Crudine Ridge Wind Farm

Biodiversity Management Plan

July 2019
Final

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Revision Control					
Revision	Date	Issue	Author	Review	Approved
1	31/05/2017	Initial	Rachel Murray Eco Logical Australia	Daniel Magdi Eco Logical Australia	Mark Branson CWP Renewables
2	08/08/2017	Draft for Consultation	Rachel Murray Eco Logical Australia	Daniel Magdi Eco Logical Australia	Mark Branson CWP Renewables
3	09/11/2017	Second Draft	Rachel Murray Eco Logical Australia	Daniel Magdi Eco Logical Australia	Mark Branson CWP Renewables
4	27/06/2019	Update following MOD1	Patric Millar CWP Renewables Cheryl O'Dwyer Eco Logical Australia Kalya Abbey Eco Logical Australia	Kalya Abbey Eco Logical Australia	Ed Mounsey CWP Renewables
5	12/07/2019	Updated following DPIE comments	Patric Millar CWP renewables	Ed Mounsey CWP Renewables	Ed Mounsey CWP Renewables

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Contributors:

Along with the author and reviewer, the following people were involved in the preparation of this report:

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Term	Meaning
BC Act	NSW *Biodiversity Conservation Act 2016*
BA Act	NSW *Biosecurity Act 2015*
BCD	Biodiversity Conservation Division of DPIE
BGW	Box Gum Woodland
BMP	Biodiversity Management Plan
Vegetation clearing	Clearing of native vegetation as per the meaning in Part 5A of the *Local Land Services Act 2013*
CCC	Community Consultative Committee
CEEC	Critically Endangered Ecological Community
CRWF	Crudine Ridge Wind Farm
Department, the	Commonwealth Department of the Environment and Energy
Development Corridor	The approved Development Corridor as defined in the Development Consent, comprising of a 100m buffer around all approved infrastructure.
Development Footprint	The area of physical disturbance associated with the construction of the Project, comprised of temporary impacts and permanent impacts, including those along Aarons Pass Road and Bombandi Road.
DOEE	Commonwealth Department of the Environment and Energy
DPIE	NSW Department of Planning, Industry and the Environment
EA	Environmental Assessment
EEC	Endangered Ecological Community
EMS	Environmental Management Strategy
EPA	NSW Environment Protection Authority
EPC	Engineering Procurement and Construction contractor; also refers to any other principal contracting entity engaged on the Project, such as TransGrid
EP&A Act	NSW *Environmental Planning and Assessment Act* 1979
EPBC Act	Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*
LGA	Local Government Area
LLS Act	*Local Land Services Act 2013*
Minister, the	Commonwealth Minister for the Environment and Energy
MWRC	Mid-Western Regional Council
Project Site	The land within the cadastral boundaries associated with the proposed Project, as defined in the Development Consent and Modification 1.
RMS	NSW Roads and Maritime Services
Secretary, the	Secretary for the NSW Department of Planning, Industry and the Environment

TEC	Threatened Ecological Community

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1 Introduction

This Biodiversity Management Plan (BMP) has been prepared by Eco Logical Australia (ELA) for CWP Renewables (CWPR), on behalf of Crudine Ridge Wind Farm Pty Ltd (The Proponent). This BMP forms a component of the Crudine Ridge Wind Farm (CRWF; the Project) Environmental Management Strategy (EMS).

The Project will consist of up to 37 wind turbine generators (turbines), access roads, hardstands, laydown areas, internal electrical reticulation, temporary construction compounds, rock crushing facilities, concrete batching plant(s), a substation, an operations and maintenance facility, a 16 km overhead transmission line and a switching station. The turbines to be constructed and operated for the Project will be located at 37 approved wind turbine locations. A map showing all approved Project infrastructure is shown in Figure 1 (herein referred to as the Project site).

This BMP has been prepared to manage potential impacts to biodiversity within the Project Site shown in Figure 1, including the turbine locations and all infrastructure options presented in the Environmental Assessment (EA) and Modification 1. Prior to construction, an Engineering Procurement and Construction (EPC) contractor will be appointed to prepare a detailed design for the final layout, and deliver the construction phase of the Project. Within this BMP, the term EPC is used to represent any contractor engaged by the Proponent to deliver works under supervision of the Principal for the Project. Avoidance through design will be the primary measure adopted to reduce impacts of the Project on biodiversity within the Project Site. This BMP describes the measures that will be implemented to manage and mitigate unavoidable impacts associated with the construction of the Project, once the final design layout is determined.

A description of how the Project will comply with the broader requirements of the Development Consent and EPBC Approval is provided in the EMS.

1.1 Purpose and Objectives of the BMP

This BMP has been prepared in accordance with the requirements of the Project's Development Consent (SSD-6697 MOD1), Conditions 19 to 23 (Biodiversity) and Conditions 41 to 42 (Rehabilitation). Condition 22 requires the preparation of a BMP for the Project to the satisfaction of the Secretary. The BMP includes a description of measures to be implemented to manage impacts to biodiversity during the construction of the Project.

In addition to this, the requirements of the Project's EPBC Approval (2011/6206) have been addressed in this BMP.

1.2 Context and Relationship with other Management Plans

This BMP has been written to complement other management plans prepared to support the Project. This plan has been developed as a component of and should be read in conjunction with the Project's EMS, and has been updated following Modification 1

The Bird and Bat Adaptive Management Plan (BBAMP) has been prepared as a separate document.

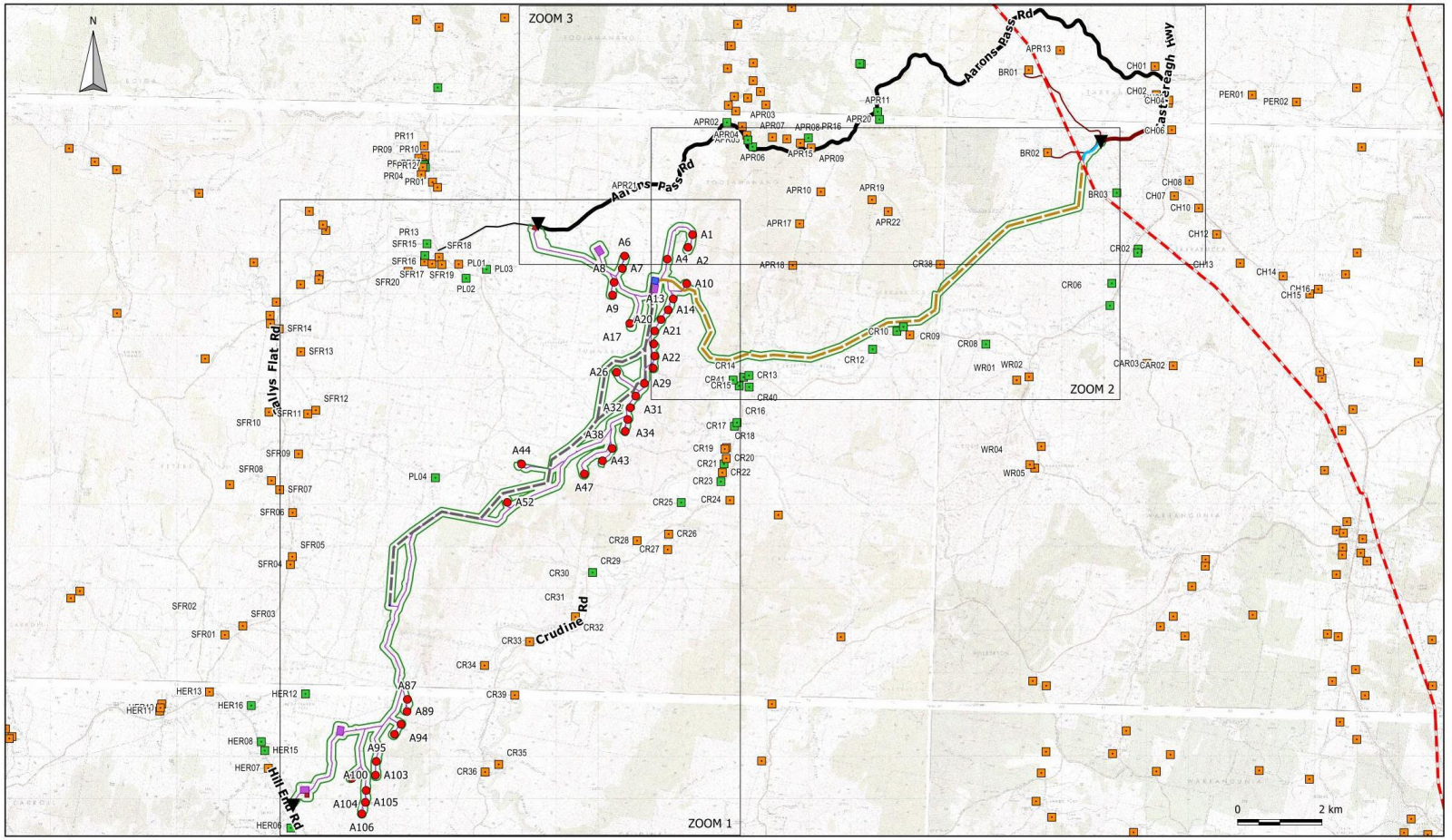

Figure 1: Approved Project Infrastructure of the Crudine Ridge Wind Farm

1.3 Legislative Requirements

Table 1-1: Relevant Legislation and Policies

Legislation	Relevance
Environment Protection and Biodiversity Conservation Act (EPBC Act)	Provides for the protection of the environment, particularly those aspects that are Matters of National Environmental Significance (MNES). MNES relevant to the site include nationally listed threatened species, ecological communities and listed migratory species.
Environmental Planning and Assessment Act 1979 (EP&A Act)	This legislation is the principal planning legislation for NSW and provides a framework for land use control and assessment, determination and management of development. The Project was transitioned from Part 3A to Part 4 of the Act on 19 March 2014 and was assessed and approved by the (former) NSW Planning Assessment Commission (PAC) as a State Significant Development in May 2016. Modification 1 was assessed under Part 4, Section 4.38 (formerly Section 89E) of the Act and approved by the NSW Independent Planning Commission (IPC) on 21 June 2019.
Biodiversity Conservation Act 2015 (BC Act)	The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. The BC Act contains provisions relating to threatened species and ecological communities' listings and assessment, repealing the Threatened Species Conservation Act 1995 (TSC Act) and section 5A of the EP&A Act. The Biodiversity Conservation Regulation 2017 supports the BC Act.
Fisheries Management Act 1994 (FM Act)	The FM Act aims to conserve, develop and share the fishery resources of NSW for the benefit of present and future generations. The FM Act defines 'fish' as any marine, estuarine or freshwater fish or other aquatic animal life at any stage of their life history, excluding whales, mammals, reptiles, birds, amphibians, or other species specifically excluded. No threatened fish species, or endangered populations are known to occur within the Project Site. In accordance with section 75U of the EP&A Act, applications for separate permits under section 201, 205 or 219 of the FM Act 1994 are not required as these matters are addressed and approved as part of the EP&A Part 3A process.
Local Land Services Act 2015 (LLS Act)	The LLS Act established Local Land Services in NSW to provide biosecurity, natural resources management and agricultural advisory services. The BC Act refers to the LLS Act for definitions including vegetation clearing.
Biosecurity Act 2015	The Act provides a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers. Whilst the Act provides for all biosecurity risks, implementation of the Act for weeds is supported by Regional Strategic Weed Management Plans (RSWMP) developed for each region in NSW. Appendix 1 of the Central Tablelands Regional Strategic Weed Management Plan 2017 - 2022 identifies the priority weeds for control at a regional scale. Five regional priority weeds were identified within the Project Site.
State Environmental Planning Policy (SEPP) 44	Aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline. SEPP 44 applies to the Mid-Western and Bathurst Regional LGAs (the Mid-Western Regional Council (MWRC) LGA includes the former Mudgee LGA, which is listed under SEPP 44). Koalas have previously been recorded within the locality and there were a number of records of this species within the Project Site. Schedule 2 of SEPP 44 includes a list of Koala feed tree species. No Koala feed tree species as listed in SEPP 44 were recorded in the Project Site; however, Koala scats were found at the bases of *Eucalyptus macrorhyncha* (Red Stringybark), *E.*

Legislation	Relevance
	rossii (Inland Scribbly Gum), *E. goniocalyx* (Long-leaved Box / Bundy), and *E. polyanthemos* (Red Box) present within the Project Site. Section 75R of the EP&A Act excludes, with respect to critical infrastructure projects, all environmental planning instruments (other than SEPPs that specifically relate to the project) and council orders under Division 2A of Part 6. An assessment under SEPP 44 was, therefore, not required. However, as the Koala is listed as a threatened species, Koala habitat was assessed as part of the EA.
Mid-Western Regional Council (MWRC) *Local Environmental Plan* (LEP) *2012*	The CRWF falls within both the MWRC and Bathurst Regional Council LGAs. The Project was assessed under the former Part 3A and Part 4 of the EP&A Act and, therefore, NSW Department of Planning, Industry and Environment (DPIE) is the consent authority. The MWRC and Bathurst Regional LEPs neither prohibit the development, nor allow it without development consent.
Bathurst Regional LEP 2014	

1.4 Conditions of Approval

Table 1-2 provides a summary of the conditions of approval within the NSW Development Consent (SSD-6697 MOD 1) and Commonwealth Approval (2011/6206) relating to biodiversity management.

A Biodiversity Offset Strategy was prepared for the Project as part of the Environmental Assessment and is referenced in the Development Consent. Due to changes in the Commonwealth approved Project, the offset strategy has been refined as a standalone document and does not form part of this BMP.

Table 1-2: NSW Development Consent conditions relevant to this Management Plan

Condition of Approval	Requirement	Section this is Addressed
Schedule 3 Condition 19	***Operating Conditions*** *The Applicant shall:* *a. ensure unless the Secretary agrees otherwise that no more than:* • *5.7 hectares of Box Gum Woodland is cleared for the development including the 0.95 hectares that would be cleared for Aarons Pass Road upgrades; and* • *5.64 hectares of Red Stringybark - Red Box - Long-leaved Box – Inland Scribbly Gum is cleared for the Aarons Pass Road upgrades; and*	*Section 4.1*
	b. implement all reasonable and feasible measures to minimise: • *impacts on the Small-Purple Pea (Swainsona recta), Acacia meiantha and Pomaderris cotoneaster; ;* • *limb-lopping of hollow bearing trees along Aarons Pass Road;* • *impacts on threatened bird and bat populations;* • *the approved clearing of native woodland vegetation and fauna habitat including hollow-bearing trees; and* *c. if micro-siting wind turbines, ensure that the revised location of the turbine is at least 30 metres from any existing hollow-bearing trees, and where reasonable and feasible, 50 metres from any existing hollow-bearing tree, unless the Secretary agrees otherwise.* *Note: In considering a request for micro-siting of turbines within 30 m of existing hollow-bearing trees, the Secretary will consider safety concerns, the constructability of the turbine, and/or whether the micro-siting would materially increase biodiversity impacts.*	*Section 4.1*
Schedule 3 Condition 20	***Biodiversity Offset Strategy*** *Within 2 years of the commencement of construction, unless the Secretary agrees otherwise, the Applicant must enter into a stewardship agreement under the BC Act for the enhancement*	*Separate document under the EMS – not included within the BMP.*

Condition of Approval	Requirement	Section this is Addressed
	and protection of the Biodiversity Offset Area (see the figure in Appendix 5) in accordance with the biodiversity offset strategy described in the EA for the development.	
Schedule 3 Condition 21	***Biodiversity Offset Strategy – Aarons Pass Road*** *Within 2 years of the commencement of construction, unless the Secretary agrees otherwise, the Applicant must retire biodiversity credits of a number and class specified in Tables 5 and 6 below. The retirement of credits must be carried out in accordance with the requirements of the NSW Biodiversity Offsets Scheme and can be achieved by:* *i. acquiring or retiring 'biodiversity credits' within the meaning of the Biodiversity Conservation Act 2016;* *ii. making payments into the Biodiversity Conservation Fund; and* *iii. funding a biodiversity conservation action that benefits the threatened entity impacted by the development, consistent with the 'Ancillary rules: Biodiversity conservation actions'*	*Biodiversity Offset Strategy (separate document to this BMP)*

Table 5: Ecosystem Credit Requirements

Vegetation Community	*PCT ID*	*Credits Required*
Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	*277*	*16*
Red Stringybark – Red Box – Long-leaved Box – Inland Scribbly Gum tussock grass shrub low open forest on hills in the southern part of the NSW South Western Slopes Bioregion	*290*	*123*

Table 6 Species Credit Requirements

Species	***Credits Required***
Glossy Black Cockatoo	*154*
Powerful Owl	*154*
Masked Owl	*154*
Koala	*156*
Acacia meiantha	*5*
Pomaderris cotoneaster	*1*

Schedule 3 Condition 22	***Biodiversity Management Plan*** *Prior to carrying out further work on the upgrades on Aarons Pass Road after the date of approval of Modification 1,, the Applicant must prepare a revised Biodiversity Management Plan for the development to the satisfaction of the Secretary. This plan must:* *(a) be prepared in consultation with BCD and DoE; and* *(b) include a:* • *description of the measures that would be implemented for:* - *satisfying the requirements in condition 19 above;* - *satisfying the requirements in condition 19 above;* - *rehabilitating and revegetating temporary disturbance areas;* - *protecting vegetation and fauna habitat outside the approved disturbance area;* - *maximising the salvage of resources such as vegetative and soil resources within the approved disturbance area, including along Aarons Pass Road, for beneficial reuse such as fauna habitat enhancement on site and/or in the biodiversity offset area;* - *collecting and propagating seed (where relevant);* *minimising the impacts on fauna on site, including undertaking pre-clearance surveys;* *controlling weeds and feral pests;* - *controlling erosion;* - *controlling access; and* - *minimising bushfire risks;* • *a Translocation Plan for moving any Acacia meiantha in the approved development area for the Aarons Pass Road upgrades;*	*Section 1.5* *Section 4.3* *Section 4.4* *Section 4.7* *Section 4.2* *Section 4.4*

<table>
<tr><th>Condition of Approval</th><th>Requirement</th><th>Section this is Addressed</th></tr>
<tr><td></td><td>-
• Bird and Bat Adaptive Management Plan, that includes:
- baseline data on bird and bat populations in the locality that could potentially be affected by the development, particularly 'at risk' species and threatened species;
- a detailed description of the measures that would be implemented on site for minimising bird and bat strike during operation of the development, including:
○ minimising the availability of raptor perches;
○ prompt carcass removal;
○ controlling pests;
○ using best practice methods for bat deterrence, including managing potential lighting impacts;
○ adaptive management of turbines to reduce mortality; and
(c) include a detailed program to monitor and report on:
• the performance of these measures and plans, including a clear methodology to calculate and verify the clearing required for the Aarons Pass Road upgrades; and
• bird and bat strike annually. or as otherwise directed by the Secretary.</td><td>Biodiversity Offset Strategy (separate to this report)
BBAMP (separate to this report)

Section 5</td></tr>
<tr><td>Schedule 3 Condition 23</td><td>Following approval, the Applicant must implement the measures described in the Biodiversity Management Plan.</td><td>Section 4</td></tr>
<tr><td>Schedule 3 Condition 41</td><td>Progressive Rehabilitation

The Applicant shall rehabilitate all areas of the site not proposed for future disturbance progressively, that is, as soon as reasonably practicable following construction or decommissioning. All reasonable and feasible measures must be taken to minimise the total area exposed at any time. Interim rehabilitation strategies shall be employed when areas prone to dust generation, soil erosion and weed incursion cannot yet be permanently rehabilitated.</td><td>Section 4.6</td></tr>
<tr><td>Schedule 3 Condition 42</td><td>Rehabilitation Objectives - Decommissioning

The Applicant shall rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must comply with the objectives in Table 7
Table 7 rehabilitation Objectives.
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>Development site (as a whole)</td><td>- safe, stable, non-polluting
- minimise the visual impact of any above ground ancillary infrastructure agreed to be retained for an alternative use as far as is reasonable and feasible</td></tr>
<tr><td>Revegetation</td><td>- Restore native vegetation generally as identified in the EA</td></tr>
<tr><td>Above ground wine turbine infrastructure (excluding wind turbine pads)</td><td>- To be decommissioned and removed, unless the Secretary agrees otherwise.</td></tr>
<tr><td>Above ground ancillary infrastructure</td><td>- To be decommissioned and removed, unless an agreed alternative use is identified to the satisfaction of the Secretary</td></tr>
<tr><td>Internal access roads</td><td>- To be decommissioned and removed, unless an agreed alternative use is identified to the satisfaction of the Secretary</td></tr>
<tr><td>Land Use</td><td>- Restore or maintain land capability as described in the EA</td></tr>
<tr><td>Community</td><td>- Ensure public safety</td></tr>
</table></td><td>Section 4.6</td></tr>
</table>

Table 1-3: Commonwealth approval conditions relevant to this Management Plan

Condition of Approval	Requirement	Section this is Addressed
2	*If the approval holder does not secure the offset site through a NSW BioBanking Agreement, then the approval holder must protect the offset site under a legal instrument, approved by the Minister within 12 months of the commencement of construction. The legal instrument must:* *a. Be register on title of the offset site once approved, and* *b. Provide for the protection and ongoing conservation management of the offset site in perpetuity.*	*Biodiversity Offset Strategy (separate to this document)*

Condition of Approval	Requirement	Section this is Addressed
3	*The person taking the action must not clear more than 3.28 hectares of White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland ecological community, for the development of the proposed action, as defined in Schedule 1 of this approval.*	*Section 2.6.1 and 4.1*
4	*The person undertaking the action must not clear known locations of Small Purple Pea (Swainsona recta) within the Project Area (identified within the Environmental Assessment). The person taking the action must not clear any additional populations of Small Purple Pea (not identified in the Environmental Assessment), without the approval of the Minister.*	*Section 4.3*

1.5 Consultation

This plan has been prepared for review by the NSW Biodiversity Conservation Division of the Department of Planning, Industry and Environment (BCD)Bi) and Commonwealth Department of the Environment and Energy (DOEE; the Department) to seek input and feedback on the proposed biodiversity management of the Project. An initial request was put to BCD on June 11, 2017 seeking recommendations for inclusion in the plan prior to the first review. It was agreed that an initial draft of the plan would be submitted to BCD prior to any feedback being provided.

During the preparation of Modification 1 further consultation was undertaken with the DPIE, Department of Environment and Energy (DOEE) and NSW BCD. BCD provided feedback on the BMP and the translocation plan for Acacia meiantha. The DOEE have advised that as there is no additional clearing of the listed EPBC Act ecological community and the is not a significant impact on Acacia meiantha and Pomaderris recta then no further action is required.

This section of the plan will be updated based on the responses provided by BCD and any other relevant stakeholders, prior to the plan being submitted to NSW DPIE for review and approval.

2 Overview of the Existing Environment

2.1 Landforms and Land use

The Project is located on the Great Dividing Range in the northern central tablelands of NSW. The landscape is characterised by undulating to steep hills and ridge-lines. The majority of the landscape is currently used for agricultural and farming practices including fodder cropping, viticulture, and grazing (Kass 2003). The land within the Project Site is primarily used for wool production and cattle grazing.

Further detail on the landforms and land use (historical and current) can be found within Sections 1.1.3 and 1.1.5 of the CRWF Part 3A Ecological Assessment (EA) (ELA 2011, ELA 2016, ELA 2018, ELA 2019).

2.2 Meteorology

The nearest operational meteorological station is located 40 km north at Mudgee (Station No. 062021). Climate data for Mudgee is summarised below in Table 2-1.

Table 2-1: Climate data for Mudgee (Bureau of Meteorology 2017)

Average Weather Conditions	Measurements
Annual Rainfall	672.7 mm
Highest Monthly Rainfall	81.5 mm (December)
Lowest Monthly Rainfall	34.6 mm (April)
Annual Minimum / Maximum Temperature	8.2°C / 22.6°C
Highest Mean Monthly Temperature	15.9°C to 30.7°C (January)
Lowest Mean Monthly Temperature	1.3°C to 14.3°C (July)

2.3 Geology and Soils

The CRWF is located within the Hill End – Ngunnawal geological province, which comprises the Hill End and Capertee subprovinces. The Hill End subprovince is characterised by steep rolling hills and undulating low hills, with exposed bedrock occurring on all slopes. Soliths and yellow solodic soils occur on the footslopes, while red podzolic soils and shallow soils are found on the upper slopes. The Capertee subprovince is characterised by strongly folded and steeply dipping terrain, which varies from rugged to undulating or rolling terrain. Non-calcic brown soils occur on the mid-slopes, while deeper, medium textured, moderate to highly fertile soils are found on the undulating terrain (Geoscience Australia 2011).

Further detail regarding geology and soils can be found within Sections 1.1.3 of the CRWF Part 3A Ecological Assessment (ELA 2011, ELA 2016, ELA 2018).

2.4 Vegetation

The Project Site is characterised by a mix of native woodland and open-forest, native pasture, exotic pasture and cleared land. Each vegetation type present has been impacted to varying degrees by weed invasion, grazing, minor cropping and soil disturbance depending on the land use practices on each property.

Four Biometric Vegetation Types (BVT) were identified within the Project Site (Table 2-2) during completion of the EA (ELA, 2012).

Table 2-2: BVTs and EEC/CEEC Equivalent

Biometric Vegetation Type	BC Act	EPBC Act
CW117 - Broad-leaved Peppermint - Brittle Gum - Red Stringybark dry open forest on the South Eastern Highlands	-	-
CW176 - Red Stringybark - Scribbly Gum - Red Box - Long-leaved Box shrub - tussock grass open forest of the NSW South Western Slopes Bioregion (Benson 290)	-	-
CW206 - Wet tussock grasslands of cold air drainage areas of the tablelands	-	-
CW209 - White Box – Blakely's Red Gum - Yellow Box grassy woodland of the NSW South Western Slopes Bioregion (Benson 282)	W*hite Box Yellow Box Blakely's Red Gum Woodland* (EEC)	*White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (CEEC)

Vegetation along Aarons Pass Road was subject to further assessment in 2018 for Modification 1, in accordance with the biodiversity assessment methods prescribed by the BC Act. Vegetation was mapped to Plant Community Type (PCT) as required by the BC Act, and comprised two PCTs which correspond directly to the now superseded BVTs:

- PCT 277 - Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (corresponds to BVT CW209)
- PCT 290 - Red Stringybark – Red Box – Long-leaved Box – Inland Scribbly Gum tussock grass shrub low open forest on hills in the southern part of the NSW South Western Slopes Bioregion (corresponds to BVT CW176).

2.4.1 Threatened Ecological Communities

One threatened ecological community (TEC) was identified in the Project Site during completion of the EA (ELA, 2012), associated with CW209 - White Box – Blakely's Red Gum - Yellow Box grassy woodland (WBBRGYB) of the NSW South Western Slopes Bioregion (mapped as PCT 277 on Aarons Pass Road). This vegetation type is listed as:

- *White Box Yellow Box Blakely's Red Gum Woodland* listed as an Endangered Ecological Community (EEC) under the BC Act; and
- *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* listed as a Critically Endangered Ecological Community (CEEC) under the EPBC Act.

Areas of the EEC White Box - Yellow Box - Blakely's Red Gum Woodland listed under the BC Act and the CEEC White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed under the EPBC Act (both more commonly known as Box Gum Woodland (BGW), are present primarily in the north of the Project Site along the Aarons Pass Road corridor and in a discrete section of the transmission line. Figure 2 and Figure 3 shows the location of the EEC/CEECs within the Project Site.

Vegetation clearance within this community has been restricted within the Conditions of Approval (Section 1.4). Schedule 3, Condition 19 a) of NSW Development Consent SSD-6697 has restricted clearing to 5.7 ha of the BC Act listed EEC, while Condition 2 of the Commonwealth Approval restricts clearing to 3.28 ha of the EPBC Act listed CEEC.

Areas of Low condition WBBRGYB are characteristic of the BC Act defined community. However, areas mapped as Moderate/Good condition only reflect the EPBC Act listed BGW community. Low condition areas do not retain sufficient integrity to be considered the CEEC under the EPBC Act. Furthermore, none of the derived grassland / pasture areas that met the EPBC Act criteria fall within the proposed impact area.

Within the Project Site, WBBRGYB is present in lower lying, gently sloping and undulating land below 900 m elevation. It occurs in both the Sally's Flat and Pyramul Clusters, but is most common in the eastern arm of the Project Site where external overhead lines are to be located, mainly on clastic (siltstone), volcanoclastic, and felsic rock (rhyolite), but also to a lesser extent on metamorphic rock (siltstone). The structure of the community is open grassy woodland, grassland and pasture.

All other areas where this community is present within the Project Site had been previously cleared. In the majority of grassland areas, the groundcover is in moderate to good condition, with native species comprising greater than 50 % cover at the time of assessment. However, in some areas near the eastern extremity of the Project Site, the groundcover is dominated by exotic species, with native species comprising less than 50 % cover, especially where pastures have been oversown with *Phalaris* spp.

The Wet Tussock grasslands of cold air drainage areas of the tablelands (CW206) has been listed as an EEC under the BC Act post approval of the Project. This community will be impacted by 0.18 ha of permanent removal and 0.06 ha of temporary removal.

2.4.2 Threatened Flora

Several threatened flora species are known to occur or have the potential to occur within the Project Site (Table 2-3). Of these, *Swainsona recta* (Small Purple-pea), was recorded in the proposed powerline easement. *Acacia meiantha* and *Pomaderris cotoneaster* were recorded at several locations along Aarons Pass Road during Modification 1. . Figure 4 and Figure 5 show the locations of these threatened species where potential impacts have been approved.

Potential habitat was identified for six other threatened flora species in the Project Site as detailed below in Table 2-3.

Table 2-3: Threatened flora with potential habitat in the Project Site

Scientific name	Common name	BC Act	EPBC Act
Bothriochloa biloba	Lobed Blue Grass	Delisted	Delisted
Eucalyptus cannonii	Capertee Stringybark	V	-
Eucalyptus robertsonii subsp. *hemisphaerica*	Robertson's Peppermint	V	V
Prasophyllum sp. *Wybong*	A Leek Orchid	-	CE
Swainsona recta	Small Purple-pea	E	E
Swainsona sericea	Silky Swainson-pea	V	-
Thesium australe	Austral Toadflax	V	V
Acacia meiantha		E	-
Pomaderris cotoneaster		E	E

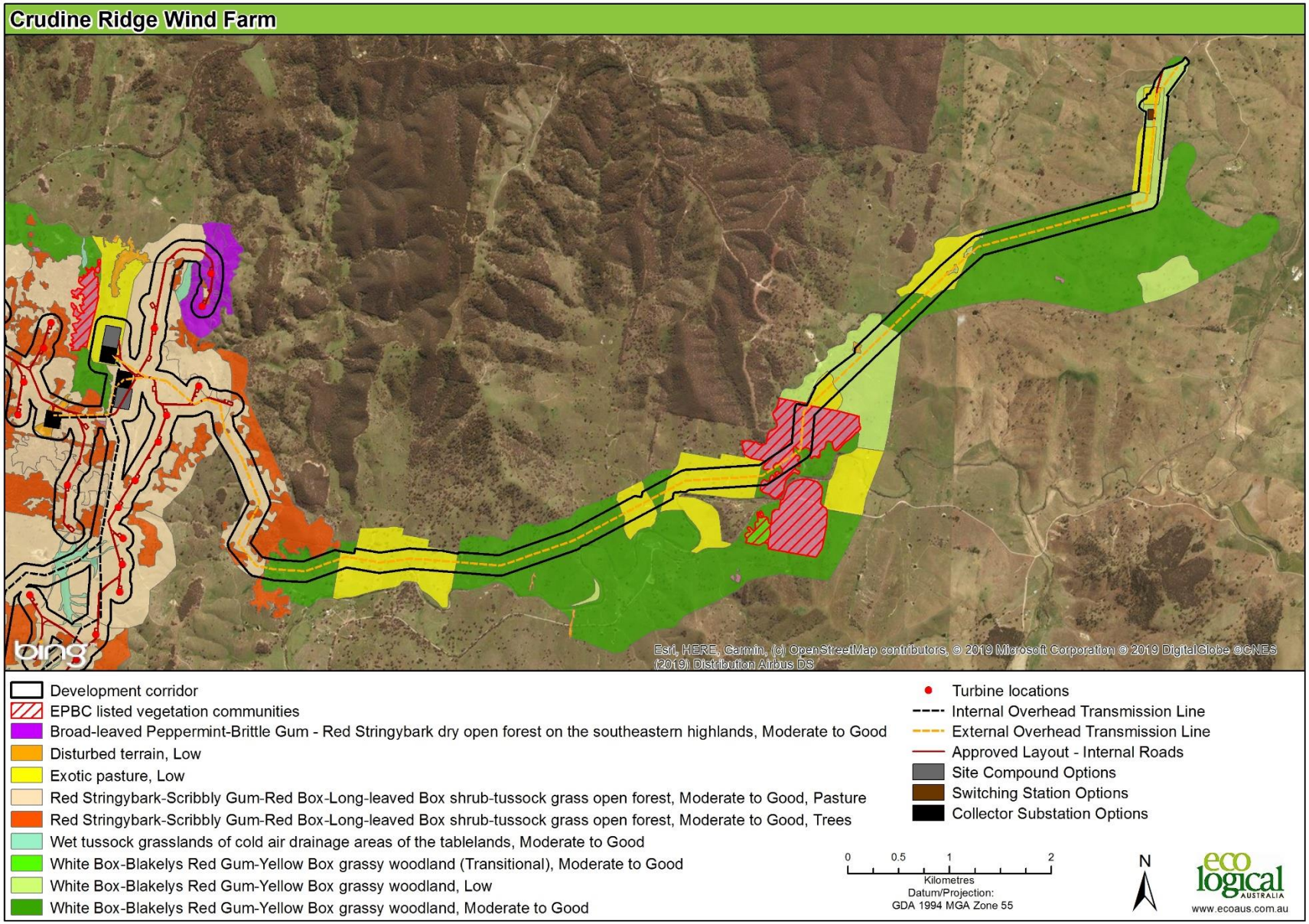

Figure 2: Vegetation types and EEC/CEEC locations – Part A

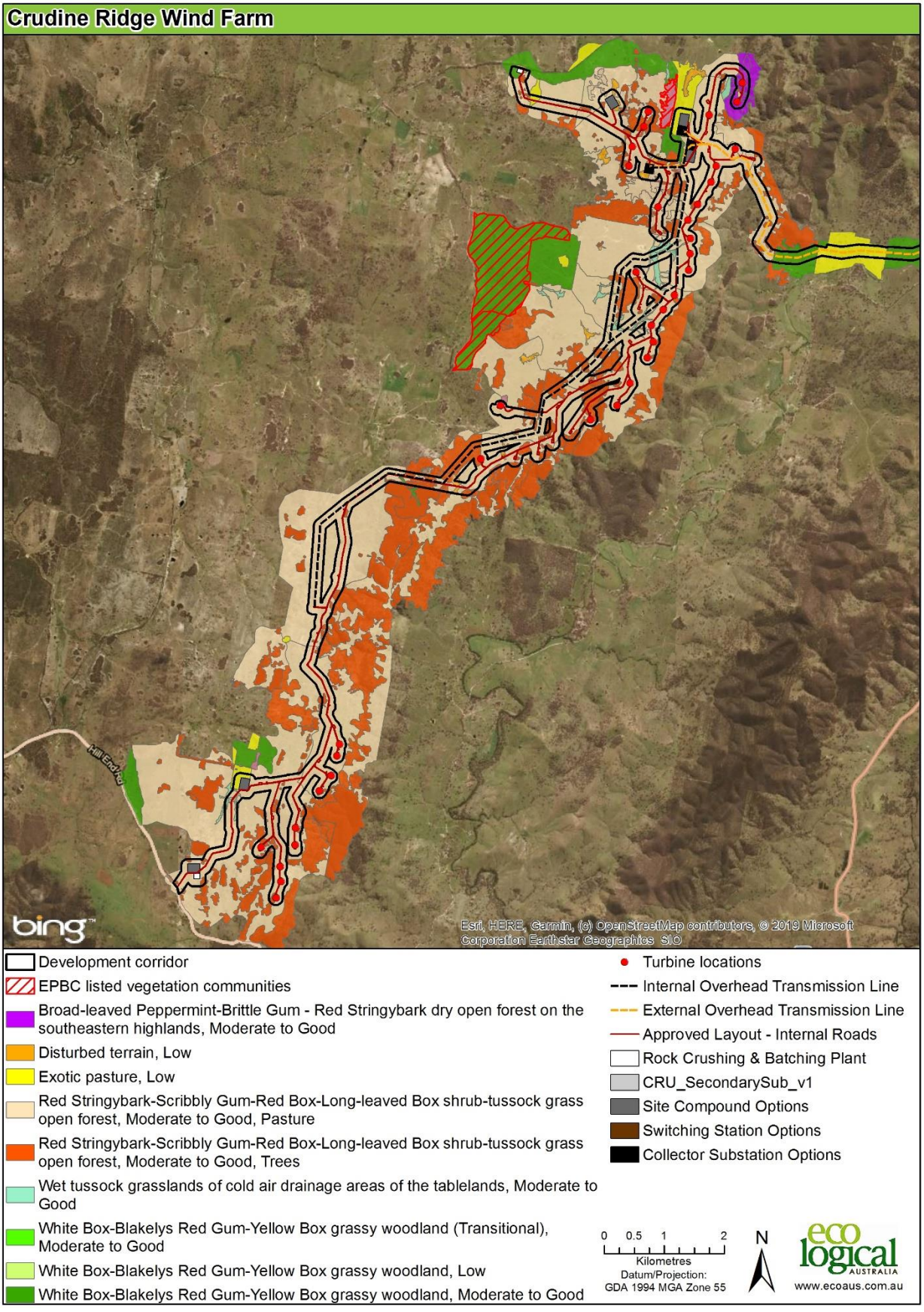

Figure 3: Vegetation types and EEC/CEEC locations – Part B

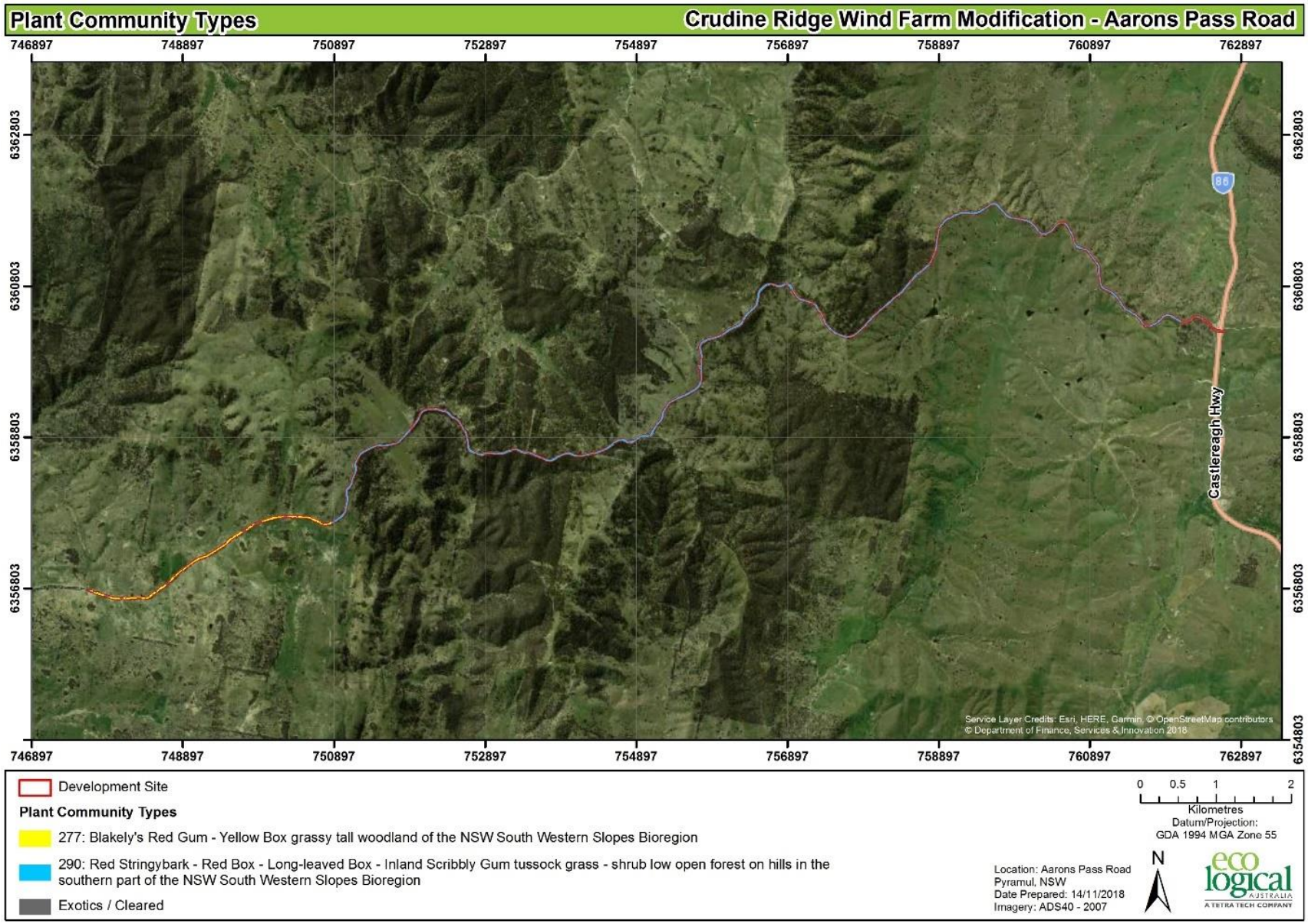

Figure 4: Vegetation types and EEC/CEEC locations – Aarons Pass Road

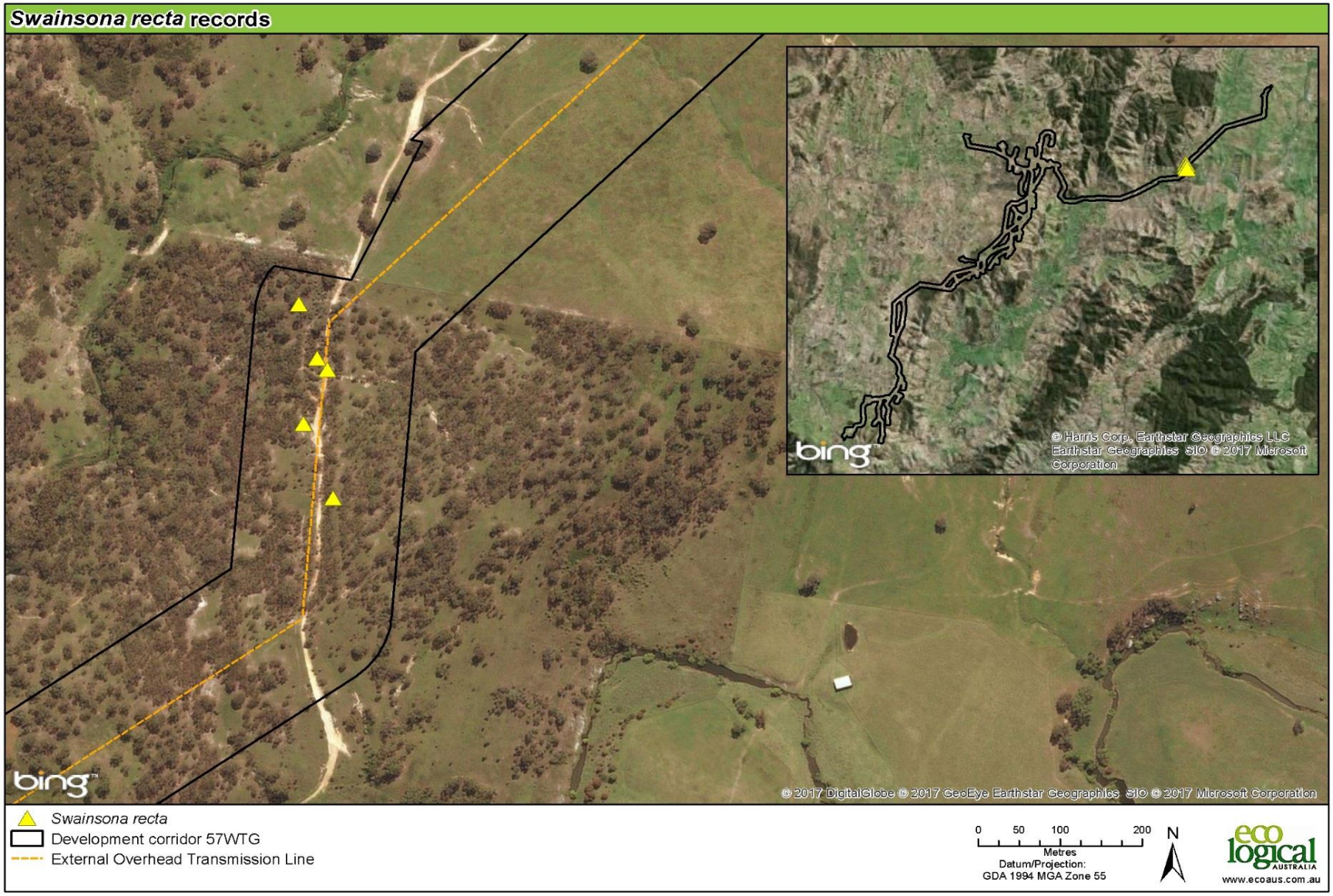
Swainsona recta records
bing
© Harris Corp, Earthstar Geographics LLC Earthstar Geographics SIO © 2017 Microsoft Corporation
bing
© 2017 DigitalGlobe © 2017 GeoEye Earthstar Geographics SIO © 2017 Microsoft Corporation
Swainsona recta
Development corridor 57WTG
External Overhead Transmission Line
0 50 100 200
Metres
Datum/Projection:
GDA 1994 MGA Zone 55
N
eco logical AUSTRALIA
www.ecoaus.com.au

Figure 5: Known locations of *Swainsona recta*

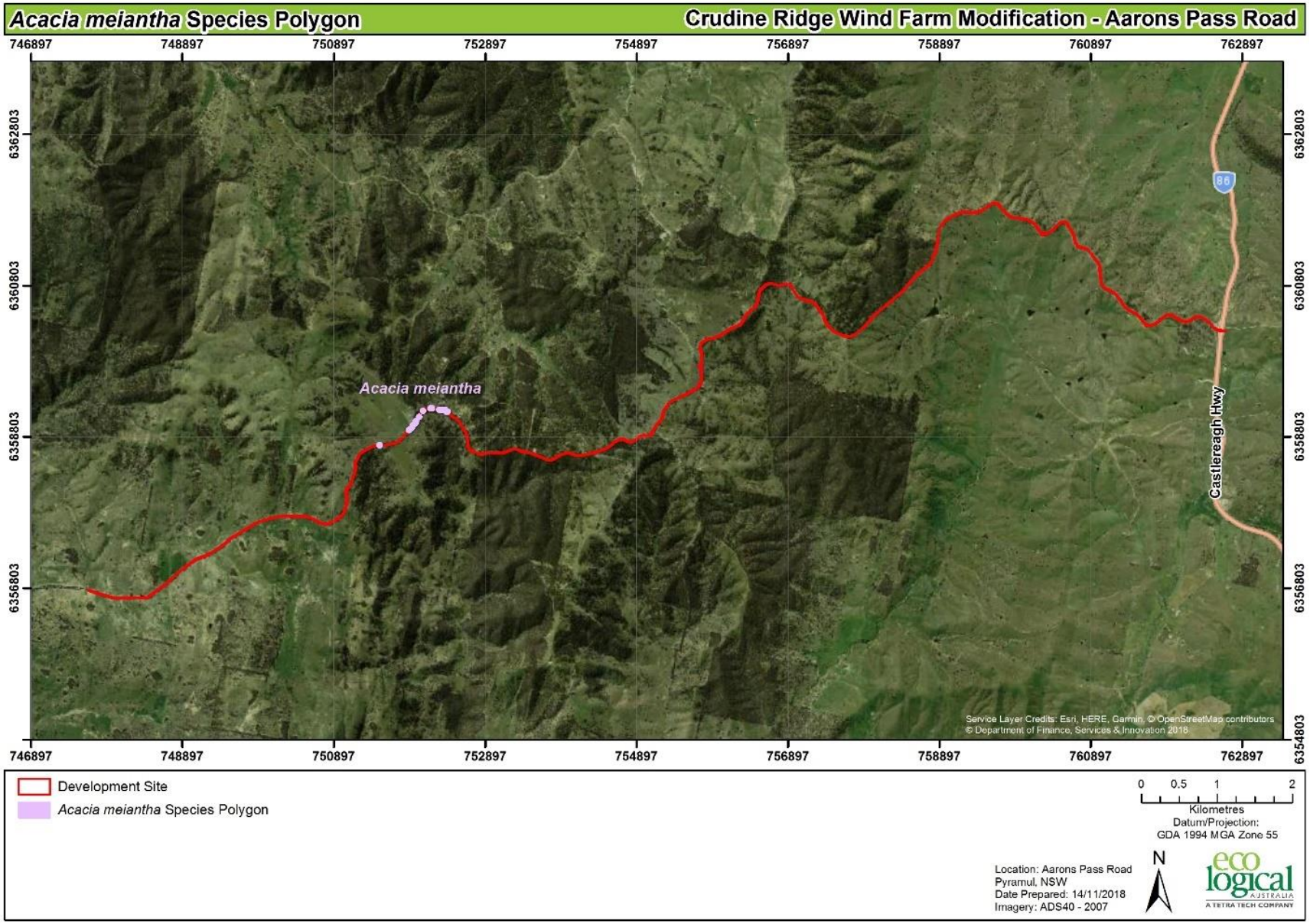

Figure 6: Location of *Acacia meiantha* along Aarons Pass Road

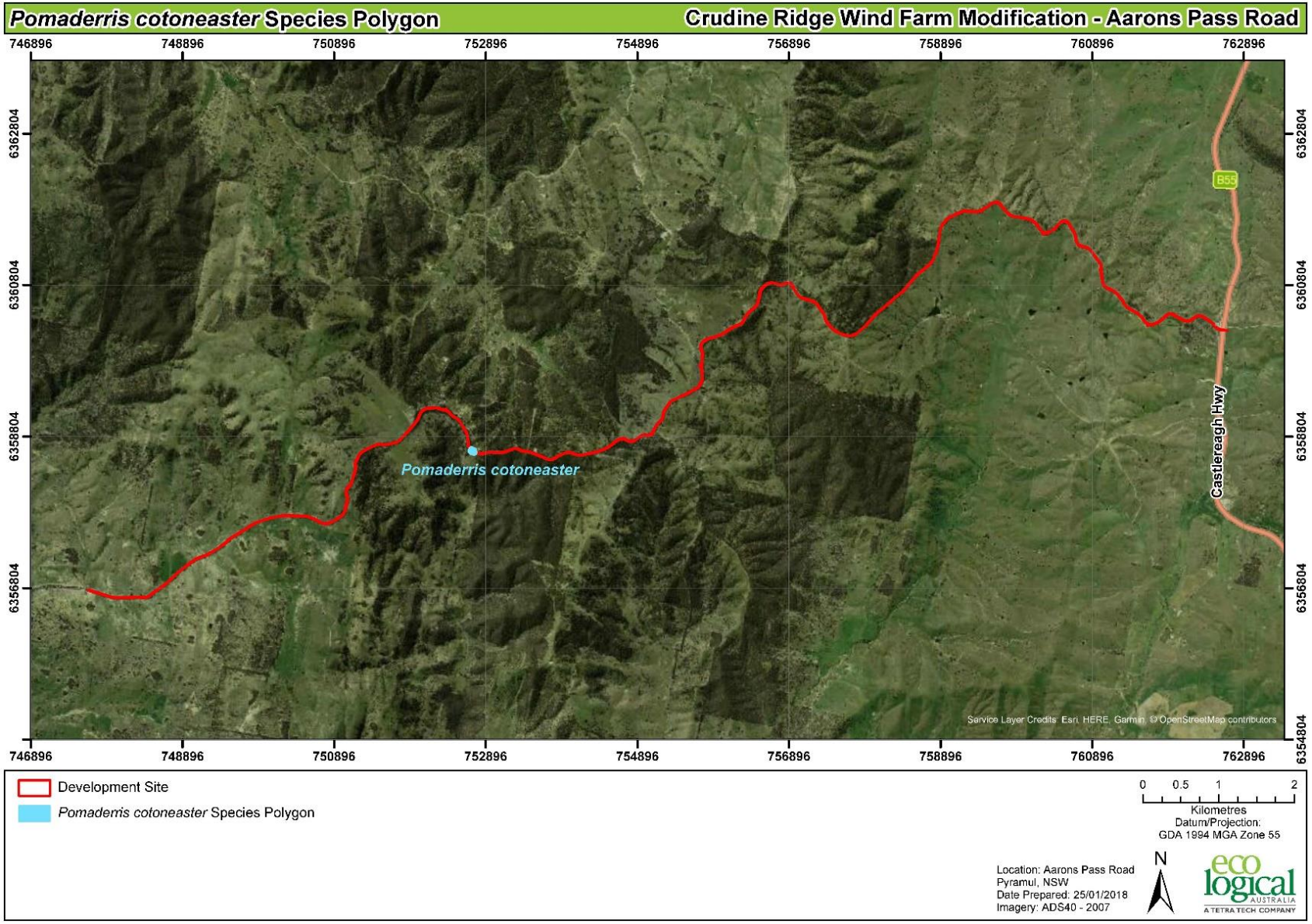

Figure 7: Location of *Pomaderris cotoneaster* along Aarons Pass Road

2.4.3 State and Regional Priority Weeds

The *Noxious Weeds Act 1993* was repealed on 1 July 2017 with the inception of the *Biosecurity Act 2015*. There are five state and/or regional priority weeds (formerly "noxious" weeds) are located within the Development Corridor. as within the MWRC and Bathurst Regional LGAs (Department of Industry and Development 2011) including three Weeds of National Significance (WONS) have been recorded within the Project Site. Species identified are listed in Table 2-4 below.

. The new categories of weeds have been developed and are shown in Table 2-4 below.

Table 2-4: Noxious weeds recorded within the Project Site

Common Name	Scientific Name	NW Act Class	WONS	State Priority Weed	Regional Priority Weed
Blackberry	*Rubus fruticosus* aggregate species	4	x	x	x
Serrated Tussock	*Nassella trichotoma*	4	x	x	x
St. John's Wort	*Hypericum perforatum*	4	-	-	x
Sweet Briar	*Rosa rubiginosa*	4	-	-	x
Willow species	*Salix* sp.	5	x	-	x

Note: Class 4: the growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority. Class 5: the requirements in the *Noxious Weeds Act 1993* for a notifiable weed must be complied with.

2.5 Fauna

A range offauna species (including six introduced species) were recorded throughout the Project Site during the field surveys. Fauna recorded included reptile species, frog species, bird species (including one introduced bird species) and mammals (non-bat) (of which five are introduced) and microbat species.

2.5.1 Fauna Habitat

Potential habitat for hollow-dependent species is abundant in the form of tree hollows in remnant woodland and scattered trees and hollow-bearing logs across the landscape. Key fauna habitat features present across the Project Site are listed in Table 2-5 below.

Table 2-5: Key fauna habitat features present across the Project Site

Habitat Features	Biometric Vegetation Types / Species	Species
Hollow-bearing trees	CW176; CW209	Arboreal mammals, microchiropteran bats, hollow-dependent birds (including owls), and reptiles
Stags	CW117; CW176; CW209	Birds and reptiles
Rocky outcrops	CW117; CW176; CW206; CW209	Small ground dwelling mammals, reptiles
Dams, watercourses and ephemeral drainages	CW176; CW206; CW209	Amphibians, birds, reptiles, mammals, microchiropteran bats
Autumn / winter-flowering eucalypts	*Eucalyptus blakelyi* (Blakely's Red Gum), *E. albens* (White Box), *E. goniocalyx* (Long-leaved Box), *E. macrorhyncha*	Nectivorous birds and microchiropteran bats
Tussock grasses	CW117; CW176; CW206; CW209	Birds, frogs, reptiles and bats
Fallen timber	CW117; CW176; CW209	Reptiles, small mammals, frogs and birds
Leaf litter	CW117; CW176; CW209	Reptiles, small mammals and birds
Defoliating bark	CW176; CW209	Small mammals and reptiles
Koala Feed Trees	*E. macrorhyncha, E. rossii* (Inland Scribbly Gum), *E. goniocalyx* (Long-leaved Box / Bundy), and *E. polyanthemos* (Red Box)	Koala

2.5.2 Threatened and Migratory Fauna Species

The threatened fauna species were identified as known, likely or have the potential to occur in the Project Site are listed in Table 2-6 below.. Fourteen (14) of these species were recorded across the Project Site during surveys undertaken for the original Project EA.

Table 2-6: Threatened fauna species known, likely or have the potential to occur

Scientific name	Common name	BC Act	EPBC Act	Identified in Project Site
Birds				
Anthochaera phrygia	Regent Honeyeater	CE	CE	N
Burhinus grallarius	Bush Stone-curlew	E	-	N
Callocephalon fimbriatum	Gang Gang Cockatoo	V	-	N
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-	N
Circus assimilis	Spotted Harrier	V	-	N
Climacteris picumnus victoriae	Brown Treecreeper	V	-	Y
Daphoenositta chrysoptera	Varied Sittella	V	-	N
Glossopsitta pusilla	Little Lorikeet	V	-	Y
Hieraaetus morphnoides	Little Eagle	V	-	N

Scientific name	Common name	BC Act	EPBC Act	Identified in Project Site
Lathamus discolor	Swift Parrot	E	CE	N
Melanodryas cucullata cucullata	Hooded Robin	V	-	Y
Melithreptus gularis gularis	Black-chinned Honeyeater	V	-	N
Ninox connivens	Barking Owl	V	-	N
Ninox strenua	Powerful Owl	V	-	N
Tyto novaehollandiae	Masked Owl	V	-	N
Petroica boodang	Scarlet Robin	V	-	Y
Petroica phoenicea	Flame Robin	V	-	N
Polytelis swainsonii	Superb Parrot	V	V	N
Chthonicola sagittata	Speckled Warbler	V	-	Y
Stagonopleura guttata	Diamond Firetail	V	-	Y
Frogs				
Litoria booroolongensis	Booroolong Frog	E	E	N
Reptiles				
Aprasia parapulchella	Pink-tailed Legless Lizard	V	V	N
Mammals				
Dasyurus maculatus	Spotted-tailed Quoll	V	E	N
Petaurus norfolcensis	Squirrel Glider	V	-	N
Phascogale tapoatafa	Brush-tailed Phascogale	V	-	N
Phascolarctos cinereus	Koala	V	Y	Y
Mammals (Bats)				
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Y
Chalinolobus picatus	Little Pied Bat	V	-	Y
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	V	-	Y
Nyctophilus corbeni	Greater (Eastern) Long-eared Bat	V	V	Y
Pteropus poliocephalus	Grey-headed Flying Fox	V	V	N
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	Y
Vespadelus troughtoni	Eastern Cave Bat	V	-	Y
Migratory Species				
Ardea modesta	Great Egret		Ma	N
Ardea ibis	Cattle Egret		Ma	N
Hirundapus caudacutus	White-throated Needletail	-	M, Ma	N
Merops ornatus	Rainbow Bee-eater	-	-	Y
Myiagra cyanoleuca	Satin Flycatcher		M, Ma	N

Note: CE = Critically Endangered, E = Endangered, V = Vulnerable, M = Migratory, Ma = Marine

2.5.3 Pest Fauna Species

Pest fauna species are commonly found across the Project Site. Species that are frequently identified onsite include foxes, goats and wild dogs. Each of these species presents management challenges for landholders. Feral animal control programs to control the populations and impacts from these species are currently undertaken across the Project Site by the landholders.

2.6 Potential Impacts

Impacts to flora, fauna and ecological communities were assessed as part of the EA and Modification 1 for the Project. Direct impacts expected to occur during construction of the project includes:

- Vegetation clearance;
- Loss of threatened flora and fauna habitat; and
- Loss of riparian vegetation.

2.6.1 Vegetation clearance

Vegetation clearing for the Project has been calculated and assessed in the EA and Modification 1.
Any native vegetation clearance that occurs will be minimised wherever possible in accordance with Condition 19 b) of SSD-6697 MOD 1 (Section 4.1). All impacts to vegetation will be offset in accordance with a quantitative assessment using 'maintain or improve' principles as determined by the use of the Biobanking credit calculator (refer to the revised Biodiversity Offset Strategy).

A more detailed assessment of the impacts of the Project on vegetation, including EECs, has been included within the EA and Modification 1 documentation (ELA 2011, ELA 2016, ELA 2018, ELA 2019).

2.6.2 Loss of threatened flora and fauna habitat

The Project Site has been cleared historically and is generally windy and exposed. Therefore, habitat suitable for a variety of threatened flora and fauna species is present in only discrete locations throughout the Project Site. The proposed vegetation clearance required for construction will result in the removal of some available potential habitat for these species. Mitigation measures to manage impacts are provided in Section 4.1.

A more detailed assessment of the impacts of the Project on threatened flora and fauna habitat has been included within the EA documentation (ELA 2011, ELA 2016 ELA 2018, ELA 2019).

2.6.3 Loss of riparian vegetation

The Project involves the establishment of a number of creek crossings. Where powerlines cross creek lines, these will be strung over the creek with poles placed outside the riparian zone to avoid impacts within this zone. Given the landscape is highly modified and riparian vegetation primarily consists of a grassy ground layer with no overstorey, the impacts to riparian vegetation will be minimal.

A more detailed assessment of the impacts of the Project on riparian areas has been included within the EA documentation (ELA 2011, ELA 2016).

3 Roles and Responsibilities

Table 3-1: Roles and responsibilities

Role	Responsibility
Principal Project Manager / Asset Manager	• *Responsible for delivery of the Project in accordance with this EMS and associated plans and statements;* • *Review and approve Project design changes, ensure Project Environment Officer and Project Community Officer are provided with updates in a timely manner;* • *Provide adequate resources to allow the implementation of the project EMS;* • *Issue non-conformance notices and to issue actions to avoid or minimise potential environmental impacts, and failing the effectiveness of such steps, order cessation of a specific activity.* • *Ensure all project personnel attend a site induction prior to commencing work;* • *Hold regular project team meetings; and* • *Support and attend Community Consultative Committee (CCC) meetings with the Project Community Officer.*
Project Environment Officer	• *Ensure site specific environmental requirements are fulfilled;* • *Ensure EPC Contractors and sub-contractors comply with this plan;* • *Ensure EPC Environment Officer is provided with updates in a timely manner* • *Undertake internal environmental auditing and reporting, or engage a suitably qualified auditor for that purpose;* • *Respond to environmental incidents;* • *Prepare reports on compliance;* • *Prepare environmental induction training materials in conjunction with EPC Contractors;* • *Implement the management programs and plans;* • *Be the primary point of contact for regulatory authority liaison;* • *Oversee environmental monitoring; and* • *Report to the Principal Project Manager on environmental performance of the EPC and sub-contractors.*
Project Community Officer	• *Be the primary point of contact for community liaison;* • *Ensure all staff and EPC contractors are aware of the community consultation requirements and complaints protocols;* • *Management of a Project complaints register;* • *Coordinate the CCC serving as the primary interface between the Project and that committee; and* • *Ensure the community is well informed of activities at the Project site, and activities which may affect the Community and their interests.*
Independent Environmental Auditor	• *Review the adequacy of the measures undertaken to deliver the Project in accordance with the EMS, management plans, programs, Development Consent and Commonwealth approval;* • *Request reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, direct that relevant actions be ceased immediately; and* • *Provide an audit report to be forwarded to the Secretary or Minister as relevant.*

Role	Responsibility
EPC Project Manager	• *Overall responsibility for the performance of the EPC Contractor and its sub-contractors against the requirements of this plan and the conditions of the Development Consent and Commonwealth approval;* • *Develop the Risk Management Plan for construction, and maintaining that plan throughout construction;* • *Consult with Principal Project Manager in relation to all Project design plan changes;* • *Provide the Project Environment Officer with detailed designs including mapping demarcating clearing boundaries;* • *Ensure all staff and sub-contractors complete a site environmental and heritage induction prior to commencing work on site;* • *Ensure adequate resources are available for all contractors and subcontractors to deliver the Project in compliance with the EMS and other relevant documents;* • *Hold regular project team meetings and toolbox talks, ensuring information is shared between all site personnel; and* • *Support and attend Community Consultative Committee (CCC) meetings at the request of the Principal Project Manager.*

EPC Environment Officer	• *Site specific environmental management programs to be prepared in accordance with the EMS, consistent with the requirements of this plan, and in compliance with the Development Consent and Commonwealth approval;*
	• *Site specific environmental management programs will be submitted to the Principal Project Manager and Project Environment Officer for approval prior to commencement of works;*
	• *Specific responsibilities in relation to this plan:*
	  ○ *Demarcation of the Development Footprint with markers or flagging tape where threatened flora species or EEC's are known to occur;*
	  ○ *Undertake the pre-clearance procedure in Section 4.2 prior to works in a given construction area, including engaging a qualified ecologist as required;*
	  ○ *Implement the threatened flora management strategies identified in Section 4.3;*
	  ○ *Manage the vegetation clearance procedures in Section 4.4;*
	  ○ *Implementing the rehabilitation and revegetation measures identified in Section 4.5;*
	  ○ *Undertake the Seed collection and propagation activities identified in Section 4.7;*
	  ○ *Implement the weed control measures identified in Section 4.8, including preparation of a Weed Control Plan to the satisfaction of the Project Environment Officer;*
	  ○ *Prepare and implement an Erosion and Sediment Control Plan identified in Section 4.10, to the satisfaction of the Project Environment Officer;*
	  ○ *Preparation of a Contamination and Waste Management Plan identified in Section 4.11, to the satisfaction of the Project Environment Officer;*
	  ○ *Preparation of a Bushfire Emergency Plan identified in Section 4.13, to the satisfaction of the Project Environment Officer;*
	  ○ *Monitoring of management activities as defined in Section 5, including maintenance of monitoring records and support of auditing;*
	  ○ *Weekly reporting identified in Section 6.1 and providing documentation required to comply with the reporting requirements in Section 6; and*
	  ○ *Notify the Project Environment Officer of any environmental incident or non-conformance immediately upon identifying the issue.*

Role	Responsibility
All Employees and Contractors	• *Complete a site induction prior to commencing works on site;* • *Attend all environmental training as required;* • *Comply with the specific controls in this EMS and associated plans;* • *Undertake all activities in accordance with agreed procedures and work methods;* • *Implement the actions identified in their management plans and programs in order to comply with the Development Consent conditions; and* • *Follow instructions of the Project Environmental Officer.*

4 Biodiversity Management Measures

This section defines the management measures that will be implemented during the Project construction phase to manage potential risks and impacts to biodiversity values. This section addresses the requirements of the Development Consent (Refer to Section 1.4) and section 3.4.2 of the Project EMS.

The key focus areas for biodiversity management strategies were identified in the EA (ELA 2011, ELA 2016, ELA 2018, ELA 2019) and have been reflected in the Development Consent. Management strategies have been developed to address the following key aspects:

- minimising vegetation clearing within approved areas, including Aarons Pass Rd;
- managing direct and indirect impacts to threatened species, including Small Purple-pea (*Swainsona recta, Acacia meiantha and Pomaderris cotoneaster*), and their habitat;
- rehabilitating and revegetating temporary disturbance areas;
- protecting vegetation and fauna habitat outside the approved disturbance area;
  maximising the salvage of resources such as vegetative and soil resources within the approved disturbance area, including along Aarons Pass Road, for beneficial reuse such as fauna habitat enhancement on site and/or in the biodiversity offset area;
- collecting and propagating seed (where relevant);
- minimising the impacts on fauna on site, including undertaking pre-clearance surveys;
- controlling weeds and feral pests;
- controlling erosion;
- controlling access; and
- minimising bushfire risks;
- a Translocation Plan for moving any *Acacia meiantha* in the approved development area for the Aarons Pass Road upgrades.

4.1 Minimising Vegetation to be Cleared

This Biodiversity Management Plan has been prepared based on the Approved Project Infrastructure, including 37 available turbine locations and all infrastructure options presented in the EA. Prior to construction the EPC Contractor will be appointed, and the Project will undergo a detailed design process. The Detailed Design process will:

1. Confirm which of the turbine locations are to be constructed;
2. Identify the final microsited locations of those turbines;
3. Confirm the ancillary infrastructure to be used for the Project; and
4. Provide detailed civil and electrical designs for all infrastructure, including the clearance limits required during construction.

All clearing of identified threatened species and communities will be done in accordance within the provisions of Condition 19 (a) Schedule 3 of SSD 6697 MOD1 which states:

The Applicant shall:

(a) ensure, unless the Secretary agrees otherwise, that no more than:

- *5.7 hectares of Box Gum Woodland is cleared for the development, including the 0.95 hectares that would be cleared for the Aarons Pass Road upgrades;*
- *5.64 hectares of Red Stringybark - Red Box - Long-leaved Box – Inland Scribbly Gum is cleared for the Aarons Pass Road upgrades; and*

The Federal Approval EPBC 2011/6206 states:

> *3. The person taking the action must not clear more than 3.28 hectares of White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland ecological community, for the development of the proposed action, as defined in Schedule 1 of this approval.*

All clearing of EPBC listed species undertaken within the Project area will be undertaken within these limits.

The detailed design will ensure that clearing is avoided where possible, and where it is unavoidable, impacts to vegetation or habitat outside of clearance areas area minimised. The first step involves the micro-siting of all infrastructure, with clearance boundaries being identified using high resolution digital capture and marking of sites in the field.

Micro-siting of Infrastructure

Micro-siting of Project infrastructure is permitted without further approval so long as it complies with the requirements of Condition 7, Schedule 3 of the Development Consent:

> *7. The Applicant may micro-site the wind turbines and ancillary infrastructure without further approval provided:*
> *(a) they remain within the development corridor shown on the figure in Appendix 2;*
> *(b) no wind turbine is moved more than 100 metres from the location shown on the figures in Appendix 2;*
> *(c) no wind turbine is moved closer to residences CR28, CR34, CR41 or HER07 from the GIS locations in Appendix 2[1]; and*
> *(d) the revised location of the wind turbine and/or ancillary infrastructure would not result in any non-compliance with the conditions of this consent.*

Micro-siting of turbines is further restricted by Condition 19 (c) of the Development Consent:

> *19. c) if micro-siting turbines, ensure that the revised location of the turbine is at least 30 metres from any existing hollow-bearing trees, and where reasonable and feasible, 50 metres from any existing hollow-bearing trees, unless the Secretary agrees otherwise.*

To commence the detailed design, turbine locations will be micro-sited on site with a qualified ecologist and relevant contractors. At each of the turbine locations the merits of final positioning will be discussed with the multiple priorities of:

- complying with micro-siting restrictions under condition 7;
- minimising impacts under conditions 19 (b) and (c) (refer to Table 1-2);
- maximising constructability of existing terrain;
- enabling safe access and egress for personnel and over-dimensional equipment;
- identifying optimal positioning of hardstand and foundation footprints; and
- optimising Project energy yield.

[1] *As clarified by DPE in an email dated June 10, 2016, wind turbines are not permitted to be constructed closer to those residences, than the nearest turbine approved in the Development Consent.*

Once the turbine locations are confirmed, detailed design of all remaining Project infrastructure will be undertaken by the EPC Contractor, prior to the commencement of construction. Micro-siting during construction may also be required in the event that unexpected finds or construction complications arise, and the measures provided in this plan are designed to allow for such circumstances.

Environmental Risk Management

The Environmental Management Strategy requires that the EPC Contractor prepare a Risk Management Plan for construction of the Project which evaluates environmental risks, identifies mitigation measures and assigned responsibilities. One of the key mitigation measures to be adopted in the plan will be to avoid and minimize vegetation clearance as far as practicable.

Environmental objectives and targets will be set and reviewed regularly throughout construction, particularly for environmental risks where the adequacy of mitigations has identified to be 'Satisfactory' or lesser. Where necessary, Environmental Management Programs and Plans will be prepared to enable effective risk management, compliance with relevant statutory requirements, and consistency with the Environmental Policy, Environmental Management Strategy, environmental objectives and targets.

This framework will ensure that the Project avoids and minimizes vegetation clearance as far as practicable.

Identifying Clearance Boundaries within the Wind Farm and Transmission Lines

The EPC Contractors detailed design will define the disturbance boundaries required for the wind turbines and associated infrastructure. The boundaries will be digitally captured and displayed within site survey and GIS databases. This data will be made available both digitally and in map format to inform and guide vegetation clearing, and post-construction for land preparation and rehabilitation requirements. The EPC Contractor will be responsible for demarcating clearing boundaries based on the detailed design and will provide the Project Environment Officer with mapping of the boundaries as approved by the Project Environment Officer prior to the commencement of any works clearance or site preparation.

Identifying Clearance Boundaries Aarons Pass Road

Prior to the commencement of any clearing activities on Aarons Pass Road the approved road design will be overlain with the vegetation mapping contained in ELA (2018) to produce a Site Disturbance Map for Aarons Pass Road.

The map will include the location of:

- The disturbance corridor for the construction of Aarons Pass Road consistent with the revised design assessed in the Modification;
- Vegetation mapping:
  - PCT 277 (Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion);
  - PCT 290 (Red Stringybark – Red Box – Long-leaved Box – Inland Scribbly Gum tussock grass shrub low open forest on hills in the southern part of the NSW South Western Slopes Bioregion);
- Disturbed and non-native vegetation;
- Known hollow bearing trees which will require lopping; which are within the blade sweep area

- Individual plants of *Acacia meiantha* to be retained, removed or relocated (refer to Translocation Plan in Appendix 2);
- Individual plants of *Pomaderris cotoneaster* to be retained or removed; and
- Where appropriate the locations of stockpiles, laydown areas and other temporary construction facilities if they impact on native vegetation.

The Site Disturbance Maps will use the vegetation mapping undertaken for the Biodiversity Development Assessment Report (BDAR) in the Modification, which was endorsed by the NSW Office of Environment and Heritage following a site inspection in April 2019.

The Site Disturbance Map will be prepared by the EPC Contractor and approved by the Project Environment Officer prior to the commencement of any works in the designated area.

Once the Site Disturbance Map has been prepared, a Clearing Chainage Table will be created. This Table will contain the type and location of vegetation to be cleared in each 100m section of Aarons Pass Road for each PCT. This will include a description of hollow bearing trees which will require lopping and the location of *Acacia meiantha* and *Pomaderris cotoneaster* to be retained, removed or relocated.

Demarcation of Development Footprint Wind Farm and Transmission Lines

Prior to clearing being undertaken in areas where threatened flora species or EEC's are known to occur, the EPC Contractor will clearly demarcate the boundaries of the Development Footprint using flagging tape or other visible markers to prevent construction works breaching the boundaries. This approach will ensure that only approved vegetation is impacted and reduce the impact to vegetation outside of these zones.

Demarcation of the disturbance corridor Aarons Pass Road

The disturbance corridor will be marked in the field by a qualified surveyor working with a suitably qualified ecologist. This will involve marking the extremities of vegetation to be cleared as indicated on the Site Disturbance Map. Where appropriate it will include identifying known hollow bearing trees which will require lopping and the location of *Acacia meiantha* and *Pomaderris cotoneaster* to be retained, removed or relocated.

Once marked in the field the provisions of Section 4 of this BMP will apply to preclearance procedures for fauna relocation, as well as vegetation clearance and associated mitigation measures in accordance with the Development Consent. A daily prestart walkdown with plant operators will be undertaken to identify vegetation to be cleared.

Inductions Wind Farm and Transmission Lines

Prior to the commencement of works on site, all site personnel will be required to undertake a site induction identifying their responsibilities under this BMP and the EPC Contractor's management plans and programs required under the EMS, to ensure that biodiversity is managed appropriately. This will ensure that unnecessary impacts to biodiversity are avoided.

Inductions Aarons Pass Road

In addition to the CRWF Site Induction, a Site Induction specific to Aarons Pass Road will be prepared to ensure that all staff involved in the upgrade of Aarons Pass Road. Specifically, it will include information on the following:

- A clearly articulated mission statement that – *"If it is not marked for clearing do not clear it"*;
- Definition of clearing activities;
- Understand clearing protocols
- Location of vegetation clearing zones;
- Survey markers used to identify vegetation clearing zones
- Location of zones not to be cleared;
- Survey markers to identify no go zones;
- Daily prestart walkdown with plant operators;
- The process for what happens when there is no marking in place;
- Clearing of habitat trees;
- Contact details for site ecologist;
- The protocol for dealing with native fauna;
- The process for dealing with public complaints and the media;
- Location information for *Acacia meiantha* and *Pomaderris cotoneaster*; and,
- Photos of *Acacia meiantha* and *Pomaderris cotoneaster*.

The overarching theme of the Aarons Pass Road Upgrade Site Induction is – *"If it is not marked for clearing do not clear it"*.




Acacia meiantha

Pomaderris cotoneaster

4.2 Pre-clearance Procedures

4.2.1 Pre-clearance Procedures Wind Farm and Transmission Line

A pre-clearance procedure is to be undertaken prior to ground disturbance in any given work area. A preliminary inspection of the disturbance area will be undertaken by the EPC Environment Officer prior to clearing, to determine if the vegetation present provides potential habitat for threatened flora or native fauna, or if weed or pest species require management. If these features are present, the procedures below will be followed, otherwise works may proceed.

Further pre-clearance surveys will be undertaken by a qualified ecologist in areas where threatened flora have previously been recorded, and in areas where native fauna habitat is identified by the EPC Environment Officer.

As a minimum, pre-clearance surveys will be undertaken in the area of the known population of Small Purple-pea (*Swainsona recta*) along the 132kV transmission line corridor to validate the extent of these occurrences.

Targeted searches for Small Purple-pea have been undertaken during the flowering season (spring) to ensure the plants were readily identified. If further threatened flora species are found within the clearing Development Footprint, the threatened flora will be managed in accordance with the Threatened Flora Management Measures identified further below in Section 4.3.

Where the EPC Environment Officer identifies habitat for native fauna, pre-clearance surveys will be conducted by a qualified ecologist, with the aim of identifying:

- potential habitat features located within proposed disturbance areas (such as hollows in fallen logs, which may provide habitat for threatened woodland birds, owls, arboreal mammals and bats) that may require management during clearing;
- habitat features (such as large fallen logs and hollows) that can be salvaged where practicable for reuse in rehabilitation areas or in adjoining non-disturbed native vegetation areas (Section 4.2.3); and
- actively nesting threatened birds or mammals and/or suspected active microbat roosts that may require active management (Section 4.4) prior to or during disturbance to minimise impacts on threatened fauna species (including woodland birds, owls, arboreal mammals and hollow dwelling bats).

There are no seasonal restrictions on when the fauna pre-clearance surveys need to be undertaken.

Data collected in the pre-clearance surveys will be provided to the Project Environmental Officer to be managed within the Project database. This data will be used when constructing the final Project footprint and undertaking any design changes.

4.2.2 Pre-clearance Procedures Aarons Pass Road

In addition to the procedures outlined above in section 4.2.1 Aarons Pass Road will have the disturbance corridor marked in the field by a qualified surveyor working with a suitably qualified ecologist. This will involve marking the extremities of vegetation to be cleared as indicated on the Site Disturbance Map. Where appropriate it will include identifying known hollow bearing trees within the blade sweep area which will require lopping and the location of *Acacia meiantha* and *Pomaderris cotoneaster* to be retained, removed or relocated.

4.3 Threatened Flora Management Strategies

Small Purple-pea (Swainsona recta)

- Pre-clearance surveys for *Small Purple-pea* have been undertaken by a qualified ecologist during the species' reported flowering season (spring) in areas of potential habitat within the 132kV powerline easement, to ensure that all individuals of this threatened species were identified prior to clearing activities commencing.
- Populations or known individuals of Small Purple-pea have been clearly marked / delineated in the field during pre-clearance surveys.

- Where ground disturbance is expected within 20m of identified plants, temporary fences will be erected for the duration of works in that area. Fencing will ensure at least a 5 m buffer is maintained between Small Purple-pea plants and ground disturbance activities.
- No additional populations of Small Purple Pea (not identified in the Environmental Assessment), are to be impacted without the approval of the Minister.

Acacia meiantha and Pomaderris cotoneaster

- Pre-clearance surveys for these species will be undertaken by a qualified ecologist to validate the extent of these occurrences, prior to commencement of road construction as outlined in section 4.1. There are no seasonal limitations for identification of these species. It is anticipated that impacts to these species can be predominantly avoided through the detailed design process.
- Upgrades to Aarons Pass Road have been designed to avoid impacts to these species wherever possible, giving due consideration to alternate road alignments and road safety.
- Identified locations will be accurately and clearly identified on site and in Site Disturbance Maps for Aarons Pass Road to ensure no activities such as earthworks, stockpiling etc. occur in these areas.
- A Translocation Plan for *Acacia meiantha* has been prepared by ELA and is contained in Appendix 2

Impacts to Threatened Flora

- If the detailed design process identifies potential for unavoidable impacts to threatened species, a Significance Assessment will be undertaken by a qualified ecologist.
- If the Significance Assessment identifies a significant impact is likely, management recommendations will be defined and communicated with DPIE to seek authorisation to proceed.
- Works in the areas where impacts are identified will not be undertaken until authorisation to proceed is provided by the relevant authority.

4.4 Minimising Impacts to Fauna

Impacts to fauna will be minimised initially through active management, avoidance of vegetation clearing and the pre-clearance procedures identified in Section 4.1 and 4.2. Additional measures will be managed by the EPC Environment Officer, as identified below.

Fauna active management protocols

In any area to be cleared, non-habitat vegetation should be cleared first with identified habitat trees (Section 4.2) left standing overnight to encourage the self-relocation of fauna that may be using the available habitat feature. Where practical and reasonable, habitat trees that remain standing will be shaken (under supervision by the EPC Environment Officer) to encourage fauna (e.g. nesting birds) to relocate from the hollow.

Where threatened fauna is observed using a habitat feature during pre-clearance surveys (and where threat abatement is not possible) an attempt will be made to either promote self-relocation (e.g. shaking a tree to encourage threatened birds, bats and mammals to move to an alternate tree) or capture and release the fauna species (e.g. in relation to bats and mammals) into a suitable proximal release area. A qualified ecologist should be present where active management of threatened fauna is undertaken.

Active management protocols to be employed for each species group is described below:

- Arboreal mammals
  Where habitat trees are present, and the presence of arboreal mammals is suspected or known, they will be managed by:

    - shaking the tree with machinery to be used during clearing activities to encourage the animal to move to an alternative location;
    - soft pushing the tree to the ground in order to reduce the likelihood of disturbance to the habitat feature/animal present;
    - inspection of the felled tree to confirm that the mammal has relocated from the habitat feature;
    - where the mammal is still present, leave the felled tree overnight to encourage the animal to relocate;

- Nesting threatened birds
    - Where a nest is active, the birds present (generally fledglings) will be collected where safe, and taken to a wildlife carer to be cared for, prior to later release;
    - Where the nest is not active (ie. no fledglings present), the nest will be removed from the tree (where safe to do so) to ensure that the nest does not become active prior to disturbance. The tree should be inspected immediately prior to clearing to ensure that it remains inactive.

- Hibernating, roosting and/or breeding microbats
  Habitat trees with suspected or confirmed bat roosts will be managed by:
    - shaking the tree with machinery prior to clearing to encourage bats to move to an alternative site;
    - Soft pushing the tree to the ground in order to reduce the likelihood of disturbance to the habitat feature/roost/microbat present;
    - preferentially positioning the tree on the ground so the entrance to the hollow faces upwards (i.e. so bats are able to exit);
    - inspecting the felled tree to confirm whether bats have exited the tree; and
    - leaving the felled tree overnight to allow any remaining bats time to exit.

Habitat Features

- Where practical and feasible, habitat features such as fallen logs with large hollows identified during the pre-clearance surveys will be relocated by the EPC Contractor to adjoining areas of remnant vegetation identified by the qualified ecologist.
- Cleared material providing potential habitat, such as tree trunks, major branches not already redistributed adjacent to cleared areas, is to be used to enhance habitat in rehabilitated areas or surrounding areas of derived native grassland.
- Vehicle speed limits within construction areas should be reduced to minimise fauna strike risk. Vehicle use should be restricted to the Development Corridor and wherever possible to those areas which are to be used for access tracks or infrastructure.
- Temporary construction features such as trenches and pits should be fenced overnight and when not in use for construction. Open trenches will be checked daily by the EPC Contractor Environment Officer or delegate.

Hollows

To commence the detailed design, turbine locations will be micro-sited on site with a qualified ecologist and relevant EPC Contractors, as described in section 4.1. In accordance with condition 19 c), if micro-siting turbines, the revised location of the turbine will be at least 30 m from any existing hollow-bearing trees, and where reasonable and feasible, 50 m from any existing hollow-bearing trees, unless the Secretary agrees otherwise. Hollows that are cleared will be managed in accordance with the *Habitat Features* section above.

Fauna Capture and Release

Individual fauna identified in the pre-clearing surveys may require relocation prior to clearing, and potentially during clearing. A person suitably qualified (such as an ecologist, wildlife carer or veterinarian) and/or person experienced in fauna handling, with appropriate licenses should be used to capture and relocate any fauna. Fauna that is harmed during site activities will be taken to a vet or wildlife carer. Suitable release areas will be determined by the qualified ecologist based on site conditions and review of the Ecological Assessment (ELA 2011, ELA 2016). Release areas will prioritise adjacent areas of similar suitable habitat, or where adjacent similar habitat is not available, suitable habitat otherwise identified by the qualified ecologist.

Koala Management Protocol

The BMP will adopt the *Code of Practice for Injured, Sick and Orphaned Koalas* (State of NSW and Office of Environment and Heritage, 2011), for any Koalas injured on site or during vehicle transport. The Project will establish relationships with local Koala conservation and rehabilitation organisations, such as WIRES, to guide the implementation of the *Code of Practice for Injured, Sick and Orphaned Koalas* (State of NSW and Office of Environment and Heritage, 2011a).

The EPC Environment Officer will notify CWPR where a koala is injured on site or during vehicle transport. They will maintain a register of all koalas encountered and supply this to BCD annually for inclusion in the BioNet Atlas for NSW Wildlife.

It is the responsibility of the rehabilitation or rescue organization, such as WIRES, to provide BCD details of injured or rescued koalas in accordance with Chapter 14 of the *Code of Practice for injured, sick and orphaned protected fauna* (State of NSW and Office of Environment and Heritage, 2011b).

4.5 Vegetation Clearance Procedures

Where vegetation is to be cleared, the EPC Environment Officer will be responsible for ensuring the following vegetation clearance measures are implemented:

- Tree clearance will be avoided wherever possible.
- Pre-clearance procedures in Section 4.2 and 4.3 (where applicable) are to be completed prior to commencement of vegetation clearance in a given work area.
- During clearing, care will be taken to prevent damage to adjacent tree roots. Where possible, trenches should be dug at least 15 m away from the base of trees and outside of drip lines for vegetation that is not going to be impacted.
- Pruning of vegetation should be prioritised wherever possible to reduce the area of vegetation to be cleared.
- Where vegetation is cleared, large fallen logs and woody debris will be salvaged where it is considered appropriate for use in revegetation or habitat enhancement activities.

- Where soil is cleared for excavations or cuttings, it will be used for fill or habitat enhancement activities within the Project site.
- Dust suppression measures such as the use of water spray will be used to mitigate dust impacts to adjacent vegetated areas.
- Vegetation that has been cleared that does not contain habitat features may be placed in areas of DNG, mulched or removed from site.

4.5.1 Vegetation Clearance Procedures Aarons Pass Road

The preclearance procedures outlined in Section 4.5 apply to Aarons Pass Road. Additionally, *Acacia meiantha* specimens located within Aarons Pass Road will be relocated in accordance with the translocation plan contained in Appendix 2. This will occur at least one week prior to the commencement of clearing of areas containing *Acacia meiantha.*

The vegetation clearance procedures apply both to the works on the Project site, as well as those works along Aarons Pass Road. The Project Environment Officer will monitor the effectiveness of these management measures and report to the Principal Project Manager and Independent Environmental Auditor.

4.6 Rehabilitating and Revegetating Temporary Impact Areas

Rehabilitation and revegetation of temporary impact areas will aim to return disturbed areas to ensure that they are safe, stable and non-polluting and reduce the total area exposed at any time in accordance with the Development Consent, including the re-creation of habitat for fauna. The EA for the Project (ELA 2011, ELA 2016, ELA 2018, ELA 2019) identifies the vegetation communities and habitat features present within the existing landscape, which will be used to inform the targeted vegetation communities to be used in final rehabilitation.

Rehabilitation will be undertaken progressively in all temporary impact areas, that is, those areas that are not required to be maintained for the operational phase of the project. Temporary impact areas may include:

- construction laydown areas;
- temporary construction compounds;
- drainage areas;
- underground infrastructure trenches; and
- access road verges;
- batters, cuts and fills.

Prior to the commencement of rehabilitation activities, the EPC Environment Officer will establish the pre-existing conditions and identify the proposed methods for rehabilitation of each site in a Rehabilitation Management Program. The program will include as a minimum:

- identify the pre-existing land use prior to construction, including mapping or relevant drawings;
- a program for the proposed rehabilitation activities (commencement and any follow up);
- proposed rehabilitation methods (i.e. cover crop, seeding, topsoil, mulching, watering regime etc);
- plant species mix to be established at each site, based on an initial cover crop to stabilise the soil and native species that reflect the pre-existing land use and condition;
- proposed physical works for rehabilitated areas including items such as:

- ensuring stability of slopes;
- ensuring that drainage is appropriate and does not result in ponding or scouring;
- early rectification of any erosion occurrences; and

- details of proposed weed control (hand removal, spot spraying, broad application of herbicide).

The EPC Environment Officer will be responsible for implementing the Rehabilitation Management Program under the supervision of the Project Environment Officer. Rehabilitation will be monitored by the EPC Contractor in accordance with the schedule in Section 5.2. The Project Environment Officer will monitor the effectiveness of the plan and report to the Principal Project Officer and Independent Environmental Auditor on its performance.

4.7 Rehabilitating and Revegetating Aarons Pass Road

Large woody debris being the trunks and lower limbs of trees that have been cleared, will be used to enhance habitat features in the areas cleared along Aarons Pass Road. The narrow road corridor along Aarons Pass Road means that many areas are not suitable for habitat enhancement with large woody debris. However, where it does not create a safety hazard and it is within an area that has been cleared large woody debris will be used to create habitat features within cleared sections of the Aarons Pass Road corridor. The placement of Large Woody Debris will be guided by the document "Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects, Revision 0/September 2011"

Where reuse is not safe, practicable or feasible the large woody debris can be relocated within the wind farm footprint for habitat enhancement. Alternatively, it can be used on the biodiversity offset area or as a last resort removed from road corridor altogether and disposed of legally.

The vegetative debris from the clearing of Aarons Pass Road not used for onsite habitat enhancement will be mulched. The mulch will be weed free and stockpiled in cleared areas for use in stabilisation works along Aarons Pass Road. It will not be spread until the area of clearing has been verified by a suitably qualified ecologist. The location of areas to be stabilised with mulch will be determined by the EPC Environmental Officer in consultation with the Project Environmental Officer. Areas which have not been cleared will not be used for mulch spreading.

Any mulch not used for stabilisation works along Aarons Pass Road can be used within the wind farm footprint for rehabilitation and batter stabilisation works. This will be done in accordance with the approved the Environmental Management System.
If deemed necessary by a suitable qualified ecologist seed from *Acacia meiantha* will be included in any revegetation mixture in those areas along Aarons Pass Road where *Acacia meiantha* is present.

4.8 Seed Collection and Propagation

Local native seed collection and propagation will be considered where threatened flora species will be impacted to ensure that the genetic integrity, structure and composition of revegetated areas are consistent with the broader landscape. Where available, seed collection and propagation for threatened species will be

carried out annually by a suitably qualified provider with appropriate experience and training in seed collection, data recording, seed storage and propagation.

4.9 Weed Control

Weed species present within the Project Site have the potential to impede the success of surrounding agriculture and remnant native vegetation as well as vegetation regeneration and rehabilitation activities in the Development Footprint. Weed management activities will be undertaken in the Development Footprint in a manner that will ensure adjacent agricultural land and native vegetation is not significantly impacted. Weeds will be proactively managed in the Development Footprint to avoid the spread of existing weeds and to manage any incursions which arise throughout construction and operation of the Project.

The EPC Environment Officer will undertake a pre-construction assessment of weeds in each work area, prior to ground disturbance. The assessment will consider the weed species present, their concentrations and likelihood of spread to adjacent areas. A Weed Control Program will be prepared in accordance with the EMS to identify the mitigation measures and monitoring requirements to ensure the spread of weeds is prevented and that incursions are adequately managed by the EPC Contractor.

The Weed Management Program will include requirements for:

- regular inspections of work areas and soil stockpiles identifying weeds present and implementing required management actions;
- implementation of weed management actions which may include mechanical removal, slashing, application of approved herbicides and biological control;
- control of noxious weeds identified in work areas in accordance with the Mid-Western and Bathurst Regional Council's Weeds Management Plan specific to each weed species. All work will be completed in accordance with the *Pesticides Act 1999*;
- management of weeds in accordance with the requirements of the *Central Tablelands Regional Strategic Weed Management Plan* (Local Land Services, 2017);
- minimising the potential for establishment of new weeds by minimising the transport of weed species to and from the Development Footprint (mitigations may include restrictions on vehicle access, and requirements to wash-down of vehicles, machinery and boots);
- routine inspection of vehicles, machinery and plant for weed and weed seed; and
- monitoring to assess the effectiveness of the weed management measures implemented and the requirement for any additional weed control activities, including where soil from stockpiles with known weed infestations is respread over previously clean areas.

Weed control activities will be documented by the EPC Environment Officer, with the following information being recorded:

- the date, time and location of areas that have undergone weed control activities;
- methods used for weed control including where used, the types of chemicals used;
- issues encountered; and
- recommended frequency and methods for follow-up weed control.

Where it has been identified that weed control activities have not been effective, the method of control implemented will be reviewed prior to further control activities occurring.

4.10 Vertebrate Pest Management

A number of introduced species (wild dog, red fox, rabbit, goat and feral pig) have been identified within the Project Site and have the potential to both compete with native species and cause considerable damage to land and vegetation. Prior to the commencement of construction, the EPC Contractor will prepare a Contamination and Waste Management Plan which will identify the waste management measures to be implemented to reduce opportunities for scavenging for animals such as foxes, wild dogs and feral cats.

The Project will cooperate with landowners to facilitate ongoing vertebrate pest control programs being undertaken on freehold land in the Project Site. Any vertebrate pest control activities undertaken in the Development Footprint will be done in accordance with the requirements of the Local Land Services.

4.11 Erosion, Sedimentation and Soil Management

The EPC Contractors Risk Management Plan will identify areas of the Project where erosion or soil management issues are likely to occur. Where an erosion or sedimentation risk is identified, prior to commencement of works in an area, the Contractor will prepare an Erosion and Sediment Control Plan in accordance with the Environmental Management Strategy. The plan will include hydrological design, temporary and permanent erosion controls and sediment controls and will be prepared in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom 2004).

Erosion and sediment control plans for the upgrade of Aarons Pass Road will be prepared by a Certified Professional in Erosion and Sediment Control (CPESC). The plans will ensure that control works do not adversely impact on known individuals of *Acacia meiantha* and *Pomaderris cotoneaster*.

The Contractors Environment Officer will ensure the site is managed and monitored in accordance with the Erosion and Sediment Control Plan. The plan will form part of the induction for all workers on site. The Project Environment Officer will monitor the effectiveness of the plan and report to the Principal Project Officer and Independent Environmental Auditor on its performance.

4.12 Contamination and Waste

The EPC Contractors Risk Management Plan will identify hazardous materials required during the Construction phase of the Project and measures to mitigate potential impacts to soil, waterways, flora and fauna. A Contamination and Waste Management Plan will be prepared by the EPC Contractor in accordance with the Environmental Management Strategy. The plan will include mitigation measures to reduce the risk of soil contamination, such as:

- bulk storage areas for fuels, oils and chemicals in accordance with AS 1940- e2004 The Storage and Handling of Flammable and Combustible Liquids;
- refuelling of equipment on-site or any other activity which could result in a spillage of a chemical, fuel or lubricant will be undertaken greater than 100m away from drainage/stormwater lines, or drip trays will be used;
- emergency spill clean-up kits that will be maintained on-site in identified locations (including close to storage locations and maintenance vehicles);

- management of waste on site to reduce opportunities for feral animals such as foxes, wild dogs and feral cats to scavenge; and
- disposal of waste including trade waste receptacles for potential contaminants, use of recycling facilities for recyclable materials and disposal of contaminated soils at appropriate facilities.

The EPC Environment Officer will ensure the site is managed and monitored in accordance with the Contamination and Waste Management Plan. The plan will form part of the induction for all workers on site. The Project Environment Officer will monitor the effectiveness of the plan and report to the Principal Project Officer and Independent Environmental Auditor on its performance.

4.13 Access Management (Control and Restrictions)

The Project is to be constructed and operated on freehold land under a lease arrangement. There are two approved access points for the wind farm, a northern access point off Aarons Pass Road and a southern access point off Hill End Road. The EPC Contractor will have a Site Management Plan to ensure that the Development Footprint will be managed to limit access to the site to only authorised and inducted personnel and minimising the opportunities to prevent the public from being able to gain entry to the site without authorisation or induction. This will reduce the risk of disturbance to intact vegetation and regenerating or revegetated areas, disturbance of soil, weed dispersal, fauna habitat disturbance and illegal rubbish dumping.

4.14 Bushfire Management

The Bushfire Hazard and Risk Assessment (ELA 2011, ELA 2016) for the project identified bushfire damage to ecological values or assets as a medium level risk. A Bushfire Management Plan will be developed and maintained to provide details of management actions related to biodiversity which should be undertaken to minimise risk and manage the impacts of bushfire. The Bushfire Management Plan will at a minimum identify:

- The provision of basic fire-fighting equipment at each active site, for example fire extinguishers, knapsacks and other equipment suitable for initial response actions.
- Descriptions of access tracks with appropriate vertical clearance and suitability for all weather conditions.
- Requirements for maintaining provision for mobile telephone and UHF radio communications.
- Provision of onsite identification of individual turbine locations and access gates for fire-fighting services, and an undertaking to provide local rural fire service groups with access to gates.
- Consideration of total fire ban days in relation to hours within which construction takes place based on fire risk.
    - Provision of information to and consultation with the Rural Fire Service (RFS) with regards to: A construction works schedule
    - Maps of final turbine layout and identification information for individual turbine sites
    - Access road plans and locations of access gates
    - Security information such as location of locked gates and restricted access areas
    - Location of any additional water supplies installed for construction activities
    - Location of potential landing pads for fire-fighting aircraft or helicopters

Prior to the commencement of construction, the EPC Contractor will prepare a Bushfire Emergency Plan which addresses the measures above. The EPC Environment Officer will ensure the site is managed and monitored in accordance with the Bushfire Emergency Plan. The plan will form part of the induction for all workers on site. The Project Environment Officer will monitor the effectiveness of the plan and report to the Principal Project Officer and Independent Environmental Auditor on its performance.

5 Monitoring

5.1 Construction Environmental Monitoring

Ongoing monitoring of environmental control measures will be undertaken to record the effectiveness of control measures and inform adaptive management of the environmental management plans and programs.

At a minimum, monitoring required under this plan to be undertaken by the EPC Environment Officer during the construction phase will include:

- Prior to vegetation clearing:
    - Ensure that threatened flora species and areas of EEC to remain intact have been clearly demarcated.
    - Ensure that habitat resources to be salvaged have been identified and the requirement for salvage communicated to the clearing contractor.
- Post vegetation clearing:
    - Ensure that demarcated areas for exclusion of clearing have not been disturbed.
    - Ensure that threatened species present within the demarcated areas remain intact.
    - Ensure that areas of EEC excluded from clearing activities have not been impacted by the clearing works and remain intact.
    - Check that areas that have been cleared are consistent with those included within the project's final layout.
- Daily inspection of any open trenches for trapped fauna;
- Weekly inspection of sediment and erosion control structures used during construction activities, and immediately after heavy rainfall (i.e. >20mm in 24 hrs);
- Weed monitoring as defined in the EPC Contractors Weed Control Program.
- Inspection of hazardous material storage controls as defined in the EPC Contractors Contamination and Waste Management Plan.

5.1.1 Aarons Pass Road Environmental Monitoring

In addition to the preclearing procedures outlined in section 4.2.2 and the reporting procedures outlined in Section 5.1 several additional procedures are required for reporting of clearing activities along Aarons Pass Road.

Prior to the commencement of any clearing activities on Aarons Pass Road the approved road design will be merged with the vegetation mapping contained in ELA 2018 to produce a Site disturbance map for Aarons Pass Road. The details of the map contents are contained in Section 4.1.

At the end of each day that clearing is undertaken, a walkdown by the Project Environmental Officer and a suitably qualified ecologist will occur and a Daily Clearing Inspection Record will be produced verifying the amount and type of vegetation that has been cleared and the number of hollow bearing trees that have been lopped. The Record will also include details of *Acacia meiantha* removed or relocated and *Pomaderris cotoneaster* removed. This will be recorded in the table of clearing activities.

On a weekly basis the EPC Environment Officer will generate a Clearing Report for the works on Aarons Pass Road.

- The report will include a cumulative amount of vegetation cleared by PCT against the approved amount of clearing as outlined in Schedule 1 Condition 19 (a) of SSD-6697 MOD1;
- The areal extent of clearing will be verified by a suitably qualified surveyor and form part of the weekly report; and
- A weekly inspection by a suitably qualified ecologist will occur during clearing activities to verify clearing against Schedule 1 Condition 19 (a) of SSD-6697 MOD1.

Details on the amount and linear extent of clearing for Aarons Pass Road will be published on the Project's website and posted on the Project's Facebook page.

At the completion of clearing activities along Aarons Pass Road, the weekly Clearing Reports will be compiled into a Final Clearing Report. The Final Clearing Report will be submitted to the DPIE within four weeks of the completion of the clearing activities. The Final Clearing Report will be supplied to the Independent Auditor pursuant to Schedule 5 Condition 8 of SSD 6697 MOD1.

5.2 Rehabilitation and Revegetation Monitoring

All rehabilitated areas will be monitored on a monthly basis by the EPC Environment Officer during the construction phase, and every sixth months by the Project Environment Officer during operations, until a review of this plan determines otherwise.

The monitoring will include an assessment of:

- drainage conditions (i.e. no ponding or scouring);
- weed infestations and required remedial actions;
- areas of instability that require stabilisation or remediation;
- whether rehabilitated areas are adequately stabilised and whether erosion is occurring;
- whether revegetated areas are growing as expected; and
- requirements for follow up rehabilitation activities including any weed control, reseeding, vertebrate pest control and watering as required.

Thresholds have been identified for each monitoring aspect which will trigger implementation of remedial or management actions within Table 5-1.

A photographic images register will be utilised to record groundcover conditions at the commencement of rehabilitation to monitor progress over time. Reports will be prepared annually to report on the success and learnings for the rehabilitation areas.

5.2.1 Rehabilitation and Revegetation Monitoring Aarons Pass Road

For the first twelve months following the completion of the road works on Aarons Pass Road a monthly inspection will be undertaken by the EPC Environmental Officers to determine success of revegetation and rehabilitation works. Any areas requiring additional rehabilitation or revegetation will be identified and appropriate actions undertaken.

5.3 Monitoring Program

Table 5-1: Monitoring Program

Item	Requirement	Frequency	Trigger for corrective action	Corrective action
1	Inspection of any open trenches for trapped fauna	Daily	Fauna are present within open trenches and cannot self-evacuate.	Capture trapped fauna and release at locations identified by the qualified ecologist.
2	Inspection of sediment and erosion control structures	Weekly Immediately following heavy rainfall	Sediment and erosion structures are failing to capture sediment or are damaged.	Undertake maintenance and repair.
3	Ensure that threatened flora species and areas of EEC to remain intact have been clearly demarcated.	Prior to vegetation clearing	Areas where known records of threatened species and areas of EEC have not been demarcated as identified by inspection prior to commencement of vegetation clearing works.	Demarcate areas that are not defined clearly in the field.
4	Ensure that habitat resources to be salvaged have been identified and the requirement for salvage communicated to the clearing contractor.		Habitat resources to be salvaged have not been salvaged prior to commencement of vegetation clearing works or are not present within adjacent remnant vegetation post clearing. Salvage requirements have not been communicated to the clearing contractor.	Demarcate the habitat resources to be salvaged. Salvage resources. Communicate the requirement for salvage to the clearing contractor.
5	Ensure that demarcated areas for exclusion of clearing have not been disturbed.	Post vegetation clearing	Demarcated areas have been disturbed.	Determine the extent of the impact. Report any non-conformances using the procedures outlined in Section 6.2 of this document. Develop a plan for remediation/rehabilitation where necessary.
6	Ensure that threatened species present within the demarcated areas remain intact.		Threatened species marked prior to clearing have been disturbed.	
7	Ensure that areas of EEC excluded from clearing activities have not been impacted by the clearing works and remain intact.		Areas of EEC have been disturbed and are no longer intact.	
8	Check that areas that have been cleared are consistent with those included within the project's final layout.		Areas that have been cleared are not consistent with the final project layout.	
9	Weed monitoring	As defined in the EPC Contractors Weed Control Program	Weeds have spread beyond the area of infestation identified during the pre-construction assessment.	Develop a plan for ongoing weed management in areas where weeds are identified, and implement where necessary.
10	Inspection of hazardous material storage controls	As defined in the EPC Contractors Contamination and Waste Management Plan.	Hazardous materials are found to not be in accordance with the EPC contractors contamination and waste management plan.	Develop a plan to access issues identified, and implement where necessary.
11	Rehabilitation and revegetation monitoring	Monthly Six Monthly	Weeds are present within rehabilitated and revegetated areas.	Implementation of follow up management activities including any weed control, reseeding,

Item	Requirement	Frequency	Trigger for corrective action	Corrective action
			Areas of rehabilitation or revegetation are found to not be successfully establishing.	vertebrate pest control and watering as identified through monitoring.
			Evidence and/or presence of vertebrate pests are present within rehabilitated and revegetated areas.	
12	Photographic monitoring	At completion of rehabilitation	Issues are identified during review of photographs post monitoring such as erosion, non-establishment of vegetation, weed and vertebrate presence, ponding and/or rubbish presence.	Where issues are identified through the monitoring, develop a plan to address these, and implement where necessary.
		Bi-annually		

5.4 Monitoring Records

Results of monitoring will be recorded by the EPC Environment Officer and the Project Environment Officer as part of inspection checklists that will include as a minimum:

- date of inspection;
- personnel undertaking the inspection;
- features to be inspected/monitored;
- outcomes of the inspection and details of compliance with objectives;
- requirement for any corrective actions; and
- details of any photographic records (file name and saved location) detailing evidence of monitoring.

Results of all monitoring will be maintained at the Project office for supply to relevant agencies upon request.

5.5 Auditing

The construction work will be subject to regular (i.e. quarterly) internal audits by the Project Environment Officer to evaluate the EPC Contractors performance. Scheduled auditing will also be undertaken by an Independent Environmental Auditor within one year of the commencement of construction and every three years thereafter, in accordance with Schedule 5, Condition 8 of the Development Consent. The requirements for audits are identified in the EMS. Unscheduled auditing may also be undertaken by NSW DPIE and the Commonwealth Department of the Environment and Energy at any stage to evaluate the Project's compliance.

The EPC Contractor will support the Project Environment Officer in providing all records and documentation required to demonstrate compliance with this document, the Development Consent and the Commonwealth approval.

At the completion of clearing activities along Aarons Pass Road, the weekly Clearing Reports will be compiled into a Final Clearing Report. The Final Clearing Report will be submitted to the DPIE within four weeks of the completion of the clearing activities. The Final Clearing Report will be supplied to the Independent Auditor pursuant to Schedule 5 Condition 8 of SSD 6697 MOD1.

6 Reporting and Documentation Requirements

Reporting requirements for the vegetation clearance protocol and threatened species management have been addressed in the Biodiversity Management Strategies section of this Plan (Section 4).

6.1 Internal Reporting

The EPC Environment Officer will provide weekly reporting to the Project Environment Officer during the construction phase. Weekly reporting will:

- detail any areas identified requiring ecologist assessment and areas where habitat features will need to be relocated;
- identify the location of any pre-clearance surveys undertaken;
- detail areas cleared during the week;
- results of trench inspections;
- detail of any fauna relocated/rescued; and
- stockpiles and any management undertaken.

All site inspection and monitoring records are to be retained onsite for the duration of construction works and will be produced as required for auditing purposes.

6.1.1 Internal Reporting Aarons Pass Road Clearing

At the end of each day that clearing is undertaken, a walkdown by the Project Environmental Officer and a suitably qualified ecologist will occur and a Daily Clearing Inspection Record will be produced verifying the amount and type of vegetation that has been cleared and the number of hollow bearing trees that have been lopped. The Record will also include details of *Acacia meiantha* removed or relocated and *Pomaderris cotoneaster* removed.

On a weekly basis the EPC Environment Officer will generate a Clearing Report for Project Environmental Officer for the works on Aarons Pass Road.

- The report will include a cumulative amount of vegetation cleared by PCT against the approved amount of clearing as outlined in Schedule 1 Condition 19 (a) of SSD-6697 MOD1;
- The areal extent of clearing will be verified by a suitably qualified surveyor and form part of the weekly report; and
- A weekly inspection by a suitably qualified ecologist will occur during clearing activities to verify clearing against Schedule 1 Condition 19 (a) of SSD-6697 MOD1.

Details on the amount and linear extent of clearing for Aarons Pass Road will be published on the Project's website and posted on the Project's Facebook page.

6.2 Reporting Environmental Incidents and Non-conformances

All environmental incidents will be recorded and reported internally to aid in the prevention of further occurrences. Environmental Incidents will also trigger regulatory reporting in accordance with the Development Consent and Commonwealth approval.

The EPC Environment Officer is responsible for notifying the Project Environment Officer for of any incident that has caused, or threatens to cause, material harm to the environment as a result of the EPC Contractors operations. The EPC Contractor must provide the Project Environment Officer with all records and documentation to support the immediate notification of the Secretary and any other relevant agencies as required under Condition 6 of Schedule 5 of the Development Consent. The Project Environment Officer is responsible for notifying the Secretary under this condition.

The EPC Environment Officer is responsible for notifying the Project Environment Officer for of any non-compliance with the Conditions of Consent within 24 hours of the non-compliance becoming evident. The EPC Contractor must provide the Project Environment Officer with all records, documentation of non-conformances to allow notification of the Department of Planning and Environment and any other relevant agencies as required under Condition 6a of Schedule 5 of the Development Consent. The Project Environment Officer is responsible for notifying the Department under this condition

The EPC Environment Officer is responsible for notifying the Project Environment Officer for of any potential or actual contravention of the conditions of the Commonwealth approval (including contravention of a commitment made in a management plan, program or strategy) as a result of the EPC Contractors operations. The EPC Contractor must provide the Project Environment Officer with all records and documentation to support the notification of the Department of the Environment and Energy within 7 days of the approval holder becoming aware of the actual or potential contravention.

Incident reporting will be undertaken using the incident management procedures developed for the project in the EMS.

6.3 Annual Reporting

The Project Environment Officer will prepare an annual report describing environmental performance of the Project against this plan and the conditions of the Development Consent and the Commonwealth approval. The reports will include the results of monitoring undertaken in accordance with Chapter 5, as well as a description of any environmental incidents and non-conformances. Reporting will be made available to the public within three months of each 12 month anniversary of commencement of construction, on the Project website, in accordance with Condition 7 of Schedule 5 of the Development Consent and Condition 10 of EPBC Approval 2011/6206.

The EPC Contractor must provide the Project Environment Officer with all records and documentation to support preparation of the annual report. The Project Environment Officer will provide evidence of the date of publication to the NSW DPIE Secretary and the Commonwealth Department at the same time as the annual report is published.

The Project Environmental Officer will provide the Department of Planning, Industry and Environment with details of the clearing activities along Aarons Pass Road within three months of the completion of the clearing activities. The information supplied will include:

- Site Disturbance Maps;
- As built drawings;
- Daily and weekly clearing records;
- Photographs of clearing boundaries, pre and post clearing;
- Translocation details for *Acacia meiantha*; and
- Records of any fauna that was relocated.

6.4 Record Keeping

Records of all environmental activities will be maintained by the EPC Environment Officer and the Project Environment Officer to demonstrate compliance with this plan, the Development Consent and the Commonwealth approval. These records will be made available to the Independent Environmental Auditor, NSW DPIE and Commonwealth Department upon request.

Condition 9 of EPBC Approval 2011/6206 requires that the person taking the action maintains accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans, reports, strategies, agreements required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.

6.5 Community Engagement Keeping

The Project engages with the community using a range of platforms including a dedicated Project webpage, social media presence, emails and phone calls to neighbours, newsletters, mailouts and personal contact.

Webpage

The existing Crudine Ridge Wind Farm webpage will be updated to include a dedicated page for the Aarons Pass Road upgrade. This page will include:

- Consent documentation
- Procedures for managing threatened species
- Clearing protocols
- Clearing statistics for the previous week
- Community engagement strategy
- Complaints process

The page will be regularly updated and will be communicated to the community when launched prior to commencement of works on Aarons Pass Road.

A draft example of the specific Aarons Pass Road webpage is provided below.

Why we are Upgrading Aarons Pass Road

In April GFJ did some much needed maintenance to Aarons Pass Road. We received a number of emails and calls complementing GEZ and local company A1 Earthworx on the great job that they were doing.

Aarons Pass Road now needs to be upgraded. Once upgraded the road will be in the best condition its ever been and will give Mid Western Regional Council an outstanding asset.

In order to undertake a complete upgrade of Aarons Pass Road 6.59 hectares of native vegetation has been approved for removal. Additionally there are several areas of non native vegetation and weeds along the roadside which will also be removed.

When calculating the amount of vegetation to be removed a works buffer was placed around the approved road design to allow for construction activities to occur.

The blade swept path was taken into account. This will require pruning of vegetation in some areas to allow for the passage of the blade components of the wind turbines.

Clearing Protocol

This is how we will clear ARP

A Site Disturbance Map has been prepared for the entire length of Aarons Pass Road. It includes:

- The road design,
- All areas to be disturbed
- Location of Vegetation communities (PCT 277, PCT 290, non native)
- Individual *Acacia meiantha* and *Pomaderris colonieastor* to be retained

A Clearing Chainage Table has been developed that details all the clearing activities within each 100 m section of road.

A Surveyor has marked out all the areas that are allowed to be cleared, the no go zones and hollow bearing trees.

Weekly Clearing Statistics

At the end of each day an inspction is done by the Ecologist and the Daily Inspection Record is updated

At the end of each week the Surveyor and Ecologist undertake a survey of the week's clearing and produce a Weekly Inspection Report. A copy of the Weekly Inspection Recort can be found here.

The Road is also inspected weekly by an Independent Ecologist.

Weekly Clearing Statistics Table

Chainage Start	Chainage End	Vegetation Type End	Clearing Allowed	Clearing Undertaken	Clearing Cummulative
0m	100m	PCT 277	0.2	0.1	0.1
100m	200m	PCT 277	0.1	0.1	0.2

Weekly Construction Lookahead

Managing *Acacia meiantha*

A number individual specimens of *Acacia meiantha* have been identified for removal and translocation.

An *Acacia meiantha* Translocation Plan has been prepared and can accessed here

Community Engagement

The upgrade of Aarons Pass Road by GEZ and their local contractor A1 Earthworx will take approximately eight weeks to complete.

During this time there may be short delays.

If you're planning on travelling along Aarons Pass Road please check the latest conditions and travel times on our Facebook Page or call us on 1300 524 463 for an update.

Community Complaints

We take complaints seriously at CWP and we recognise that there will be times when things don't appear to be running smoothly.

If you've got a complaint then please call us on 1300 524 463 or use the Contact Us form below and we will respond within 24 hours of receiving the complaint.

Need more information? Please fill in the Contact Form below and we'll get back to you

Your Name (required)

Your Email (required)

Subject (required)

Your Message (required)

Send

Social Media

The Project uses social media (Facebook) to communicate with the community. Weekly updates will be posted to this platform comprising aspects such as:

- Clearing activities for the week;
- Construction progress; and,
- Weekly look ahead for clearing and construction.

Neighbour Engagement

The neighbours of Aarons Pass Road will be directly impacted by the road upgrade. We will minimise the impact through:

- Personal contact which will occur prior to the commencement of works and be ongoing through the upgrade works;
- Provision of written material with contact details of key personnel supervising the upgrade works and indicative works schedule; and,
- A commitment to ensuring that local traffic has priority along Aarons Pass Road.

Local and State Government

Local and State Government agencies need to be kept up to date on all facets of the upgrade. This will be achieved through:

- Briefing MWRC prior to the commencement of works;
- Sharing the link from the Project Webpage to MWRC;
- Ensuring MWRC are aware of the Complaint Procedure and are able to pass on any complaints they receive; and,
- MWRC, BCD, DPIE will receive weekly updates of clearing activities via email.

Community Complaints

The Project's Complaint Procedure will apply to the works on Aarons Pass Road.

- All complaints will be responded to within 24 hours of receipt;
- All complaints will be logged and entered into the Community Complaint Register and published monthly on the website;
- Complaints can be made:
    - Via the 1300 number;
    - Via the Website;
    - Via Facebook Page; and
    - In person.
- The complainant is contacted to address the concern and to identify appropriate actions to prevent a recurrence in the future.

7 Review

The Project Environment Officer will be responsible for reviewing this plan within five years of the commencement of construction, and every five years thereafter. The plan may also be required to be reviewed in response to the occurrence of an incident, the submission of an audit report, or modification to the conditions of the Development Consent, in accordance with Condition 4 of Schedule 5 of the Development Consent. Review of the plan will be undertaken in consultation with the NSW BCD and DPIE. Updates to the plan will be made available on the Project website.

References

Bureau of Meteorology 2017. *Mudgee Daily Weather Observations.* [available online at: http://www.bom.gov.au/climate/averages/tables/cw_062101.shtml].

Department of Industry and Development 2011. *Noxious Weed Declarations*. [available online at: http://www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/noxweed].

Eco Logical Australia 2011. *Crudine Ridge Wind Farm Part 3A Ecological Assessment*. Prepared for Wind Prospect CWP.

Eco Logical Australia 2018. *Crudine Ridge Wind Farm Modification Biodiversity Development Assessment Report*. Prepared for CRWF Nominees Pty Ltd.

Eco Logical Australia 2019. *Crudine Ridge Wind Farm Modification 1 Biodiversity Development Assessment Report: Prepared for Supplementary Information Request*. Prepared for CRWF Nominees Pty Ltd.

Geoscience Australia 2011. *Australian Stratigraphic Names Database*. [available online at: www.ga.gov.au].

Local Land Services 2017. *Central Tablelands Regional Strategic Weed Management Plan*. [available online at: http://centraltablelands.lls.nsw.gov.au/__data/assets/pdf_file/0009/722727/Central-Tablelands-Regional-Strategic-Weed-Management-Plan-June-2017.pdf

NSW and Office of Environment and Heritage, 2011a. *Code of Practice for Injured, Sick and Orphaned Koalas*. Office of Environment and Heritage, Sydney, NSW.

NSW and Office of Environment and Heritage, 2011a. *Code of Practice for injured, sick and orphaned protected fauna*. Office of Environment and Heritage, Sydney, NSW.

Roads and Traffic Authority 2011 *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects, Revision 0/September 2011*

Appendix 1 – White Box – Blakely's Red Gum – Yellow Box species present

Canopy species

- *Eucalyptus blakelyi* (Blakely's Red Gum);
- *E. melliodora* (Yellow Box);
- *E. polyanthemos*;
- *E. bridgesiana* (Apple Box); and
- *E. macrorhyncha*.

Mid-storey species

- regenerating *Eucalyptus* sp;
- *Acacia dealbata*;
- *Cassinia arcuata*;
- *Pultenaea microphylla*;
- *Lissanthe strigosa* (Peach Heath); and
- *Melichrus urceolatus* (Urn-heath).

Ground layer species

A variety of native herbs and grasses are present in the ground layer and include species such as:

- *Bothriochloa macra*;
- *Bothriochloa decipiens*;
- *Euchiton sphaericus*;
- *Geranium* sp.;
- *Themeda australis* (Kangaroo Grass);
- *Aristida* sp.;
- *Austrodanthonia* sp.;
- *Cheilanthes sieberi* subsp. *sieberi* (Mulga Fern);
- *Desmodium varians* (Slender Tick-trefoil);
- *Dichelachne micrantha*;
- *Goodenia hederacea* subsp. *Hederacea*;
- *Hypericum gramineum*;
- *Sporobolus creber*; and
- *Wahlenbergia* sp.

1 Summary

Translocation is defined as the deliberate transfer of plants or animals form one place to another, including existing or new sites. Whilst attempts at translocation of threatened species is often risky and can fail, this is usually because the original threats have not been removed, or the biological and ecological requirements for the species is not well understood. *Acacia meiantha* is listed as an endangered species under both Commonwealth and NSW legislation and is currently known from three distinct populations, one of which occurs along Aarons Pass Road (APR). An upgrade to APR has been proposed to facilitate the movement of wind turbines, associated infrastructure and access to the Crudine Ridge Wind Farm (CRWF). The proposed development has identified 59 individual *A. meiantha* plants within the designated impact area that will need to be removed.

Whilst irreversible impacts to these individuals have been considered as part of the Biodiversity Development Assessment Review (BDAR) for the proposed upgrade and offset credits for this species have been calculated, it is recommended that these individuals be salvaged and translocated to increase knowledge of the species. Translocation of the species has been recommended, not as a mitigation measure, but purely as an opportunity to potentially reduce the loss of individuals by increasing knowledge and to directly support the conservation of the species. There is limited information available on the success of translocating *A. meiantha*. The proposed method is to translocate and take cuttings from plants that have been identified within the impact zone during the proposed road upgrade, to a nursery to be grown in pots until they are showing signs of recovery and an appropriate field site has been secured. This will assist in understanding the species and to conserve the wild genetic stock. An increased understanding of these aspects will improve the finer scale approach to the recovery of the species. Translocation procedures should follow the "Guidelines for the translocation of threatened plants in Australia, 3rd Ed" (Commander et al. 2018).

2 Acacia meiantha

Acacia meiantha is a straggling shrub usually 1.5 m high but sometimes up to 2.5 m tall flowering in July to October. It has smooth greenish brown bark with straight to slightly curved phyllodes with an indistinct midvein. It produces fruit from November to December and occasionally in August (Tindale et al 1992). It occurs as three distinct populations all located within the Central Tablelands, at Clarence (near Lithgow), at Mullions Range (near Orange) and along APR. The APR population was discovered in October 2011 and is primarily confined to the road easement. The APR population occurs in old growth low forest in association with *Eucalyptus macrorhyncha* (Red Stringybark) and *E. rossii* (Inland Scribbly Gum).

The species was declared an endangered species under Part 1 of Schedule 1 of the (now repealed) *Threatened Species Conservation Act 1995* in 2015 due to the geographic distribution of the species being highly restricted. The population along APR is estimated to be between 750-1000 individuals. Due to the proposed APR upgrade, it is likely that 59 individual plants will be impacted by the proposed road works. These individuals have been tagged for translocation.

3 Translocation Goals

- To improve the status of *Acacia meiantha.*
- To translocate individuals and establish cuttings firstly from site into pots and then into the wild successfully.
- To increase the population by establishing a self-sustaining population.

- To increase knowledge and understanding of the species.

4 Translocation Procedure

4.1 Identify and manage risks

Consultation with regulatory authorities will be undertaken prior to translocation. This will involve determining any scientific licensing requirements under the *Biodiversity Conservation Act 2016* and to allow an opportunity to discuss and further justify the proposed methods.

All risks and threats associated with the translocation should be identified, controlled or mitigated. Some possible risks are identified in the table below.

RISK	LIKELIHOOD	CONTROL
Species becomes invasive and weedy outside its range	Unlikely	*A. meiantha* is highly restricted in its distribution and is unlikely to become an invasive weed within the same landscape. Care must be taken to ensure the plant doesn't become established outside of its current range.
Lack of ongoing funding and commitment to monitoring and managing the translocation site	Potential	There must be a financial commitment to manage and monitor *A. meiantha*.
Threats to the survivability of the species was incorrectly identified	Potential	Given that little is known about the species in terms of its biological and ecological requirements, attempts at translocation may not be successful. However, these individuals will otherwise be removed by the road upgrade, therefore any attempts of establishing them ex situ are worthwhile.
Introduction of pests and diseases	Unlikely	All equipment used during planting will be maintained under strict disease hygiene.
Unsupportive community attitude	Potential	The proponent will liaise with community about the process.
Lack of Regulatory agency support	Potential	Species is part of Saving Our Species (SOS) program and *A. meiantha* has been identified as a species to be managed in situ. However, given that these individuals will be impacted under the proposed road upgrade this provides an opportunity to study the species ex situ.
Lack of long-term security over translocation site	Potential	Secure site. Conservation covenant or agreement.

4.2 Site Procedure

It is Eco Logical Australia's experience that translocations have an increased success rate if plants on site are removed, nurtured in a nursery and monitored. To remove plants from site, the following process should be followed:

- Plants identified for removal should be watered and allowed to drain.
- Soil should be wet but not sloppy.
- An area around the plant, as wide as the canopy and as deep as possible should be cut out from around the plant.
- As much soil and root material should be retained as possible around individuals that are identified as suitable for translocation. Those individuals where translocation may be deemed unlikely to be successful can be used for cutting material. The decision to use material for translocation or cutting should be made in the field by a suitably qualified botanist.
- Plants should be potted on site into Grow Bags and watered.
- Plants and plant material should be transported to the nursery in a closed vehicle to avoid damage by wind. It may be necessary to remove some vegetation which can be used as cutting material to reduce the transpiration rate.
- Once at the nursery the trees should be monitored and watered regularly.
- In the mean-time, a translocation field site can be secured and prepared.

Acacia meiantha is known to be sucker forming in both dense and diffuse clumps of stems arising from the roots of a single plant (Eldridge 2015). Whilst this may make it difficult to identify individual plants, it is possible that any root material left behind may regenerate. Additionally, collecting the top soil from around the plants and the soil seed bank into trays may also increase the likelihood of establishing plants in ex situ. Cuttings could also be established from those individuals salvaged off site to further increase the number of plants ex-situ.

4.3 Selecting release sites

A release site should meet all the practical need of the species:

- Meet all biotic and abiotic requirements, same soil type and vegetation.
- Be appropriate for all life stages.
- Be adequate for all seasonal requirements.

Successful translocations are more likely if the plants are nurtured offsite in a nursery and regularly tended to until they are deemed healthy to translocate into the field. Survival rate is critical in the first year, mortality rate can be up to 50% of individuals due to hot dry summers or frosts (Commander et al 2018). In the nursery, cuttings can also be taken to increase the number of propagules further increasing the likelihood of success.

4.4 Monitor and evaluate

Monitoring is a cyclical process of implementation, monitoring, feedback and adjustment for both biological and non-biological aspects until goals are met or the translocation / cuttings are deemed unsuccessful. Monitoring of the translocated individuals and those derived from cuttings should include:

- counting surviving plants
- measuring height
- width of crown
- general health
- presence or absence of flowers, pods and other fertile material
- identification of any new threats.

Monitoring data may be made available to regulatory agencies as required and potentially included in annual reporting requirements under the Project Approval.

5 References

Commander, LE, Coates, DJ, Broadhurst, Offord, CA, Makinson, RO and Mattes, M. (2018) Guidelines for the translocation of threatened plants in Australia, 3rd Ed. http://www.nespthreatenedspecies.edu.au/Translocation%20Guidelines_FINAL%20WEB2.pdf

Eldridge, M. (2015) NSW Scientific Advisory Committee Final Determination *Acacia meiantha*, https://www.environment.nsw.gov.au/resources/threatenedspecies/determinations/FDAcaciameiaES.pdf. Accessed 12/12/18

Royal Botanic Gardens and Domain Trust (2013) PlantNET – The Plant Information Network System of The Royal Botanic Gardens and Domain Trust, Sydney, Australia (version 2.0). http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Acacia~meiantha(accessed 12/12/2018)

Tindale MD, Kodela PG, Herscovich C (1992) *Acacia meiantha* (Fabaceae, Mimosoideae), a new species from the Central Tablelands of New South Wales. *Australian Systematic Botany* **51**, 761–765.