely to occur, this measure will further mitigate potential impacts to individual vagrants of migratory species.

3.1 (f) Commonwealth marine area

Adoption of appropriate erosion and sedimentation controls will ensure that water quality within watercourses on the site will not be significantly impacted. There will be no downstream impacts on water quality or habitat values.

No Commonwealth Marine area is likely to be directly or indirectly affected by the Project.

3.1 (g) Commonwealth land

(If the action is on Commonwealth land, complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land.)

Description

The Project will not result in any direct or indirect impacts on any Commonwealth land.

Nature and extent of likely impact

N/A

3.1 (h) The Great Barrier Reef Marine Park

Description

The site is not within or adjacent the Great Barrier Reef Marine Park area or its catchments. The Great Barrier Reef Marine Park is not likely to be directly or indirectly affected by the Project.

Nature and extent of likely impact

N/A

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

3.2 (a)	**Is the proposed action a nuclear action?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (b)	**Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (c)	**Is the proposed action to be taken in a Commonwealth marine area?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))		

3.2 (d)	**Is the proposed action to be taken on Commonwealth land?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))		

3.2 (e)	**Is the proposed action to be taken in the Great Barrier Reef Marine Park?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))		

3.3 Other important features of the environment

3.3 (a) Flora and fauna

In March and September 2009, a detailed fauna investigation was undertaken by two qualified ecologists to assess the local fauna assemblage. EPBC threatened species were targeted in association with those species classed as rare or threatened under State legislation. The fauna survey consisted of trapping (cage, pitfall and Elliott©), Faunatech© hair tube sampling, diurnal searches, early morning and late afternoon bird surveys, spotlighting, Anabat II© bat detection, camera surveillance, bioaccoustics field recorder and call analysis, call/playback, passive soil plot sampling for animal track analysis as well as incidental collection of animal traces such as scats, bones and hair. Habitat assessments of areas outside of the fauna monitoring locations such as the riparian zones associated with the river crossings were also conducted.

During the investigations, a total of 115 species were recorded from the development area, including 11 amphibians, 71 birds, 17 mammals and 16 reptiles. Moderately healthy species diversity was observed.

The majority of the species identified are listed as of Least Concern under the *Nature Conservation Act 1992* (State legislation) and are common and widespread within South East Queensland. One EPBC Act listed species was identified, being the koala which is listed as vulnerable. Two dual listed (migratory and marine) species, the great egret and cattle egret, were recorded, and one marine only species, the cotton pygmy goose.

Significant impacts have not been identified for any MNES flora or fauna on assessment against the Significant Impact Guidelines 1.1 published by DSEWPaC. Two MNES flora species *Hydrocharis dubia* (Frogbit) and *Macadamia integrifolia* (Macadamia nut) were identified as potentially occurring in the area. Suitable habitat for these species will however be retained or is largely absent from the project area and neither species was identified in targeted searches. No important population will be affected and no habitat will be removed such that these species, listed as vulnerable, are likely to decline. As such no significant impact is likely to occur to these species.

One TEC was identified. The Swamp Tea-tree Forest TEC was identified approximately 1 km east of Jimboomba substation, 43 m from the southern edge of the Project corridor. It will not be physically impacted by the proposed development; being separated by some 43 m. Section G(A), if adopted would increase the separation between the alignment and the identified TEC.

Vegetation communities across the alignment were diverse, with patches of remnant vegetation occurring amidst heavy disturbance by agricultural and rural residential land uses. The dominant vegetation types encountered were Melaleuca open forest, cleared pasture and Eucalypt open forest. The alignment targets existing cleared areas to minimise impacts on remaining vegetation.

3.3 (b) Hydrology, including water flows

The Project corridor is located within the Logan River catchment which hosts a range of land uses in the study area including grazing and agricultural pursuits. The Logan River is part of a basin known as the Logan-Albert Basin and is characterised by flat coastal plains, steep ranges and variable but high intensity climatic events. The proposed development intersects the Logan River five times, as well as a number of tributaries.

The Ecosystem Health Monitoring Programme (EHMP) was established by the South East Queensland Healthy Waterways Partnership (SEQHWP) to provide information related to the quality of waterways within South East Queensland. The EHMP measures waterway health using a broad range of biological, physical and chemical indicators of ecosystem health (Aurecon 2010b).

Since the production of the IAR, SEQHWP has updated their assessment of SEQ's major catchments, river estuaries and Moreton Bay for the Ecosystem Health Monitoring Programme (EHMP). The results of the 2009 EHMP for the Logan River catchment and estuary have concluded the following:

- Streams generally in poor condition
- Substantial improvements over time in ecosystems processes and fish indicators, and a slight improvement in aquatic macroinvertebrates
- Declines in the physical and chemical and nutrient cycling indicators
- Increase in nitrogen and continued high phosphorus concentration and turbidity levels
- Increase in phytoplankton abundance and a decline in dissolved oxygen
- Salinity throughout estuary lowest since 2001, indicative of high freshwater inputs.

Although clearly highly disturbed and degraded, the Logan River still performs important ecosystem functions and has significant natural resource and commercial values close to its estuary. There is also some potential for enhancement of the riparian zone which would, over time, lead to an improvement in the overall ecosystem health of the Logan River by reducing nutrient and sediment laden inputs, stabilising river banks and attenuating peak flows, thereby reducing the likelihood of flooding (Aurecon 2010b).

The Logan River crossings have been designed to target existing heavily cleared areas and incorporate significant setbacks from the high bank.

3.3 (c) Soil and Vegetation characteristics

Vegetation relevant to MNES is discussed in this referral. More detail on soils and vegetation are contained within the FIAR (available online).

3.3 (d) Outstanding natural features

The proposed development intersects the Logan River; a significant natural feature of this region. Tributaries of the Logan River are also crossed.

3.3 (e) Remnant native vegetation

Remnant native vegetation is discussed in Section 3.3(a) above.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

Full details are provided in the FIAR (available at **Appendix B**).

3.3 (g) Current state of the environment

A number of declared weed species as specified under the *Land Protection (Pest and Stock Route Management) Act 2002* (LP Act) have been identified. These species include the Class 2 LP Act species *Eichhornia crassipes* (Water hyacinth), *Opuntia stricta* (Prickly Pear), and Salvinia *molesta* (Salvinia) and the Class 3 species *Asparagus aethiopicus* (Asparagus Fern), *Cinnamomum camphora* (Camphor Laurel), *Lantana camara* (Lantana), *Lantana montevidensis (*Creeping Lantana), and *Sphagneticola trilobata* (Singapore Daisy). The species *Lantana camara* (Lantana), *Lantana montevidensis* (Creeping Lantana), and *Salvinia molesta* (Salvinia) are weeds of national significance (WoNS) as identified under the National Weeds Strategy.

Class 2 and 3 species under the LP Act are those which are established in Queensland and have, or could have, an adverse economic, environmental and/or social impact. Whilst landholders are not required to control Class 3 plants unless their land is adjacent to an environmentally significant area, landowners must take reasonable steps to keep land free of Class 2 plants.

Land use activities within the development corridor have had serious adverse impacts to some of the environmental values of the area, particularly those associated with the Logan River. This includes farming activities which have resulted in clearing of most of the riparian zone, which has undoubtedly had significant impacts to the water quality and is still having residual effects.

Recolonisation of cleared areas by weeds including morning glory (*Ipomoea indica*), lantana and camphor laurel is a significant issue and current farming practices continue to degrade the banks and the water quality, both directly and indirectly. Energex have, wherever possible, positioned the transmission line pole locations outside of a designated buffer zone of the Logan River in the areas where the development corridor is required to cross the river. In addition to this, the majority of the river crossings occur in areas where the vegetation is already either absent; minimal or highly disturbed due to previous land clearing practices.

The northern section of the development area, predominantly where the corridor runs through the suburbs of Kingston, Loganlea, Waterford, Waterford West, Logan Reserve, Chambers Flat and Buccan, has largely been cleared for residential (Kingston, Loganlea and Waterford) and rural purposes (Logan Reserve and Chambers Flat). This has greatly fragmented the landscape and limited the amount and quality of habitat corridors in the area. Within the southern region of the development area, a large amount of remnant vegetation has been retained, with a higher percentage of residential land use on larger blocks in the areas of Jimboomba.

Connectivity within this area is much more complete and the tracts of vegetation are much less degraded and have high habitat values. Connectivity exists between this southern region of the development area further south to the Birnam Range, Tamborine National Park and ultimately Springbrook and Lamington National Parks (Aurecon 2010b).

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

There are no Commonwealth Heritage Places in proximity to the Project corridor.

3.3 (i) Indigenous heritage values

No Aboriginal cultural heritage has been recorded on the Aboriginal Cultural Heritage Register or Database in close proximity to the proposed sub transmission line. Searches of the Register of the National Estate, the National Heritage List, the Commonwealth Heritage List, the Australian Heritage Database, the National Trust and the UNESCO World Heritage List were also undertaken. No cultural heritage places are recorded within or in close proximity of the proposed sub transmission line.

Some results were returned in the broader region; however no heritage places were identified within 2 km of the project corridor (Aurecon 2010b). The nature of the proposed development is such that impacts are highly localised in nature and no identified Indigenous heritage values will be impacted. The CEMP will contain processes to stop work and refer any incidental findings, along with specifications for mandatory training in heritage matters for operational personnel.

3.3 (j) Other important or unique values of the environment

No protected areas have been identified within the development area. Within the local area, protected areas include Buccan Conservation Park and Plunkett Conservation Park in Jimboomba. There is also connectivity to important habitats to the south of the development area such as Birnam Range and the Tamborine, Springbrook and Lamington National Parks. Retaining connectivity between these areas is vital (Aurecon 2010b).

3.3 (k) Tenure of the action area (eg freehold, leasehold)

The non-road land tenure underlying easements or for the proposed development corridor has been detailed in **Appendices A and B**. The project will be located wholly located within road reserve or electricity easement . Lot and plans are provided for the alignment approved under the CID process only. Section G(A) (if adopted) will alter the properties intersected in a minor fashion. All lots intersected by deviation G(A) are freehold or road reserve.

3.3 (l) Existing land/marine uses of area

The existing land uses of the land within and adjoining the proposed development site include:

- Existing transport corridor
- Open space and recreation
- Residential and rural residential uses
- Commercial uses
- Community uses (eg churches, schools, cemeteries).

There are also areas that are not developed and currently remain as vacant land and forested vegetation. Residential and rural residential is the dominant land use along the corridor.

3.3 (m) Any proposed land/marine uses of area

No future uses are known at the time of preparing the referral. Route alignment analysis took into consideration future land uses to the extent published or conveyed in stakeholder liaison (Aurecon 2010b).

4 Measures to avoid or reduce impacts

4.1 Project environmental management

The Construction Environmental Management Plan (CEMP) will detail the ‘business as usual’ performance objectives, actions and procedures to be carried out during the construction phase of the project to minimise potential environmental impacts.

Specific management measures to minimise the potential for impact upon NES matters are provided below.

4.2 Koala protection measures

- Minimisation of koala habitat – overhead power lines will be supported by concrete and/or steel poles. Compared with steel lattice tower construction, the vegetation clearance profiles will be reduced as far as practicable.
- Where practicable, height of poles will be increased to reduce the clearing footprint and avoid further fragmentation of previously fragmented habitat to retain some fauna linkages within the local area.
- Minimisation of feed tree destruction – lopping of branches to be used to obtain necessary clearances wherever possible. The Project corridor will be assessed in detail prior to any works to determine the extent of tree removal and/or lopping required and to identify any koalas present within the corridor.
- Fauna spotter-catchers will be used to identify any MNES prior to commencement of works.
- Sequential clearing will occur to provide time for animals to relocate. If necessary, works will be halted to allow individuals to move on.
- Installation of signage in areas if/where koalas are sighted to raise the awareness of site personnel.
- Reduction of speed limits within construction areas if/where koalas are sighted.

4.3 Bird protection measures

- Individual transmission line cables shall be spaced to such a width apart to reduce entanglement electrocution risk for several bird species within the area (such as Great egret) as well as the Grey-headed flying fox.
- Fauna spotter-catchers will be used to identify any MNES prior to commencement of works.
- Active nests will be subject to a buffer zone to be created which must be treated as a 'No Go Zone' to reduce the likelihood of disturbance until the nesting period is complete and young are fully fledged.

4.4 Flora

- Clearing of remnant vegetation will be restricted to the absolute minimum required to enable the project’s safe construction, operation and maintenance.
- Wherever possible, existing access tracks will be utilised for survey, construction and maintenance.
- Weed management measures will address existing introduced species *Ipomoea indica* (Blue morning glory) and the declared species *Lantana camara* (Lantana), *Lantana montevidensis* (Creeping Lantana) and *Sphagneticola trilobata* (Singapore Daisy).
- Best practice erosion and sediment control measures will be implemented to minimise any potential harm to riparian vegetation and downstream aquatic vegetation.

With the effective implementation of the developed CEMP during the construction phase and the operational EMP (as a subset of the EMS), it is expected that environmental risks can be managed to meet all legislative requirements, stakeholder expectations and implement environmental duty of care. A draft CEMP was completed for the FIAR of 2010; however it will be updated prior to construction.

5 Conclusion on the likelihood of significant impacts

5.1 Do you THINK your proposed action is a controlled action?

✓	No, complete section 5.2
	Yes, complete section 5.3

5.2 Proposed action IS NOT a controlled action.

The proposed action is not a controlled action.

The EPBC listed threatened ecological community *Melaleuca irbyana* (Swamp Tea-tree) Forest of SEQ was identified adjacent to the Project corridor approximately 1 km east of the Jimboomba substation, where it occurs in a discreet stand approximately 43 m south of the proposed easement extent. It is separated from the Project corridor by a cleared, disused railway corridor that provides a distinct land use break between the vegetation and the proposed Project corridor. As a result the threatened ecological community will not be impacted.

Koala (*Phascolarctos cinereus*) is known to occur in the Project area, and has been sighted in surveys supporting the FIAR (Aurecon 2010b) and the RPS report of August 2013, recorded in database searches and anecdotally reported to Energex on a regular basis during discussions with project stakeholders. Energex engaged environmental consultants RPS to undertake a targeted evaluation of koala populations and koala habitat. RPS produced an impact assessment, supported by targeted koala and koala habitat survey.

RPS has concluded that there will not be a significant impact to the koala as a result of the Project. The Project co-locates heavily with existing anthropogenic disturbance of some kind (roads, power lines, heavily cleared areas) and is optimised to minimise vegetation clearing. Koala is present in the Project area; however no 'important population' occurs in the area according to the *EPBC Act Matters of National Environmental Significance (MNES) Significant Impact Guidelines 1.1*. While "Critical Habitat' was identified the potential impact of the Project is minimal in the regional context. RPS undertook an assessment of the Project against the Significance Criteria outlined in the *EPBC Act Matters of National Environmental Significance (MNES) Significant Impact Guidelines 1.1* for Vulnerable species. This assessment is provided in **Table 5**.

RPS has concluded that the Project is not to have a significant impact to the koala. No other significant impact was identified to matters protected under the EPBC Act.

Energex is in the process of evaluating Section G(A) as a specific refinement of the approved alignment. For the purpose of MNES and the EPBC Act adopting Section G(A) in lieu of Section G does not alter the outcomes of this assessment in any way.

The Project is not a 'controlled action' whether Energex progresses to construction of the existing CID approved alignment or undertake a minor amendment for Section G(A).

5.3 Proposed action IS a controlled action

Type 'x' in the box for the matter(s) protected under the EPBC Act that you think are likely to be significantly impacted. (The 'sections' identified below are the relevant sections of the EPBC Act.)

	Matters likely to be impacted
	World Heritage values (sections 12 and 15A)
	National Heritage places (sections 15B and 15C)
	Wetlands of international importance (sections 16 and 17B)
	Listed threatened species and communities (sections 18 and 18A)
	Listed migratory species (sections 20 and 20A)

	Protection of the environment from nuclear actions (sections 21 and 22A)
	Commonwealth marine environment (sections 23 and 24A)
	Great Barrier Reef Marine Park (sections 24B and 24C)
	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
	Protection of the environment from Commonwealth actions (section 28)
	Commonwealth Heritage places overseas (sections 27B and 27C)

Specify the key reasons why you think the proposed action is likely to have a significant adverse impact on the matters identified above.

6 Environmental record of the responsible party

NOTE: If a decision is made that a proposal needs approval under the EPBC Act, the Environment Minister will also decide the assessment approach. The EPBC Regulations provide for the environmental history of the party proposing to take the action to be taken into account when deciding the assessment approach.

		Yes	No
6.1	**Does the party taking the action have a satisfactory record of responsible environmental management?** **Provide details** The Energex Environmental Management System (EMS) incorporates environmental responsibilities into the corporation's agenda and business practices. The EMS, an international environmental standard ISO 14001-certified system, operates across the entire organisation and is a key element in its environment commitment. Energex construction projects can be audited against a specific Environmental Management Plan to ensure all relevant legislative and environmental matters are addressed on the ground. Early planning is aimed at minimising environmental losses wherever possible and offsetting where it is not.	✓	
6.2	**Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?** **If yes, provide details**		✓
6.3	**If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?** **If yes, provide details of environmental policy and planning framework** Yes. See above for details of Energex's EMS	✓	
6.4	**Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?** **Provide name of proposal and EPBC reference number (if known)** • 2010/5616 Energex Limited/Energy generation and supply (non-renewable)/South east Queensland near Mt Crosby, west of Brisbane/QLD/Abermain to Lockrose High Voltage Distribution Line • 2013/6715 Energex Limited/Energy generation and supply (non-renewable)/Approximately 90km north of Brisbane/QLD/Suncoast 132kV Power Project - Palmwoods to Pacific Paradise • 2009/4870 Energex Limited/Energy generation and supply (non-renewable)/Between Brendale and Rothwell/QLD/Duplication of the South Pine to Hays Inlet 110kV overhead power transmission line	✓	

7 Information sources and attachments

(For the information provided above)

7.1 References

Aurecon, 2009. Loganlea to Jimboomba 110 kV Sub Transmission Line Energex Limited Initial Assessment Report – Community Infrastructure Designation

Aurecon, 2010a. Loganlea to Jimboomba 110 kV Sub Transmission Line Community Infrastructure Designation Supplementary Initial Assessment Report

Aurecon, 2010b. Final Initial Assessment Report – Community Infrastructure Designation

AMEC 2013. Description of environment and likely impacts. Assessment of Loganlea to Jimboomba 110kV Project.

M. Bamford, D. Watkins, W. Bancroft, G. Tischler and J. Wahl, *Migratory Shorebirds of the East Asian - Australasian Flyway*, Wetlands International - Oceania, 2008

Department of Environment and Heritage (DEH) 2005, Nationally threatened species and ecological communities: Swamp tea-tree (*Melaleuca irbyana*) forest of South-east Queensland, [online] Accessed: April 2009 by Aurecon. Available at http://www.environment.gov.au/biodiversity/threatened/publications/swamp-tea-tree-forest.html

Department of Environment and Climate Change (DECC), NSW 2005b, Heart-leaved Bonewood - Profile [Online], Accessed by Aurecon: April 2009, Available: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10874

Department of Environment and Climate Change (DECC), NSW 2005c, Yellow Satinheart - profile [Online], Accessed by Aurecon: April 2009, Available: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10103

Department of Environment and Climate Change (DECC), NSW 2005d, Stinking Cryptocarya - Profile [Online], Accessed by Aurecon: April 2009, Available: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10186

Department of the Environment, Water, Heritage and the Arts (DEWHA) 2008c, *Commonwealth Conservation Advice on Marsdenia coronata. Threatened Species Scientific Committee* [Online], Accessed: April 2009 by Aurecon, Available: http://www.environment.gov.au/biodiversity/threatened/species/pubs/20632-conservation-advice.pdf

Department of Sustainability, Environment, Water, Population and Communities (2012a). Dasyurus maculatus maculatus (SE mainland population) in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012b). Geophaps scripta scripta in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Sun, 23 Sep 2012

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012b). Turnix melanogaster in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Mon, 24 Sep 2012.

Department of Sustainability, Environment, Water, Population and Communities (2012c). Lowland Rainforest of Subtropical Australia in Community and Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra

Department of the Environment, Water, Heritage and the Arts (DEWHA) 2013a, *Commonwealth Conservation Advice on Notelaea ipsviciensis. Threatened Species Scientific Committee* [Online], Accessed: February 2013, Available: http://www.environment.gov.au/biodiversity/threatened/species/pubs/81858-conservation-advice.pdf

Department of the Environment, Water, Heritage and the Arts (DEWHA) 2013b, *Commonwealth Conservation Advice on Phaius australis. Threatened Species Scientific Committee* [Online], Accessed: February 2013, Available: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=5872

Department of Sustainability, Environment, Water, Population and Communities (2013a). Coeranoscincus reticulatus in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Tue, 4 Jun 2013 14:49:49 +1000.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2013b). Chalinolobus dwyeri in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Mon, 4 Feb 2013.

Department of Sustainability, Environment, Water, Population and Communities (2013ba). *Dasyornis brachypterus* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Thu, 25 Jul 2013 10:17:39 +1000.

Department of Sustainability, Environment, Water, Population and Communities (2013bb). *Dasyurus hallucatus* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Thu, 25 Jul 2013 11:03:06 +1000.

Department of Sustainability, Environment, Water, Population and Communities (2013c). Delma torquata in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Tue, 4 Jun 2013 14:51:00 +1000.

Department of Sustainability, Environment, Water, Population and Communities (2013d). Furina dunmalli in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Tue, 4 Jun 2013 14:51:06 +1000.

Department of Sustainability, Environment, Water, Population and Communities (2013da). *Poephila cincta cincta* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Thu, 25 Jul 2013 10:29:11 +1000.

Department of Sustainability, Environment, Water, Population and Communities (2013e). *Phebalium distans* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Tue, 4 Jun 2013 14:20:02 +1000.

Department of Sustainability, Environment, Water, Population and Communities (2013f). *Streblus pendulinus* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Tue, 4 Jun 2013 14:20:21 +1000.

Department of Sustainability, Environment, Water, Population and Communities (2013). *Cryptostylis hunteriana* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and

Communities, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Mon, 22 Jul 2013 15:47:19 +1000.

Department of the Environment, Water, Heritage and the Arts (DEWHA) 2008b, *Commonwealth Conservation Advice on Hydrocharis dubia. Threatened Species Scientific Committee* [Online], Accessed: April 2009, Available: http://www.environment.gov.au/biodiversity/threatened/species/pubs/3650-conservation-advice.pdf

Energex Limited SWP 1.6 - DEVELOPMENT OF VEGETATION MANAGEMENT PLANS FOR OVERHEAD TRANSMISSION AND DISTRIBUTION LINE ROUTES, Network Systems Delivery Group, 2003

Leiper, G, Glazebrook, J, Cox, D & Rathie, K 2008, *Mangroves to Mountains: A field guide to the native plants of south-east Queensland*, Logan River Branch: Browns Plains.

Logan River Branch S.G.A.P (Qld Region) Inc 2005, *Mangroves to Mountains: A Field Guide to the Native Plants of the Logan-Albert Rivers Catchment Volume 2*, Copyright Publishing Co. Pty Ltd; QLD, Australia.

Morcombe, M. (2004) Field Guide to Australian Birds, Archerfield, Queensland: Steve Parish Publishing

RPS (2013) EPBC Act Koala Impact Assessment – Loganlea to Jimboomba Power Line, August 2013, Fortitude Valley, Queensland

7.2 Reliability and date of information

Information contained in this document is believed to be accurate at the time of preparing this document. The information presented has been compiled from a combination of data resources and field investigations undertaken for the FIAR of June 2010 (Aurecon 2010b). Recent additional survey effort was undertaken specifically to assess potential impacts on the koala by RPS in April 2013.

7.3 Attachments

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	**Figure 1**: Locality map **Figure 2**: Plan of the Project corridor (multiple maps)
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	**Appendix B:** FIAR (mapping included in the report). **Also available online:** http://www.energex.com.au/the-network/major-projects/loganlea-to-jimboomba-network-upgrade/final-iar **Appendix C:** RPS report – koala habitat (mapping included in report)
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)	✓	**Appendix D** - Copy of Ministerial Designation
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)		**Appendix B: FIAR. Also available online:** http://www.energex.com.au/the-

		network/major-projects/loganlea-to-jimboomba-network-upgrade/final-iar
copies of any flora and fauna investigations and surveys (section 3)	✓	**Appendix B:** FIAR. **Also available online:** http://www.energex.com.au/the-network/major-projects/loganlea-to-jimboomba-network-upgrade/final-iar **Appendix C:** RPS report
technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	✓	**Appendix B:** FIAR. **Also available online:** http://www.energex.com.au/the-network/major-projects/loganlea-to-jimboomba-network-upgrade/final-iar **Appendix C:** RPS report **FIAR Available online:** http://www.energex.com.au/the-network/major-projects/loganlea-to-jimboomba-network-upgrade/final-iar
report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	✓	**Appendix B:** FIAR. **Also available online:** http://www.energex.com.au/the-network/major-projects/loganlea-to-jimboomba-network-upgrade/final-iar

8 Contacts, signatures and declarations

NOTE: Providing false or misleading information is an offence punishable on conviction by imprisonment and fine (s 489, EPBC Act).

Under the EPBC Act a referral can only be made by:

- the person proposing to take the action (which can include a person acting on their behalf); or
- a Commonwealth, state or territory government, or agency that is aware of a proposal by a person to take an action, and that has administrative responsibilities relating to the action[1].

Project title: Loganlea to Jimboomba 110 kV Network Upgrade

8.1 Person proposing to take action

This is the individual, government agency or company that will be principally responsible for, or who will carry out, the proposed action.

If the proposed action will be taken under a contract or other arrangement, this is:

- the person for whose benefit the action will be taken; or
- the person who procured the contract or other arrangement and who will have principal control and responsibility for the taking of the proposed action.

If the proposed action requires a permit under the Great Barrier Reef Marine Park Act[2], this is the person requiring the grant of GBRMP permission.

The Minister may also request relevant additional information from this person.

If further assessment and approval for the action is required, any approval which may be granted will be issued to the person proposing to take the action. This person will be responsible for complying with any conditions attached to the approval.

If the Minister decides that further assessment and approval is required, the Minister must designate a person as a proponent of the action. The proponent is responsible for meeting the requirements of the EPBC Act during the assessment process. The proponent will generally be the person proposing to take the action[3].

Name	Mark Paton
Title	Group Manager Environment
Organisation	Energex Limited
ACN / ABN (if applicable)	ABN 40 078 849 055
Postal address	GPO Box 1461 Brisbane Qld 4001
Telephone	0407 758 976
Email	markpaton@energex.com.au
Declaration	I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct. I understand that giving false or misleading information is a serious offence. I agree to be the proponent for this action. I acknowledge that I may be liable for fees related to my proposed action following the introduction of cost recovery under the EPBC Act.

Signature Date 11/10/2013

8.2 Person preparing the referral information (if different from 8.1)

Individual or organisation who has prepared the information contained in this referral form.

Name	Mark Paton
Title	Group Manager Environment
Organisation	Energex Limited
ACN / ABN (if applicable)	ABN 40 078 849 055
Postal address	GPO Box 1461 Brisbane Qld 4001
Telephone	0407 758 976
Email	markpaton@energex.com.au
Declaration	I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature Date 11/10/2013

REFERRAL CHECKLIST

NOTE: This checklist is to help ensure that all the relevant referral information has been provided. It is not a part of the referral form and does not need to be sent to the Department.

HAVE YOU:

- ✓ Completed all required sections of the referral form?
- ✓ Included accurate coordinates (to allow the location of the proposed action to be mapped)?
- ✓ Provided a map showing the location and approximate boundaries of the project area?
- ✓ Provided a map/plan showing the location of the action in relation to any matters of NES?
- ✓ Provided complete contact details and signed the form?
- ✓ Provided copies of any documents referenced in the referral form?
- ✓ Ensured that all attachments are less than two megabytes (2mb)?
- ✓ Sent the referral to the Department (electronic and hard copy preferred)?

Appendix A – Lot and Plan Descriptions of Land Parcels along the Project

Note: Only the 40 metre wide easement/corridor affects these properties - the entire properties are not impacted.

Lot	Plan	Tenure	Property owner
N/A		Freehold	Powerlink Queensland (Loganlea Substation)
135	CP827105	Estate in Perpetuity	Department of Transport and Main Roads
N/A			**Crosses Railway Parade**
37	RP25866	Freehold	Logan City Council
36	RP25866	Freehold	Logan City Council
34	RP25866	Freehold	Logan City Council
33	RP25866	Freehold	Logan City Council
N/A			**Crosses Jutland Street**
N/A			**Crosses Battle Street**
1	RP223712	Freehold	Logan City Council
503	RP904604	Freehold	Private landowner
N/A			**Crosses Kingston Road**
339	SL12378	Reserve	Department of Natural Resources and Mines
1	RP802743	Freehold	Private landowner
N/A			**Crosses Road and Logan Motorway**
28	SL12622	Reserve	Department of Natural Resources and Mines
24	SP110645	Reserve	Department of Natural Resources and Mines
22	SP110645	Freehold	Private landowner
7	RP892325	Reserve	Department of Natural Resources and Mines
2	RP892325	Freehold	Private landowner
3	RP892325	Freehold	Private landowner
4	RP892325	Freehold	Private landowner
N/A			**Crosses Scrubby Creek**
2	RP184803	Freehold	Logan City Council
1	RP184803	Freehold	Private landowner
5	RP892325	Freehold	Private landowner

N/A			**Crosses Mudgee Street**
1	SP103663	Freehold	Private landowner
5	RP156775	Freehold	Logan City Council
7	RP156775	Freehold	Logan City Council
2	RP156775	Freehold	Private landowner
1	RP146505	Freehold	ENERGEX Limited (Kingston Substation)
N/A			**Transition to underground from Kingston Substation**
1	CP864203	Freehold	Private landowner
N/A			**Underground in Chambers Flat Road and Kingston Road (from Kingston Substation to intersection of Muchow Road)**
N/A			**Underground in Logan Reserve Road (crossing Muchow Road to Beutel Street)**
N/A			**Underground in Logan Reserve Road (crossing Beutel Street to Schmidts Road)**
N/A			**Underground in Logan Reserve Road (crossing Schmidts Road to School Road)**
N/A			**Underground in Glen Road (transition to overhead)**
1	RP25892	Freehold	Private landowner
N/A			**Crosses Logan River (#1)**
463	WD4533	Reserve	Department of Natural Resources and Mines
449	WD5155	Reserve	Department of Natural Resources and Mines
2	RP172382	Freehold	Private landowner
32	RP174958	Freehold	Private landowner
N/A			**Crosses Logan River (#2)**
12	RP837232	Freehold	Private landowner
13	RP837232	Freehold	Private landowner
14	RP837232	Freehold	Private landowner
15	RP837232	Freehold	Private landowner
62	MAR619	Freehold	Private landowner
63	SP122549	Freehold	Private landowner
N/A			**Crosses proposed road**
65	MAR619	Freehold	Private landowner
N/A			**Crosses Pleasant View Road**

251	SL327	Freehold	Private landowner
N/A			**Crosses Logan River (#3)**
2	RP213738	Freehold	Private landowner
188	MAR6117	Freehold	Private landowner
187	MAR6117	Freehold	Private landowner
N/A			**Crosses Logan River (#4)**
2	RP25894	Freehold	Private landowner
1	RP25895	Freehold	Private landowner
N/A			**Crosses Kirk Road**
1	RP863053	Freehold	Private landowner
2	RP863054	Freehold	Private landowner
N/A			**Crosses Anzac Avenue**
N/A			**Crosses Logan River (#5)**
N/A			**Crosses Anzac Avenue (volumetric)**
12	RP908213	Freehold	Logan City Council
4	RP865669	Freehold	Private landowner
N/A			**Crosses Albert Street**
3	RP27477	Freehold	Logan City Council
1	RP121867	Owner	Department of Natural Resources and Mines
N/A			**Crosses Waterford Tamborine Road**
11	SP130073	Owner	Department of Natural Resources and Mines
74	RP210268	Freehold	Private landowner
5	RP168377	Freehold	Private landowner
6	RP168377	Freehold	Private landowner
8	RP168377	Freehold	Private landowner
7	RP168377	Freehold	Private landowner
11	SP250104	Freehold	Private landowner
10	SP250104	Freehold	Private landowner
9	SP250104	Freehold	Private landowner
1	SP138647	Freehold	Private landowner
3	RP144442	Freehold	Private landowner
N/A			**Crosses Hotz Road**

4	RP201777	Freehold	Private landowner
3	RP809533	Freehold	Private landowner
1	RP809533	Freehold	Private landowner
5	RP111329	Freehold	Private landowner
61	SP159208	Freehold	Private landowner
7	RP111329	Freehold	Private landowner
16	RP111685	Freehold	Private landowner
123	RP894567	Freehold	Private landowner
2	RP809934	Freehold	Private landowner
3	RP862775	Freehold	Private landowner
1	RP862775	Freehold	Private landowner
2	RP862775	Freehold	Private landowner
1	RP897380	Freehold	Private landowner
N/A			**Crosses Camp Cable Road**
5	RP841508	Freehold	Private landowner
4	RP837863	Freehold	Private landowner
N/A			**Crosses Camp Cable Road**
28	RP111331	Freehold	Private landowner
4	SP147262	Freehold	Private landowner
N/A			**Crosses Travis Road**
1	RP199189	Freehold	Private landowner
5	RP807296	Freehold	Private landowner
4	RP807296	Freehold	Private landowner
N/A			**Crosses Virginia Way**
1	RP199993	Freehold	Private landowner
4	RP815750	Freehold	Private landowner
3	RP815750	Freehold	Private landowner
1	RP172097	Freehold	Private landowner
2	RP172097	Freehold	Private landowner
3	RP183336	Freehold	Private landowner
N/A			**Crosses Amber Crescent**
87	RP172097	Freehold	Private landowner

86	RP183336	Freehold	Private landowner
88	RP172097	Freehold	Private landowner
89	RP172097	Freehold	Private landowner
90	RP172097	Freehold	Private landowner
91	RP172097	Freehold	Private landowner
92	RP172097	Freehold	Private landowner
93	RP172132	Freehold	Private landowner
94	RP172132	Freehold	Private landowner
95	RP172132	Freehold	Private landowner
96	RP172132	Freehold	Private landowner
97	RP172132	Freehold	Private landowner
98	RP172132	Freehold	Private landowner
N/A			**Crosses Edelsten Road**
456	WD6290	Reserve	Department of Natural Resources and Mines
2	M331435	Owner	Department of Natural Resources and Mines
122	RP172127	Freehold	Private landowner
123	RP172127	Freehold	Private landowner
124	RP172127	Freehold	Private landowner
2	RP893416	Freehold	Private landowner
2	RP198717	Freehold	Private landowner
1	RP198717	Freehold	Private landowner
2	RP211179	Freehold	Private landowner
N/A			**Crosses Meadow Road**
30	RP126166	Freehold	Private landowner
1	RP229151	Freehold	Private landowner
2	RP229151	Freehold	Private landowner
23	RP126166	Freehold	Private landowner
24	RP126166	Freehold	ENERGEX Limited (Jimboomba Substation)