



# Referral of proposed action

## What is a referral?

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) provides for the protection of the environment, especially matters of national environmental significance (NES). Under the EPBC Act, a person must not take an action that has, will have, or is likely to have a significant impact on any of the matters of NES without approval from the Australian Government Environment Minister or the Minister's delegate. (Further references to 'the Minister' in this form include references to the Minister's delegate.) To obtain approval from the Environment Minister, a proposed action should be referred. The purpose of a referral is to obtain a decision on whether your proposed action will need formal assessment and approval under the EPBC Act.

Your referral will be the principal basis for the Minister's decision as to whether approval is necessary and, if so, the type of assessment that will be undertaken. These decisions are made within 20 business days, provided sufficient information is provided in the referral.

## Who can make a referral?

Referrals may be made by or on behalf of a person proposing to take an action, the Commonwealth or a Commonwealth agency, a state or territory government, or agency, provided that the relevant government or agency has administrative responsibilities relating to the action.

## When do I need to make a referral?

A referral must be made for actions that are likely to have a significant impact on the following matters protected by Part 3 of the EPBC Act:

- World Heritage properties (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)
- A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
- The environment, if the action involves Commonwealth land (sections 26 and 27A), including:
  - actions that are likely to have a significant impact on the environment of Commonwealth land (even if taken outside Commonwealth land);
  - actions taken on Commonwealth land that may have a significant impact on the environment generally;
- The environment, if the action is taken by the Commonwealth (section 28)
- Commonwealth Heritage places outside the Australian jurisdiction (sections 27B and 27C)

You may still make a referral if you believe your action is not going to have a significant impact, or if you are unsure. This will provide a greater level of certainty that Commonwealth assessment requirements have been met.

To help you decide whether or not your proposed action requires approval (and therefore, if you should make a referral), the following guidance is available from the Department's website:

- the Policy Statement titled Significant Impact Guidelines 1.1 – Matters of National Environmental Significance. Additional sectoral guidelines are also available.

- the Policy Statement titled Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies.
- the Policy Statement titled Significant Impact Guidelines: Coal seam gas and large coal mining developments—Impacts on water resources.
- the interactive map tool (enter a location to obtain a report on what matters of NES may occur in that location).

#### **Can I refer part of a larger action?**

In certain circumstances, **the Minister may not accept a referral for an action that is a component of a larger action and may request the person proposing to take the action to refer the larger action for consideration under the EPBC Act (Section 74A, EPBC Act)**. If you wish to make a referral for a staged or component referral, read 'Fact Sheet 6 Staged Developments/Split Referrals' and contact the Referrals Gateway (1800 803 772).

#### **Do I need a permit?**

Some activities may also require a permit under other sections of the EPBC Act or another law of the Commonwealth. Information is available on the Department's web site.

#### **Is your action in the Great Barrier Reef Marine Park?**

If your action is in the Great Barrier Reef Marine Park it may require permission under the *Great Barrier Reef Marine Park Act 1975* (GBRMP Act). If a permission is required, referral of the action under the EPBC Act is deemed to be an application under the GBRMP Act (see section 37AB, GBRMP Act). This referral will be forwarded to the Great Barrier Reef Marine Park Authority (the Authority) for the Authority to commence its permit processes as required under the Great Barrier Reef Marine Park Regulations 1983. If a permission is not required under the GBRMP Act, no approval under the EPBC Act is required (see section 43, EPBC Act). The Authority can provide advice on relevant permission requirements applying to activities in the Marine Park.

The Authority is responsible for assessing applications for permissions under the GBRMP Act, GBRMP Regulations and Zoning Plan. Where assessment and approval is also required under the EPBC Act, a single integrated assessment for the purposes of both Acts will apply in most cases. Further information on environmental approval requirements applying to actions in the Great Barrier Reef Marine Park is available from <http://www.gbrmpa.gov.au/> or by contacting GBRMPA's Environmental Assessment and Management Section on (07) 4750 0700.

The Authority may require a permit application assessment fee to be paid in relation to the assessment of applications for permissions required under the GBRMP Act, even if the permission is made as a referral under the EPBC Act. Further information on this is available from the Authority:

Great Barrier Reef Marine Park Authority

2-68 Flinders Street PO Box 1379

Townsville QLD 4810

AUSTRALIA

Phone: + 61 7 4750 0700

Fax: + 61 7 4772 6093

[www.gbrmpa.gov.au](http://www.gbrmpa.gov.au)

#### **What information do I need to provide?**

**Completing all parts of this form will ensure that you submit the required information and will also assist the Department to process your referral efficiently. If a section of the referral document is not applicable to your proposal enter N/A.**

You can complete your referral by entering your information into this Word file.

#### **Instructions**

Instructions are provided in blue text throughout the form.

#### **Attachments/supporting information**

The referral form should contain sufficient information to provide an adequate basis for a decision on the likely impacts of the proposed action. You should also provide supporting documentation, such as environmental reports or surveys, as attachments.

Coloured maps, figures or photographs to help explain the project and its location should also be submitted with your referral. Aerial photographs, in particular, can provide a useful perspective and context.

Figures should be good quality as they may be scanned and viewed electronically as black and white documents. Maps should be of a scale that clearly shows the location of the proposed action and any environmental aspects of interest.

**Please ensure any attachments are below three megabytes (3mb) as they will be published on the Department's website for public comment. To minimise file size, enclose maps and figures as separate files if necessary. If unsure, contact the Referrals Gateway (email address below) for advice. Attachments larger than three megabytes (3mb) may delay processing of your referral.**

**Note: the Minister may decide not to publish information that the Minister is satisfied is commercial-in-confidence.**

### **How do I pay for my referral?**

From 1 October 2014 the Australian Government commenced cost recovery arrangements for environmental assessments and some strategic assessments under the EPBC Act. If an action is referred on or after 1 October 2014, then cost recovery will apply to both the referral and any assessment activities undertaken. Further information regarding cost recovery can be found on the [Department's website](#).

**Payment of the referral fee can be made using one of the following methods:**

- **EFT Payments can be made to:**

BSB: 092-009  
Bank Account No. 115859  
Amount: \$7352  
Account Name: Department of the Environment.  
Bank: Reserve Bank of Australia  
Bank Address: 20-22 London Circuit Canberra ACT 2601  
Description: The reference number provided (see note below)

- **Cheque** - Payable to "Department of the Environment". Include the reference number provided (see note below), and if posted, address:

The Referrals Gateway  
Environment Assessment Branch  
Department of the Environment  
GPO Box 787  
Canberra ACT 2601

- **Credit Card**

Please contact the Collector of Public Money (CPM) directly (call (02) 6274 2930 or 6274 20260 and provide the reference number (see note below).

Note: in order to receive a reference number, submit your referral and the Referrals Gateway will email you the reference number.

### **How do I submit a referral?**

Referrals may be submitted by mail or email.

**Mail to:**

Referrals Gateway  
Environment Assessment Branch  
Department of Environment  
GPO Box 787  
CANBERRA ACT 2601

- If submitting via mail, electronic copies of documentation (on CD/DVD or by email) are required.

**Email to: [epbc.referrals@environment.gov.au](mailto:epbc.referrals@environment.gov.au)**

- Clearly mark the email as a 'Referral under the EPBC Act'.
- Attach the referral as a Microsoft Word file and, if possible, a PDF file.
- **Follow up with a mailed hardcopy including copies of any attachments or supporting reports.**

## **What happens next?**

Following receipt of a valid referral (containing all required information) you will be advised of the next steps in the process, and the referral and attachments will be published on the Department's web site for public comment.

The Department will write to you within 20 business days to advise you of the outcome of your referral and whether or not formal assessment and approval under the EPBC Act is required. There are a number of possible decisions regarding your referral:

### **The proposed action is NOT LIKELY to have a significant impact and does NOT NEED approval**

No further consideration is required under the environmental assessment provisions of the EPBC Act and the action can proceed (subject to any other Commonwealth, state or local government requirements).

### **The proposed action is NOT LIKELY to have a significant impact IF undertaken in a particular manner**

The action can proceed if undertaken in a particular manner (subject to any other Commonwealth, state or local government requirements). The particular manner in which you must carry out the action will be identified as part of the final decision. You must report your compliance with the particular manner to the Department.

### **The proposed action is LIKELY to have a significant impact and does NEED approval**

If the action is likely to have a significant impact a decision will be made that it is a *controlled action*. The particular matters upon which the action may have a significant impact (such as World Heritage values or threatened species) are known as the *controlling provisions*.

The controlled action is subject to a public assessment process before a final decision can be made about whether to approve it. The assessment approach will usually be decided at the same time as the controlled action decision. (Further information about the levels of assessment and basis for deciding the approach are available on the Department's web site.)

### **The proposed action would have UNACCEPTABLE impacts and CANNOT proceed**

The Minister may decide, on the basis of the information in the referral, that a referred action would have clearly unacceptable impacts on a protected matter and cannot proceed.

## **Compliance audits**

If a decision is made to approve a project, the Department may audit it at any time to ensure that it is completed in accordance with the approval decision or the information provided in the referral. If the project changes, such that the likelihood of significant impacts could vary, you should write to the Department to advise of the changes. If your project is in the Great Barrier Reef Marine Park and a decision is made to approve it, the Authority may also audit it. (See "*Is your action in the Great Barrier Reef Marine Park*," p.2, for more details).

## **For more information**

- call the Department of the Environment Community Information Unit on 1800 803 772 or
- visit the web site <http://www.environment.gov.au/topics/about-us/legislation/environment-protection-and-biodiversity-conservation-act-1999>

All the information you need to make a referral, including documents referenced in this form, can be accessed from the above web site.

# Referral of proposed action

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**Project title:** Ilford to Bylong Transmission Line Upgrade

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## 1 Summary of proposed action

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### 1.1 Short description

KEPCO Bylong Australia Pty Ltd (KEPCO), on behalf of Endeavour Energy, propose to upgrade the existing transmission lines between Ilford and Bylong with higher capacity lines that meet Endeavour Energy's current standards (the proposal). The key features of the proposal involve:

- Upgrading 10 km of the northern end of the existing 66 kV transmission line (Feeder 841) between Ilford Transmission Substation (TS) and Kandos Zone Substation (ZS) (from pole 63 to Kandos ZS).
- Upgrading 50 km of the existing 66 kV transmission line (Feeder 839) between Kandos and Bylong ZS.
- Installing a new 66 kV transmission line along a 250 metre section of the Henbury Avenue road reserve at Kandos; along a 400 metre section of the road reserve along Davies Road, Kandos; and along approximately 7 km of a non-operational rail corridor between Kandos and Rylstone (to bypass a 7 km section of the existing line that runs along Bylong Valley Way and Mill Street South).
- Upgrading of the transmission lines includes:
  - Replacing existing wooden poles with concrete poles.
  - Replacing the existing overhead conductors to increase the capacity of both transmission lines.
  - Installing an Overhead earth wire (OHEW) to improve reliability by increasing protection from lightning.

The proposal will satisfy the electricity needs for the local community as well as the proposed Bylong Coal Project (project). KEPCO is the proponent for the project which is the subject of a separate referral (EPBC No 2014/7133). In accordance with the Endeavour Energy's Connection Policy and the National Electricity Rules (NER), KEPCO is required to upgrade the connection on behalf of Endeavour Energy to defined points and pay all associated costs. Accordingly, KEPCO is carrying out the proposal on behalf of Endeavour Energy (see Attachment 6).

Construction of the proposal will utilise existing access tracks currently used by Endeavour Energy wherever possible. Three access tracks have been identified to require minor upgrade works including tree trimming to reinstate clear access. Where works are required on private land, alternate existing access tracks may be utilised as requested by the landowner. Any such tracks would already be formed, cleared of vegetation and used informally by the landowner.

In relation to works within the non-operational rail corridor, access would be via public roads including Boronia Road and then along existing access tracks.

The location of the proposal is shown on Figure 1 and 2 (Attachment 1 and Attachment 2).

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### 1.2 Latitude and longitude

Latitudes and longitudes bounding the proposal corridor are listed in Table 1.

**Table 1 Latitude and longitude of proposal site**

Location Point	Longitude	Latitude	Location Point	Longitude	Latitude
0	149° 55' 54.549"	32° 56' 10.737"	53	149° 58' 43.568"	32° 48' 19.151"
1	149° 55' 55.238"	32° 56' 9.734"	54	149° 58' 40.497"	32° 48' 14.550"
2	149° 56' 3.314"	32° 55' 25.595"	55	149° 58' 38.736"	32° 48' 9.899"
3	149° 56' 29.422"	32° 55' 0.001"	56	149° 58' 37.158"	32° 48' 4.138"
4	149° 56' 34.144"	32° 54' 57.961"	57	149° 58' 37.160"	32° 48' 4.130"
5	149° 56' 38.255"	32° 54' 50.163"	58	149° 58' 42.801"	32° 47' 34.654"
6	149° 56' 42.150"	32° 54' 48.695"	59	149° 58' 35.293"	32° 47' 12.882"
7	149° 56' 43.748"	32° 54' 46.259"	60	149° 59' 13.974"	32° 45' 42.259"
8	149° 56' 49.989"	32° 54' 14.846"	61	149° 59' 14.143"	32° 45' 12.481"
9	149° 56' 48.832"	32° 54' 13.014"	62	149° 59' 23.520"	32° 44' 50.617"
10	149° 56' 50.684"	32° 54' 7.389"	63	149° 59' 23.704"	32° 44' 43.552"
11	149° 57' 34.958"	32° 53' 16.121"	64	149° 59' 30.895"	32° 44' 0.309"
12	149° 57' 37.695"	32° 53' 12.044"	65	149° 59' 33.668"	32° 43' 46.851"
13	149° 57' 44.257"	32° 53' 2.224"	66	149° 59' 27.017"	32° 43' 36.138"
14	149° 57' 47.928"	32° 52' 54.934"	67	149° 59' 39.749"	32° 42' 29.614"
15	149° 58' 5.597"	32° 51' 53.415"	68	150° 0' 25.748"	32° 42' 7.352"
16	149° 58' 5.617"	32° 51' 35.859"	69	150° 0' 21.591"	32° 41' 24.608"
17	149° 58' 5.226"	32° 51' 34.456"	70	150° 0' 32.397"	32° 40' 59.492"
18	149° 58' 4.817"	32° 51' 32.969"	71	150° 0' 52.163"	32° 40' 35.658"
19	149° 58' 4.647"	32° 51' 31.963"	72	150° 0' 35.143"	32° 39' 42.575"
20	149° 58' 4.599"	32° 51' 31.121"	73	150° 0' 53.318"	32° 39' 27.941"
21	149° 58' 4.559"	32° 51' 29.855"	74	150° 1' 4.743"	32° 39' 5.417"
22	149° 58' 6.121"	32° 51' 28.685"	75	150° 1' 4.369"	32° 38' 39.396"
23	149° 58' 8.708"	32° 51' 15.929"	76	150° 3' 15.037"	32° 37' 43.169"
24	149° 58' 8.723"	32° 51' 15.844"	77	150° 3' 18.518"	32° 37' 19.554"
25	149° 58' 11.439"	32° 51' 16.207"	78	150° 3' 29.728"	32° 37' 14.947"
26	149° 58' 12.517"	32° 51' 16.590"	79	150° 3' 34.844"	32° 37' 14.867"
27	149° 58' 15.596"	32° 51' 18.084"	80	150° 4' 3.856"	32° 37' 3.273"
28	149° 58' 17.320"	32° 51' 19.049"	81	150° 4' 12.160"	32° 37' 3.430"
29	149° 58' 21.424"	32° 51' 16.420"	82	150° 4' 19.204"	32° 37' 0.148"
30	149° 58' 30.587"	32° 51' 13.155"	83	150° 4' 39.995"	32° 36' 8.533"
31	149° 58' 38.937"	32° 51' 9.425"	84	150° 5' 39.024"	32° 35' 9.818"
32	149° 58' 43.573"	32° 51' 6.517"	85	150° 5' 42.595"	32° 34' 51.410"
33	149° 58' 47.726"	32° 51' 2.968"	86	150° 5' 47.248"	32° 34' 34.321"
34	149° 58' 51.060"	32° 50' 58.966"	87	150° 6' 1.328"	32° 33' 44.118"
35	149° 58' 53.707"	32° 50' 54.622"	88	150° 6' 1.974"	32° 33' 37.437"
36	149° 58' 56.153"	32° 50' 48.471"	89	150° 5' 45.130"	32° 32' 53.003"
37	149° 59' 13.377"	32° 49' 49.878"	90	150° 5' 41.868"	32° 32' 20.779"
38	149° 59' 13.073"	32° 49' 44.829"	91	150° 5' 30.056"	32° 32' 8.673"
39	149° 59' 11.492"	32° 49' 40.308"	92	150° 5' 21.017"	32° 31' 24.594"
40	149° 59' 7.985"	32° 49' 34.436"	93	150° 5' 16.417"	32° 31' 11.784"
41	149° 59' 5.567"	32° 49' 29.985"	94	150° 5' 12.672"	32° 30' 19.441"
42	149° 59' 3.762"	32° 49' 25.026"	95	150° 4' 59.303"	32° 30' 7.308"
43	149° 59' 2.761"	32° 49' 20.210"	96	150° 4' 47.272"	32° 29' 17.052"
44	149° 59' 2.485"	32° 49' 15.013"	97	150° 4' 37.922"	32° 26' 54.515"
45	149° 59' 2.603"	32° 49' 6.896"	98	150° 5' 16.528"	32° 25' 56.826"
46	149° 59' 2.413"	32° 49' 1.935"	99	150° 5' 41.803"	32° 25' 27.886"

47	149° 59' 1.509"	32° 48' 55.485"	100	150° 5' 58.893"	32° 25' 24.677"
48	149° 59' 0.025"	32° 48' 49.101"	101	150° 6' 35.594"	32° 25' 7.244"
49	149° 58' 57.973"	32° 48' 42.824"	102	150° 6' 53.721"	32° 24' 51.251"
50	149° 58' 55.195"	32° 48' 36.770"	103	150° 6' 56.543"	32° 24' 51.957"
51	149° 58' 51.864"	32° 48' 30.895"	104	150° 6' 58.120"	32° 24' 51.491"
52	149° 58' 48.625"	32° 48' 26.037"			

### 1.3 Locality and property description

The proposal is located within the Mid-Western Regional Council Local Government Area (LGA) of NSW.

The proposal relates to the upgrade of approximately 67 km of the existing transmission line between Ilford and Bylong. The proposal also utilises a section of road reserve along Henbury Avenue and Davies road and approximately 6.6 km of non-operational rail corridor to bypass the existing transmission line alignment between Kandos and Rylstone along Bylong Valley Way and Mill Street South.

The proposal passes the towns of Clandulla, Charbon, Kandos, Rylstone, Ginghi and Bylong. The proposal also passes a number of the smaller rural settlements including Reedy Creek, Breakfast Creek, Upper Growee, Growee, Budden and Lee Creek.

The proposal is located in the Central Tablelands catchment as managed by Local Lands Services. The majority of the proposal is located within the Sydney Basin Bioregion, with the southern-most section located within the South-eastern Highlands Bioregion.

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

The maximum size of the development footprint for the proposal (as calculated for the entire 67 km upgrade) would be approximately 31 hectares.

The main impacts of the proposal will be due to pole replacement which would disturb an area of approximately 25 by 30 metres around the base of each pole. Where poles are to be located within an endangered ecological community (EEC), this construction footprint will be limited to a disturbance area of 18 by 15 metres around the base of each pole. This disturbance will be contained within the existing corridor which has been previously cleared and consists mainly of understorey shrubs and groundcovers.

Where there is woodland vegetation within the non-operational rail corridor, the canopy layer and understorey shrubs greater than 3 metres high will be permanently removed along an 18 metre wide corridor in order to comply with Endeavour Energy safety standards. In areas of derived grassland, impacts will be limited to the disturbance of the ground storey of approximately 25 by 15 metres around each new pole. In areas containing exotic vegetation, impacts would include the disturbance of 25 by 30 metres around each pole.

Along the existing alignment, existing access tracks that are currently used by Endeavour Energy for maintenance of the transmission line will be used to access pole locations during construction and for ongoing maintenance. Some of these tracks may require some minor trimming of overhanging vegetation and branches. Where works are required on private land, alternate existing access tracks may be utilised as requested by the landowner. Any such tracks would already be formed, cleared of vegetation and used informally by the landowner.

Along the non-operational rail corridor, the construction area will be accessed via Boronia Road (to the west of the rail corridor) and then onto existing access tracks. Along the Davies Road and Henbury Avenue Road reserves, it is anticipated that only minor trimming of overhanging vegetation and branches will be required, with no impact to Box Gum Woodland EEC (see Figure 5, Attachment 5).

The proposal would result in impacts to approximately 7.18 hectares of native vegetation which includes approximately 2.84 hectares of White Box Yellow Box –Blakely's Red Gum Grassy Woodland and Derived Native Grassland (including 2.54 hectares of the woodland form of this community and 0.3 hectares of the derived grassland form) (herein referred to as Box Gum Woodland). This vegetation is listed as a critically endangered ecological community (CEEC) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

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1.5 **Street address of the site**  
N/A

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## 1.6 Lot description

The land parcels and all Lots and DPs intersected by the proposal are listed in **Table 2** below. Land ownership details are shown on Figure 3 (Attachment 3).

**Table 2 – Lot and DP Numbers intersected by proposal**

Lot and DP Numbers				
Lot 1 / DP 195252	Lot 2 / DP 532286	Lot 27 / DP 755448	Lot 131 / DP 755789	Lot 3 / DP 431442
Lot 4 / DP 101758	Lot 1 / DP 421103	Lot 26 / DP 755448	Lot 257 / DP 755789	Lot 1 / DP 712781
Lot 68 / DP 755417	Lot 2 / DP 1075816	Lot 2 / DP 712781	Lot 21 / DP 877502	Lot 1 / DP 553888
Lot 10 / DP 755417	Lot 2 / DP 222796	Lot 100 / DP 654171	Lot 279 / DP 755789	
Lot 3 / DP 101758	Lot 2 / DP 803563	Lot 38 / DP 755448	Lot 2602 / DP 1053053	
Lot 69 / DP 755432	Lot 1 / DP 1146893	Lot 70 / DP 755448	Lot 6 / DP 595800	
Lot 11 / DP 755417	Lot 2 / DP 195251	Lot 78 / DP 755448	Lot A / DP 382271	
Lot 100 / DP 755417	Lot 6 / DP 1175935	Lot 113 / DP 755448	Lot 2 / DP 583351	
Lot 56 / DP 755417	Lot 4 / DP 1178786	Lot 2 / DP 755448	Lot 258 / DP 755789	
Lot 7 / DP 755417	Lot 5 / DP 1175935	Lot 2 / DP 130528	Lot 262 / DP 755789	
Lot 9 / DP 755417	Lot 13 / DP 755432	Lot 1 / DP 843422	Lot 2601 / DP 1053053	
Lot 6 / DP 755417	Lot 1 / DP 730108	Lot 3 / DP 1084297	Lot 181 / DP 755789	
Lot 21 / DP 755417	Lot 53 / DP 755432	Lot 2 / DP 1084297	Lot 1 / DP 700561	
Lot 83 / DP 755417	Lot 4 / DP 1055368	Lot 1 / DP 1084297	Lot 261 / DP 755789	
Lot 22 / DP 755417	Lot 44 / DP 755432	Lot 3 / DP 871888	Lot 11 / DP 1000558	
Lot 3 / DP 101757	Lot 1 / DP 1000927	Lot 39 / DP 755448	Lot 12 / DP 1000558	
Lot 8 / DP 755417	Lot 84 / DP 755432	Lot 9 / DP 11187	Lot 1001 / DP 1091133	
Lot 39 / DP 755432	Lot 43 / DP 755432	Lot 22 / DP 172052	Lot 7311 / DP 1130635	
Lot 20 / DP 755417	Lot 11 / DP 755432	Lot 8 / DP 817671	Lot 110 / DP 755765	
Lot 1 / DP 101758	Lot 71 / DP 755432	Lot 1352 / DP 1091480	Lot 185 / DP 755789	
Lot 27 / DP 755432	Lot 14 / DP 755432	Lot 126 / DP 755426	Lot 6 / 2 / DP 758249	
Lot 4 / DP 755417	Lot 93 / DP 755432	Lot 9 / DP 817671	Lot 18 / DP 755765	
Lot 23 / DP 755432	Lot 2 / DP 1000927	Lot 2 / DP 876237	Lot 10 / DP 773904	
Lot 41 / DP 755432	Lot 10 / DP 821809	Lot 1 / DP 635229	Lot 1 / 2 / DP 758249	
Lot 16 / DP 755417	Lot 103 / DP 755432	Lot 2 / DP 798497	Lot 189 / DP 755765	
Lot 13 / DP 755417	Lot 11 / DP 821809	Lot 10 / 23 / DP 758891	Lot 11 / DP 773904	
Lot 15 / DP 755417	Lot 10 / DP 755432	Lot 7 / 18 / DP 758891	Lot 7 / DP 755783	
Lot 71 / DP 755417	Lot 70 / DP 755432	Lot 5 / 18 / DP 758891	Lot 124 / DP 755765	
Lot 17 / DP 755417	Lot 7011 / DP 1113428	Lot 1 / 28 / DP 758891	Lot 125 / DP 755765	
Lot 42 / DP 755432	Lot 7007 / DP 1117328	Lot 4 / DP 798498	Lot 20 / DP 755765	
Lot 12 / DP 755417	Lot 180 / DP 755432	Lot 9 / 23 / DP 758891	Lot 4 / 2 / DP 758249	
Lot 67 / DP 755432	Lot 22 / DP 755448	Lot 7003 / DP 1023503	Lot 1 / DP 882651	
Lot 18 / DP 755417	Lot 4 / DP 261875	Lot 1 / DP 817671	Lot 5 / 2 / DP 758249	
Lot 81 / DP 755417	Lot 5 / DP 261875	Lot 1 / 26 / DP 758891	Lot 74 / DP 755783	
Lot 1 / DP 195251	Lot 6 / DP 261875	Lot 12 / 26 / DP 758891	Lot 118 / DP 755765	
Lot 1 / DP 199850	Lot 32 / DP 842182	Lot 1 / DP 1024571	Lot 1 / DP 823412	
Lot 31 / DP 598162	Lot 120 / DP 654172	Lot 3 / DP 877996	Lot 111 / DP 755432	
Lot 1 / DP 430939	Lot 3 / DP 1055368	Lot 12 / DP 755789	Lot 92 / DP 755432	
Lot 32 / DP 598162	Lot 79 / DP 755448	Lot 90 / DP 755789	Lot 11 / DP 1128784	

Lot 90 / DP 755420	Lot 41 / DP 755448	Lot 263 / DP 755789	Lot 121 / DP 1167047	
Lot 2 / DP 421103	Lot 7001 / DP 96917	Lot 2 / DP 1024571	Lot 2 / DP 1179425	
Lot 91 / DP 722302	Lot 152 / DP 755448	Lot 2 / DP 749342	Lot 1 / DP 1163467	
Lot 1 / DP 222796	Lot 42 / DP 755448	Lot 256 / DP 755789	Lot 120 / DP 1167047	
Lot 101 / DP 778500	Lot 67 / DP 755448	Lot 4 / DP 877996		

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

The proposal is located within the Mid-Western Regional Council LGA. Discussions and consultation regarding the proposal have been held with the following at Mid-Western Regional Council:

Cassie Liney (02 6378 2849 or [cassie.liney@midwestern.nsw.gov.au](mailto:cassie.liney@midwestern.nsw.gov.au))

Sally Mullinger, Business Manager – Works (02 6378 2851 or [salley.mullinger@midwestern.nsw.gov.au](mailto:salley.mullinger@midwestern.nsw.gov.au))

Nicole Cassidy, Roads Administration Assistant (02 6378 2858 or [Nicole.cassidy@midwestern.nsw.gov.au](mailto:Nicole.cassidy@midwestern.nsw.gov.au))

Claire Cam, Manager Water and Sewer (02 6378 2850 or [Claire.cam@midwestern.nsw.gov.au](mailto:Claire.cam@midwestern.nsw.gov.au)).

#### 1.8 Time frame

Award of detailed design is anticipated to commence in early 2017 with construction of the proposal following taking between 15 to 18 months to complete. This estimate is indicative only and is dependent on the timing for obtaining the necessary approvals, the Engineering, Procurement and Construction (EPC) contractor's construction methods, the number of crews and the electricity outage durations permitted by Endeavour Energy.

1.9	<b>Alternatives to proposed action</b> Were any feasible alternatives to taking the proposed action (including not taking the action) considered but are not proposed?		No
		X	Yes, you must also complete section 2.2
1.10	<b>Alternative time frames etc</b> Does the proposed action include alternative time frames, locations or activities?		No
		X	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	<b>State assessment</b> Is the action subject to a state or territory environmental impact assessment?		No
		X	<p>Yes, you must also complete Section 2.5</p> <p>Under Clause 41(1) of <i>State Environmental Planning Policy (Infrastructure) 2007</i> (ISEPP), development for the purpose of an electricity transmission or distribution network may be carried out by or on behalf of an electricity supply authority or public authority without development consent on any land, except land reserved under the <i>National Parks and Wildlife Act 1974</i> (NSW) (NP&amp;W Act) in specified circumstances. The proposal is not located on any land reserved under the NP&amp;W Act.</p> <p>The proposal is being undertaken by KEPCO on behalf of Endeavour Energy, as indicated in correspondence from Endeavour Energy presented in Attachment 6.</p> <p>The proposal includes the reconstruction of an above ground electricity transmission line and will be undertaken on behalf of Endeavour Energy which is an "electricity supply authority" (as defined by Clause 40 of the ISEPP) and a "public authority" (as defined by Clause 5 of the ISEPP and Section 4 of the <i>Environmental Planning and Assessment Act 1979</i> (NSW) (EP&amp;A Act)). The proposal is therefore permissible without development consent subject to an assessment being undertaken pursuant to Part 5 of the EP&amp;A Act.</p> <p>Under Part 5 of the EP&amp;A Act, Endeavour Energy is the "determining authority" (as defined by Section 110 of the EP&amp;A Act) for the proposal and is required to:</p> <p>(a) examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposal; and</p> <p>(b) if the proposal is likely to significantly affect the environment (including critical habitat) or threatened species, populations or ecological communities (or their habitats), obtain and consider an Environmental Impact Statement for the proposal.</p>
1.12	<b>Component of larger action</b> Is the proposed action a component of a larger action?	X	No
			<p>Yes, you must also complete Section 2.7</p> <p>The proposal being is undertaken by KEPCO on behalf of Endeavour Energy.</p> <p>The proposal will provide electricity supply to the local community as well as for the project. The proposal will be constructed and funded by KEPCO (on behalf of Endeavour Energy).</p>

		<p>As described above, the proposal is permissible with consent under Clause 41(1) of the ISEPP. For the purposes of Part 5 of the EP&amp;A Act, Endeavour Energy is the “determining authority” for the proposal. The proposal is subject to a completely separate environmental assessment and approval process to the project which is a State significant development application being assessed under Division 4.1 of Part 4 of the EP&amp;A Act.</p> <p>Further, the following should be noted:</p> <ul style="list-style-type: none"> <li>• The proponent for the proposal is Endeavour Energy. KEPCO will undertake the proposal on behalf of Endeavour Energy.</li> <li>• The assets following completion of the proposal will be owned and managed by Endeavour Energy (not KEPCO).</li> <li>• The proposal will last for a much longer time period (i.e. at least 50 years) than the project (i.e. 25 years).</li> <li>• The proposed action will provide broader benefits to the greater community including improved performance and reliability for all residents and businesses connected to the network.</li> <li>• The proposed action will provide improved safety for the greater community by upgrading the transmission lines to better control voltage and add an OHEW to help protect the lines from lightning strikes.</li> </ul> <p>Therefore, the proposal action is a completely separate and independent action to the project.</p>
1.13	<b>Related actions/proposals</b> Is the proposed action related to other actions or proposals in the region (if known)?	<div> <div>No</div> <div>X</div> <div>Yes, provide details:</div> </div> <p>As described above, the proposal will provide the electricity supply for the project and will be constructed (on behalf of Endeavour Energy) and funded by KEPCO, except part of the works the subject of the proposal which will be undertaken by Endeavour Energy itself.</p> <p>The proposal will also provide broader benefits to the greater community including improved performance and reliability for all residents and businesses connected to the network. The proposal is not directly related to other actions in the region.</p>
1.14	<b>Australian Government funding</b> Has the person proposing to take the action received any Australian Government grant funding to undertake this project?	<div> <div>No</div> <div>X</div> <div>Yes, provide details:</div> </div>
1.15	<b>Great Barrier Reef Marine Park</b> Is the proposed action inside the Great Barrier Reef Marine Park?	<div> <div>No</div> <div>X</div> <div>Yes, you must also complete Section 3.1 (h), 3.2 (e)</div> </div>

## 2 Detailed description of proposed action

### 2.1 Description of proposed action

KEPCO, on behalf of Endeavour Energy, propose to upgrade the existing transmission lines between Ilford and Bylong with higher capacity lines that meet Endeavour Energy's current standards (the proposal). The key features of the proposal involve:

- Upgrading 10 km of the northern end of the existing 66 kV transmission line (Feeder 841) between Ilford Transmission Substation (TS) and Kandos Zone Substation (ZS) (from pole 63 to Kandos ZS).
- Upgrading 50 km of the existing 66 kV transmission line (Feeder 839) between Kandos and Bylong ZS.
- Installing a new 66 kV transmission line along a 250 metre section of the Henbry Avenue road reserve at Kandos; along a 400 metre section of the road reserve along Davies Road, Kandos; and along approximately 7 km of a non-operational rail corridor between Kandos and Rylstone (to bypass a 7 km section of the existing line that runs along Bylong Valley Way and Mill Street South).
- Upgrading of the transmission lines includes:
  - Replacing existing wooden poles with concrete poles.
  - Replacing the existing overhead conductors to increase the capacity of both transmission lines.
  - Installing an OHEW to improve reliability by increasing protection from lightning.

Key construction activities associated with the proposal would include the following key stages:

- Establishing construction compounds and associated ancillary infrastructure
- Providing temporary power to Endeavour Energy's customers, where required
- Dismantling the existing transmission line, where applicable
- Constructing foundations and erecting new structures
- Stringing conductors and OHEW for the 66 kV lines
- Re-establishing the lower voltage services on the new concrete poles and removing any temporary infrastructure
- Stabilising and rehabilitating the proposal site.

The proposal provides for approximately 60 km (90%) of the existing 67 km of transmission lines to be upgraded by rebuilding the two lines within the existing corridor following the same alignment.

Approximately 7 km (10% in total) of the existing transmission line along Bylong Valley Way, between Kandos and Rylstone, will be bypassed by constructing a new transmission line in the Henbury Avenue and Davies Road reserve and the non-operational rail corridor. This deviation will reduce construction and operational impacts to the local community and will provide a safer means of carrying out the upgrade than doing so along Bylong Valley Way, which is the main arterial road between Kandos and Rylstone.

#### **Establishing construction compounds and associated ancillary infrastructure**

Temporary construction compounds will be established in the transmission line corridor and will include facilities such as demountable site offices, toilet facilities, vehicle parking and areas to store equipment, machinery and waste materials.

The following principles will apply to the selection of sites for construction compounds:

- Construction compounds will be located within areas of exotic grassland to avoid any known environmental sensitivities including threatened ecological communities or known locations or habitat for threatened species. and sites of Aboriginal cultural significance and minimise vegetation clearing and land disturbance where possible.
- The location and extent of the construction compound area will be determined in consultation with the relevant affected landowner and any other affected stakeholders.
- Prior to establishment, an environmental site map will be prepared for each compound site including environmental constraints and identification of soil and erosion control measures.

### **Transmission line construction**

The construction will be progressive and as sections of the existing lines are made available for upgrade, the works would be carried out and the new section tested, commissioned and returned to service over a 15 to 18 month period (subject to all necessary approvals having been obtained). The following details are indicative construction methods for purposes of this referral.

#### ***Work pad***

Relatively level construction pads will be required adjacent to each pole for stability of hole-boring mobile rigs, bucket trucks and cranes. Relatively flat surfaces will also be required every few spans for the cable drum truck and winch.

Each construction pad within the existing corridor will be about 25 by 30 metres. The pads will be sized, oriented and arranged to minimise benching requirements, vegetation clearing and other potential environmental impacts. Where construction pads are required within areas of Box Gum Woodland CEEC, the area of disturbance would be reduced to 18 x 15 metres in woodland areas and 25 X 15 metres in areas of the derived native grassland form of the Threatened Ecological Community (TEC).

#### ***Interim power supply***

Where required, temporary poles will be provided for existing underhung services including 400 V, 11 kV or 12.7 kV Single Wire Earth Return (SWER) circuits. This is to maintain supply during the upgrade. The old underslung services will then be strung under the new 66 kV conductors and the temporary poles removed. Where new 66 kV spans that are longer than the original are used, mid-span timber poles to support the original underhung SWER circuits may be required.

Some temporary poles may remain for those locations where it is not practical or permitted to re-attach services to the concrete poles. This will occur, for example, where existing SWER transformers are required to be re-mounted on poles.

Portable generation may be required for customers likely to have significant supply disruptions to their premises.

#### ***Old infrastructure removal***

All existing timber poles and possibly some existing concrete poles will be replaced with new concrete poles. The number of concrete poles required would be determined during detailed design. It is likely that KEPCO's contractor will use 'bucket trucks' and cranes to remove/install conductors and remove/install poles respectively. The process of removing the old infrastructure generally involves:

- Removing redundant earth wire and conductors using drum and winch trucks to wind them onto cable drums.
- Removing insulators and any other equipment on the structures.
- Removing whole timber poles (where possible) and earthing straps, typically by crane. In some instances, removal of the butts may require excavation.

- Cutting any guy anchor rods approximately 0.5 metres below ground where the land is capable of cultivation and at least 0.3 metres below ground elsewhere. The remainder of the anchor (i.e. mass concrete blocks) will remain buried, or will be excavated and removed if practicable.
- Filling holes following removal of infrastructure with excess spoil from the excavation of new holes. Where necessary, clean fill will be imported.

#### *New infrastructure construction*

- Hole-boring rigs will be used to dig the holes for the new poles. Soil excavated for the foundations will be stockpiled (with the topsoil separated) for use in rehabilitation activities.
- The pole will be lifted into position by crane and backfilled with concrete to secure its vertical position. A heavy lift by helicopter may be used in remote areas where the terrain does not permit large mobile plant or sufficient work pad areas to accommodate all work vehicles without extensive disturbance.
- Any guy wires required will be connected to a metal rod which will be embedded in a concrete foundation block installed below ground to Endeavour Energy's engineering standards. In general, construction of foundations will involve boring or excavating a hole, installing steel reinforcement and the stub leg and earthing straps, if required, followed by pouring concrete. If hard rock is encountered, rock drilling using a truck mounted air compressor, pneumatic rock hammer or controlled blasting, may be required, which will be undertaken in accordance with relevant legislation and in consultation with nearby landowners and sensitive receptors.
- Once structures have been erected, the conductors and OHEW will be strung using rollers, a bucket truck, draw wire and winch. Where required, the contractor may use a helicopter to string the longer spans across ravines and the like where it is not feasible to string from the ground.
- Fences and gates will be earthed, as required.
- Within areas of EEC or CEEC, all excess spoil would be removed from the area.

#### *Construction in the non-operational rail corridor*

Construction in the non-operational rail corridor would enable the removal from service the existing 66 kV conductors along Bylong Valley Way and Mill Street South between Henbury Avenue in Kandos and Cox Street in Rylstone. This is relatively simple compared to rebuilding the existing line in this alignment.

The line removal works on the existing 7 km long section of Feeder 839 between Kandos and Rylstone will entail:

- De-energisation and removal of the 66 kV Walnut conductors and OHEW.
- The underslung high voltage and low voltage services left in place. This is likely be achieved with 'bucket trucks' and cranes supporting the conductors as they are cut into manageable sections and lowered to the ground.

Construction of the transmission line in the non-operational rail corridor will be a relatively simple "greenfield" construction compared to the complexity, risk and community impact of attempting to rebuild the existing section of transmission line along approximately 7 km of Bylong Valley Way and Mill Street South. An electricity supply outage of the transmission line should only be required to connect the new section of line in the rail corridor to the transmission line in its existing alignment at Henbury Avenue, Kandos and north of Mill Street South in Rylstone.

## Material disposal

### *Timber poles*

The disposal of the timber poles from the existing transmission line corridors will be undertaken in line with Endeavour Energy's procedures for the disposal of redundant poles, *Waste Classification Guidelines* (EPA 2014), *Protection of the Environment Operations Act 1997* (NSW) (POEO Act) and *Protection of the Environment Operations (Waste) Regulation 2005* (NSW). All waste tracking data will be completed.

### *Spoil*

Excess spoil from backfill of excavations will be disposed of onsite or at an appropriately licensed waste facility in accordance with the assessment criteria provided in the *National Environmental Protection (Assessment of Site Contamination) Measure 1999* (NEPM) (as amended 2013) or the *Waste Classification Guidelines* (EPA 2014). All necessary licenses will be obtained, and all waste tracking data will be completed.

### *Conductors, OHEW and other redundant equipment from structures*

All conductors, OHEW and other equipment which are located on the existing structures will be returned to Endeavour Energy's nominated premises for disposal in accordance with Endeavour Energy's policies and procedures.

## Site rehabilitation

Site rehabilitation will meet the requirements of Endeavour Energy's transmission line design standards and include:

- Removing all construction waste material and debris including temporary erosion and sedimentation control devices.
- Stabilising work pads to reduce erosion.
- Restoring any fences and gates.
- Restoring construction laydown areas, compounds and vegetation (if applicable).
- Revegetation techniques such as loosening ground compacted by construction equipment, using topsoil removed from excavations, and spreading fertiliser and sterile grass seeds as required.

Disturbed areas that are required for future operation and maintenance will be left in a stable and suitable condition for long-term use.

Work sites and disturbed areas not required for future use or access will be rehabilitated as soon as possible after the completion of work on each site.

## Maintenance

Maintenance practices will be carried out by Endeavour Energy and meet the Endeavour Energy standards for 66 kV transmission lines in semi-urban and rural locations.

Once operational, the proposal will have a minimum design life of 50 years and will provide an ongoing benefit to the greater community it serves.

### **2.2 Alternatives to taking the proposed action**

Three alternative approaches have been considered during the development of the proposal. These include a 'do nothing approach', installation of underground lines and modification of the existing electricity network. The feasibility of each of these options is discussed below.



## Do nothing

The 'do nothing' option would involve not modifying the existing transmission line or power supply. This option was considered but found to be significantly flawed in that the existing wood poles would continue to deteriorate and would need to be replaced. This would jeopardise Endeavour Energy's requirement under the *Electricity Supply Act 1995* (NSW) to provide a safe and reliable electricity supply.

In addition, the electricity demands required for the project would not be met as the existing supply does not have sufficient capacity to meet the minimum electricity standards of the NER for supply whilst maintaining supply to existing customers.

## Installing underground lines

Whilst the use of underground transmission cables is technically feasible, there are a number of significant issues which include:

- Operation and maintenance are problematic as there are no 66 kV cable service crews in the region. Endeavour Energy would need to bring a cable crew from its Sydney depot, adding many hours to restoration of supplies should there be a cable fault.
- The capital costs associated with this option are prohibitive.
- Undergrounding would also have significantly greater impacts on the environment, landholders and community during the construction phase. These include significant trenching for some 67 km through townships, rural landscapes, forests, creeks and roads.
- Undergrounding of transmission lines is usually only done in cities when overhead transmission lines are not possible and then only over relatively short distances compared to the 67 km required for this proposal.

This option was not considered further because of these significant issues outlined above.

## Modification of the existing electricity network

Endeavour Energy issued a Project Definition to specify the augmentation works required for the 66 kV transmission lines (841 (Ilford TS to Kandos ZS) and 839 (Kandos ZS to Bylong ZS)), and a Project Definition specifying the augmentation works required for the two associated zone substations (Kandos ZS and Bylong ZS).

An options supply study was completed to identify other options to provide an adequate high voltage (HV) supply to the project. The 15 options identified in the report included:

- 1. Upgrading the existing 66 kV supply:
  - 1A. In accordance with existing Project Definition and three approved dispensations (i.e. the changes identified by KEPCO that Endeavour Energy has agreed too).
  - 1B. In accordance with existing Project Definition and additional dispensations
  - 1C-L. Utilising Lime conductors and the non-operational rail corridor route between Kandos and Rylstone
  - 1C-M. Utilising Mango conductor and the non-operational rail corridor route between Kandos and Rylstone
  - 1C-N Utilising Mango conductor and a section of road reserve along Henbury Avenue and Davies Road as well as 6.6 km of non-operational rail corridor between Kandos and Rylstone
- 2. Installing a second 66 kV Line from Ilford to Bylong:
  - 2A. Sharing the same corridors as the existing 66 kV lines
  - 2B. Using the existing corridor of the Kandos to Bylong 22 kV back-up line

- 2C. Using road and rail reserves with double circuit sections with existing line
- 3. Installing a new line from Mudgee to Bylong:
  - 3A. A 132 kV transmission line from TransGrid's line at Mudgee using Ulan and Wollar Road reserves
  - 3B. A 66 kV transmission line from Essential Energy's line at Mudgee using Ulan and Wollar Road reserves
- 4. Replacing the Bylong ZS:
  - 4A. With a new 66/22 kV substation nearby and 22 kV supply to the project
  - 4B. With a new 66/22 kV substation at the project
- 5. A hybrid option – Utilising the existing line with on-site generation:
  - 5A. Using the existing 66 kV supply with on-site generation in Stage 1 of the project i.e. the open-cut mine operation
  - 5B. Use Existing 66 kV Supply with on-site generation in Stage 2 of the project i.e. the underground mine operation
- 6. Installing an off-grid coal-fired power station at the project.

### *Initial analysis*

The initial analysis applying an "issues/resolution" methodology identified seven options with fatal flaws due to technical or schedule factors. The following options were not considered further:

- Option 2A: This option required the corridors to be widened because a second line could not be built within the existing line corridors. It is highly unlikely that approval for the expanded corridors could be obtained for the length of the line where necessary in road reserves and by negotiation with existing landowners.
- Option 2B: This option required the removal of the existing 22 kV line to make way for a second 66 kV line which would require a new corridor for construction of a new 22 kV line and as such, is self-defeating.
- Option 2C: There is insufficient room available in some road reserves to install a double circuit 66 kV line, as well as difficulties in obtaining corridors adjacent to the road and technical issues.
- Option 3A: There is insufficient time for obtaining planning and environmental approval and implementing the design for this option.
- Option 3B: There is insufficient capacity in the TransGrid transmission network for implementation, as well as the requirement to use Mudgee's backup power supply and insufficient clearance in Wollar Road reserve.
- Option 5B: Excessive network losses and large capacitive support requirements ruled this option out.
- Option 6: There is insufficient time for implementation and an unlikelihood of receiving environmental planning approval because of higher CO<sub>2</sub> emissions intensity.

### *Secondary analysis*

Of the remaining seven options:

- Options 4A and 4B did not meet the objective of providing sufficient capacity unless they were combined with another option at considerable cost to both options. These options were not cost effective and no further analysis was carried out on these two options.
- The initial "issues/resolution" analysis carried out on Option 1B identified design elements likely to be unacceptable to Endeavour Energy. Option 1C was considered a variation of Option 1B. Given this, Option 1B was not developed further.

### *Tertiary analysis*

Details of the remaining four options (1A, 1C-M, 1C-L and 5A) are as follows:

- Option 1A involves replacing all existing timber poles with concrete poles on the two 66 kV Feeders 841 and 839. The remaining 10 km of Banana conductors on 841 and the Walnut conductors on 839 would be replaced with the high capacity, all-aluminium Uranus conductors and an OHEW is to be strung for the entire route.
- Option 1C-M involves upgrading the network as identified in Option 1A but uses the steel-reinforced Mango conductors rather than the larger Uranus conductors. In addition, a non-operational rail corridor between Kandos and Rylstone would be used to bypass a section of Feeder 839 along the Bylong Valley Way that has multiple services attached to most timber poles. These other services include 11 kV and 400 V power lines and lights which must be removed and restored in the upgrade of the line in Option 1A.
- Option 1C-L is the same as Option 1C-M except that the lower capacity, steel-reinforced Lime conductors would be used instead of the higher capacity Mango conductors.
- Option 5A uses the existing network (except for the replacement of the existing Banana conductors with Lime conductors on Feeder 841) supplemented by diesel generation at the Bylong Coal Project site to prevent overloading the low capacity Feeder 839 and to help reduce the high line losses.

Load flow studies and cost estimation (including a sensitivity analysis) at the concept level were completed for these four options. Results concluded:

- Option 1A has the highest capital expenditure (CAPEX) estimate but lowest operating expenditure (OPEX) estimate because the use of Uranus conductors results in the lowest line losses.
- Option 1C-M has a slightly higher CAPEX estimate than Option 1C-L because of the use of larger conductors. However, its OPEX estimate is lower than that of Option 1C-L line because its line losses are lower.
- Option 5A has the lowest CAPEX estimate but the highest OPEX estimate due to the high cost of diesel fuel and the very high line losses which are about ten times that of Option 1A.
- Option 1C-M has the lowest present value cost and levelised cost of electricity (LCOE) of the four options.

### **Preferred option (the proposal)**

The preferred option is Option 1C-N (Utilising a Mango conductor and a section of road reserve along Henbury Avenue and Davies Road, Kandos as well as 6.6 km of non-operational rail corridor between Kandos and Rylstone) because:

- It has resulted in a substantial reduction to the impacts on Box Gum Woodland EEC from 6.3 ha (using the 7km non-operational rail corridor) to 2.84 ha (utilising 6.6km of the non-operational rail corridor and the road reserves of Henbury Avenue and Davies Road).
- It would avoid the disturbance of Capertee Stringybark individuals.
- The network losses are about halfway between those of Option 1A (the lowest) and Option 1C-L.
- The network can be operated at lagging power factor (between 0.98 and 1) at all substation busses except at Bylong ZS and the mine substation at the maximum demand of 21 Megawatts.
- It has lower construction risk than Option 1A because it avoids the high risk of schedule delays in rebuilding the section of Feeder 839 between Kandos and Rylstone.

- It would have reduced construction traffic impacts along Bylong Valley Way and Mill Street South between Kandos and Rylstone compared to the alternative option to replace the existing section of transmission line in this area.
- Mango conductors are closer in performance to the Uranus conductors originally specified by Endeavour Energy in its Project Definition than Lime conductors.
- Sensitivity analysis indicated that it is a robust option in that the present value cost analysis shows Option 1C-M retains the lowest present value cost.
- Sensitivity analysis also indicated that for Option 1A to have a lower present value cost estimate than Option 1C-M, significant and unrealistic CAPEX reduction is required.
- It has the lowest present value cost at the concept level and accordingly the lowest LCOE over the 23 years of modelled mine life.
- It has the second lowest CAPEX of the three network-alone upgrades.

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

Within the preferred option, three route options have been investigated for the 7 km transmission line alignment between Kandos and Rylstone. These include:

- Utilising the existing alignment along Bylong Valley Way and Mill Street South.
- Installing the transmission line along 7 km of a non-operational rail corridor to bypass the existing alignment along Bylong Valley Way and Mill Street South.
- Installing the transmission line along Henbury Avenue (250m) and Davies Road (400m) reserves and 6.6 km of a non-operational rail corridor to bypass the existing alignment along Bylong Valley Way and Mill Street South.

The preferred option for the proposal and the option that is the subject of this referral is to install the transmission line within the road reserve along Henbury Avenue and Davies Road and within the 6.6 km of a non-operational rail corridor between Kandos and Rylstone.

Utilising the Henbury Avenue and Davies Road reserve and 6.6 km of a non-operational rail corridor has advantages in terms of reduced disruptions to power supply, avoidance of construction of the transmission line in congested areas (in terms of traffic, noise etc.) and reduced costs for installation and maintenance. This is because the existing poles for the transmission line also carry a number of other services including 11 kV and 400 V distribution lines and street lighting. Rebuilding this section of line in its existing alignment would mean that these services would need to be relocated onto temporary poles in a congested road reserve while the transmission line poles and conductors are replaced. The distribution lines and street lighting will then need to be restored on the new transmission line poles and the temporary poles removed. Additional permanent wood poles would likely be needed for any existing services that cannot be relocated onto concrete poles for technical reasons.

Thus the use of the existing alignment between Kandos and Rylstone is not considered prudent as it has significantly higher technical complexity and hence risk; it has a greater impact on the community due to the additional works required over a longer period; it requires more electricity supply outages to Endeavour Energy's customers; it involves greater disruptions to the community and motorists wishing to use the Bylong Valley Way, the main arterial road between Rylstone and Kandos; and there are greater safety issues due to the technical complexity of the upgrade and the requirements for extensive traffic management.

The proposed rerouting of this 7 km section of line along the Henbury Avenue and Davies Road reserves and within the non-operational rail corridor significantly reduces the community impact, reduces the visual impact for a greater number of community residents and travellers, and reduces safety issues while minimising impacts on Box Gum Woodland CEEC.

## **2.4 Context, planning framework and state/local government requirements**

Under Clause 41(1) of the ISEPP, development for the purpose of an electricity transmission or distribution network may be carried out by or on behalf of an electricity supply authority or public authority without development consent on any land (excepting land reserved under the NP&W Act).

The proposal includes the reconstruction of two above ground electricity transmission line and will be undertaken on behalf of Endeavour Energy which is an electricity supply authority and a public authority. The proposal is therefore permissible without development consent under this clause and Endeavour Energy, as the determining authority, must assess the proposal in accordance with Part 5 of the EP&A Act. A Review of Environmental Factors (REF) is currently being prepared to provide the required environmental assessment to meet the requirements of Part 5 of the EP&A Act.

Under Part 5 of the EP&A Act, Endeavour Energy is the determining authority for the proposal and is required to:

- (a) examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposal (Section 111 of the EP&A Act); and
- (b) if the proposal is likely to significantly affect the environment (including critical habitat) or threatened species, populations or ecological communities (or their habitats), obtain and consider an Environmental Impact Statement for the proposal (Section 112 of the EP&A Act).

## **2.5 Environmental impact assessments under Commonwealth, state or territory legislation**

As described in Section 2.4, an REF is currently being prepared for the proposal in accordance with Part 5 of the EP&A Act and Part 14 of the *Environmental Planning and Assessment Regulation 2000* (NSW).

Endeavour Energy will be the 'determining authority' for the purposes of Part 5 of the EP&A Act and will assess the REF.

The purpose of the REF is to meet the requirements of Part 5 of the EP&A Act. It will provide an environmental assessment that examines and takes into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposal and will provide an assessment of whether the proposal is likely have a significant effect on the environment (including critical habitat) or threatened species, populations or ecological communities, or their habitats.

## **2.6 Public consultation (including with Indigenous stakeholders)**

Consultation regarding the proposal has been undertaken with relevant stakeholders including potentially impacted landholders, Mid-Western Regional Council and government agencies during the preparation of the REF.

A total of 158 residents and businesses adjacent to the corridor were notified in February 2014 by KEPCO's former project manager (Cockatoo Coal) of the intent to access Endeavour Energy's power line corridor over or adjacent to the resident's property to undertake environmental assessments. Residents were also notified of the proposal at this time. Feedback from respondents to the letter mainly related to the size of the poles (relating to visual impact), configuration of the poles and conductors and transmission line alignment.

Individual landholders were contacted in late 2015 and early 2016 to arrange access for specific environmental investigations. In March 2016, all 58 private landholders that would be directly impacted by the proposed works were issued with a letter from Endeavour Energy introducing Worley Parsons as acting on behalf of KEPCO in the context of the contestable works project (i.e. the part of the works being carried out by KEPCO on behalf of Endeavour Energy).

Key service providers in the towns of Kandos and Rylstone also received the introductory letter and have been personally updated on the project's status and proposed scope. Further landholder engagement (face to face meetings) is currently taking place in relation to land access agreements with directly impacted landholders.

An Aboriginal Heritage Due Diligence Assessment has recently been completed as part of the REF for the proposal. Initial assessments indicate that as the proposal is unlikely to impact Aboriginal cultural heritage, consultation with the Aboriginal Community was not required under the NSW *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010).

The following government agencies were also consulted with in regard to the proposal, as detailed further in the REF:

- Mid-Western Regional Council
- NSW Office of Environment and Heritage
- NSW Environmental Protection Authority
- NSW Department of Primary Industries – Water
- NSW Department of Primary Industries - Fisheries
- NSW Department of Primary Industries - Lands
- NSW Roads and Maritime Services
- Forestry Corporation of NSW
- NSW Department of Planning & Environment.

#### **2.7 A staged development or component of a larger project**

The proposal is undertaken by KEPCO on behalf of Endeavour Energy.

The proposal will provide an electricity supply for the project and will be constructed (on behalf of Endeavour Energy) and funded by KEPCO.

As described above, the proposal is permissible with consent under Part 5 of the EP&A Act, whereby Endeavour Energy will be the "determining authority". The proposal is therefore subject to a separate environmental assessment and approval process to the project which is being assessed under Division 4.1 of Part 4 of the EP&A Act.

Further, the following should be noted:

- The proponent is Endeavour Energy. KEPCO is undertaking the proposal on behalf of Endeavour Energy (i.e. contestable works).
- The asset the subject of the proposal (once completed) will be the asset of and managed by Endeavour Energy (not KEPCO).
- The life of the proposal is for a much longer time period (i.e. at least 50 years) than the separate and standalone project (i.e. 25 years).
- The proposed action will provide broader benefits to the greater community including improved performance and reliability for all residents and businesses connected to the network.
- The proposed action will provide improved safety for the greater community by upgrading the transmission lines to better control voltage and add an OHEW to help protect the lines from lightning strikes.

Therefore, the proposal is a separate and standalone action from the project.

## 3 Description of environment & likely impacts

### 3.1 Matters of national environmental significance

Potential impacts of the proposal on matters of national environmental significance (MNES) listed under the EPBC Act are described in the following sections. The following information is summarised from the Flora and Fauna Impact Assessment prepared for the proposal (GHD 2015b). For more information, including detailed methodology, please refer to this document (included as Attachment 7).

In terms of identifying relevant EPBC Act listed MNES, the Flora and Fauna Impact Assessment relied on information obtained using the Protected Matters Search Tool (5 August 2015 (DotE 2015a, Attachment 7) and field surveys undertaken within the proposal site (between 3-7 March 2014 and 7-9 October 2015).

The following terms are used in the sections below:

- 'Proposal' refers to the proposed upgrade of the Ilford to Bylong 66 kV Transmission Line as described in section 2.1
- The 'proposal site' refers to the disturbance area where construction would occur at each of the structure (pole) locations (both removal and installation), within the preferred alignment.
- The 'study area' encompasses the proposal site and the surrounding area that may be indirectly impacted by the proposal. It includes the proposal site and adjacent areas of private land and generally included a 100 metre buffer surrounding the proposal site.
- The 'locality' is the area within a 10 kilometre radius of the proposal site.

### **3.1 (a) World Heritage Properties**

#### **Description**

The Greater Blue Mountains World Heritage occurs within the locality. At its closet point, near the intersection of Bylong Valley Way and Growee Road, the World Heritage Area is located about 250 metres to the east of the proposal (DotE 2015a). The location of the Greater Blue Mountains World Heritage in relation to the proposal site is shown in Figure 2 (Attachment 2).

#### **Nature and extent of likely impact**

The proposal will not result in any direct or indirect impacts on the Greater Blue Mountains World Heritage area or any other World Heritage Properties (GHD, 2016) (see Attachment 7)

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### **3.1 (b) National Heritage Places**

#### **Description**

The Greater Blue Mountains National Heritage Area (GBMWhA) occurs within the locality. At its closet point, near the intersection of Bylong Valley Way and Growee Road, the National Heritage Area is located about 250 metres to the east of the proposal (DotE 2015a). The location of the Greater Blue Mountains World Heritage in relation to the proposal site is shown in Figure 2 (Attachment 2).

#### **Nature and extent of likely impact**

The proposal will not result in any direct or indirect impacts on the Greater Blue Mountains World Heritage area or any other Natural Heritage Properties (GHD, 2016) (see Attachment 7).

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

#### **Description**

The protected matters search completed for the proposal (DotE 2015a) identifies the Hunter Estuary Wetlands, a listed Wetland of International Importance, as being downstream of the proposal. This wetland is located over 150 kilometres south east from the proposal.

#### **Nature and extent of likely impact**

The proposal will not result in any direct or indirect impacts on the Hunter Estuary Wetlands or any other Wetland of International Importance.

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### 3.1 (d) Listed threatened species and ecological communities

#### Description

##### *Overview*

Flora and Fauna surveys were undertaken by GHD for the proposal that included the proposal site and surrounding area.

Field surveys of the existing alignment were conducted by two GHD ecologists from 3 to 7 March 2014. A follow-up survey was conducted by two GHD ecologists from 7 to 9 October 2015 to assess the non-operational rail corridor between Kandos and Rylstone, as part of the preferred option. Field surveys comprised rapid assessments of vegetation types and fauna habitats along the corridor, with more detailed surveys completed in areas of native vegetation.

A second survey of the non-operational rail corridor as well as a section of Davies Road, Kandos was completed by two ecologists accompanied by design engineers from Worley Parsons on 2 to 3 March 2016. The purpose of this survey was to refine vegetation mapping for the area and to record in GPS, locations for the proposed power poles that would minimise the impacts on Box Gum Woodland EEC that occurs within the rail corridor.

Key information in the following sections is summarised from the Flora and Fauna Impact Assessment prepared for the proposal (GHD 2015b; Attachment 7).

A desktop assessment was undertaken for the proposal to identify MNES known or with the potential to occur within the locality (defined as the area within a 10 km radius of the proposal site). This included reviewing records of threatened species contained in the NSW Office of Environment and Heritage (OEH) Wildlife Atlas (OEH 2015a), PlantNet (RBG 2015) and the results of an online protected matters search (DotE 2015a, Attachment 7).

Results of the desktop assessment identified four TEC's, 21 flora species and 21 fauna species listed as threatened under the EPBC Act that are known or predicted to occur in the locality.

Of the threatened biota identified in the database searches, one threatened ecological community (Box Gum Woodland) and one threatened fauna species, Large-eared Pied Bat (*Chalinolobus dwyeri*) was recorded within the proposal site. One additional species, Spotted-tailed Quoll (*Dasyurus maculatus maculatus*) has also been previously recorded adjacent to the existing alignment by a landowner (GHD 2015b; Attachment 7). A further five threatened fauna species were considered to have a moderate likelihood of occurring within the proposal site, based on the presence of suitable habitat (refer to **Table 3**).

##### *Threatened ecological communities*

One vegetation community commensurate with the definition of White Box Yellow Box Blakely's Red Gum grassy woodland and derived native grassland (Box Gum Woodland) was recorded within the proposal site. This community is listed as a CEEC under the EPBC Act.

Due to the presence of White Box (*Eucalyptus albens*), Yellow Box (*Eucalyptus melliodora*) and/or Blakely's Red Gum (*Eucalyptus blakelyi*), a predominantly native understorey and high diversity of native herb species, three of the Plant Community Types (PCTs) within the study area comply with the classification criteria for the Box-Gum Woodland CEEC. Areas of Box Gum Woodland threatened ecological community are shown on Figure 4 (Attachment 4) and include a large portion of the rail corridor. Plant communities within the study area that are commensurate with Box Gum Woodland include Blakely's Red Gum – White Box – Yellow Box – Black Cypress Pine box grass/shrub woodland (PCT 282), Yellow Box – Rough-barked Apple grassy woodland (PCT 1693) and White Box – Blackthorn shrubby woodland (PCT 1587).

Approximately 2.84 hectares of native vegetation commensurate with various forms and condition classes of Box Gum Woodland as defined by Threatened Species Scientific Committee occurs within the proposal site (TSSC 2006). The proposal would involve the modification of up to 2.54 hectares of the woodland form of Box Gum Woodland, through the removal of canopy trees and shrubs over 3 metres in height within the Kandos to Rylstone rail corridor. This clearing of canopy trees would be required to establish the minimum 18 metre clearing safety requirements for the new corridor. Box Gum Woodland along the rail corridor is dominated by *Eucalyptus blakelyi* (Blakely's Red Gum) with occasional *Eucalyptus melliodora* (Yellow Box). The shrub layer is relatively sparse and dominated by *Acacia buxifolia* (Buxton Wattle), *Bursaria spinosa* (Sweet Bursaria), *Pultenaea microphylla* (Spreading Bush-Pea), *Lissanthe strigosa* (Peach Heath), *Hibbertia obtusifolia* (Hoary Guinea Flower) and *Daviesia ulicifolia* (Gorse Bitter Pea). The ground layer consists of a diverse mixture of native herbs and grasses. Common species include *Themeda australis* (Kangaroo Grass), *Aristida vagans* (Three Awned Grass), *Stackhousia monogyna* (Creamy Candles), *Lomandra multiflora* (Many-flowered Mat-rush), *Hypericum graminea* (Small St John's Wort), *Chrysocephalum apiculatum* (Common Everlasting), *Calotis cuneifolia* (Purple Burr-daisy), *Leucochrysum albicans* var. *albicans*, *Craspedia variabilis* (Common Billy Buttons) and *Vittadinia cuneata* (Fuzzweed). This vegetation is in good condition although there are a number of exotic species present.

The works would not involve the total removal of Box Gum Woodland vegetation and the community would persist in a modified state as the derived grassland form of this community beneath the transmission lines.

Within the existing alignment patches, of Box Gum Woodland have been previously cleared and beneath the transmission line easement and are routinely slashed as part of the Endeavour Energy maintenance programme. Within these areas the community occurs as a derived grassland and is dominated by small shrubs, grasses and herbs. There are also areas within the Kandos to Rylstone rail corridor that have had the canopy layer removed and as a result the Box Gum Woodland persist in a grassland form (refer to Figure 4-1). Common species within the derived grassland form of this community include *Themeda australis* (Kangaroo Grass), *Dianella revoluta* (Blue-flax Lily), *Chrysocephalum apiculatum* (Common Everlasting), *Calotis cuneifolia* (Purple Burr-daisy), *Calocephalus solanderi* (Pale Beauty-heads), *Lomandra multiflora* (Many-headed Flax Lily), *Lissanthe strigosa* (Peach heath), *Bossiaea obcordata*, *Acaena ovina* (Bidgee-widgee), *Carex inversa*, *Hibbertia monogyna*, *Aristida vagans* (Three Awn Spear Grass), *Aristida ramosa* (Purple Wiregrass), *Tricoryne elatior* (Yellow Rush-lily), *Burchardia umbellata* (Milkmaids), *Goodenia hederacea* (Ivy Goodenia), *Stackhousia monogyna* (Creamy Candles) and *Panicum effusum* (Hairy Panic). Although this vegetation is disturbed it meets the EPBC condition threshold for Box Gum Woodland as it has a predominately native understorey, is greater than 0.1 hectares in size and includes 12 or more native understorey species (excluding grasses) including at least one important species.

The proposal would result in the removal and/or temporary disturbance of up to 0.30 hectares of the derived grassland form of this community.

Along the remainder of the alignment two small patches of Box Gum Woodland are present in a derived grassland form, having had their overstorey and midstorey removed due to the construction and maintenance of the existing transmission easement. The derived grassland form of Box Gum Woodland within the proposal site includes a mixture of low shrubs over a herb rich, native grassland.

The proposal also has the potential to modify the composition of the ecological community through the introduction or spread of weeds. Earthworks and general disturbance from machinery and vehicles and the removal of canopy trees may also create conditions conducive to weed establishment.

Weed control measures such as chemical and manual removal of noxious weed species and measures to ensure vehicle and machinery hygiene would be implemented during construction and operation of the proposal to minimise the potential for the introduction or spread of invasive weeds.

#### ***Threatened flora species***

No threatened flora species listed under the EPBC Act were recorded or are considered likely to occur within the proposal site (refer to Appendix A of Attachment 7).

#### ***Threatened fauna species***

One threatened fauna species listed under the EPBC Act was recorded within the study area during field surveys. The cave-roosting Large-eared Pied Bat, a threatened species listed under both the TSC Act and the EPBC Act, was recorded in forest at the top of the range above the Bylong Valley near the Blue Mountains World Heritage area. Large rocky outcrops are present throughout this area, providing potential roosting habitat for this species, none of this habitat however would be impacted by the proposal. This species was also recorded in a small patch of woodland along the rail corridor. This small patch is mainly surrounded by cleared agricultural land, and only has limited connectivity to more suitable foraging habitat. This species is known to roost in Fairy Martin nests, which occur frequently in culverts and tunnels under this rail corridor.

In addition to Large-eared Pied Bat there is potential habitat for seven additional fauna species listed as threatened under the EPBC Act within the proposal site. These species are listed in **Table 3**.

Large rock outcrops with associated woodland are present along parts of the corridor, particularly north of Rylstone. These contain crevices and overhangs, and would provide den habitat for the Spotted-tailed Quoll (*Dasyurus maculatus maculatus*). This species has been recorded adjacent to the proposal site by a local landowner. No habitat for Spotted-tailed Quoll would be impacted by the proposal.

Rocky escarpments provide potential shelter and breeding habitat for the Brush-tailed Rock-wallaby and the Broad-headed Snake. Minimal habitat for these species occurs within the proposal site and as such these species are unlikely to be impacted by the proposal.

Woodland habitat within the proposal site may provide potential foraging habitat for the Koala, Regent Honeyeater, Swift Parrot and Grey-headed Flying-fox. Habitat in the rail corridor is restricted in area and mainly surrounded by cleared agricultural land with only limited connectivity. Higher quality habitat for these species is present elsewhere in the locality. There are no records of the Koala within 10 km of the rail corridor in the last twenty years (OEH 2015a) and the habitat at this location is not considered 'habitat critical to the survival of the Koala' due to the limited connectivity and limited recovery value in this area. Potential habitat at this location is mainly surrounded by cleared agricultural land.

Similarly, the potential foraging habitat for the Regent Honeyeater, Swift Parrot and Grey-headed Flying-fox is considered to be low quality due to the small area, surrounding mostly-cleared agricultural land, and presence of better quality foraging habitat elsewhere in the locality.

**Table 3 Threatened fauna known or with the potential to occur within the proposal site**

Scientific name	Common name	EPBC Act Status	Likelihood of occurrence within the study area
<i>Anthochaera phrygia</i> (syn. <i>Xanthomyza phrygia</i> )	Regent Honeyeater	EM	Likely. Potential foraging habitat present in woodland in the proposal site
<i>Lathamus discolor</i>	Swift Parrot	E	Moderate – potential foraging present in woodland in the proposal site
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	Known – Recorded within rail corridor and along existing easement
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	Likely. Potential foraging habitat present in woodland in the proposal site
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll (southern subspecies)	E	High – potential habitat recorded in the study area and landowner recorded species adjacent to project corridor.
<i>Phascolarctos cinereus</i>	Koala	V	Low – potential low quality habitat recorded along the rail corridor
<i>Petrogale penicillata</i>	Brush-tailed Rock Wallaby	V	Possible - Potential foraging and breeding habitat present in rocky escarpments in the study area. Very limited area of potential habitat present in the proposal site.
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	V	Possible - Could forage and breed in rocky areas in the study area. Very limited area of potential habitat present in the study area.

## **Nature and extent of likely impact**

### **Construction impacts**

The construction footprint along the existing alignment will include disturbance to areas of approximately 25 by 30 metres around the base of each pole. While it has been assumed that the entire 25 by 30 metres within each of these works areas would be disturbed this is a conservative approach. It is likely that the impacts would be substantially less and this area would be used only for a short period for parking (where parking on the access tracks is not available), storage of poles, spoil storage, and work benches for cranes, pole mounting machinery and post borers.

Where there is woodland vegetation within the rail corridor, the canopy layer and understorey shrubs greater than 3 metres high would be permanently removed along an 18 metre wide by 15 metre long corridor in order to comply with Endeavour Energy safety standards. In areas of derived grassland impacts would be limited to the temporary disturbance of the ground storey within a 25 by 15 metre radius around each new pole and in areas of exotic vegetation impacts would include the disturbance of a 25 by 30 metre patch around each pole.

The majority of the proposal would result in the disturbance of exotic grassland within the existing corridor. Given the already cleared nature of the corridor, potential impacts on native biodiversity values would be limited. The main potential impacts of the proposal would be clearing and temporary disturbance of modified native vegetation where this occurs within the proposal footprint.

Along the existing alignment, existing access tracks that are currently used by Endeavour Energy for maintenance of the transmission line would be used to access pole locations during construction and for ongoing maintenance. Some of these tracks may require some minor trimming of overhanging vegetation and branches. Where works are required on private land, alternate existing access tracks may be utilised as requested by the landowner. Any such tracks would already be formed, cleared of vegetation and used informally by the landowner.

Along the non-operational rail corridor, the construction area would be accessed via Boronia Road (to the west of the rail corridor) and then onto an existing access tracks. Along the Davies Road and Henbury Avenue Road reserves, it is anticipated that only minor trimming of overhanging vegetation and branches would be required, with no impact to Box Gum Woodland CEEC occurring in these areas (see Figure 5, Attachment 5).

A total of approximately 31 hectares would be disturbed by the proposal including 7.18 hectares of native vegetation (comprised of 4.52 hectares of modified native vegetation and 2.66 hectares of woodland vegetation).

### **Impacts on Box Gum Woodland CEEC**

The proposal would result in the removal of canopy trees and large shrubs from approximately 2.54 hectares of the woodland form of Box Gum Woodland CEEC. All of this vegetation occurs within the 6.6 km non-operational rail corridor section of the alignment. Impacts would also include disturbance of up to 0.3 hectares of the derived grassland form of this community. As discussed above impacts to areas of derived grassland would be restricted a maximum disturbance area of 25 by 15 metres around the base of each proposed pole location. The majority of impact to areas of derived grassland is likely to be temporary in nature other than the immediate site where poles will be located as understorey and groundcover vegetation would be allowed to regenerate in disturbed areas following construction activities.

An Assessment of Significance has been undertaken having regard to the significant impact criteria contained in the EPBC Act Significant Impact Guidelines (DotE 2013) has been prepared for the Box Gum Woodland CEEC and is provided as Attachment 7.

This Assessment of Significance concluded that the proposal is unlikely to have a significant impact on this community as:

- It would not result in the total removal of the community but rather the modification of a small area (2.54 hectares) from the woodland form of this community to the derived grassland form as well the temporary disturbance of 0.3 hectares of the derived grassland form of the community. This represents only a very small reduction/modification to the extent of the community compared to the local occurrence.
- It would not result in any substantial further fragmentation and/or isolation of any patches of the community beyond what already exists along the transmission line easement.
- It would not cause a substantial reduction in the extent, quality or integrity of an occurrence of the community
- It would not modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for the community's survival
- It would not adversely affect habitat critical to the survival of a species

The area to be impacted is relatively small compared to the extent in the locality and as such would be unlikely to interfere with the recovery of the community.

### **Impacts on threatened species**

Vegetation to be removed as a result of the proposal would include known or potential habitat for EPBC Act listed threatened fauna species identified in **Table 3**. The proposal would also potentially have indirect impacts on adjoining areas of potential habitat through increases in noise and vibration, dust generation, sedimentation and erosion, weed invasion and changes to surface and groundwater flows.

Along the rail corridor section of the proposal 2.54 hectares of Box Gum Woodland CEEC woodland vegetation would be impacted where this occurs as a linear strip along approximately 4 kilometres of the rail corridor. Approximately 0.12 hectares of other native woodland may also be impacted as a result of minor trimming of overhanging vegetation and branches. Within the remainder of the proposed alignment there would also be temporary disturbance of 4.52 hectares of native vegetation and 24.01 hectares of cleared land consisting of non-native grassland that also provides habitat for some threatened fauna species. Only two hollow-bearing trees are likely to be removed from these areas. The impacts of the proposal would be minor for most fauna species.

While 2.54 hectares of Box Gum Woodland CEEC canopy would be removed, it is located mainly as a linear strip within mostly cleared agricultural land, provides limited connectivity, and lacks hollow-bearing trees. Shrub and groundcover would be retained or would regenerate in the long-term, and would thus continue to provide habitat for some fauna.

The proposal would remove 2.66 hectares of woodland vegetation that is potential habitat for two EPBC listed Fauna species (being Regent Honeyeater and Swift Parrot) and known habitat for the EPBC listed Large-eared Pied Bat.

No roosting habitat for the Large-eared Pied Bat would be removed. The proposal would require the removal of 2.66 hectares of potential foraging habitat (mainly Box Gum Woodland) for this species. The majority of vegetation to be removed is highly fragmented, occurring as a linear strip along an existing disused rail line, and surrounded by mostly cleared agricultural land. This is not considered preferred habitat for the species as it is not fertile woodland near sandstone escarpments.

The majority of good quality habitat for the species in the study area is located in the rocky escarpment areas near Growee. There would be limited impacts on vegetation near sandstone escarpments. Upgrade of the transmission line could temporarily disturb breeding sites (if present) during construction through noise and vibration. These temporary impacts would only occur if breeding was occurring near the study area at the time of construction. Similarly, construction could temporarily disturb roost sites along the rail corridor if the species is roosting at the time of construction. An assessment of significance has been prepared for this species and is provided in Attachment 7. This assessment concluded that the proposal is unlikely to have a significant impact on this species (refer to Attachment 7).

No breeding habitat for the Regent Honeyeater would be impacted by the proposal. The Swift Parrot does not breed in NSW. Increase in the width of the proposal corridor would have a limited impact on connectivity for these species, given the width of the existing corridor and the small length of the corridor that would be widened. Assessments of significance have been prepared for these species given their endangered and critically endangered status, and the presence of the Capertee Valley near the proposal (refer to Attachment 7). These assessments conclude that the proposal is unlikely to have a significant impact on any of these species.

Low quality foraging habitat for the Grey-headed Flying-fox would be removed along the rail corridor. Only limited impacts on foraging habitat would occur elsewhere in the locality. Habitat to be removed is not likely to be critical to the survival of the species, given its fragmented nature, small area and lack of nearby breeding colonies. The proposal would not fragment habitat for this species. Low quality habitat for the Koala would be removed along the rail corridor.

There are no records of this species within 10 km of the rail corridor in the last twenty years (OEH 2015a) and the habitat at this location is not considered 'habitat critical to the survival of the Koala'. There would be minimal disturbance of rocky outcrops, and no potential denning or shelter habitat for the Brush-tailed Rock-wallaby, Spotted-tailed Quoll and Broad-headed Snake would be removed. Given the minimal impacts on these species, no assessments of significance are considered necessary. The proposal is unlikely to have a significant impact on any fauna species listed under the EPBC Act that are known or likely to occur in the proposal footprint. No assessments of significance have been prepared for these species.

The potential for impacts on the threatened species identified as known or potentially occurring within the proposal corridor is summarised in Table 4.

Mitigation measures to address impacts on adjoining retained vegetation and wildlife movements are discussed in detail below and would be incorporated into the Construction Environmental Management Plan (CEMP) for the proposal.

Table 4 Potential for significant impacts on threatened fauna listed under the EPBC Act

Scientific name	Common name	EPBC Act status	Nature of impacts and outcome of significance assessment
<i>Anthochaera phrygia</i> (syn. <i>Xanthomyza phrygia</i> )	Regent Honeyeater	EM	<p>Proposal would remove canopy trees within a 2.54 hectare area along the rail corridor between Kandos and Rylstone As well as a small area (0.12 ha) adjacent to existing access tracks in the north of the proposal site which require minor trimming of overhanging vegetation and branches</p> <p>Impacts on breeding habitat for the Regent Honeyeater are unlikely. Known breeding habitat is located 20 km from the proposal and would not be directly impacted. There would be limited impact on connectivity for this species as the proposal would only remove a small area of vegetation that is not</p>

			<p>connected to other significant areas of habitat for this species.</p> <p>No impacts to any known habitat or individuals.</p> <p>The proposal is unlikely to have a significant impact on this species.</p>
<i>Lathamus discolor</i>	Swift Parrot	E	<p>The proposal would remove canopy trees within a 2.54 hectare area along the rail corridor between Kandos and Rylstone. As well as a small area (0.12 ha) adjacent to existing access tracks in the north of the proposal site which require minor trimming of overhanging vegetation and branches.</p> <p>The proposal would not impact on breeding habitat for Swift Parrot as this species breeds only in Tasmania and migrates to the mainland of Australia in Autumn.</p> <p>There would be limited impact on connectivity for this species as the proposal would only remove a small area of vegetation that is not connected to other significant areas of habitat for this species.</p> <p>No impacts to any known habitat or individuals.</p> <p>The proposal is unlikely to have a significant impact on this species.</p>
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	<p>The proposal would remove canopy trees within a 2.54 hectare area along the rail corridor. As well as a small area (0.12 ha) adjacent to existing access tracks in the north of the proposal site which require minor trimming of overhanging vegetation and branches.</p> <p>Up to 4.6 ha of modified shrub and ground layer (foraging habitat) would also be temporarily disturbed. This is not considered preferred habitat as this species usually forages over large expanses of woodland habitat. Habitat to be removed has limited connectivity to other areas of native woodland vegetation.</p> <p>Species would continue to forage along corridor following construction.</p> <p>Minimal disturbance of potential roost sites in rocky outcrops. Some disturbance during construction of potential roost sites in culverts along the rail corridor.</p> <p>The proposal is unlikely to have a significant impact on this species.</p>
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	<p>The proposal would remove canopy trees within a 2.54 hectare area along the rail corridor between Kandos and Rylstone. As well as a small area (0.12 ha) adjacent to existing access tracks in the north of the proposal site which require minor trimming of overhanging vegetation and branches.</p> <p>The proposal would not impact on breeding habitat. No breeding camps are known from the area.</p> <p>There would be limited impact on connectivity for this species as the proposal would only remove a</p>



			<p>small area of vegetation that is not connected to other significant areas of habitat for this species.</p> <p>No impacts to any known habitat or individuals.</p> <p>Given that no breeding habitat for this species would be removed, and only limited areas of foraging habitat may be temporarily disturbed, no assessment of significance is considered necessary for this species.</p>
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll (southern subspecies)	E	<p>The proposal would remove canopy trees within a 2.54 hectare area along the rail corridor. As well as a small area (0.12 ha) adjacent to existing access tracks in the north of the proposal site which require minor trimming of overhanging vegetation and branches.</p> <p>Vegetation in the rail corridor is unlikely to be utilised by the species as it is surrounded by cleared agricultural land and has limited connectivity. There is a low likelihood that this species would be impacted along the remainder of the alignment as the proposal would remove only small linear patches of vegetation from along the existing easement.</p> <p>There may be some temporary disturbance at rocky escarpments as a result of noise and vibration. However, this is not likely to be significant.</p> <p>No potential den sites in rocky outcrops would be removed and there would be limited impact on connectivity for this species.</p> <p>Given that no den habitat for this species would be removed, and only limited areas may be temporarily disturbed, no assessment of significance is considered necessary.</p> <p>The proposal is unlikely to have a significant impact on this species.</p>
<i>Phascolarctos cinereus</i>	Koala	V	<p>The proposal would remove canopy trees within a 2.54 hectare area along the rail corridor. There are no records of the Koala within 10 km of Kandos or Rylstone (OEH 2015a). Vegetation in the proposal area would not comprise 'habitat critical to the survival of the Koala' due to the limited connectivity and limited recovery value in this area. Potential habitat within the preferred alignment option is mainly surrounded by cleared agricultural land.</p> <p>Limited impact on connectivity for this species.</p> <p>No impacts to any known habitat or individuals.</p> <p>Given the very limited impacts on low quality habitat for this species in the rail corridor, and that negligible areas of potential habitat elsewhere in the alignment would be removed, no assessment of significance is considered necessary. The proposal is unlikely to have a significant impact on this species.</p>
<i>Petrogale penicillata</i>	Brush-tailed Rock Wallaby	V	<p>Temporary disturbance at rocky escarpments as a result of noise and vibration.</p>

			<p>No impacts to any known habitat or individuals.</p> <p>Given that no habitat for this species would be removed, and only limited areas may be temporarily disturbed, no assessment of significance is considered necessary.</p> <p>Assessment of significance concluded that the proposal is unlikely to have a significant impact on this species.</p>
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	V	<p>Proposal is unlikely to disturb any shelter habitat (exfoliating rocks) for this species. No hollow-bearing trees in areas of potential habitat would be removed.</p> <p>The proposal may result in temporary disturbance at rocky escarpments as a result of noise and vibration however these impacts are likely to be minor.</p> <p>Given that no habitat for this species would be removed, and only limited areas may be temporarily disturbed, no assessment of significance is considered necessary for this species.</p> <p>The proposal is unlikely to have a significant impact on this species.</p>

### 3.1 (e) Listed migratory species

#### Description

No migratory species were recorded during the flora and fauna survey of the proposal site (GHD 2015b).

The protected matters search (DoE 2015a) identifies 13 migratory species listed under the EPBC Act as potentially occurring in the study area. Of these species seven species have been identified as likely to occur, at least on occasion, as shown in Table 5.

The migratory birds identified through the desktop review could possibly forage and breed in the proposal site in areas of suitable habitat. Extensive areas of potential habitat are also present in the locality. The proposal site is not considered important habitat for any of these species, according to the significant impact criteria for migratory species (DEWHA 2009). This is because:

- The habitat for migratory species in the proposal site is equivalent to similar habitats present throughout the locality and region. There are many thousands of hectares of such habitat in the region, including extensive areas in National Parks. The study area would only ever support a small number of individuals of any migratory species and never an ecologically significant proportion of the population of any species.
- The proposal site does not contain any specific habitat resources that would be of critical importance to any migratory species at particular life-cycle stages. Shelter, foraging and breeding habitat within the study area is also available in many thousands of hectares of similar vegetation in the region.

- The habitat for migratory species in the proposal site is surrounded in all directions by equivalent habitat and is not the terminal patch of habitat near the limit of any species' range.
- Impacts would be restricted to the proposal site and its immediate vicinity and so the proposal would not result in an invasive species becoming established in important habitat for any migratory species.
- Only a small number of individuals of the regional populations of any migratory species would ever occupy habitat within or near the proposal site. The risk of injury or mortality of any of these individuals is very slight. The site does not contain any habitat resources that are likely to be significant for any migratory species at the population scale.
- The proposal would not significantly increase the degree of fragmentation or isolation of habitat in the locality. Therefore, the proposal would not seriously disrupt the lifecycle of an ecologically significant proportion of the population of any migratory species.

Based on the consideration of the criteria contained EPBC Act Significant Impact Guidelines (DotE 2013), the proposal is not likely to have a significant impact on any migratory species.

Table 5 Migratory fauna known or with the potential to occur

Scientific name	Common name	EPBC Act status	Likelihood of occurrence within the proposal site	Likelihood of impact
<i>Ardea ibis</i>	Cattle Egret	M	Likely to occur in association with cattle in cleared agricultural areas	The proposal would have limited impact on already cleared areas. The proposal is unlikely to have a significant impact on this species.
<i>Monarcha melanopsis</i>	Black-faced Monarch	M	Potential foraging and breeding habitat present in woodland in the study area.	Proposal would remove only small linear patches of vegetation from alongside existing the easement or from within the rail corridor. The proposal is unlikely to have a significant impact on this species.
<i>Rhipidura rufifrons</i>	Rufous Fantail	M	Potential foraging and breeding habitat present in woodland in the study area.	Proposal would remove only small linear patches of vegetation from alongside existing the easement or from within the rail corridor. The proposal is unlikely to have a significant impact on this species.

<i>Anthochaera phrygia</i> (syn. <i>Xanthomyza phrygia</i> )	Regent Honeyeater	E, M	Potential foraging and breeding habitat present in woodland in the study area.	<p>Proposal would remove canopy trees within a 2.66 hectare area most of which occurs along the non-operational rail corridor between Kandos and Rylstone. Up to 4.52 ha of modified shrub and ground layer (foraging habitat) would also be temporarily disturbed within the remainder of the proposal site.</p> <p>Impacts on breeding habitat for the Regent Honey Eater are unlikely. There would be limited impact on connectivity for this species as the proposal would only remove a small area of vegetation that is not connected to other significant areas of habitat for this species.</p> <p>No impacts to any known habitat or individuals.</p> <p>The proposal is unlikely to have a significant impact on this species.</p>
<i>Apus pacificus</i>	Fork-tailed Swift	M	Potential foraging habitat present above the easement.	<p>Proposal would not impact foraging habitat above the easement.</p> <p>The proposal is unlikely to have a significant impact on this species.</p>
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	M	Potential foraging and breeding habitat present in woodland in the study area.	<p>Proposal would remove only small linear patches of vegetation from alongside existing the easement or from within the rail corridor.</p> <p>Limited impact on connectivity for this species.</p> <p>No impacts to any known habitat or individuals.</p> <p>The proposal is unlikely to have a significant impact on this species.</p>
<i>Merops ornatus</i>	Rainbow Bee-eater	M	Potential foraging and breeding habitat present in woodland in the study area.	<p>Proposal would remove only small linear patches of vegetation from alongside existing the easement or from within the rail corridor.</p> <p>Limited impact on connectivity for this species.</p> <p>No impacts to any known habitat or individuals.</p> <p>The proposal is unlikely to have a significant impact on this species.</p>

Key to EPBC Act Status: E – Endangered; M – Migratory species

### **Nature and extent of likely impact**

According to the significant impact criteria for migratory species (DoE 2013), an area of 'important habitat' for a migratory species is:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, and/or
- Habitat that is of critical importance to the species at particular life-cycle stages, and/or
- Habitat utilised by a migratory species which is at the limit of the species range, and/or
- Habitat within an area where the species is declining'.

The proposal site is not considered important habitat for any of the species listed in Table 5. This is due in part to the fact that potential habitat within the indicative project footprint would not support an ecologically significant proportion of the population of these species; is not of critical importance to these species at particular life-cycle stages; is not at the limit of these species ranges; and is not within an area where these species are declining.

Based on the consideration of the criteria contained in the EPBC Act Significant Impact Guidelines (DoE 2013), the proposal is not likely to have a significant impact on any migratory species.

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#### **3.1 (f) Commonwealth marine area**

(If the action is in the Commonwealth marine area, complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

##### **Description**

No Commonwealth Marine Area is in the vicinity of, or in the same catchment, as the proposal.

##### **Nature and extent of likely impact**

The proposal will not result in any direct or indirect impacts on Commonwealth Marine Areas.

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#### **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 online protected matters search tool results (DoE 2015 Attachment 7) indicates there are two Commonwealth lands within a 10 km radius of the proposal site. None of these are located within the proposal site.

##### **Nature and extent of likely impact**

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

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#### **3.1 (h) The Great Barrier Reef Marine Park**

##### **Description**

The proposal is not located within or near the Great Barrier Reef Marine Park.

##### **Nature and extent of likely impact**

The proposal will not result in any impacts on the Great Barrier Reef Marine Park.

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### **3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development**

#### **Description**

The proposed development does not involve a water resource in relation to coal seam gas or large coal mining development.

#### **Nature and extent of likely impact**

The proposal would not result in any impacts to a water resource, in relation to coal seam gas development or large coal mining development.

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### 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

You must describe the nature and extent of likely impacts (both direct & indirect) on the whole environment if your project:

- is a nuclear action;
- will be taken by the Commonwealth or a Commonwealth agency;
- will be taken in a Commonwealth marine area;
- will be taken on Commonwealth land; or
- will be taken in the Great Barrier Reef marine Park.

Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:

- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

3.2 (a)	Is the proposed action a nuclear action?	X	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?	X	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?	X	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?	X	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?	X	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

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed above). If at Section 2.3 you identified any alternative locations, time frames or activities for your proposed action, you must complete each of the details below (where relevant) for each alternative identified.

#### 3.3 (a) Flora and fauna

##### Flora

Ten vegetation communities were identified within the proposal site (see Figure 4, Attachment 4). Two of these comprised exotic vegetation types and the remainder are native vegetation types as described in Section 3.3(e).

A total of 266 plant species were recorded in the study area during field surveys of which 189 species (71%) were native and 77 species (29%) were exotic (including six noxious weeds). A complete list of all plant species recorded within the study area is provided in the Flora and Fauna Report (GHD 2015; Appendix A of Attachment 7).

A diversity of canopy tree species was recorded in the study area, with the most commonly occurring species including Inland Scribbly Gum (*Eucalyptus rossii*), Rough-barked Apple (*Angophora floribunda*), Grey Gum (*Eucalyptus punctata*) and White Box (*Eucalyptus albens*). River Red Gum (*Eucalyptus camaldulensis*) is also present on the banks of the Bylong River at the northernmost end of the study area.

The most commonly occurring mid-storey tree species were Hickory Wattle (*Acacia implexa*), Narrow-leaved Geebung (*Persoonia linearis*) and Narrow-leaved Wattle (*Acacia linearifolia*).

Commonly occurring shrubs included Blackthorn (*Bursaria spinosa* subsp. *spinosa*), Blunt Beard-heath (*Leucopogon muticus*), Pink Five-Corners (*Styphelia triflora*), Box-leaf Wattle (*Acacia buxifolia* subsp. *buxifolia*) and Sifton Bush (*Cassinia arcuata*).

Groundcover vegetation was often sparse in shrubby parts of the study area, with other more open areas dominated by native and introduced species. Native grasses in the study area included *Poa* spp., Kangaroo Grass (*Themeda australis*), Jericho Wiregrass (*Aristida jerichoensis*), Wallaby-grass (*Plinthanthesis urvillei*) and Bent-grass (*Deyeuxia quadriseta*).

Commonly occurring native forbs included Mat-rush (*Lomandra confertifolia*), Slender Tick-trefoil (*Desmodium varians*), Forest Goodenia (*Goodenia hederacea*), Poison Rock Fern (*Cheilanthes sieberi* subsp. *sieberi*) and Many-flowered Mat-rush (*Lomandra multiflora* subsp. *multiflora*).

One threatened flora species, listed as vulnerable under the TSC Act, Capertee Stringybark (*Eucalyptus cannonii*), was recorded at two locations within the study area. One patch containing a small number of Capertee Stringybark individuals is located just south of Rylstone. There is also a much larger patch located near Breakfast Creek which contains more than 100 individuals with approximately 20 of these located within the proposal site. The proposal has been designed to avoid impacts on Capertee Stringybark individuals.

One endangered flora population, the River Red Gum (*Eucalyptus camaldulensis*) population in the Hunter Catchment, has its westernmost occurrence at Bylong. A number of River Red Gums occur in the study area along the Bylong River. None of these individuals would be impacted by the proposal.

##### Fauna

A total of 124 fauna species were recorded during field surveys. This included four frog species, eight reptile species, 84 bird species, 14 terrestrial or arboreal mammal species and eleven microchiropteran bat (microbat) species. In addition, three microbat species were identified as probably present and five were identified as possibly present based on echolocation call analysis. Four introduced species were recorded comprising two mammal species and two bird species.



One threatened fauna species (Large-eared Pied Bat) listed as threatened under the EPBC Act and eleven species listed as threatened under the TSC Act were identified (definite or probable) in the proposal site and study area during field surveys (refer to **Table 6**). A complete list of all fauna species recorded within the project corridor is provided in the Flora and Fauna Impact Assessment Report for the proposal (GHD 2015b; Appendix B of Attachment 7).

**Table 6** TSC and EPBC Act listed threatened fauna recorded during the field surveys

Common name	Scientific name	EPBC Act Status	TSC Act Status	Location recorded
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Vulnerable	Vulnerable	This species was recorded ('definite' record based on call analysis) at the top of the range above the Bylong Valley and also along the rail corridor
Speckled Warbler	<i>Pyrrholaemus sagittatus</i>	Not listed	Vulnerable	Individuals were recorded in a number of locations in scrubby woodland alongside the corridor. Potential habitat for this species is located throughout larger woodland patches in the study area.
Brown Treecreeper	<i>Climacteris picumnus</i>	Not listed	Vulnerable	One individual was heard calling within woodland near Clandulla. Potential habitat for this species is located throughout larger woodland patches in the study area
Little Lorikeet	<i>Glossopsitta pusilla</i>	Not listed	Vulnerable	Two flocks were recorded, one of about three individuals near Ilford, and one of about 10 individuals near Breakfast Creek. Potential habitat for this species is located throughout larger woodland patches in the study area
Diamond Firetail	<i>Stagonopleura guttata</i>	Not listed	Vulnerable	Three individuals were recorded foraging in roadside grass near Clandulla
Square-tailed Kite	<i>Lophoictinia isura</i>	Not listed	Vulnerable	One individual was observed soaring above the study area
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	Not listed	Vulnerable	Individuals were heard calling near Growee Road and at the top of the range above the Bylong Valley
Yellow-bellied Glider	<i>Petaurus australis</i>	Not listed	Vulnerable	One individual was heard calling in response to call playback (calls of the Powerful Owl <i>Ninox strenua</i> ) near Growee Road

Common name	Scientific name	EPBC Act Status	TSC Act Status	Location recorded
Eastern Bentwing Bat	<i>Miniopterus schreibersii oceanensis</i>	Not listed	Vulnerable	Was recorded based on 'definite', 'probable' and 'possible' records based on call analysis at various locations in the study area (definite and probable locations included the rail corridor, Nevells Road and Clandulla State Forest).
Yellow-bellied Sheath-tailed Bat	<i>Saccolaimus flaviventris</i>	Not listed	Vulnerable	Recorded ('definite' and 'probable' records based on call analysis) in the rail corridor (definite calls) and at the top of the range above the Bylong Valley and along Nevells Road (probable calls).
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	Endangered	Vulnerable	Recorded on an adjacent landholding by a property owner (pers comm).

## Habitat

Four broad fauna habitats were identified within the proposal site. These include:

- Cleared corridors
- Woodland areas
- Heath
- Rock outcrops
- Aquatic habitat (including creeks and farm dams)

The above habitat features and resources have been described in terms of the native fauna, including threatened species they may support (GHD 2015b, Attachment 7). The study area has varying fauna habitat values, as it comprises large areas cleared for agricultural purposes as well as small areas of woodland and heath. The main habitat types are described below.

### Cleared corridors

Much of the proposal site is located within cleared agricultural land including grazing and cropped land. Cleared land also occurs along the northern section of the rail corridor. Cleared land included occasional paddock trees and fallen timber. These were generally located outside the proposal site.

Species recorded in cleared areas included a range of common birds typical of rural landscapes such as the Australian Magpie (*Cracticus tibicen*), Willie Wagtail (*Rhipidura leucophrys*), Galah (*Eolophus roseicapillus*), Eastern Rosella (*Platycercus eximius*), Crimson Rosella (*Platycercus elegans*), and Wedge-tailed Eagle (*Aquila audax*).

Many Fairy Martin (*Petrochelidon ariel*) nests were observed in culverts and tunnels under the rail line. A number of microchiropteran bats are known to use Fairy Martin nests for roosting. These include three threatened species: Large-footed Myotis (*Myotis macropus*) (listed as vulnerable under the TSC Act), Eastern Cave Bat (*Vespadelus troughtoni*) (listed as vulnerable under the TSC Act) and Large-eared Pied Bat (*Chalinolobus dwyeri*) (listed as vulnerable under the TSC and EPBC Acts) (Shultz, 1998). One definite call of this latter species was recorded along the rail corridor.

Eastern Grey Kangaroos (*Macropus giganteus*) were recorded in the study area and would forage in open paddocks (particularly grazing land) and take water at dams. A number of microbat species would forage over these areas, including the TSC Act listed threatened species Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*) and Yellow-bellied Sheath-tail Bat (*Saccolaimus flaviventris*) which were potentially recorded in the study area (calls identified as 'probable' or 'possible' based on recorded bat call analysis). Common Wombat (*Vombatus ursinus*) burrows were observed in a number of locations.

Occasional small patches of exfoliating surface rock were present in the study area. Otherwise, paddocks have generally been cleared of small surface rock if it was present historically. No lizards were recorded under surface rock in the study area.

Given the general lack of surface rock and native grasses, history of grazing and crop cultivation, and lack of any local records, it is unlikely that any threatened lizards occur in the proposal site.

Introduced species such as Common Starlings (*Sturnus vulgaris*) and Rabbits (*Oryctolagus cuniculus*) were regularly observed.

A Bearded Dragon (*Pogona barbatus*) was observed on Bylong Valley Way near the rail corridor. Spotted Grass Frogs (*Limnodynastes tasmaniensis*) were heard calling from grass within a paddock. The Copper-tailed Skink (*Ctenotus taeniolatus*) was observed in a pile of cut timber in a paddock.

### Woodland areas

Woodland patches are scattered throughout the study area, including the southern section of the non-operational rail corridor between Kandos and Rylstone (refer to Plate 1 and 2).

Woodland areas generally consist of a range of eucalypt species, with varying shrub layer and groundcover depending on the surrounding environment. Small woodland patches tend to have minimal groundcover and are dominated by pasture species, while larger woodland patches have a better quality native understory present. Mistletoes are often present.

Foraging habitat is present for a range of bird species, and these areas have higher species diversity than cleared land. Small birds included the Brown Thornbill (*Acanthiza nana*), Grey Fantail (*Rhipidura albiscapa*), Rufous Whistler (*Pachycephala rufiventris*), White-throated Treecreeper (*Cormobates leucophaeus*), Scarlet Honeyeater (*Myzomela sanguinolenta*), Yellow-faced Honeyeater (*Lichenostomus chrysops*) and White-plumed Honeyeater (*Lichenostomus penicillatus*). Larger birds included Eastern Rosellas (*Platycercus eximius*), Crimson Rosellas (*Platycercus elegans*), Noisy Miners (*Manorina melanocephala*), Noisy Friarbirds (*Philemon corniculatus*), Pied Butcherbirds (*Cracticus nigrogularis*), Black-faced Cuckoo-shrikes (*Coracina novaehollandiae*) and White-winged Choughs (*Corcorax melanorhamphos*). Threatened species recorded included the threatened Speckled Warbler (*Pyrrholaemus sagittatus*), Little Lorikeet (*Glossopsitta pusilla*), Brown Treecreeper (*Climacteris picumnus*) and Square-tailed Kite (*Lophoictinia isura*), all listed as vulnerable under the TSC Act.

Hollow-bearing trees are present in some woodland patches adjacent to the transmission line corridor and the rail corridor. No hollow-bearing trees were observed within the rail corridor. Hollows are generally of a small size (5 to 10 centimetres in diameter), although very occasional larger hollows are present (20 centimetre diameter). Hollow-dependent fauna recorded included the Common Brush-tailed Possum (*Trichosurus vulpecula*), Galah (*Eolophus roseicapillus*), Eastern Rosella (*Platycercus eximius*), Crimson Rosella (*Platycercus elegans*), and Red-rumped Parrots (*Psephotus haematonotus*). A range of common hollow-dependent bats were recorded. Three threatened hollow-dependent microbats, the Yellow-bellied Sheath-tail Bat (*Saccolaimus flaviventris*, listed as vulnerable under the TSC Act), Greater Broad-nosed Bat (*Scoteanax reuppellii*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) were potentially recorded (calls identified as 'probable' or 'possible' based on recorded bat call analysis). A Yellow-bellied Glider (*Petaurus australis*) responded to owl call playback. This species is listed as vulnerable under the TSC Act.

The cave-roosting Large-eared Pied Bat, a threatened species listed under both the TSC Act and the EPBC Act, was recorded in forest at the top of the range above the Bylong Valley near the Blue Mountains World Heritage area. Large rocky outcrops are present throughout this area, providing potential roosting habitat for this species. Extensive foraging habitat is also present in this area. This species was also recorded in a small patch of woodland along the rail corridor. This small patch is mainly surrounded by cleared agricultural land, and only has limited connectivity to more suitable foraging habitat. As noted above, this species is known to roost in Fairy Martin nests, which occur frequently in culverts and tunnels under this rail corridor. The proposal is unlikely to have a significant impact on the Large-eared Pied Bat as:

- No breeding habitat would be removed for the proposal.
- Impacts on potential roost sites would be temporary during construction only.
- Potential habitat to be removed comprises patches of disturbed woodland, which is not preferred foraging habitat for this species.
- The proposal would not create a barrier to movements

The proposal site is near the border of the 'central coast' and 'central tablelands' Koala management areas as identified in the recovery plan (DECC 2008). Most eucalypt species in the study area are primary, secondary or supplementary Koala feed trees for these areas. There are, however, only two records of the Koala in the locality, suggesting the species occurs in very low densities in the study area. Most records of the species in the region are located to the west of the Castlereagh Highway. The vegetation in the study area that is of good quality and has connectivity to large areas of habitat has been assessed as comprising 'habitat critical to the survival of the Koala' as defined in the referral guidelines for the species (DotE 2014 refer to **Table 7**) due to the presence of primary and secondary feed trees, landscape connectivity, and importance for interim recovery objectives.

**Table 7** Assessment of Koala Habitat in the study area

Attribute	Score	Habitat appraisal	
Koala occurrence	0	Desktop	EPBC PMST report identified the koala as 'known to occur' in the locality. There are two records from the locality (OEH 2015a), however neither of these are from within 2 km of the study area from the last 10 years (OEH 2015a).
		On-ground	No Koala scats or Koalas were recorded during diurnal habitat searches or nocturnal spotlighting surveys.
Vegetation structure and composition	2	Native vegetation in the study area contains a range of primary and secondary feed trees.	
Habitat connectivity	2	Native woodland is part of a contiguous landscape.	
Key existing threats	2	Little or no evidence of Koala mortality from vehicle strike or dog attack	
Recovery value	2	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context	
Total	8	Decision: habitat in the study area meets the criteria for habitat critical to the survival of the Koala.	

There are no records of the Koala within 10 km of Kandos or Rylstone (OEH 2015a). Vegetation in the vicinity of the rail corridor between Kandos and Rylstone would not comprise 'habitat critical to the survival of the Koala' due to the limited connectivity and limited recovery value in this area. Potential habitat at this location is mainly surrounded by cleared agricultural land.

Leaf litter and fallen timber is present in woodland areas. Few reptiles were observed, except for occasional litter skins (species of *Lampropholis*) and a Wood Gecko (*Diplodactylus vittatus*). Evidence of Short-beaked Echidnas (*Tachyglossus aculeatus*) (diggings and scats) was observed in woodland areas. Conical diggings, likely to be from a Long-nosed Bandicoot (*Perameles nasuta*), were observed in some larger woodland patches.

Eastern Grey Kangaroos (*Macropus giganteus*), Common Wallaroos (*Macropus robustus*), Swamp Wallabies (*Wallabia bicolor*) and Red-necked Wallabies (*Macropus rufogriseus*) were observed in many of the woodland patches.

A Yellow-footed Antechinus (*Antechinus flavipes*) was observed running up and down a Plane Tree adjacent to stacks of cut timber in a cleared paddock.



Plate 1 Existing corridor through cypress woodland



Plate 2 Existing corridor through eucalypt woodland

### Heath

Low heath is present at one location in the central portion of the study area. Vegetation is dominated by low shrubs, including species of tea tree (*Leptospermum* sp.) and bottlebrushes (*Callistemon* spp.) (see Plate 3). A range of small birds were recorded in this vegetation, including the New Holland Honeyeater (*Phylidonyris novaehollandiae*), Eastern Spinebill (*Acanthorhynchus tenuirostris*), Brown Gerygone (*Gerygone mouki*), and Superb Fairy-wren (*Malurus cyaneus*). Larger birds included Eastern Rosellas (*Platycercus eximius*), Noisy Miners (*Manorina melanocephala*) and Noisy Friarbirds (*Philemon corniculatus*). A Copper-tailed Skink (*Ctenotus taeniolatus*) was observed in a pile of timber.



Plate 1 Heath in the proposal site



### Rock outcrops

Large rock outcrops with associated woodland are present along parts of the corridor, particularly north of Rylstone (see Plate 4). These contain crevices and overhangs, and would provide den habitat for the Spotted-tailed Quoll (*Dasyurus maculatus maculatus*), listed as a vulnerable species under the TSC Act and an endangered species under the EPBC Act. This species has been observed by landholders in the study area (see Plate 5). Cave-roosting microbats may also roost in rock overhangs.

These include the Large-eared Pied Bat (*Chalinolobus dwyeri*), definitely recorded in the study area (calls identified as 'definite' based on recorded bat call analysis), as well as the Eastern Bentwing Bat (*Miniotperus schreibersii oceanensis*) and Eastern Cave Bat (*Vespadelus troughtoni*), both potentially recorded in the study area (calls identified as 'probable' or 'possible' based on recorded bat call analysis). The Large-eared Pied Bat and Eastern Cave Bat could breed in caves and overhangs in the study area and surrounds. The Eastern Bentwing Bat relies on specific maternity caves for breeding which occur outside the locality. No rocky outcrops would be impacted by the proposal it is therefore considered unlikely that the project would have a significant impact on the Large-eared Pied Bat or Spotted Quoll. Any construction activities that occur near potential den sites would be temporary.



Plate 4 Rock outcrops adjacent to corridor near Ginghi



Plate 5 Spotted-tailed Quoll on property near Reedy Creek through which corridor passes

(photo courtesy of R. Heap)

### Creeklines

Numerous first and second order creeks occur as ephemeral drainage lines along the route of the corridor. Most creeks have no obvious creek banks, although some creeks are better defined with up to 1 metre high banks. Despite heavy rain immediately preceding field surveys, little water was observed in any creeks. Stream flow within these creeks would likely be active only during and immediately following high rainfall periods. Flows would quickly recede and standing pools may persist providing some limited aquatic habitat. These may be utilised by aquatic macroinvertebrates, colonised through aerial pathways, although the period of habitability would likely be insufficient for stable communities to occur.

Given the limited aquatic habitat and highly ephemeral nature of the creeks they are ranked as either Class 4 unlikely fish habitat (low depressions) or Class 3 minimal fish habitat (creeks with steeper banks). These streams are considered either Type 3 minimally sensitive key fish habitat or are not key fish habitat (streams of stream order 1 or 2) (DPI 2013). The lack of connectivity to larger water bodies suggests that these creeks would be insufficient for colonisation or prolonged presence of any fish populations.



Plate 6 Creek under transmission line in Clandulla State Forest

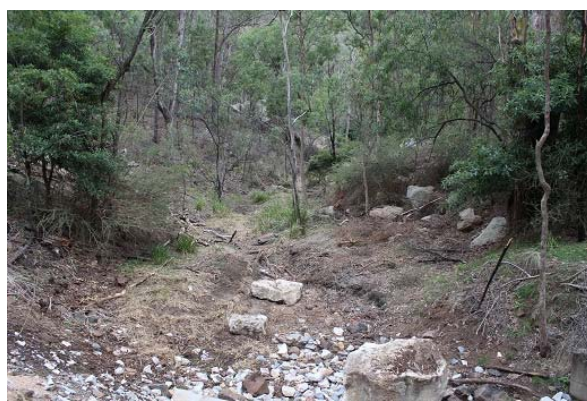


Plate 7 Gulf Creek, passes under the transmission line adjacent to Bylong Valley Way near Ginghi

Frogs were heard calling from scattered water filled depressions. These included the Common Eastern Froglet (*Crinia signifera*) and the Eastern Sign-bearing Froglet (*Crinia parinsignifera*). No threatened frogs are likely to occur.

The Cudgegong River near Rylstone contained low levels of water at the time of the survey. This river is mapped as Key Fish Habitat (DPI 2007). The riparian vegetation is limited to pasture grasses and perennial herbs with no tree or shrub layer present. This lack of riparian vegetation has resulted in a high erosion potential for the stream banks at this location. Although ephemeral, the environment of the aquatic ecosystem at this location may provide some habitat for aquatic species such as yabbies and native fish. The pools present at the time of sampling could be considered semi-permanent which suggests this is a Class 3 minimal fish habitat, and Type 3 minimally sensitive key fish habitat (DPI 2013). It is dammed in a number of locations upstream and downstream to form reservoirs, limiting fish passage in the locality.

### *Farm dams*

Farm dams are located in paddocks throughout the study area and locality. Dams range in size from small (10 metre diameter) to large (50 metre diameter). Levels of emergent vegetation vary between dams. Some have a good cover of emergent fringing aquatic vegetation, while others (particularly where cattle are present) have little fringing vegetation. Common species of waterbird were observed at many dams, including Pacific Black Ducks (*Anas superciliosa*), Australian Wood Ducks (*Chenonetta jubata*), White-faced Herons (*Egretta novaehollandiae*) and White-necked Herons (*Ardea pacifica*). The dams were generally isolated from each other by large expanses of cleared agricultural land, and are unlikely to provide habitat for any threatened frogs or waders.

#### **3.3 (b) Hydrology, including water flows**

The proposal site is located predominately within the Central Tablelands Catchment. Surface water flow within the proposal site can be generally summarised as:

- The southern portion of the proposal site (south of Upper Growee) drains to the west via small watercourses leading into Cudgegong River which joins the Macquarie River at Lake Burrendong. The Macquarie River generally flows in a north-westerly direction to the Lower Barwon River and then Darling River system.
- The central portion of the proposal site (Upper Growee to Growee) flows to the north-east, via Gulf Creek into the Bylong Valley to meet the Growee River at Growee.
- The northern portion of the proposal site (north of Growee) drains to the north via the ephemeral Growee River which is generally parallel to Bylong Valley Way and the corridor until it meets Bylong River at Bylong and the Goulburn River. The Goulburn River flows in a generally easterly direction until it reaches the Hunter River, south of Denman.

Using the Strahler method for identification, the proposal crosses approximately:

- 55 first order streams
- 25 second order streams
- 18 third order streams (allowing for repeated crossings of the same streams)

The most significant waterways include Carwell Creek south of Clandulla, Cudgegong River near Rylstone, Reedy Creek near Reedy Creek and Growee River between Growee and Bylong.

#### **3.3 (c) Soil and Vegetation characteristics**

##### *Topography*

The topography of the study area is highly varied and is characterised by wide valleys and low rolling hills below sandstone cliffs. Isolated flat top mountains occur, and shoulder slopes with stone pillars or "pagodas" are also present. Steep canyons on tributary streams fall into gorges, and other areas contain low gradient swampy stream lines (Morgan 2001).

Topography along the proposal corridor can be summarised in three distinct zones:

- Undulating terrain on the southern portion of the corridor, until Upper Growee.
- Steep terrain as the corridor drops down the Bylong escarpment.
- Flat to undulating terrain adjacent to the Growee River.



## Geology

The proposal site is predominantly located within the Sydney basin, with short sections of the corridor near Rylstone and Clandulla being located in the Lachlan Fold Belt. Geologies of the Sydney basin along the corridor consist of the following:

- Triassic sandstone, claystone and shale of the Narrabeen Group which occupies the more elevated portions of the corridor, presented as undulating plateaus with steep bounding escarpments.
- Permian sediments of the Singleton Coal Measures comprised of shale, sandstone, conglomerate, tuff, chert, coal and torbanite. This geology typically occupies the middle to lower slope positions in the landscape.
- Undifferentiated Permian sediments of the Shoalhaven group consisting of siltstone, sand stone and conglomerate. This geology occupies the lower landscape elevations in the broader, more incised valleys.

Around Rylstone, the proposal corridor is underlain by the Rylstone tuff consisting of Carboniferous rhyolite, dacite and tuff. Near Clandulla, the southern extent of the corridor overlies an undifferentiated series of igneous and metamorphic formations which includes sandstone based conglomerates, shale, limestone, rhyolite, tuff, dolerite and dacite.

## Soil

The proposal is located upon a number of soil landscapes as identified on eSPADE database (OEH 2015b). The soil landscapes for the proposal site are summarised in **Table 8**.

The area does not contain any known acid sulfate soils.

**Table 8** Soil landscape summary within proposal site

Soil Landscape	Approximate length of alignment (km)	Location	Description
Bald Hill	1.4	Two occurrences in the central portion of the proposal site	Primarily occurring as undulating low hills with chocolate soils developed on basalt or dolerite geology. May occur as rock cappings on isolated hills or ridges as well as lava flows down hillslopes. Low erosion hazard.
Benjang	1.5	Two occurrences in the central portion of the proposal site	Occurs on rounded rolling hills, with broad valleys and sandstone rock outcropping as cliffs on the valley sides. Soils vary from solodic soils on mid to upper slopes with non-calcic brown soils on longer lower slopes. Cleared hillslopes with solodic soils can be prone to severe sheet erosion, while mid to lower slopes are subject minor rill and gully erosion.
Bylong	17.7	Dominant soil landscape within the northern portion of the proposal site	Characterised by a low relief landscape of alluvial flats and terraces of Growee Creek and the Bylong Valley. Stable soil landscape with erosion limited to some stream bank erosion along channels.
Capertee	24.5	Dominant soil landscape in the southern portion of the corridor around Ilford, Clandulla and north of Rylstone.	Undulating low hills with broad, gently sloping valleys developed on Permian sediments of shale, sandstone and conglomerate. Minor to moderate sheet erosion hazard on slopes provided surface cover is maintained. When cover is low, erosion hazard is high. Drainage depressions are susceptible to gully erosion.

Soil Landscape	Approximate length of alignment (km)	Location	Description
		Also occurs in the southern portion of the rail corridor.	
Collingwood	3.9	Two occurrences in the vicinity of Kandos and Ilford.	Characterised by rolling to undulating footslopes and sandstone spurs developed on Permian sediments. Moderate sheet erosion hazard on slopes given current land use and gradients.
Growee	11.8	Several occurrences in the northern portion of the alignment. One occurrence in the central portion of the alignment near Growee.	Consists of undulating rises and low hills with broad shallow valleys developed on the Singleton Coal Measures. Larger valleys have terraced alluvium near the drainage lines. Minor sheet erosion hazard on slopes with Solodic Soils.
Lees Pinch	1.9	Two occurrences in the central portion of the proposal site , one north of Rylstone and the other at the top of the Bylong escarpment.	Higher elevation, rolling hills with steep rocky with slopes, extensive rock outcrops, boulder debris slopes, sandstone cliffs and narrow valleys and gorges. Land not suitable for cultivation. Steep slopes have a high sheet erosion hazard where disturbed.
Munghorn Plateau	8.4	Two occurrences in the central portion of the proposal site r from Reedy Creek to the top of the Bylong escarpment.	Low undulating hills giving way to sandstone plateaus with rock outcrops at higher elevations. Slopes are sufficient to cause a minor to moderate sheet erosion hazard when surface cover is low and loose sands are easily detached by water flows. Soils in drainage depressions are susceptible to gully erosion without adequate protection from high runoff.
Ogilvie	0.2	One localised occurrence to the north of Rylstone.	Characterised by steep hills and escarpments with deeply incised drainage and sandstone and conglomerate forming cliffs. Minor sheet erosion is common.
Rylstone	6.4	One occurrence around Rylstone in the southern portion of the proposal site  Also occurs in the northern portion of rail corridor.	Consists of rolling hills with rhyolite outcropping as ramps and slabs on steep upper slopes. Narrow valleys are incised and stone filled. Moderate sheet erosion is common on hillslopes and drainage lines are prone to gully processes. Erosion hazard is high when surface cover is low, surface soil is tilled or water flows are concentrated. Soils in drainage depressions are usually sodic, dispersible and highly susceptible to gully erosion without adequate protection from high runoff.
Sandy Hollow	0.8	Localised occurrence at the very northern end of the proposal site	Undulating rises with smooth, low to moderate grade slopes occasionally exhibiting sandstone outcrops. Minor sheet and rill erosion hazard on slopes. Drainage lines are susceptible to gully erosion.

### 3.3 (d) Outstanding natural features

The proposal site along the existing transmission line easement is significantly disturbed due to previous clearing and ongoing maintenance activities. The rail corridor contains small remnant patches of natural bushland in generally good condition.

There are no other outstanding natural features within the proposal site.

### 3.3 (e) Remnant native vegetation

As shown on Figure 4 (Attachment 4) eight native vegetation types occur within the proposal site. These are summarised in **Table 9**. Further information including description of vegetation types is provided within the Flora and Fauna Impact Assessment (GHD 2015b, Attachment 7).

**Table 9** Plant Communities recorded within study area

Plant Community Type	Description	Conservation significance	Dominant canopy species	Dominant shrub species	Common groundcover species
<p>PCT 1676</p> <p>Grey Gum - Scribbly Gum - Black Pine heathy open forest on sandstone ranges of the Sydney Basin</p> <p>Surveys: T3, T4, T6, T9</p> 	<p>Forest and woodland</p> <p>Height: 10-20m</p> <p>Shrub layer: Moderate</p>	<p>Not a listed community under the EPBC or TSC Acts</p>	<p>Inland Scribbly Gum (<i>E. rossii</i>)</p> <p>Black Cypress Pine (<i>C. endlicheri</i>)</p> <p>Narrow-leaved Stringybark (<i>E. sparsifolia</i>)</p> <p>Grey Gum (<i>E. punctata</i>)</p> <p>Rough-barked Apple (<i>A. floribunda</i>)</p> <p>Hickory Wattle (<i>Acacia implexa</i>)</p>	<p>Drooping Cassinia (<i>Cassinia arcuata</i>)</p> <p>Blackthorn (<i>Bursaria spinosa</i> subsp. <i>spinosa</i>)</p> <p>Box-leaf Wattle (<i>Acacia buxifolia</i>)</p> <p>Fern-leaved Wattle (<i>Acacia filicifolia</i>)</p> <p>Prickly Shaggy Pea (<i>Podolobium ilicifolium</i>)</p> <p>Narrow-leaved Geebung (<i>Persoonia linearis</i>)</p> <p>Thyme Spurge (<i>Phyllanthus hirtellus</i>)</p> <p>Blunt Beard-heath (<i>Leucopogon muticus</i>)</p> <p>Pink Five-Corners (<i>Styphelia triflora</i>)</p>	<p>Kangaroo Grass (<i>Themeda australis</i>)</p> <p>Many-flowered Mat-rush (<i>Lomandra multiflora</i> subsp. <i>multiflora</i>)</p> <p>Snowgrass (<i>Poa</i> sp.)</p> <p>Rock Fern (<i>Cheilanthes sieberi</i>)</p> <p>Mat-rush (<i>Lomandra confertifolia</i> subsp. <i>pallida</i>)</p> <p>Purple Burr-daisy (<i>Calotis cuneifolia</i>)</p> <p>Urn Heath (<i>Melichrus urceolatus</i>) (sub-shrub)</p> <p>Stinking Pennywort (<i>Hydrocotyle laxiflora</i>)</p> <p>Wallaby Grass (<i>Plinthanthesis urvillei</i>)</p> <p>Forest Goodenia (Goodenia hederacea)</p>
<p>PCT 282</p> <p>Blakely's Red Gum - White Box - Yellow Box - Black Cypress Pine box grass/shrub woodland on clay loam soils on undulating hills of central NSW South Western Slopes Bioregion</p> <p>Surveys: T10 &amp; general observations</p>	<p>Woodland</p> <p>Height: 10m</p> <p>Shrub layer: Sparse-moderate</p>	<p>Listed as Box Gum Woodland EEC under the TSC Act and CEEC under the EPBC Act</p>	<p>Blakely's Red Gum (<i>E. blakelyi</i>)</p> <p>Yellow Box (<i>E. melliodora</i>)</p> <p>Inland Scribbly Gum (<i>E. rossii</i>)</p> <p>Red Stringybark (<i>E. macrorhyncha</i>)</p> <p>Black Cypress Pine (<i>C. endlicheri</i>)</p>	<p>Drooping Cassinia (<i>Cassinia arcuata</i>)</p> <p>Blackthorn (<i>Bursaria spinosa</i> subsp. <i>spinosa</i>)</p> <p>Sticky Cassinia (<i>Cassinia uncata</i>)</p>	<p>Kangaroo Grass (<i>Themeda australis</i>)</p> <p>Wild Oats (<i>Avena</i> sp.*)</p> <p>Flatweed (<i>Hypochaeris radicata</i>*)</p> <p>Cocksfoot (<i>Dactylis glomerata</i>*)</p> <p>Many-flowered Mat-rush (<i>Lomandra multiflora</i> subsp. <i>multiflora</i>)</p> <p>Blueberry Lily (<i>Dianella revoluta</i>)</p> <p>St John's Wort (<i>Hypericum perforatum</i>*)</p> <p>Lovegrass (<i>Eragrostis</i> sp.)</p> <p>Snowgrass (<i>Poa</i> sp.)</p>

Plant Community Type	Description	Conservation significance	Dominant canopy species	Dominant shrub species	Common groundcover species
					
<p>PCT 1693</p> <p>Yellow Box - Rough-barked Apple grassy woodland of the upper Hunter and Liverpool Plains</p> <p>Surveys: T7, T8</p> 	<p>Woodland</p> <p>Height: 12m</p> <p>Shrub layer: Sparse-moderate</p>	<p>Listed as Box Gum Woodland EEC under the TSC Act</p>	<p>Rough-barked Apple (<i>A. floribunda</i>)</p> <p>Capertee Stringybark (<i>E. cannonii</i>)</p> <p>Yellow Box (<i>E. melliodora</i>)</p> <p>Inland Scribbly Gum (<i>E. rossii</i>)</p>	<p>Drooping Cassinia (<i>Cassinia arcuata</i>)</p> <p>Fern-leaved Wattle (<i>Acacia filicifolia</i>)</p> <p>Narrow-leaved Geebung (<i>Persoonia linearis</i>)</p> <p>Box-leaf Wattle (<i>Acacia buxifolia</i>)</p>	<p>Purple Burr-daisy (<i>Calotis cuneifolia</i>)</p> <p>Rock Fern (<i>Cheilanthes sieberi</i>)</p> <p>Stinking Pennywort (<i>Hydrocotyle laxiflora</i>)</p> <p>St John's Wort (<i>Hypericum perforatum</i>*)</p> <p>Mat-rush (<i>Lomandra confertifolia</i> subsp. <i>pallida</i>)</p>
<p>PCT 1587</p> <p>White Box - Blackthorn shrubby woodland on sandstone ranges of the Sydney Basin</p> <p>Surveys: P1, P2, T2</p> 	<p>Woodland</p> <p>Height: 10-20m</p> <p>Shrub layer: Sparse-moderate</p>	<p>Listed as Box Gum Woodland EEC under the TSC Act and CEEC under the EPBC Act</p>	<p>White Box (<i>E. albens</i>)</p> <p>Kurrajong (<i>Brachychiton populneus</i>)</p> <p>Rough-barked Apple (<i>A. floribunda</i>)</p> <p>Hickory Wattle (<i>Acacia implexa</i>)</p>	<p>Blackthorn (<i>Bursaria spinosa</i> subsp. <i>spinosa</i>)</p> <p>Narrow-leaved Wattle (<i>Acacia linearifolia</i>)</p> <p>Sweet Pittosporum (<i>Pittosporum undulatum</i>)</p>	<p>Speargrass (<i>Austrostipa</i> sp.)</p> <p>St John's Wort (<i>Hypericum perforatum</i>*)</p> <p>Kangaroo Grass (<i>Themeda australis</i>)</p> <p>Snowgrass (<i>Poa</i> sp.)</p> <p>Spiny-headed Mat-rush (<i>Lomandra longifolia</i>)</p>

Plant Community Type	Description	Conservation significance	Dominant canopy species	Dominant shrub species	Common groundcover species
PCT 324 Inland Scribbly Gum grassy open forest on hills in the Mudgee Region, NSW central western slopes Surveys: General observations	Woodland Height: 10 m Shrub layer: Sparse	Not a listed community under the EPBC or TSC Acts	Inland Scribbly Gum ( <i>E. rossii</i> )	Not surveyed as not located within proposal site	Not surveyed as not located within proposal site
PCT 323 Red Stringybark - Inland Scribbly Gum open forest on steep hills in the Mudgee - northern section of the NSW South Western Slopes Bioregion Surveys: General observations	Woodland Height: 10 m Shrub layer: Sparse-moderate	Some areas listed as Box Gum Woodland EEC under the TSC Act and CEEC under the EPBC Act	Inland Scribbly Gum ( <i>E. rossii</i> ) Red Stringybark ( <i>E. macrorhyncha</i> ) Yellow Box ( <i>E. melliodora</i> ) Capertee Stringybark ( <i>E. cannonii</i> ) Grey Gum ( <i>E. punctata</i> )	Not surveyed as not located within proposal site	Not surveyed as not located within proposal site
PCT 1616 Ribbon Gum - Parramatta Wattle - Rough-barked Apple shrubby open forest on sandstone ranges of the Sydney Basin Surveys: General observations	Woodland Height: 20m Shrub layer: Sparse	Not a listed community under the EPBC or TSC Acts	Ribbon Gum ( <i>E. viminalis</i> ) Apple Box ( <i>E. bridgesiana</i> )	Not surveyed as not located within proposal site	Not surveyed as not located within proposal site
PCT 42 River Red Gum /River Oak riparian woodland wetland in the Hunter Valley	Woodland Height: 20 m Shrub layer: Absent	Listed as Hunter Floodplain Red Gum Woodland under the TSC Act	River Red Gum ( <i>E. camaldulensis</i> ) River Oak ( <i>Casuarina cunninghamiana</i> ) Rough-barked Apple ( <i>Angophora floribunda</i> )	Shrub layer absent	Exotic pastoral grasses including Cocksfoot ( <i>Dactylis glomerata</i> ) Paspalum ( <i>Paspalum dilatatum</i> ) Phalaris ( <i>Phalaris aquatica</i> ) Lovegrass ( <i>Eragrostis</i> spp.)
Cleared Land with Scattered Trees	Woodland Height: 20 m Shrub layer: Absent		Yellow Box ( <i>E. melliodora</i> ) Inland Scribbly Gum ( <i>E. rossii</i> ) Red Stringybark ( <i>E. macrorhyncha</i> ) Blakely's Red Gum ( <i>E. blakelyi</i> )	Shrub layer absent	Exotic pastoral grasses including Cocksfoot ( <i>Dactylis glomerata</i> ) Paspalum ( <i>Paspalum dilatatum</i> ) Phalaris ( <i>Phalaris aquatica</i> ) Lovegrass ( <i>Eragrostis</i> spp.)

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

Not applicable

### **3.3 (g) Current state of the environment**

The majority of the study area is located within cleared agricultural land including grazing and cropped land. Cleared land included occasional paddock trees and fallen timber. These were generally located outside the transmission line corridor.

The majority of the proposal will be located within an existing cleared easement. In areas of native vegetation although the canopy and large shrub layer has been removed the low shrub and ground layer vegetation persists within the easement.

Along the southern portion of the rail corridor vegetation consists of Box Gum Woodland in good condition.

Six noxious weeds as well as a number of environmental weeds occur within the proposal site.

There are signs of erosion along many of the creekbanks within the proposal site including the Cudgegong River near Rylstone which has been cleared of riparian vegetation.

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

No commonwealth Heritage Places have been identified as occurring within 10 km of the proposal site (DotE 2015).

### **3.3 (i) Indigenous heritage values**

An Aboriginal Heritage Due Diligence Assessment of the proposal was recently undertaken by Kelleher Nightingale Consulting Pty Ltd. The initial outcomes of the assessment are summarised below.

#### ***Methodology***

Assessment of the proposal was undertaken in accordance with the DECCW *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010). The assessment also complies with the *NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects* (NSW Minerals Council 2010). The due diligence assessment included heritage register searches, review of background information, landscape assessment, impact avoidance assessment and a visual inspection. The desktop review included a review of Aboriginal literature sources largely including the Aboriginal Heritage Information Management System (AHIMS) maintained by OEH and associated files and catalogue of archaeological reports.

The study area was inspected and assessed by a team of three personnel over a five day period from 20-26 March 2013 and the non-operational rail corridor was inspected in October 2015. Inspections of the proposed access tracks was undertaken in April 2016. Visual inspection included pedestrian inspection of the existing transmission line corridor. The aim of the inspection was to conduct a full coverage assessment of the study area on foot and identify Aboriginal archaeological sites.

#### ***Existing environment***

The assessment identified thirteen previously unrecorded Aboriginal archaeological sites within the study area. Newly recorded sites included rockshelters with art and artefacts/archaeological deposit, open artefact scatters and isolated artefacts.

Seven newly recorded sites fall within the 200m study area buffer corridor around the existing transmission alignment. Two previously recorded Aboriginal archaeological sites were also relocated along the existing transmission alignment.



These sites comprised an open artefact scatter and a rockshelter containing art and artefacts. Three previously unrecorded sites were identified along the non-operational rail corridor between Kandos and Rylstone. Two of these were open artefact scatters and one was an isolated artefact. Three additional new sites (two artefact scatters and one isolated artefact) were recorded along proposed access routes outside of the 200m buffer corridor around the existing alignment.

### *Impact assessment*

All construction activities associated with the proposal have the potential to impact Aboriginal heritage by:

- Direct harm or disturbance to all surface and/or subsurface features at an item - generally a total loss of heritage value at a site.
- Direct harm or disturbance to some surface and/or subsurface features at an item - partial loss of value at a site.
- Indirect harm or disturbance - through vegetation clearance, changes to the microclimate, and the effects of vehicle movements, dust and vibration experienced during construction that may or may not result in a loss of heritage value.

The assessment determined that none of the Aboriginal archaeological sites along the existing transmission corridor are likely to be impacted by the proposal, as they are located at some distance from locations where pole replacement/installation is proposed. The three sites located along the rail corridor would be avoided where possible. If the installation of poles is proposed in the vicinity of the identified sites, further consideration would be undertaken to avoid Aboriginal sites. If any sites are unable to be avoided, further assessment and consultation with the Aboriginal stakeholders would be undertaken, and an application would be submitted for an Aboriginal Heritage Impact Permit under the NP&W Act.

Visual inspection of the remainder of the study area did not observe any Aboriginal objects or archaeological sites or areas of archaeological potential. The archaeological sensitivity of the remainder of the proposal site is limited by landform context and existing disturbance and the proposal is considered unlikely to have an impact on unidentified items of Aboriginal heritage.

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

The proposal is located about 250 m to the west of The Greater Blue Mountains World Heritage Area at its closest distance which is at Growee. This declared heritage area would not be impacted by the proposal.

### **3.3 (k) Tenure of the action area (e.g. freehold, leasehold)**

Property ownership and land use along the proposal site can be generally summarised as:

- Predominantly freehold land - agriculture including grazing.
- Crown lands - short sections at road crossings, where the corridor is located adjacent to roads, several blocks in Kandos and the edge of the escarpment between Upper Growee and Growee.
- Mid-Western Regional Council land - street crossings.
- State forest (the corridor passes through approximately 1.5 km of Clandulla State Forest).
- The non-operational rail corridor is owned by Transport for New South Wales.



### **3.3 (l) Existing land/marine uses of area**

Land use within the proposal site is predominantly:

- Agriculture (predominantly grazing) from Clandulla to Reedy Creek (including the rail corridor)
- State forest, south west of Charbon
- Agriculture (grazing) and bushland from Reedy Creek to Upper Growee
- Bushland in the vicinity of the escarpment from Upper Growee to Ginghi
- Agriculture consisting of cropping and grazing in the Bylong Valley from Ginghi to Bylong
- The rail corridor is fenced, ceased being used for rail traffic in 2007 and is not currently used for any purpose

There are no marine or aquatic uses of land within the proposal site.

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

There are no other proposed uses of the land than those described above.

## 4 Environmental outcomes

N/A – see Section 5.

## 5 Measures to avoid or reduce impacts

### *Approach*

The mitigation of adverse effects arising from the proposal is presented below according to the hierarchy of avoidance, mitigation and offsetting of impacts.

The proposal would result in some unavoidable residual adverse impacts, including removal and/or modification of native vegetation and habitat resources in the locality. Residual impacts would involve only small areas of clearing at scattered locations along the length of the existing transmission line corridor and the temporary disturbance to ground storey vegetation that exists beneath the existing transmission lines. The proposal would also result in the modification of up to 2.84 hectares of Box Gum Woodland and associated habitat resources which may result in significant impacts to this CEEC.

Specific mitigation measures would be undertaken to minimise impacts on the natural environment including Box Gum Woodland CEEC as discussed below.

### *Avoidance of impacts*

The existing alignment is located in a generally highly modified environment within existing cleared corridors, and thus generally avoids impacts on biodiversity values. There would be no impacts on the key fish habitats present. In areas where the vulnerable species Capertee Stringybark have been recorded the design will include micro-realignments to avoid removal of Capertee Stringybark individuals.

The proposal would involve the removal of canopy trees in a linear patch of Box Gum woodland and the temporary disturbance to areas of the derived grassland form of this CEEC. Within the non-operational rail corridor where the woodland form of this community is present, the width of the transmission line easement has been reduced to 18 metres to minimise impacts to this CEEC. Where the proposal is located within the derived grassland form of Box Gum Woodland CEEC, the construction footprint has been reduced to a 25 X 15 metre disturbance area to minimise impacts on this CEEC.

GHD ecologists and design engineers from Worley Parsons completed additional detailed surveys within the road reserves of Henbury Avenue and Davies Road and within the non-operational rail corridor. The additional surveys were aimed at identifying poles and access track locations that would minimise impacts to areas of Box Gum Woodland CEEC. As a result of this exercise the impacts on this community were able to be reduced significantly from 6.3 hectares to 2.84 hectares.

Further mitigation measures to reduce the impacts on this community are listed below:

- In areas where Box Gum Woodland CEEC occurs the proposal footprint would be reduced to as small an area as practicable (i.e. no stockpiling or parking of machinery in these areas) and fence off to prevent inadvertent impacts.
- A pre-construction site inspection would be conducted by a qualified ecologist (or other suitably experienced/qualified person) to identify 'sensitive' areas requiring temporary fencing such as vegetation constituting Box Gum Woodland CEEC, Capertee Stringybark individuals and/or River Red Gum and/or location of hollow-bearing trees.
- Adjoining areas of EEC and CEEC would be fenced off and clearly mark as 'no go' zones.
- Lopping of branches would be avoided where possible (although lopping is preferred to complete removal of trees).

- Structural works would where possible avoid disturbing the roots of established large and/or hollow-bearing trees including Capertee Stringybark individuals.
- Set down areas for construction materials would be clearly designate and where possible located in areas that support predominantly introduced vegetation.
- Control measures would be put in place to prevent construction traffic moving off of formed tracks and the proposed works footprints and laydown areas and into native vegetation areas, including areas of Box Gum Woodland CEEC.
- Drip zones of mature native trees would also be protected from parking and laydown.

### *Mitigation of impacts*

Unavoidable residual impacts of the proposal would include modification of native vegetation comprising areas of CEEC and potential habitat for threatened fauna, including loss of two hollow-bearing trees. Operational impacts are expected to be negligible and would not alter from those associated with the existing transmission line. In order to minimise the potential impacts of the proposal on biodiversity, the mitigation measures outlined in Table 10 would be implemented.

Table 10 Mitigation measures

Impact	Mitigation
General	<ul style="list-style-type: none"> <li>• A Construction Environmental Management Plan (CEMP) would be developed prior to the commencement of works. This would include the preparation of a Flora and Fauna Management Sub-plan and Weed Management Sub-plan.</li> <li>• All workers would be provided an environmental induction prior to starting work on site. This would include information on the ecological values of the study area and protection measures to be implemented to protect biodiversity.</li> </ul>
Vegetation and flora	<ul style="list-style-type: none"> <li>• A suitably qualified ecologist would be engaged prior to any clearing works to clearly demarcate vegetation protection areas (i.e. areas of CEEC), clearing limits, and Capertee Stringybark or River Red Gum individuals to be avoided.</li> <li>• Where possible clearance undertaken in areas of CEEC would be minimised.</li> <li>• Capertee Stringybark and River Red Gum trees that are present within vegetation adjoining the proposal area would be temporarily fenced during construction to avoid any direct or indirect impacts to individual trees.</li> <li>• Clear marking and delineation (that is, signage and barrier fencing) would be installed between the works areas and any vegetation (including threatened species) that is to be retained to avoid any unnecessary impacts to those areas, including clear delineation of any reversing bays.</li> <li>• Any vegetation removal and/or disturbance would be undertaken in accordance with the Endeavour Energy Environmental Management Standard (EMS) 0004: Vegetation Management.</li> </ul>

Impact	Mitigation
	<ul style="list-style-type: none"> <li>• The trimming or removal of vegetation will be conducted in accordance with Endeavour Energy MMI 0013 0013 – Clearances to be maintained between network assets and vegetation and AS4373 – Pruning of amenity trees.</li> <li>• All proposals must be deemed compliant to MMI0013 0013 – Clearances to be maintained between network assets and vegetation (refer to Table 3 &amp; 4 of the Endeavour Energy Generic Environmental Risk Mitigation Measures (Endeavour Energy 2014)), prior to energising the network</li> <li>• In accordance with Endeavour Energy Generic Environmental Risk Mitigation Measures no trittering or slashing of vegetation shall occur in areas where the vegetation has not been subject to trittering/slashing in the previous two years (Endeavour Energy 2014).</li> <li>• Any existing tree(s) that is not required to be removed shall be protected in accordance to AS4970 – Protection of trees on development sites. Protective fencing for these tree(s) would be erected and secured to restrict access before any machinery or materials are brought onto the proposal site, and before the commencement of any works. Once erected, the protective fencing would not be altered or removed without approval.</li> <li>• Any potential damage to tree roots within and adjacent to the subject site in response to excavation activities would be qualified by an arborist prior to works being carried out.</li> </ul>
Weeds and Pathogens	<ul style="list-style-type: none"> <li>• Weed control mitigation and management strategies would be documented and implemented in accordance with the CEMP and Noxious Weeds Act 1993. This shall include procedures to reduce the spread of weeds via vehicles and machinery.</li> <li>• Stockpiles of construction materials, fill or vegetation would be restricted to existing cleared areas and not within areas of adjoining native vegetation.</li> <li>• Wash-down of vehicles and plant would occur prior to commencing work on site to minimise the potential for the introduction of diseases such as Phytophthora and Myrtle Rust into areas of adjoining vegetation. This would ensure all vehicles and plant are free of potentially contaminated soil prior to work on site. Refer to the national best practice guidelines for Phytophthora (O’Gara et al. 2005) and the Myrtle Rust factsheet (DPI 2011) for hygiene control.</li> </ul>
Fauna habitats	<p>Pre-clearance surveys will be undertaken by a qualified ecologist and the required methodology will be developed for target species as part of the CEMP. Surveys would include:</p> <ul style="list-style-type: none"> <li>• A procedure for clearing potential habitat, including hollow-bearing trees</li> <li>• Where clearing is required it would be undertaken in a progressive manner such that any resident fauna can easily exit the area prior to impact from machinery and equipment.</li> </ul>

Impact	Mitigation
	<ul style="list-style-type: none"> <li>• A suitably qualified ecologist would be engaged to check termite mounds within the disturbance area for evidence of nesting Rosenberg Goannas. If evidence of Goannas are observed mitigation measures specific for this species should be included in the Flora and Fauna Management Plan.</li> <li>• Pre-construction surveys would be conducted at culverts and tunnels under the rail corridor to search for roosting or hibernating bats. If hibernating bats are present, construction at these locations may need to be delayed until after they have finished hibernation.</li> <li>• An experienced, licenced wildlife carer or ecologist would be present to supervise vegetation clearing and capture then relocate fauna if required</li> <li>• If any Koalas are present at the time of clearing, they should be left to move on under their own volition</li> <li>• Salvage and relocation of habitat features (e.g. hollow logs and branches) would occur into adjacent areas of habitat.</li> </ul>
Water Quality	<ul style="list-style-type: none"> <li>• Erosion and sediment controls would be implemented in accordance with the Endeavour Energy Generic Environmental Risk Mitigation Measures (Endeavour Energy 2014). The Erosion and Sediment Control Plans (ESCP) would be established prior to the commencement of construction and be updated and managed throughout as relevant to the activities during the construction phase to minimise the potential for adverse impacts on adjoining conservation areas, watercourses and downstream environments.</li> <li>• All stockpiled material would be stored in bunded areas and kept away from waterways to avoid sediment entering the waterway.</li> <li>• Specific measures would be incorporated into the CEMP to minimise the potential for chemical spills and associated impacts on natural environments adjacent to and downstream of the study area.</li> <li>• Appropriate dust suppression techniques would be employed as necessary, such as the dampening down of the subject site prior to work or the installation of dust barriers or gates to minimise the risk of dust moving off-site. Where possible, existing vegetation will be retained to act as a windbreak and traffic movement will be controlled so as to reduce the potential for airborne movement of sediment.</li> <li>• Vehicles would follow appropriate speeds to limit dust generation.</li> <li>• Disturbed surfaces would be mulched or revegetated as soon as possible to minimise dust emissions. A cover crop (using suitable seed mixture) should be spread on the disturbed area if grass sods are not available. Sterile seed or preferably local native seed should be used in bushland areas to prevent the introduction of weed species. Where vegetation has been trimmed or removed, particularly in bushland areas, this would be mulched and spread over the site to provide a seed base and protect the soil.</li> </ul>

## 6 Conclusion on the likelihood of significant impacts

Identify whether or not you believe the action is a controlled action (i.e. whether you think that significant impacts on the matters protected under Part 3 of the EPBC Act are likely) and the reasons why.

### 6.1 Do you THINK your proposed action is a controlled action?

☒

No, complete section 6.2

☐

Yes, complete section 6.3

### 6.2 Proposed action IS NOT a controlled action.

An Assessment of Significance completed in accordance with the EPBC Significant Impact Guidelines (DotE 2013) concluded that the proposal is unlikely to have a significant impact on Box Gum Woodland CEEC as:

- It would not result in the total removal of the community but rather the modification of a small area (2.54 hectares) from the woodland form of this community to the derived grassland form as well the temporary disturbance of 0.3 hectares of the derived grassland form of the community. This represents only a very small reduction/modification to the extent of the community compared to the local occurrence.
- Vegetation to be removed is relatively young and does not contain any mature trees or hollows.
- The impacts of the proposal will be confined to small patches dispersed over the full length (67 km) of the proposal corridor, and thus the intensity and extent of impacts on the local occurrence of Box Gum Woodland within the subject site and the locality is expected to be low.
- It would not result in any substantial further fragmentation and/or isolation of any patches of the community beyond what already exists along the transmission line easement.
- It would not cause a substantial reduction in the extent, quality or integrity of an occurrence of the community.
- It would not modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for the community's survival
- It would not adversely affect habitat critical to the survival of a species.

The area to be impacted is relatively small compared to the extent in the locality and as such would be unlikely to interfere with the recovery of the community.

The proposal is not likely to have a significant impact on any threatened flora species, fauna species or migratory species.

### 6.3 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

<input type="checkbox"/>	World Heritage values (sections 12 and 15A)
<input type="checkbox"/>	National Heritage places (sections 15B and 15C)
<input type="checkbox"/>	Wetlands of international importance (sections 16 and 17B)
<input type="checkbox"/>	Listed threatened species and communities (sections 18 and 18A)
<input type="checkbox"/>	Listed migratory species (sections 20 and 20A)
<input type="checkbox"/>	Protection of the environment from nuclear actions (sections 21 and 22A)
<input type="checkbox"/>	Commonwealth marine environment (sections 23 and 24A)
<input type="checkbox"/>	Great Barrier Reef Marine Park (sections 24B and 24C)
<input type="checkbox"/>	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
<input type="checkbox"/>	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
<input type="checkbox"/>	Protection of the environment from Commonwealth actions (section 28)
<input type="checkbox"/>	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.

## 7 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
<p><b>7.1 Does the party taking the action have a satisfactory record of responsible environmental management?</b></p> <p><b>Provide details</b></p> <p>KEPCO was established in 2010 and is committed to working sustainably and with respect for the communities and environments in which it operates. KEPCO believes in performing its work in an environmentally responsible manner, and is committed to a vision of zero harm to people and assets, and zero environmental incidents. KEPCO is a subsidiary of Korea Electric Power Corporation (KEPCO Korea) which is responsible for the generation of 85% of South Korea's electricity for its industrial, commercial, residential, educational and agricultural customers. For more than one hundred years, KEPCO Korea has served as a reliable supplier of top-quality electric power.</p>	X	
<p><b>7.2 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?</b></p> <p><b>If yes, provide details</b></p> <p>Proceedings were commenced in the Local Court of New South Wales against KEPCO Bylong Australia Pty Limited in relation to an alleged contravention of section 378C of the Mining Act 1992 (NSW) as that section applied in May 2015. These proceedings relate to an allegation that certain photographs included in a Surface Disturbance Notice for exploration activities prepared and submitted by KEPCO Bylong Australia Pty Limited's manager were incorrectly labelled. These proceedings are currently ongoing."</p>	X	
<p><b>7.3 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?</b></p>	X	



**If yes, provide details of environmental policy and planning framework**

KEPCO has appointed WorleyParsons to be responsible for the concept design, environmental approvals and environmental management and monitoring for the proposal. The proposal will be undertaken in accordance with WorleyParsons' Health Safety and Environment Policy and Environmental Management Plan.

*Health Safety and Environment Policy (CMM-009)*

*Dated: May 2016 (Rev 13)*

*Signed: Andrew Wood (Chief Executive Officer)*

WorleyParsons is committed to achieving its vision of zero harm to people and assets, and zero environmental incidents. OneWay™, is an enterprise wide integrity framework, which establishes the corporate expectations for progressing towards this zero harm vision and it applies to all people, contractors, products and services. WorleyParsons requires an active commitment to, and accountability for, health, safety and the environment from all employees and contractors.

The policy is to:

- Comply with all applicable laws, regulations and standards, customer requirements; and apply company standards where laws do not exist
- Consult and seek contributions from our people on issues that have the potential to affect the environment and their health and safety
- Lead, train and motivate our people, contractors and suppliers to work in a safe and responsible manner
- Identify, assess and manage risks that impact health, safety and the environment prior to commencing activities, when circumstances change and throughout project phases
- Foster a culture that empowers and supports anyone intervening to safeguard people and to protect the environment
- Require contractors and suppliers to manage health, safety and environment using standards and practices that align with ours
- Implement health management programs including effective injury management and rehabilitation to maintain and improve the wellbeing of WorleyParsons' people
- Drive continual improvement in health, safety and environmental performance through open reporting and effective assessment and analysis of our performance, leadership and engagement with our stakeholders

*Environmental Management Plan (CHF-1036)*

*Dated: 2016*

The Environmental Management Plan sets out the framework for environmental management and includes the following key principles:

- Commitment to environmental excellence
- Organisational structure
- Accountability
- Management Systems and Standards
- Risk Management
- Legislative Compliance
- Training
- Environmental Aspects
- Continuous improvement
- Monitor, Audit and Review

In relation to construction, the Contract Strategy calls for the design, planning, procurement and field works including commissioning / energising to be undertaken by a single contractor to KEPCO.

WorleyParsons is currently managing the tendering process for the proposal and a part of the contract requirements will be that the contractor needs to demonstrate and operate according to a health, safety and environment plan consistent with the above.

7.4	<b>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?</b>	X	
	<b>Provide name of proposal and EPBC reference number (if known)</b>		
	Bylong Coal Project EPBC 2014/7133		

## 8 Information sources and attachments

(For the information provided above)

### 8.1 References

- DotE (2013), *Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment.
- DotE (2014), *EPBC Act referral guidelines for the vulnerable Koala*. Department of the Environment. Accessed at <http://www.environment.gov.au/biodiversity/threatened/publications/epbc-act-referral-guidelines-vulnerable-koala>
- DotE (2015a), *Protected Matters Search Tool*. Department of the Environment. Accessed at <http://www.environment.gov.au/arcgis-framework/apps/pmst/pmst.jsf>
- DotE (2015b), *Species profiles and threats database (SPRAT)*. Department of the Environment. Accessed at <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>
- DPI (2007). Key Fish Habitat maps. <http://www.dpi.nsw.gov.au/fisheries/habitat/publications/protection/key-fish-habitat-maps>
- DPI (2013) *Policy and guidelines for fish habitat conservation and management (update 2013)*, Department of Primary Industries. Accessed at <http://www.dpi.nsw.gov.au/fisheries/habitat/publications/policies,-guidelines-and-manuals/fish-habitat-conservation>
- DPI (2015a), Online protected species viewer for records of threatened aquatic species in the locality, Department of Primary Industries. Accessed at <http://www.dpi.nsw.gov.au/fisheries/species-protection/records/viewer>
- DSEWPAC (2012), *Environment Protection and Biodiversity Conservation Act 1999 –Environmental Offsets Policy*, Department of Sustainability, Environment, Water, Population and Communities, Canberra.
- Endeavour Energy (2014) Endeavour Energy Generic Environmental Risk Mitigation Measures for use in preparing Environmental Management Plans (EMS 0001). Endeavour Energy.
- GHD (2016a), Ilford to Bylong Transmission Line Upgrade: Review of Environmental Factors, unpublished report prepared for KEPCO.
- GHD (2016b) Ilford to Bylong Electricity Transmission Line Upgrade: Flora and Fauna Impact Assessment, unpublished report prepared for KEPCO
- Gibbons, P; Lindenmayer, D.B.; Barry, S.C. and Tanton, M.T. (2000), Hollow formation in eucalypts from temperate forests in south-eastern Australia. *Pacific Conservation Biology*, vol. 6, pp 218-228
- Hansen Bailey (2015) Bylong Coal Project Environmental Impact Statement
- OEH (2010). *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. Office of Environment and Heritage
- OEH (2014a). Framework for Biodiversity Assessment. Office of Environment and Heritage. <http://www.environment.nsw.gov.au/biodivoffsets/1482fba.htm>
- OEH (2014b) NSW Biodiversity Offsets Policy for Major Projects, NSW Office of Environment and Heritage, Sydney, NSW
- OEH (2015a), *NSW Bionet. The website for the atlas of NSW wildlife*, Office of Environment and Heritage. Accessed at <http://www.bionet.nsw.gov.au/>

OEH (2015b). eSPADE database. Accessed September 2015

<http://www.environment.nsw.gov.au/eSpadeWebapp/>

RBGT (2015), *PlantNET – The Plant Information Network System of The Royal Botanic Gardens and Domain Trust*, The Royal Botanic Gardens and Domain Trust Sydney, Australia. Accessed by:

<http://plantnet.rbgsyd.nsw.gov.au>

Shultz, M. Bats and other fauna in disused Fairy Martin *Hirundo aerial* nests. *Emu* 98: 184-191.

Threatened Species Scientific Committee (TSSC) (2006), *Commonwealth Advice Listing on White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland*, Department of Environment and Heritage Canberra.

## 8.2 Reliability and date of information

For information in section 3 specify:

- source of the information;
- how recent the information is;
- how the reliability of the information was tested; and
- any uncertainties in the information.

## 8.3 Attachments

Indicate the documents you have attached. All attachments must be less than three megabytes (3mb) so they can be published on the Department's website. Attachments larger than three megabytes (3mb) may delay the processing of your referral.

		✓ attached	Title of attachment(s)
<b>You must attach</b>	figures, maps or aerial photographs showing the project locality (section 1)	✓	Figure 1 (Locality Plan) (Attachment 1)
	GIS file delineating the boundary of the referral area (section 1)	✓	Shape files delineating boundary of the referral areas provided electronically
	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)	✓	Figure 2 (Attachment 2) shows location of proposal in respect to the Greater Blue Mountains World Heritage Area  Figure 3 (Attachment 3) shows the land ownership of the proposal area.  Figure 4 shows vegetation mapping for the proposal site (Attachment 4).  Figure 5 shows the zoomed in location of EPBC listed vegetation in the proposal site (Attachment 5).
<b>If relevant, attach</b>	copies of any state or local government approvals and consent conditions (section 2.5)	N/A	Not available
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)	N/A	Correspondence from Endeavour Energy (Attachment 6)
	copies of any flora and fauna investigations and surveys (section 3)	✓	Flora and Fauna Impact Assessment (Attachment 7)
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	✓	Flora and Fauna Impact Assessment (Attachment 7)
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	N/A	Currently being completed

## 9 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<sup>1</sup>.

### Project title: Ilford to Bylong Transmission Line Upgrade

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#### 9.1 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<sup>2</sup>, this is the person requiring the grant of a 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<sup>3</sup>.

1. Name and Title:

Je Hyeon Kim (Chief Executive Officer)

2. Organisation (if applicable):

KEPCO Bylong Australia Pty Ltd

3. EPBC Referral Number (if known):

4: ACN / ABN (if applicable):

79075361769

5. Postal address

Suite 1301, 141 Walker Street, North Sydney, NSW 2060  
02 8904 9508

6. Telephone:

7. Email: [Phillip.jo@kepcoaustralia.com](mailto:Phillip.jo@kepcoaustralia.com)  
[Peter.Lawley@advisian.com](mailto:Peter.Lawley@advisian.com)

8. Name of proposed proponent (if not the

Endeavour Energy

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<sup>1</sup> If the proposed action is to be taken by a Commonwealth, state or territory government or agency, section 8.1 of this form should be completed. However, if the government or agency is aware of, and has administrative responsibilities relating to, a proposed action that is to be taken by another person which has not otherwise been referred, please contact the Referrals Gateway (1800 803 772) to obtain an alternative contacts, signatures and declarations page.

<sup>2</sup> If your referred action, or a component of it, is to be taken in the Great Barrier Reef Marine Park the Minister is required to provide a copy of your referral to the Great Barrier Reef Marine Park Authority (GBRMPA) (see section 73A, EPBC Act). For information about how the GBRMPA may use your information, see [http://www.gbrmpa.gov.au/privacy/privacy\\_notice\\_for\\_permits](http://www.gbrmpa.gov.au/privacy/privacy_notice_for_permits).

same person at item 1  
above and if applicable):

9. ACN/ABN of proposed  
proponent (if not the  
same person named at  
item 1 above): 59 253 130 878

**COMPLETE THIS SECTION ONLY IF YOU QUALIFY FOR EXEMPTION FROM THE  
FEE(S) THAT WOULD OTHERWISE BE PAYABLE**

I qualify for exemption  
from fees under section  
520(4C)(e)(v) of the  
EPBC Act because I am:

- ☐ an individual; OR
- ☐ a small business entity (within the meaning given by section 328-110 (other than subsection 328-119(4)) of the *Income Tax Assessment Act 1997*); OR
- ☐ not applicable.

If you are small business  
entity you must provide  
the Date/Income Year  
that you became a small  
business entity:

Note: You must advise the Department within 10 business days if you cease to be a small business entity. Failure to notify the Secretary of this is an offence punishable on conviction by a fine (regulation 5.23B(3) *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth)).

**COMPLETE THIS SECTION ONLY IF YOU WOULD LIKE TO APPLY FOR A WAIVER**

I would like to apply for a  
waiver of full or partial  
fees under Schedule 1,  
5.21A of the [EPBC  
Regulations](#). Under sub  
regulation 5.21A(5), you  
must include information  
about the applicant (if  
not you) the grounds on  
which the waiver is  
sought and the reasons  
why it should be made:

- ☐ not applicable.

Declaration

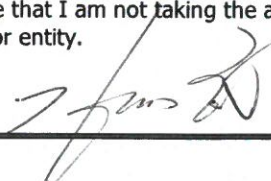
I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.

I understand that giving false or misleading information is a serious offence.

I agree to be the proponent for this action.

I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature




Date

26-7-16

**9.2 Person preparing the referral information (if different from 8.1)**

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

Name	Melissa Dunlop
Title	Principal Environmental Scientist
Organisation	GHD Pty Ltd
ACN / ABN (if applicable)	39 008 488 373
Postal address	PO Box 5403, Hunter Region Mail Centre NSW 2310
Telephone	02 4979 9068
Email	<a href="mailto:Melissa.dunlop@ghd.com">Melissa.dunlop@ghd.com</a>
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	28 July 2016



# 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 a digital file (preferably ArcGIS shapefile, refer to guidelines at [Attachment A](#)) delineating the boundaries of the referral area?
- ☐ 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 three megabytes (3mb)?
- ☐ Sent the referral to the Department (electronic and hard copy preferred)?

## Geographic Information System (GIS) data supply guidelines

If the area is less than 5 hectares, provide the location as a point layer. If the area greater than 5 hectares, please provide as a polygon layer. If the proposed action is linear (e.g. a road or pipeline) please provide a polyline layer.

GIS data needs to be provided to the Department in the following manner:

- Point, Line or Polygon data types: ESRI file geodatabase feature class (preferred) or as an ESRI shapefile (.shp) zipped and attached with appropriate title
- Raster data types: Raw satellite imagery should be supplied in the vendor specific format.
- Projection as GDA94 coordinate system.

Processed products should be provided as follows:

- For data, uncompressed or lossless compressed formats is required - GeoTIFF or Imagine IMG is the first preference, then JPEG2000 lossless and other simple binary+header formats (ERS, ENVI or BIL).
- For natural/false/pseudo colour RGB imagery:
  - If the imagery is already mosaiced and is ready for display then lossy compression is suitable (JPEG2000 lossy/ECW/MrSID). Prefer 10% compression, up to 20% is acceptable.
  - If the imagery requires any sort of processing prior to display (i.e. mosaicing/colour balancing/etc) then an uncompressed or lossless compressed format is required.

Metadata or 'information about data' will be produced for all spatial data and will be compliant with ANZLIC Metadata Profile. ([http://www.anzlic.org.au/policies\\_guidelines#guidelines](http://www.anzlic.org.au/policies_guidelines#guidelines)).

The Department's preferred method is using ANZMet Lite, however the Department's Service Provider may use any compliant system to generate metadata.

All data will be provide under a Creative Commons license (<http://creativecommons.org/licenses/by/3.0/au/>)