lightsource bp

Biodiversity Management Plan

WELLINGTON SOLAR FARM

DECEMBER 2019

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CONTENTS

1 INTRODUCTION 1
1.1 PURPOSE AND OBJECTIVES 1
1.2 THE PROJECT 2
1.3 ENVIRONMENTAL MANAGEMENT SYSTEMS OVERVIEW 2
1.4 ENVIRONMENTAL POLICY 3
1.5 CONTINUAL IMPROVEMENT 3
1.6 CONSULTATION 3
2 PLANNING 5
2.1 LEGISLATIVE AND OTHER ENVIRONMENTAL MANAGEMENT REQUIREMENTS 5
2.2 OBJECTIVES AND TARGETS 5
2.3 CONDITIONS OF CONSENT 7
2.4 COMMITMENTS 9
3 EXISTING ENVIRONMENT 12
3.1 SOILS 12
3.2 FLORA 12
3.3 FAUNA 15
3.4 WEEDS AND PESTS 15
4 ENVIRONMENTAL ASPECTS AND IMPACTS 16
5 WORK SCHEDULES 17
5.1 CONSTRUCTION AND OPERATION ACTIVITIES 17
6 ENVIRONMENTAL MANAGEMENT ZONES 24
7 ENVIRONMENTAL MANAGEMENT PROTOCOLS AND PROCEDURES 26
7.1 GROUND DISTURBANCE PROTOCOL 27
7.2 VEGETATION CLEARANCE PROCEDURE 27
7.3 RE-USE OF RESOURCES 33
7.4 THREATENED SPECIES FINDS PROCEDURE 34
7.5 WEED AND PEST MANAGEMENT PROTOCOL 37
7.6 VEHICLE HYGIENE PROCEDURE 40
7.7 VEGETATION CONSTRAINT MANAGEMENT 41
8 PERFORMANCE CRITERIA, TRIGGERS AND RESPONSES 45
9 BIODIVERSITY MITIGATION AND MANAGEMENT MEASURES 51
10 COMPLIANCE MANAGEMENT 57

10.1 ROLES AND RESPONSIBILITIES 57
10.2 TRAINING 58
10.3 MONITORING AND INSPECTION 58
10.4 ADAPTIVE IMPLEMENTATION 62
10.5 INCIDENT MANAGEMENT 62
10.6 AUDITING 62
10.7 REPORTING 62
11 REVIEW AND IMPROVEMENT 63
11.1 CONTINUOUS IMPROVEMENT 63
11.2 BMP UPDATE AND AMENDMENT 63
11.3 DOCUMENT CONTROL 63
APPENDIX A GROUNDCOVER MANAGEMENT PLAN ..... A-I
APPENDIX B BASELINE PLOT DATA FROM BIODIVERSITY ASSESSMENT REPORT ..... B-I
APPENDIX C SAMPLE REGISTERS ..... C-I
APPENDIX D AGENCY INPUT ON BMP ..... D-I
APPENDIX E AGENCY APPROVAL OF BMP ..... E-I

TABLES

Table 1-1 Timeframe of environmental management measures. 1
Table 2-1 Location of information in this BMP addressing the requirements of Conditions of Consent. 8
Table 2-2 Commitments of the Proponent and Project Contractors 9
Table 4-1 Potential biodiversity impacts as a result of the Project. 16
Table 5-1 Schedule of construction works. 18
Table 5-2 Schedule of operation works. 22
Table 7-1 Summary of protocol and procedure timing. 26
Table 8-1 Summary of performance criteria, triggers for actions and responses for environmental management protocols 45
Table 9-1 Biodiversity management and mitigation measures. 51
Table 10-1 Construction team roles and responsibilities (from the EMS). 57
Table 10-2 Monitoring and inspection requirements during construction and operation. 58
Table 10-3 Monitoring and inspection requirements during operation 61

Table A-1 Relevant conditions and commitments. ..... A-I

Table A-2 Timing of groundcover management activities. ..... A-II

Table B-3 Flora plot data ..... B-I

Table C-1 Sample Threatened Species Register. ..... C-III

Table C-2 Sample Vehicle hygiene register. ..... C-VI

FIGURES

Figure 1-1 Site map showing biodiversity constraints. 4

Figure 6-1 Environmental management zones for the project area 25

Figure 7-1 Vegetation clearance procedure. 29

Figure 7-2 Example of exclusion zone signage 30

Figure 7-3 Example of exclusion zone fencing. 30

Figure 7-4 Three-cut method of removing branches. 31

Figure 7-5 Hollow bearing tree removal procedure. 32

Figure 7-6 Threatened species finds procedure. 35

Figure 7-7 Vegetation constraints in exclusion zones 42

ACRONYMS AND ABBREVIATIONS

AS	Australian Standard
BAR	Basic Right Turn
BAR	Biodiversity Assessment Report
BC Act	Biodiversity Conservation Act 2016 (NSW)
BCD	Biodiversity & Conservation Division (NSW, formerly OEH)
Biosecurity Act	Biosecurity Act 2015 (NSW)
BMP	Biodiversity Management Plan
CEMP	Construction Environmental Management Plan
CoCs	Conditions of Consent
CWD	Coarse woody debris
Construction	The construction of the development, including but not limited to, the carrying out of any earthworks on site and the construction of solar panels and any ancillary infrastructure.
DPE	(NSW) Department of Planning and Environment
DPIE	(NSW) Department of Planning, Industry and Environment (formerly DPE)
Decommissioning	The removal of solar panels and ancillary infrastructure and/or rehabilitation of the site
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EMS	Environmental Management Strategy
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cwth)
ERSED	Erosion and sediment control
Exclusion zones	Areas of limited access to protect site values (i.e. vegetation constraints).
FM Act	Fisheries Management Act 1994 (NSW)
ha	Hectares
HSEQ Manager	Health, Safety, Environment and Quality Control Manager
kL	Kilolitres
km	Kilometres
kV	Kilovolts
LGA	Local Government Area

m	Metres
m^2	Square metres
MW	Megawatts
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW	New South Wales
NV Act	Native Vegetation Act 2003 (NSW)
OEH	Office of Environment and Heritage, now called Biodiversity & Conservation Division
PCT	Plant Community Type
POEO Act	Protection of the Environment Operations Act 1997 (NSW)
Photovoltaic	PV
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Vegetation constraints	Native vegetation adjacent to and outside of designated impact areas, including Endangered/Critically Endangered Ecological Communities, and riparian vegetation
Sp./spp.	Species/species (plural)
t	Tonnes
TSC Act	Threatened Species Conservation Act 1995 (NSW)
The Project	Wellington Solar Farm
The Proponent	Lightsource BP Pty Ltd
Vegetation	Any native trees, shrubs or grassland.
WIRES	NSW Wildlife Information Rescue and Education Service

1 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

Planning approval was received on 25 May 2018 for the construction and operation of a 174 megawatt (MW) photovoltaic (pv) solar farm with an energy storage facility, located 2 kilometres (km) north-east of Wellington within the Dubbo Local Government Area (LGA).

On December 11 2019, a Modification Application (NGH 2019) was approved by the Department of Planning, Industry and Environment (DPIE) to expand the existing substation on Goolma Road and change the transmission connection to it. This was required to facilitate connection of the project to the substation.

The Wellington Solar Farm ('the Project') is a State Significant Development and represents an important contribution to renewable energy generation in New South Wales (NSW).

This Biodiversity Management Plan (BMP) forms part of the Environmental Management Strategy (EMS) for Wellington Solar Farm, and has been prepared to address the construction and operation requirements of:

- NSW Department of Planning and Environment (DPE) Conditions of Consent (CoC) (25 May 2018).
- All applicable legislation, during the construction and operation of the Project.
- Mitigation and management measures and commitments in the Wellington Solar Farm Environmental Impact Statement (EIS; 2017), Biodiversity Assessment Reports (BARs) 2017 and 2019, Submissions Report 2018 and Modification Application 2019.

The purpose of this BMP is to provide a framework for the management of biodiversity issues during the construction and operation of the Project. Some management measures are only applicable during the construction period, while others continue throughout operation, as summarised below (Table 1-1).

Table 1-1 Timeframe of environmental management measures.

Construction	Operation
Ground disturbance	N/A
Vegetation clearance	N/A
Re-use of resources protocol	N/A
Unplanned Threatened Species Finds	
Weed and Pest Management	
Vehicle Hygiene	
Vegetation Constraint Management	
Groundcover Management	

Implementing this BMP will ensure that the Project Team meets the Project requirements in a systematic manner and continually improves its performance.

NSW Department of Planning, Industry and Environment approved this BMP V3.1 on 14/10/2019.

After the approval of the Modification Application, which involved additional biodiversity assessment and offset calculations, this plan was updated to include the new project scope. No changes to the mitigation strategies were required.

1.2 THE PROJECT

The Scope of Works under the contract includes all works necessary to design, construct, test, commission, energise, decommission, and train staff in the operation of a 174 MW_{AC} solar farm including energy storage (approximately 25 MW / 100 MW rated capacity), and inverter stations.

The Scope of Works consists of but is not limited to:

- Approximately 440,000 solar panels (up to 4.5 metres (m) in height) and approximately 50 inverter stations (up to 2.9 m in height).
- An energy storage facility (approximately 25 MW / 100 MW rated capacity) with up to 6 purpose-built blocks (which will be constructed at a later date outside the main construction period).
- Underground 33kV, 132 kV or 330 kilovolt (kV) transmission cables connecting the energy storage facility to the TransGrid substation.
- Internal access tracks, staff amenities, car parking, laydown area and security fencing.
- The substation expansion includes underground transmission cables and an additional substation bench (located on the western edge of the existing substation).

During construction and operation, the site will be accessed off Goolma Road, approximately 4.6 km north of the intersection with the Mitchell Highway. Key road works for the Project will involve upgrading the intersection of Goolma Road and the site access point with a Basic Right Turn (BAR) and Basic Left Turn (BAL) treatment.

In terms of timing:

- The construction period will last for up to 12 months from the commencement of site establishment works and include a peak period of 6 months. Construction hours will be limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1pm.
- The expected operational life of the project is approximately thirty years.

The estimated Capital Investment Value of the Project is $270 million.

1.3 ENVIRONMENTAL MANAGEMENT SYSTEMS OVERVIEW

The BMP is part of the Lightsource BP's environmental management framework for the Project, as described in the overall Environmental Management System (EMS).

Used together, the EMS, BMP and other sub-plans, procedures and EWMS form management guides that clearly identify required environmental management actions for reference by Lightsource BP Infrastructure personnel and contractors.

The review and document control processes for this plan are described in the EMS.

1.4 ENVIRONMENTAL POLICY

The sustainability policy describes Lightsource BP's commitment to minimise the environmental impacts and enhancing the social and economic benefits of their products.

The environmental policy is displayed at the site office and communicated to employees and other interested parties via inductions and ongoing awareness programs.

A copy of the environmental policy is provided in the EMS.

1.5 CONTINUAL IMPROVEMENT

Management reviews are undertaken as part of the continual improvement process. The review process will be detailed in the Construction Environmental Management Plan (CEMP).

Communication is also key for continual improvement as discussed in Section 11.1.

1.6 CONSULTATION

Consultation was undertaken with the NSW Biodiversity Conservation Division (BCD, formerly the Office of Environment and Heritage) on 6 March 2019 to discuss requirements for preparation of this BMP. A working draft was supplied and high-level discussion was held regarding the requirements of the BMP. Comments provided (refer to Appendix D.1) are addressed in this plan.

Consultation was undertaken with BCD again on 8 July 2019 to seek input on a revised BMP covering both construction and operation. A draft was supplied and comments provided (Appendix D.2) are addressed in this plan.

Additional comments were received from the BCD on 16 September 2019 (Appendix D.3) on the revised BMP provided to the BCD. Key comments related to specificity of actions and performance criteria, to ensure the BMP can be audited in a meaningful way. Cross referencing errors were also noted. This final version addresses all comments received during the consultation process with the BCD.

NSW Department of Planning, Industry and Environment approved this BMP V3.1 on 14/10/2019.

After the approval of the Modification Application, which involved additional biodiversity assessment and offset calculations, this plan was updated to include the new project scope (V3.2). No changes to the mitigation strategies were required.

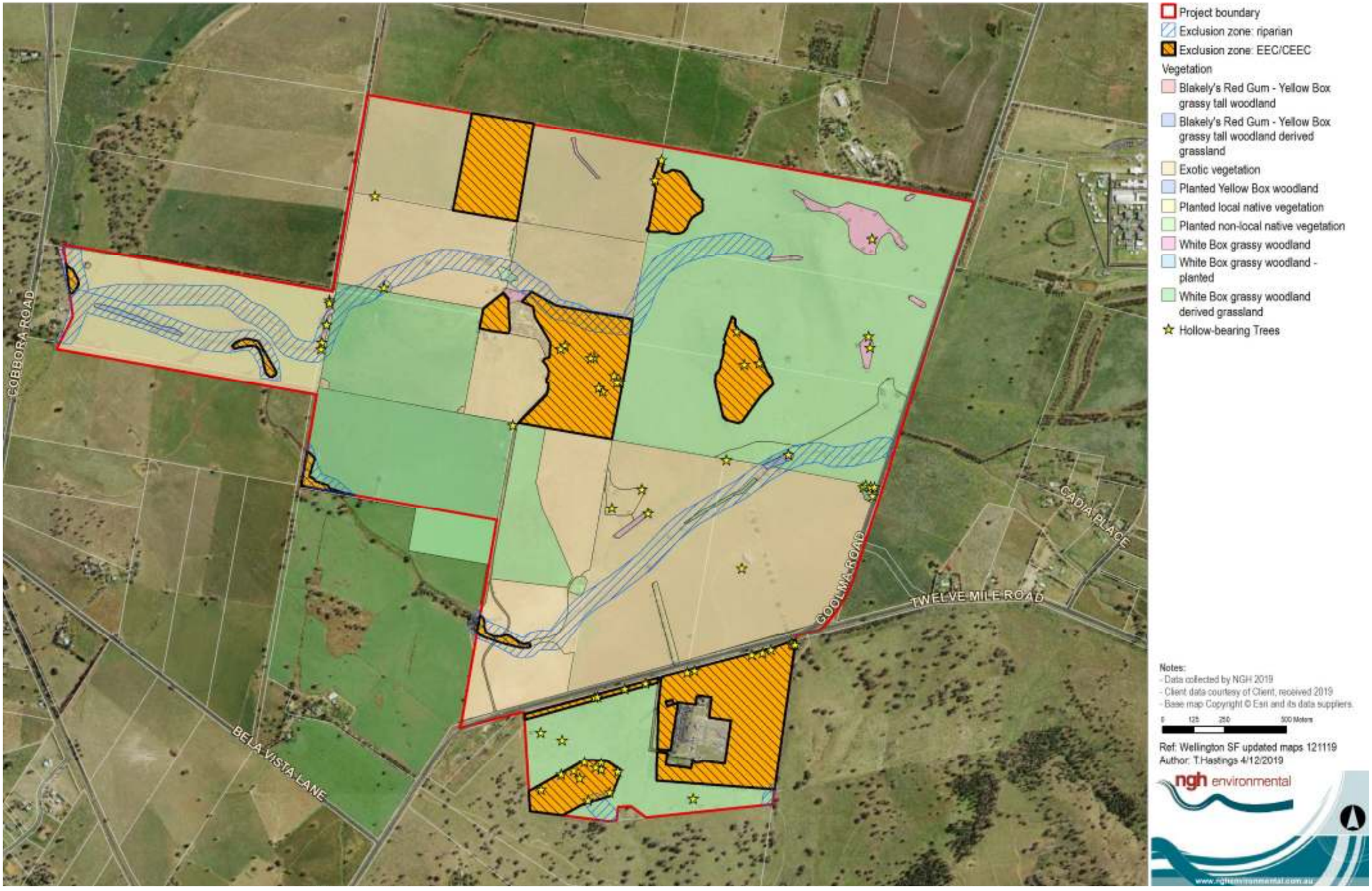


Figure 1-1 Site map showing biodiversity constraints.

2 PLANNING

2.1 LEGISLATIVE AND OTHER ENVIRONMENTAL MANAGEMENT REQUIREMENTS

2.1.1 Legislation

Legislation relevant to biodiversity management includes:

- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *National Parks and Wildlife Act 1974* (NPW Act).
- *Biodiversity Conservation Act 2016* (BC Act).
- *Protection of the Environment Operations Act 1997* (POEO Act).
- *Fisheries Management Act 1994* (FM Act).
- *Biosecurity Act 2015.*
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Relevant provisions of the above legislation are explained in the register of legal and other requirements included in Appendix B of the EMS.

2.1.2 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this BMP include:

- NSW National Parks & Wildlife Service. 2001. *Policy for the Translocation of Threatened Fauna in NSW: Policy and Procedure Statement No. 9* Threatened Species Unit, Hurstville NSW.
- Relevant recovery plans, priority action statements and best practice guidelines.
- DECCW. 2008. Hygiene protocol for the control of disease in frogs.
- Australian Standard AS 4373 Pruning of Amenity Trees.
- Australian Standard 4970 – 2009 Protection of Trees.

2.2 OBJECTIVES AND TARGETS

2.2.1 Objectives

Construction

The key objective of the BMP during construction is to ensure that the impacts of this project on biodiversity are managed and are within the scope permitted by the planning approval.

To achieve this objective, Lightsource BP will:

- Ensure appropriate controls and procedures are implemented during construction activities to avoid (where necessary) or minimise potential adverse impacts to biodiversity values in the Project footprint.
- Ensure appropriate measures are implemented to address the mitigation measures detailed in the EIS, BAR and CoCs.

- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in section 4 and section 8 of this BMP.

Operation

The key objective of the BMP during operation is to ensure that the impacts of this project on biodiversity are managed and the condition of site biodiversity values maintained over the lifetime of the project.

To achieve this objective, Lightsource BP will:

- Ensure appropriate controls and procedures are maintained during operation to manage potential adverse impacts to biodiversity values in the Project footprint.
- Protect areas outside the Project impact areas (but within the site boundaries).
- Ensure biodiversity monitoring is carried out regularly, particularly for vegetation under the panels and in exclusion zones, to maintain biodiversity values in these areas.
- Ensure the project continues to comply with all relevant legislation and other requirements.

2.2.2 Targets

The following targets have been established for the management of biodiversity impacts for the Project:

Construction

- Ensure full compliance with the relevant legislative requirements.
- Ensure full compliance with relevant requirements of the EIS, BAR and CoCs.
- No disturbance to biodiversity outside the construction footprint.
- Minimise disturbance to biodiversity in the project area.
- Retain existing native riparian vegetation to the greatest extent possible in an undamaged and unaltered condition.
- Protect exclusion zones from all adverse impacts throughout the construction period.
- Survey weed abundance in exclusion zones quarterly during construction, and use this survey as a basis for implementing seasonal targeted weed control measures in each zone.
- Survey and map weed distribution across the project site monthly during construction and use to implement targeted weed control measures to control all mapped infestations.
- Targeted weed control measures to be implemented for any seasonal weed outbreaks within a year of discovery.
- No native fauna mortality or injury during construction.
- No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat.
- Rehabilitate all disturbed areas not required for the operation of the solar farm.
- Revegetation of disturbed areas will have 70% ground cover over 90% of disturbed areas within 12 months of establishment or corrective actions would be implemented:
    - Failed vegetation patches greater than 5 m^2 will be revegetated.
    - Scours greater than 50 mm deep and 100 m long will be revegetated.
    - Targeted weed control measures will be implemented if weed cover exceeds 10% of groundcover or if priority weeds are detected.
    - Ground cover will achieve seed set across at least 80% of area treated.
    - Native species will be used for revegetation.

Operation

- Ensure full compliance with the relevant legislative requirements.
- Ensure full compliance with relevant requirements of the EIS, BAR and CoCs.
- No disturbance to biodiversity outside the operational footprint.
- Minimise disturbance to biodiversity in the project area.
- Retain existing native riparian vegetation to the greatest extent possible in an undamaged and unaltered condition.
- Maintain or improve the baseline vegetation condition class of exclusion zones throughout the operation period.
- Survey weed abundance in exclusion zones quarterly during operation, and use this survey as basis for implementing seasonal targeted weed control measures in each area.
- A general reduction in the abundance of weeds in exclusion zones during the operation period.
- Survey weed distribution across the project site quarterly during operation and use to implement targeted weed control measures.
- Demonstrate reduced weed distribution annually by at least 50% in mapped infestation areas.
- Targeted weed control measures to be implemented for any seasonal weed outbreaks within a year of discovery.
- New invasive weeds recorded in project area compared to baseline surveys are controlled.
- African Boxthorn and listed priority weeds eradicated from project area within three years of detection.
- No native fauna mortality or injury during operation.
- No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat.

Note, rehabilitation of operational areas is covered by the Groundcover Management Plan in Appendix A.

2.3 CONDITIONS OF CONSENT

DPE (now DPIE) issued approval for the Project on 25 May 2018. Modified Approval was granted on December 11, 2019.

Specific conditions relating to biodiversity which detail specific requirements for mitigation and management measures are detailed in Table 2-1. Those relevant to construction are addressed in this plan.

Table 2-1 Location of information in this BMP addressing the requirements of Conditions of Consent.

<table>
<tr><th>Condition of Consent</th><th>Condition requirement</th><th>Location</th><th>Timing</th></tr>
<tr><td colspan="4">LAND MANAGEMENT</td></tr>
<tr><td>Schedule 3
CoC 9</td><td>Following any construction or upgrading on site, the Applicant must:
a) Restore the ground cover of the site as soon as practicable, but within 12 months of completing any construction or upgrades, using suitable species;
b) Restore and maintain the ground cover with appropriate perennial species;
c) Manage weeds within this ground cover.</td><td>Appendix A Section 7.5</td><td>Construction</td></tr>
<tr><td colspan="4">BIODIVERSITY</td></tr>
<tr><td>Schedule 3
CoC 10</td><td>Within two years of commencing development under this consent, unless otherwise agreed by the Secretary, the Applicant must retire biodiversity credits of a number and class specified in Table 1 below to the satisfaction of BCD.
The retirements of these credits must be carried out in accordance with the NSW Biodiversity Offsets Policy for Major Projects 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) Providing supplementary measures.

Ecosystem credit requirements
<table><tr><th>Vegetation Community</th><th>PCT ID</th><th>Credits required</th></tr><tr><td>White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion</td><td>PCT 266</td><td>3</td></tr></table>
Note: Following repeal of the Threatened Species Conservation Act 1995 on 25 August 2017, credits created under that Act are taken to be “biodiversity credits” under the Biodiversity Conservation Act 2016 by virtue of clause 22 of the Biodiversity Conservation (Savings and Transitional) Regulation 2017.</td><td>Section 8</td><td>Within two years of commencement</td></tr>
<tr><td>Schedule 3
CoC 10</td><td>Within two years of commencing development under this consent, unless otherwise agreed by the Secretary, the Applicant must retire biodiversity credits of a number and class specified in Table 1 and Table 2 below to the satisfaction of BCD.
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 BC Act;
(b) making payments into an offset fund that has been developed by the NSW Government; or
(c) providing supplementary measures.

Table 1: Ecosystem Credit Requirements
<table><tr><th>PCT ID</th><th>Vegetation Community</th><th>Credits Required under the TSC Act</th></tr><tr><td>266</td><td>White Box grassy woodland in the upper slopes’ subregion of the NSW South Western Slopes Bioregion 266 3 1</td><td>1</td></tr></table></td><td>Section 8</td><td>Within two years of commencement</td></tr>
</table>

Condition of Consent	Condition requirement	Location	Timing
	Table 2: Species Credit Requirements Species Credit Species — *Credits Required **under the BC Act*** **Pink-tailed Legless Lizard (*Apraisia parapulchella*)** — 2		
Schedule 3 CoC 11	Prior to the commencement of 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: a) Include a description of the measures that would be implemented for: • Protecting vegetation and fauna habitat outside the approved disturbance areas; • Maximise the salvage of vegetative and soil resources within the approved disturbance area for beneficial reuse in the enhancement or the rehabilitation of the site; b) Include a seasonally based program to monitor and report on the effectiveness of these measures; c) Include details of who would be responsible for monitoring, reviewing and implementing the plan, and timeframes for completion of actions. Following the Secretary's approval, the Applicant must implement the Biodiversity Management Plan. *Note: If the biodiversity credits are retired via a Biobanking Stewardship Agreements, then the Biodiversity Management Plan does not need to include any of the matters that are covered under the Biobanking Stewardship Agreement.*	Construction requirement covered by this report Section 7.2 Section 10.3 Section 8, Section 10.1	Pre-construction

2.4 COMMITMENTS

Commitments to protect biodiversity over the life of the Project were contained in the Submissions Report. The commitments listed in Table 5-1 are in addition to the CoCs in section 2.3.

Table 2-2 Commitments of the Proponent and Project Contractors.

Commitment reference	Commitment requirement	Location in the BMP	Timing
BIODIVERSITY CREDITS			
Submissions report	If the credit profile of the final infrastructure layout cannot be reduced to zero, retirement of the biodiversity credits from the biodiversity register established under Part 7A of the TSC Act would be undertaken.	Section 8	Pre-construction
MANAGEMENT PLANS			
Submissions report	Preparation of a Flora and Fauna Management Plan (FFMP) that would incorporate protocols for: • Protection of native vegetation to be retained. • Best practice removal and disposal of vegetation. • Staged removal of hollow-bearing trees and other habitat features such as fallen logs with attendance by an ecologist. • Weed management. • Unexpected threatened species finds. • Rehabilitation of disturbed areas.	Construction requirement covered by this report Section 7.1, Section 7.2, Section 7.4, Section 7.5,	Pre-construction

Commitment reference	Commitment requirement	Location in the BMP	Timing
	The FFMP would consider the potential to link and enhance remnant patches on the site. The FFMP would form part of the Wellington Solar Farm Construction Environmental Management Plan (CEMP).	Section 7.7 Appendix A	
Submissions report	Weed, hygiene and pest management protocols will be prepared and implemented as part of the Flora and Fauna Management Plan for the proposal.	Construction requirement covered by this report Section 7.5, Section 7.6	Pre-construction Construction Operation
Submissions report	A Groundcover Management Plan would be developed in consultation with an agronomist, and taking account of soil survey results to ensure perennial grass cover is established across the site as soon as practicable after construction and maintained throughout the operation phase. The plan would cover: • Soil restoration and preparation requirements. • Species election. • Soil preparation. • Establishment techniques. • Maintenance requirements. • Perennial groundcover targets, indicators, condition monitoring, reporting and evaluation arrangements – i.e. live grass cover would be maintained at or above 70% at all times to protect soils, landscape function and water quality. Any grazing stock would be removed from the site when cover falls below this level. Grass cover would be monitored on a fortnightly basis using an accepted methodology. • Contingency measures to respond to declining soil or groundcover condition. • Identification of baseline conditions for rehabilitation following decommissioning.	Construction requirement covered by this report Appendix A	Pre-construction Construction Operation
Submissions report	A Groundcover Management Plan would be developed and implemented to ensure an appropriate perennial ground cover is established and maintained beneath the arrays during operation of the solar farm. This will require consideration of existing groundcover and may require expert input and trials to achieve the objective.	Construction requirement covered by this report Appendix A	Develop: Pre-construction Implement: Construction and Operation
Submissions report	The CEMP (*Construction Environmental Management Plan*) will include measures to avoid noise encroachment on adjacent habitats such as avoiding night works as much as possible.	CEMP Section 7.7	Pre-construction
CONSTRUCTION			
Submissions report	Hollow-bearing trees within the development site would not be cleared between June and January, to avoid the breeding and core hibernation period of Corben's Long-eared Bat. If clearing outside of this period cannot be achieved, pre-clearing surveys would be undertaken to ensure these species do not occur.	Section 7.2.6 Section 5.3.2	Construction
Submissions report	Stockpiling materials and equipment and parking vehicles will be avoided within the dripline (extent of foliage cover) of any native tree.	Section 5 Stockpile Procedure	Pre-construction Construction
Submissions report	Prior to the commencement of work, a physical vegetation clearing boundary at the approved clearing limit is to be clearly demarcated and	Section 7.1 Section 7.2	Pre-construction Construction

Commitment reference	Commitment requirement	Location in the BMP	Timing
	implemented. The delineation of such a boundary may include the use of temporary fencing, flagging tape, para-webbing or similar.		
Submissions report	A riparian buffer zone of 40 m along Wuuluman Creek would be clearly delineated prior to works commencing. Works would be avoided within the riparian buffer zone.	Section 7.2.4	Pre-construction Construction
Submissions report	Existing native riparian vegetation is retained to the greatest extent possible in an undamaged and unaltered condition.	Construction requirement covered by this report Section 2.2, Section 5, Section 7.2	Pre-construction Construction
Submissions report	Works occurring around Wuuluman Creek should be in accordance with the DPI Fisheries Policy and Guideline document: *Policies and Guidelines for Fish Habitat Conservation and Management.*	Section 5 SWMP	Pre-construction Construction
Submissions report	Where possible, landscape plantings will be comprised of local indigenous species with the objective of increasing the diversity of the existing vegetation. Planting locations would be designed to improve the connectivity between patches in the landscape where consistent with landscaping outcomes.	Landscaping Plan	Construction
Submissions report	Carry out refuelling of plant and equipment, chemical storage and decanting off site or at least 50 m away from farm dams in impervious bunds. Ensure that dry and wet spill kits are readily available.	SWMS Section 5	Construction Operation
Submissions report	Avoid night works. Direct lights away from vegetation.	Section 5 Section 7.7 CEMP	Construction Operation
Submissions report	Awareness training during site inductions regarding site speed limits. Site speed limits to be enforced.	Construction requirement covered by this report Section 5	Pre-construction Construction Operation

3 EXISTING ENVIRONMENT

3.1 SOILS

Full details of the soil characteristics are contained in the SWMP. Details below are relevant to this BMP.

The topography of the project site is flat to gently undulating and sits at an elevation of between 300 and 415 metres (m) above sea level (ASL). The site includes the following topographic features:

- A hill is located in the north-eastern part of the site (rising to 415 m ASL).
- Wuuluman Creek, and two tributaries of the creek, occur on the site and generally drain water from the site in an east to west direction.

One soil landscape occurs at the project site: Bodangora (bz). This soil landscape has the following limitations:

- High erosion hazard under cultivation and low cover levels
- Moderate fertility
- Friable surface soils
- Moderate to high shrink-swell potential in subsoils
- Aggregated clays may leak in earthworks

eSpade (OEH, 2017) indicates that the project site has a moderate to very high salinity hazard, although subsequent testing showed the site has low salinity and sodicity. There is no potential for acid sulphate soils to occur at the project site.

No specific remediation treatment is considered to be required for the establishment of ground cover.

3.2 FLORA

The site is dominated by cleared areas that are primarily used for cropping and grazing, which provide very little in terms of native fauna habitat (around 250 hectares (ha) or 47% within the site boundary). Fragmented areas of grassy woodland also occur within the project boundary.

The Project has been designed to minimise clearing of native woodland vegetation and threatened species habitats. In this regard, the development footprint comprises only around 316 ha of the project area, primarily to minimise biodiversity impacts.

The Project will retain:

- The majority of grassy woodland vegetation of high importance.
- The majority of endangered ecological communities.

3.2.1 Vegetation communities

Two Plant Community Types (PCTs) were identified in the development site:

- White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes (PCT 266).
- Blakely's Red Gum – Yellow Box grassy tall woodland (PCT 277).

Both of these PCTs are listed as Endangered Ecological Communities (EECs).

White Box Grassy Woodland

Within the solar farm development site, this PCT occurred as:

- 1.81 ha of woodland vegetation in moderate to good condition.
- 0.90 ha of woodland vegetation in moderate to good condition comprised from a previous tree planting.
- 1.75 ha of woodland vegetation in low condition.
- 5.86 ha of derived grassland in moderate to good condition.
- 133.59 ha of derived grassland in low condition.

In the woodland vegetation, the overstory is characteristically dominated by White Box *Eucalyptus albens* with occasional Kurrajong *Brachychiton populneus* subsp. *populneus*. Understory vegetation is comprised of native grasses and herbs, and some exotic species.

A planted tree lot occurred along Goolma Road near the substation. This tree lot comprised mature White Box *Eucalyptus albens*, White Cypress Pine *Callitris glaucophylla*, Mugga Ironbark *Eucalyptus sideroxylon* and Kurrajong *Brachyscome populneus* in rows. Understory vegetation is comprised of native grasses and exotic annual grasses. Some native shrubs also occur in the understory.

In the derived grassland in moderate to good condition, the native groundcover is comprised of species such as Red Grass *Bothriochloa macra*, Nineawn Grass *Enneapogon* sp., Yellow Burr-daisy *Calotis lappulacea*, Spear Grass *Austrostipa scabra*, Umbrella Grass *Digitaria divaricatissima* and Bluebells *Wahlenbergia luteola* in greater than 50% cover. Exotic species are common. The low condition derived grassland consists of similar native grasses and forbs but with less than 50% native species cover and is dominated by exotic species.

Blakely's Red Gum – Yellow Box Grassy Tall Woodland

Within the solar farm development site, PCT 277 occurred as two small patches (totalling 0.32 ha) of low condition woodland vegetation.

The overstorey was dominated by Yellow Box *Eucalyptus melliodora* with some Fuzzy Box *Eucalyptus conica*. The groundcover was disturbed by the impacts of stock. Exotic species dominated the groundcover. Only one native species, Hogweed *Zaleya galericulata* was recorded during plot surveys.

Update due to substation expansion 2019

The consented layout in 2018 had an overhead transmission line connecting to the existing Wellington substation from the solar farm. The project, as modified in 2019 now allows for an underground transmission cable connection to the Wellington substation from the solar farm.

Additionally, an expansion of the existing substation compound is required to house additional infrastructure. In total, the modified works require 0.69 ha of ground disturbance. Importantly, of the 0.69 ha of ground disturbance associated with the modification, 0.32 ha would have been impacted by the consented 2018 overhead transmission line alignment.

The updated impact areas for each PCT are now shown below.

Table 3-1 Changed impact areas; Consented 2018 and Modification Application 2019.

Zone ID	Vegetation zones	Condition class	Total impact areas	
			Submissions Report 2018 (ha) (consented)	Modification application 2019 (ha)
1	PCT #277 BVT CW112 Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Low	0.27	0
2	PCT #266 BVT CW216 White Box Grassy Woodland in the Upper Slopes sub-region of the NSW South Western Slopes Bioregion	Moderate/Good Other (Planted Vegetation)	0	0.02
3	PCT #266 BVT CW216 White Box Grassy Woodland in the Upper Slopes sub-region of the NSW South Western Slopes Bioregion	Low	1.98	0
4	PCT #266 BVT CW216 White Box Grassy Woodland in the Upper Slopes sub-region of the NSW South Western Slopes Bioregion	Moderate – good	0.06	0
5	PCT #266BVT CW216 White Box Grassy Woodland in the Upper Slopes sub-region of the NSW South Western Slopes Bioregion	Derived Grassland – Moderate to Good	0.03	0.36
6	PCT #266BVT CW216 White Box Grassy Woodland in the Upper Slopes sub-region of the NSW South Western Slopes Bioregion	Derived Grassland - Low	132.06	0.3
Total (ha)			**134.40**	**0.69**

3.3 FAUNA

The field surveys for the EIS identified one threatened species, a Masked Owl *Tyto novaehollandiae* which is listed as vulnerable in NSW. One was observed during spotlighting surveys in a large Yellow Box *E. melliodora.* This tree contained two large hollows (greater than 20 cm) in the trunk.

The assessment determined that the habitat within the project site is unlikely to be preferred habitat of the Masked Owl. The development site is highly cleared and fragmented with the nearest densely forested area over two kilometres to the south-west. The development site is unlikely to provide foraging habitat for the Masked Owl. Based on the NSW Recovery Plan for Large Owls (DEC, 2006), it was considered unlikely that the Masked Owl would utilise the hollows in the development site for nesting. It is likely that the individual observed was resting in the development site while travelling through. As such, no breeding resources would be impacted by the project.

3.4 WEEDS AND PESTS

Common Starling *Sturnus vulgaris* was the only non-native fauna species recorded during the EIS site surveys. This species is not considered an invasive pest requiring control measures during construction or operation of the Project.

Fifty-three species of weed were recorded in the project area. None of these species are listed on either the BS Act and/or are weeds of national significance. However, *Lycium ferocissimum* (African Boxthorn), is listed on NSW WeedWise as having a prohibition on dealings in Dubbo Regional LGA, and *Heliotropium* sp. (A Heliotrope), as banned from being bought, sold, carried, or released to the environment. African Boxthorn is listed as a priority weed species in the Central West Regional Strategic Weed Management Plan. Blue Heliotrope (*Heliotropism amplexicaule*) is also listed as a priority weed and may be the species occurring at the site.

4 ENVIRONMENTAL ASPECTS AND IMPACTS

The construction and operation phases of the project have the potential to impact biodiversity values at the site in ways that cannot be avoided. This would occur through direct impacts such as habitat clearance and installation of infrastructure, and indirect impacts including weed ingress, soil and water contamination, and generation of excessive dust, light, or noise.

Key aspects of the Project that could result in impacts to biodiversity have been described in Table 4-1.

Table 4-1 Potential biodiversity impacts as a result of the Project.

Impact	Frequency	Intensity	Duration	Consequence
Direct				
Habitat clearance for permanent and temporary construction facilities (e.g. solar infrastructure, transmission lines, compound sites, stockpile sites, access tracks).	Regular	High	Construction	• Direct loss of native flora and fauna habitat including hollow-bearing trees. • Injury and mortality to fauna during clearing of fauna habitat. • Introduction and spread of noxious weeds and pathogens. • Disturbance to fallen timber, dead wood and bush rock.
Impacts to Wuuluman Creek and riparian vegetation.	Rare	Moderate	Construction	• Loss of riparian vegetation. • Bed and bank erosion.
Indirect				
Accidental spills and contamination from construction activities (including compound sites) and maintenance works.	Rare	Moderate	Construction Operation	• Pollution of soils and dams.
Earthworks	Regular	Moderate	Construction	• Erosion and sedimentation and/or pollution of soils, dams and downstream habitats.
Noise	Regular	Low	Construction Operation	• Construction machinery and activities and maintenance vehicles and works may disturb local fauna.
Dust generation	Regular	Low	Construction Operation	• Inhibit the function of plant species and communities, soils and dams.
Light spills during night works.	Rare	Low	Construction Operation	• May alter fauna activities and/or movements.
Introduction/ encouragement of feral pests, weeds or pathogens.	Regular	Moderate	Construction Operation	• Feral pest, weed and/or pathogen encroachment.

5 WORK SCHEDULES

5.1 CONSTRUCTION AND OPERATION ACTIVITIES

The following work schedule is indicative of the staging that will be implemented at the project site. Some activities may occur in parallel, particularly given the size of the project site.

The schedule in Table 5-1 is indicative of construction sequencing and mitigation measures. The schedule in Table 5-2 is indicative of sequencing and mitigation measures during operation. These mitigation measures, where relevant, would be incorporated into EWMSs.

Table 5-1 Schedule of construction works.

Project phase	Potential disturbance	Key actions and mitigation	Performance target
Construction site set up	• Disturbance to native groundcover from vehicle movements. • Disturbance and removal of fauna habitat including woody debris. • Spread of priority weeds. • Collision with wildlife causing injury or death. • Disturbance of native fauna by light or noise at night.	• Prior to the commencement of work, a physical vegetation clearing boundary at the approved clearing limit is to be clearly demarcated and implemented. The delineation of such a boundary may include the use of temporary fencing, flagging tape, para-webbing etc. • A riparian buffer zone of 40 m along Wuuluman Creek would be clearly delineated prior to works commencing. Works would be avoided in riparian buffer zone. • Existing native riparian vegetation is retained to the greatest extent possible in an undamaged and unaltered condition. • Stockpiling materials and equipment and parking vehicles will be avoided within the dripline (extent of foliage cover) of any native tree. • Wash and inspect plant and vehicles as per Vehicle Hygiene Procedure. • Pre-clearing surveys will be carried out by an ecologist and will include general fauna surveys, general tree hollow inspections and dam/waterway inspections. Habitat trees will be clearly marked with flagging tape. • Hollow-bearing trees within the development site would not be cleared between June and January, to avoid breeding and core hibernation periods of Corben's Long-eared Bat. • If clearing outside this period cannot be achieved, pre-clearing surveys would be undertaken to ensure these species do not occur. • Include awareness training in site inductions regarding site speed limits. Site speed limits to be enforced. • Avoid night works. • Where night works cannot be avoided, work must not take place within 100 m of exclusion zones. • Direct lights away from vegetation.	• No disturbance to biodiversity outside the approved construction footprint. • Minimise disturbance to biodiversity in the project area. • Retain existing native riparian vegetation to the greatest extent possible in an undamaged and unaltered condition. • Protect exclusion zones from adverse impacts during construction. • Weeds and pests are controlled. • Speed limits will be enforced. • No native fauna mortalities during construction. • No works causing light or noise impacts occurring near exclusion zones at night.

Project phase	Potential disturbance	Key actions and mitigation	Performance target
		• Noise-emitting plant will be oriented so that noise will be directed away from exclusion zones wherever possible. • When not in use, vehicles and plant will not be left idling near exclusion zones, but will be switched off whenever possible.	
Internal road construction	• Disturbance to native groundcover from vehicle movements. • Disturbance and removal of fauna habitat including woody debris. • Disturbance to native fauna from lights and noise. • Collision with wildlife causing injury or death. • Disturbance of groundcover from stockpiles. • Spread of priority weeds. • Spills from vehicles, plant, and storage facilities. • Pollution of waterways or native vegetation.	• Wash and inspect plant and vehicles as per Vehicle Hygiene Procedure. • Stockpiling and storage of materials and machinery will occur only on designated direct disturbance areas. • Stockpiling materials and equipment and parking vehicles will be avoided within the dripline (extent of foliage cover) of any native tree. • Avoid night works. • Direct lights away from vegetation. • Include awareness training in site inductions regarding site speed limits. • Site speed limits to be enforced. • Carry out refuelling of plant and equipment, chemical storage and decanting off site or at least 50 m away from farm dams in impervious bunds. • Ensure that dry and wet spill kits are readily available.	• No disturbance to biodiversity outside the approved construction footprint. • Minimise disturbance to biodiversity in the project area. • Retain existing native riparian vegetation to the greatest extent possible in an undamaged and unaltered condition. • Protect exclusion zones from adverse impacts during construction. • No mortality of native fauna during construction. • Weeds and pests are controlled. • Speed limits will be enforced. • No native fauna mortalities. • No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat.
Construction of solar farm infrastructure	• Disturbance to native fauna from lights and noise. • Collision with wildlife causing injury or death. • Disturbance of groundcover from stockpiles. • Spread of priority weeds • Spills from vehicles, plant, and storage facilities.	• Implement ground disturbance permit procedure before any clearing activity. • Implement Vegetation Clearance Procedure for vegetation removal. • Place CWD in remaining vegetated areas where practicable. • Works occurring around Wuuluman Creek must be in accordance with the DPI Fisheries document *Policies and Guidelines for Fish Habitat Conservation and Management.*	• No disturbance to biodiversity outside the approved construction footprint. • Minimise disturbance to biodiversity in the project area. • Retain existing native riparian vegetation to the greatest extent possible in an undamaged and unaltered condition.

Project phase	Potential disturbance	Key actions and mitigation	Performance target
	• Pollution of waterways or native vegetation.	• Record clearing and ground disturbance via spatial mapping. • Provide awareness training during site inductions and toolbox talks – emphasise the importance of native habitat. • Machinery, trucks and equipment will be restricted to designated parking areas. No parking on roadside vegetation will occur. • Stockpiles and storage of materials and machinery will avoid the dripline (extent of foliage cover) of any native tree. • Stockpiling and storage of materials will occur only on designated direct disturbance areas. • Plant and vehicles will be washed and inspected as per Vehicle Hygiene Procedure. • Avoid night works. • Direct lights away from vegetation. • Topsoil will be salvaged where possible within the approved disturbance area and stockpiled for beneficial reuse in the enhancement or the rehabilitation of the site, as per the Weed Management Procedure (section 7.5.1) and Rehabilitation Plan (separate to this report). • Carry out refuelling of plant and equipment, chemical storage and decanting off site or at least 50 m away from farm dams in impervious bunds. • Ensure that dry and wet spill kits are readily available.	• Protect exclusion zones from all adverse impacts throughout the construction period. • Survey weed abundance in exclusion zones seasonally during construction and use as basis for implementing seasonal targeted weed control measures in each zone. • Survey weed abundance across the project site seasonally during construction and use to implement targeted weed control measures to control weed infestations. • Targeted weed control measures to be implemented for any seasonal weed outbreaks within a year of discovery. • No mortality of native fauna during vegetation removal. • Weeds and pests are controlled. • Speed limits will be enforced. • No native fauna mortalities during construction. • No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat.
Removal of temporary construction equipment.	• Disturbance to existing native fauna from lights and noise. • Disturbance of groundcover from stockpiles. • Spread of priority weeds.	• Machinery, trucks and equipment will be restricted to designated parking areas. No parking on roadside vegetation will occur. • Stockpiles and storage of materials and machinery will avoid the dripline (extent of foliage cover) of any native tree. • Stockpiles and storage will occur only on designated direct disturbance areas.	• Weeds and pests are controlled. • Speed limits will be enforced. • No native fauna mortalities during construction. • No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat.

Project phase	Potential disturbance	Key actions and mitigation	Performance target
		• Direct any lighting away from vegetation. • Plant and vehicles will be inspected and washed as per Traffic Management Procedure. • Install and maintain ERSED controls.	• Protect exclusion zones from adverse impacts during construction.
Revegetation	• Loss of groundcover • Spread of priority weeds	• Restore the ground cover of the site as soon as practicable, but within 12 months of completing any construction or upgrades, using suitable species. • Restore and maintain the ground cover with appropriate perennial species. • Manage weeds within this ground cover.	• Rehabilitate all disturbed areas not required for the operation of the solar farm. • Revegetation of disturbed areas will have 70% ground cover over 90% of disturbed areas: - Failed vegetation patches greater than 5 m^2 will be revegetated. - Ground cover will achieve seed set across at least 80% of area. • Native species will be for revegetation.

Table 5-2 Schedule of operation works.

Project phase	Potential disturbance	Key actions and mitigation	Performance target
Operation and Maintenance	• Loss of groundcover. • Spread of priority weeds. • Disturbance to native groundcover from vehicle movements. • Collision with wildlife causing injury or death. • Disturbance of native fauna by light or noise at night. • Decline in vegetation condition of exclusion zones.	• Maintain ground cover with appropriate perennial species (Appendix A). • Manage weeds within ground cover. • Manage weeds within exclusion zones. • Vehicles will be inspected and washed as per Vehicle Hygiene Procedure. • Machinery, trucks and equipment will be restricted to designated parking areas. No parking on roadside vegetation will occur. • Include awareness training in site inductions regarding site speed limits. • Site speed limits to be enforced. • Avoid night works. • Where night works cannot be avoided, work must not take place within 100 m of exclusion zones. • Direct lights away from vegetation. • Noise-emitting plant will be oriented so that noise will be directed away from exclusion zones wherever possible. • When not in use, vehicles and plant will not be left idling near exclusion zones, but will be switched off whenever possible.	• Groundcover will be maintained at 70% cover over 90% of disturbed areas throughout operation. a) Failed vegetation patches greater than 5 m^2 will be revegetated. b) Ground cover will achieve seed set across at least 80% of area. c) Native species will be used for revegetation. • No disturbance to biodiversity outside the approved operational footprint. • Minimise disturbance to biodiversity in the project area. • Retain existing native riparian vegetation to the greatest extent possible in an undamaged and unaltered condition. • No native fauna mortality or injury during operation. • No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat. • Maintain or improve the baseline vegetation condition class of exclusion zones throughout the operation period. • Survey and map weed abundance in exclusion zones annually during operation, and use as basis for implementing annual targeted weed control measures in each zone.

Project phase	Potential disturbance	Key actions and mitigation	Performance target
			• No increase in weed abundance in exclusion zones from baseline levels at end of operation period. • Annually survey and map weed distribution across the project site and use to implement targeted weed control measures. • Demonstrate reduced weed distribution annually by at least 50% in mapped infestation areas. • Targeted weed control measures to be implemented for any seasonal weed outbreaks within a year of discovery. • No increase in distribution of weeds from baseline in the project site at end of operation period. • No new invasive weeds recorded in project area compared to baseline surveys at end of operation period. • African Boxthorn and listed priority weeds eradicated from project area before end of operation period.

6 ENVIRONMENTAL MANAGEMENT ZONES

The Project area has been divided into four discrete zones for the purposes of biodiversity management:

1. Woodland areas that will be impacted by the project
2. Derived Native Grassland Areas that will be impacted by the project
3. Riparian areas that will be avoided and retained by the project
4. Areas of EEC/CEEC that will be avoided and retained by the project

These zones are described below and their location is shown on Figure 6-1. These zones are referred to in the management protocols and procedures described in Section 7 and summarised in Section 8.

Zone 1 - Woodland areas that will be impacted by the project

These are areas where tree removal will be required during construction. Specific protocols will need to be employed to manage the impacts of vegetation clearance. These areas would then be managed as per Management Zone 2 for the operational phase of the project where a native ground cover is present.

Zone 2 - Derived Native Grassland Areas that will be impacted by/not excluded from the project

These are areas where much of the solar farm infrastructure will be constructed. These areas will require ongoing management particularly during operation to ensure adequate groundcover is retained and to manage weeds.

Zone 3 - Riparian areas that will be avoided and retained by the project

The riparian areas within the project area are exclusion zones and are to be projected for the life of the project. This zone is particularly vulnerable to erosion, sedimentation and contamination. Enrichment and improvement of this zone can occur during construction and operation.

Zone 4 - Areas of EEC/CEEC that will be avoided and retained by the project

These are areas of conservation importance that are identified exclusion zones to be protected for the life of the project. They differ from Zone 3 in that they are listed as State or Commonwealth EEC or CEEC. Ensuring these areas are not degraded for the life of the project, such as through weed invasion, is also particularly important. Enrichment and improvement of this zone can occur during construction and operation.

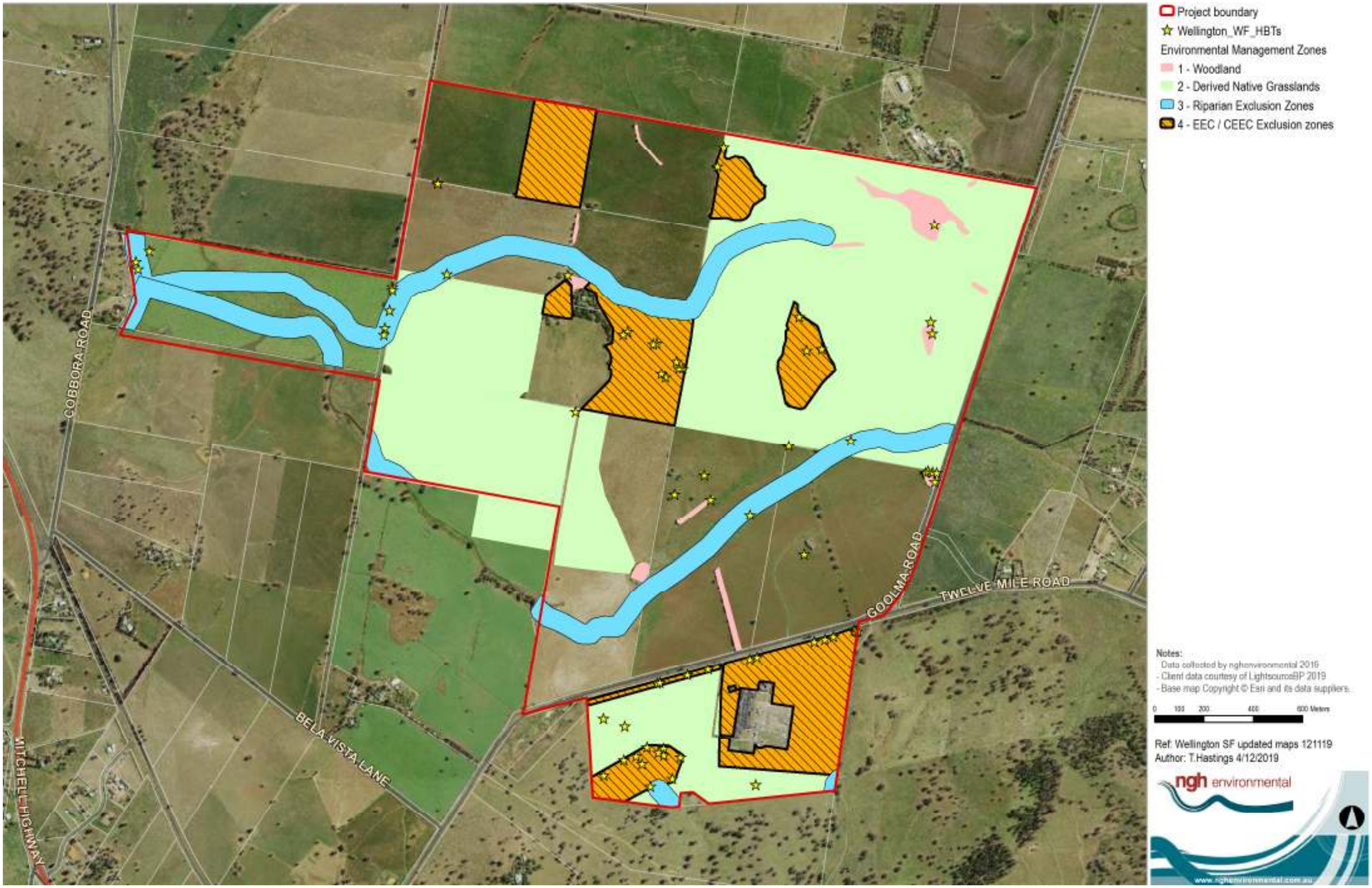


Figure 6-1 Environmental management zones for the project area

7 ENVIRONMENTAL MANAGEMENT PROTOCOLS AND PROCEDURES

The following protocols and procedures have been developed to manage the impacts of the project on biodiversity. Table 7-1 below summarises the stage of the project to which the protocol/procedure applies.

Table 7-1 Summary of protocol and procedure timing.

Construction	Operation
Ground disturbance protocol	N/A
Vegetation clearance procedure	N/A
Re-use of resources protocol	N/A
Threatened Species Finds Procedure	
Weed and Pest Management Protocol	
Vehicle Hygiene Procedure	
Vegetation Constraint Management	
Groundcover Management Plan	

Each of these protocols/procedures is described in detail in this section below.

Risks to fauna from vehicle collision have also been identified however this is managed through the implementation of speed limits which is covered in the project's Safety Plan. Monitoring of fauna fatalities has been included as part of this BMP in Section 10.3 with appropriate triggers and responses included.

Table 8-1 provides a summary of the key performance criteria for the protocols and procedures detailed in this BMP and triggers for corrective actions. The actions to be implemented should the trigger arise are also described.

7.1 GROUND DISTURBANCE PROTOCOL

A ground disturbance permit process will be implemented during construction and applies to Management Zones 1 and 2. The ground disturbance permit process is integral to communicate the distinction between vegetation protection areas and the ground disturbance footprints in which construction contractors will be working. This process is also vital to enable the construction contractor to track and control vegetation clearing on a daily, weekly, and monthly basis.

The ground disturbance permit process is managed by the Health, Safety, Environment and Quality Control (HSEQ) Manager and is summarised below.

- Contractors are informed in their contract and site induction that all ground disturbing activities require them to obtain a ground disturbance permit prior to undertaking the work.
- The ground disturbance permit must be submitted to the HSEQ Manager via email at least 48 hours before the work is undertaken.
- The HSEQ Manager will compare the proposed ground disturbance area to the project footprint detailed in the current approved development design.
- The HSEQ Manager will visit the site and conduct a pre-clearing survey (Section 7.2.2) to digitally capture and display clearance boundaries, with captured data uploaded to the project GIS database, and mark out vegetation projection areas.
- The HSEQ Manager will either issue the permit unamended or contact the contractor for further clarification.
- Once the permit has been issued, the construction contractor may undertake ground works as per their contract.
- Once the work has been completed (date specified in the permit), the HSEQ Manager will inspect the site, request any additional clean up or remediation activities and sign-off that the conditions of the permit have been met.
- The HSEQ Manager will then record the disturbed area as part of a running total disturbed area for the Project.

An example of the ground disturbance permit form is provided in Appendix C.1.

7.2 VEGETATION CLEARANCE PROCEDURE

The vegetation clearance procedure will be implemented for vegetation clearance during construction.

7.2.1 Monitoring total clearing footprint

Vegetation clearance is only permitted in the areas identified in the BAR 2017 and 2019 (now delineated as Management Zones 1 and 2). No more than 135.08 ha of native vegetation will be removed in total (comprising 0.47 ha of PCT 266 moderate to good condition, 134.34 ha of PCT 266 low condition, and 0.27 ha of PCT 277 low condition), otherwise the biodiversity credit requirement will be affected. Any additional clearance required will first require a project modification.

Prior to vegetation clearing, the HSEQ Manager will digitally capture and display clearance boundaries within the site. Survey teams and GIS databases will be used to inform and record vegetation clearing and site rehabilitation.

The cumulative amount of vegetation cleared will be progressively monitored by the HSEQ Manager. Prior to undertaking any vegetation clearing, this value will be compared to the total approved area to be cleared.

Demarcation of the development footprint is the responsibility of the construction contractor and will be determined by them. Typical measures will include:

- Use of temporary fencing
- Flag tape or rope
- Physical separation such as by an earth bund or drain

7.2.2 Pre-clearing surveys

Pre-clearing surveys will be carried out by an Ecologist prior to any vegetation clearing. The following pre-clearing surveys will be carried out when habitat trees are to be removed, including hollow-bearing trees and other woody vegetation:

- Identifying any potential breeding/roosting habitat
- Recording number, location and type of tree hollows present for use during hollow-bearing tree removal
- Clearly marking habitat trees with flagging tape and demarcating area to be cleared
- Targeted surveys for Corben's Long-eared Bat, if clearing within breeding and core hibernation period between June and January

The results of these surveys will be provided to site staff (including equipment operators) involved in vegetation clearing, through site inductions, toolbox talks, and targeted training (Section 10.2), as well as through the issuing of ground clearance permits (Section 7.1).

7.2.3 General Process

When undertaking vegetation clearing, the process shown in Figure 7-1 will be followed to minimise the area of disturbance and the amount of vegetation to be cleared.

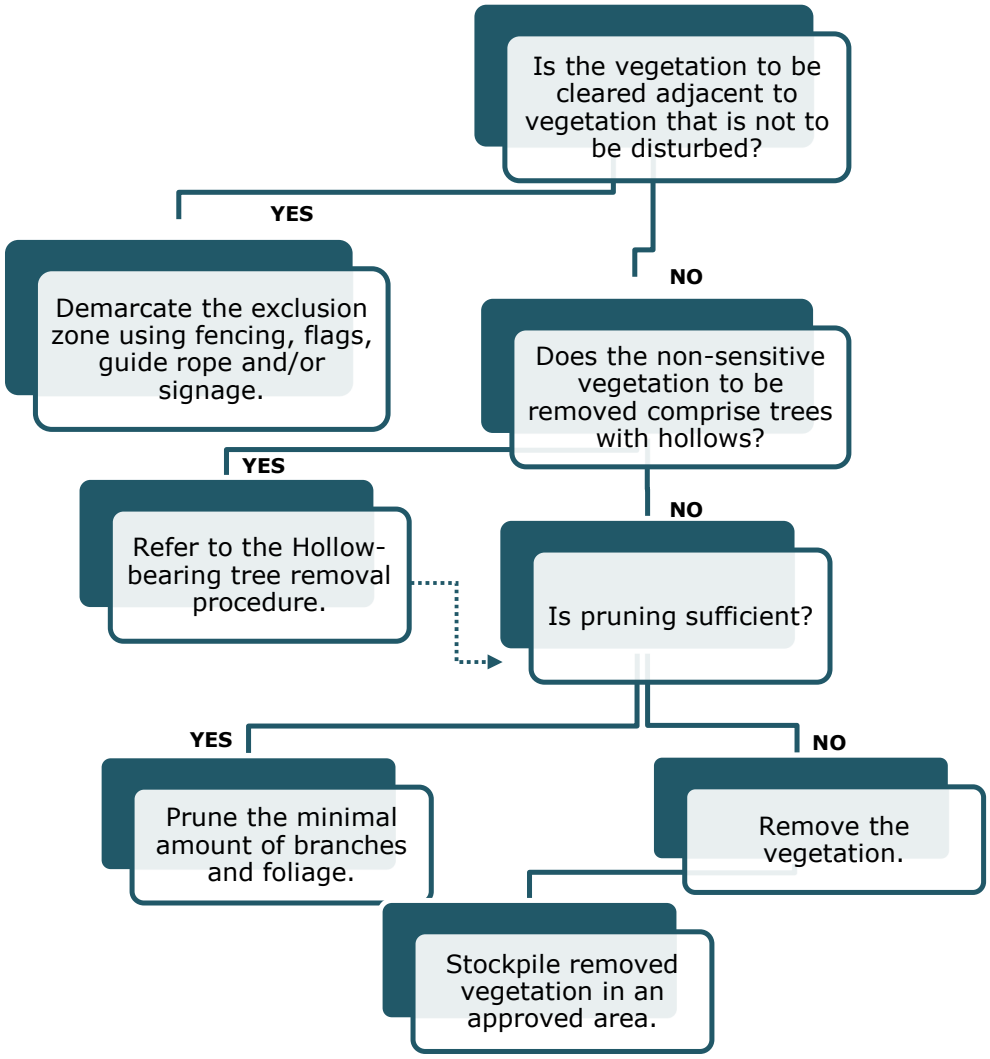


Figure 7-1 Vegetation clearance procedure.

7.2.4 Clearing near Exclusion Zones

Exclusion zones containing vegetation constraints are shown in Figure 1-1 and must be protected from any project impacts. Prior to construction commencing, vegetation in these areas will be protected by exclusion fencing and signage (e.g. Figure 7-2 and Figure 7-3). These areas will be communicated to site staff (including equipment operators) through site inductions, toolbox talks and targeted training prior to works taking place in the vicinity. A vegetation exclusion zone will be established between vegetation constraints and protective fencing (no closer than the dripline of the vegetation) to ensure that vegetation constraints are not impacted accidentally. Additional exclusion fencing will define the boundary between vegetation to be removed and vegetation to be retained.

Riparian constraint areas in the same figure comprise a 40 m riparian buffer zone along Wuuluman Creek. This will be clearly delineated prior to works commencing with exclusion fencing and signage. Works must be avoided within the riparian buffer zone.

Figure 7-2 Example of exclusion zone signage.

Figure 7-3 Example of exclusion zone fencing.

Following any vegetation clearing in the vicinity of a Vegetation Constraint Area, the HSEQ Manager will conduct an inspection of the area to confirm that the Constraint Area has not been impacted.

7.2.5 Lopping, pruning and trimming procedure

Heavy machinery will not be used for pruning or trimming. Appropriate tools to use are loppers, chain saws and vehicle mounted saws.

In the first instance, hollow bearing limbs will be retained. If this is not possible the hollow bearing limb will be inspected by the Project Ecologist / suitably qualified expert and placed in adjacent undisturbed vegetation to provide fauna habitat.

Tree limbs are to be removed using the three cut method as shown below in Figure 7-4.

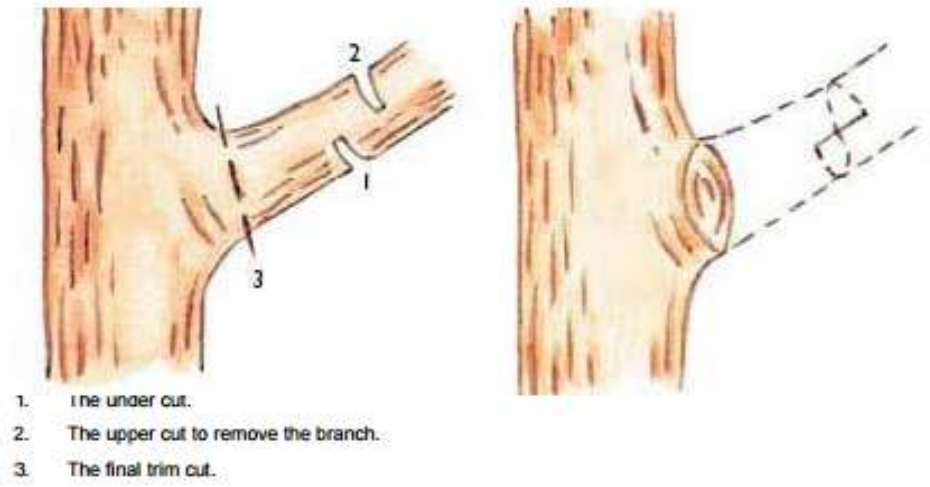


Figure 7-4 Three-cut method of removing branches.

7.2.6 Hollow-bearing tree removal procedure

Hollow-bearing trees occur within Management Zone 1 and 2. They are important habitat feature for a variety of native animals such as possums, gliders, birds and bats. Before clearing any hollow-bearing trees, it is important to consider if animals are present. The following procedure (Figure 7-5) is a guide to give animals an opportunity to escape a hollow-bearing tree prior to it being removed.

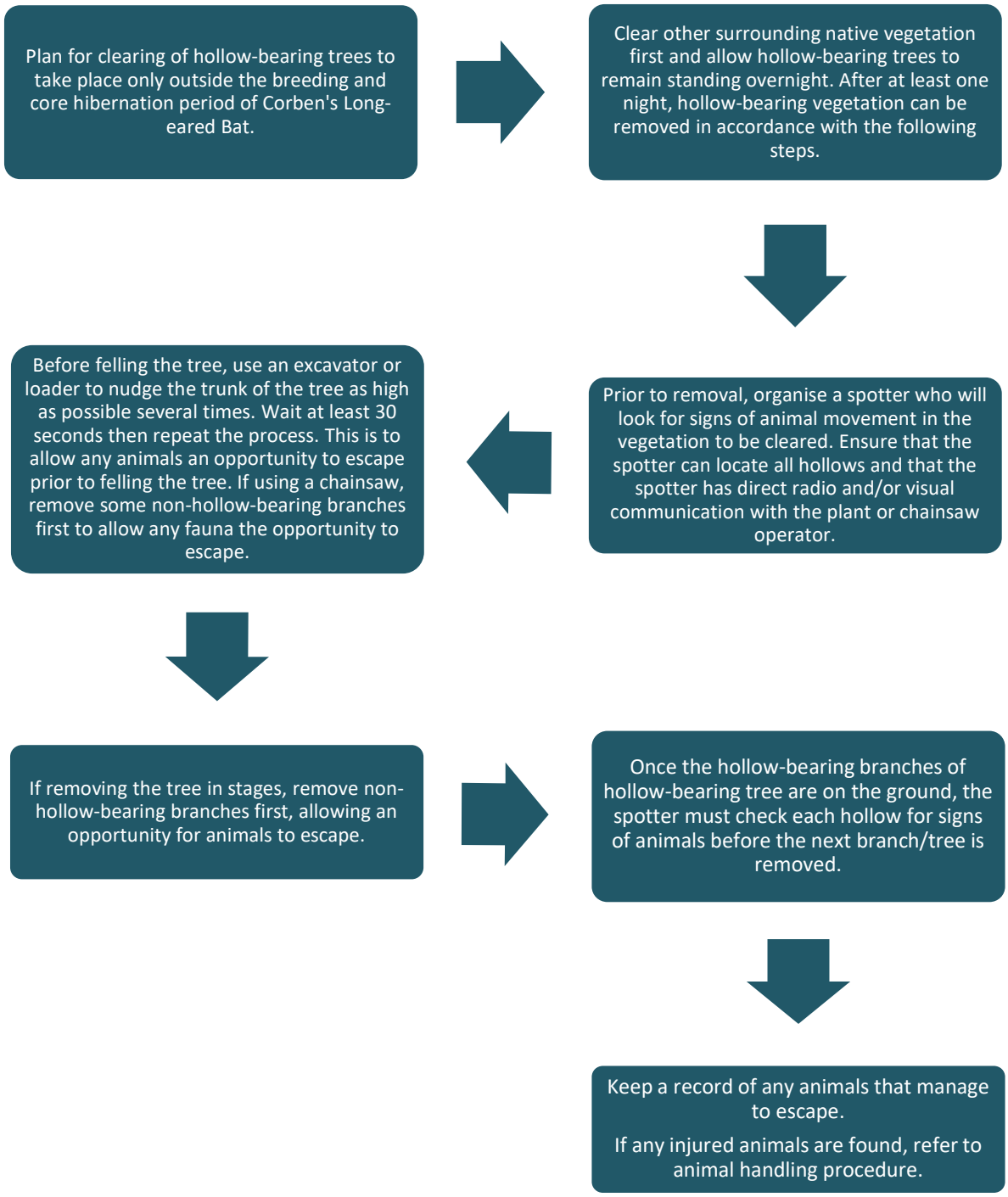


Figure 7-5 Hollow bearing tree removal procedure.

7.2.7 Removal of trees outside the approved clearing limits

The approved clearing limit is the line between the vegetation to be removed and the vegetation to be retained. It will be shown on all design plans as required. Some construction activities will require tree removal or trimming that has not been included in the design.

Where additional impacts to trees are required, the following process will be followed:

1. The Site Manager will notify the HSEQ Manager of the location and need for the tree impact via the ground disturbance permit process
2. The HSEQ Manager will assess that the tree (or other vegetation type) is not heritage listed, a habitat tree, nominated for retention or protected under relevant legislation and is legally able to be removed and/or trimmed. Alternatives to removing the tree will also be investigated at this stage.
3. The HSEQ Manager will consult a heritage specialist if heritage significance is suspected.
4. The Supervisor will await written confirmation from the HSEQ Manager prior to restarting works around the tree(s).

7.3 RE-USE OF RESOURCES

7.3.1 Re-use of Coarse Woody Debris (CWD)

Felled timber from Management Zones 1 and 2 greater than 200 mm and less than 600 mm in diameter will be used as CWD for habitat enhancement and to maximise the salvage of resources within the disturbance area for beneficial reuse. CWD can be used to enhance habitat values in existing vegetation and rehabilitated areas including derived native grassland (either in offset areas or areas adjoining impacted areas). CWD can provide:

- Habitat for micro-invertebrates.
- Habitat for macro-invertebrates.
- Habitat for vertebrates using fallen timber for shelter, e.g. skinks, geckoes, dunnarts.
- Habitat for vertebrates using fallen timber for foraging, e.g. treecreepers, robins.
- A source of nutrients for native vegetation.
- Increased habitat complexity.

CWD will be placed within Management Zones 3 and 4 shown in Figure 6-1 as discrete logs rather than in piles to reduce fire risk and potential for use as shelter by feral animals such as foxes and rabbits. CWD will be placed at discrete intervals at densities to ensure that the CWD Benchmark for the receiving PCT is not exceeded. For PCT 266 (White Box grassy woodland) and PCT 277 (Blakely's Red Gum – Yellow Box grassy tall woodland), this benchmark is listed as 49 m per 1000 m^2. That is, in any 50 x 20 m plot, the total linear length of CWD greater than 10 cm in diameter will not exceed 49 m in total. The density of CWD must take into account existing fallen timber. Removal, transportation, and placement of CWD will be carried out in a manner that minimises disturbance to native vegetation, including the canopy, trees, shrubs, standing dead timber, fallen timber, and groundcover, as well as topsoil.

Felled timber greater than 600 mm in diameter (primarily tree trunks) will be used as CWD where practicable or left on site where it is too large to transport.

Felled timber between 10 and 200 mm in diameter will be chipped and used for disturbed area rehabilitation.

7.3.2 Re-use of rocks

Rocks greater than 300 mm diameter at their widest point removed during construction will be retained and relocated to areas in either Management Zone 3 or 4 based on the advice of an Ecologist. Removal, transportation, and placement of rocks will be carried out in a manner that minimises disturbance to vegetation constraints, including the canopy, trees, shrubs, standing dead timber, fallen timber, and groundcover, as well as topsoil.

7.3.3 Re-use of soil resources

Topsoil will be salvaged where possible within the approved disturbance area and stockpiled for beneficial reuse in the enhancement or rehabilitation of the site, as per the Weed Management Procedure (section 7.5.1) and Rehabilitation Plan (separate to this report).

Stockpiles and storage of materials and machinery will avoid the dripline (extent of foliage cover) of any native tree.

7.4 THREATENED SPECIES FINDS PROCEDURE

The threatened species finds procedure will be implemented whenever a threatened species is unexpectedly found throughout construction and operation across Management Zones 1 and 2.

Any nests found in habitat features to be removed during construction will be inspected by an Ecologist to determine whether fauna are using the nest, and whether relocation of the fauna and the nest to an adjacent area is viable.

As a general principle, any native animals found with the construction area will be avoided. Fauna will only be handled by a qualified ecologist or wildlife carer with relevant skills and experience (e.g. snake handling), and only when absolutely necessary.

Should threatened fauna, or suspected threatened fauna, be encountered, the procedure outlined in Figure 7-6 will be followed. If capture is required by an Ecologist a procedure is provided below as guidance.

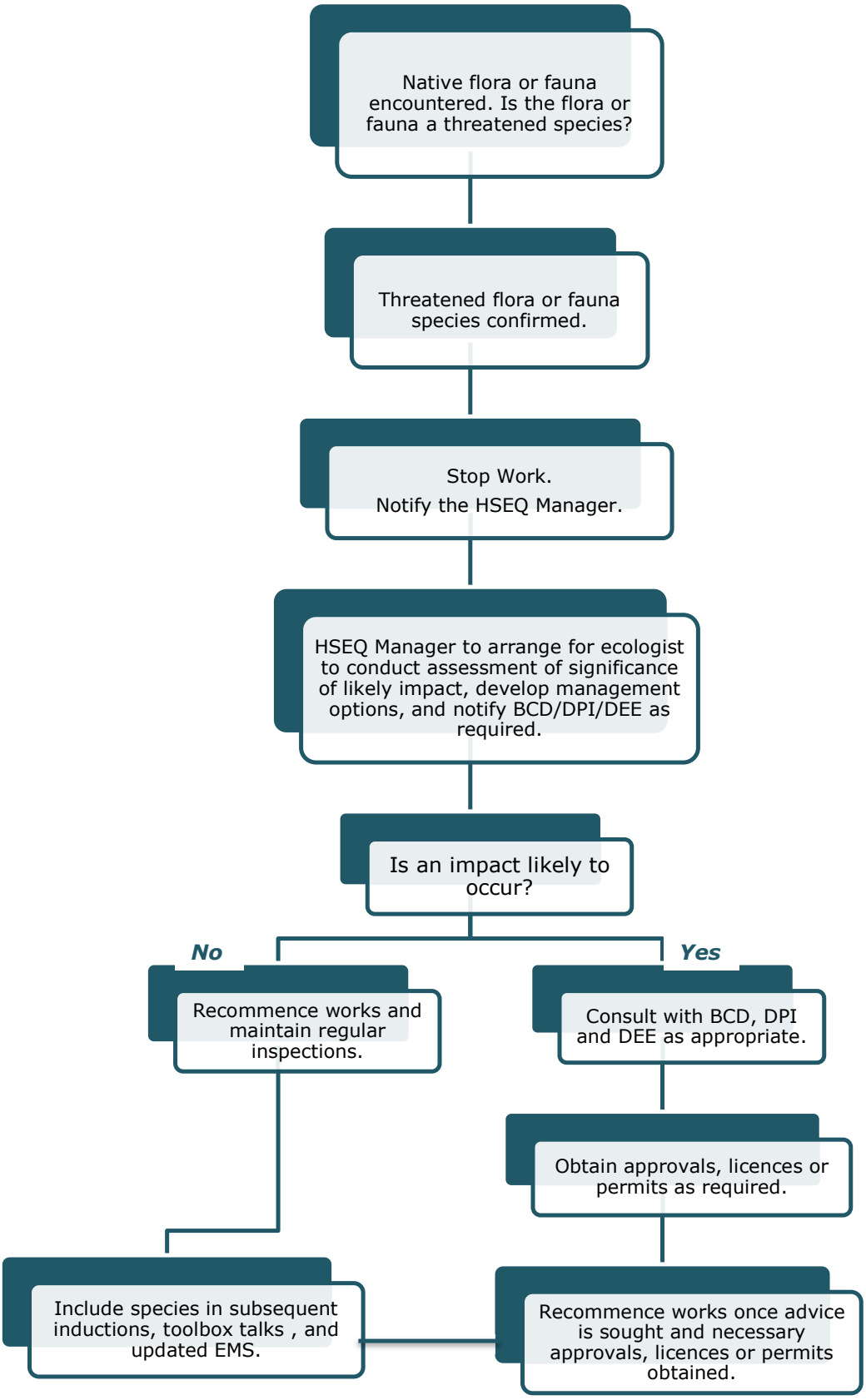


Figure 7-6 Threatened species finds procedure.

Animal relocation procedure (to be completed by Ecologist)

Step 1

Remove any threat to the animal that could cause or exacerbate an injury.

Step 2

Use appropriate equipment to capture the animal. This may include:

- Frogs: disposable gloves, disinfectant on hands and equipment between animals, disposable plastic bags (one per animal, one use only).
- Mammals: gloves, cloth bags/cotton pillow slips, up-to-date Australian Bat Lyssavirus vaccinations.

Step 3

Contain the animal to minimise stress. Gently place the animal in a holding box specifically designed for holding animals. Cotton pillowslips may be used to cover mammals, or mammals may be placed inside them. Boxes will be placed in a quiet, safe, dark location (not in a vehicle unless temperature is constantly monitored). Do not give the animal food or water.

Step 5

Call WIRES on 1300 556 686, who will provide advice on what to do until a trained WIRES rescuer can come to take the animal away. If you cannot contact WIRES, contact Wellington Veterinary Hospital on 02 6845 2872.

Step 6

Release fauna into similar habitats, as near as possible to their capture location. Day-active fauna will be released during the day of capture. Night-active fauna will be released at or after dusk. Arboreal (tree-dwelling) fauna will be slowly released from their bag onto the trunk of a tree, with bats and gliders placed on a tree with rough or peeling bark and hollows.

Step 7

Details of fauna captured and relocated will be recorded in a threatened species finds register (Appendix C.2). Any injury or death of a threatened species will be reported to the HSEQ Manager.

7.5 WEED AND PEST MANAGEMENT PROTOCOL

Weeds and pests will be controlled on site throughout construction and operation across all management zones. The Site Manager or HSEQ Manager will also initiate collaboration with adjoining landholders to control animal pests and weeds that may traverse property boundaries. These initial communications will inform collaborative pest and weed management measures during construction and operation.

7.5.1 Weed Management Procedure

Weeds in this BMP are defined as non-native flora species, and particularly refers to those listed in the plot data in Appendix B. Fifty-three species of weed were recorded in the project area. None of these species are listed on either the BS Act and/or are weeds of national significance. Other invasive weeds that were recorded include *Lycium ferocissimum* (African Boxthorn), listed as having a prohibition on dealings in Dubbo Regional LGA, and *Heliotropium* sp. (A Heliotrope), which was not identified to species level, but could be Blue Heliotrope *Heliotropium amplexicaule* which may not be bought, sold, carried, or released to the environment. Both are listed as priority weeds in the Central West Strategic Weed Management Plan.

African Boxthorn *Lycium ferocissimum*

African Boxthorn is an erect perennial shrub growing up to 5 m high, with woody, thorny growth, white flowers and orange-red berries. The effective, long-term control of this species generally requires the integration of a number of techniques, including mechanical removal, cultivation, and herbicide application. Control is more effective and economical if done when plants are young. Removal of roots is more effective when the soil is moist. Foliar spray is the most commonly used control method, and basal bark or cut stump treatments are appropriate in environmentally sensitive areas.

Blue Heliotrope *Heliotropium amplexicaule*

Blue Heliotrope is a hairy, summer-growing, prostrate perennial herb, 15 – 30 cm high and 30 – 200 cm in diameter. It has many hairy, branched stems radiating from a woody rootstock, a strong, slender taproot that can be very woody, alternate dull green leaves that are soft and tapered at both ends, and bluish-purple flowers with yellow centres. The effective control of this weed usually involves a combination of a number of control options, including pasture management, grazing management, cultivation, biological control, and chemical control.

Work for the Project has the potential to spread weeds through the movements of heavy machinery and light vehicles during construction, and the movements of light vehicles during operation.

Weeds will be controlled through:

- An adaptive management approach whereby management actions will be adjusted to optimise the groundcover growth addressing on-site observations as per the Groundcover Management Plan in Appendix A.
- For more intensive infestations of weeds, the use of selective herbicides may be warranted to prevent seed set and promote weed control. The advice of an ecologist and agronomist will be sought to advise on the control of weed infestations. 10% non-native groundcover is the target requiring corrective action.
- Any supplementary feeding of livestock will use treated or processed feed to prevent viable weed seeds being introduced to the site.

A detailed weed management procedure is provided below.

Weed inspection

During construction, the HSEQ Manager will do the following weed inspections:

- Survey weed distribution across the project site quarterly.
- Survey weed abundance in exclusion zones quarterly.
- Targeted weed inspections prior to clearing and grubbing in the affected area.
- Survey weed distribution and abundance where a previous weed infestation has been identified.

During operation, the HSEQ Manager will ensure the following occurs:

- Survey weed distribution across the project site quarterly, timed to identify weeds before they flower.
- Survey abundance in exclusion zones quarterly.
- Survey weed distribution and abundance particularly where a previous weed infestation has been identified.

Infestations of invasive weeds will be mapped with GPS, including noting the species and degree of infestation, and capturing an image for monitoring purposes. Data collected from inspections will be used as a basis for implementing seasonal targeted weed control measures.

Weed treatment

During construction, weed control will be based on data collected from survey and inspections of the project site and of exclusion zones. Targeted weed control measures for any recorded weed outbreaks will be implemented within a year of discovery. The aims of construction weed treatment include:

- Apply weed treatments to all mapped invasive weed infestation areas.
- Annual reduction in invasive weed distribution by at least 50% in mapped infestation areas from previous year's inspections.

During operation, weed control will be based on data collected from the quarterly inspections of the project site and of exclusion zones. Targeted weed control measures for any recorded weed outbreaks will be implemented within a year of discovery, with priority given to African Boxthorn and any listed priority weeds. The aims of operational weed treatment include:

- Annual reduction in invasive weed distribution by at least 50% in mapped infestation areas from previous year's inspections.
- A general reduction in the abundance of weeds in exclusion zones during the operation period as evidenced by quarterly inspections.
- New invasive weeds detected in project area are controlled during operation.
- African Boxthorn and listed priority weeds eradicated from project area within 3 years of detection.

A general guide to weed control and management is presented above. More detailed information, including herbicide types and application rates, can be sought from the Project Ecologist or from the WeedWise website (http://weeds.dpi.nsw.gov.au/). Consultation with Local Land Services (LLS) will also be undertaken to ensure a coordinated approach with other landholders in the area.

The introduction and spread of weeds via vehicles and plant will be controlled by the Vehicle Hygiene Procedure provided in section 7.6.

Herbicide application record

Herbicide application will only be carried out by authorised personnel (i.e. ChemCert accreditation – AQF 3) in accordance with SafeWork requirements.

Herbicides will only be applied in accordance with the Safety Data Sheet (SDS) for that product.

A Herbicide Application Record (Appendix C.3) will be completed and public notifications made in accordance with relevant legislation, where herbicides are to be used in areas that could be accessed by members of the public.

Only herbicides registered for use near water may be used near any waterways.

Follow-up inspection

The HSEQ Manager will ensure that a follow-up inspection is undertaken of identified weed infestation sites to ensure treatment was successful.

Weed disposal

Where invasive weed areas are disturbed by construction activities, weeds and topsoil that may contain weed propagules will be removed and disposed of appropriately.

Where weeds cannot be effectively destroyed prior to topsoil stripping, weed contaminated topsoil will be isolated and either encapsulated by deep burying, or disposed of at an approved offsite licensed facility as directed by the HSEQ Manager.

Ongoing management & monitoring

Monitoring of weed infestations will occur as part of the routine environmental inspections throughout construction and operation to determine effectiveness of management controls. The presence of any weeds and the necessary management actions will be noted on the Environmental Inspection Checklist (to be included in the CEMP).

7.5.2 Animal Pest Management Procedure

No animal pest species requiring specific control measures were recorded during site surveys. However, some may be present at the site. Monitoring of animal pests and signs of their activity will occur as part of routine inspections during construction, and operation. A suitably qualified person will traverse the site to identify if vertebrate pests are present, including the following species as a minimum:

- European Rabbit
- European Hare
- Red Fox
- Feral Cat

The following data would be recorded and used to determine the need for pest animal control measures:

- Number and location of any tracks, traces or sightings
- Whether the level of activity is negligible, minimal, moderate or high.

If any are identified that are required to be controlled, the appropriate management actions listed at https://www.dpi.nsw.gov.au/biosecurity/vertebrate-pests/pest-animals-in-nsw will be implemented, and noted on the Environmental Inspection Checklist.

Pesticide application record

As with herbicide applications, pesticides will only be administered by authorised personnel with ChemCert accreditation – AQF 3 and in accordance label instructions. A Pesticide Application Record (Appendix C.4) will be completed and public notifications made in accordance with relevant legislation, where pesticides are to be used in areas that could be accessed by members of the public. Only pesticides registered for use near water may be used near any waterways.

7.6 VEHICLE HYGIENE PROCEDURE

7.6.1 Vehicle, plant & equipment movement

Vehicle hygiene procedures will be implemented for any vehicle that enters the development site during construction and operation which is likely to come into contact with the natural ground or weeds. The procedures include:

- Inspection upon arrivals in laydown area.
- Removal of dirt and/or plant matter from newly arrived vehicles at a designated washdown area by trained site personnel.

- Washing and inspection prior to vehicles being given the all clear to enter indirect disturbance areas.
- Inspection and washing after leaving indirect disturbance areas and prior to leaving the site.
- Inspections and washdowns will be recorded on a Vehicle Hygiene Register. An example is shown in Appendix C.5.

Any water from the washdown area will be managed in accordance with the SWMP.

7.7 VEGETATION CONSTRAINT MANAGEMENT

7.7.1 Management areas

The exclusion zones (Management Zones 3 and 4) contain vegetation constraints which are outside the approved disturbance areas (**Error! Reference source not found.**). This vegetation includes remnant native Box-Gum Woodland, which is listed as an Endangered Ecological Community under the NSW *Biodiversity Conservation Act 2016* and the federal *Environment Protection and Biodiversity Conservation Act 1999.* These areas will be managed throughout construction and operation to protect them from any impacts from the project.

The aim of vegetation constraint management is for the condition of this vegetation to be maintained or improved during the lifetime of the project (baseline conditions in Appendix B).

The following targets have been established:

- Maintain or improve the condition of vegetation in exclusion zones throughout construction and operation of the project.
- Quarterly surveys of weed abundance in exclusion zones, and use as basis for implementing targeted weed control measures in each zone throughout construction and operation.
- A general reduction in weed abundance in exclusion zones throughout the operational period.

Figure 7-7 Vegetation constraints in exclusion zones .

7.7.2 Vegetation condition

In order to monitor changes in the vegetation condition of exclusion zones, the baseline vegetation condition has been quantified using Biometric plots prior to construction commencing. Plots will be conducted immediately following construction to determine an updated condition assessment at the commencement of the operation phases. The exclusion zones will be included in the quarterly weed monitoring during construction to manage weed ingress during the construction phase.

An ecologist will conduct Biometric assessments within Zones 3 and 4 every five years throughout operation. If a noticeable decline in condition is recorded, this will trigger the need for an assessment to determine the appropriate management response.

7.7.3 Management actions

Vegetation Constraints

Exclusion zones will be demarcated prior to clearing in accordance with the Vegetation Clearance Procedure (Section 7.2.4), including a 40 m exclusion zone around riparian vegetation along Wuuluman Creek, and at no closer than the dripline around terrestrial exclusion zones. These zones will be demarcated using protective fencing to ensure that vegetation is not impacted accidentally, which may consist of star pickets at 4 to 5 m intervals with a strand of plain wire and flagging tape. If stock are to be on site during operation, then stock-proof exclusion fencing will be required. The location of exclusion areas will be communicated to site staff (including equipment operators) through site inductions, toolbox talks and targeted training prior to works taking place in the vicinity.

Indirect impacts on vegetation constraints will be reduced by:

- Avoiding vehicle or plant access within exclusion zones.
- Where night works cannot be avoided, work must not take place within 100 m of exclusion zones.
- Directing lights away from exclusion zones.
- Noise-emitting plant will be oriented so that noise will be directed away from exclusion zones.
- When not in use, vehicles and plant will not be left idling near exclusion zones, but will be switched off whenever possible.

Weed management

There is a risk of weed encroachment during construction and operation from infested areas into exclusion zones, and potentially from exclusion zones into disturbed areas following groundcover rehabilitation. To manage these risks, weed management as described in Section 7.5.1 will include monitoring exclusion zones and implementing weed control measures as required throughout construction and operation.

Weeds in the exclusion zones will be controlled in accordance with the Weed Management Procedure (Section 7.5.1).

Response to decline in condition

If a quantitative assessment of vegetation constraint condition determines the need for an additional management response, actions may include but are not limited to:

- Erect permanent fencing to exclude stock and human/vehicle access.
- Targeted weed or pest control.

- Groundcover rehabilitation and shrub/tree plantings for habitat enhancement.
- Ecological burns in consultation with appropriate authorities to reduce fuel loads or control over-dominant groundcover species, in accordance with relevant fire regime for the vegetation community.

8 PERFORMANCE CRITERIA, TRIGGERS AND RESPONSES

Table 8-1 below provides a summary of the key performance criteria and triggers for corrective actions. The actions to be implemented should the trigger arise are also described. This combined with the monitoring described in Section 10.3 forms the Trigger, Action Response Plan (TARP) for the Project. The monitoring triggers have been used to inform the triggers for protocols and procedures that require monitoring in Table 8-1.

Table 8-1 Summary of performance criteria, triggers for actions and responses for environmental management protocols.

Management protocol (applicable zones)	Performance criteria	Risk of not achieving performance criteria	Trigger for additional actions	Action proposed
Ground disturbance protocol **(Zones 1 and 2)**	• Ground disturbance permit process implemented prior to construction. • Remediation activities completed and conditions of the permit met. • Final disturbed area recorded.	Low – Standard construction procedure that contractor will be familiar with.	• Permit not obtained. • Remediation activities not completed. • Final disturbance area not recorded.	Escalate matters above the HSEQ Manager to ensure compliance with this BMP.
Vegetation clearance procedure **(Zones 1 and 2)**	• No more than 134.4 ha of native vegetation will be removed in total (comprising 0.09 ha of PCT 266 moderate to good condition, 134.04 ha of PCT 266 low condition, and 0.27 ha of PCT 277 low condition). • Pre-clearance surveys conducted. • No impacts on exclusion zones.	Low – Clearing area will be clearly demarcated prior to clearing commencing. Pre-clearance requirements are detailed in this BMP. Exclusion areas will be clearly identified.	• Pre-clearance surveys not completed. • Clearing outside of approved clearing areas. • Clearing of trees not identified for removal.	Clearing works will not to commence until required surveys completed. If clearing occurs outside of marked clearing areas or of marked trees, works will cease immediately and advice sought from BCD as to whether further assessment/approval requirements are applicable.

Management protocol (applicable zones)	Performance criteria	Risk of not achieving performance criteria	Trigger for additional actions	Action proposed
Re-use of resources protocol **(All Management Zones)**	• Coarse Woody Debris, Rocks and Topsoil (as described in Section 7.3 removed during construction are retained. • Retained resources are relocated appropriately into Management Zones 3 and 4.	Low – Standard construction practice.	• Resources stockpiled and not relocated.	Resources to be relocated immediately under the Guidance of an Ecologist to ensure minimal damage to Zones 3 and 4.
Unplanned Threatened Species Finds Procedure **(Zones 1 and 2)**	• Threatened Species Finds Procedure followed if threatened species found. • No harm to threatened species.	Moderate – Not all personnel on site will have the skill to be able to identify threatened species.	• Threatened species found to be present (living or dead) that was not previously identified.	Prepare and implement an education program for personnel working on site to increase awareness of threatened species that may be encountered.

Management protocol (applicable zones)	Performance criteria	Risk of not achieving performance criteria	Trigger for additional actions	Action proposed
Weed and Pest Management Protocol **(All zones)**	• Annual reduction in invasive weed distribution by at least 50% in mapped infestation areas from previous year's inspections. • A general reduction in the abundance of weeds in exclusion zones during the operation period as evidenced by quarterly inspections. • New invasive weeds detected in project area are controlled during operation. • African Boxthorn and listed priority weeds eradicated from project area within 3 years of detection. • Pest animal populations maintained at a low level of activity.	Low to moderate – Weed abundance is highly dependent on seasonal conditions and the amount of seed stored within the seed bank. Similarly, Pest animal abundance is seasonally variable and influenced by external factors such as management by adjacent landholders. However, weeds and pests are manageable with appropriate treatment applied in a coordinated approach by trained personnel.	• 10% non-native ground cover. • Presence of priority weeds detected during quarterly or annual monitoring. • New weed species on site detected during quarterly or annual monitoring. • Moderate or High levels of observed pest animal activity.	Eliminate priority weed species as soon as practicable in accordance with recommended control methods and timing. Increase targeted weed or pest animal control measures (Section 7.5). Seek additional advice from Local Land Services and adhere to recommendations.
Vehicle Hygiene Procedure	• Vehicle hygiene procedures implemented for all vehicles.	Low – Standard site procedure.	• Vehicle hygiene procedures not being implemented.	To be raised with HSQE management on site. Ensure it is included in site inductions, toolbox talks etc and that staff responsible are implementing the procedure.

Management protocol (applicable zones)	Performance criteria	Risk of not achieving performance criteria	Trigger for additional actions	Action proposed
Vegetation Constraint Management	• Maintain or improve the condition of vegetation in exclusion zones throughout construction and operation of the project. • Quarterly surveys of weed abundance in exclusion zones and use as basis for implementing targeted weed control measures in each zone throughout construction and operation. • A general reduction in weed abundance in exclusion zones throughout the operational period.	Moderate – Condition of vegetation in general is highly dependent on climatic conditions and is variable from year to year. Active management measures can be implemented to improve the condition of vegetation in exclusion zones with a reasonable degree of confidence of success.	• Decline in exclusion area condition as evidenced by monitoring. • Weed abundance not decreasing within exclusion zones. • Moderate to high pest animal activity recorded in exclusion zones.	Investigation into reason for decline by suitable qualified person(s). Recommendations following investigation to be followed which may include but not be limited to: • Erect permanent fencing to exclude stock and human/vehicle access. • Targeted weed or pest control. • Groundcover rehabilitation and shrub/tree plantings for habitat enhancement. • Ecological burns in consultation with appropriate authorities to reduce fuel loads or control over-dominant groundcover species, in accordance with relevant fire regime for the vegetation community.

Groundcover Management Plan	• Rehabilitate all disturbed areas not required for the operation of the solar farm. • Revegetation of disturbed areas and areas under panels will have 70% ground cover over 90% of disturbed areas and areas under panels within 12 months of establishment and maintained throughout operation until contract completion. • Failed vegetation patches greater than 5 m2 will be revegetated. • Ground cover will achieve seed set across at least 80% of area. • Native species will be used for revegetation wherever practicable in areas identified as native grassland as well as exotic vegetation. • Failed vegetation patches greater than 5 m2 will be revegetated. • Scours greater than 50 mm deep and 100 m long will be revegetated. • Targeted weed control measures will be implemented if weed cover exceeds 10% of	Moderate – Condition of groundcover will be dependent on climatic conditions and will also be affected by other management measures such as weed treatment. Success of sowing and seed set will also be dependent on climatic conditions and other variables.	• Groundcover below 70% cover of 90% of disturbed areas. • Failed vegetation patches greater than 5 m2. • Groundcover seed set below 80% of area after 3 months. • Scours greater than 50 millimetres (mm) deep and 100 m long. • Grassland weed cover greater than 10%. • Presence of priority weeds.	Remove grazing stock. Bare patches greater than 5 m2 will be recultivated and revegetated. Additional watering of seeded areas. Weeds controlled where required. Treat soil conditions such as compaction, frequency of traffic movements, low seedbank storage, lack of soil moisture and nutrient imbalance. Seek additional advice from an agronomist if seed set is not occurring.

Management protocol (applicable zones)	Performance criteria	Risk of not achieving performance criteria	Trigger for additional actions	Action proposed
	groundcover or if priority weeds are detected. • Ground cover will achieve seed set across at least 80% of area. • Native species will be used for revegetation. • Establish perennial native pasture under solar panels prior to completion of construction.			

9 BIODIVERSITY MITIGATION AND MANAGEMENT MEASURES

A range of mitigation requirements and control measures are identified in the Modified Approval. Specific measures to address impacts to biodiversity are outlined in Table 9-1. The measures have been listed to cover broad activities, and as such there may be some repetition of mitigation measures.

Table 9-1 Biodiversity management and mitigation measures.

<table>
<tr><th>Measure / Requirement</th><th>Where addressed</th><th>Work stage</th><th>Responsibility</th><th>Reference</th></tr>
<tr><td colspan="5">BIODIVERSITY CREDITS for WELLINGTON SOLAR FARM</td></tr>
<tr><td>Within two years of commencing development under this consent, unless otherwise agreed by the Secretary, the Applicant must retire biodiversity credits of a number and class specified in Table 1 below to the satisfaction of BCD.
The retirement of these credits must be carried out in accordance with the NSW Biodiversity Offsets Policy for Major Projects 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) providing supplementary measures.
Table 1: Ecosystem Credit Requirements
<table>
<tr><th>Vegetation Community</th><th>PCT ID</th><th>Credits Required</th></tr>
<tr><td>White Box grassy woodland in the upper slopes subregion of the NSW South Western Slopes Bioregion</td><td>266</td><td>3</td></tr>
</table>
Note: Following repeal of the Threatened Species Conservation Act 1995 of 25 August 2017, credits created under that Act are to be taken to be “biodiversity credits” under the Biodiversity Conservation Act 2016 by virtue of clause 22 of the Biodiversity Conservation (Savings and Transitional) Regulation 2017.</td><td>Retirement of 3 biodiversity credits from biodiversity register.</td><td>Pre-construction
Construction</td><td>Lightsource BP</td><td>Schedule 3
CoC 10</td></tr>
<tr><td>BIODIVERSTIY CREDITS FOR WELLINGTON SUBSTATION</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Within two years of commencing development under this consent, unless otherwise agreed by the Secretary, the Applicant must retire biodiversity credits of</td><td>Retirement of 1 ecosystem credit and</td><td>Pre-construction
Construction</td><td>Lightsource BP</td><td>Schedule 3
CoC 10</td></tr>
</table>

<table>
<tr><th>Measure / Requirement</th><th>Where addressed</th><th>Work stage</th><th>Responsibility</th><th>Reference</th></tr>
<tr><td>a number and class specified in Table 1 and Table 2 below to the satisfaction of BCD.
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 BC Act;
(b) making payments into an offset fund that has been developed by the NSW Government; or
(c) providing supplementary measures.

Table 1: Ecosystem Credit Requirements
<table><tr><th>PCT ID</th><th>Vegetation Community</th><th>Credits Required under the TSC Act</th></tr><tr><td>266</td><td>White Box grassy woodland in the upper slopes’ subregion of the NSW South Western Slopes Bioregion 266 3 1</td><td>1</td></tr></table>
Table 2: Species Credit Requirements
<table><tr><th>Species Credit Species</th><th>Credits Required under the BC Act</th></tr><tr><td>Pink-tailed Legless Lizard (Apraisia parapulchella)</td><td>2</td></tr></table>
Note: Following repeal of the TSC Act on 25 August 2017, credits created under that Act are taken to be “biodiversity credits” under the BC Act by virtue of clause 22 of the Biodiversity Conservation (Savings and Transitional) Regulation 2017.</td><td>2 species credits from biodiversity register.</td><td></td><td></td><td></td></tr>
<tr><td>If the credit profile of the final infrastructure layout cannot be reduced to zero, retirement of the biodiversity credits from the biodiversity register established under Part 7A of the TSC Act would be undertaken.</td><td>Retirement of 3 biodiversity credits from biodiversity register.</td><td>Pre-construction
Construction</td><td>Lightsource BP</td><td>Submissions Report</td></tr>
<tr><td colspan="3">MANAGEMENT PLANS</td><td colspan="2"></td></tr>
</table>

Measure / Requirement	Where addressed	Work stage	Responsibility	Reference
Prior to the commencement of 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: a) include a description of the measures that would be implemented for: ▪ protecting vegetation and fauna habitat outside the approved disturbance areas; ▪ 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 b) include a seasonally based program to monitor and report on the effectiveness of these measures; and c) include details of who would be responsible for monitoring, reviewing and implementing the plan, and timeframes for completion of actions. Following the Secretary's approval, the Applicant must implement the Biodiversity Management Plan. *Note: If the biodiversity credits are retired via a Biobanking Stewardship Agreement, then the Biodiversity Management Plan does not need to include any of the matters that are covered under the Biobanking Stewardship Agreement.*	This report Section 7.2.4 Section 5 Section 10.3 Section 8, Section 10.1	Pre-construction	Lightsource BP	Schedule 3 CoC 11
Preparation of a Flora and Fauna Management Plan (FFMP) that would incorporate protocols for: • Protection of native vegetation to be retained • Best practice removal and disposal of vegetation • Staged removal of hollow-bearing trees and other habitat features such as fallen logs with attendance by an ecologist • Weed management • Unexpected threatened species finds • Rehabilitation of disturbed areas The FFMP would consider the potential to link and enhance remnant patches on the site. The FFMP would form part of the Wellington Solar Farm Construction Environmental Management Plan (CEMP).	This report Section 7.1, Section 7.2, Section 7.4, Section 7.5, Section 7.7, Appendix A	Pre-construction	Lightsource BP	Submissions Report
Weed, hygiene and pest management protocols will be prepared and implemented as part of the Flora and Fauna Management Plan for the proposal.	Section 7.5 and 7.6 of this report	Pre-construction Construction	Lightsource BP	Submissions Report

Measure / Requirement	Where addressed	Work stage	Responsibility	Reference
		Operation		
A Rehabilitation Plan would be prepared to ensure the array site is returned to its pre-solar farmland capability. The plan would be developed with reference to base line soil testing and with input from an agronomist to ensure the site is left stabilised, under a cover crop or other suitable ground cover. The plan would reference: • Australian Soil and Land Survey Handbook (CSIRO, 2009). • Guidelines for Surveying Soil and Land Resources (CSIRO, 2008). The land and soil capability assessment scheme: second approximation (OEH, 2012).	Rehabilitation Plan (separate to this report)	Pre-construction Construction Operation	Lightsource BP	Submissions Report
A Groundcover Management Plan would be developed in consultation with an agronomist, and taking account of soil survey results to ensure perennial grass cover is established across the site as soon as practicable after construction and maintained throughout the operation phase. The plan would cover: • Soil restoration and preparation requirements. • Species election. • Soil preparation. • Establishment techniques. • Maintenance requirements. • Perennial groundcover targets, indicators, condition monitoring, reporting and evaluation arrangements – i.e. live grass cover would be maintained at or above 70% at all times to protect soils, landscape function and water quality. Any grazing stock would be removed from the site when cover falls below this level. Grass cover would be monitored on a fortnightly basis using an accepted methodology. • Contingency measures to respond to declining soil or groundcover condition. • Identification of baseline conditions for rehabilitation following decommissioning.	Appendix A of this report	Pre-construction Construction Operation	Lightsource BP	Submissions Report
A Groundcover Management Plan would be developed and implemented to ensure an appropriate perennial ground cover is established and maintained beneath the arrays during operation of the solar farm. This will require consideration of existing groundcover and may require expert input and trials to achieve the objective.	Appendix A of this report	Pre-construction Construction Operation	Lightsource BP	Submissions Report

Measure / Requirement	Where addressed	Work stage	Responsibility	Reference
The Construction Environmental Management Plan will include measures to avoid noise encroachment on adjacent habitats such as avoiding night works as much as possible.	CEMP (separate to this report) Section 7.7	Pre-construction	Lightsource BP	Submissions Report
CONSTRUCTION AND OPERATION				
Hollow-bearing trees within the development site would not be cleared between June and January, to avoid the breeding and core hibernation period for Corben's Long-eared Bat. If clearing outside this period cannot be achieved, pre-clearing surveys would be undertaken to ensure these species do not occur.	Section 7.2.6 Section 7.2.2	Construction	Lightsource BP	Submissions Report
Stockpiling materials and equipment and parking vehicles will be avoided within the dripline (extent of foliage cover) of any native tree.	Section 5 Stockpile procedure	Pre-construction Construction	Lightsource BP	Submissions Report
Prior to the commencement of work, a physical vegetation clearing boundary at the approved clearing limit is to be clearly demarcated and implemented. The delineation of such a boundary may include the use of temporary fencing, flagging tape, para-webbing or similar.	Detailed design drawings Section 7.1 and Section 7.2	Pre-construction Construction	Lightsource BP	Submissions Report
A riparian buffer zone of 40 m along Wuuluman Creek would be clearly delineated prior to works commencing. Works would be avoided within the riparian buffer zone.	Constraints mapping Detailed design drawings Section 7.2.4	Pre-construction Construction	Lightsource BP	Submissions Report
Existing native riparian vegetation is retained to the greatest extent possible in an undamaged and unaltered condition.	Detailed design drawings Section 2.2, Section 5, Section 7.2	Pre-construction Construction	Lightsource BP	Submissions Report
Works occurring around the Wuuluman Creek should be in accordance with the DPI Fisheries Policy and Guideline document: *Policies and Guidelines for Fish Habitat Conservation and Management*.	Section 5, SWMP	Pre-construction Construction	Lightsource BP	Submissions Report

Measure / Requirement	Where addressed	Work stage	Responsibility	Reference
Where possible, landscape plantings will be comprised of local indigenous species with the objective of increasing the diversity of the existing vegetation. Planting locations would be designed to improve the connectivity between patches in the landscape where consistent with landscaping outcomes.	Landscaping Plan (separate to this report)	Construction	Lightsource BP	Submissions Report
Carry out refuelling of plant and equipment, chemical storage and decanting off site or at least 50m away from farm dams in impervious bunds. Ensure that dry and wet spill kits are readily available.	SWMP Section 5.1	Construction Operation	Lightsource BP	Submissions Report
Avoid night works. Direct lights away from vegetation.	Section 5.1 EMS Section 7.7	Construction Operation	Lightsource BP	Submissions Report
Awareness training during site inductions regarding enforcing site speed limits. Site speed limits to be enforced.	EMS Section 5.1	Pre-construction Construction Operation	Lightsource BP	Submissions Report
Following any construction or upgrading on site, the Applicant must: a) Restore the ground cover of the site as soon as practicable, but within 12 months of completing any construction or upgrades, using suitable species; b) Restore and maintain the ground cover with appropriate perennial species; c) Manage weeds within this ground cover.	Appendix A Section 5.5	Construction Operation	Lightsource BP	Schedule 3 CoC 9

10 COMPLIANCE MANAGEMENT

10.1 ROLES AND RESPONSIBILITIES

The Lightsource BP Project Team's organisational structure and overall roles and responsibilities are outlined in the EMS.

The Environmental Management Team includes the following roles and responsibilities:

Table 10-1 Construction team roles and responsibilities (from the EMS).

Role	Responsibility	Authority
EPC Project Manager	• Ensure resources are made available to enable works to comply with EMS and other environmental management requirements. • Ensure that all procedures are followed adequately. • Ensure appropriate approvals and licences are held. • Ensure all staff and contractors are aware of environmental compliance requirements and environmental controls. • Responsible for reporting pollution incidents.	• Order Stop-work for an activity that may cause material or environmental harm. • Release of environmental hold points, if required.
EPC Health Safety and Environment and Quality Manager (HSEQ)	• Maintaining all environmental management documents. • Identifying where environmental measures are not meeting the targets and where improvements can be achieved. • Monitoring and reporting environmental compliance. • Reviewing Project environmental documents. • Reporting of pollution incidents.	• Recommend Stop-work for an activity that may cause material or environmental harm. • Release of environmental hold points, if required.
EPC Site Manager	• Responsible for the implementation of environmental management plans. • Responsible for the induction of staff and contractors. • Responsible for all aspects of the worksite including the coordination and management of all staff and contractors. • Undertake routine environmental site inspection. • Maintaining environmental records. • Receiving plant, materials and chemicals and ensuring all items are appropriately stored.	• Order Stop-work if any items in the CEMP are in danger of breach. • Approve and accept waste disposal methods requested by staff or contractors. • Approve minor changes to environmental sub-plans, including Erosion and Sediment Control Plans (ESCP).

Role	Responsibility	Authority
	• Responsible for addressing corrective actions arising from Environmental Inspections.	
All Lightsource BP staff: • **LSBP Project Manager/Site Superintendent** • **LSBP Steering Committee** • **LSBP Technical Team**	• Ensure contractors are working in accordance with the requirements of the EMS, as required under the EPC contract. • Undertake site visits during construction to monitor compliance with EMS requirements. • Report and raise any issues that arise that may have an environmental impact. • Report and raise the discovery of any artefacts, Aboriginal relics or places and cease work until the matter has been addressed.	• Report any issues that may have the potential to cause material or environmental harm. • Report any incidents or near-misses that may impact on the environment or breach conditions set-out in this EMS.

Further details regarding specific responsibilities for the implementation of environmental controls are detailed in the EMS.

10.2 TRAINING

All employees, contractors and utility staff working on site will undergo site induction training relating to biodiversity issues. Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in biodiversity management, including vegetation clearing which will include information on the outcomes of pre-clearing surveys, constraints mapping, and digitally-captured clearance boundaries (Section 7.2). Targeted training would address the requirements of the environmental management measures (Section 5), legislative requirements (Section 2.1), and all conditions and commitments relating to biodiversity (Section 2.3, Section 2.4). Further details regarding staff induction and training are outlined in the EMS.

10.3 MONITORING AND INSPECTION

Regular monitoring and inspections will be undertaken during construction and operation. The tables below include monitoring and inspection requirements during construction (Table 10-2) and operation (Table 10-3), with the trigger and response columns contributing to the TARP for the project

Table 10-2 Monitoring and inspection requirements during construction and operation.

Requirement	Timing	Responsibility	Trigger for additional actions	Response proposed
Pre-clearing inspections including checking for roosting/breeding habitat, recording tree hollows, marking habitat trees, demarcating area to be cleared, and targeted bat surveys between June and January, and dam/waterway inspections.	Before vegetation clearing	Ecologist	Pre-clearing surveys not carried out or not in all areas required	Supplementary surveys undertaken

Requirement	Timing	Responsibility	Trigger for additional actions	Response proposed
Progressive monitoring of the cumulative amount of vegetation cleared (7.2.1), including inspecting exclusion zones to confirm that they have not been disturbed (7.2.4). Prior to undertaking any vegetation clearing, this value will be compared to the total approved area to be cleared.	Before and after all vegetation clearing	HSEQ Manager	Clearing outside approved clearing limits	HSEQ Manager to manage incident as required by EMS and relevant legislation/ approvals
Monitoring of high disturbance areas, groundcover, exclusion zones and boundary fence lines, including:	Monthly during construction	Lightsource BP	Damaged exclusion fencing or signage Storage or infrastructure underneath tree driplines.	Exclusion fencing/ signage replaced
• Details of resource re-use placement	Recorded as it occurs	Lightsource BP	Resources stacked, not distributed	Resources to be moved under direction of an Ecologist
• Inspection of waterways.	Monthly during construction	Lightsource BP	Evidence of siltation or pollution	Rehabilitate waterway and review spill procedures.
A review of any fauna killed or injured on site. Threatened fauna mortalities will be reported to BCD and deaths of any birds from contact with fences or solar panels will be recorded. Fauna relocations due to vegetation clearing will be recorded.	Monthly during construction	Lightsource BP	Presence of injured or deceased fauna	Report where necessary, record details of incident.
Weed and pest survey and mapping across project site (section 7.5).	Quarterly during construction. Annually during operation • October for weeds • August for feral animals.	Lightsource BP	10% non native ground cover. Presence of priority weeds. New weed species on site.	Implement targeted weed and pest control measures (Section 7.5).
Quantitative assessment of condition of vegetation constraints	Immediately following completion of	Lightsource BP	Vegetation condition declining	Investigation into reasons for decline by suitable qualified person(s)

Requirement	Timing	Responsibility	Trigger for additional actions	Response proposed
• Biometric plots would be conducted at the locations of plots conducted during the assessment process. Additional plots would be established if required.	construction (spring). Every five years during operation (spring).			and adherence to recommendations.
Groundcover monitoring, including: • Groundcover would be monitored using 1m x 1m quadrats placed at 30 random locations within Zone 2 and within all planted areas.	Fortnightly for first six months after establishment. 6 months after establishment. Annually throughout operation (spring).	Lightsource BP	Groundcover below 70% cover of 90% of disturbed areas. Groundcover seed set below 80% of area . Scours greater than 50 .millimetres (mm) deep and 100 m long. Grassland weed cover greater than 10%. Presence of priority weeds	Bare patches greater than 5 m^2 will be recultivated and revegetated. Additional watering of seeded areas. Weeds controlled where required. Treat soil conditions such as compaction, frequency of traffic movements, low seedbank storage, lack of soil moisture and nutrient imbalance.

Table 10-3 Monitoring and inspection requirements during operation.

Requirement	Timing	Responsibility	Trigger for additional actions	Action proposed
Monitoring of high disturbance areas, groundcover, exclusion zones and boundary fence lines, including:	Annually throughout operation	Lightsource BP		
• A review of any fauna killed or injured on site. Threatened fauna mortalities will be reported to BCD and deaths of any birds from contact with fences or solar panels will be recorded.	Annually throughout operation	Lightsource BP	Presence of injured or dead animals	Report where necessary, record details of incident
• Areas of priority weeds across project site will be mapped and controlled on a seasonal basis (section 7.5).	Before spring, annually throughout operation	Lightsource BP	Presence of priority weeds	Targeted weed control measures (Section 7.5.1)
• A suitably qualified person will walk over the site to identify if vertebrate pests are present. • The following data would be recorded and used to determine the need for pest animal control measures: ○ Number and location of any tracks, traces or sightings • Whether the level of activity is negligible, minimal, moderate or high	Annually throughout operation (August)	Lightsource BP	Moderate or High levels of observed feral animal activity	Targeted pest animal control measures (Section 7.5.2)
Groundcover monitoring, including: • Grass cover would be monitored using 1m x 1m quadrats placed at 30 random locations within Zone 2 and within all planted areas.	Fortnightly for first six months after establishment. 6 months after establishment. Annually during operation (spring).	Lightsource BP	Groundcover below 70% of 90% of disturbed areas. Groundcover seed set below 80% of area. Scours greater than 50 millimetres (mm) deep and 100 m long. Grassland weed cover greater than 10%. Presence of priority weeds.	Bare patches greater than 5 m^2 will be recultivated and revegetated. Additional watering of seeded areas. Weeds controlled where required. Treat soil conditions such as compaction, frequency of traffic movements, low seedbank storage, lack of soil moisture and nutrient imbalance.

10.4 ADAPTIVE IMPLEMENTATION

This BMP would be reviewed every 5 years during operation following monitoring of the exclusion areas to ensure that it is still relevant and appropriate for the management of the site and that required adaptations have been included as required. Where additional actions have been implemented, they would be incorporated as required.

10.5 INCIDENT MANAGEMENT

All incidents will be managed in accordance with the incident response procedures contained in the EMS.

10.6 AUDITING

Audit requirements are detailed in the EMS.

10.7 REPORTING

Reporting requirements and responsibilities are outlined in the EMS.

11 REVIEW AND IMPROVEMENT

11.1 CONTINUOUS IMPROVEMENT

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.
    - Make comparisons with objectives and targets.

Review procedures are contained in the EMS.

11.2 BMP UPDATE AND AMENDMENT

This BMP will need to be revised whenever the construction program, scope of work, or work methods change, whenever the work methods are found to be ineffective, or if directed by the Proponent. This will occur as needed and in accordance with the process outlined in the EMS.

A copy of the updated BMP and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure identified in the EMS.

11.3 DOCUMENT CONTROL

Document control procedures are outlined in the EMS.

APPENDIX A GROUNDCOVER MANAGEMENT PLAN

A.1 INTRODUCTION

This Groundcover Management Plan has been planned to address the requirements of the relevant conditions and commitments listed in the project's Modified Approval from the NSW Minister for Planning and the final amended Statement of Commitments from the Wellington Solar Farm Submissions Report[1] (Table A-1). The Plan is relevant to both the construction and operation period of the project, with the timing of actions summarised in Table 11-2 .

Table A-1 Relevant conditions and commitments.

Reference	Condition/commitment requirement
Schedule 3 CoC 9	Following any construction or upgrading on site, the Applicant must: a) Restore the ground cover of the site as soon as practicable, but within 12 months of completing any construction or upgrades, using suitable species; b) Restore and maintain the ground cover with appropriate perennial species; c) Manage weeds within this ground cover.
Submissions report	A Groundcover Management Plan would be developed in consultation with an agronomist, and taking account of soil survey results to ensure perennial grass cover is established across the site as soon as practicable after construction and maintained throughout the operation phase. The plan would cover: • Soil restoration and preparation requirements. • Species selection. • Soil preparation. • Establishment techniques. • Maintenance requirements. • Perennial groundcover targets, indicators, condition monitoring, reporting and evaluation arrangements – i.e. live grass cover would be maintained at or above 70% at all times to protect soils, landscape function and water quality. Any grazing stock would be removed from the site when cover falls below this level. Grass cover would be monitored on a fortnightly basis using an accepted methodology. • Contingency measures to respond to declining soil or groundcover condition. • Identification of baseline conditions for rehabilitation following decommissioning.
Submissions report	A Groundcover Management Plan would be developed and implemented to ensure an appropriate perennial ground cover is established and maintained beneath the arrays during operation of the solar farm. This will require consideration of existing groundcover and may require expert input and trials to achieve the objective.

[1] This includes BAR commitments. No additional BAR commitments were included in the Modification Report 2019.

Table 11-2 Timing of groundcover management activities.

	Construction	Operation
MANAGEMENT AREAS	**Temporary disturbance**	**Under panels**
	Exclusion zones	
GROUNDCOVER ESTABLISHMENT	**Ripping**	**N/A**
	Sowing	**N/A**
	Hydromulching/hydroseeding	**N/A**
	Fertiliser	**N/A**
	Drains and batters	**N/A**
GROUNDCOVER MAINTENANCE	**Monitoring**	
	Maintenance	
	Weed control	

A.2 MANAGEMENT AREAS

Temporary disturbance areas

Areas temporarily disturbed for the Project will need to be rehabilitated and revegetated as soon as practicable. Temporarily disturbed areas may include:

- Grassland mowed for piling installation.
- Batters for permanent tracks and temporary tracks.
- Construction and decommissioning laydown areas.
- Cable trenches.

The aim of the rehabilitation and revegetation is to stabilise disturbed areas and to return it to a condition that is similar to its pre-disturbance state, meaning that native groundcover comprising vegetation plant communities are returned to these locations. Refer to Appendix B for baseline conditions.

The following targets have been established:

- Rehabilitate all disturbed areas not required for the operation of the solar farm.
- Revegetation of disturbed areas will have 70% ground cover over 90% of disturbed areas within 12 months of establishment and maintained throughout operation until contract completion:
    - Failed vegetation patches greater than 5 m^2 will be revegetated.
    - Ground cover will achieve seed set across at least 80% of area.
    - Native species will be used for revegetation wherever practicable in areas identified as native grassland as well as exotic vegetation.
- Revegetation of disturbed areas will have 70% ground cover over 90% of disturbed areas within 12 months of establishment or corrective actions would be implemented:
    - Failed vegetation patches greater than 5 m^2 will be revegetated.

- Scours greater than 50 mm deep and 100 m long will be revegetated.
- Targeted weed control measures will be implemented if weed cover exceeds 10% of groundcover or if priority weeds are detected.
- Ground cover will achieve seed set across at least 80% of area.
- Native species will be used for revegetation.

Areas under solar panels

Areas which will be under solar panels during operation of the Project will need to be rehabilitated and revegetated as soon as practicable. The aim of the rehabilitation and revegetation of these areas is to maintain and establish a perennial native pasture underneath the panels. Refer to Appendix B for baseline conditions.

The following targets have been established:

- Establish perennial native pasture under solar panels prior to completion of construction.
- Revegetation of areas under solar panels will have 70% ground cover over 90% of disturbed areas within 12 months of establishment and maintained throughout operation until contract completion:
  - Failed vegetation patches greater than 5 m^2 will be revegetated.
  - Ground cover will achieve seed set across at least 80% of area.
  - Native species will be used for revegetation wherever practicable in areas identified as native grassland as well as exotic vegetation.

Exclusion zones

The vegetation constraints in exclusion zones, which are mapped on Figure 1-1 will not be rehabilitated or revegetated. However, there is a risk of weed encroachment from disturbed areas into the exclusion zones, and potentially from exclusion zones into disturbed areas following groundcover rehabilitation, throughout construction and into the operation period. To manage these risks, weed management as described in Section 7.5.1 will include monitoring exclusion zones and implementing weed control measures as required throughout construction and operation. Measures for maintaining the habitat quality of exclusion zones will also be included in any operational management plans.

A.3 GROUNDCOVER ESTABLISHMENT

The following methods will be used, where necessary, in establishing or improving native perennial groundcover in temporary disturbance areas and areas under the solar array. Not all methods will be used, the condition of the area to be rehabilitated will determine which are required to reach the target condition. Where groundcover is already at 70% over 90% of a disturbed area, revegetation works may not be necessary. However, weed management strategies described in Section 7.5 may be required if exotic weed populations are greater than 10%.

Due to climatic conditions (evaporation rates), native grassland establishment is best attempted over late autumn, winter or early spring. Wet summers are also able to maintain established perennial pasture growth in summer active species. Summer rainfall is less reliable than summer evaporation, and as such revegetation is also less reliable. Rehabilitation and revegetation will therefore commence in late summer/early autumn as temperatures decrease and evaporation rates fall.

Ripping and topsoiling

Topsoil will be replaced on all areas from where it has been removed. Prior to the application of topsoil, compacted areas will be tined or ripped to a depth of 150 mm to loosen the surface. Areas that are not compacted will not be ripped in order to reduce soil disturbance.

Over the surfaces, at least 30 cm of topsoil will be placed. The topsoil must be free of rocks and sticks greater than 10 mm in diameter or 500 mm in length. If the surface sets hard after rain, harrow the topsoil prior to sowing seed.

Spray any undesirable grass/weed growth on topsoil stockpiles with a knockdown herbicide before spreading topsoil. More than one application of herbicide may be required. Apply the last application of herbicide not less than 4 weeks before spreading the topsoil or as per manufacturer's instructions.

Broadcast sowing

Undertake sowing using either:

a) A tractor drawn seed drill to place seed at a depth of 5 mm or less; or
b) A spreader followed immediately by a single pass with an unweighted diamond harrow.
c) By hand, where machinery would be a hindrance.

Where safe to do so, tractor passes with the seed drill or harrow will follow the finished surface contours. Distribute seed and fertiliser evenly over the areas to be sown at the rates specified below. Apply fertiliser concurrently with the seeding operation.

Calibrate the drill and monitor the seed and fertiliser application rates to ensure an even distribution over the areas sown, in accordance with the rates nominated. Maintain records of measurements and calculations to determine actual distribution rates for areas treated.

Dry sowing native species on small areas where machinery would be a hindrance can be achieved by mixing seed to sand at a ratio of 1:10 and spreading across the area by hand.

In areas with an existing native-dominated groundcover, the ground surface will not be disturbed before sowing unless deemed necessary by an agronomist.

Hydromulching and hydroseeding

Carry out hydromulching / hydroseeding within 5 – 10 days of completed soil preparation or, if delayed by the weather conditions, as soon as conditions permit.

Continuously agitate the slurry of seed, fertiliser, binder (60 kg/ha Guar gum), mulch, and water (35 kilolitres (kL)/ha) to maintain a uniform consistency during application. Apply the sprayed slurry uniformly over the whole surface, ensuring that all surfaces are sprayed from two directions to ensure complete coverage. Within 48 hours of application, the sprayed hydromulch layer must have a minimum thickness at any location of 5 mm when using sugar cane mulch, or 2 mm when using wood fibre or shredded paper.

Where straw (5 tonnes (t)/ha) is used for mulch, apply the straw mulch uniformly using a purpose-made blower unit. Incorporate the emulsion (bitumen) as a spray into the air stream of the mulch blower or apply it in a separate operation within 12 hours from the application of straw mulch. Within 48 hours of application, the straw mulch layer must have a minimum thickness at any location of 25 mm.

Do not apply hydroseeding/hydromulching and straw mulching if:

- Winds exceed 15 km/hr.
- Temperatures exceed 37°C.
- The surface is water-logged.
- During rain periods or when rain appears imminent.

Native grass sowing

A mixture of native pasture species will be used to minimise the risk of exotic weeds encroaching into exclusion zones. Only locally indigenous species (Appendix B) or those which are likely to occur in the PCTs identified in the project area will be used. Care will be taken to ensure sufficient plant densities. Component groundcover species from either PCT 266 or PCT 277 as appropriate will be used for any direct seeding of bare ground triggering corrective action targets. Potential native species for seeding and indicative seeding rate are listed in Table A-1. Exact species and seeding rates for this Project will be determined in consultation with the district agronomist and landholder to determine what is most appropriate for the property.

Table A-3 Suggested native pasture species and rates for rehabilitation.

Plant type	Indicative seeding rate (kg/ha)
Wallaby Grass *Rytidosperma* spp.	2
Kangaroo Grass *Themeda triandra*	5
Spear Grass *Austrostipa* spp.	2
Red Grass *Bothriochloa macra*	15
Queensland Bluegrass *Dichanthium sericeum*	15

Sowing and fertiliser rate

Where necessary, apply pelletised poultry manure to be applied at a rate of around 250 kg/ha. Alternatively, apply Granulock® S (or similar: 16% nitrogen, 16.7% phosphorous, 12% sulphur) at around 150 kg/ha. Consult with the district agronomist and landowner to determine pasture type and fertiliser rates suitable for each site.

Open drains and batters steeper than 2:1

Lay the runs of the organic fibre mesh (jute mesh) along the direction of water flow or down the steep batter. In drains, slot the upstream end of the mesh into a trench 150 mm wide by 150 mm deep and pin the mesh to the base of the trench at 200 mm centres. Backfill the trench with soil and compact by foot. Lay the mesh taut and even over the soil surface without any air pockets, but do not stretch it. Overlap adjacent runs of mesh by 100 mm with the higher run overlapping the lower.

Pin the mesh along the sides of each run at 500 mm centres and along the middle of each run at 1 m centres. End overlaps must be 150 mm wide with the higher end overlapping the start of the lower and pinned at 200 mm centres.

Hydroseed or hand seed areas prior to jute matting. Spray a slow-setting anionic bitumen emulsion over the meshed surface at a rate of 0.8 to 1.0 litres (L) of undiluted residual bitumen emulsion per square metre.

A.4 GROUNDCOVER MAINTENANCE

Monitoring

Groundcover will be monitored on a fortnightly basis for the first six months after establishment, every 6 months after establishment and annually during operation. Ground cover will be monitored using 1m x 1m quadrats placed within all treated locations to ensure cover does not fall below 70% and at 30 random locations within Zone 2 where no treatment has occurred. Any grazing stock would be removed from the affected area if cover falls below threshold levels and additional planting undertaken if there is no response within the following monitoring events. Including:

- Bare patches greater than 5 m^2 will be recultivated and revegetated

- Additional watering of seeded areas
- Weeds controlled where required
- Treat soil conditions such as compaction, frequency of traffic movements, low seedbank storage, lack of soil moisture and nutrient imbalance

Maintenance

All revegetated areas will be maintained for 6 months after all sowing is complete throughout operation until contract completion. Lightsource BP will direct where and when to water areas, by means of a fine spray, which causes minimal disturbance to seeded areas.

Dead vegetation will be cleared from areas showing poor growth or damage and all lost topsoil replaced. The area will then be recultivated and reseeded. Weeds will be controlled where required with herbicide or hand removal (section 7.5).

APPENDIX B BASELINE PLOT DATA FROM BIODIVERSITY ASSESSMENT REPORT

B.1 BIOMETRIC PLOT RESULTS

Numbers indicate percentage cover of species in each 20 x 20 m Biometric Plot. Plots in **bold** were located in or near exclusion zones), and provide baseline vegetation conditions for managing vegetation constraints in these areas. The location of each plot is shown in Appendix B.2 below.

Table B-3 Flora plot data

SCIENTIFIC NAME	COMMON NAME	**WSF1**	WSF2	WSF3	**WSF4**	**WSF5**	**WSF6**	WSF7	WSF8	WSF9	**WSF10**	WSF11	**WSF12**	WSF13	**WSF14**	WSF15
Trees																
Brachychiton populneus	Kurrajong							40							**5**	
Callitris glaucophylla	White Cypress Pine													20		
Eucalyptus albens	White Box										**30**				**5**	30
Eucalyptus conica	Fuzzy Box	**20**														
Eucalyptus melliodora	Yellow Box	**20**														
Eucalyptus sideroxylon	Mugga Ironbark													50	**10**	
Shrubs																
**Lycium ferocissimum*	African Boxthorn	**1**									**1**			1		
Atriplex semibaccata	Creeping Saltbush													1	**1**	
Einadia nutans	Climbing Saltbush					**1**							**2**	2	**2**	
Maireana microcarpa															**1**	
Sclerolaena muricata	Black Roly-poly														**1**	
Forbs																
**Acetosella vulgaris*	Sheep Sorrel			1							**1**					
**Alternanthera pungens*	Khaki Weed										**1**			1	**1**	
**Arctotheca calendula*	Capeweed		10		**2**											
**Brassica* sp.	Wild Mustard							1						2	**2**	
**Capsella bursa-pastoris*	Shepard's Purse		1			**1**										
**Carthamus lanatus*	Saffron Thistle				**1**	**10**		10	2	2	**5**	5	**2**	1	**2**	5
**Centaurea calcitrapa*	Star Thistle								1	2		10				

SCIENTIFIC NAME	COMMON NAME	**WSF1**	WSF2	WSF3	**WSF4**	**WSF5**	**WSF6**	WSF7	WSF8	WSF9	**WSF10**	WSF11	**WSF12**	WSF13	**WSF14**	WSF15
**Centaurea solstitialis*	St Barnaby's Thistle		1		**5**	**15**	**1**		40		**1**		**1**			
**Cerastium vulgare*	Mouse-ear Chickweed			1						5	**1**					
**Chenopodium multifidum*	Scented Goosefoot														**1**	
**Chondrilla juncea*	Skeleton Weed	**1**			**1**		**1**		2	1		1				
**Cirsium vulgare*	Spear Thistle					**1**				1				1	**1**	5
**Conyza sp.*	Fleabane		1			**2**										
**Cucumis myriocarpus*	Paddy Melon	**1**		1												
**Erodium spp.*	Crowfoot		1				**1**									
**Heliotropium spp.*	A Heliotrope			5												
**Hypochaeris radicata*	Catsear			1	**1**		**1**			2	**2**	5	**1**	1		1
**Lepidium bonariense*	Argentine Peppercress	**1**	1			**2**			1		**1**					
**Lepidium sp.*	A Peppercress						**1**							2	**2**	
**Malva parviflora*	Small-flowered Mallow	**10**		1	**1**		**5**			1		1		1	**1**	2
**Malva sp.*	Mallow						**5**									
**Marrubium vulgare*	Horehound						**2**				**1**			1	**5**	2
**Medicago polymorpha*	Burr Medic												**20**	5		2
**Medicago sativa*	Lucerne	**5**	50			**2**										
**Petrorhagia nanteuilii*	Proliferous Pink									2						1
**Plantago lanceolata*	Lamb's Tongues							5	2	2	**2**	1	**1**		**1**	1
**Polygonum aviculare*	Wireweed		2		**2**	**2**							**2**	2	**1**	
**Salvia verbenaca*	Vervain			1				2			**1**	10	**2**		**2**	
**Sida rhombifolia*	Paddy's Lucerne														**1**	
**Silybum marianum*	Variegated Thistle	**1**		1		**1**		10		1	**2**				**1**	2
**Sonchus oleraceus*	Common Sowthistle				**1**			5		2						
**Spergularia rubra*	Sandspurry			1												
**Stellaria media*	Common Chickweed			1												

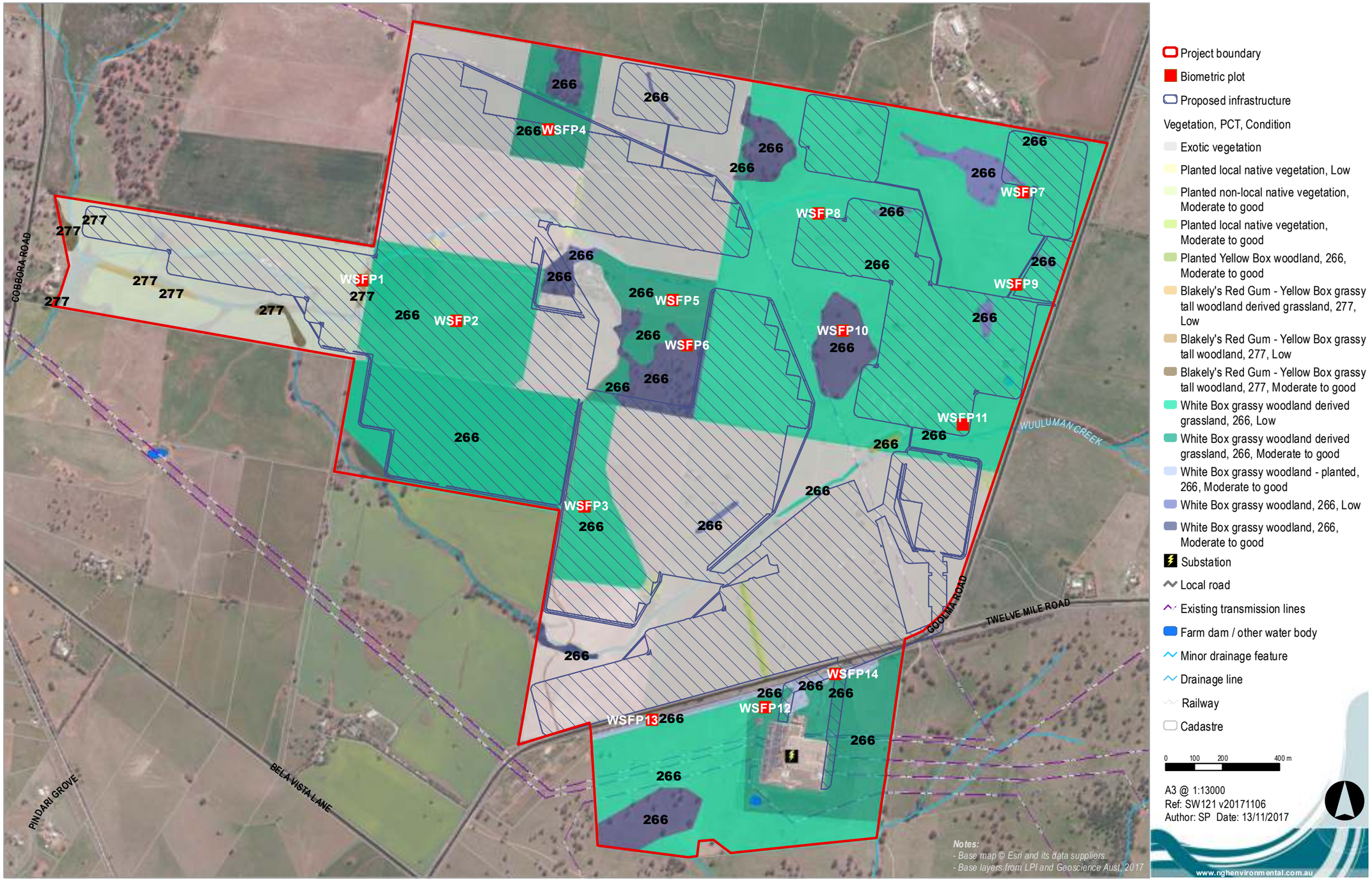
SCIENTIFIC NAME	COMMON NAME	**WSF1**	WSF2	WSF3	**WSF4**	**WSF5**	**WSF6**	WSF7	WSF8	WSF9	**WSF10**	WSF11	**WSF12**	WSF13	**WSF14**	WSF15
**Taraxacum officinale*	Dandelion												**1**			
**Tolpis barbata*	Yellow Hawkweed				**1**					1						
**Tribulus terrestris*	Cat-head				**1**		**1**									
**Trifolium arvense*	Hare's-foot clover															
**Trifolium campestre*	Hop Clover	**1**	5		**20**	**10**		1	10		**10**					1
**Trifolium glomeratum*	Clustered Clover				**15**	**5**				1						
**Trifolium repens*	White Clover										**10**					
**Trifolium subterraneum*	Subterranean Clover			2			**2**	5	2	10				5		1
**Veronica spp.*														2		
**Xanthium spinosum*	Bathurst Burr		1	1				2			**1**					
Acaena novae-zelandiae	Bidgee-widgee				**2**											
Boerhavia dominii	Tarvine						**1**				**1**		**1**			
Calotis lappulacea	Yellow Burr-daisy		1	1	**5**	**1**	**1**									
Chrysocephalum apiculatum	Common Everlasting														**1**	
Convolvulus erubescens	Pink Bindweed					**1**										
Cotula australis	Common Cotula													1		
Crassula sieberiana	Australian Stonecrop						**1**									
Cymbonotus lawsonianus	Bear's Ear												**1**	1		
Daucus glochidiatus	Native Carrot					**1**								1		
Desmodium varians	Slender Tick-trefoil															1
Dichondra repens	Kidney Weed		10	1												
Dysphania pumilio	Small Crumbweed			1												
Euchiton involucratus	Star Cudweed						**1**								**1**	
Geranium potentilloides												1				
Glycine clandestina	Twining Glycine										**1**					
Glycine tabacina	Variable Glycine						**2**									
Haloragis heterophylla	Variable Raspwort						**1**									
Hydrocotyle laxiflora	Stinking Pennywort			2	**2**		**2**						**1**			
Opercularia hispida	Hairy Stinkweed				**1**											
Oxalis perennans	Oxalis			1	**2**		**1**				**1**	2	**5**			2
Oxalis radicosa					**5**		**1**	5	2	2	**2**			2		5
Plantago cunninghamii	Sago-weed						**1**									

SCIENTIFIC NAME	COMMON NAME	**WSF1**	WSF2	WSF3	**WSF4**	**WSF5**	**WSF6**	WSF7	WSF8	WSF9	**WSF10**	WSF11	**WSF12**	WSF13	**WSF14**	WSF15
Rumex brownii	Swamp Dock						**2**				**1**				**1**	
Senna barclayana	Smooth Senna			1			**1**					5			**1**	1
Sida corrugata	Corrugated Sida						**2**						**2**		**1**	
Veronica plebeia	Trailing Speedwell						**1**									
Vittadinia cuneata	Fuzzweed		1	1		**1**						2	**2**	1	**1**	
Wahlenbergia communis	Tufted Bluebell		1		**1**								**2**			
Wahlenbergia luteola	Bluebell				**1**		**1**						**1**		**1**	
Wahlenbergia stricta	Tall Bluebell			1		**1**			1					1		
Zaleya galericulata	Hogweed	**1**														
Grass																
**Bromus catharticus*	Prairie Grass							10		2				1	**20**	40
**Bromus diandrus*	Great Brome		1													
**Bromus hordeaceus*	Soft Brome	**20**					**1**									
**Bromus sp.*	Brome			20							**5**					
**Digitaria sanguinalis*	Crab Grass												**2**			
**Echinochloa crus-galli*	Barnyard Grass		1													
**Eragrostis curvula*	African Lovegrass									1						
**Festuca spp.*											**20**					
**Lolium perenne*	Perennial Ryegrass	**5**	1		**2**			30	2	10	**5**	10	**2**	5		
**Phalaris aquatica*	Phalaris									2		10				
Aristida behriana	Bunch Wiregrass						**1**									
Austrostipa aristiglumis	Plains Grass													1		
Austrostipa setacea	Corkscrew Grass						**1**							1	**10**	
Austrostipa verticillata	Slender Bamboo Grass													5		
Austrostipa sp.	Spear Grass		1	10	**2**		**2**						**5**		**10**	
Bothriochloa macra	Red Grass		1	10	**5**	**40**	**1**	1	20	20	**5**	20	**30**		**2**	
Chloris truncata	Windmill Grass		1	1	**1**		**1**					2	**2**		**1**	
Cynodon dactylon	Couch		1	5												
Dichanthium sericeum	Queensland Bluegrass												**2**	1		
Digitaria brownii	Cotton Panic Grass		1		**1**	**2**	**30**		2	2		2	**5**			
Digitaria divaricatissima	Umbrella Grass					**1**	**2**						**5**			
Elymus scaber	Common Wheatgrass				**1**									2		
Enneapogon nigricans	Nineawn Grass						**1**			1			**5**	1	**2**	
Enneapogon spp.	Bottlewashers				**15**											
Enteropogon ramosus	Curly Windmill Grass		20			**2**	**1**									
Eragrostis brownii	Brown's Lovegrass		1	1	**1**		**1**						**2**			

SCIENTIFIC NAME	COMMON NAME	**WSF1**	WSF2	WSF3	**WSF4**	**WSF5**	**WSF6**	WSF7	WSF8	WSF9	**WSF10**	WSF11	**WSF12**	WSF13	**WSF14**	WSF15
Eriochloa pseudoacrotricha	Early Spring Grass					**5**										
Paspalidium constrictum	Knottybutt Grass				**1**											
Paspalidium distans				1												
Panicum effusum	Hairy Panic				**1**								**1**			
Rytidosperma caespitosum	Ringed Wallaby Grass												**2**	1	**2**	
Sporobolus creber	Slender Rat's Tail Grass								8				**1**			
Graminoids																
Juncus sp.	Rush															
Ferns																
Marsilea drummondii	Common Nardoo															

* = exotic.

B.2 LOCATION OF BASELINE BIOMETRIC PLOTS



Map source: Biodiversity Assessment Report (NGH 2017)

APPENDIX C SAMPLE REGISTERS

C.1 SAMPLE GROUND DISTURBANCE PERMIT FORM

Project: Wellington Solar Farm **Project No:**

Requested By:

Habitat Clearing Start Date: **Expected Completion Date:**

HABITAT CLEARING LOCATIONS – ATTACH DRAWINGS / SKETCHES IF NECESSARY

Location	Comments

This section to be completed by Ecologist and HSEQ Manager for clearing of trees, logs, rocky features, and other habitat features, with reference to constraints mapping.	
Has the limit of clearing been clearly delineated?	☐ Yes ☐ No
All trees / vegetation / habitat to be retained identified and exclusion zones fenced off?	☐ Yes ☐ No
State how identified:	
Have habitat trees been identified and appropriately marked?	☐ Yes ☐ No ☐ N/A
State how identified:	
Are specific targeted surveys required?	☐ Yes ☐ No
State how survey was completed, including results:	
Is there a risk of weed infestation or spread?	☐ Yes ☐ No
Are any animals present? (If *Yes*, relocation required)	☐ Yes ☐ No
Are any active nests/burrows present? (If *Yes*, relocation required)	☐ Yes ☐ No
If soil disturbance is to occur, has an ERSED Plan been created, and have these controls been installed?	☐ Yes ☐ No

Have relevant workers been given toolbox talks on limit of clearing, fauna handling procedures and any other SHE Controls?	☐ Yes ☐ No
Can habitat features be re-used for habitat enhancement?	☐ Yes ☐ No
Can the habitat feature be re-used immediately?	☐ Yes ☐ No
If not re-used immediately, where will it be stockpiled*?	
Comments:	

APPROVALS

Inspection completed by Ecologist (if required): **Date:**

Ecologist Signature Required

Approval by HSEQ Manager: **Date:**

HSEQ Manager Signature Required

* Stockpiles must not be placed within the dripline (extent of foliage cover) of any native tree.

SIGN-OFF (ONCE WORKS COMPLETED)

Have the conditions of the permit been met? **Date:**

HSEQ Manager Signature Required

Figure C-1 Sample ground disturbance permit form.

C.2 SAMPLE THREATENED SPECIES REGISTER

Table C-1 Sample Threatened Species Register.

Date	Species	Location and time captured	Location and time released	Behaviour and condition on release	Details of any injuries/ death	Contact details of vet/wildlife handler if transferred to their care

C.3 SAMPLE HERBICIDE APPLICATION RECORD

NSW GOVERNMENT | Industry & Investment

Location, Applicator, Date of Application

Property/Holding: (residential address)					Date:
Applicator's Full Name:			Owner (if not applicator):		
Address:			Address:		
		Phone:			Phone:
Mobile:	Fax:	Email:	Mobile:	Fax:	Email:
Sensitive Areas (including distances, buffers): N / W / Treated Area / E / S			Comments (including risk control measures for sensitive areas):		

Host/Pest

Paddock Number/Name:	Paddock Area:	Order of Paddocks Sprayed:
Crop/Situation:	Type of Animals:	
Crop/Pasture Variety:	Age/Growth Stage:	
Growth Stage:	Mob/Paddock/Shed:	
Pest/Disease/Weed:	Animals — Number Treated:	
	Pest Density/Incidence: Heavy ❑ Medium ❑ Light ❑	

Application Data

Full Label Product Name:			Rate/Dose:	Water Rate L/ha:
Permit No.:	Expiry Date:		Additives/Wetters:	
Total L or kg:	WHP:	ESI*:	Date Suitable for Sale:	
Equipment Type:		Nozzle Type:	Nozzle Angle:	Pressure:
Date Last Calibrated:	Water Quality (pH or description):			

Weather

Showers ❑ Overcast ❑ Light Cloud ❑ Clear Sky ❑

Rainfall (24 hours before and after)
Before: mm During: mm After: mm

Time (show time in this column)	Temperature °C	Relative Humidity (%)	Wind Speed	Direction	Variability (e.g. gusting)
Start					
Finish					

Comments:

* When using herbicides in mixtures with fungicides and insecticides, an ESI may apply to the non-herbicide component of the mixture.

Figure C-2 Sample herbicide application record sheet.

C.4 SAMPLE PESTICIDE APPLICATION RECORD

Pesticide Application Record Sheet

NSW GOVERNMENT | Industry & Investment

Location, Applicator, Date of Application

Property/Holding: (residential address)					Date:
Applicator's Full Name:			Owner (if not applicator):		
Address:			Address:		
		Phone:			Phone:
Mobile:	Fax:	Email:	Mobile:	Fax:	Email:
Sensitive Areas (including distances, buffers): N / W / Treated Area / E / S			Comments (including risk control measures for sensitive areas):		

Host/Pest

Paddock Number/Name:	Paddock Area:	Order of Paddocks Sprayed:
Crop/Situation:	Type of Animals:	
Crop/Pasture Variety:	Age/Growth Stage:	
Growth Stage:	Mob/Paddock/Shed:	
Pest/Disease/Weed:	Animals — Number Treated:	
	Pest Density/Incidence: Heavy ❑ Medium ❑ Light ❑	

Application Data

Full Label Product Name:			Rate/Dose:	Water Rate L/ha:
Permit No.:	Expiry Date:		Additives/Wetters:	
Total L or kg:	WHP:	ESI*:	Date Suitable for Sale:	
Equipment Type:		Nozzle Type:	Nozzle Angle:	Pressure:
Date Last Calibrated:	Water Quality (pH or description):			

Weather

Showers ❑ Overcast ❑ Light Cloud ❑ Clear Sky ❑					
Rainfall (24 hours before and after) Before: mm During: mm After: mm					
Time (show time in this column)	Temperature °C	Relative Humidity (%)	Wind Speed	Direction	Variability (e.g. gusting)
Start					
Finish					
Comments:					

* When using herbicides in mixtures with fungicides and insecticides, an ESI may apply to the non-herbicide component of the mixture.

Figure C-3 Sample pesticide application record sheet.

C.5 SAMPLE VEHICLE HYGIENE REGISTER

Table C-2 Sample Vehicle hygiene register.

Date	Time in	Vehicle type	Destination	Driver name	Driver contact no.	Driver registration	Entrance wash (Y/N)	Exit wash (Y/N)	Time out	Inspection staff initials

APPENDIX D AGENCY INPUT ON BMP

D.1 OFFICE OF ENVIRONMENT AND HERITAGE (NOW BCD) COMMENTS ON DRAFT

Email chain confirming OEH consultation.

Wynn <Samantha.Wynn@environment.nsw.gov.au>

Yesterday, 2:57 PM Brooke Marshall; Jess Murphy; Sarah Hillis; David Geering <David.Geering@environment.nsw.gov.au>

Inbox

Hi Brooke

All fine at our end. I have just added one addition in red for additional clarity. Again – if you need any further assistance please give us a call.

Regards
Sam

Samantha Wynn
Senior Team Leader - Planning, North West
Conservation and Regional Delivery
Office of Environment and Heritage
48-52 Wingewarra Street (PO Box 2111) Dubbo NSW 2830
T: 02 6883 5365 M: 0459 888 603
W: www.environment.nsw.gov.au

Brooke Marshall

Hi Sam, are you happy with this summary? please feel free to amend or add anything additional
thanks, Brooke

Notes from OEH meeting 06 03 2019: to be addressed in the Construction BMP
Attendees David Geering, Sam Wynn (OEH), Jess Murphy, Sarah Hilis, Brooke Marshall (NGH)
High level discussion of working draft.

- Make sure its stated up front (section 1) this is BMP that the scope is construction only
- Map set that includes all relevant information will be handy. Ie hollows, PCTs, exotic, constraints etc.
- Regarding the conditions of consent, make clear in sections 2.3 and 2.4 what will be covered in this BMP and what will be required to carry over into operational requirements of the BMP (or be addressed in other plans)
- How will exotic zones be managed distinct from native dominated zones – particularly relevant to ground cover establishment and maintenance and weed control
- How will the constraint areas be managed? ie weed control during operation. Life of Project is long and could see degradation through weed encroachment. Weed seed bank could come back.

As the requirement of the plan is to manage / protect native vegetation, the scope should include these no go areas and this should extend from construction into operation

- No superb parrot breeding habitat is relevant to this site.
- Restrict clearing footprint to areas allowed in the BAR otherwise the credit requirement will be affected.
- Pest control really for operation and detail provided in draft does not seem appropriate to this site. See particularly fencing. Ensure context section on pest animals and weeds is added.
- Ensure protocols are clear action statements and adhere to 'SMART' principles, not motherhood statements.
- Good to see that Vehicle hygiene protocol is included
- Protocols in section 9 [now section 6] need to be specific to construction (if that is the scope of this plan) and make clear how they may need to carry over into operation where relevant.
- A Revised BMP for operation will be required prior to operations so ensure enough time is allowed for agency consultation here too.
- Species list for exotic areas under panels – question for agronomist. Ongoing threat of encroachment on native areas needs to be monitored as protecting native vegetation is the commitment (in construction and operation).
- Don't sow exotics in the native dominated areas.

D.2 OFFICE OF ENVIRONMENT AND HERITAGE (NOW BCD) COMMENTS ON REVISED REPORT

NSW GOVERNMENT | Planning, Industry & Environment

DOC19/314291

Brooke Marshall
Manager, NSW SE & ACT
nghenvironmental
Brooke.m@nghenvironmental.com.au

Dear Brooke

Wellington Solar Farm Biodiversity Management Plan

Thank you for the opportunity for the Biodiversity and Conservation Division (BCD) of the Department of Planning, Industry and Environment to comment on the revised Biodiversity Management Plan (BMP) for the Wellington Solar Farm.

A draft BMP submitted and reviewed by BCD addressed only the 12-month construction phase of the development. That BMP was satisfactory however, BCD notes the Planning and Assessment Division of the Department of Planning, Industry and Environment has requested that the BMP be updated to include both construction and operational requirements of the project. As the project has an expected operational life of 30 years the revised BMP will necessarily be more complex as it will need to address the management and protection of substantial areas of remnant native vegetation and fauna habitat outside the approved disturbance areas.

In summary, the BMP does not yet adequately address the operational phase of the project. Detailed comments and recommendations are provided in Attachment A.

Should you require additional information please contact David Geering on (02) 6883 5335 or david.geering@environment.nsw.gov.au.

Yours sincerely

PETER CHRISTIE
Director North West
Biodiversity and Conservation

08 July 2019

Contact officer: DAVID GEERING
6883 5335

cc. leesa.johnston@planning.nsw.gov.au

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Attachment A

BCD review of Wellington Solar Farm BMP

1 Scope of the BMP

A draft BMP submitted and reviewed by BCD addressed only the construction phase of the development. DPE has requested that the BMP be updated to include both construction and operational requirements of the project.

Most sections of the revised BMP still refer almost exclusively to the construction phase of the project.

The project Conditions of Consent (CoC) state that 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:

a) Include a description of the measures that would be implemented for:
   - Protecting vegetation and fauna habitat outside the approved disturbance areas

The CoC also require the preparation of a Flora and Fauna Management Plan (FFMP) and Groundcover Management Plan (GCMP). A GCMP is provided in Appendix A of the BMP.

The BMP should include the construction and operational requirements of the FFMP and GCMP. The BMP however remains heavily skewed towards the construction phase of the project despite this being a relatively short period in the overall life of the solar farm. For example, Table 2-2 of the BMP suggests that only the construction requirements are currently included in the BMP. Table 5-1 provides disturbance measures, key actions and mitigation and performance targets for the construction period. A similar table is not provided for the operational phase of the project.

Section 1.1 of the BMP states that "*Most environmental management measures apply during construction, with measures during operation primarily involving maintenance of groundcover management and controlling weeds and pests*" while Section 2.1 of the BMP indicates that "*the key objective of the BMP is to ensure that construction impacts to biodiversity are managed*". There are substantial areas of remnant native vegetation outside the approved disturbance areas that will require on-going management to ensure that the condition of this remnant vegetation is maintained or improved during the life of the project. It is important that management actions for these areas are clearly identified and incorporated into the BMP.

Recommendation

1.1 A specific objective relating to the operation of the project should be included in the BMP.
1.2 The construction and operational requirements of the Flora and Fauna Management Plan and Groundcover Management Plan be included BMP.
1.3 All aspects of biodiversity management of the project site, including actions outside the approved disturbance areas, be included in the BMP.

2 Targets should be quantifiable

The targets outlined in Section 2.2 are very general in nature. Short, medium- and long-term objectives and targets should be described in the BMP. In the case of long-term targets, noting that the project has a 30-year life, the BMP should include some interim targets that can be reviewed and amended as required.

Successful management plans include tailored, quantitative performance measures and targets, completion criteria monitoring and trigger points for corrective action which adhere to the SMART principles (specific, measurable, achievable, realistic, timely). Management targets are required for weed, feral animal and erosion control as well as habitat restoration. These targets should adhere to the SMART principles and must be measurable and expressed in a manner that assists in the evaluation of progress toward the strategic goals that define the completion criteria.

Section 2.2.2 specifically mentions no increase in weed distribution in the project area or abundance in sensitive vegetation areas. A more appropriate target would be to decrease weeds to a specific target. Appendix B of the BMP provides some baseline data relating to existing weed infestations. This baseline data should be used to determine the completion criteria that could be expressed, for example, as "the complete removal of all African Boxthorn". BCD notes that the BMP mentions 10% non-native groundcover as a target requiring corrective action. Performance and completion criteria should be clearly provided in Table 5-1. Table 5-1 does not contain actions relating to the operational phase of the wind farm, these should be developed and included as a separate table in the BMP.

Recommendation

1.4 The BMP incorporate quantitative performance measures and targets, completion criteria monitoring and trigger points for corrective action. This should be presented as separate tables for the construction and operational phases of the project.

1.5 A TARP be included that specifically addresses the operational phase of the project

D.3 BCD COMMENTS ON REVISED REPORT

Planning, Industry & Environment

Our ref: DOC19/684306
Senders ref:

Ms Brooke Marshall
Manager, NSW SE & ACT
NGH Environmental
brooke.m@nghenvironmental.com.au

Dear Brooke

Subject: Wellington Solar Farm Biodiversity Management Plan

Thank you for the opportunity for the Biodiversity and Conservation Division (BCD) of the Department of Planning, Industry and Environment to comment on the revised Biodiversity Management Plan (BMP) for the Wellington Solar Farm. BCD note that the BMP has been updated since our prior correspondence dated 8 July 2019, however the matters raised have not yet been adequately addressed.

The format of the current BMP is difficult to follow, particularly in relation to specific actions and their associated performance criteria, trigger points and corrective actions. Key performance indicators and completion criteria lack consistency and the detail required to ensure the BMP can be audited in a meaningful way.

In summary, the plan should be reviewed and updated to ensure that specific, measurable, achievable, repeatable and time-bound (SMART) principles are applied to all criteria. The document should also be checked for proof errors, for example it is stated in section 1.6 that agency comments are provided in Appendix C while they are in Appendix D. References to OEH should also be changed to BCD. Detailed comments and recommendations are provided in **Attachment A**.

Should you require additional information please contact David Geering on (02) 6883 5335 or david.geering@environment.nsw.gov.au.

Yours sincerely

Peter Christie
Director
North West, Biodiversity and Conservation

16 September 2019

Planning, Industry & Environment

Attachment A

BCD review of Wellington Solar Farm BMP

1 Biodiversity Management Areas

Commitments contained within a BMP should be clear and auditable. The BMP should cover impacts that may arise from activities conducted throughout the life of the project. It should cover any biodiversity conditions related to the development's impacts as well as the management of other areas within the project area and any biodiversity offset areas, if applicable.

The revised BMP remains ambiguous in regards the area covered. Section 3, for example, describes the development site rather than the entire project area (as shown in Figure 1).

The project area should ideally be divided into discrete zones for biodiversity management (e.g. impact area, riparian, woodland, derived native grassland) with these being clearly identified in the BMP. A description for each management area should be provided. The description should outline the level of intervention activities proposed in each management area (i.e. whether management will be passive only, or whether regeneration, revegetation and/or other habitat augmentation activities will occur).

Recommendation

1.1 The project area should be divided into discrete management zones for biodiversity management

2 Actions and Targets

The strategies to be implemented to manage biodiversity impacts and to ensure that biodiversity outcomes are improved or maintained should be detailed. The timing of each strategy should be outlined (whether they will be implemented over the short, medium or long term).

Strategies and actions may address:

- the management of remnant vegetation and habitat;
- revegetation and regeneration including the establishment (where relevant) of canopy, sub-canopy, understorey and ground strata;
- use of resources (including vegetative, rocks, and soil resources) for habitat enhancement that were salvaged from impacted areas;
- managing soil disturbance;
- rehabilitating riparian areas and aquatic habitat;
- managing salinity;
- transplanting and/or propagating threatened flora and native grassland;
- controlling weeds and pest animals, including native pest animals;
- managing grazing and agriculture to ensure biodiversity outcomes;
- controlling access;
- maintenance or improvement of connectivity;
- managing impacts on fauna, including catering for fauna re-locating from the areas of impact on the project site;
- integrating management with adjoining landholders;
- bushfire management; and

- catering for threatened species requirements through the management of existing habitat or in the rehabilitation or revegetation of areas of potential habitat.

Table 5-2 of the BMP provides the key actions and performance targets for the operational phase of the project. The table contains performance targets such as:

- Retain existing native riparian vegetation to the greatest extent possible in an undamaged and unaltered condition.
- Maintain or improve the baseline vegetation condition class of exclusion zones throughout the operation period.
- No increase in weed abundance in exclusion zones from baseline levels at end of operation period.
- African Boxthorn and listed priority weeds eradicated from project area before end of operation period.

These performance targets should reflect the objectives and must be quantifiable. Completion criteria for weed management, for example, may include "*non-native groundcover not to exceed 10%*". Listed priority weeds should be eradicated as soon as practicable, a target of the end of the operational period is not acceptable.

Trigger points and subsequent corrective actions to be implemented if the monitoring program identifies that biodiversity management objectives are not being met are required. These also need to be measurable, for example, *"if weed invasion increases by 10% above the agreed performance indicator, additional weed management activities (discuss specific details) will be implemented"*.

Recommendations

2.1 Management actions for each zone be clearly presented, including when they are to occur.

2.2 Quantifiable performance criteria be developed for each management action.

2.3 A TARP be developed that specifically addresses trigger points and appropriate corrective actions for each management action.

3 Monitoring

The BMP should present details of the monitoring program to be implemented that will assess the effectiveness of the management and mitigation strategies against the management objectives and performance criteria.

The monitoring program should:

- Contain clear objectives and targets that relate to the biodiversity management objectives. All monitoring objectives and targets should adhere to the SMART principles (specific, measurable, achievable, realistic, timely).
- Describe the intended monitoring methods and proposed analysis to be used.
- Measure any differences between predicted and actual impacts and outcomes.
- Identify any unpredicted impacts requiring remedial measures.
- Take into account seasonal variability of certain biodiversity components when determining the timing of the monitoring.
- Be implemented throughout the construction, operation and decommissioning of the project.

The results of the monitoring program should have an adaptive management feedback to the biodiversity management strategies that are being implemented.

Planning, Industry & Environment

The BMP currently indicates that qualitative visual assessments will be conducted annually throughout construction and operation. If a noticeable decline in vegetation condition is recorded, this will trigger the need for a quantitative assessment to determine the appropriate management response. In order to adequately assess changes in vegetation condition on-going quantitative assessment is required. It may be sufficient to monitor vegetation condition, using the BAM methodology, every three to five years depending on the zone (riparian or EEC).

Recommendation

3.1 A clear, quantitative monitoring program be developed that will assess the effectiveness of the management and mitigation strategies against the management objectives and performance criteria.

APPENDIX E AGENCY APPROVAL OF BMP