



GAIA

Biodiversity Management Plan

Bonshaw Solar Farm

21 July 2023

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Biodiversity Management Plan

Bonshaw Solar Farm



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Acronyms and Abbreviations

Name	Description
BAM	Biodiversity Assessment Method
BC Act	Biodiversity Conservation Act 2016
BCD	Biodiversity and Conservation Division of the Biodiversity, Conservation and Science Directorate in the Environment and Heritage Group of the Department of Planning and Environment
BMP	Biodiversity Management Plan
BDAR	Biodiversity Development Assessment Report
CoC	Consent of Conditions
DPI	Department of Primary Industries
DPE	Department of Planning and Environment
DPIE	The former Department of Planning Industry and Environment
DP	Deposited Plan
EIS	Environmental Impact Statement
EPC	Engineering Procurement and Construction contractor
IEA	Independent Environmental Audit
ERM	Environmental Resources Management Australia Pty Ltd
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
HBT	Hollow-bearing Trees
IBRA	Interim Biogeographic Regionalisation for Australia
OEH	Office of Environment & Heritage
PCT	Plant Community Type
RtS	Response to Submissions
SEPP	State Environmental Planning Policy
SSD	State Significant Development
TEC	Threatened Ecological Communities
WoNS	Weeds of National Significance

1. INTRODUCTION

1.1 Background

Environmental Resources Management Australia Pty Ltd (ERM) has been engaged by GAIA Australia (GAIA) prepare a Biodiversity Management Plan (BMP) for the approved Bonshaw Solar Farm (the Project) at Bonshaw, within the Inverell Local Government Area in New South Wales (NSW).

The Project includes the installation, operation, maintenance and decommissioning of a new 200 megawatt (MW) solar farm with up to 300 MW of battery energy storage system (BESS) and associated infrastructure¹. The Project is located approximately 66 km north of Inverell, with site access fronting the Bruxner Highway.

The Project site comprises Lot 2 Deposited Plan (DP) 1039185 and Lot 201 DP 879480 covering approximately 368 hectares (ha), of which the proposed development area occupies 149.24 ha (Development Footprint). The remaining undeveloped portion of the Project site will be retained and managed in accordance with this BMP.

The location is shown in Figure 1-1. The approved Bonshaw Solar Farm development footprint and approved layout is provided in Figure 1-2.

1.2 Purpose and Scope

This BMP has been prepared to satisfy the requirements of Schedule 3, Condition 17 of the Development Consent for the Bonshaw Solar Farm (refer to Section 2.1). It outlines the required measures for:

- protecting vegetation and fauna habitat outside the approved disturbance areas;
- managing the remnant vegetation and fauna habitat on site;
- minimising clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development;
- minimising the impacts to fauna on site and implementing fauna management protocols;
- avoiding the removal of hollow-bearing trees during spring to avoid the main breeding period for hollow-dependent fauna;
- rehabilitating and revegetating temporary disturbance areas with species that are endemic to the area;
- maximising the salvage of vegetative and soil resources with the approved disturbance area for beneficial reuse in the enhancement or the rehabilitation of the site; and
- controlling weeds, feral pests and pathogens.

¹ A full description of the Project is provided with the Environmental Impact Statement (EIS) and subsequent Submissions Report and Amendment Report. This information can be accessed on the Project website: <https://www.gaiaau.com/projects-6>

1.3 Objectives and Targets

This BMP describes the biodiversity management measures that will be implemented to avoid, minimise, and mitigate impacts associated with the construction and operation of the approved Bonshaw Solar Farm. To achieve these objectives, the following targets have been established and will aim to:

- Ensure appropriate controls and procedures are implemented during construction and operational phases of the Project to minimise impacts on biodiversity values; and
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 2.1.

This BMP has been written to complement other management plans for the Project and has been developed as a component of, and must be read in conjunction with:

- Bonshaw Solar Farm Environmental Management Strategy (EMS);
- Bonshaw Solar Farm Heritage Management Plan;
- Bonshaw Solar Farm Landscape and Vegetation Plan;
- Bonshaw Solar Farm Bushfire Management Plan.

Once approved, and in accordance with SSD 9438 Schedule 4 Condition 10, a copy of this BMP will be made available via the Project website.

1.4 Biodiversity Offset Obligations

Prior to commencing construction, in accordance with SSD 9438 Schedule 3 Condition 16, the Applicant must retire biodiversity credits of a number and class specified below (refer to Table 1-1), unless the Secretary agrees otherwise. The retirement of these credits must be carried out in accordance with the NSW Biodiversity Offsets Scheme and can be achieved by:

- a) acquiring or retiring 'biodiversity credits' within the meaning of the Biodiversity Conservation Act 2016;
- b) making payments into an offset fund that has been developed by the NSW Government; or
- c) funding a biodiversity conservation action that benefits the entity impacted and is listed in the ancillary rules of the biodiversity offset scheme.

It is important to note that this Biodiversity Management Plan excludes the retirement of these biodiversity credits (SSD 9438 Schedule 3, Condition 16). An application for a Biodiversity Stewardship Agreement over the undeveloped portions of Lot 2 DP1039185 has been submitted to the NSW Credit Supply Taskforce.

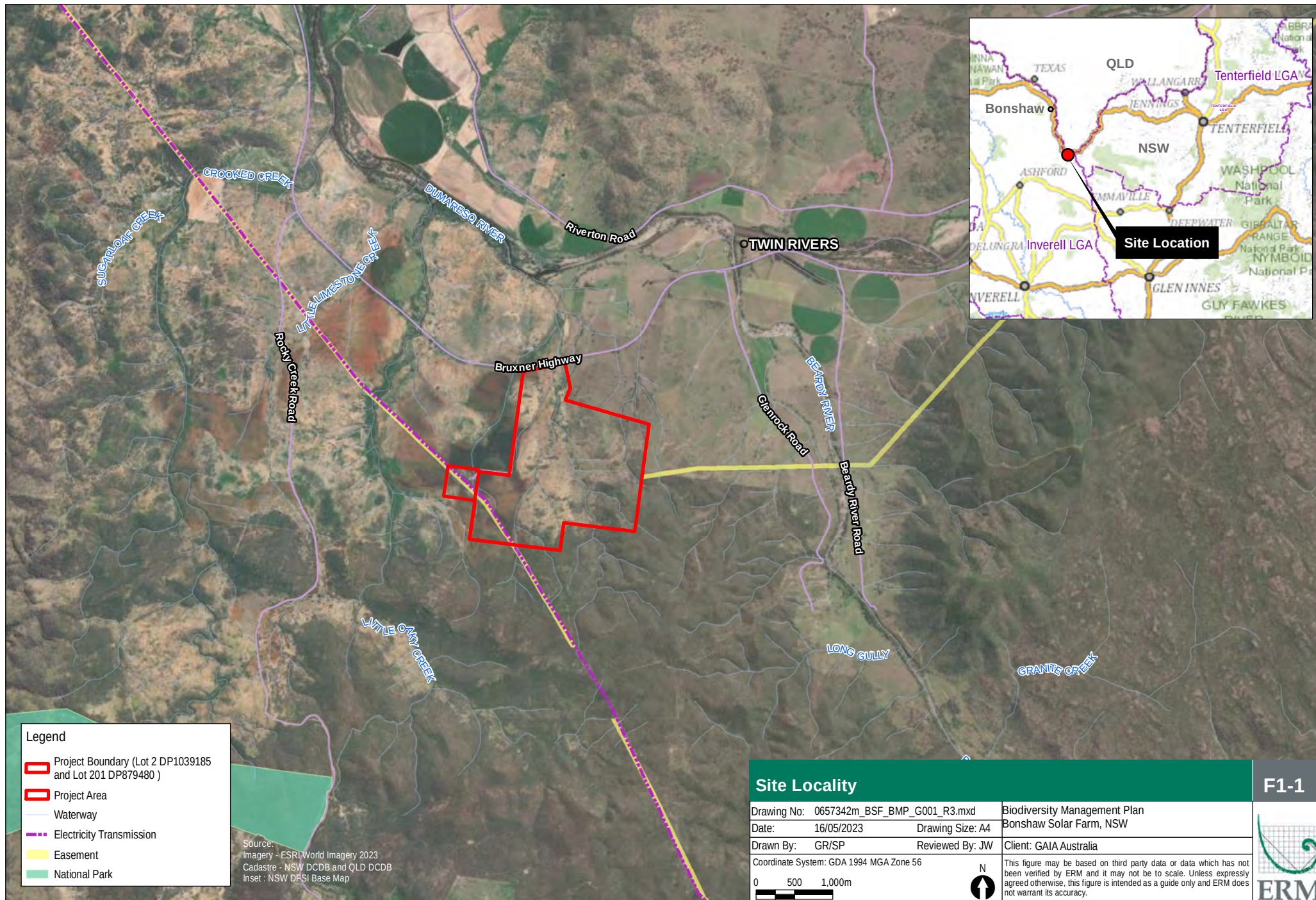
A site visit was undertaken with the CST on Monday 8 May 2023 and the final application was submitted on 19 June 2023. The Biodiversity Stewardship Agreement, if approved, will partially fulfil the required credit obligations. Any remaining credits will be sourced from the Biodiversity Credits Supply Fund prior to the commencement of any construction activities.

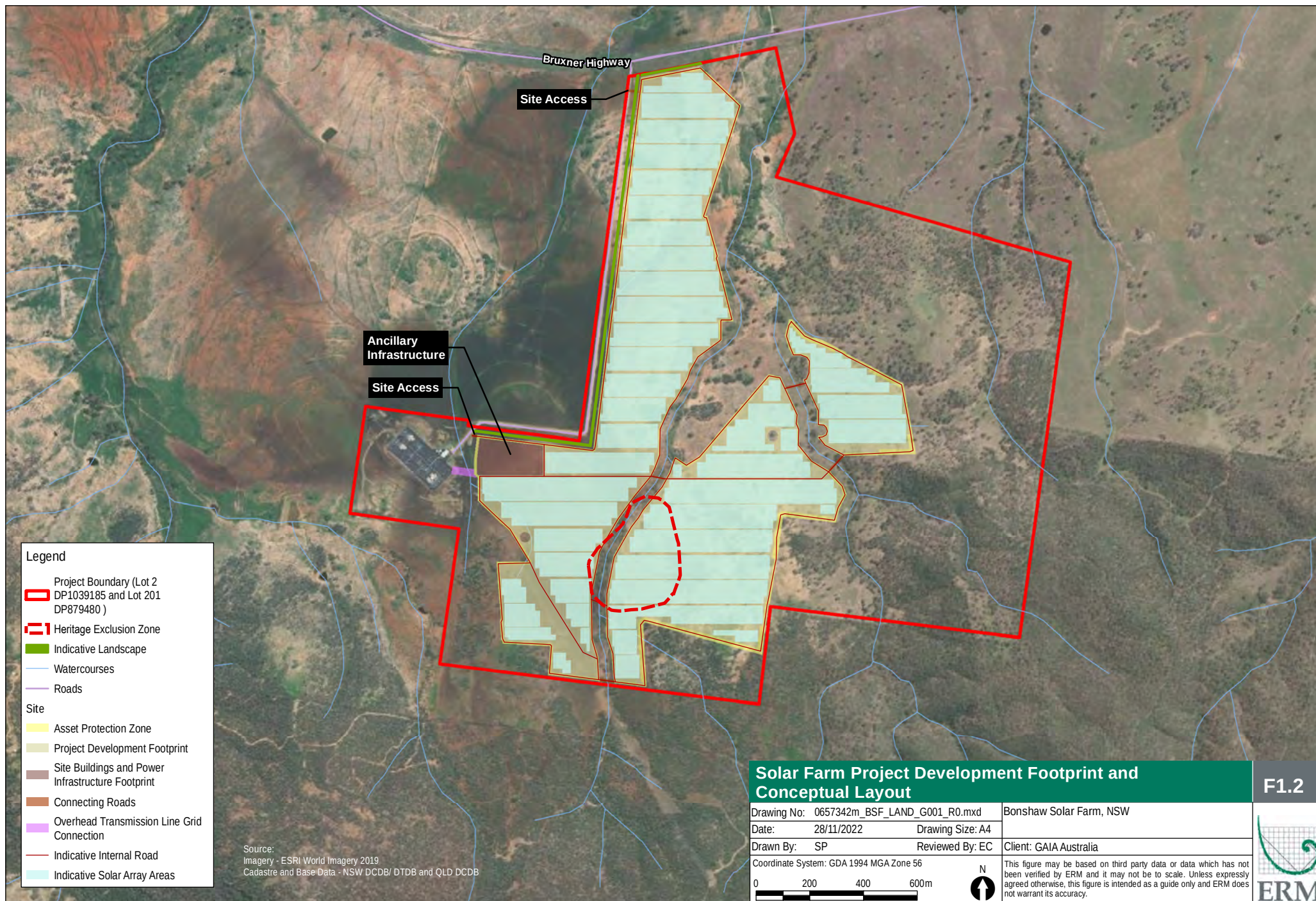
As the agreement has yet to be approved, this Biodiversity Management Plan currently applies all undeveloped portions of the Project Site. In the event that the Biodiversity Stewardship Agreement is approved, this Biodiversity Management Plan will need to be updated and will only apply to those areas outside of the development footprint and external to the approved Stewardship site.

Table 1-1 Biodiversity Credit Requirements

Species/Community	PCT	Credits Required
Ecosystem Credit Requirements		
Grey Box grassy woodland or open forest of the Nandewar Bioregion and New England Tableland Bioregion	PCT 516	65
Rough-barked Apple - White Cypress Pine - Blakely's Red Gum riparian open forest/woodland of the Nandewar Bioregion and New England Tableland Bioregion	PCT 544	15
Silver-leaved Ironbark – White Cypress Pine shrubby open forest of Brigalow Belt South Bioregion and Nandewar Bioregion	PCT 594	249
Tumbledown Red Gum – White Cypress Pine – Silver-leaved Ironbark shrubby woodland mainly in the northern Nandewar Bioregion	PCT 596	269
Species Credit Requirements		
Bristle-faced Free-tailed Bat (<i>Mormopterus eleryi</i>)		827
Eastern Cave Bat (<i>Vespadelus troughtoni</i>)		1030
Masked Owl (<i>Tyto novaehollandiae</i>)		104
Barking Owl (<i>Ninox connivens</i>)		283

Construction cannot commence until these credits have been retired in full. At the preparation of this report, dated 21 July 2023, these credits have not yet been secured or retired.





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2. PLANNING CONSIDERATIONS

2.1 Conditions of Consent

The EIS for Bonshaw Solar Farm (SSD 9438) was placed on public exhibition in October 2019, and a Response to Submissions Report (RtS) was submitted in March 2020. SSD 9438 was approved by the NSW Land and Environment Court on 3 December 2020 under the EP&A Act, subject to a number of conditions. Conditions of consent (CoC) relevant to this BMP and where they have been addressed are detailed in Table 2-1.

Table 2-1 Relevant Conditions of Consent and Reference Location

Condition of Consent	Description	Reference Location
Schedule 2, Condition 1 Obligation to Minimise Harm	In meeting the specific environmental performance criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, upgrading or decommissioning of the development.	Once approved, GAIA must implement this management plan.
Schedule 3, Condition 17 Biodiversity Management Plan	Prior to the commencement of construction, the Applicant must prepare a BMP for the development in consultation with BCD and to the satisfaction of the Secretary. This plan must: (a) include a description of the measures that would be implemented for:	Whole Document
	■ protecting vegetation and fauna habitat outside the approved disturbance areas;	Section 3.2 and Section 4 Protocol 1 – pre-clearance surveys
	■ managing the remnant vegetation and fauna habitat on site;	Section 3.2 and Section 4
	■ minimising clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development;	Section 3.2 and Section 4 Protocol 1 – pre-clearance surveys
	■ minimising the impacts to fauna on site and implementing fauna management protocols;	Section 4 Protocol 4 – Fauna handling and relocation procedure Protocol 5 – unexpected threatened species find procedure
	■ avoiding the removal of hollow-bearing trees during spring to avoid the main breeding period for hollow-dependent fauna;	Section 4 Protocol 3 – Tree clearance protocol
	■ rehabilitating and revegetating temporary disturbance areas with species that are endemic to the area;	Section 3.2
	■ maximising the salvage of vegetative and soil resources with the approved disturbance area for beneficial reuse in the enhancement or the rehabilitation of the site; and	Section 4 and Section 5 Protocol 1 – pre-clearance surveys
	■ controlling weeds, feral pests and pathogens.	Section 4 and Section 6 Protocol 6 – Pathogen management Protocol 7 – Pest management procedure

Condition of Consent	Description	Reference Location
	Following the Secretary's approval, the Applicant must implement the Biodiversity Management Plan.	Once approved, GAIA must implement this management plan.
Schedule 3, Condition 15 Vegetation Clearance	■ The Applicant must not clear any native vegetation or fauna habitat located outside the approved disturbance footprint described in the EIS.	Section 4 Protocol 1 – pre-clearance surveys

2.2 Consultation

As per the consultation requirements of Schedule 3, Condition 17 of SSD 9438, a copy of the BMP was provided to DPE for their review and comment on 28 October 2022 and 29 May 2023. A summary of their responses and where addressed in the revised report are provided in Appendix A.

[A copy of the final BMP has been provided to the DPE on the 21 July 2023. A copy of their response will also be provided in Appendix A prior to finalisation and implementation of the BMP.]

3. BIODIVERSITY MANAGEMENT MEASURES

The BMP aims to identify management and mitigation measures to be adopted prior to, during and post-construction to manage the identified impacts on flora and fauna species and their habitat which may be directly or indirectly affected by the Project.

3.1 Roles and Responsibilities

It is the responsibility of all Project staff members and contractors to adhere to the requirements outlined in this BMP.

All personnel and subcontractors must:

- comply with all legal and contractual requirements;
- comply with management / supervisory directions;
- promptly report to management on any non-conformance and/or breaches;
- undergo induction and training in environmental awareness as directed by management; and
- must be aware of environmental risks associated with their work activities.

The **EPC Environment Officer** is responsible for the implementation and outcomes of the management and mitigation measures during the construction phase of the project. This responsibility will transfer to the **Project Environmental Management Representative** post-construction.

The EPC Environment Officer and Project Environmental Management Representative are able to engage suitably qualified environmental specialists (i.e. ecologists/fauna handler/weed contractor) as required but are ultimately responsible for any outcomes delivered by those specialists.

It should be noted that the BMP does not cover the decommissioning phase of the Project.

The roles and responsibilities of the BMP must form a component of the site inductions that all contracted staff and personnel are expected to undertake.

3.2 Direct and Indirect Project Design Impacts

The Project is situated on relatively disturbed land with vegetation comprising low to moderate integrity (refer to Appendix B). Direct impacts associated with the construction and operational phases of the proposed development are outlined in Table 3-1 and include:

- Loss of native vegetation communities and habitat;
- Displacement of resident fauna;
- Potential injury or death of fauna; and
- Removal of important habitat features e.g. Hollow bearing trees.

Identified indirect impacts that could occur as a result of the project are also outlined in Table 3-1 and include:

- Increased noise, vibration and dust levels;
- Increased sedimentation and erosion;
- Increased mortality and/or injury of fauna;
- Artificial lighting impacting nocturnal species behaviour; and
- Increase in invasive species, weeds and pathogens.

3.3 Impact and Mitigations Measures

Table 3-1 outlines the potential direct and indirect impact of the Project on biodiversity. It also outlines the mitigation measures that are to be implemented to reduce the risks from the potential impacts. This table also outlines monitoring requirements and responsibility for implementing these measures, noting that it is the responsibility of all Project staff members and contractors to adhere to the requirements outlined in this BMP. Given the requirement of multiple monitoring events across the various management protocols and procedures, a synthesis report will be compiled annually for record keeping purposes.

Incident response, contingencies and adaptive management measures are provided in Table 8-1.

Table 3-1 Project Environmental Risks, Mitigation Measures and Monitoring Responses

Risk ID	Nature of Impact	Description of the Impact	Mitigation measures	Timing	Monitoring and Reporting	Performance measures	Responsibility
Direct Impacts							
1.1	Vegetation Clearing	Direct removal of native vegetation representing flora and fauna habitat. Removal of 40.97 ha of disturbed native vegetation Removal of 107.55 ha of heavily disturbed grassland 34 trees with hollows to be removed	Revegetation and Nest Box Monitoring Plan. At least 34 nest-boxes suitable for hollow dependent microbats will be installed prior to hollow bearing tree removal. A minimum of 68 trees will be planted within the riparian corridor with commitment to a 100% recruitment rate	Tree replacement and installation of nest boxes prior to vegetation clearance.	Tree plantings will be inspected at least every three months for the first two years to ensure 100% recruitment rate. The nest boxes will be inspected at least every six months for the first two years and then annually during the operational phase of the solar farm.	A minimum of 68 trees planted with a 100% recruitment rate after two years. Ongoing evidence of usage of the nest boxes by native fauna species. Target 30% occupancy after two years.	EPC Environment Officer Construction contractor(s)
1.2	Vegetation Clearing	Loss of 0.83 ha of Critically Endangered PCT 544	Revegetation and Nest Box Monitoring Plan. This CEEC will be allowed to naturally regenerate within retained riparian areas and buffers and infill plantings will be provided that will expand the extent of the CEEC on the Project Site and improve its current condition.	Baseline assessment to be completed prior to construction. Photo monitoring points to be established prior to construction.	Quarterly inspections of rehabilitated areas for two years after rehabilitation works and implementation of appropriate responses if rehabilitation fails.	Areas of PCT 544 within the riparian corridor have improved vegetation integrity scores from the baseline assessment.	EPC Environment Officer Construction contractor(s)

Risk ID	Nature of Impact	Description of the Impact	Mitigation measures	Timing	Monitoring and Reporting	Performance measures	Responsibility
1.3	Vegetation Clearing	Displacement of resident fauna. Injury and/or mortality of fauna.	Protocol 1 – pre-clearance surveys Protocol 2 – Vegetation clearing protocol (shrubs and understorey) Protocol 3 – Tree clearance protocol Protocol 4 – Fauna handling and relocation procedure Protocol 5 – unexpected threatened species find procedure. Ensure reduced speed limits apply across the site during both construction and operation to reduce risk of vehicle strike on resident fauna.	Prior to and during all vegetation clearance activities.	Records of all preclearance surveys. Evidence of vegetation clearing protocols and supervision by a suitably qualified ecologist. Maintain a log of salvaged animals and actions taken to relocate them. Maintain a habitat tree register	Evidence of vegetation clearing protocols and supervision by suitably qualified ecologist. Install signage to indicate reduced speed limits apply across the site.	EPC Environment Officer Construction contractor(s) Ecologist (or other suitably qualified consultant) to undertake any fauna handling and to supervise all vegetation clearing activities.
1.4	Groundcover disturbance	Groundcover disturbance within temporary laydown areas or other temporary disturbance areas within the Development Footprint.	Rehabilitate and revegetate temporary disturbance areas with species endemic to the area to establish a diverse grassy understorey suitable for foraging by the Grey-crowned Babbler. While vegetation is establishing, appropriate signs and temporary fencing will be installed as required to prevent grazing by native or feral animals and further disturbance by the Project activities. Any weed free topsoil recovered during the vegetation clearance activities will be used to stabilise and assist in the revegetation of temporary disturbance areas.	Rehabilitation to commence as areas become available. Revegetation works to be completed within 12 months post-construction.	Fortnightly follow up and visual inspections of rehabilitation works during construction to assess the success of soil stabilization and revegetation. Rehabilitation areas will be monitored at least every three months for the first two years.	Revegetated areas within the Development Footprint contain a diverse grassy understorey dominated (>90%) by native species.	EPC Environment Officer Construction contractor(s)

Risk ID	Nature of Impact	Description of the Impact	Mitigation measures	Timing	Monitoring and Reporting	Performance measures	Responsibility
1.5	Installation of perimeter fencing	Injury and/or mortality of fauna. Displacement of resident fauna and potential decline in local fauna populations due to additional fencing being installed on all sides of the solar farm.	Inspection and supervision of fence installation. Ensure that fencing does not impede movement of fauna along the central riparian corridor and no barbed wire is used. Protocol 4 – fauna handling and relocation procedure Protocol 5 – unexpected threatened species find procedure	As required for the duration of construction and operation	Fortnightly inspection and regular maintenance of fencing during construction and monthly during first year of operation. Thereafter either monthly or annually depending on frequency of observed incidences. Maintain a log of salvaged animals and actions taken to relocate them.	No reported injury and/or mortality of native fauna. Ensure that fencing does not impede movement of fauna along the central riparian corridor.	EPC Environment Officer Construction contractor(s) Ecologist (or other suitably qualified consultant) to undertake any fauna handling.
Indirect Impacts							
2.1	Introduction of pests and pathogens	Clearing of vegetation and construction of roads provides increased potential for the introduction/spread of invasive pest species. Increased movement of vehicles also has the potential to transport pathogens into the development site and adjacent vegetation.	Protocol 6 – Pathogen management Protocol 7 – Pest management procedure	Daily during construction Monthly during construction and every six months during operation	Daily Environmental Checklist Monitoring monthly during construction and every six months during operation.	No reported infection of native plants by <i>Phytophthora cinnamomic</i> Feral Pest Control programs will be developed and implemented as required	EPC Environment Officer Construction contractor(s) Project Environmental Management Representative

Risk ID	Nature of Impact	Description of the Impact	Mitigation measures	Timing	Monitoring and Reporting	Performance measures	Responsibility
2.2	Introduction of weed species	Increased movement of vehicles has the potential to transport weeds into the development site and adjacent vegetation. There is also the risk that weeds may be transported off-site.	Ensure that weed management is undertaken in accordance with the Weed Management Plan outlined in this BMP.	During construction and operation	Quarterly	No net increase in the cover of environmental weeds within the Development Footprint.	EPC Environment Officer Construction contractor(s) Project Environmental Management Representative
2.3	Erosion and sedimentation	Mobilisation of soils/sediments may occur during inclement weather over disturbed soils and sediments in areas where vegetation has been cleared and/or areas where soil and construction material has been stockpiled. Reduction in watercourse bank stability following any nearby construction and any clearing of riparian vegetation could also result in bank erosion and input of sediments into watercourses.	Protocol 8 – Erosion and sediment control Protocol 9 – Dust control	Install erosion and sediment control measures prior to any works	Daily Environmental Checklist Weekly inspections of all sediment and erosion controls. Within 24 hours of significant rainfall events (nominated as >20 mm in any 24-hour period).	No evidence of increased sedimentation or bank erosion	EPC Environment Officer Construction contractor(s) Project Environmental Management Representative
2.4	Contamination of land and water from chemical spills	Contamination of land and water from chemical spills	Protocol 10 – chemical management	During construction and operation direct Impacts	Daily Environmental Checklist Monthly during Operations	No records on non-compliance	EPC Environment Officer Construction contractor(s) Project Environmental Management Representative

Risk ID	Nature of Impact	Description of the Impact	Mitigation measures	Timing	Monitoring and Reporting	Performance measures	Responsibility
2.5	Artificial lighting	The project will require limited permanent night lighting, most likely for the operations and maintenance buildings and substations. Temporary, localised night lighting may be required during general maintenance activities conducted during the operational stage of the project. Lighting has the potential to impact species behaviour.	Protocol 11 – lighting design protocol	During construction and operation	Weekly inspections during construction.	No light spill into retained habitats	EPC Environment Officer Construction contractor(s) Project Environmental Management Representative

4. MANAGEMENT AND MITIGATION PROTOCOLS AND PROCEDURES

The maximum area of native vegetation that can be disturbed, or cleared, for the Project is prescribed by the Development Consent and linked directly to the biodiversity offsets required. To ensure compliance with the Project approval, prior to the clearing of any vegetation, a robust pre-clearing procedure is to be implemented by the EPC Environment Officer to ensure impacts to vegetation are minimised. The pre-clearing procedure will comprise the following key elements:

- Identification of clearance boundaries based on the approved development; and
- Pre-clearing survey conducted by a suitably qualified ecologist to identify any sensitive areas which may require further management during clearing.

The EPC Environment Officer and construction contractor(s) will be responsible for demarcating vegetation clearing boundaries. Flagging tape, bunting, temporary fencing or similar will be used to visually identify vegetation clearing boundaries based on the detailed design and site survey. **No clearing is permitted outside of the approved development boundary as identified in the development consent** although it is noted detailed design may allow for additional avoidance mechanisms.

The following protocols have been developed to guide this process as required:

Protocol 1: Pre-clearance surveys;

Protocol 2: Vegetation clearing protocol (understorey and shrubs);

Protocol 3: Tree clearance protocol;

Protocol 4: Fauna handling and relocation procedure;

Protocol 5: Unexpected threatened species find procedure;

Protocol 6: Pathogen management;

Protocol 7: Pest management procedure;

Protocol 8: Erosion and sediment control;

Protocol 9: Dust control;

Protocol 10: Chemical management; and

Protocol 11: Lighting design protocol.

Reduced speed limits will also apply across the entire site during both construction and operation to reduce risk of vehicle strike on resident fauna. Relevant signage must be installed prior to the commencement of construction and must be maintained throughout construction and operation of the solar farm.

4.1 Protocol 1: Pre-clearance Surveys

Frequency	Monitoring and Reporting	Responsibility
Prior to commencement of vegetation clearing As required for the duration of clearing	Records of each survey must include: ■ Area surveyed; ■ Results of survey; ■ Required actions; and ■ Tree Register.	EPC Environment Officer

A survey of the identified impact area is to be undertaken by a suitably qualified ecologist prior to any vegetation clearing, to determine:

- The area of native vegetation to be cleared, including mapped CEEC;
- The location of all habitat features (hollow bearing trees, grey-crowned babbler nest (active and non-active), termite mounds, nests and rocky outcrops) are to be recorded using GPS;
- The location of all habitat features (hollow bearing trees, nests, termite mounds, nests and rocky outcrops) to be cleared will be marked in the field with flagging tape (or similar) and will be salvaged for re-use;
- Habitat features immediately adjacent to and / or within the impact area that will be retained will be also marked, for the establishment of an exclusion zone and protection from impacts;
- Resident fauna or habitat features that may require active management prior to or during disturbance will be recorded using GPS. This may include:
 - actively nesting birds or mammals;
 - habitat features including tree hollows or fallen logs that contain roosts; nests, dreys or dens;
 - suspected active microbat roosts; and
 - the presence of any previously unrecorded threatened flora or fauna species requiring management under the 'Unexpected finds' procedure.
- Areas where topsoil is relatively weed free and contains native groundcover in the seed bank will be clearly identified for reuse within the rehabilitation of temporary disturbance areas;
- Features identified in the pre-clearing survey will be recorded using handheld GPS. The use of a differential GPS unit will be considered where sensitive vegetation or features are identified to provide greater accuracy of the location; and
- Data collected in the pre-clearing inspection will be collated and reported by the Project Ecologist.

The preclearance surveys will also identify potential hollow logs, fallen timber and rocky outcrops that can be relocated outside of impact areas and in locations where any resident fauna cannot readily re-enter active construction areas. Larger logs that are cleared from the development site would be placed within the riparian corridor area to provide additional habitat features. The relocation of such habitat resources into conservation areas is aimed at increasing habitat complexity in these areas.

4.2 Protocol 2: Vegetation Clearing Protocol (Understorey and Shrubs)

Frequency	Monitoring and Reporting	Responsibility
As required for the duration of clearing	Records must include: ■ Total area cleared ■ Evidence of vegetation clearing protocols and supervision by ecologist (or other suitably qualified consultant) ■ Details of all habitat features cleared and/or relocated ■ Implementation of fauna management protocols ■ Unexpected threatened species finds	EPC Environment Officer

The EPC Environment Officer will be responsible for ensuring the clearing of vegetation is undertaken in accordance with this BMP. The ecologist/fauna handler will be present at all times during the clearance of native vegetation and/or fauna habitats.

Specific measures to minimise the impact of vegetation clearing include:

- The pre-clearing procedures detailed in Protocol 1, including the installation of 34 nest boxes within retained habitats must be completed prior to commencement of any vegetation clearing;
- The EPC Environment Officer and construction contractor(s) will be responsible for demarcating vegetation clearing boundaries based on the detailed design and construction requirements. Flagging tape, bunting, temporary fencing or similar will be used to visually identify vegetation clearing boundaries based on the detailed design and site survey. No clearing is permitted outside of the approved development boundary as identified in the development consent although it is noted detailed design may allow for additional avoidance.
- Immediately prior to clearing, the Project Ecologist is to identify the presence of any Grey-crowned Babblers (or other native species) within the clearance areas. The supervising ecologist / fauna handler will be responsible for determining the appropriate clearance methods ensuring sufficient time is allowed for the birds to relocate;
- Clearing will begin in the area that is furthest from those areas of vegetation that are to be retained and move progressively towards the area retained. The direction of clearing must ensure that fauna species are directed away from threats such as roads, developed areas or disturbed areas;
- Sequential clearing will not create an 'island' of habitat that is isolated from adjoining habitat by roads, or cleared and disturbed areas;
- Pruning of vegetation (in lieu of vegetation removal) will be considered wherever possible to reduce the area of vegetation to be cleared;
- Surface disturbance is to be minimised and no vegetation clearing is to occur outside the approved impact area footprint;
- Project vehicles and machinery are to remain within the impact area wherever practicable;
- Laydown or temporary disturbance areas will be sited within the approved development footprint;
- A qualified ecologist/licenced wildlife handler is to supervise clearing activities and manage any impacts to fauna in accordance with Protocol 4;
- Salvage of soil and habitat resources will be undertaken to enhance adjacent areas, or to be re-used in rehabilitation and landscaping activities on the solar farm site. This will include weed free topsoil, rocky outcrops, felled hollow bearing trees, large fallen logs and woody debris; and
- Seed resources within areas to be cleared will be identified during pre-clearance surveys. Where practical, this seed will be collected from trees after they have been felled, but prior to them being stockpiled or mulched. Collected seed will be stored and either propagated to create tubestock for rehabilitation activities or incorporated into the seed mix used on rehabilitation areas.

4.3 Protocol 3: Tree Clearance Protocol

Frequency	Monitoring and Reporting	Responsibility
As required for the duration of clearing	Records must include: ■ Evidence of vegetation clearing protocols and supervision by ecologist (or other suitably qualified consultant); ■ Implementation of active fauna management protocols; ■ Unexpected threatened species finds; and ■ Updated Tree Register.	EPC Environment Officer

Trees must be carefully felled under the supervision of an ecologist (or other suitably qualified consultant). The following recommendations have been developed in consideration of best practice guidelines:

- The pre-clearing procedures detailed in Protocol 1 must be completed prior to commencement of any vegetation clearing;
- The removal of identified habitat trees (those with hollows or nests) must be avoided in spring and only occur before 1 September or after 30 November;
- Check weather conditions prior to removal and do not remove habitat trees in hot weather (above 35°C) due to potential to add stress to fauna;
- 'Tree Protection Zones' must be delineated around any trees to be retained during construction, consistent with AS 4970-2009 Protection of trees on development sites;
- Materials will not be stockpiled or vehicles parked within 'Tree Protection Zones' (and tree canopy) or native vegetation to be retained, and never pushed up around the base of trees;
- Vegetation surrounding the tree is to be cleared first, with habitat trees left standing overnight (ideally up to three days) to encourage self-relocation of any fauna that may be using the hollow. Hollows will be monitored prior to removal using a nestbox inspection camera (or similar) to avoid impacting any breeding females or juveniles;
- Immediately prior to clearing, habitat trees will be shaken with machinery to encourage resident fauna to vacate the hollow and move to an alternative site. Relocation may be assisted by the supervising ecologist / fauna handler;
- Where the animal remains in the tree, the supervising ecologist / fauna handler will be responsible for determining the appropriate method:
 - ensuring sufficient time is allowed for the animal to relocate; and
 - capture and relocation may be considered.
- Habitat trees must be soft pushed to the ground in order to reduce the impact to any remaining resident fauna. Where fauna is known to remain within the hollow, an alternative method that may be considered is to lower cut sections of the tree using an arborist and crane. Preferentially, felled habitat trees should be positioned on the ground so the entrance to the hollow faces upwards allowing any remaining resident fauna to exit;
- Felled habitat trees are to be inspected by the supervising ecologist / fauna handler to confirm whether fauna have exited the tree;
- Felled trees are to be left overnight before mulching or relocating, to allow any remaining fauna time to exit, which will be confirmed by reinspection on the following day; and
- Vegetation will either be mulched and incorporated into the topsoil or stockpiled separately and spread over rehabilitation areas to provide additional habitat.

4.4 Protocol 4: Fauna Handling and Relocation Procedure

Frequency	Monitoring and Reporting	Responsibility
As required for the duration of construction and operation	Records must include: ■ Evidence of vegetation clearing protocols and supervision by and ecologist (or other suitably qualified consultant); ■ Location and time captured; ■ Location and time released; ■ Behaviour and condition upon release; ■ Details of any injury or deaths that occurred; and ■ Contract details and location of licensed wildlife carer or vet if the animal was transferred into their care.	EPC Environment Officer Project Environmental Management Representative

Note: Relocation of species will be restricted to native faunal species. Where pest species are identified they will be managed in accordance with the Pest Management Procedure.

The ecologist/fauna handler will be present at all times during the clearance of native vegetation and/or fauna habitats. Animals that require handling will not be approached or handled until the ecologist/fauna handler is present, unless in an emergency (e.g. when ecologist/fauna handler is not on-site and where the failure to immediately intervene would place the animal at significant risk). In such an emergency, the EPC Environment Officer (during construction) or Project Environmental Management Representative (pot-construction) may obtain over the phone instructions from the ecologist/fauna handler to approach/handle the fauna.

Uninjured:

The following methods will be followed for the release of uninjured native fauna:

- Uninjured captured individuals will be immediately released at the nearest suitable habitat at a suitable distance away from the construction area;
- Suitable locations will include habitats that are considered appropriate for the species, as determined by the ecologist/wildlife carer (e.g. sufficient protective cover, habitat features likely to support adequate food and water). The requirements of the species type will be taken into consideration during relocation (e.g. territorial boundaries);
- If the ecologist/fauna handler is not trained to handle snakes, a licensed snake handler will be engaged; and
- For particular species (e.g. nocturnal species), the ecologist/fauna handler may also determine that it is beneficial to hold the animal/s safely in an appropriate receptacle until (or after) sunset to reduce risks to the animal such as disorientation or attack from predators. The receptacle will be kept in a shaded or otherwise suitable location during the day so that the temperatures experienced by the animals are well within its normal range. At all times, the receptacle will be kept in a secure location, under the supervision of the ecologist/wildlife carer.

Injured:

The following methods will be followed for the management of injured native fauna:

- If an injured animal is found, then the ecologist/wildlife carer will immediately take this animal to a nearby veterinarian for assessment;
- For animals whose injuries can be repaired and that stand a good chance of a successful return to the wild (as determined by the veterinarian), they will be placed into the care of a local and 'accredited party' if they are experienced in the care of that particular animal species. This may include WIRES carers;
- For particular species of injured animals where the local accredited party is not qualified in their care and recovery, alternative accredited party(s) will be arranged from a wider area;
- If there are animals for which no suitable accredited parties can be found, advice will be sought from DPE on an appropriate solution;
- When injured animals have recovered sufficiently, they will be released safely at the point of capture by the ecologist/wildlife carer in suitable habitat; and
- Animals whose injuries have a poor chance of repair or for which a successful return to the wild is considered unlikely (as determined by the veterinarian) will be euthanised humanely by the veterinarian.

Deceased:

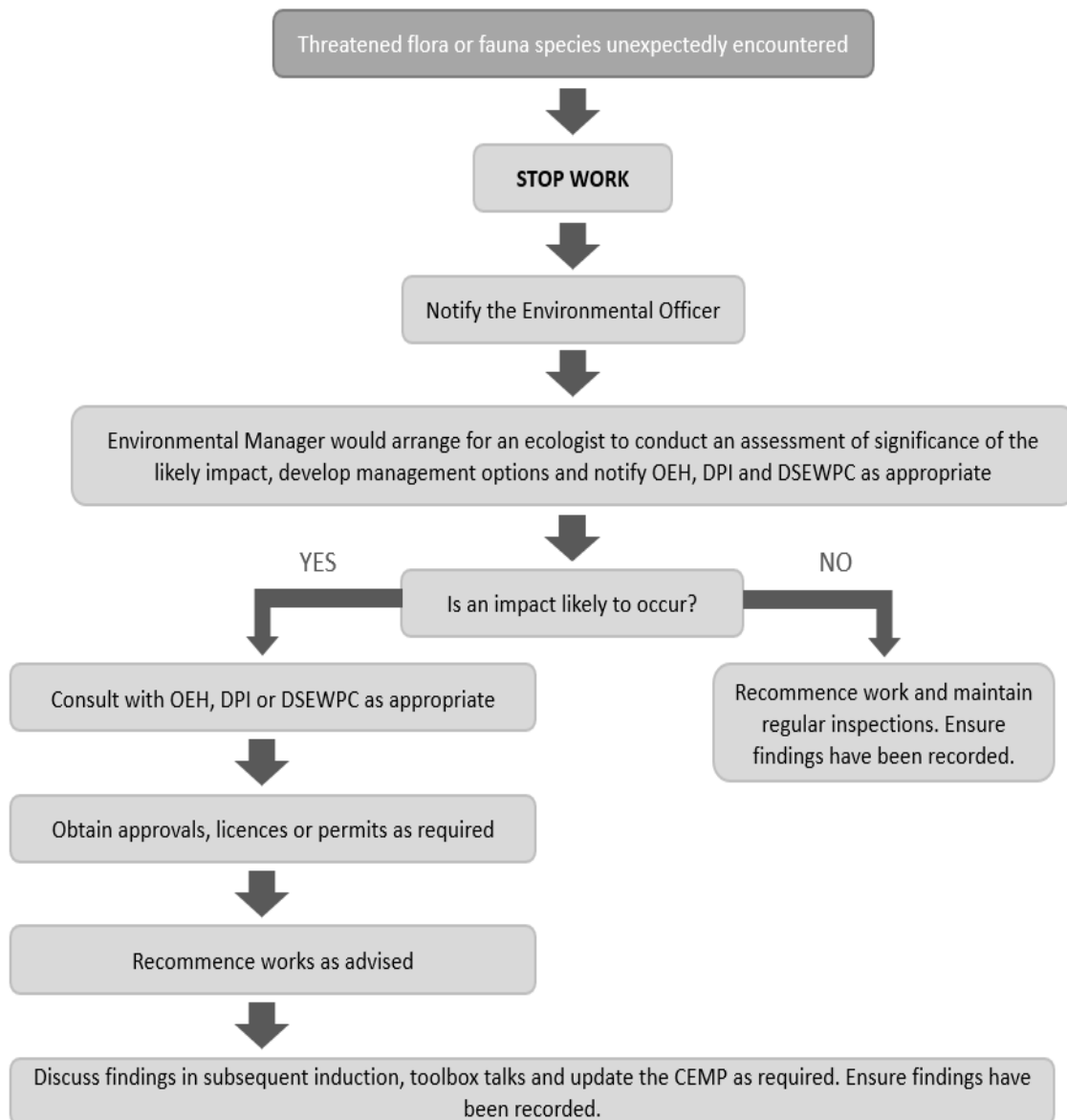
The ecologist/fauna handler will offer deceased animals to the Australian Museum. If the Museum rejects the specimens, then the specimens will be disposed of thoughtfully and hygienically- either buried or securely wrapped and disposed of in the waste collection.

In the event that the animal has sustained considerable damage the specimens will be disposed of in accordance with the above practice.

4.5 Protocol 5: Unexpected Threatened Species Find Procedure

Frequency	Monitoring and Reporting	Responsibility
As required for the duration of construction and operations	A record of the unexpected find will be maintained and will include the following details: ■ Date, time and location of the unexpected find; ■ Details regarding assessment (with advice from a suitable qualified ecologist); and ■ Actions undertaken before work recommenced. Additionally, records of non-threatened fauna finds will also be maintained.	EPC Environment Officer Project Environmental Management Representative

If previously unrecorded threatened flora or fauna are identified during pre-clearing surveys, clearing activities or operation of the solar farm, a qualified ecologist will be engaged to determine the significance of impacts and provide advice on approval requirements. Works in these areas, where potential impacts to threatened species are identified, will not be undertaken until authorisation to proceed is provided by the relevant authority.



4.6 Protocol 6: Pathogen Management

Frequency	Monitoring and Reporting	Responsibility
As required for the duration of construction and operations	Daily Environmental Checklist Visual inspections to assess vehicle movements to and from the Project site and weed transfer on tyres.	EPC Environment Officer Project Environmental Management Representative

Infection of native plants by *Phytophthora cinnamomi* is listed as a key threatening process under the BC Act and EPBC Act. *P. cinnamomi* can lead to death of trees and shrubs, resulting in devastation of native ecosystems. The following pathogen measures are to be undertaken:

- Ensure the risk of spreading pathogens and the mitigation measures required on site are regularly communicated to staff and contractors e.g. during inductions and toolbox talks;
- Works will be scheduled to move from uninfected areas to infected areas;
- Ensure vehicles and footwear are free of soil before entering or exiting the site;
- Wash down facilities for vehicles and footwear;

- Exclusion zones to be set up with fencing and signage to restrict access into contaminated areas; and
- Restrict vehicles to designated tracks, trails and parking areas.

4.7 Protocol 7: Pest Management Procedure

Frequency	Monitoring and Reporting	Responsibility
Six monthly for the duration of construction and operations. Opportunistic observations	Monitoring of the Project site is to occur monthly during construction and every six months during operation to determine presence of feral animals and over abundant native herbivores to reduce impact to native vegetation. The Feral Scan App https://www.feralscan.org.au/ will be used to report the occurrence of the various pest species in order to contribute to this database and to the broader management of the relevant pest species	EPC Environment Officer

Feral Pest Control programs will be developed and implemented as required. All control methods must be completed in accordance with relevant legislation / standard operating procedures by licenced contractors.

Avoid the use of chemicals, including overuse of pesticides and herbicides, within the solar farm during the construction and operational phases to prevent contributing to the global decline in insect population and diversity.

Inspections are to be undertaken prior to the completion of any fencing to reduce the risk of animals being trapped within the development site.

Monitoring of the Project site is to occur monthly during construction and at least every six months during operation to assess and map the presence of feral animals and over abundant native herbivores within the Project site to reduce impact to native vegetation. Results of the monitoring events are to be reported to the EPC Environment Officer.

Opportunistic sightings of feral animals within operational areas are also to be reported to the EPC Environment Officer.

Where possible all pest control activities will be coordinated with adjoining landowners to maximise the benefits of the programs. The scope and effectiveness of these programs (if undertaken) will be reported annually.

Over-abundant Herbivore Control:

A commercial license to harm kangaroos from NPWS is required in order to control overabundant populations of kangaroos and wallabies. The following measures are also required under the procedure:

- All recorded fauna mortalities are to be notified to BCD or DPE;
- Adjoining landholders will be notified by letterbox drop if and when baiting for feral animals is planned to be used; and
- This protocol is to be included in the induction process for the Project.

4.8 Protocol 8: Erosion and Sediment Control

Frequency	Monitoring and Reporting	Responsibility
As required for the duration of construction and operations	Weekly inspections of all sediment and erosion controls. Within 24 hours of significant rainfall events (nominated as >20 mm in any 24-hour period).	EPC Environment Officer Project Environmental Management Representative

Measures to control erosion and sediment control are to be maintained in accordance with the Construction Environmental Management Plan and will include:

- Install erosion and sediment control measures prior to any works;
- Complete regular inspection, particularly after rainfall to ensure ongoing functionality;
- Avoid stockpiling of materials adjacent to native vegetation; and
- Undertake maintenance of silt fences and other mitigation measures to isolate runoff.

4.9 Protocol 9: Dust Control

Frequency	Monitoring and Reporting	Responsibility
As required for the duration of construction and operations	Daily Environmental Checklist; and incidental records.	EPC Environment Officer Project Environmental Management Representative

Measures to control dust impacts are to be maintained in accordance with the Construction Environmental Management Plan and will include:

- Setting maximum speed limits for all traffic within the construction site to limit dust generation (and reduce risk of vehicle strike);
- Use of a water tanker or similar to spray unpaved access tracks during construction phase; and
- Application of dust suppressants or covers on soil stockpiles.

4.10 Protocol 10: Chemical Management

Frequency	Monitoring and Reporting	Responsibility
As required for the duration of construction and operations	Daily Environmental Checklist; and Incident Records.	EPC Environment Officer Project Environmental Management Representative

Simple management principles to reduce potential for chemical spills are:

- The Project will store and handle all chemicals, fuels and oils used on-site in accordance with the requirements of all relevant Australian Standards and the NSW EPA's Storing and Handling of Liquids: Environmental Protection – Participants Handbook if the chemicals are liquid;
- Regularly inspect vehicles and mechanical plant for leakage of oil or fuel; and
- No re-fuelling, washing or maintenance of vehicles and plant to be undertaken within 20 m of natural drainage lines.

4.11 Protocol 11: Lighting Design Protocol

Frequency	Monitoring and Reporting	Responsibility
As required for the duration of construction and operations	Weekly inspections during construction.	EPC Environment Officer

National Light Pollution Guidelines for Wildlife has the following Best Practice Lighting Design:

- Start with natural darkness and only add light for specific purposes;
- Use adaptive light controls to manage light timing, intensity and colour;
- Light only the object or area intended – keep lights close to the ground, directed and shielded to avoid light spill;
- Use the lowest intensity lighting appropriate for the task;
- Use non-reflective, dark-coloured surfaces;
- Use lights with reduced or filtered blue, violet and ultra-violet wavelengths; and
- Refer to Australian Standard 4282 – Control of the obtrusive effects of outdoor lighting for additional management options.

5. REVEGETATION AND NEST BOX MONITORING PLAN

To compensate for the loss of trees and vegetation, replacement of trees (ideally native to the Project Site) will be planted along the second and third order streams within the Project Boundary. This will increase the vegetation density along the creek-lines and enhance its value as a linking corridor with remnant vegetation fragments and paddock trees beyond the Development site. This will also enhance corridors for mobile fauna such as the Bristle-faced Free-tailed Bat and other microbats recorded within the Project Boundary.

In accordance with the commitments of the BDAR and EIS, trees will be planted at a rate of 2:1 with two new trees planted for each HBT removed. As naturally formed tree hollows take many decades to develop, at least 34 nest-boxes will also be installed within suitable retained habitat (e.g. riparian corridors) and will be monitored and maintained during the construction and operational phases of the development.

5.1 Tree Replacement Program

- A minimum of 68 trees will be planted within the riparian corridor and will aim for a 100% recruitment rate after two years;
- All planting is to be installed within the riparian corridor as tubestock, unless otherwise advised, to increase plant survival and ongoing vigour;
- Planting would be undertaken by an experienced landscape contractor in consultation with local nurseries. Revegetation will prioritise species that are endemic to the area;
- Planting is to be undertaken by hand to minimise soil disturbance and must all be undertaken in accordance with the Cultural Heritage Management Plan to avoidance areas of heritage sensitivity;
- Application of organic matter and slow release fertiliser is to be applied at the time of planting;
- Watering and initial maintenance over the first six months will be determined by the landscape contractor based on site conditions at the time of planting;
- Six monthly monitoring for at least two years will be undertaken. This allows for an adaptive management approach and will enable the identification of issues and any remedial actions or replacement plantings.
- If 100% recruitment has not been achieved after 2 years, a revised revegetation program will need to be developed and the monitoring program will be extended for another two years or until the target has been met.

Note that these trees are to be planted within the riparian corridor and will assist in the rehabilitation of the critically endangered PCT 544 (see Section 6.3 below). This is separate to the requirement for landscape and visual buffers to be planted along the Bruxner Highway as part of the Landscape and Vegetation Plan.

5.2 Nest Box Installation and Requirements

The nest box requirements specific for Microbats are presented in Table 5-1 below.

Table 5-1 Microbat Nest Box Requirements

Description	Requirement for the Bonshaw Project Site
Number required	34 nest boxes are to be installed within retained habitats prior to vegetation clearance activities.
Dimensions (length x breadth x height)	500 mm tall x 400 mm wide – 50 mm deep
Diameter of entrance	15 – 20 mm
Height above ground	To be installed 4-6 metres above the ground
Placement	The nest boxes must be installed vertical. Where possible, they are to be placed under partial shelter / shade i.e foliage cover if possible. Where possible, 3 boxes can be installed at the same height on 3 different sides of one tree. This will allow the bats to move from one to the other if one box becomes too hot or cold. Avoid installing dark-coloured boxes facing north in areas with little shade, as boxes may get extremely hot. Certain orientations seem to be preferred (primarily NE to SE-facing) but varies seasonally. Trees with a minimum diameter of 30 cm at 6 m in height provide a good base for the boxes. Select trees with no branches below 6 m to avoid obstruction to entrance. Smooth-barked trees are preferences due to maintenance and removal of bark prior to installation.
Materials	Hardwood is preferable because of its durability, but if cost is a limiting factor, pine or marine plywood may last up to a decade – it's important to use only untreated wood. Recycled HDPE plastic board is now being used to make boxes designed to last 30+ years. Boxes will be painted with a good quality UV-proof exterior paint to extend the life of the box. Dark colours are to be avoided.
Maintenance	The nest boxes must be inspected at least every six months for the first two years and then annually during the operational phase of the solar farm. At a minimum the following information will be recorded: ■ Inspection dates; ■ Condition; ■ Photograph per inspection; ■ Presence of ant infestations; ■ Occupancy of the nest box by any species; and ■ Details of any maintenance and management undertaken.
Other requirements	The roof should be hinged, to allow opening and closing. Galvanised screws for attaching boxes to trees is preferenced.

Source: Boxes for bats (Australian Bat Society Inc., 2021)

5.3 Rehabilitation of the Critically Endangered PCT 544

The Project BDAR (ERM 2020) identified the presence of PCT 544, Rough-barked Apple – White Cypress Pine – Blakely's Red Gum riparian open forest / woodland of the Nandewar Bioregion and New England Tableland Bioregion. PCT 544 corresponds to the NSW listed Critically Endangered Ecological Community (CEEC) "White Box Yellow Box Blakely's Red Gum Woodland". The occurrence of this TEC is not considered to satisfy the minimum condition criteria for the Commonwealth listing of this TEC. This determination has been made because of very small patch sizes, low diversity of native understorey species and absence of "important species" as described in the Threatened Species Scientific Committee listing advice and National Recovery Plan for the TEC.

The Project BDAR (ERM 2020) concluded that the Project is not considered to represent a Serious and Irreversible Impact (SAII) on this TEC and this TEC will be allowed to naturally regenerate within retained riparian areas and buffers. The majority of this community will be avoided (with the exception of 0.83 ha) by retaining riparian corridors and associated buffers (refer to Figure 5-1). Infill plantings will also be provided that will extend the extent of this TEC within the Project site and improve its current condition.

A list of priority species in line with the PCT 544 profile description for seeding and tubestock are available below. Planting is to be undertaken by hand to minimise soil disturbance.

Table 5-2 Potential Species for use in PCT 544 Rehabilitation

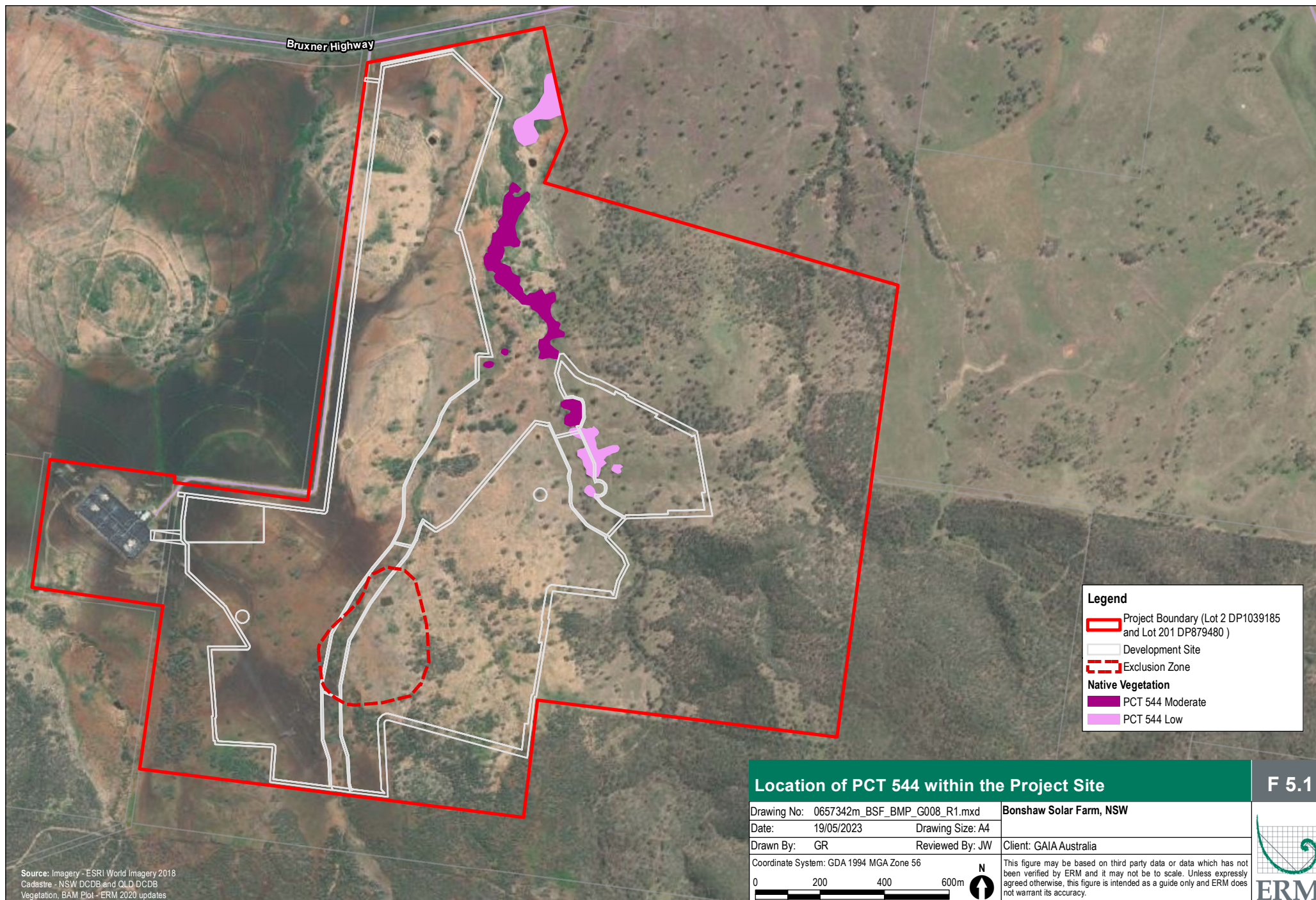
Species	Structure intention	Species	Structure intention
<i>Angophora floribunda</i>	Canopy	<i>Microlaena stipoides</i> var. <i>stipoides</i>	Ground cover - grass
<i>Eucalyptus blakelyi</i>	Canopy	<i>Bothriochloa macra</i>	Ground cover - grass
<i>Eucalyptus albens</i>	Canopy	<i>Austrostipa verticillata</i>	Ground cover - grass
<i>Eucalyptus melliodora</i>	Canopy	<i>Echinopogon caespitosus</i>	Ground cover - grass
<i>Callitris glaucophylla</i>	Canopy	<i>Eragrostis leptostachya</i>	Ground cover - grass
<i>Callitris endlicheri</i>	Canopy	<i>Imperata cyclidrica</i>	Ground cover - grass
<i>Notelea microcarpa</i> var. <i>microcarpa</i>	Shrub-layer	<i>Dichondra</i> sp.	Ground cover – forb
<i>Leptospermum brevipes</i>	Shrub-layer	<i>Plantago debilis</i>	Ground cover – forb
<i>Leptospermum polygalifolium</i>	Shrub-layer	<i>Oxalis perennans</i>	Ground cover – forb
<i>Olearia elliptica</i>	Shrub-layer	<i>Rostellularia adscendens</i> subsp. <i>adscendens</i>	Ground cover – forb
<i>Beyeria viscosa</i>	Shrub-layer	<i>Swainsonia galegifolia</i>	Ground cover – forb
<i>Cassinia quinquefaria</i>	Shrub-layer	<i>Urtica incisa</i>	Ground cover – forb
<i>Dodonaea viscosa</i> subsp. <i>angustifolia</i>	Shrub-layer	<i>Cynoglossum australe</i>	Ground cover – forb
<i>Primelea neoanglica</i>	Shrub-layer	<i>Vittadinia dissecta</i>	Ground cover – forb
<i>Maireana micropylla</i>	Shrub-layer	<i>Cyperus gracilis</i>	Ground cover – Sedge
<i>Acacia neriifolia</i>	Shrub-layer	<i>Carex inversa</i>	Ground cover – Sedge
<i>Lomandra longifolia</i>	Ground-cover		

Identified within the BDAR for this project, PCT 544 was observed being low in diversity and abundance for mid-stratum and ground-stratum species. A priority action for improving the moderate quality PCT condition would be to ensure that diverse native ground-cover returns to the community. Ground-stratum for this PCT is often dense with a high diversity of natives.

Rehabilitation measures will focus on returning higher native diversity of native ground stratum species and a sparse shrub layer. The following rehabilitation measures are derived from the practices deemed essential to the maintenance and/or improvement of Box-Gum Grassy Woodland as outlined in the Threatened Species Scientific Committee listing advice and National Recovery Plan (DECCW 2011).

Table 5-3 Rehabilitation Measures for PCT 544

Rehabilitation Measure	Action	Timing/Frequency	Location	Performance Indicator
Baseline assessment	Conduct BAM plots to capture baseline vegetation integrity scores and to establish photo monitoring points.	Prior to construction	Areas of PCT 544 within the riparian corridor	Baseline data established
Rehabilitation of current PCT 544 to improve condition	Scope to be confirmed following baseline assessment. Priority rehabilitation steps will focus on improving ground-stratum cover. Works to be undertaken at an appropriate time of year to ensure survival of the planted species. Revegetation works will be complete within 12 months of post-construction. No removal of regenerating trees and shrubs within remnant patches. Prevent firewood collection or the “tidying up” of fallen dead timber and leaf litter. Prevent rock removal. Prevent the removal of standing dead hollow trees.	Rehabilitation and infill planting to be completed within 12 months of post-construction.	Areas of PCT 544 within the riparian corridor	Areas of PCT 544 within the riparian corridor have improved vegetation integrity scores from the baseline assessment to be completed.
Maintain or improve soil condition	Avoid physical disturbances or chemical changes (e.g. use of fertilisers or soil ameliorants) within the riparian corridor. Avoid soil compaction from vehicles/machinery or stock camps	During construction and operations.	Outside of the approved development footprint.	No impacts to PCT 544 outside of the development footprint
Control exotic plant and weed introduction	Prevent the introduction and spread of exotic weeds and implement the measures of the Weed Management Plan	During construction and operations	Areas of PCT 544 within the riparian corridor	No net increase in the cover of environmental weeds within the riparian corridor
Rehabilitation monitoring	Monitoring of rehabilitation areas will be undertaken to assess against performance criteria and rehabilitation indicators and the baseline vegetation integrity scores	Quarterly inspections of rehabilitated areas for two years after rehabilitation works and implementation of appropriate responses if rehabilitation fails or additional infill planting and/or weed control is required.	Areas of PCT 544 adjacent to the subject site	Areas of PCT 544 within the riparian corridor have improved vegetation integrity scores from the baseline assessment to be completed.



6. WEED MANAGEMENT PLAN

This Weed Management Plan is relevant to the pre-construction, construction, and operation of the solar farm only.

The objectives of the Weed Management Plan include:

- Prevent the spread of noxious weeds and environmental weeds;
- Eradicate or control any noxious weeds and environmental weeds that establish during or after the soil disturbance associated with construction activities; and
- To ensure that the Project Area is returned to a similar or better state in regards to weeds, after the two year post-construction period.

Potential impacts from weeds to environmental values include:

- Alteration of ecological processes and prevention of regeneration of native species;
- Modification of native fauna habitat; and
- Loss of threatened flora species through competition.

6.1 Weed Mitigation Measures

A summary of mitigation measures for the handling of weeds are presented below in Table 6-1.

Table 6-1 Weed Mitigation Measures

Mitigation Measure	Action	Location	Responsibility
Pre-construction			
Preclearance Baseline Weed Assessment	The Project Ecologist or other suitably qualified consultant will be required to undertake detailed baseline weed assessment and mapping within the development site and the riparian corridor. This baseline assessment will be used to refine the weed management control measures to be used during the construction phase of the project.	Areas impacted by construction activities, access points and within the riparian corridor	EPC Environment Officer
Establish Vehicle and equipment hygiene	Vehicle access points will be established at entry points to the construction zone, and all vehicles accessing the construction site will enter and exit only through the recognised access points	Vehicle access points	EPC Environment Officer
Establish Personnel equipment hygiene	Prior to entering the construction area all personnel will complete weed management inductions	Access points	EPC Environment Officer
Establish Vehicle and equipment hygiene	A vehicle wash down area will be established on site for vehicles entering the site for the first time and for periodic cleaning, and will be maintained to prevent the further spread of noxious and environmental weeds	On site, away from water points	EPC Environment Officer
Establish Vehicle and equipment hygiene	The cleaning process will include physical removal of soil and organic matter from underneath vehicles, in the cabin and/or load trays. Where required, removal of excess material by high pressure air or water spray jets may be necessary.	Designated vehicle wash down area	EPC Environment Officer

Mitigation Measure	Action	Location	Responsibility
Construction			
Control of significant weed infestations	Any noxious or environmental weeds within the construction area and retained riparian corridor will be controlled by a licensed contractor. This will be undertaken at least four times per year.	Areas impacted by construction activities and within the riparian corridor	EPC Environment Officer Licenced Weed Contractor
Monitoring of significant weed infestations	The construction area and riparian corridor will also be monitored at least four times a year and during any weed control works for the germination of noxious and environmental weeds. A weed monitoring proforma will be completed following each monitoring assessment and must include details of all weed control activities undertaken and the location of any new infestations. These proformas will be consolidated in an annual progress report, in order to compare different approaches to weed management, increase efficiency and maximise the removal and control of infestations.	Areas impacted by construction activities and within the riparian corridor	EPC Environment Officer Licenced Weed Contractor
Topsoil management	Disturbed areas will be revegetated as soon as practicable to minimise the area of exposed soil as potential for weed establishment and spread	Areas impacted by construction activities	EPC Environment Officer
Topsoil management	Imported topsoil and bedding material will be certified free of weeds (where possible)	All areas directly impacted by construction activities	EPC Environment Officer
Traffic Management	Vehicles will enter and leave the site via defined entry points and use constructed roads to minimise on site damage and the potential for weed spread	Construction site	EPC Environment Officer
Personnel equipment hygiene	Prior to entering the construction area all personnel will complete weed management inductions.	Access points	EPC Environment Officer
Vehicle and equipment hygiene	A vehicle wash down area will be established on site for vehicles entering the site for the first time and for periodic cleaning, and will be maintained to prevent the further spread of noxious and environmental weeds	On site, away from water points	EPC Environment Officer
Vehicle and equipment hygiene	The cleaning process will include physical removal of soil and organic matter from underneath vehicles, in the cabin and/or load trays. Where required, removal of excess material by high pressure air or water spray jets may be necessary	Designated vehicle wash down area	EPC Environment Officer
Weed Audit #1	At the completion of the construction period, a detailed weed audit will be undertaken comparing the results to the baseline weed assessment. This assessment will be used to refine the weed management control measures to be used during the operational phase of the project Any increase in weed density and distribution from baseline or greater than 10% weed coverage within the development site and/or riparian corridor will require additional control measures to be introduced within the operation phase of the project.	The solar farm site, access points and riparian corridor	EPC Environment Officer

Mitigation Measure	Action	Location	Responsibility
Post-construction			
Periodic weed monitoring	The solar farm site, access points and riparian corridor will be monitored four times annually (early spring, late spring, summer, autumn) for two years	The solar farm site, access points and riparian corridor	Project Environmental Management Representative
General weed management	Weed control will be undertaken by a licensed weed contractor four times annually (early spring, late spring, summer, autumn) for at least two years post-construction.	The solar farm site, access points and riparian corridor	Project Environmental Management Representative
Weed monitoring	A weed monitoring proforma will be completed following each monitoring assessment and must include details of all weed control activities undertaken and the location of any new infestations. These proformas will be consolidated in an annual progress report, in order to compare different approaches to weed management, increase efficiency and maximise the removal and control of infestations.	The solar farm site, access points and riparian corridor	Project Environmental Management Representative
Weed Audit #2	At the completion of the two year post-construction period, a weed audit will be undertaken comparing the results to the baseline weed assessment. Any increase in weed density and distribution from baseline or greater than 10% weed coverage within the development site and/or riparian corridor will require additional control measures in consultation with a suitably qualified weed control contractor. Weed control measures will continue for at least another 24 months.	The solar farm site, access points and riparian corridor	Project Environmental Management Representative

6.2 Weed Control / Management Approaches

Control measures depending on the type of weed being controlled. Eradication of certain weeds may not be realistic due to the nature of the weed itself (i.e. highly dispersive) or the level of infestation (predominant throughout the landscape). Eradication will be considered to be achieved where:

- The weed occupies only a small area and will not reinvade from adjoining areas;
- Less than 10% weed coverage within the development site and riparian corridor;
- The control method used kills all plants before maturity; and
- The weed seed does not remain dormant in the soil, or the infestation is detected before seeds are released.

Containment or control of weed species is likely to be a more realistic management approach when dealing with widespread, well established species (such as the key weed species identified on the Project site). Containment is aimed at reducing new weed infestations and the need for future control by limiting the extent and intensity of infestations.

Attempts will be made in limiting the reliance on chemical control measures on weeds. Non-chemical control measures will be considered as a priority for particular weeds as recommended by Weeds Australia. Table 6-2 below presents the various control measures available for the key noxious weeds identified. Measures highlighted in green have been identified by Weeds Australia as the most effective / recommended approach and are to be prioritised.

6.3 Monitoring and Reporting

A regular monitoring program will be undertaken for weeds throughout the construction area for at least two years post-construction. Monitoring of the area for the presence of existing key weeds as well as any new outbreaks of weeds will be undertaken four times annually (early spring, late spring, summer, autumn) for two years, as part of an integrated weed management approach.

Monitoring across the Development Footprint and riparian corridor will include:

- Photographs taken from the same place during each monitoring period;
- A record of the distribution and abundance of key weed species using GIS mapping; and
- Details on the effectiveness of weed control.

The results of the weed monitoring must be recorded in an annual progress report, in order to compare different approaches to weed management, increase efficiency and maximise the removal and control of infestations. This annual progress report will identify the key weed areas that require treatment, and the recommended timeframes and methods for control, based on the type of weeds present.

At the completion of the construction period, and two-years post-construction, a detailed weed audit will be prepared and will include:

- A summary of the weed control measures (and their effectiveness) undertaken to date;
- A detailed comparison of the distribution and abundance of key weed species present compared to the baseline data (refer to Table 6-1); and
- Identify any triggers for adaptive management or additional requirements for weed management to achieve the target of less than 10% weed coverage within the development site and riparian corridor.

Table 6-2 Weed Control Measures

Common Name		Non-chemical control	Chemical Control	Biological Control
Tiger Pear		Physical removal and burning can be used to control Tiger Pear infestations. All dislodged segments and fruit must be destroyed to prevent reestablishment. As much of the root system as possible should be removed by grubbing or cultivation	A number of herbicides can be used against Tiger Pear (Land Protection 2006). However, chemical control can be difficult as Tiger Pear often occurs on steep rocky areas	Tiger Pear can be controlled by the Tiger Pear Cochineal Insect (<i>Dactylopius austrinus</i>) which can be manually transferred by a few pieces of stem segment to unaffected plants. It needs to be reintroduced after Tiger Pear regrows. Heavy rain kills some of these insects so they are most effective during long dry spells. It is also less effective in the cooler winter areas of NSW
Velvet Tree Pear		Mechanical control using machinery is difficult because the pear pads can easily re-establish. A hot fire is an effective control method for dense Pear infestations	A number of herbicides are effective by spraying or injecting	The Cochineal insect (<i>Dactylopius opuntiae</i>) is the main biological control used for this species. In areas where Cochineal does not cause sufficient damage felling of large trees increases the level of control by this insect. <i>Cactoblastis</i> Insect (<i>Cactoblastis cactorum</i>) will destroy seedlings and smaller plants but causes minor damage to large plants.

Common Name		Non-chemical control	Chemical Control	Biological Control
Montpellier broom		Manual control – For isolated plants hand weeding or hoeing is an option. Lack of follow-up management, such as spraying the seedlings with herbicide, only exacerbates the problem Grazing – Sheep, goats and cattle eat Broom, particularly younger seedlings, and may suppress the development of infestations. Large plants can be cut to provide stock with better grazing access	Herbicides are useful for both initial treatment and following other control methods. The most appropriate applications are either foliar spray or cut stump methods. When applying foliar sprays ensure that the mixture is applied to the point of run-off over the whole plant, and use a penetrant or surfactant as directed on the herbicide label. More than one application is usually necessary to be a successful control method	No useful biological control agents are available in Australia.
Chilean needlegrass		Physical control – Hand weeding or chipping is very effective on single plants or small patches. The whole plant needs to be destroyed. Mulching – Suitable for small infestations in native or urban areas, or larger infections in agricultural situations. Fire – To burn-off and kill flowering and stem seeds in large infestations.	Spot spraying is effective when used on individual plants and small infestations. For large infestations boom spraying as part of integrated weed management techniques can be useful. For up-to-date information on which herbicides are registered to control Chilean Needle Grass and the best application methods and dosages, contact your state or territory weed management agency or local council	No useful biological control agents are available in Australia.

Common Name		Non-chemical control	Chemical Control	Biological Control
Prickly Pears		Physical control – Manual (hand) removal appears to be one of the most effective control methods for scattered and small infestations. Mechanical – Useful for large dense impenetrable stands Disposal – The root system must also be dug out to prevent regrowth. If one large plant is uprooted, broken up, and left on the soil surface, each pad will take root and form a new plant	Chemical control is not recommended for managing Prickly Pears.	Biological control using Cactoblastis moths or Cochineal insects can be effective on dense population. However, there are a number of species of Cochineal insects that are host specific, and may destroy one species of <i>Opuntia</i> but not others. The effect of these agents appears to be limited in colder climates.
Radiata pine		Seedlings can be hand pulled or dug out as long as the main root is removed. Younger infestations may be treated by cutting with a brush-cutter. Trees can be cut down or ringbarked without the need for herbicide use.	Large standing trees may be stem-injected with herbicide. Younger infestations may be treated with herbicides. Younger Radiata Pine infestations may be treated with foliar herbicide or by cutting with a brush-cutter or saw and applying herbicide. Radiata Pines must be cut as close to the ground as possible, all green needles need to be removed to ensure the stumps do not re-sprout. Swabbing the stump with herbicide immediately after cutting can increase the kill rate.	No biological control agents are available in Australia.

Common Name		Non-chemical control	Chemical Control	Biological Control
Blackberry		Physical control – Either by manual (hand) or mechanical (machine) means removes biomass, but alone is rarely successful because it's hard to remove all the roots and is normally used with a follow-up herbicide. Grazing – Goats can make a start on controlling heavy infestations and prefer blackberry over improved pasture species. Again follow-up with herbicide will be required to kill the plants.	There are many herbicides registered for use on blackberry. A mixture of triclopyr + picloram used with or without aminopyralid gives the best long-term control. Spray healthy, actively growing plants with new leaves on the cane tips and apply to both the outer and inner leaves with the first year plants are easier to kill. Well-established thickets may need more treatments like slashing or burning to access and promote fresh new growth that effectively adsorbs herbicide.	No useful biological control agents are available in Australia.
Willows		Physical control – Through hand (manual) is limited to small and isolated situations and could be particularly useful in removing initial invaders of a catchment if they can be located early enough. Using large machinery is not recommended except in dry areas. Disposal – Trees killed while they are standing (i.e. by stem injection) should be left for 12 months before they are removed. They can then be cut at a suitable height and stacked away from watercourses. If it is necessary to remove live trunks and limbs from the site, stack them to dry above flood level, taking care to minimise the spread of small pieces. Smaller twigs should be bagged and disposed of at tip facilities.	Herbicides available for woody weeds are effective in controlling Willow. Trees can be killed by stem injection, application to leaves and stems, bark (chemical girdling) and cut and paint methods (check with state/territory agencies for current recommendations). In dry conditions herbicide can also be applied by basal bark spraying and treatment of seedlings. In general, herbicide should be applied from summer to early autumn, although stem injection or cut and paint application is effective year round	No useful biological control agents are available in Australia.

Common Name		Non-chemical control	Chemical Control	Biological Control
Silver nightshade		Physical control – Both manual and mechanical removal are not recommended as roots are deep (up to meters deep) and need to be removed as new plants can grow from the smallest root fragment. Grazing – By sheep and goats could reduce the size and number of Silver-leaf Nightshade shoots during the growing season, as well as suppressing flowering and seed set. However, cattle and sheep should not be allowed to eat fruiting plants as they are poisonous and it can promote dispersion Disposal – Any roots that are dug up should be disposed of as root fragments can produce new plants if left in or on the soil.	Silver-leaf Nightshade can be difficult to control with herbicides because of the horizontal root system from which new plants are able to establish. Glyphosate and picloram have been found to be effective in other countries. For effective control with chemicals foliar application is required with numerous applications need over 3-5 years to exhaust the root system.	No useful biological control agents are available in Australia.

Note: Measures highlighted in green have been identified by Weeds Australia as the most effective / recommended approach and are to be prioritised.

7. LANDSCAPE AND VEGETATION PLAN

As noted in Section 1.1, this BMP has been developed as a component of, and must be read in conjunction with the Bonshaw Solar Farm Landscape and Vegetation Plan².

As described in the Bonshaw Solar Farm Landscape and Vegetation Plan, a 5-metre-wide mature vegetation buffer will be established and maintained along the northern boundary and a 400 metre portion of the north-western boundary, and to the east of the TransGrid Dumaresq Substation access road. This vegetation buffer will help minimise views from Bruxner Highway within 3 years of commencing operations.

The vegetation buffers must:

- be planted prior to the commencement of construction;
- be comprised of species that are endemic to the area that will survive the climatic conditions and require minimal maintenance;
- be designed and maintained in accordance with RFS's *Planning for Bushfire Protection 2019* (or equivalent);
- minimise views from Bruxner Highway within 3 years of commencing operations; and
- be properly maintained with appropriate weed management.

A detailed works schedule and monitoring plan is provided in Section 4 of the Bonshaw Solar Farm Landscape and Vegetation Plan. The EPC Environment Officer will also be responsible for the overall implementation and maintenance of the vegetation buffers in accordance with the approved Bonshaw Solar Farm Landscape and Vegetation Plan.

Refer to Figure 7-1 for an indicative design of the proposed vegetation buffer.

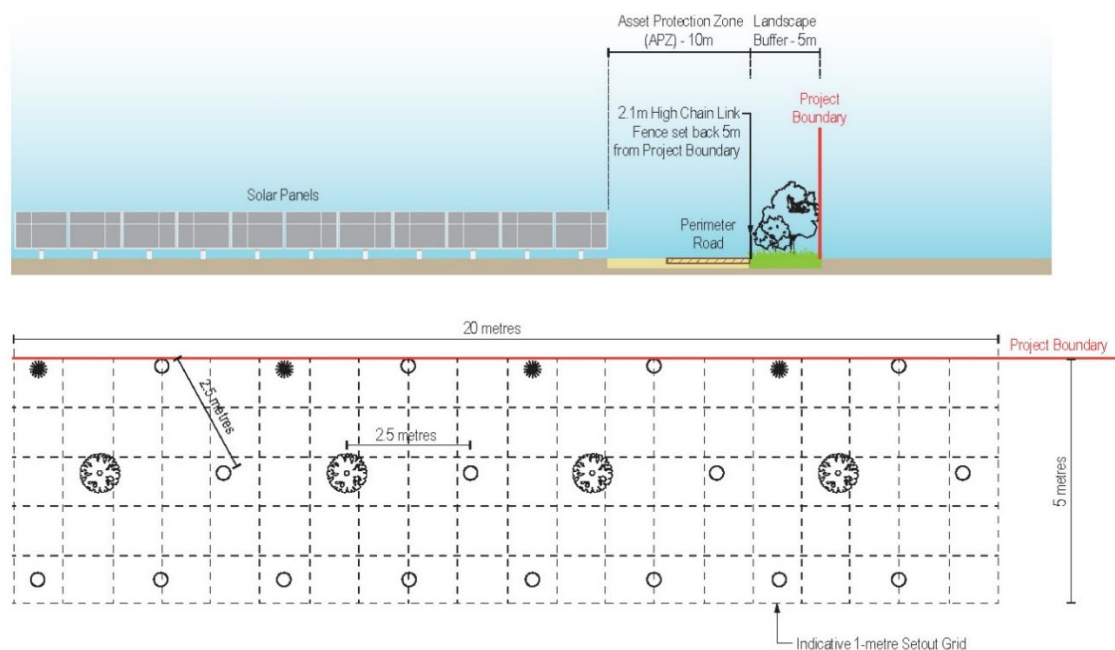


Figure 7-1 Proposed Landscape Mitigation for Landscape Vegetation Plan

² Once approved, and in accordance with SSD 9438 Schedule 4 Condition 10, a copy of both this BMP and the Bonshaw Solar Farm Landscape and Vegetation Plan will be made available via the Project website.

8. INCIDENT RESPONSE AND ADAPTIVE MANAGEMENT MEASURES

Monitoring and reporting commitments are summarised in Table 3-1. Incident response triggers and adaptive management measures are provided in Table 8-1. Any recommendations or changes to the ecological aspects of the monitoring must be acted upon within a reasonable timeframe.

Environmental incidents relating to biodiversity management may include, but are not limited to:

- Clearing outside of the approved Project boundary
- Fauna injury or death
- Discovery of threatened species
- Spread of weed or pathogens
- Vehicle access within prohibited vegetation zones

All monitoring actions/inspections will be recorded by the EPC Environment Officer (during the Construction phase) and the Project Environmental Management Representative (during the Operational phase) and be utilised to meet the projects reporting requirements as outlined within the EMS. Given the requirement of multiple monitoring events across the various management protocols and procedures, a synthesis report will be compiled annually for record keeping purposes.

In accordance Schedule 4 of the development consent (SSD 9438), DPE must be notified in writing via the Major Projects website portal immediately after the Applicant becomes aware of an incident and within 7 days of any non-compliance. The notification must identify the reasons for the incident or non-compliance (if known) and what actions have been done, or will be, undertaken to address the incident or non-compliance.

All non-compliances to be reported within seven days to: compliance@planning.nsw.gov.au

Table 8-1 Performance Criteria, Triggers and Responses

Management Action	Monitoring Action	Timing/ Frequency	Responsibility	Performance Criteria	Trigger for Additional Action	Adaptive Response	Reporting
Construction							
Installation of perimeter fencing	Inspect and maintain fencing.	Fortnightly	EPC Environment Officer Construction contractor(s) Project Ecologist	No reported injury and/or mortality of native fauna. Ensure that fencing does not impede movement of fauna along the central riparian corridor.	Fencing is damaged or not being maintained. Injured or deceased fauna is observed along or near fencing.	Fencing to be repaired or re-instated and maintained. Investigate cause of death or injury to fauna and record details	Maintain a log of salvaged animals and actions taken to relocate them.
Nest box installation Revegetation and Nest Box Monitoring Plan	Inspect nest boxes to identify occupancy and damage	Twice yearly, once in late winter and once in mid-summer	EPC Environment Officer Construction contractor(s) Project Ecologist	Ongoing evidence of usage of the nest boxes by native fauna species. Target 30% occupancy after two years.	Habitat boxes require repair or evidence of pest species (ie ant or wasps).	Repair or replace boxes. Remove any pest species.	Project Ecologist to report to EPC Environment Officer after each monitoring stage.
Revegetation within the Riparian Corridor Revegetation and Nest Box Monitoring Plan	Tree plantings will be inspected	Quarterly for the first two years	EPC Environment Officer Construction contractor(s)	A minimum of 68 trees planted with a 100% recruitment rate after two years. Areas of PCT 544 within the riparian corridor have improved vegetation integrity scores from the baseline assessment.	Less than 100% recruitment rate after two years; and/or Reduced vegetation integrity scores from the baseline assessment.	If 100% recruitment has not been achieved after 2 years, or the monitoring surveys report reduced vegetation integrity scores from the baseline assessment, a revised revegetation program will need to be developed to the satisfaction of DPE and the monitoring program will be extended for another two years or until the target has been met.	Project Ecologist to report to EPC Environment Officer after each monitoring stage.
Protocol 1 – pre-clearance surveys Protocol 2 – Vegetation clearing protocol (shrubs and understorey) Protocol 3 – Tree clearance protocol	Inspect the clearing site to ensure relevant protocol and requirements are met.	Prior to and during daily during clearance activities	EPC Environment Officer Construction contractor(s) Project Ecologist	Signs installed to indicate reduced speed limits apply across the site. No clearing is undertaken outside of the approved development boundary as identified in the development consent. Fencing does not impede movement of fauna along the central riparian corridor.	Evidence that vegetation clearing protocols are not being met.	Project Ecologist and EPC Environment Officer to ensure vegetation is to be removed or retained is appropriately marked prior to continuation of works. Flagging tape, bunting, temporary fencing or similar must be used to visually identify vegetation clearing boundaries based on the detailed design and site survey. If any vegetation is removed outside the approved development footprint, stop work, and report incident. If work is observed not being completed in accordance with this BMP, stop work and review the procedure.	The results of all pre-clearance surveys and vegetation supervision is to be consolidated at the completion of the clearance activities. This report will include: - Records of all preclearance surveys. - Evidence of vegetation clearing protocols and supervision by a suitably qualified ecologist. - any non-compliances and adaptive management measures. - Maintain a habitat tree register.
Protocol 4 – Fauna handling and relocation procedure Protocol 5 – unexpected threatened species find procedure.	Maintain a log of salvaged animals and actions taken to relocate them	As required.	EPC Environment Officer to ensure compliance and review log. Project Ecologist to undertake fauna handling and record details.	No reported injury and/or mortality of native fauna. Ensure that fencing does not impede movement of fauna along the central riparian corridor.	Pattern of fauna mortalities/ injury is identified.	Investigate and identify corrective actions.	Maintain a log of salvaged animals and actions taken to relocate them. EPC Environment Officer to report any incidents to GAIA and DPE as required.

Management Action	Monitoring Action	Timing/ Frequency	Responsibility	Performance Criteria	Trigger for Additional Action	Adaptive Response	Reporting
Protocol 6 – Pathogen management	Visual inspections to assess vehicle movements to and from the Project site and weed transfer on tyres.	Daily Environmental Checklist	EPC Environment Officer Construction contractor(s)	Wash down facilities for vehicles and footwear are provided and maintained. No recorded presence of <i>Phytophthora cinnamomic</i> .	Wash down facilities not maintained or evidence of <i>Phytophthora cinnamomic</i> reported.	Investigate and identify corrective actions.	EPC Environment Officer to report any incidents to GAIA and DPE as required.
Protocol 7 – Pest management procedure	Inspect for the presence of feral pest animals	Monthly	EPC Environment Officer Construction contractor(s)	No increase in the number of feral pests is detected within the Project Site.	Any increase in the number of feral pests is detected within the Project Site.	Feral Pest Control programs will be developed and implemented as required	EPC Environment Officer to report any incidents to GAIA and DPE as required. Evidence must be provided of all relevant permits or licences including consultation with neighbouring property owners.
Protocol 8 – Erosion and sediment control Protocol 9 – Dust control	Inspect erosion and sediment control devices installed	Daily Environmental Checklist Weekly inspections of all sediment and erosion controls. Within 24 hours of significant rainfall events (nominated as >20 mm in any 24-hour period).	EPC Environment Officer Construction contractor(s)	No evidence of increased sedimentation or bank erosion	Erosion and sediment control devices not functioning correctly. Sedimentation and runoff occurring. Increased bank erosion.	Repair and/or replace devices. Install new devices as necessary. Stop construction work in wet conditions as necessary	EPC Environment Officer to report any incidents to GAIA and DPE as required.
Protocol 10 – chemical management	Inspect chemical storage areas	Daily Environmental Checklist	EPC Environment Officer Construction contractor(s)	No records on non-compliance	Chemical spills.	Repair and/or replace chemical storage/area. Organise rehabilitation of polluted area	EPC Environment Officer to report any incidents to GAIA and DPE as required.
Protocol 11 – lighting design protocol	Inspect Artificial lighting	Weekly inspections during construction.	EPC Environment Officer Construction contractor(s)	No light spill into retained habitats	Light spill into retained habitats.	Amend lighting design to reduce the light spill into any retained habitats.	EPC Environment Officer to report any incidents to GAIA and DPE as required.
Weed management Weed Management Plan	Weed monitoring	Quarterly	EPC Environment Officer Construction contractor(s)	No net increase in the cover of environmental weeds within the Development Footprint.	Increase in weed density and distribution from baseline. Greater than 10% weed coverage within the development site and/or riparian corridor.	Additional control measures in consultation with a suitably qualified weed control contractor. Weed control measures will continue for at least another 24 months.	The results of the weed monitoring must be recorded quarterly and included in an annual progress report, in order to compare different approaches to weed management, increase efficiency and maximise the removal and control of infestations. At the completion of construction period, a weed audit will be undertaken comparing the results to the baseline weed assessment.
Rehabilitate and revegetate temporary disturbance areas	Monitor the density and diversity of vegetation. Inspect signs and temporary fencing.	Fortnightly visual inspection during construction. Quarterly for the first two years.	EPC Environment Officer Construction contractor(s)	Revegetated areas within the Development Footprint contain a diverse grassy understorey dominated (>90%) by native species.		Additional control measures in consultation with a suitably qualified weed control contractor. Weed control measures will continue for at least another 24 months.	
Operation							
Maintenance of perimeter fencing	Inspect and maintain fencing.	Monthly during first year of operation. Annually for operational phase.	Project Environmental Management Representative	Ensure that fencing does not impede movement of fauna along the central riparian corridor.	Fencing is damaged or not being maintained. Injured or deceased fauna is observed along or near fencing.	Fencing to be repaired or re-instated and maintained. Investigate cause of death or injury to fauna and record details.	Maintain a log of salvaged animals and actions taken to relocate them.

Management Action	Monitoring Action	Timing/ Frequency	Responsibility	Performance Criteria	Trigger for Additional Action	Adaptive Response	Reporting
Revegetation and Nest Box Monitoring Plan	Inspect nest boxes to identify occupancy and damage	Twice yearly, once in late winter and once in mid-summer	Project Environmental Management Representative Project Ecologist	Ongoing evidence of usage of the nest boxes by native fauna species. Target 30% occupancy after two years.	Habitat boxes require repair, or 30% occupancy not achieved.	Repair or replace boxes. Review any causes of limited occupancy. Responses may involve modification of style, or an increase in box numbers.	Project Ecologist to report to Project Environmental Management Representative after each monitoring stage.
Rehabilitate disturbed areas Revegetation and Nest Box Monitoring Plan	Monitor rehabilitated areas	Quarterly for the first three years of operation then as required	Project Environmental Management Representative		Proliferation of non-native vegetation. Increased erosion or bank instability. A reduction of native vegetation integrity or structure.	Identify and implement additional control measures in consultation with suitable qualified weed control contractor. Ensure use of species that are endemic to the area.	Project Ecologist to report to Project Environmental Management Representative after each monitoring stage.
Protocol 4 – fauna handling and relocation procedure Protocol 5 – unexpected threatened species find procedure	Maintain a log of salvaged animals and actions taken to relocate them	As required.	Project Environmental Management Representative to ensure compliance and review log. Project Ecologist to undertake fauna handling and record details.	No reported injury and/or mortality of native fauna.	Pattern of fauna mortalities/ injury is identified.	Investigate and identify corrective actions.	Maintain a log of salvaged animals and actions taken to relocate them. Project Environmental Management Representative to report any incidents to GAIA and DPE as required.
Protocol 7 – Pest management procedure	Inspect for the presence of feral pest animals	Quarterly	Project Environmental Management Representative	No increase in the number of feral pests is detected within the Project Site.	Any increase in the number of feral pests are detected within the Project Site.	Identify an implement control measures within Protocol 8 – pest management procedure.	Project Environmental Management Representative to report any incidents to GAIA and DPE as required. Evidence must be provided of all relevant permits or licences including consultation with neighbouring property owners.
Protocol 10 – chemical management	Inspect chemical storage areas	Monthly	Project Environmental Management Representative	No records on non-compliance	Chemical spills.	Repair and/or replace chemical storage/area. Organise rehabilitation of polluted area.	Project Environmental Management Representative to report any incidents to GAIA and DPE as required.
Protocol 11 – lighting design protocol	Inspect Artificial lighting	Annual	Project Environmental Management Representative	No light spill into retained habitats	Light spill into retained habitats	Implement management in Protocol 12 – lighting design protocol in accordance with AS4282.	Project Environmental Management Representative to report any incidents to GAIA and DPE as required.
Weed management Weed Management Plan	Weed monitoring	Quarterly for at least two years post-construction	Project Environmental Management Representative	No net increase in the cover of environmental weeds within the development site and/or riparian corridor.	Increase in weed density and distribution from baseline or greater than 10% weed coverage within the development site and/or riparian corridor.	Identify and implement additional control measures in consultation with suitable qualified weed control contractor.	The results of the weed monitoring must be recorded quarterly and included in an annual progress report, in order to compare different approaches to weed management, increase efficiency and maximise the removal and control of infestations. Two-years post-construction, a weed audit will also be undertaken comparing the results to the baseline weed assessment.

9. AUDIT AND REVIEW

In the event that the Biodiversity Stewardship Agreement is approved, this Biodiversity Management Plan will need to be updated and will only apply to those areas external to the approved Stewardship site.

9.1 Auditing

The EPC Project Manager (during construction) and the Quality & Environmental Manager (during operations) will maintain a compliance register for the Project to ensure audits and reporting requirements are met within scope and within set timeframes.

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this BMP and compliance with other relevant approvals, licenses and guidelines including:

- Independent Environmental Audit (IEA) within 3 months from the commencement of construction. This will be led and conducted by a suitably qualified, experienced and independent expert(s) whose appointment has been endorsed by the Secretary. It must be prepared in accordance with Schedule 4, Condition 9 of the development consent (SSD 9438) and the relevant *Independent Audit Post Approval requirements* (DPE 2020). A copy of the report will be submitted to DPE and any other NSW government agency that requests it within 3 months of commencement of the audit;
- Corrective measures or actions to improve the environmental performance of the Project recommended by auditors will be reviewed by the senior management team and incorporated into strategies, plans, or programmes required under the Development Consent; and
- The recommendation of the IEA must be implemented to the satisfaction of the Secretary.

Additional audit requirements are detailed in the EMS and have been prepared to meet the requirements of Schedule 4, Condition 9 of the development consent (SSD 9438). The recommendations of the Independent Environmental Audit must be implemented to the satisfaction of the Secretary and confirmed in writing.

9.2 Review and Improvement

This BMP will be reviewed within 3 months of commencing construction and every 12 months. Continuous improvement of this BMP will be achieved by the ongoing evaluation of performance against the BMP environmental policies, objectives and targets to identify opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance;
- Determine the cause or causes of non-conformances and deficiencies;
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;
- Verify the effectiveness of the corrective and preventative actions;
- Document any changes in procedures resulting from process improvement; and
- Make comparisons with objectives and targets.

In accordance with Schedule 4, Condition 2 of the development consent (SSD 9438) and as outlined within the EMS, the BMP will also be reviewed to the satisfaction of the Secretary:

- prior to carrying out any upgrading or decommissioning activities on site; and
- within 1 month of the submission of an incident report, external audit report or any modification to the conditions of this consent.

9.3 Monitoring and Reporting

Monitoring will be undertaken to ensure the biodiversity management measures is achieving the required outcomes during all stages of construction, and operational phases of the project. This allows for an adaptive management approach and will enable the identification of issues and any remedial actions or adjustments to the BMP. Given the requirement of multiple monitoring events across the various management protocols and procedures, a synthesis report will be compiled annually for record keeping purposes.

Records of all native animals that are handled, or otherwise managed, will be maintained on a project register or database. Data to be recorded includes:

- Date and time of the sighting and details of the observer;
- Location of the sighting (including GPS coordinates);
- Species name;
- Number of individuals recorded;
- Vegetation cleared;
- Fauna mortalities;
- Weeds and feral pest observations;
- Performance in relation to carrying out works in accordance with this BMP;
- Condition of the animal (living/dead/injured/sick);
- Vegetation type in which the animal was recorded;
- Biological information (where possible) including the age, sex, breeding condition and size;
- Management action undertaken (e.g. captured, handled, taken to vet); and
- Results of any management action (e.g. released, euthanised, placed with carer). Records will be completed and signed off by appropriately qualified fauna or wildlife handler.

In accordance with Schedule 4, Condition 3 of the development consent (SSD 9438) and in support of the adaptive management approach, with the agreement of the Secretary, this BMP can be revised and submitted to the Secretary for approval at any time (without undertaking consultation with all the parties referred to under the relevant condition of this consent).

10. TRAINING

10.1 Induction

As outlined within the EMS, all staff must be aware of their environmental obligations and be competent in relation to their environmental responsibilities. All staff employed during both the construction and operational phases will be appropriately inducted prior to commencing works on-site.

As part of the induction, personnel and relevant subcontractors will become familiar with:

- the purpose of the BMP;
- the protocols of the BMP and environmental controls; and
- key roles and responsibilities relevant to BMP.

During construction, protocols in this BMP relevant to that day's activities will be highlighted in the pre-start meeting, and protocols that relate specifically to managing flora and fauna on site are to be included in the induction material developed for the project.

A spreadsheet that contains all employees/roles and what the requirement of training is for their position will also be maintained. An induction register will be kept on-site, signed by inductees, with awareness of the requirements of the BMP highlighted.

10.2 Project Ecologist

The Project Ecologist is required to have an applicable tertiary qualification or similar. The ecologist must be familiar with the scope of works proposed, the project objectives and have a clear knowledge of the ecology of the locality. The ecologist must:

- Have a minimum of five years of experience working in the western region;
- Maintain standard licences and approvals including a National Parks and Wildlife Act 1974 Section 132c Scientific License and Animal Ethics Committee Research Authority to Handle/Survey Wildlife;
- Maintain a current first aid certificate;
- Maintain working at heights qualifications (required as part of the habitat box installation process); and
- Maintain all necessary vaccinations required to handle microchiropterans and be vaccinated against the bacterial infection (Tetanus) caused by *Clostridium tetani*.

Proof of all licences, approvals and qualifications must be provided at the commencement of the ecologist's involvement in this project.

APPENDIX A EVIDENCE OF CONSULTATION

Table A-1 Comments on BMP and Reference Location

<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
Vegetation Clearance 15. The Applicant must not clear any native vegetation or fauna habitat located outside the approved disturbance footprint described in the EIS.	Yes	Table 2-1 address the requirement.	-	No amendments required
Biodiversity Offsets 16. Prior to commencing construction under this consent, the Applicant must retire biodiversity credits of a number and class specified in Table 1 and Table 2 below, unless the Secretary agrees otherwise. The retirement of these credits must be carried out in accordance with the <i>NSW Biodiversity Offsets Scheme</i> and can be achieved by:				No amendments required
(a) acquiring or retiring 'biodiversity credits' within the meaning of the <i>Biodiversity Conservation Act 2016</i> ; (b) making payments into an offset fund that has been developed by the NSW Government; or (c) funding a biodiversity conservation action that benefits the entity impacted and is listed in the ancillary rules of the biodiversity offset scheme.	Partial	Section 1.3 discusses the Biodiversity Stewart Agreement being underway. There are no dates of consultation or evidential records.	Discuss the correspondence dates with the Credit Taskforce in the section and include evidential records.	Refer to new Section 1.4. A site visit was undertaken with the CST on Monday 8 May 2023 and the final application was submitted on 19 June 2023.

BIODIVERSITY MANAGEMENT PLAN

Bonshaw Solar Farm

Biodiversity Schedule 3	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response										
Table 1: Ecosystem Credit Requirements <table><tr><td>Vegetation Community</td><td></td></tr><tr><td>Grey Box grassy woodland or open forest of the Nandewar Bioregion and New England Tablelands Bioregion</td><td></td></tr><tr><td>Rough-Barked Apple - White Cypress Pine - Blakely's Red Gum riparian forest / woodland of Nandewar Bioregion of New England Tableland Bioregion</td><td></td></tr><tr><td>Silver-leaved Ironbark - White Cypress Pine shrubby open forest of Brigalow Belt South Bioregion and Nandewar Bioregion</td><td></td></tr><tr><td>Tumbledown Red Gum - White Cypress Pine – Silver-leaved Ironbark shrubby woodland mainly in the northern Nandewar Bioregion</td><td></td></tr></table>	Vegetation Community		Grey Box grassy woodland or open forest of the Nandewar Bioregion and New England Tablelands Bioregion		Rough-Barked Apple - White Cypress Pine - Blakely's Red Gum riparian forest / woodland of Nandewar Bioregion of New England Tableland Bioregion		Silver-leaved Ironbark - White Cypress Pine shrubby open forest of Brigalow Belt South Bioregion and Nandewar Bioregion		Tumbledown Red Gum - White Cypress Pine – Silver-leaved Ironbark shrubby woodland mainly in the northern Nandewar Bioregion					Refer to new Section 1.4
Vegetation Community														
Grey Box grassy woodland or open forest of the Nandewar Bioregion and New England Tablelands Bioregion														
Rough-Barked Apple - White Cypress Pine - Blakely's Red Gum riparian forest / woodland of Nandewar Bioregion of New England Tableland Bioregion														
Silver-leaved Ironbark - White Cypress Pine shrubby open forest of Brigalow Belt South Bioregion and Nandewar Bioregion														
Tumbledown Red Gum - White Cypress Pine – Silver-leaved Ironbark shrubby woodland mainly in the northern Nandewar Bioregion														
Table 2: Species Credit Requirements <table><tr><td>Species Credit Species</td><td></td></tr><tr><td>Bristle-faced Free-tailed Bat (<i>Mormopterus eleryi</i>)</td><td></td></tr><tr><td>Eastern Cave Bat (<i>Vespadelus troughtoni</i>)</td><td></td></tr><tr><td>Masked Owl (<i>Tyto novaehollandiae</i>)</td><td></td></tr><tr><td>Barking Owl (<i>Ninox connivens</i>)</td><td></td></tr></table>	Species Credit Species		Bristle-faced Free-tailed Bat (<i>Mormopterus eleryi</i>)		Eastern Cave Bat (<i>Vespadelus troughtoni</i>)		Masked Owl (<i>Tyto novaehollandiae</i>)		Barking Owl (<i>Ninox connivens</i>)					Refer to new Section 1.4.
Species Credit Species														
Bristle-faced Free-tailed Bat (<i>Mormopterus eleryi</i>)														
Eastern Cave Bat (<i>Vespadelus troughtoni</i>)														
Masked Owl (<i>Tyto novaehollandiae</i>)														
Barking Owl (<i>Ninox connivens</i>)														
Biodiversity Management Plan 17. Prior to commencing construction, the Applicant must prepare a Biodiversity Management Plan for the development in consultation with BCD, and to the satisfaction of the Secretary. This plan must:		BCS feedback sighted. See under agency comment		No amendments required										
(a) include a description of the measures that would be implemented for: • protecting vegetation and fauna habitat outside the approved disturbance areas;	Partial	Section 4.2 and Table 8-1 discuss retained areas and habitats will be managed and appropriately marked. There is minimal information on how it will be protected.	Include a discussion on how areas will be fenced off to delineate boundaries and protect retained vegetation	As described in Section 4, the EPC Environment Officer and construction contractor(s) will be responsible for demarcating vegetation clearing boundaries. Flagging tape, bunting, temporary fencing or similar will be used to visually identify vegetation clearing										

<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
				boundaries. This requirement has been added to both Section 4.2 and Table 8-1.
• managing the remnant vegetation and fauna habitat on site;	Yes	Section 3.2, Section 5 and Table 5-3 address the requirement.	-	No amendments required
minimising clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development;	Yes	Section 3.2 and Section 4 addresses the requirement.	-	No amendments required
• minimising the impacts to fauna on site and implementing fauna management protocols;	Partial	Section 4 does not mention speed limits as discussed in the EIS.	Include enforcing site speed limits to reduce risk of vehicle strike on threatened fauna;	Reduced speed limits have been included within Table 3-1 and Section 4.
• avoiding the removal of hollow-bearing trees during spring to avoid the main breeding period for hollow-dependent fauna;	Partial	Section 4 Protocol 3 Tree clearance protocol addresses the requirement. However, does not include the monitoring of tree hollows prior to removal to avoid impacting any breeding females or juveniles;	Include the requirement to monitor of tree hollows prior to removal to avoid impacting any breeding females or juveniles Include the requirement to instal nest-boxes suitable prior to removal of hollow bearing trees in section 5.2	Section 4.3, Protocol 3 updated to include this requirement. Section 5.2 already states that 34 nest boxes are to be installed within retained habitats prior to vegetation clearance activities.

<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
rehabilitating and revegetating temporary disturbance areas with species that are endemic to the area;	Partial	Section 3.2 (section 1.4) uses non-committal language such as “aim” to rehabilitate and revegetate and Section 4 is unclear if temporary disturbance areas will be revegetated with species endemic to the area. Section 5 discusses endemic species to be used in the tree planting program.	Revise section to include committed measures to rehabilitating and revegetating temporary disturbance areas with species that are endemic to the area	Updated to remove reference to ‘will aim to’ and ‘may’. Section 3.2 now clearly identifies that temporary disturbance areas will be revegetated with species that are endemic to the area
maximising the salvage of vegetative and soil resources within the approved disturbance area for beneficial reuse in the enhancement or the rehabilitation of the site; and		Section 4.2 uses noncommittal language such as “may be undertaken”... There is discussions on measures to salvage animal but limited info on how vegetative and soil resources within the approved disturbance area will be salvaged.	Discuss committed measures to maximise the salvage of vegetative and soil resources within the approved disturbance area	Included in Sections 4.1- 4.3.
controlling weeds, feral pests and pathogens.	Partial	Is there a requirement to report fauna mortalities to DPE? Use of non-committal language “should be record”.	Revise section 4.7 to include achievable actions. Revise section 6.3 to include committed actions – discuss reporting requirements for the weed audits. Include details in Table 6-2 for green shaded area.	Section 4.7 updated. Section 6.3 updated to include reporting requirements. As noted in Section 6.2, the measures highlighted in green

<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
		Where will the detailed weed audit be reported and to whom? It is unknown why Table 6-2 has area shaded in green		have been identified by Weeds Australia as the most effective / recommended approach and are to be prioritised.
Following the Secretary's approval, the Applicant must implement the Biodiversity Management Plan.	No	There is no detail to address the condition.	Include a commitment to implement the approved Biodiversity Management Plan.	Included in Table 2.1
<i>Schedule 4</i>				
Revision of Strategies, Plans and Programs 2. The Applicant must: (a) update the strategies, plans or programs required under this consent to the satisfaction of the Secretary prior to carrying out any upgrading or decommissioning activities on site; and (b) review and, if necessary, revise the strategies, plans or programs required under this consent to the satisfaction of the Secretary within 1 month of the: • submission of an incident report under condition 7 of Schedule 4; • submission of an audit report under condition 9 of Schedule 4; or • any modification to the conditions of this consent.	No	The BMP does not include the requirement.	Include the requirements consistent with condition 2 in section 9.	Updated in Section 9.2

<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
Updating and Staging of Strategies, Plans or Programs 3. With the approval of the Secretary, the Applicant may submit any strategy, plan or program required by this consent on a progressive basis. To ensure the strategies, plans or programs under the conditions of this consent are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Secretary for approval. With the agreement of the Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all the parties referred to under the relevant condition of this consent.	No	The BMP does not include the requirement.	Include the requirements consistent with condition 3 in section 9.	Updated in Section 9.3
NOTIFICATIONS Notification of Department 4. Prior to commencing the construction, operations, upgrading or decommissioning of the development or the cessation of operations, the Applicant must notify the Department in writing via the Major Projects website portal of the date of commencement, or cessation, of the relevant phase. If any of these phases of the development are to be staged, then the Applicant must notify the Department in writing prior to commencing the relevant stage, and clearly identify the development that would be carried out during the relevant stage.	No	The BMP does not include the requirement.	Include the requirements consistent with condition 4.	This is included as part of the EMS and not specific to the BMP.

<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
Incident Notification 7. The Department must be notified in writing via the Major Projects website portal immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one), and set out the location and nature of the incident.	No	The BMP does not include the requirement.	Include the requirements consistent with condition 7.	Included within Section 8
Non-Compliance Notification 8. The Department must be notified in writing via the Major Projects website portal within 7 days after the Applicant becomes aware of any non-compliance with the conditions of this consent. The notification must identify the development and the application number for it, set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been done, or will be, undertaken to address the non-compliance.	No	The BMP does not include the requirement.	Include the requirements consistent with condition 8.	Included within Section 8

INDEPENDENT ENVIRONMENTAL AUDIT 9. The Applicant must commission and pay the full cost of Independent Environmental Audits of the development. The audits must: (a) be prepared in accordance with the <i>Independent Audit Post Approval Requirements</i> (DPIE, 2020); (b) be led and conducted by a suitably qualified, experienced and independent expert(s) whose appointment has been endorsed by the Secretary; (c) be prepared, unless otherwise agreed with the Secretary: (i) within 3 months of commencing construction; (ii) within 3 months of commencement of operations; and (iii) as directed by the Secretary; (d) be carried out in consultation with the relevant agencies; (e) assess whether the development complies with the relevant requirements in this consent, and any strategy, plan or program required under this consent; and (f) recommend appropriate measures or actions to improve the environmental performance of the development and any strategy, plan or program required under this consent unless the Secretary agrees otherwise. Within 3 months of commencing an Independent Environmental Audit, or unless otherwise agreed by the Secretary, a copy of the audit report must be submitted to the Secretary, and any other NSW agency that requests it, together with a response to any	No	The BMP does not include the requirement.	Include the requirements consistent with condition 9.	Refer to Section 9.1
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<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations of the Independent Environmental Audit must be implemented to the satisfaction of the Secretary, confirmed in writing.				
ACCESS TO INFORMATION 10. The Applicant must: (a) make the following information publicly available on its website as relevant to the stage of the development: • the EIS; • the final layout plans for the development; • current statutory approvals for the development; • approved strategies, plans or programs required under the conditions of this consent • the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged; • how complaints about the development can be made; • a complaints register; • compliance reports; • any independent environmental audit, and the Applicant's response to the recommendations in any audit; and	No	The BMP does not include the requirement.	Include the requirements consistent with condition 10.	Refer to Section 1.3. Once approved, and in accordance with SSD 9438 Schedule 4 Condition 10, a copy of this BMP will be made available via the Project website.

<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
- any other matter required by the Secretary; and (b) keep this information up to date.				
General Comments			Action Required	Company Response
The use of wording such as “indicative solar array areas”			Areas as approved in the Assessment report are to be included in the management plan.	“indicative solar array areas” not referred to in report? No clearing is permitted outside of the approved development boundary as identified in the development consent.
Section 2.2 describes a draft copy was submitted to DPE for their review. Was it DPE or BCS?			Only final copies of management plans are to be submitted to DPE. Revise section.	Revised to delete reference to draft report
In section 3 there is only the responsibility of the EPC Environmental Officer and Project Environmental Manager for implementation and outcomes of the management and mitigation measures in the BMP.			The implementation of the BMP is the responsibility of the whole team. Revise the section.	Included in new Section 3.1
The whole document contains non-committal language in some sections. Management plans are to contain committed action to mitigate the impacts.			Revise the document to include committed actions.	Reviewed and updated throughout the BMP

<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
In section 4, first point includes a statement where clearance boundaries identification is based on detail designs. Clearance boundaries are to be based and identified on approved clearance limits.			Revise section 4	No clearing is permitted outside of the approved development boundary as identified in the development consent although it is noted that detailed design may allow for additional avoidance.
Section 4.4 under “Injured” point 4 seems to be repeat of “will be sought”			Amend the section	Updated
Section 10.1 discusses training conducted in the construction phase, will there be inductions carried out during operational?			Discuss why no inductions will be carried during the operational stage.	Section 10.1 updated to include both construction and operation stages of the Project.
BCS Comments, October 2022			Action Required	DPE Response
1. For each of the biodiversity management measures the BMP must include: a. the details of actions proposed to mitigate the impacts b. the timing for each action/measure c. who is responsible for implementing each measure d. performance measures and contingencies e. monitoring and reporting.			Table 3-1 contains limited information on contingencies and reporting. Discuss contingencies/ A Trigger Action Response Plan detailing actions should performance or completion criteria not be met. Discuss reporting details on the effectiveness of mitigations measures to assess.	Monitoring and reporting commitments are summarised in Table 3 1. Incident response triggers and adaptive management measures are provided in Table 8 1.
2. A Tree Replacement and Nest Box Monitoring Plan in accordance with recommendations in the Environmental Impact Statement and Biodiversity Development Assessment Report for the proposal.			Section 5 contains non-committal language using the word “should.”	Updated language to reduce the use of ‘should’

<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
			There are no contingencies in Table 3-1 or section for tree clearing or nest box installation. Revise section to included committed actions. Revise Table 3-1 or include a separate monitoring plan to track actual performance and a Trigger Action Response Plan (TARP) detailing corrective actions to be taken if performance or completion criteria are not met.	Table 8-1 includes incident response and adaptive management measures
3. A weed management plan			Section 6 addresses the requirement. Closed	No amendments required
4. Landscape management and revegetation plans.			Discuss the implementation measures and maintenance measures that will be carried out by the Environmental Officer.	A detailed works schedule and monitoring plan is provided in Section 4 of the Bonshaw Solar Farm Landscape and Vegetation Plan. This is a separate report that must be read in conjunction with the BMP. It is not reproduced in the BMP.
5. Details on the rehabilitation of areas of Critically Endangered Ecological Communities (Plant Community Type 544) on the subject land to improve its current condition.			Section 5.3 addresses the comment. Closed	No amendments required

BIODIVERSITY MANAGEMENT PLAN

Bonshaw Solar Farm

<i>Biodiversity Schedule 3</i>	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
6. Details to manage unexpected threatened species finds.			Protocol 5 addresses the requirement. Closed	No amendments required
7. The management actions proposed for rehabilitation and revegetation of temporary disturbed areas.			Section 3.2 and section 4 addresses the requirement. Closed	No amendments required

APPENDIX B BACKGROUND INFORMATION AND EXISTING ENVIRONMENT CONTEXT

BACKGROUND INFORMATION AND EXISTING ENVIRONMENT CONTEXT

The Project Site and the locality has undergone a long history of disturbance, including clearing for agricultural and grazing land uses. The Development Footprint is mainly cleared land and its current land use is low intensity grazing. The following information provides background information and existing environmental context as reported in the project BDAR (ERM 2020).

Vegetation Communities

Numerous targeted flora surveys have been completed on the Project Site as part of the Environmental Impact Statement (EIS) and Biodiversity Development Assessment Report (BDAR) prepared for the approved development (ERM 2020). These were primarily focused on the development footprint. Additional surveys have been completed within the broader Project site to support the Biodiversity Stewardship Agreement (currently being assessed by the Biodiversity Credit Taskforce). These surveys have been referred to in the preparation of this BMP.

The Development Footprint occupies 149.24 ha, including 54.4 ha (36.5 %) of mapped Biophysical Strategic Agricultural Land. A total of four our Plant Community Types (PCTs) in various conditions (woodland and derived grasslands) have been identified and mapped across the Project Site (see Table B-1 and Figure B-1).

PCT 544 corresponds to the NSW listed critically endangered ecological community (CEEC) White Box Yellow Box Blakely's Red Gum Woodland. The occurrence of this TEC is not considered to satisfy the minimum condition criteria for the Commonwealth listing of this TEC. This determination has been made because of very small patch sizes, low diversity of native understorey species and absence of "important species" as described in the Threatened Species Scientific Committee listing advice and National Recovery Plan for the TEC.

Flora and Weeds

No threatened flora species have been recorded within the Project site.

A total of 32 exotic species, including five high threat exotic (HTE) were recorded within the Project Site. Of these, two are Weeds of National Significance (WoNS):

- Tiger Pear (*Opuntia aurantiaca*); and
- Velvet Tree Pear (*Opuntia tomentosa*).

Priority weeds for the Northern Tablelands include Fireweed (*Senecio madagascariensis*) which was also commonly encountered across the Project Site.

Table B-2 Vegetation Communities

PCT	PCT Name		Vegetation Condition	Approved for Impact	Retained within the Project Site
PCT 516	Grey Box grassy woodland or open forest of the Nandewar Bioregion and New England Tableland Bioregion.	This PCT is described as widespread, mid-high to very tall woodland or open forest occurring on flat to undulating sites at low to mid elevation, mainly on fine-grained soils on sedimentary and metasedimentary substrates. It is dominated by Grey Box (<i>Eucalyptus moluccana</i>) (crossing with <i>Eucalyptus albens</i> at sites with basalt influence) which is associated with Blakely's Red Gum (<i>Eucalyptus blakelyi</i>), Yellow Box (<i>Eucalyptus melliodora</i>) and/or White Cypress Pine (<i>Callitris glaucophylla</i>), with occasional Rough-barked Apple (<i>Angophora floribunda</i>). A sparse shrub layer of <i>Notelaea microcarpa</i> var. <i>microcarpa</i> and/or <i>Dodonaea viscosa</i> subsp. <i>spatulata</i> is sometimes present. The ground layer is dense and diverse, containing a mix of grasses and forbs including <i>Cymbopogon refractus</i>, <i>Austrostipa scabra</i> subsp. <i>scabra</i>, <i>Aristida ramosa</i>, <i>Asperula conferta</i>, <i>Bothriochloa decipiens</i>, <i>Daucus glochidiatus</i>, <i>Dichanthium sericeum</i> subsp. <i>sericeum</i>, <i>Carex inversa</i>, <i>Chrysocephalum apiculatum</i>, <i>Cymbonotus lawsonianus</i>, <i>Dichondra</i> sp. A, <i>Glycine tabacina</i>, <i>Poa sieberiana</i>, <i>Desmodium varians</i>, <i>Eremophila debilis</i>, <i>Austrodanthonia racemosa</i> var. <i>obtusata</i>, <i>Austrostipa verticillata</i>, <i>Dichondra repens</i>, <i>Hydrocotyle laxiflora</i>, <i>Plantago debilis</i>, <i>Rostellularia adscendens</i> subsp. <i>adscendens</i>, <i>Chloris ventricosa</i>, <i>Geranium solanderi</i> var. <i>solanderi</i>, <i>Cyperus gracilis</i>, <i>Hypericum gramineum</i>, and (rarely) <i>Panicum paludosum</i>.	Moderate and very low condition	5.76 hectares	36.28 hectares

PCT	PCT Name		Vegetation Condition	Approved for Impact	Retained within the Project Site
PCT 544 ³	Rough-barked Apple – White Cypress Pine – Blakely’s Red Gum riparian open forest / woodland of the Nandewar Bioregion and New England Tableland Bioregion	This PCT is described as a tall open forest to woodland dominated by Rough-barked Apple (<i>Angophora floribunda</i>) in association with Blakely’s Red Gum (<i>Eucalyptus blakelyi</i>), White Cypress Pine (<i>Callitris glaucophylla</i>) or Yellow Box (<i>Eucalyptus melliodora</i>) or Black Cypress Pine (<i>Callitris endlicheri</i>) or White Box (<i>Eucalyptus albens</i>). The shrub layer is sparse comprising species such as <i>Notelaea microcarpa</i> var. <i>microcarpa</i>, <i>Leptospermum polygalifolium</i> subsp. <i>transmontanum</i>, <i>Olearia elliptica</i>, <i>Leptospermum brevipes</i>, <i>Beyeria viscosa</i>, <i>Cassinia quinquefaria</i>, <i>Dodonaea viscosa</i> subsp. <i>angustifolia</i>, <i>Pimelea neo-anglica</i>, <i>Maireana microphylla</i> and <i>Acacia neriifolia</i>. The ground layer is often dense and is comprised of the mat-rush (<i>Lomandra longifolia</i>) and a range of grasses including <i>Microlaena stipoides</i> var. <i>stipoides</i>, <i>Bothriochloa macra</i>, <i>Austrostipa verticillata</i>, <i>Echinopogon caespitosus</i>, <i>Eragrostis leptostachya</i> and blady grass (<i>Imperata cylindrica</i>). Forb species include <i>Dichondra</i> sp. A, <i>Dichondra repens</i>, <i>Plantago debilis</i>, <i>Oxalis perennans</i>, <i>Rostellularia adscendens</i> subsp. <i>adscendens</i>, <i>Swainsona galegifolia</i>, <i>Urtica incisa</i>, <i>Cynoglossum australe</i> and <i>Vittadinia dissecta</i>. Sedges include <i>Cyperus gracilis</i> and <i>Carex inversa</i>. The invasive weed Coolatai grass (<i>Hyparrhenia hirta</i>) occurs at some sites.	Low condition	0.83 hectares	7.54 hectares
PCT 594	Silver-leaved Ironbark – White Cypress Pine shrubby open forest of Brigalow Belt South Bioregion and Nandewar Bioregion	Mid-high to tall open forest or woodland or dominated by White Cypress Pine and Silver-leaved Ironbark with other trees including <i>Eucalyptus dealbata</i>, <i>Eucalyptus albens</i>, <i>Eucalyptus crebra</i> or <i>Angophora floribunda</i>.	Moderate and low condition	13.64 hectares	211.75 hectares

³ Note: PCT 544 corresponds to the NSW listed endangered ecological community (EEC) “White Box Yellow Box Blakely’s Red Gum Woodland”. The occurrence of this TEC is not considered to satisfy the minimum condition criteria for the Commonwealth listing of this TEC. This determination has been made because of very small patch sizes, low diversity of native understorey species and absence of “important species” as described in the Threatened Species Scientific Committee listing advice and National Recovery Plan for the TEC.

PCT	PCT Name		Vegetation Condition	Approved for Impact	Retained within the Project Site
		The shrub layer is often mid-dense and includes <i>Notelaea microcarpa</i> var. <i>microcarpa</i>, <i>Olearia elliptica</i>, <i>Cassinia quinquefaria</i>, <i>Pimelea neo-anglica</i>, <i>Geijera parviflora</i> and <i>Melichrus urceolatus</i>. The ground layer is sparse and includes <i>Desmodium brachypodum</i>, the grasses <i>Cymbopogon refractus</i>, <i>Aristida ramosa</i>, <i>Themeda australis</i> and <i>Austrostipa scabra</i> subsp. <i>scabra</i>. and the sedge <i>Cyperus gracilis</i>. Forb species include <i>Dichondra species A</i>, <i>Oxalis perennans</i>, <i>Wurmbea dioica</i> subsp. <i>dioica</i>, <i>Cymbonotus lawsonianus</i>, <i>Chrysocephalum apiculatum</i> and <i>Chrysocephalum semipapposum</i>.			
PCT 596	Tumbledown Red Gum – White Cypress Pine – Silver-leaved Ironbark shrubby woodland mainly in the northern Nandewar Bioregion	Mid-high to low woodland or open forest dominated by Tumbledown Red Gum (<i>Eucalyptus dealbata</i>), White Cypress Pine (<i>Callitris glaucophylla</i>) and Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>). Other tree species may include Caley's Ironbark (<i>Eucalyptus caleyi</i> subsp. <i>caleyi</i>), Rough-barked Apple (<i>Angophora floribunda</i>), Long-fruited Bloodwood (<i>Corymbia dolichocarpa</i>), Black Cypress Pine (<i>Callitris endlicheri</i>) and Rusty Fig (<i>Ficus rubiginosa</i>). There is usually a dense shrub/small tree layer of species such as <i>Leptospermum brevipes</i>, <i>Acacia cheelii</i>, <i>Notelaea microcarpa</i> var. <i>microcarpa</i>, <i>Melichrus urceolatus</i>, <i>Xanthorrhoea johnsonii</i> and <i>Leucopogon muticus</i>. The vine <i>Pandorea pandorana</i> is often abundant. The ground layer is sparse with <i>Cheilanthes distans</i>, <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>, <i>Aristida vagans</i>, <i>Cymbopogon refractus</i>, <i>Entolasia stricta</i> and <i>Aristida ramosa</i> most frequent. Forb species include <i>Plectranthus parviflorus</i>, <i>Commelina cyanea</i>, <i>Scleria mackaviensis</i>, <i>Dichondra species A</i>, <i>Calotis lappulacea</i>, <i>Phyllanthus virgatus</i>, <i>Vittadinia sulcata</i> and <i>Galium guadichaudii</i>.	Moderate, low, very low and derived grasslands	20.74 hectares	345.47 hectares
NA	Disturbed Grasslands/cleared lands	NA	NA	107.79 hectares	2.13 hectares

Fauna and Fauna Habitat

Numerous targeted fauna surveys have been completed on the Project Site as part of the Environmental Impact Statement (EIS) and Biodiversity Development Assessment Report (BDAR) prepared for the approved development (ERM 2020). A total of 75 fauna species were recorded across the Development Footprint, including eleven threatened fauna species (see Figure B-3).

Recorded threatened species recorded are:

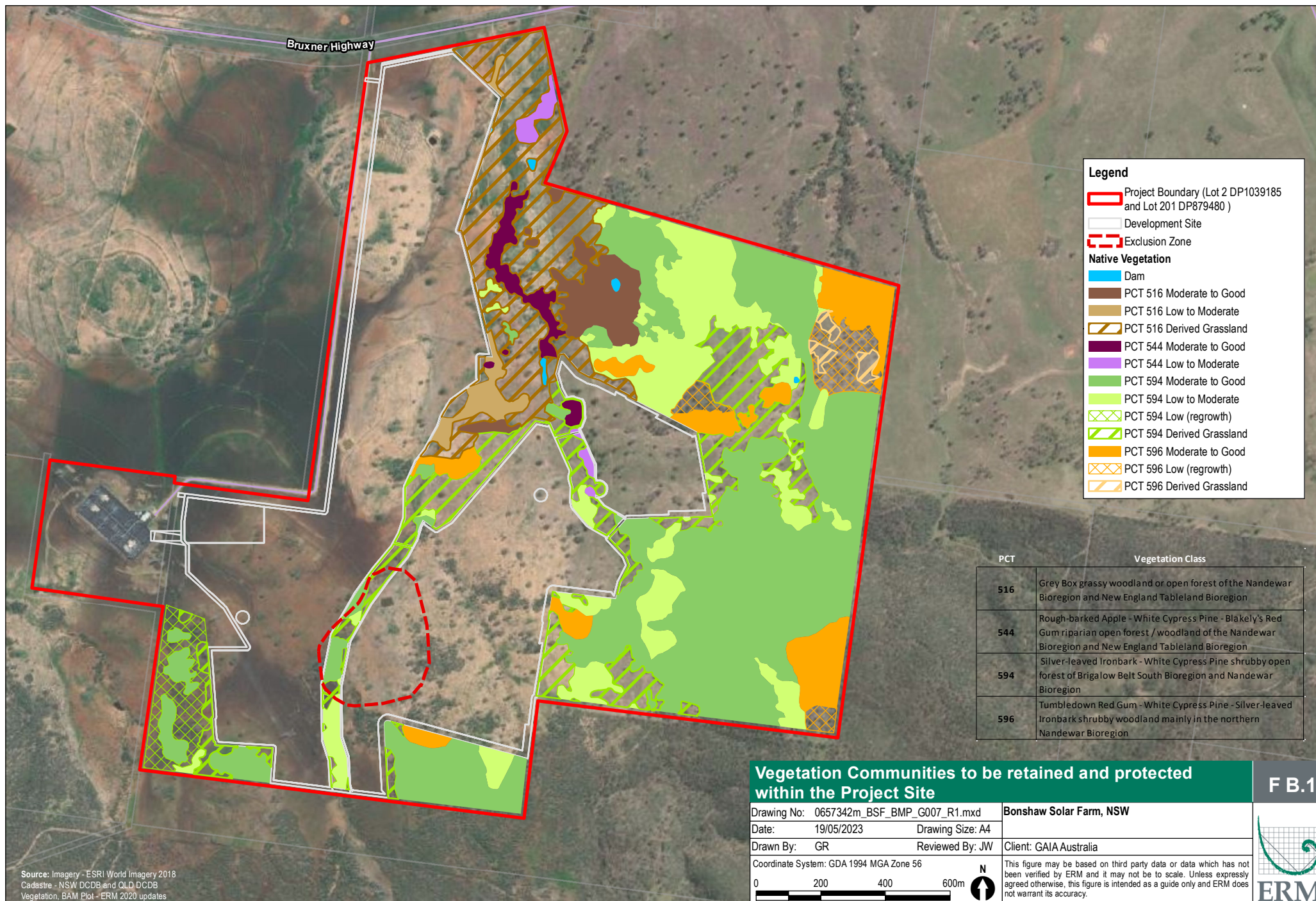
- Grey-crowned Babbler (*Pomatostomus temporalis*) (Vulnerable under the BC Act);
- Cicadabird (*Coracina tenuirostris*) (Migratory EPBC Act);
- Definite echolocation call of six vulnerable (BC Act) microchiropteran bats: Little Pied Bat (*Chalinolobus picatus*), Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*), Corben's Long-eared Bat (*Nyctophilus corbeni*), Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*), Eastern Cave Bat (*Vespadelus troughtoni*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*).
- Definite echolocation call of the endangered (BC Act) Bristle-faced Free-tailed Bat (*Mormopterus eleryi*); and
- Potential echolocation call of two vulnerable (BC Act) species: Greater Broad-nosed Bat (*Scoteanax rueppellii*) and Hoary Wattled Bat (*Chalinolobus nigrogriseus*).

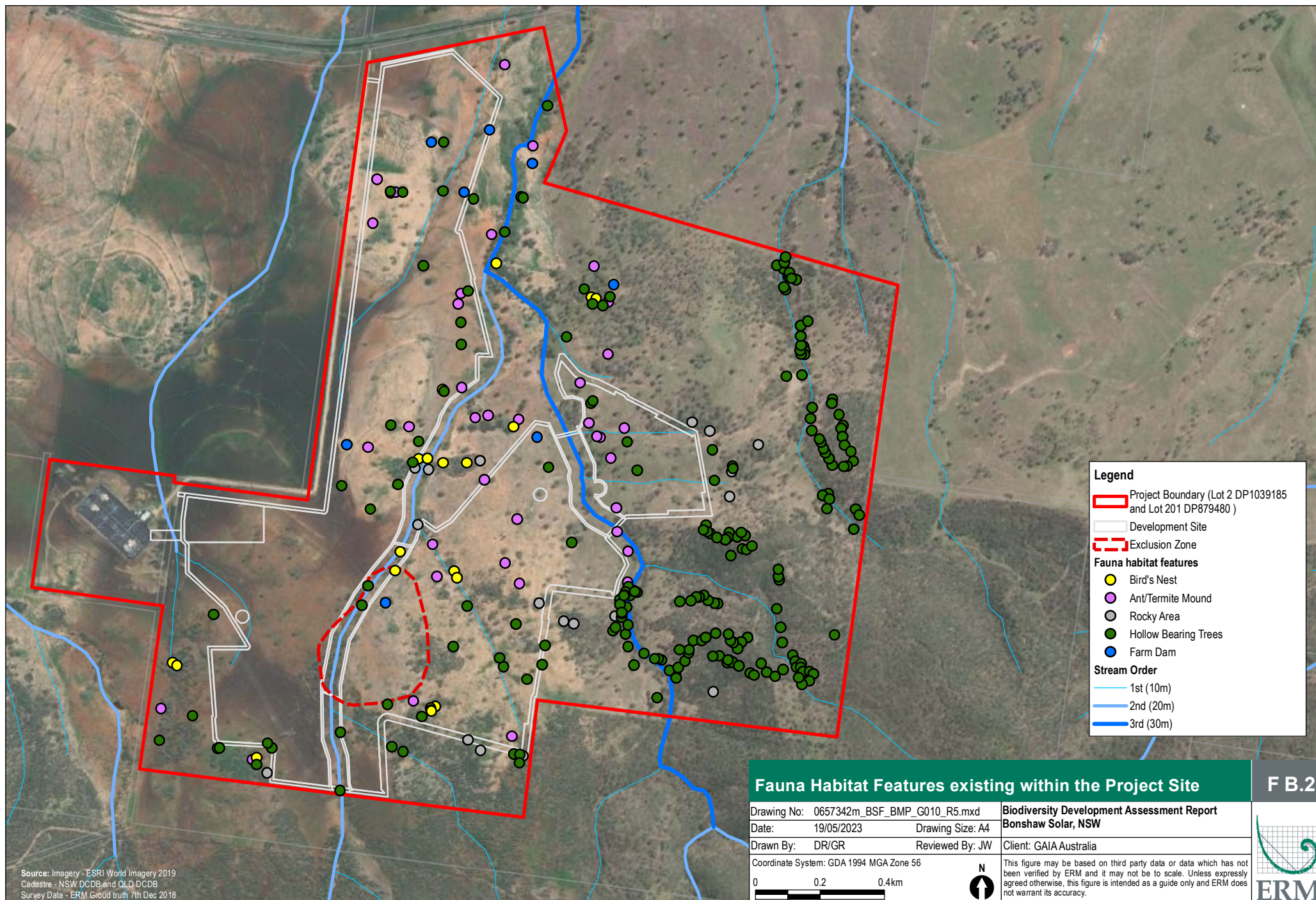
Two additional Vulnerable bird species (Brown Treecreeper and Speckled Warbler) were also recorded within the Project site during potential offset site investigations (NCE 2022).

Fauna habitat identified within the disturbance area and approved for removal include (see Figure B-2):

- 34 hollow-bearing trees;
- six rocky areas;
- 39 termite/ant mounds;
- 20 bird nests; and
- farm dams.

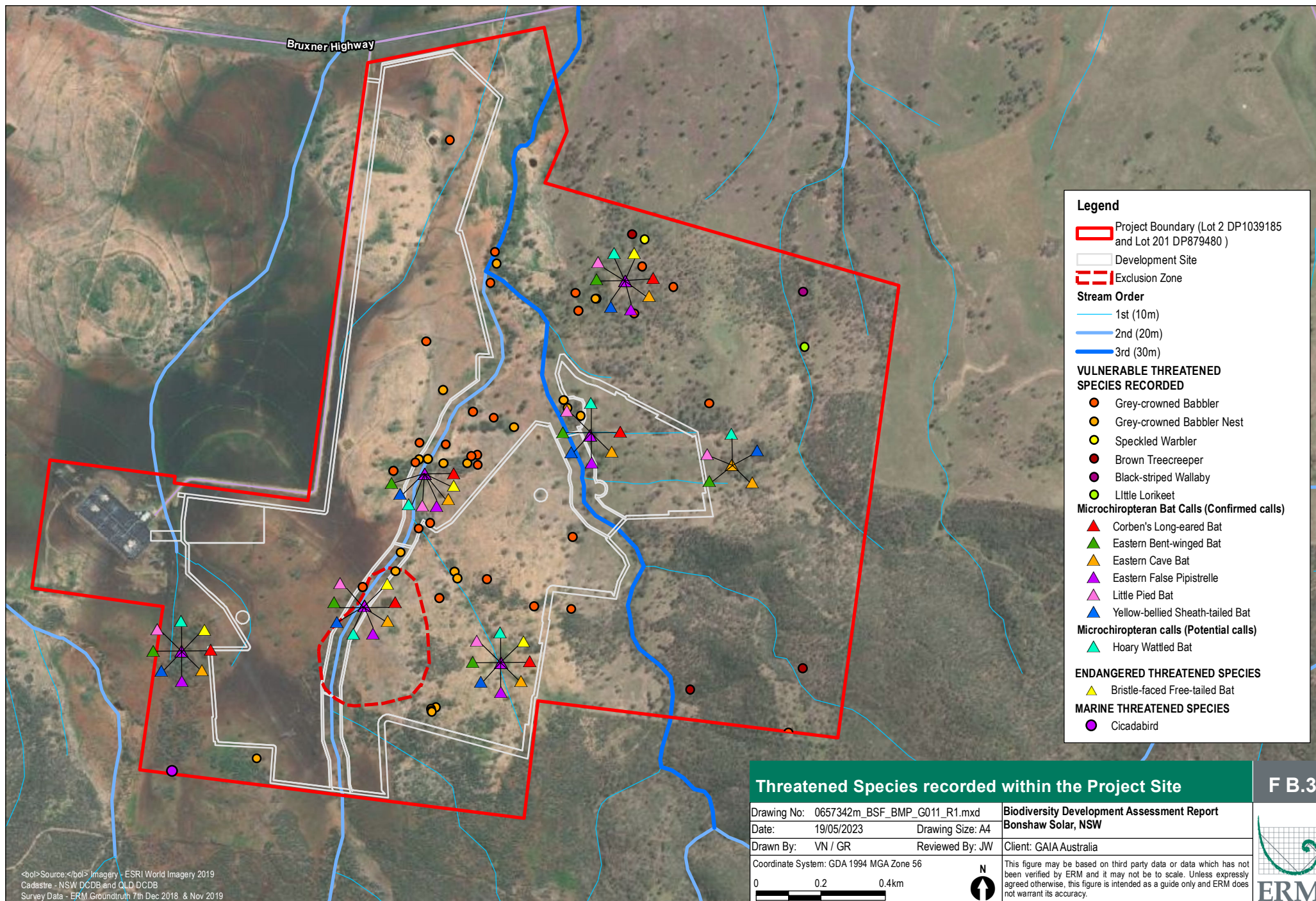
Similar habitat features will be retained and protected outside of the Development Footprint.





Source: Imagery - ESRI World Imagery 2019
 Cadastre - NSW DCDB and QLD DCDB
 Survey Data - ERM Ground truth 7th Dec 2018

F B.2



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