



BIODIVERSITY MANAGEMENT PLAN

Suntop Solar Farm

June 2020

Project Number: 19-775



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ACRONYMS AND ABBREVIATIONS

AHIMS	Aboriginal heritage information management system
BC Act	Biodiversity Conservation Act 2016 No 63
Biosecurity Act	Biosecurity Act 2015 No 24
BCD	Biodiversity Conservation Division DPIE (Formerly OEH)
BMP	Biodiversity Management Plan
Bouygues	Bouygues Construction Australia (Engineering Procurement Contractor)
BOM	Australian Bureau of Meteorology
Canadian Solar	Owner and Operator of the Suntop Solar Farm
CEMP	Construction environmental management plan
CWD	Coarse woody debris
Cwth	Commonwealth
Council	Dubbo Regional Council
DP&I	(NSW) Department of Planning and Infrastructure
DPIE	(NSW) Department of Planning, Industry and Environment
EEC	Endangered ecological community – as defined under relevant law applying to the proposal
EIS	Environmental impact statement
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999 (Cwth)
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
ESD	Ecologically Sustainable Development
FM Act	Fisheries Management Act 1994 (NSW)
ha	hectares
Heritage Act	Heritage Act 1977 (NSW)
ISEPP	State Environmental Planning Policy (Infrastructure) 2007 (NSW)
KFH	Key Fish Habitat
km	kilometres
LALC	Local Aboriginal Land Council
LEP	Local Environment Plan
m	Metres
NES	Matters of National environmental significance under the EPBC Act (c.f.)
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW	New South Wales
NV Act	Native Vegetation Act 2003 (NSW)
Priority Weeds	Weeds nominated under the Biosecurity Act for management/control
REP	Regional Environmental Plan
SEPP	State Environmental Planning Policy (NSW)

SEWPAC (Cwth) Department of Sustainability, Environment, Water, Population and Communities

1. INTRODUCTION

1.1. BACKGROUND

Suntop Solar Farm Pty Ltd (the proponent) received planning approval on 4 December 2018 for the construction, operation and decommissioning of a 189 megawatt (MW) alternating current (AC) photovoltaic (PV) solar farm, located around 10 km west of Wellington within the Dubbo Regional Council Local Government Area (LGA). Suntop Solar Farm ('the Project') is a State Significant Development (SSD 8696) and represents an important contribution to renewable energy generation in New South Wales.

This Biodiversity Management Plan (BMP) has been prepared to address the requirements of the mitigation and management measures listed in the *Suntop Solar Farm Environmental Impact Statement* (EIS) (Pitt and Sherry 2018), Statements of Commitment (SoCs) listed in the Suntop Solar Farm Response to Submissions (Pitt and Sherry 2018) and the Conditions of Consent (CoC) from the New South Wales, Minister for Planning. Additionally, it considers legislation, policies and guidelines applicable to biodiversity management.

The BMP considers the development site (Figure 1-1) construction and operational area comprising of approximately 472 hectares (ha). An existing TransGrid easement runs in a north-easterly direction across the Site from the western boundary of Lot 3 DP 506925, through Lot 122 DP 753238, and exiting near the north-eastern corner of Lot 122 DP 753238. This easement contains existing TransGrid 132kV powerlines on wooden pole structures connecting to the Wellington substation approximately 15km to the north-east of the Site.

The land is divided into 15 fenced paddocks currently used for agriculture, including cropping (e.g. wheat and lucerne) and grazing. It is proposed that grazing activities would continue on the land occupied by the solar farm. The site has been almost entirely cleared of its original vegetation except for a few scattered paddock trees. Various plantings of eucalypts have been made on the property including a woodlot in the centre east, and five narrow linear plantings two tree rows wide along fence lines. In addition, some of the scattered paddock trees have been planted historically. The remnant paddock trees and plantings comprise the only native vegetation on the site

1.2. THE PROJECT

The scope of works under the contract includes all works necessary to design, construct, test, commission, energise, operate, decommission, and train staff in the operation of a 189 MW AC solar farm.

The scope of works consists of but is not limited to:

- Around 440,000 solar panels up to 2.0 metres (m) in height, mounted on a single axis tracking system.
- 110 inverter units, standing up to 2.9 m above ground surface.
- Electrical substation located 400 metres to the north-east of the western boundary (Figure 1).
- Upgrade of existing access within the site and two site access tracks off Suntop Road, with a Rural Property Access type treatment to cater for the largest vehicle accessing the site.
- Internal access tracks.
- Underground electrical cable reticulation.
- 132 kV transmission cables connecting the onsite substation to the TransGrid transmission line.
- Security fencing and CCTV.
- Native vegetation planting for visual screening.
- Small operations and maintenance building with associated car parking.

• Laydown area and security fencing.

During construction, the development site will be accessed from a temporary access point in the north east corner of the development off Suntop Road. Suntop Road and its intersection with Renshaw McGirr Way will be upgraded to the satisfaction of the relevant roads authority prior to construction.

The construction period of the solar farm will last approximately 12 months from the commencement of site establishment work. Construction hours will be limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1pm. Night works are not anticipated to occur.

Biodiversity Management plan Suntop Solar Farm



Figure 1-1: Site layout for Project



Figure 1-2: Paddock arrangement for development site

1.3. ENVIRONMENTAL MANAGEMENT STRATEGIC FRAMEWORK

The BMP is part of the 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 Suntop Solar Farm Infrastructure personnel and contractors.

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

2. PURPOSE AND OBJECTIVES

2.1. PURPOSE

This BMP forms part of the EMS for Suntop Solar Farm, and addresses the requirements of:

- NSW Department of Planning, Industry and Environment (DPIE) Conditions of Consent.
- All applicable legislation, during the construction of the project.
- Mitigation and management measures and commitments in the Environmental Impact Statement (EIS), Biodiversity Assessment Report (BAR) and modification application.

The purpose of this BMP is to provide a framework for the management of biodiversity issues during the construction and operation of the Project. Implementing this BMP will ensure that the Project Team meets the Project requirements in a systematic manner and continually improves its performance.

2.2. OBJECITVES

Specifically, the BMP aims to:

- Ensure appropriate planning, controls and procedures are implemented during construction.
- Ensure appropriate measures are implemented to address the CoC.
- Ensure appropriate measures are implemented to comply with all relevant legislation.

The key objective of the BMP during construction and operation 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, Bouygues (Constructor) and Canadian Solar (owner Operator) 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 3 of this BMP.

2.3. TARGETS

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

- 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 vegetation to the greatest extent possible, undamaged and unaltered.
- Protect exclusion zones from all adverse impacts throughout the construction period.
- No native fauna mortality or injury during construction.
- No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat.
- New priority weeds will be controlled before they establish an area > 0.25 ha onsite.
- Existing priority weeds patches will be controlled when >0.25 ha on site. Integrated pest control will be used to minimise rabbits and foxes when LLS programs are run.

3. ENVIRONMENTAL REQUIREMENTS

3.1. RELEVANT LEGISLATION AND GUIDELINES

3.1.1. Legislation

Legislation relevant to biodiversity management includes:

- Environmental Planning and Assessment Act 1979 (EP&A 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 legislation are explained in the register of legal requirements in the EMS.

3.1.2. Conditions of consent

Conditions 11,12 and 13 of Schedule 3 of the CoC detail the requirements of the BMP (Table 3-1 Conditions of consent relevant to biodiversity management.).

CoC	Condition requirement	Location
Land Management		
Schedule 3 condition 11	Following any construction or upgrading on the site, the Applicant must:a) restore the ground cover of the site as soon as practicable.b) Maintain the ground cover with appropriate perennial species.c) Manage weeds within this groundcover.	Land Management Plan (LMP) (App B this Plan)
Biodiversity Offsets		
Schedule 3 condition 12	Prior to the commencement of construction, 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 OEH (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 <i>Biodiversity Conservation Act 2016</i>. b) making payments into an offset fund that has been developed by the NSW Government. c) providing supplementary measures. 	

Table 3-1 Conditions of consent relevant to biodiversity management.

	Table 1: Ecosystem Credit Requirements			
	Vegetation Community	PCT ID	Credits Required	
	White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	PCT267	47.75	
	Note: Following repeal of the Threatened Species Conservation Act 1995 on 25 Act are taken to be "biodiversity credits" under the Biodiversity Conservation Biodiversity Conservation (Savings and Transitional) Regulation 2017.	5 August 2017, c Act 2016 by vi	redits created under that irtue of clause 22 of the	
Biodiversity Management Plan				
Schedule 3 condition 13	Prior to the commencement of construction, the Ap Biodiversity Management Plan for the developmen (BCD), and to the satisfaction of the Secretary.	oplicant m nt in consu	ust prepare a Itation with OEH	
	 a) This plan must include a description of the implemented for: managing the remnant vegetation 	e measures and fauna	s that would be a habitat on site.	Section 8.1
	 minimising clearing and avoiding u of vegetation that is associated wir operation of the development. 	unnecessa th the con	ary disturbance struction and	Section 8.1
	 minimising the impacts to fauna or interaction with perimeter fencing) management protocols. 	n site (incl and imple	uding fauna ementing fauna	Section 8.3/4 and Table 9-2/3
	 avoiding the removal of hollow-beau winter and spring to avoid the mail 	aring trees	s during late	Section 8.1.3
	hollow-dependent fauna.	n preedinį	g period for	LMP
	 rehabilitating and revegetating ten areas. 	nporary di	sturbance	Section 8.5 and 9
	 protecting vegetation and fauna has approved disturbance areas 	abitat outs	ide the	Section 9
	 maximising the salvage of vegetat within the approved disturbance a 	tive and so	oil resources	Section 8.2
	 the enhancement or the rehabilitation of the controlling weeds and feral pests. 	tion of the	site.	LMP
	 b) Include details of who would be responsible reviewing and implementing the plan, and completion of actions. 	le for mon timeframe	itoring, es for	

3.1.3. Project commitments

Commitment reference	Commitment requirement	Location in BMP
B1	A 10-m buffer shall be established between the perimeter of the remnant vegetation stands and the works footprint.	Section 9
B2	Erect barriers to protect remnant perimeter trees, planting in Paddock 12 and Fuzzy Box clump in Paddock 1	Section 9
B3	The works (e.g. plant, material stockpiling) should not encroach into remnant vegetation and buffer areas.	Section 9
B4	A clearing protocol will be developed to ensure any potential impacts to native fauna are minimised during vegetation removal, this will include supervised removal of trees with hollows by a trained wildlife carer.	Section 8.1
B5	B5 A Land Management Plan which will be developed (refer Appendix J) and will be incorporated into an overall construction environmental management plan (CEMP). This will include weed management, animal pest management and monitoring as well as an induction for all employees and contractors detailing the trees that are protected on Site.	
B6	Trenches should be backfilled as soon as possible to minimise the chance of fauna becoming trapped. Any trench sections left open for greater than a day would be inspected daily, early in the morning and afternoon/early evening, any trapped fauna removed. The use of ramps or ladders to facilitate trapped fauna escape is recommended.	
B7	37 Speed limits should be set to 20km per hour on internal roads and tracks. <i>Internal speed limits have been adjusted to 40 km/hr in line with Work Health and Safety requirements.</i>	
B8	A Vegetation Management Plan will be developed and incorporate tree protection measures to conserve the trees around the perimeter of the Site.	
B9	Enhancement of buffer zones around the perimeter of the site to include additional planting of replacement trees for those lost due to the clearing of the paddocks	Landscaping Plan
B10	Any works surrounding the dam located on the western boundary of the site will include implementation of appropriate erosion and sediment controls to prevent silt build up in the dam.	Section 9

Table 3-2 Relevant Project commitments revised in the Response to Submissions.

4. CONSULTATION

Post approval consultation regarding this BMP for the Project occurred with BCD on the 11 March 2020. BCD were sent a copy of the draft plan with a request for comment. The BCD's comments were received on the 24th April 2020 and (Appendix B) have been addressed in this plan and are summarised and tabulated (Appendix B).

BCD were again consulted on the draft and additional comments were received 5 June 2020 (Appendix B). The comments have been addressed in this plan and are summarised and tabulated (Appendix B).

5. EXISTING ENVIRONMENT

5.1. SOILS

Soils at the Site have been mapped as being in the Arthurville Soil Landscape and as detailed in the DLWC Dubbo 1:250000 Sheet (1998). This is an area of approximately 682 km² and the soils are predominantly Redbrown Earths with some Yellow Podzolic-Solodic soils being present. The majority of soils on cleared land have been extensively disturbed by agricultural activities such as clearing for grazing of sheep and cattle, and rotational cultivation for the growing of cereal crops such as wheat, oats and canola, and fodder crops such as lucerne.

Murphy *et.al* (1998) describes the soils chemical fertility of this soil landscape as moderate with common deficiencies such as Nitrogen, Phosphorous and Sulphur. The surface soils also exhibit some areas of slight acidification and aluminium toxicity. The physical fertility is generally moderate, with some of the lighter textured surface soils being subject to structural degradation which can have consequences of higher runoff, increased erosion and surface sealing. The subsoils, particularly the Red-brown Earths are well structured and this has the benefits of allowing large amounts of root growth.

The erosion hazard has been described as moderate to high given the long slopes, especially when the soils have been cultivated or the amount of groundcover is low. The soils on site do not indicate that substantial amounts of salts are present in this part of the landscape. A review of the Wellington Local Environmental Plan (LEP) 2012 did not indicate that the site is at risk of acid sulfate soils or salinity. A review of the eSpade indicates that the subject site is not currently mapped as being a risk area for ASS.

The soils on the site are classified as being Class III Rural Land Capability. This gives them a general rating of being suitable for cropping and for the construction of dams and other erosion control earthworks including banks and waterways.

5.2. FLORA

The majority of the site has been previously cleared for historical cropping (i.e. wheat, oats, canola and Lucerne) and grazing purposes (cattle and sheep) with limited native vegetation remaining. As such, the area contains minimal native vegetation with the local surface hydrology, landform and soils have been heavily modified by the paddock development. There are, however, several small scattered rows and isolated clumps of vegetation across the site, including 28 native scattered paddock trees, comprised of the following:

- Fuzzy Box (Eucalyptus conica).
- White Box (*Eucalyptus albens*).
- Kurrajong (Brachychiton populneus).
- White Cypress Pine (*Callitris glaucophylla*).

The following native vegetation on the Site would be impacted adversely by the Project;

- Loss of 1.25 ha of eucalypt plantings which are assumed to represent PCT267 for the purposes of running BAMC.
- Loss of 0.04 ha of Box-Gum Woodland EEC beside Renshaw McGirr Way.
- Loss of 25 remnant paddock trees, 6 isolated planted native trees and up to 10 roadside trees.

The cumulative impacts of the project on remnant native vegetation loss are negligible whether remnant woodland or plantings of native windbreak trees are considered.

The biodiversity credit report output from the BAMC for clearance of the blocks of planted trees indicates that the total area of native plantings to be removed from the Site and the upgrade of the intersection of Renshaw

- McGirr Way and Suntop Road is valued at 20 credits. The number of native paddock trees to be cleared on the site with the presence of hollows will be offset with plantings taking place in the upper slopes of the site.

5.3. FAUNA

The fauna assessment did not identify or locate any of the listed threatened species. The survey included targeted searches for threatened fauna species that could potentially occur on the site and their habitats. The following habitat features were identified during the site assessment:

- Hollow-bearing trees (totalling 10 scattered paddock trees).
- Semi-permanent / ephemeral wet areas (second order stream).
- Waterbodies (including one small farm dam per paddock, varying between 0.2 and 0.5 ha in size).

A total of 26 species of vertebrate fauna were recorded during the survey. This included 21 species of bird (one of which was non-native), two exotic species of mammal, three species of reptile but no species of frog or fish.

The remaining trees within the site are scattered and very isolated and in poor condition due to the previous and existing site disturbances. As a result, they offer little habitat to the listed species. The tree plantations on site contain mixed species and being relatively young have not developed hollows or other habitat features for threatened fauna.

Several mature Western Grey Box (*Eucalyptus microcarpa*) trees occur were recorded on the perimeter of the site. This species is regarded as a secondary food tree for koalas (OEH 2017a). No evidence was found of koalas in the trees and these trees are too remote from any other potential koala habitat which would prevent koalas being able to reach them. In addition, the remnant tree patches are quite small, highly exposed and totally surrounded by cleared paddocks.

5.4. WEEDS AND PESTS

Three introduced species regarded as high threat exotic weeds under the BAM (OEH, 2018a) were recorded on the Site, Khaki Weed, Bathurst Burr and Saffron Thistle. None are listed as Priority Weeds under the *NSW Biosecurity Act 2015* or as Weeds of National Significance by the Australian Weeds Committee. The Land management Plan (Appendix B) addresses the monitoring and treatment of weed species across the site.

An ecologist or agronomist will be contracted annually to map the distribution and density of weeds across the project in late autumn and late summer. Mapping will be completed by traversing transects of the solar farm at a sufficient density to identify and map weeds and record the GPS coordinates of weed species extent and also details on the weed density. The mapping will be accompanied by a brief report discussing the changes in weed species distribution and density from previous years and the recommended weed control options. The weed mapping and control will utilise the LLS *Central West Regional Strategic Weed Management Plan* 2017 - 2022 as a resource. Spraying of weeds will take place prior to flowering where reasonable and feasible in line with the targets in section 2.3.

There were three exotic vertebrate species (excluding livestock animals) recorded within the project area. These including the European Red Fox (*Vulpes vulpes*), European Starling (*Sturnus vulgaris*) and House Mouse (*Mus musculus*). The proposed changes to the site are unlikely to result in an increase to the impacts of these feral species on native fauna. A pest management and monitoring regime will be prepared as part of the site Land management Plan (Appendix B).

Pest animal sightings will be recorded by the HSE representative/operations staff. As required and in an integrated manner with adjacent landowner's pest animal control will occur as part of LLS run programs. Pest animal control will be guided by the LLS Central West Regional Strategic Pest Animal Management Plan 2018 – 2023. Decreasing observations of foxes and rabbit warrens will indicate success.

6. WORK SCHEDULES

6.1. CONSTRUCTION AND OPERATION ACTIVITIES

The construction and commissioning phase is expected to last approximately 12 months. The main construction activities are outlined in Table 6-1.

Table 6-1: Main	construction	activities	by stage
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Stage	Main Activities
Site Establishment	 Installation of security measures including fencing. Establishment of site compound, material lay out and equipment washdown areas. Ground preparation. Installation of environmental controls in accordance with a detailed Construction Environmental Management Plan (CEMP). Vegetation clearing. Targeted clearance of low laying vegetation around trenching areas. Pile driven installation of PV mounting structures to minimise disturbance to existing ground cover. Establishment of tree and vegetation protection measures as required. Establishment of additional sedimentation and erosion controls as required.
Preliminary civil works	 Setting up foundations for the substation and inverter stations. Drainage works (as required). Intersection upgrade works.
Install PV systems and cables	 Installation of steel post and rail foundation system for the solar panels. Installation of PV panels and DC wiring beneath the panels. Installation of electrical cabling including trenching for underground cabling and installation of inverter stations.
Construction of 132kV substation	 Site Establishment and clearing (if required). Bulk earthworks. Detailed civil works including earthing, foundations. Erection of steelwork, equipment, demountable buildings and transformers. Electrical connections. Install new poles. Transmission line stringing for new conductor and OPGW from substation to existing 132 kV transmission line.
Intersection works	 Widening and trees: Set up traffic control for safe working and traffic management and crew facilities.

Stage	Main Activities
	 Mark out and remove trees and clear away. Excavate road edge area to be constructed for widening. Prepare formation and lay drainage where required. Construct road formation in layers and compact. Install permanent signage. Remove traffic control, make good and open new road area.
	 Set up traffic control for safe working area and set up crew facilities. Set out support post positions. Prepare foundations for posts and set in place. Fit W or similar type barrier on posts. Erect permanent road signage as required. Remove traffic control and make good.
Rehabilitation and Commissioning	 Testing of electrical infrastructure. Removal of temporary construction facilities and rehabilitation of disturbed areas. Landscaping works based on the Landscape Plan.
Operation	 Attendance at site weekly. Checking of system performance. Replacement of fuses as required on rows. Replacement of faulty equipment. Servicing of equipment. Monitoring of weeds, landscaping, environmental controls. Weed control. Landscaping and groundcover maintenance. Maintenance of environmental controls. Waste removal.

7. ENVIRONMENTAL ASPECTS AND IMPACTS

The construction phase and to a lesser extent the operational phase of the project has the potential to impact biodiversity values at the development site. 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 7-1.

Table 7-1 Potential biodiversity impacts as a result of the Project.

Impact	Consequence
Direct	
Loss of habitat	 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. Disturbance of fauna during construction due to light, noise and air quality impacts generated by vehicles, equipment and construction activities. Entrapment of fauna in trenches.
Indirect	
Accidental spills and contamination	Pollution of soils and dams.
Earthworks	• Erosion and sedimentation and/or pollution of soils, dams and downstream habitats.
Noise	Construction machinery and activities and maintenance vehicles and works may disturb local fauna.
Dust generation	• Inhibit the function of plant species and communities, soils and dams.
Introduction/ encouragement of feral pests, weeds or pathogens.	Feral pest, weed and/or pathogen encroachment.

8. ENVIRONMENTAL MANAGEMENT

The following protocols and procedures have been developed to manage the impacts of the project on biodiversity:

- Clearing protocol.
- Re-use of resources procedure.
- Unexpected threatened species finds procedure.
- Fauna handling and rescue procedure.
- Groundcover management.

8.1. CLEARING PROTOCOL

This clearing protocol will be implemented for vegetation clearance during construction.

8.1.1. Monitoring total clearing footprint

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.

8.1.2. Pre-clearing surveys

Pre-clearing surveys will be carried out by an Ecologist prior to any vegetation clearing. The following preclearing 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.

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, as well as through the issuing of ground clearance permits.

8.1.3. Timing of clearing

Avoiding the removal of hollow-bearing trees during late winter and spring to avoid the main breeding period for hollow-dependent fauna.

8.1.4. Clearing near exclusion zones

Exclusion zones containing vegetation and fauna habitat outside the approved disturbance areas must be protected from any project impacts (Figure 1-1 and detailed design TBC). Prior to construction commencing, vegetation in these areas will be protected by exclusion fencing and signage. 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. The following exclusion zones will be implemented across the site:

- A minimum 10-m buffer will be established between remnant vegetation and works.
- Erect barriers to protect retained trees, planting in Paddock 12 and Fuzzy Box in Paddock 1.

Following any vegetation clearing in the vicinity of a vegetation exclusion zone, the HSE Manager will conduct an inspection of the area to confirm that the excluded vegetation has not been impacted. Exclusion zone fencing is to be repaired within 48 hours of observed damage.

8.1.5. 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 8-1.



Figure 8-1: Three-cut method for limb removal

8.1.6. 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).

8.2. RE-USE OF RESOURCES PROTOCOL

8.2.1. Re-use of coarse woody debris (CWD)

Felled timber from the approved disturbed area 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 and 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.

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. This material will be placed (not pushed) into areas of retained vegetation to protect vegetation and fauna habitat outside the approved disturbance areas (Figure 1-1).

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

Felled timber will be stored adjacent to access roads away from solar panels and compound areas. Stockpiles will be less than 2m in height and largely free of soil where practical.

8.2.2. Re-use of soil resources

Topsoil will be salvaged where possible within the approved disturbance area. Topsoil will be windrowed adjacent disturbed areas and no greater than 1 metre in height. Where windrowing is not practicable it will be stockpiled in dedicated areas no greater than 2 metre in height. Stockpiles will be respread within 6 months of creation. Topsoil windrowed or stockpiled will be beneficially reused to enhance or rehabilitate disturbed or degraded areas of the site, as per the Land Management Plan (Appendix B).

Stockpiles soils and machinery will be outside the dripline (extent of foliage cover) of any native tree.

8.3. UNEXPECTED THREATENED SPECIES FINDS

An Unexpected Threatened Species Finds Procedure has been developed as part of this BMP. The procedure is to be implemented following the discovery of any known or suspected threatened flora or fauna within the project site.

PURPOSE

This procedure details the actions to be taken when a threatened species is unexpectedly encountered during excavation / construction activities.

SCOPE

This procedure is applicable to all activities conducted by personnel that have the potential to come into contact with threatened species.

Where threatened fauna is unexpectedly encountered that requires handling or rescue, refer to the Fauna Handling and Rescue Procedure.

INDUCTION / TRAINING

Where required, personnel will be inducted on the identification of potential threatened species occurring on site and the relevant actions for them with regards to this procedure during the Project Induction, Site Inductions and regular toolbox talks.

PROCEDURE

The HSE is responsible for implementing the procedure listed below.

1. Threatened species/ EEC unexpectedly encountered during excavation/ construction activities

If a threatened species is unexpectedly encountered during excavation / construction activities:

- a) STOP ALL WORK in the vicinity of the find.
- b) Immediately notify the Project Manager, who will notify the Project Ecologist, HSE, and Lead Representative. The Bouygues Representative will then contact the relevant agencies as required.

2. Assessment of Impact

An assessment is to be undertaken by the HSE and the Project Ecologist to identify the animal to species level, and the likely impact to the threatened species and appropriate management options, such as re-location measures, developed in consultation with Bouygues and other relevant parties (i.e. National Parks).

3. Approvals

Obtain any relevant licences, permits or approvals required if the threatened species is likely to be significantly impacted.

4. Recommencement of Works

Construction works may recommence once the Environmental Consultant has:

- Obtained approvals as required.
- Confirmed that all corrective actions and additional mitigation measures have been implemented.

The HSE must:

• Ensure that the threatened species is included in subsequent sensitive area plans, project inductions and toolbox talks.

8.4. FAUNA HANDLING AND RESCUE PROCEDURE

A Fauna Handling and Rescue Procedure has been developed as part of this BMP. The Fauna Rescue and Release Procedure must be implemented whenever fauna are encountered on the site that require rescuing or relocation. Trenches will be monitored for trapped fauna at the start and end of the workday. Fauna rescue and/or relocation would be carried out by an experienced ecologist or licenced wildlife handler/carer.

PURPOSE

This procedure explains the actions to be undertaken in the event fauna (including injured, shocked, juvenile or other animal) are discovered on the project site that require handling or rescue during vegetation and soil clearance, and ongoing construction activities.

SCOPE

This procedure is applicable to all native and introduced fauna species that are found on the project site.

Where a threatened fauna species is unexpectedly encountered during construction activities, refer to the Unexpected Threatened Species Finds Procedure.

INDUCTION AND TRAINING

All site personnel and subcontractors will be made aware of the actions to be taken in the event that fauna are discovered on the project. This training will occur on site during the Project Induction and as required in Toolbox Talks.

PROCEDURE

If wildlife is discovered on the project site during site construction activities **that may harm the animal** or **pose risk to site personnel**, the following steps will be taken.

- a) Stop all work in the vicinity of the fauna and immediately notify the site supervisor who is then to notify the environmental consultant, who is an ecologist.
- b) Preferably allow fauna to leave an area without intervention if it is not injured or in shock and if safe to do so (i.e. no machinery in the immediate vicinity).
- c) If the animal is injured, call the appropriate rescue agency immediately and follow any advice provided by the agency. Once the rescue agency arrives at the site, they are responsible for the animal. Any decisions regarding the care of the animal will be made by the rescue agency. The fauna ecologist, rescue services and local veterinary surgeries contact details are as follows:

Agency / business	Contact Number
Project Ecologist	Name – phone number
WIRES	1300 094 737
Vet	Wellington Vet Hospital – 02 6845 2872

- d) If the animal is able to and required to be captured (such as for animals that will not leave the construction area and require relocation outside of the construction area), the following measures should be applied:
 - a. Place smaller animals in a cotton bag, tied at the top; and
 - b. Keep the animal quiet, warm, ventilated and in a dark location away from noisy construction activities.
- e) If the fauna is to be released, the Project Ecologist must identify suitable fauna release locations within or near the Project site. Suitable release locations should be identified before commencement of activities that may displace fauna (such as works within areas of bog or rock removal).
- f) The HSE Manager is to record the find in an Environmental Incident Report where required following consultation with the Bouygues Representative, any sightings of threatened species, particularly unexpected threatened species. All relevant characteristics of the fauna find should

be recorded to the extent practicable (e.g. visual signs of behaviour; habitat; health signs; sex; time; date; weather).

- g) Following consultation with all relevant stakeholders, the HSE Manager shall implement any corrective actions and additional safeguards.
- a) Following confirmation by the HSE Manager that all appropriate safeguards have been implemented, construction works shall recommence.

All fauna handling/ rescue events will be recorded on a Fauna Rescue Event Record (to be prepared and included in the Construction and Environmental Management Plan).

Pest animals will be humanely euthanised.

Where fauna is routinely (>1/month) impacted by site infrastructure (eg. perimeter fencing) options will be investigated to minimising adverse interaction. An ecologist will be contacted to provide advice on the options for minimising adverse interactions. These options will be implemented where feasible.

8.5. GROUNDCOVER MANAGEMENT

Following any construction or upgrading on the site, the Applicant must:

- Restore the ground cover of temporarily disturbed areas as soon as practicable.
- Maintain the ground cover with appropriate perennial species.
- Manage weeds within this groundcover.
- Rehabilitating and revegetating temporary disturbance areas

Groundcover and weed management will be completed in accordance with this plan and the Land Management Plan (Section 7) submitted with the EIS in 2018 (Appendix B).

Areas of temporary soil disturbance will be treated with lime at the rate of 1t/ha, covered with topsoil, seeded with a mixture of ground covers listed (Table 8-1). Sown after rain in autumn to early winter. Sown with a fertilise with and N:P:K:S ratio of 15:13:0:11 at a rate of about 120 kg/ha. Stock to be withheld from sown areas.

Species	Seeding Rate	Sowing Timing
Cocksfoot	3-4 kg/ha	Autumn after rains
Fescue	8-10 kg/ha	Autumn after rains
Annual Rye Grass	5-7 kg/ha	Autumn after rains
Sub Clover	3-6 kg/ha	Autumn after rains
Barrel Medic	3-6 kg/ha	Autumn after rains
Serradella	0.25-0.5 kg/ha	Autumn after rains
Biserrula	2-4 kg/ha	Autumn after rains

Table 8-1: Plant species for rehabilitation of disturbed areas.

Grazing of pasture should be restricted until weed control and pasture seed set has occurred. Set stocking is to be avoided in preference to crash grazing in early summer or grazing integrated with weed control.

9. BIODIVERSITY MITIGATION AND MANAGEMENT MEASURES

A summary of the biodiversity mitigation and management measures for the Project are shown in Table 9-1.

Table 9-1 Biodiversity mitigation and management measures for pre-construction

Measure / requirement	Target	When to implement	Who will implement	Resources	Reference	Monitoring and sign-off
Training						
Training will be provided to all project personnel, including relevant sub-contractors on the requirements from this BMP through inductions, toolboxes and targeted training.	All workers and contractors trained on biodiversity issues.	Prior to any groundworks	Bouygues PM and HSE Manager	Training venue Induction package Toolbox talks	This BMP	Training records will be retained for all workers and contractors. These records will be audited in accordance with the Project's EMS.
Contractors will be made aware of potential threatened fauna species that could be encountered (such as through site inductions, an information poster established in crib room or similar).	Potential threatened species identification included in induction package. Reference materials including pictures placed on noticeboards at two locations.	Prior to any groundworks	Bouygues PM and HSE Manager	Posters of potential threatened species that may occur Training records	BDAR – threatened species tables BioNet – threatened species profiles	Training records will be retained for all workers and contractors. These records will be audited in accordance with the Project's EMS. HSE Manager to check noticeboards daily to ensure information is up-to-date.
Biodiversity Management Plan	'		·	'		'
A BMP will be developed and implemented as part of the CEMP.	BMP signed off internally and by BCD.	Prior to any groundworks	Suntop Solar Farm PM	CEMP Induction package	This BMP	BCD sign-off
A Clearing Protocol will be developed to ensure any potential impacts to native fauna are minimised during vegetation removal, this will include	BMP signed off internally and by BCD.	Prior to any groundworks	Bouygues PM	Two stage clearing protocol. Ecologist for clearing.	Section 8.1 of this BMP	BCD sign-off

Measure / requirement	Target	When to implement	Who will implement	Resources	Reference	Monitoring and sign-off
supervised removal of trees with hollows by a trained wildlife carer.				Clearing records.		
Vegetation						
Protective barriers will be erected to protect remnant perimeter trees, particularly plantings in Paddock 12 and Fuzzy Box clump in Paddock 1.	Retained vegetation not directly impacted by construction activities.	Prior to any groundworks	Bouygues HSE Manager	Surveyed exclusion zones marked. Start pickets. Flag tape/para web. Exclusion signage. Weekly environmental inspection report.	Clearing Protocol (section 8.1 of this BMP). Construction design drawings demarcating vegetation exclusion areas.	HSE Manager to inspect vegetation exclusion zone barriers and sign-off before to the commencement of construction via internal clearing permit.
A 10-m buffer shall be established between the perimeter of the remnant vegetation stands and the works footprint to protect vegetation and fauna habitat outside the approved disturbance areas.	A 10 m buffer implemented around retained vegetation prior to clearing works and maintained throughout construction.	Prior to any groundworks	Bouygues HSE Manager	Surveyed exclusion zones marked. Start pickets. Flag tape/para web. Exclusion signage. Weekly environmental. inspection report.	Clearing Protocol (section 8.1 of this BMP). Construction design drawings demarcating vegetation exclusion areas.	HSE Manager to inspect vegetation exclusion zone barriers and sign-off before to the commencement of construction via internal clearing permit. HSE Manager to inspect fencing of 10 m buffers weekly throughout construction. Environmental inspection forms and audits.
Applicant must retire biodiversity credits of a number and class specified in Table 1 below to the satisfaction of OEH.	PCT267 = 47.75 credits	Prior to the commencement of construction	Suntop Solar Farm PM	Payments to be made into the offset fund that developed by the NSW Government;	Biodiversity Conservation Act 2016	HSE Manager to witness payment receipt.

Table 1: Ecosystem Credit Requirements

Vegetation Community	PCT ID	Credits Required
White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	PCT267	47.75

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.

Table 9-2 Biodiversity mitigation and management measures for construction

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
Training					
Training will be provided to all project personnel, including relevant sub-contractors on the requirements from this BMP through inductions, toolboxes and targeted training.	Duration of construction: All workers and contractors trained on biodiversity issues and the requirements of this BMP on induction. Commencement of HSE Manager role: HSE Manager trained to identify threatened species identified in BDAR – threatened species tables.	Bouygues PM and HSE Manager	Training venue, Induction package Toolbox talks	This BMP	Training records will be retained for all workers and contractors. These records will be audited in accordance with the Project's EMS and CoCs.
Potential threatened species identification included in induction package. Reference materials including pictures placed on noticeboards at two locations.	Duration of construction: All workers and contractors trained on biodiversity issue. Following threatened species encounters: encounter locations and species identification details included in toolbox talk and posters on two noticeboards within 24 hours.	Bouygues PM and HSE Manager	Posters of potential threatened species that may occur	BDAR – threatened species tables. BioNet – threatened species profiles	Training records will be retained for all workers and contractors. These records will be audited in accordance with the Project's EMS and CoCs.

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
					HSE Manager to check noticeboards daily to ensure information is up-to-date.
ВМР					
A BMP will be implemented as part of the CEMP.	 Commencement of construction: Vegetation exclusion zones in place prior to clearing. Clearing protocol and fauna handling and rescue procedure followed. Six months into construction: Six month audit confirms BMP has been adhered to. End of construction audit confirms BMP has been adhered to. End of construction audit confirms BMP has been adhered to. Retained vegetation not directly impacted. Vegetation clearing and fauna handling records complete and accurate. 	Suntop Solar Farm PM	CEMP Induction package and other training materials.	This BMP BDAR	Internal and external audits in accordance with the Project's EMS and CoCs.
Unexpected threatened species	finds				
In the event that a threatened species is unexpectedly encountered during the works, the Unexpected Threated Species Finds Procedure will be implemented to ensure appropriate responses are undertaken.	 As threatened species are encountered: the Unexpected Threatened Finds Procedure will be followed with records containing as a minimum: Time date, location weather conditions Species, condition and number of individuals. 	Bouygues HSE Manager	Fauna field kit including camera, and fauna handling equipment.	Unexpected Threated Species Finds Procedure Monthly reporting	Unexpected threatened species finds records will be audited as part of audits completed in accordance with the Project's EMS and CoCs.

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
	 Description of the event that led to the discovery Outcome: whether the threatened individuals were protected with fencing/barricades if an animal, whether they escaped or handed to a wildlife carer/vet. Photos of the threatened plant/animal where possible. 		Field guides or BioNet threated species profiles.		
Native vegetation					
Protective barriers will be erected to protect remnant perimeter trees, particularly plantings in Paddock 12 and Fuzzy Box clump in Paddock 1	Commencement of construction: Vegetation exclusion zones including 10 m buffers implemented prior to clearing. Duration of construction: Weekly inspections by the HSE Manager to ensure vegetation exclusion zones are maintained. End of construction: retained vegetation not directly impacted by construction activities.	Bouygues HSE Manager	Surveyed exclusion zones marked. Start pickets. Flag tape/para web. Exclusion signage. Weekly environmental inspection report.	Internal vegetation clearing permits. Construction design drawings showing retained vegetation areas.	Internal vegetation clearing permits and site inspection reports would be assessed as part of Project audits in accordance with the EMS and CoCs.
A 10-m buffer shall be established between the perimeter of the remnant vegetation stands and the works footprint to protecting vegetation and fauna habitat outside the approved disturbance areas	Commencement of construction: Vegetation exclusion zones including 10 m buffers implemented prior to clearing. Duration of construction: Weekly inspections by the HSE Manager to ensure vegetation exclusion zones are maintained. End of construction: retained vegetation not directly impacted by construction activities.	Bouygues HSE Manager	Surveyed exclusion zones marked. Start pickets. Flag tape/para web. Exclusion signage.	Internal vegetation clearing permits. Construction design drawings showing retained vegetation areas.	Internal vegetation clearing permits and site inspection reports will be assessed as part of Project audits in accordance with the EMS and CoCs.

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
			Weekly environmental inspection report.		
The works (e.g. plant, material stockpiling) should not encroach into remnant vegetation and buffer areas in order to protect and preserve the limited vegetation and habitat areas across the site	Commencement of construction: Vegetation exclusion zones including 10 m buffers implemented prior to construction materials and machinery arriving onsite. All workers and contractors trained to understand that vegetation exclusion zones are not to be entered or impacted by construction activities. Duration of construction: Weekly inspections by the HSE Manager to ensure vegetation exclusion zones are maintained and that laydown areas are restricted to designated areas shown on construction design drawings. End of construction: retained vegetation not directly impacted by construction activities.	Bouygues HSE Manager	Surveyed exclusion zones marked. Start pickets. Flag tape/para web. Exclusion signage. Weekly environmental inspection report.	Internal vegetation clearing permits. Construction design drawings showing retained vegetation areas.	Internal vegetation clearing permits, site inspection reports and training records will be assessed as part of Project audits in accordance with the EMS and CoCs.
Terrestrial fauna and fauna hab	itat management				
Topsoil and salvaged coarse woody debris will be stockpiled for beneficial reuse adjacent to access roads in stockpiles less than 2 m in height or less.	Commencement of construction: HSE Manager will work closely with Site Manager and Site Superintendent to identify areas for topsoil removal and storage. CWD > 600 mm diameter stockpiled within designated areas. Six months into construction: Topsoil replaced progressively throughout construction. End of construction: CWD reused adjacent to access roads in stockpiles less than 2 m high	Bouygues HSE Manager, Site Superintendent	Landscaping Plan Stockpile areas Materials tracking Weekly environmental inspection report	Construction design drawings showing retained vegetation areas. Internal ground disturbance permits. Reuse of Resources Protocol.	Internal ground disturbance permits, and site inspection reports would be assessed as part of Project audits in accordance with the EMS and CoCs.

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
	at the direction of the HSE Manager. No topsoil stockpiles remaining.				
Any vegetation (including dead trees and woody debris) removed must be placed adjacent to the impacted areas to retain refuge areas and provide future habitat and protect vegetation and fauna habitat outside the approved disturbance areas	Duration of construction: The HSE Manager will work closely with the Site PM and Site Superintendent to identify areas for placing CWD. Workers and contractors participating in clearing and placing CWD will be made aware of the Clear Protocol and Reuse of CWD Protocol to ensure CWD is placed and not pushed horizontally by machinery resulting in vegetation disturbance.	Bouygues HSE Manager, Site PM and Site Superintendent.	Dedicated CWD areas. Surveyed exclusion zones marked. Training materials. Weekly environmental inspection report.	This BMP Clearing Protocol Reuse of CWD Protocol	Internal vegetation clearing permits, and site inspection reports would be assessed as part of Project audits in accordance with the EMS and CoCs.
Avoiding the removal of hollow- bearing trees during late winter and spring to avoid the main breeding period for hollow- dependent fauna.	Duration of construction: construction activities will be scheduled according the weather conditions and seasons. Hollow- bearing trees would be inspected prior to felling. Where breeding fauna are identified, clearing and other construction activities will continue elsewhere, and the tree will be left until the nest has been vacated.	Bouygues HSE in consultation with an ecologist.	Construction planning Training records Fauna handling kit.	This BMP Clearing Protocol Reuse of CWD Protocol	Vegetation clearing and fauna handling records, and site inspection reports would be assessed as part of Project audits in accordance with the EMS and CoCs.
Trenches will have infrastructure installed and be backfilled as soon as practicable. Where possible, trenches will not be left open overnight. They will be backfilled or covered in some other manner to minimise the chance of fauna becoming trapped.	Duration of construction: HSE Manager will work closely with the Site Superintendent to ensure workers and contractors are aware that trenches need to be backfilled promptly and /or covered overnight. Open trenches will be inspected every morning and at the end of each day for fauna trapped in trenches. Where fauna is encountered the Fauna Handling and Rescue Procedure will be followed and detailed records made.	Bouygues HSE Manager, Site Superintendent.	Construction planning Training records Fauna handling kit.	This BMP Fauna Handling and Rescue Procedure	Fauna handling records and site inspection reports would be assessed as part of Project audits in accordance with the EMS and CoCs

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
 Where trenches are left open overnight: Ramps or ladders will be installed to allow for trapped fauna to escape. They will be inspected at first light. Any trapped fauna will be removed by an experienced fauna handler and relocated in areas of adjacent habitat outside the works area. Where required, handle trapped animals safely, minimising stress and injury. If a native animal is detected and is unable to depart of their own accord, then implement the Fauna handling and rescue procedure. 	Duration of construction: HSE Manager will work closely with the Site Superintendent to ensure workers and contractors are aware that ramps or ladders need to be provided in covered open trenches overnight. Open trenches will be inspected every morning and at the end of each day by a qualified ecologist. Where fauna is encountered the Fauna Handling and Rescue Procedure will be followed and detailed records made.	Bouygues HSE Manager, Site Superintendent.	Night trench covers Timber ramps Morning fauna inspections Morning / evening fauna inspection Fauna handling report Weekly environmental inspection report	This BMP Fauna handling and rescue procedure	Fauna handling records and site inspection reports would be assessed as part of Project audits in accordance with the EMS and CoCs
Speed limits should be set to 20 km per hour on internal roads and tracks to avoid and minimise chances of collision with fauna. <i>Internal speed limits</i> have been adjusted to 40 km/hr	Duration of construction: All workers and contractors will be informed that the speak limit of internal roads is 20 km/hour. Speed limit signage will be placed at strategic locations including the site entrance. A target of no animal vehicle collisions stands for the duration of the Project. Fauna	Bouygues PM	Induction package Toolbox talks Speed limit signage	This BMP Fauna Handling and Rescue Procedure Traffic Management Plan	Fauna mortality and handling records, Traffic Management Plan and site inspection reports would be assessed as part of Project audits in accordance with the EMS and CoCs
Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
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in line with Work Health and Safety requirements.	mortalities will be reported to the HSE Manager immediately and reported. Where the animal is still alive the Fauna Handling and Rescue Procedure would be implemented.		Weekly environmental inspection report		
The fauna handling and rescue procedure must be implemented whenever fauna are encountered on the site and which require rescuing or relocation. Fauna rescue and/or relocation would be carried out by an experienced ecologist or licenced wildlife handler/carer.	 Duration of construction: Where animals are trapped, dependent juveniles or injured and unable to get away, the fauna handling and rescue procedure would be implemented but an experienced ecologist or wildlife handler. Records will be made of all animals handled including: Time date, location weather conditions Species and condition of animal. Description of the even that led to the animal encounter. Outcome: whether the animal was released, handed to a wildlife career or put down. 	Bouygues HSE Manager	Fauna handling and rescue procedure Fauna field kit Contact details: vet, wildlife carer, ecologist Weekly environmental inspection report	This BMP Fauna Handling and Rescue Procedure	Fauna handling records would be assessed as part of Project audits in accordance with the EMS and CoCs
Weed and pest animal manageme	ent				
Integrated pest animal control will be implemented with adjoining landowners and the Local Land Services (LLS) when campaigns occur. <i>Central West Local Land</i> <i>Services</i> 96 Victoria St, Dubbo NSW 2830 (02) 6841 6500	Commencement of construction: A Weed and Pest Management Plan will be developed in consultation with adjoining landowners and LLS. Duration of construction target: no indication of increasing pest animal populations. Trapping and/or baiting to control cat and fox populations should be completed each year in late autumn or early winter before the breeding season of most native fauna in	Bouygues HSE Manager	Adjacent landowners Central West Regional LLS Monthly reporting Trapping/pesticide application records	Central West Regional Strategic Pest Animal Management Plan 2018 - 2023	Weed and Pest Management signed-off by BCD. Written correspondence with adjoining landowners and LLS regarding their interest and involvement in the Weed and Pest Management Plan including details of coordinated activities. Site inspection reports, fauna records including encounters with

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
	 accordance with the approved Weed and Pest Management Plan. Records of pest animal encounters and control activities will be recorded including at a minimum: Time date, location weather conditions Species and condition of animal. Description of the even that led to the animal encounter. Outcome: whether the animal escaped or was put down. 		Weekly environmental inspection report		pest animals and documented pest control activities would be assessed as part of Project audits in accordance with the EMS and CoCs.
Existing and emergent high threat exotic weeds will be surveyed for and controlled on a seasonal basis prior to flowering when weeds are likely to exceed 0.25 ha.	Commencement of construction: the development site will be surveyed, and all high threat exotic weeds removed through earthworks or sprayed. Vehicle hygiene measures implemented and recorded in accordance with the Weed and Pest Management Plan. Contaminated removed vegetation and topsoil disposed of at a licensed waste facility or treated/quarantined onsite to prevent spreading. Duration of construction: monthly weed monitoring of the entire development site. No patches of high threat exotic weeds larger than 0.25 ha. Annual weed species extent and density mapping and reporting. Patches of weeds identified and sprayed each spring prior to the bushfire season and each autumn prior to winter rains.	Bouygues HSE Manager	Ecologist or agronomist inspection/control report Weed spraying contractor Selective herbicides Pesticide application records Monthly environmental inspection report	Weed and Pest Management Plan WeedWise website Central West Regional Strategic Weed Management Plan 2017 - 2022	Review of Weed and Pest Management Plan in accordance with the Project's EIS. Site inspection reports, fauna records, weed monitoring records and weed management actions would be assessed as part of Project audits in accordance with the EMS and CoCs.

Suntop Solar Farm

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
Minimise impacts of fauna interaction with perimeter fencing	Monitor perimeter fencing for fauna during routine inspections Rescue and recover/ release fauna trapped	Bouygues HSE Manager	Daily informal fence observation Monthly environmental inspection report Perimeter fencing checks	Fauna Handling and Rescue Procedure	Site inspection reports, fauna records

Table 9-3 Biodiversity mitigation and management measures for operation

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
Training					
Training will be provided to all project personnel, including relevant sub-contractors on the requirements from this BMP through inductions, toolboxes and targeted training.	Duration of operation: All workers and contractors trained on biodiversity issues and the requirements of this BMP on induction. Commencement of HSE Manager role: HSE Manager trained to identify threatened species identified in BDAR – threatened species tables.	Suntop Solar Farm HSE Manager	Training venue, Induction package Toolbox talks	This BMP	Training records will be retained for all workers and contractors. These records would be audited in accordance with the Project's EMS and CoCs.
Potential threatened species identification included in induction package. Reference materials including pictures placed on noticeboards at two locations.	Duration of operation: All workers and contractors trained on biodiversity issues. Following threatened species encounters: encounter locations and species identification details included in toolbox talk and posters on two noticeboards within 24 hours.	Suntop Solar Farm HSE Manager	Posters of potential threatened species that may occur	BDAR – threatened species tables. BioNet – threatened species profiles	Training records will be retained for all workers and contractors. These records would be audited in accordance with the Project's EMS and CoCs. HSE Manager to check noticeboards weekly to ensure information is up-to-date.

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
ВМР					
A BMP will be implemented as part of the OEMP.	 Duration of operation: Vegetation exclusion zones in place. Clearing protocol and fauna handling and rescue procedure followed. Retained vegetation not directly impacted. Fauna handling, weed monitoring/control and pest management records complete and accurate. Monthly environmental inspections implemented and recorded. 	Suntop Solar Farm Site Manager	OEMP Induction package and other training materials.	This BMP BDAR	Internal and external audits in accordance with the Project's EMS and CoCs.
Unexpected threatened species	finds				
In the event that a threatened species is unexpectedly encountered during the works, the Unexpected Threated Species Finds Procedure will be implemented to ensure appropriate responses are undertaken.	 As threatened species are encountered: the Unexpected Threatened Finds Procedure will be followed with records containing as a minimum: Time date, location weather conditions Species, condition and number of individuals. Description of the event that led to the discovery Outcome: whether the threatened individuals were protected with fencing/barricades, if an animal whether they escaped or handed to a wildlife carer/vet. Photos of the threatened plant/animal where possible. 	Suntop Solar Farm HSE Manager	Fauna field kit including camera, and fauna handling equipment. Field guides or BioNet threated species profiles.	Unexpected Threated Species Finds Procedure Monthly reporting	Unexpected threatened species finds records would be assessed as part of audits completed in accordance with the Project's EMS and CoCs.

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off			
Terrestrial fauna and fauna habi	Terrestrial fauna and fauna habitat management							
Speed limits should be set to 20 km/ hour on internal roads and tracks to avoid and minimise chances of collision with fauna.	Duration of operation: All workers and contractors will be informed that the speak limit of internal roads is 20 km/hour. Speed limit signage will be placed at strategic locations including the site entrance. A target of no animal vehicle collisions stands for the duration of the Project. Fauna mortalities will be reported to the HSE Manager immediately and reported. Where the animal is still alive the fauna handling and rescue procedure would be implemented.	Suntop Solar Farm Site Manager	Induction package Toolbox talks Speed limit signage Weekly environmental inspection report	This BMP Fauna handling and rescue procedure Traffic Management Plan	Fauna mortality and handling records, Traffic Management Plan and site inspection reports would be assessed as part of Project audits in accordance with the EMS and CoCs			
The fauna handling and rescue procedure must be implemented whenever fauna are encountered onsite and which require rescuing or relocation. Fauna rescue and/or relocation would be carried out by an experienced ecologist or licenced wildlife handler/carer.	 Duration of construction: Where animals are trapped, dependent juveniles or injured and unable to get away, the fauna handling and rescue procedure would be implemented but an experienced ecologist or wildlife handler. Records will be made of all animals handled including: Time date, location weather conditions Species and condition of animal. Description of the even that led to the animal encounter. Outcome: whether the animal was released, handed to a wildlife carer or put down. 	Suntop Solar Farm HSE Manager	Fauna handling and rescue procedure Fauna field kit Contact details: vet, wildlife carer, ecologist Weekly environmental inspection report	This BMP Fauna handling and rescue procedure	Fauna handling records would be assessed as part of Project audits in accordance with the EMS and CoCs			
Integrated pest animal control will be implemented with	Duration of operation target: no evidence of pest animals including cats and foxes within the development site.	Suntop Solar Farm HSE Manager	Adjacent landowners	Weed and Pest Management Plan	As the Weed and Pest Management Plan is reviewed and updated in accordance with			

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Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
adjoining landowners and the Local Land Services (LLS).	 Action: Trapping and/or baiting to control cat and fox populations will be completed each year in late autumn or early winter before the breeding season of most native fauna in accordance with the approved Weed and Pest Management Plan. Records of pest animal encounters and control activities will be recorded including at a minimum: Time date, location weather conditions Species and condition of animal. Description of the even that led to the animal encounter. Outcome: whether the animal escaped or was put down. 		Central West Regional LLS Monthly reporting Trapping/pesticide application records Weekly environmental inspection report	Central West Regional Strategic Pest Animal Management Plan 2018 - 2023	the EMS, pest animal records will be analysed to determine whether the numbers of pest animals are dropping or increasing. Management actions should be amended accordingly. Site inspection reports, fauna records including encounters with pest animals and documented pest control activities would be assessed as part of Project audits in accordance with the EMS and CoCs.
Existing and emergent high threat exotic weeds will be surveyed for and controlled on a seasonal basis prior to flowering when weeds are likely to exceed 0.25 ha.	Commencement of operation target: No patches of high threat exotic weeds larger than 0.25 ha. 12 month target: No patches of high threat exotic weeds larger than 0.25 ha. Two year target (an ongoing): No patches of high threat exotics larger than 0.25 ha within the development site. Action: Annual weed species extent and density mapping and reporting. Patches of weeds identified and sprayed each spring prior to the bushfire season and each autumn prior to winter rains.weed	Suntop Solar Farm HSE Manager	Ecologist or agronomist inspection/control report Weed spraying contractor Selective herbicides Pesticide application records Monthly environmental inspection report	Weed and Pest Management Plan WeedWise website Central West Regional Strategic Weed Management Plan 2017 - 2022	Review of Weed and Pest Management Plan in accordance with the Project's EIS. Site inspection reports, fauna records, weed monitoring records and weed management actions would be assessed as part of Project audits in accordance with the EMS and CoCs.

Measure / requirement	Target and implementation timing	Who will implement	Resources	Reference	Monitoring and sign-off
Minimise impacts of fauna interaction with perimeter fencing	Monitor perimeter fencing for fauna during routine inspections	Suntop Solar Farm HSE Manager	Minimise impacts of fauna interaction with perimeter fencing	Monitor perimeter fencing for fauna during routine inspections	Site inspection reports, fauna records

10. COMPLIANCE MANAGEMENT

10.1. ROLES AND RESPONSIBILITIES

The Project Team's organisational structure and overall roles and responsibilities are outlined in the EMS. Specific responsibilities for the implementation of environmental controls will be detailed in the CEMP.

Table 10-1 Construction team roles and responsibiliti

Role	Responsibility	Authority
Bouygues 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. Ensure appropriate approvals and licences are held. Ensure all staff and contractors are aware of environmental compliance requirements and environmental controls. Address & Implement BMP review findings. 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.
Bouygues Quality, Health Safety and Environment Coordinator	 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 including the BMP. Reporting of pollution incidents. 	 Recommend Stop-work for an activity that may cause material or environmental harm. Release of environmental hold points, if required.
Bouygues 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. Responsible for addressing corrective actions arising from Environmental Inspections. 	 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.
Suntop Solar Farm staff: • Project Manager/Site Superintendent • 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 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.

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Figure 10-1 Canadian Solar operations and maintenance (O&M) organisational chart (example).

PRELIMINARY Org. chart Suntop 190 MWp NOTE: PRELIMINARY CHART FOR TENDER PURPOSES - INDICATIVE NAMES AND RATES



Figure 10-2 Bouygues Construction Australia organisational chart.

10.2. MONITORING

The following schedules will be used to monitoring biodiversity on site.

Table 10-2: Pre-construction monitoring schedule for Suntop Solar Farm

Measure / requirement	Monitoring	Trigger levels	Corrective action and Timing
Training			
Training will be provided to all project personnel, including relevant sub- contractors on the requirements from this BMP through inductions, toolboxes and targeted training.	 Training records will be retained for all workers and contractors including: induction training registration sheets. Specialist training certification e.g. chainsaw tickets and drivers' licences kept on file. induction package. Toolbox sign-in sheets. Toolbox agendas. The HSE Manager will provide environmental training material for the induction package including: Vegetation exclusion zones. Clearing Protocol. Unexpected Threatened Species Finds Procedure. Fauna sighting requirements. Biosecurity (e.g. vehicle hygiene) The HSE Manager will check the induction package monthly for missing information. Training records will be audited as part of the Independent Environmental Audit (Schedule 4, CoC 6). 	 Induction training package does not contain required environmental content to comply with this BMP. Induction registration forms do not include the names of all workers and contractors. Toolbox agendas do not align with biodiversity events e.g. threatened species finds, poor vehicle hygiene etc. Gaps in targeted training records. 	Workers or contractors found to be insufficiently trained will stop work and complete required training within 24 hours before returning to work. HSE Manager, Site Superintendent and Project MP will be informed of gaps in toolbox agendas. Missed biodiversity issues will be addressed in the next toolbox meeting within 48 hours.

Measure / requirement	Monitoring	Trigger levels	Corrective action and Timing
Contractors will be made aware of potential threatened fauna species that could be encountered (such as through site inductions, an information poster established in crib room or similar).	Induction training package will list threatened species identified in BDAR species tables including images for each species. Threatened species identification information will be available on two site noticeboards at all times. Threatened species encounters will be reported at the next toolbox meeting and two noticeboards. HSE Manager to check noticeboards daily to ensure information is up-to-date.	Threatened species information missing from induction package. Threatened species information missing from noticeboards. Threatened species encounters missing from toolbox agendas.	Threatened species list including images returned to induction pack and training staff informed within 24 hours. Threatened species replaced on noticeboards within 48 hours. Missed biodiversity issues discussed at next toolbox meeting within 48 hours.
A BMP will be developed and implemented as part of the CEMP.	BCD sign-off.	No further action.	No further action. Prior to the commencement of construction.
A Clearing Protocol will be developed to ensure any potential impacts to native fauna are minimised during vegetation removal. This will include supervised removal of trees with hollows by a trained wildlife carer.	 BCD sign-off HSE Manager will remain aware of all scheduled removal of hollow-bearing trees and will inspect these locations daily until removed. HSE Manager to check fauna handing gear (once) prior to removal of hollow-bearing trees. HSE Manager to review Clearing Protocol documentation at the end of each clearing task. 	Hollow-bearing tree removal with no ecologist present. Insufficient fauna handling gear to rescue animals safely. Clearing Protocol documentation incomplete.	Stop work immediately until a qualified ecologist is present. Replace missing fauna handling equipment within 24 hours. Contact Project Ecologist and ask them to provide the missing information within 48 hours.
Protective barriers will be erected to protect remnant perimeter trees, particularly plantings in Paddock 12 and Fuzzy Box clump in Paddock 1.	HSE Manager to inspect vegetation exclusion zone barriers and sign-off before to the commencement of construction (including delivery of construction materials and clearing).	Protective fencing and barriers absent.	Protective fence and barriers installed prior to commencement of construction daily (within 24 hours).

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Measure / requirement	Monitoring	Trigger levels	Corrective action and Timing
	Environmental inspection reports will be assessed in the Independent Environmental Audit (Schedule 4, CoC 6).		
A 10-m buffer shall be established between the perimeter of the remnant vegetation stands and the works footprint.	HSE Manager to inspect vegetation exclusion zone barriers and sign-off before to the commencement of construction.	Buffers between remnant vegetation stands and works area less than 10 m	Reinstall fencing and barriers to 10 m from remnant vegetation stands prior to construction commencing daily (within 24 hours).

Table 10-3 Construction monitoring schedule for Suntop Solar Farm

Measure / requirement	Monitoring	Trigger levels	Corrective actions
Training will be provided to all project personnel, including relevant sub- contractors on the requirements from this BMP through inductions, toolboxes and targeted training.	 Training records will be retained for all workers and contractors including: induction training registration sheets. Specialist training certification e.g. chainsaw tickets and drivers' licences kept on file. induction package. Toolbox sign-in sheets. Toolbox agendas. The HSE Manager will provide environmental training material for the induction package including: Vegetation exclusion zones. Clearing Protocol. Unexpected threatened Species Finds Procedure. Fauna sighting requirements. Biosecurity (e.g. vehicle hygiene) 	Induction training package does not contain required environmental content to comply with this BMP. Induction registration forms do not include the names of all workers and contractors. Toolbox agendas do not align with biodiversity events e.g. threatened species finds, poor vehicle hygiene etc. Gaps in targeted training records.	Workers or contractors found to be insufficiently trained will stop work and undertake required training before returning to work within 24 hours. HSE Manager, Site Superintendent and Project MP will be informed of gaps in toolbox agendas. Missed biodiversity issues will be addressed in the next toolbox meeting within 48 hours.

Measure / requirement	Monitoring	Trigger levels	Corrective actions
	The HSE Manager will check the induction package monthly for missing information. Training records will be audited as part of the Independent Environmental Audit (Schedule 4, CoC 6).		
Potential threatened species identification included in induction package. Reference materials including pictures placed on noticeboards at two locations.	Induction training package will list threatened species identified in BDAR species tables including images for each species. Threatened species identification information will be available on two site noticeboards at all times. Threatened species encounters will be reported at the next toolbox meeting and two noticeboards. HSE Manager to check noticeboards weekly to ensure information is up-to-date.	Threatened species information missing from induction package. Threatened species information missing from noticeboards. Threatened species encounters missing from toolbox agendas.	Threatened species list including images returned to induction pack and training staff informed within 24 hours. Threatened species replaced on noticeboards within 48 hours. Missed biodiversity issues discussed at next toolbox meeting within 48 hours.
A BMP will be implemented as part of the CEMP.	 HSE Manager to ensure that systems are in place in compliance with the BMP including: Worker and contractor training. Clearing Protocol such as the implementation in internal ground disturbance and vegetation clearing permits. Recruit and brief a Project Ecologist on the expectations of the Clearing Protocol and Fauna Handing and Rescue Procedure. Brief the Site Superintendent and Project PM about the expectations of vehicle speed limits, vehicle hygiene and vegetation clearing protocol. 	Workers unaware of biodiversity-related procedures. Biodiversity procedures including recordkeeping not properly adhered to.	Address shortcomings in toolbox meetings e.g. going through the Clearing Protocol from start to finish within 48 hours. Address recordkeeping shortcoming by going through requirements with individual workers as required within 24 hours.

Measure / requirement	Monitoring	Trigger levels	Corrective actions
	HSE Manager to check recordkeeping weekly for the first four weeks of construction and then monthly thereafter.		
In the event that a threatened species is unexpectedly encountered during the works, the Unexpected Threated Species Finds Procedure will be implemented to ensure appropriate responses are undertaken.	Where unexpected encounters with threatened species occur, the HSE Manager will be informed immediately and will ensure an environmental incident report is completed and the Project Ecologist and rescue agency are contacted immediately. Unexpected threatened species incident reports will be audited as part of the Independent Internal Audit (Schedule 4, CoC 6).	Threatened species encounters unreported. Threatened animals injured. Threatened species habitat accidentally damaged.	Environmental incident report completed immediately. If threatened fauna is still present, stop work immediately and contact Project Ecologist and the nominated rescue agency within 24 hours. Raise the incident at the next toolbox meeting to prevent future non-compliance within 48 hours.
Protective barriers will be erected to protect remnant perimeter trees, particularly plantings in Paddock 12 and Fuzzy Box clump in Paddock 1	 HSE Manager to inspect protective barriers immediately prior to clearing activities and weekly thereafter. Internal vegetation clearing permits and site inspection reports will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC 6). 	Protective barriers/fencing moved or damaged. Protective barriers/fencing not respected by construction workers.	Protective barriers/fencing replaced to correct location within 24 hours. Workers responsible for moving barriers or entering 'no go zones' reprimanded within 24 hours.
A 10-m buffer shall be established between the perimeter of the remnant vegetation stands and the works footprint.	 HSE Manager to inspect protective barriers and buffers immediately prior to clearing activities and weekly thereafter. Internal vegetation clearing permits and site inspection reports will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC 6). 	Protective barriers/fencing moved or damaged. Protective barriers/fencing not respected by construction workers.	Protective barriers/fencing replaced to correct location within 24 hours. Workers responsible for moving barriers or entering 'no go zones' reprimanded within 24 hours.
The works (e.g. plant, material stockpiling) should not encroach into remnant vegetation and buffer areas in order to protect and preserve the	Commencement of construction: designated laydown areas mapped and marked with flagging tape or fencing prior to use.	Stockpile sites and laydown area boundaries not clearly marked.	Replace fencing or markers to clearly delineate stockpile and laydown areas within 48 hours. Evaluate whether stockpiles or laydown could impact vegetation exclusion areas or habitat. If

Measure / requirement	Monitoring	Trigger levels	Corrective actions
limited vegetation and habitat areas outside approved disturbance areas (figure 1) and detailed design (TBC)	Laydown areas inspected weekly to ensure all materials and equipment are with designated boundaries. Weekly site inspection reports will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC 6).	Stockpiles and laydown outside designated areas. Remnant vegetation for habitat areas impacted. Vehicle movement outside the approved disturbance areas.	not, clearly mark new area and add to updated mapping. If yes, carefully remove and rehabilitate the area as best as practicable within 48 hours. Reprimand workers where appropriate, complete environmental incident report and raise incident at next toolbox meeting within 48 hours. Re-induct errant workers within 24 hours.
Topsoil and salvaged coarse woody debris will be stockpiled for beneficial reuse adjacent to access roads in stockpiles less than 2 m in height or less.	Commencement of construction: areas for topsoil removal, storage and application mapped. Peg and flag topsoil to be removed and stockpile areas. Flag and mark areas for CDW placement. HSE Manager to brief Arborists that CWD >600 mm diameter is to be retained and stockpiled. Weekly site inspection includes vegetation clearing, topsoil removal and stockpile areas. Weekly site inspection reports will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC 6).	Reclaimed topsoil not removed. CWD chipped and not retained. Topsoil stockpiles not covered resulting in dust, erosion and sediment runoff.	Where practicable, stop work, remove equipment and materials, and recommence topsoil removal within 24 hours. Discuss non-compliance with Arborists and request that in future, CWD > 600 mm is to be retained and not chipped within 48 hours. Manage stockpiles in accordance with the Soil and Water Management Plan at all times. Complete environmental incident report and raise incident at next toolbox meeting within 48 hours.
Any vegetation (including dead trees and woody debris) removed must be placed adjacent to the impacted areas to retain refuge areas and provide future habitat.	Areas for placing dead trees and woody debris mapped. Designated areas for placement clearly marked with pegs and flagging tape. Arborists briefed the dead trees and woody debris is to be retained and placed in designated areas.	Dead trees and woody debris chipped or taken offsite. Dead trees and woody debris not placed in designated areas.	Arborists briefed on the dead trees and woody debris is to be retained and placed in designated areas within 24 hours. Complete environmental incident report and raise incident at next toolbox meeting within 48 hours.

Measure / requirement	Monitoring	Trigger levels	Corrective actions
	HSE Manager will inspect tree removal activities daily throughout the duration of construction.		
	Site inspection reports will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC 6).		
Avoiding the removal of hollow- bearing trees during late winter and spring to avoid the main breeding period for hollow-dependent fauna.	Construction schedule to consider timing of hollow-bearing tree removal. Weekly site inspection of hollow-bearing trees to ensure they are not been disturbed during late winter and spring. Weekly site inspection reports and Clearing Protocol records will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC 6).	Hollow-bearing trees removed in late winter, and spring.	Arborists briefed that hollow-bearing trees are not to be removed during late winter and spring or without sign-off by the HSE Manager within 24 hours. Complete environmental incident report and raise incident at next toolbox meeting within 48 hours.
Trenches will have infrastructure installed and be backfilled as soon as practicable. Where possible, trenches will not be left open overnight. They will be backfilled or covered in some other manner to minimise the chance of fauna becoming trapped.	 Trench locations mapped and scheduled to maximise backfilling efficiency. Open tranches will be inspected early in each morning and every afternoon/evening until the work is completed. Daily site inspection reports and fauna handling records will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC 6). 	More than 500 m of trench open at any one time. Any trench not covered overnight. Fauna mortality.	Backfill trenches before digging further trenches each 24 hour construction cycle . Brief workers that open trenches must be covered overnight and reprimand workers for repeat offences within 24 hours. Complete environmental incident report and raise incident at next toolbox meeting within 48 hours.
 Where trenches are left open overnight: Ramps or ladders will be installed to allow for trapped fauna to escape. 	Commencement of construction: trench locations mapped and scheduled to maximise backfilling efficiency. Open tranches will be inspected early in each morning and every afternoon/evening until the work is completed.	Any trench not covered overnight. Overnight ramps/ladders every 100 m absent. Fauna mortality.	Backfill trenches before digging further trenches each 24 hour construction cycle. Brief workers that open trenches must be covered overnight with ramps placed every 100 m and reprimand workers for repeat offences within 48 hours.

Measure / requirement	Monitoring	Trigger levels	Corrective actions
 They will be inspected at first light. Any trapped fauna will be removed by an experienced fauna handler and relocated in areas of adjacent habitat outside the works area. Where required, handle trapped animals safely, minimising stress and injury. If a native animal is detected and is unable to depart of their own accord, then implement the Fauna handling and rescue procedure. 	Fauna handling records completed daily and compared daily to establish whether cover and ladders is effective to prevent trapped animals. Methods altered as applicable. Daily site inspection reports and fauna handling records will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC 6).		Complete environmental incident report and raise incident at next toolbox meeting within 48 hours.
Speed limits should be set to 20 km per hour on internal roads and tracks to avoid and minimise chances of collision with fauna.	Internal speed limits and signage will be monitored in accordance with the Traffic Management Plan. Weekly site inspection reports and fauna handling records (including fauna mortality) will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC 6).	Speeding incidents reported. Internal speed signage absent. Fauna vehicle strike.	Reprimand workers in accordance with the Traffic Management Plan within 24 hours. Replace seed limit signage at the site entrance and other selected locations within 48 hours. Complete environmental incident report and raise incident at next toolbox meeting within 48 hours.
The fauna handling and rescue procedure must be implemented whenever fauna are encountered on the site and which require rescuing or relocation. Fauna rescue and/or relocation would be carried out by an experienced ecologist or licenced wildlife handler/carer.	The HSE Manager will inspect fauna handling documents as they are received. Fauna handling records (including fauna mortality) will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC 6).	Fauna handling records incomplete.	Project Ecologist/wildlife handler asked to provide complete records within 72 hours.
Integrated pest animal control will be implemented with adjoining	Weed and Pest Management signed-off by BCD.	Evidence of cat or fox present within the development site.	Scheduled pest animal control activities undertaken as scheduled in the Weed and

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Measure / requirement	Monitoring	Trigger levels	Corrective actions
landowners and the Local Land Services (LLS) when campaigns occur. <i>Central West Local Land Services</i> 96 Victoria St, Dubbo NSW 2830 (02) 6841 6500	Written correspondence with adjoining landowners and LLS regarding their interest and involvement in Weed and Pest Management including details of coordinated activities. Weed and Pest Management Plan, fauna records including encounters with pest animals and documented pest control activities will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC).	Pest control actions requirements of the Weed and Pest Management Plan. Pest animal populations appear to increase.	Pest Management Plan. The timing for this action is seasonal as required, typically once or twice per year. Where control measures in the Weed and Pest Management plan are ineffective, contact adjoining landowners and LLS about implementing additional control measures.
Existing and emergent high threat exotic weeds will be surveyed for and controlled on a seasonal basis prior to flowering when weeds are likely to exceed 0.25 ha.	Commencement of construction: map the development site for high threat weed populations to create baseline. Weed monitoring and mapping for extent and density to occur each spring and autumn. Weed extent and density results mapped and tracked for progress. Weed and Pest Management Plan and weed monitoring records will be assessed as part of the Independent Environmental Audit (Schedule 4, CoC).	Targets of high threat exotic weeds not met.	Repeat herbicide application, applied two weeks after spraying/slashing to target surviving plants. Review management approach and change plan.

Table 10-4 Operation monitoring schedule for Suntop Solar Farm

Measure / requirement	Monitoring	Trigger levels	Corrective actions
Training will be provided to all project personnel, including relevant sub- contractors on the requirements from	 Training records will be retained for all workers and contractors including: induction training registration sheets. 	Induction training package does not contain required environmental content to comply with this BMP.	Workers or contractors found to be insufficiently trained will stop work and undertake required training before returning to work within 24 hours.

Measure / requirement	Monitoring	Trigger levels	Corrective actions
this BMP through inductions, toolboxes and targeted training.	 Specialist training certification e.g. chainsaw tickets and drivers' licences kept on file. induction package. Toolbox sign-in sheets. Toolbox agendas. The HSE Manager will provide environmental training material for the induction package including: Vegetation exclusion zones. Clearing Protocol. Unexpected threatened Species Finds Procedure. Fauna sighting requirements. Biosecurity (e.g. vehicle hygiene) The HSE Manager will check the induction package monthly for missing information. Training records will be audited annually under the Project EMS.	Induction registration forms do not include the names of all workers and contractors. Toolbox agendas do not align with biodiversity events e.g. threatened species finds, poor vehicle hygiene etc. Gaps in targeted training records.	HSE Manager, Site will be informed of gaps in toolbox agendas. Missed biodiversity issues will be addressed in the next toolbox meeting within 48 hours.
Potential threatened species identification included in induction package. Reference materials including pictures placed on noticeboards at two locations.	Induction training package will list threatened species identified in BDAR species tables including images for each species. Threatened species identification information will be available on two site noticeboards at all times. Threatened species encounters will be reported at the next toolbox meeting and two noticeboards. HSE Manager to check noticeboards weekly to ensure information is up-to-date.	Threatened species information missing from induction package. Threatened species information missing from noticeboards. Threatened species encounters missing from toolbox agendas.	Threatened species list including images returned to induction pack and training staff informed within 24 hours. Threatened species replaced on noticeboards within 48 hours. Missed biodiversity issues discussed at next toolbox meeting within 48 hours.

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Measure / requirement	Monitoring	Trigger levels	Corrective actions
A BMP will be implemented as part of the OEMP.	 HSE Manager to ensure that systems are in place in compliance with the BMP including: Worker and contractor training. Clearing Protocol such as the implementation in internal ground disturbance and vegetation clearing permits. Recruit and brief a Project Ecologist on the expectations of the Clearing Protocol and Fauna handing and Rescue Procedure. Brief the Site Superintendent and Project PM about the expectations of vehicle speed limits, vehicle hygiene and vegetation clearing protocol. The BMP will be audited as part of the annual internal audit in line with the Project EMS. 	Workers unaware of biodiversity-related procedures. Biodiversity procedures including recordkeeping not properly adhered to.	Address shortcomings in toolbox meetings e.g. going through the Clearing Protocol from start to finish within 24 hours. Address recordkeeping shortcoming by going through requirements with individual workers as required within 48 hours.
In the event that a threatened species is unexpectedly encountered during the works, the Unexpected Threated Species Finds Procedure will be implemented to ensure appropriate responses are undertaken.	Where unexpected encounters with threatened species occur, the HSE Manager will be informed immediately and will ensure an environmental incident report is completed and the Project Ecologist and rescue agency are contacted immediately. Unexpected threatened species incident reports will be audited as part of annual EMS audits.	Threatened species encounters unreported. Threatened animals injured. Threatened species habitat accidentally damaged.	Environmental incident report completed immediately. If threatened fauna is still present, stop work immediately and contact Project Ecologist and the nominated rescue agency within 48 hours. Raise the incident at the next toolbox meeting to prevent future non-compliance within 48 hours.

Measure / requirement	Monitoring	Trigger levels	Corrective actions
Speed limits should be set to 20 km/ hour on internal roads and tracks to avoid and minimise chances of collision with fauna.	Internal speed limits and signage will be monitored in accordance with the Traffic Management Plan. Monthly site inspection reports and fauna handling records (including fauna mortality) will be assessed as part of annual EMS audits.	Speeding incidents reported. Internal speed signage absent. Fauna vehicle strike.	Reprimand workers in accordance with the Traffic Management Plan within 24 hours. Replace seed limit signage at the site entrance and other selected locations within 48 hours. Complete environmental incident report and raise incident at next toolbox meeting within 48 hours.
The fauna handling and rescue procedure must be implemented whenever fauna are encountered onsite and which require rescuing or relocation. Fauna rescue and/or relocation would be carried out by an experienced ecologist or licenced wildlife handler/carer.	The HSE Manager will inspect fauna handling documents as they are received. Fauna handling records (including fauna mortality) will be assessed as part of annual EMS audits.	Fauna handling records incomplete.	Project Ecologist/wildlife handler asked to provide complete records within 48 hours.
Integrated pest animal control will be implemented with adjoining landowners and LLS.	Written correspondence with adjoining landowners and LLS regarding their interest and involvement in the Weed and Pest Management Plan including details of coordinated activities. Weed and Pest Management Plan, fauna records including encounters with pest animals and documented pest control activities will be assessed as part of the annual EMS audit.	Evidence of cat or fox present within the development site. Pest control actions requirements of the Weed and Pest Management Plan. Pest animal populations appear to increase.	Scheduled pest animal control activities undertaken as scheduled in the Weed and Pest Management Plan. Where control measures in the Weed and Pest Management plan are ineffective, contact adjoining landowners and LLS about implementing additional control measures annualy.
Existing and emergent high threat exotic weeds will be surveyed for and controlled on a seasonal basis prior to flowering when weeds are likely to exceed 0.25 ha.	Weed monitoring and mapping for extent and density to occur each spring and autumn. Weed extent and density results mapped and tracked for progress. Weed and Pest Management Plan and weed	Targets of high threat exotic weeds not met.	Repeat herbicide application, applied two weeks after spraying/slashing to target surviving plants.

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Measure / requirement	Monitoring	Trigger levels	Corrective actions
monitoring records will be assessed as part of the annual EMS audit.			

Monitoring observations and reports will be directed to the Project Manager (construction) or the Site Manager (operations) for consideration and action.

The findings of reports and outcomes of management actions will be reported as described in the EMS.

10.3. 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. Targeted training would address the requirements of the environmental management measures, legislative requirements, and all conditions and commitments relating to biodiversity.

10.4. INCIDENT MANAGEMENT

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

10.5. AUDITING

Audit requirements are detailed in the EMS.

10.6. REPORTING

Reporting requirements and responsibilities are outlined in the EMS.

11. REVIEW AND IMPROVEMENT

11.1. CONTINUOUS IMPROVEMENT

Continuous improvement of this plan will be achieved by the ongoing evaluation of environmental management performance against 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.
 - o Determine the cause or causes of non-conformances and deficiencies.
 - Develop and implement a plan of corrective and preventative action to address any nonconformances and deficiencies.
 - Verify the effectiveness of the corrective and preventative actions.
 - o 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 AMENEDMENT

This BMP will be reviewed on an annual basis and 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 CONTROLS

Document control procedures are outlined in the EMS.

12. REFERENCES

Murphy, BW and Lawrie, JW (1998) 'Athurville', Soil Landscapes of the Dubbo 1:250 000 Sheet.Pitt and Sherry (2018). Suntop Solar Farm Environmental Impact Statement.Pitt and Sherry (2018). Suntop Solar Farm Response to Submissions.Pitt and Sherry (2018). Land Management Plan

APPENDIX A EIS LAND MANAGENMENT PLAN

Land Management Plan Suntop Solar Farm

transport | community | mining | industrial | food & beverage | energy



Date:

May 2018 Rev00



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Date: 9 April 2018

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Date: 10 May 2018

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1. Introduction

1.1 Purpose of the Report

The purpose of this Suntop Solar Farm Land Management Plan (LMP) is to develop a framework for the ongoing management of land, water and vegetation within the site (the "Subject Land") and describe the following components to ensure that land management is undertaken in the most appropriate manner throughout all phases of the Project:

- Provide a brief description of the Proposal and the existing environment (Section 3)
- Identify and document the existing operations, and conditions of the Site (Section 3 and 4)
- Identify critical stakeholders (Section 5)
- Outline the applicable approvals and licencing conditions (Section 6)
- Implement appropriate management measures to ensure the management of land within the Site is maintained (Section 7)
- Provide a methodology for the remediation of land following decommissioning of the Proposal (Section 8)
- Outline reporting procedures to gauge management measure effectiveness (Section 9).

1.2 Objectives

The objective of this LMP is to provide a documented system that will help ensure all land management requirements and commitments made during the approvals process are collated within this document and implemented when operating the Suntop Solar Farm.

1.3 Post-Approval Implementation

It is anticipated that following approval being given to the Proposal by the Department of Planning and Environment (DP&E), conditions of approval would likely relate to the requirement of this LMP to be updated, reviewed, approved and implemented either under, or within, the Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan (OEMP).

As a result of this, this document would be amended post-approval to reflect the specific conditions or management measures outlined within any approval documents and requirements.

1.4 Interactions with Other Documents

This LMP is a supporting document to the Suntop Solar Farm Environmental Impact Statement (EIS), 2018 and should be read in conjunction with the EIS and specialist reports provided as part of the EIS.

Specific management measures relating to surface water, erosion and sediment controls etcetera would be incorporated into the overarching CEMP, OEMP and other specific management plans as required.

2. The Proponent

The proponent is Suntop Solar Farm (SSF) which is owned by three companies including Photon Energy, Canadian Solar and Polpo Investments.

3. The Proposal

This section outlines a broad explanation of the Suntop Solar Farm (the 'Proposal'), defines the projects boundaries and identifies existing operations and environmental conditions within the Subject Land.

3.1 Overview

SSF propose to construct and operate a 200-megawatt (MW) solar farm using photovoltaic (PV) technology, comprising a total of 472 hectares in Wellington, NSW. The Proposal would be located at 909 Suntop Road, Wellington, NSW 2820 and contained within Lot 1-2 and part Lot 3 DP 506925, Lot 122 DP 753238 and Lot 90 DP 657805.

The Proposal is located within the Dubbo Local Government Area (LGA) and is approximately 10km southwest from the Wellington town centre.

The solar farm and its ancillary components would occupy a total of 472 hectares out of the total land holdings of 517 hectares (equivalent to approximately 92% of the available land) and is hereafter referred to as the "Site". Figure 1: The Proposalprovides an overview of the Proposal.

Up to 550,000 PV panels would be installed on a single axis tracker system across the Site. The single axis tracker system option would consist of groups of east-west facing PV modules tilted at +/- 60° angle (each approximately 2m x 1m in area) on mounting structures approximately 2m in height and in rows approximately 11m apart. The mounting structure would be piled steel posts that would extend between 1.6m to 4m below ground depending on geological conditions. The maximum height of panels during tracking movement is up to 4m.

The major additional components of the Proposal required to support the construction and operation of the Proposal are outlined below.

- Construction of a new main access road for all access and egress to the Site and related facilities
- Installation of electrical infrastructure including:
 - A new 132kV Substation
 - Inverters to collect and convert DC to AC
 - Cabling and other electrical infrastructure (e.g. security systems)
- A maintenance compound and ancillary buildings
- Fencing, landscaping and environmental works.

Power generated by the facility will be initially transmitted from the new 132kV substation to the existing 132kV transmission lines via a 'tee-off' (an electrical connector that joins electrical cables into existing electrical lines), along an easement owned by TransGrid that traverses the Site, before extending through to the Wellington substation, located approximately 15 kilometres to the north.

The operational life of the Proposal is expected to be 30 years at which point the panels are either replaced and operations continue (pending subsequent extension approvals) or decommissioned, removed from Site and ultimately rehabilitated as required.



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Figure 1: The Proposal

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3.2 Construction Activities

The construction and commissioning phase is expected to last approximately 12 months. The main construction activities are outlined in Table 1.

Table 1: Main	Construction	Activities
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Stage	Main activities
Site Establishment	 Installation of new access road Installation of security measures including fencing Establishment of site compound, material layout and equipment wash down areas Ground preparation Installation of environmental controls in accordance with a detailed Construction Environmental Management Plan (CEMP) Minor vegetation clearing (grasses, shrubs and groundcover) Targeted clearance of low laying vegetation around trenching areas Pile driven installation of PV mounting structures to minimise disturbance to existing ground cover Establishment of tree and vegetation buffer protection measures as required Establishment of additional sedimentation and erosion controls as required
Preliminary civil works	 Setting up foundations for the substation and inverter stations Drainage works (as required).
Install PV systems and cables	 Installation of steel post and rail foundation system for the solar panels Installation of PV panels and DC wiring beneath the panels Installation of electrical cabling including trenching for underground cabling and installation of inverter stations.
Construction of 132kV substation and new transmission line	 Site establishment and clearing (if required) Bulk earthworks Detailed civil works including earthing, foundations Erection of steelwork, equipment, demountable buildings and transformers Electrical connections Install new poles Transmission line stringing for new conductor and optical ground wire (OPGW) from substation to existing 132 kV transmission line.
Rehabilitation and Commissioning	 Testing of electrical infrastructure Removal of temporary construction facilities and rehabilitation of disturbed areas Undertake appropriate rehabilitation to be outlined in the CEMP.



3.3 **Operational Activities**

Operational activities are to immediately follow the construction and installation stages. Once operational, activities would include daily operations and maintenance, including the following.

- Remote 24/7 on-line monitoring
- Scheduled visual inspections and general maintenance
- Repair and cleaning operations of the PV arrays (as required)
- Replacement of equipment and infrastructure, as required
- Land management monitoring and activities including:
 - Livestock and grazing management
 - Maintenance of vegetation (including groundcover and pasture improvement)
 - Weed and feral animal control
 - Soil monitoring and improvement (if required).

3.4 Existing Environment

The following subheadings outline the existing site operations that occur within the Site and existing environmental conditions.

3.4.1 Existing Operations

The Subject Land, as shown in Figure 2, comprises a series of large fenced paddocks containing cereal crops and grazing cattle livestock. The paddocks have been largely cleared for agricultural purposes with a series of constructed earthworks in the form of rollover banks being placed across the Site. The property also contains several built structures including agricultural sheds, one residential dwelling and grain silos.

Section 4 provides further details regarding specific land management activities undertaken within the Subject Land.

3.4.2 Existing Site Conditions

Vegetation

The majority of the Subject Land has been previously cleared for historical cropping (i.e. wheat, oats, canola and Lucerne) and grazing purposes (cattle and sheep) with limited native vegetation remaining. As such, the area contains minimal native vegetation with the local surface hydrology, landform and soils have been heavily modified by the paddock development. There are however, several small scattered rows and isolated clumps of vegetation across the Subject Land, including 28 native scattered paddock trees, comprised of the following:

- Fuzzy Box (Eucalyptus conica)
- White Box (Eucalyptus albens)
- Kurrajong (Brachychiton populneus)
- White Cypress Pine (Callitris glaucophylla).

A total of eight dams exist within the Subject Land, ranging from 0.2ha to 0.5ha.



Figure 2: Typical Existing Site Conditions

Soils

The majority of soils on the land have been extensively disturbed by agricultural activities such as clearing for grazing and rotational cultivation. The soils are described as quite deep and relatively well drained with limited constraints. Generally, the soils do not present any major physical or chemical constraints that cannot be managed.

Chemical analysis of soil samples indicate that potential issues can be easily rectified with the application of an ameliorant such as lime for pH issues or targeted addition of nutrients for fertility. The soil tests also show that the existing soils can be prone to soil erodibility when left unvegetated due to K factors, although the overall erosion hazard is low due to climate and landform factors.

See Appendix K of the EIS for further details including soil sampling results and Section 6.8 for detailed soil management measures.

Weather

To assist with any improvement of pasture works and management of the site generally, weather data has been reviewed to determine suitable pasture species.

Generally in Wellington, Summer temperatures extend to a maximum mean of of 31.2°C and down to a mean minimum of 3.4°C in winter. Median rainfall is Summer dominant with the highest totals in the Spring/Summer months and lowest throughout the winter months. The long term median annual average rainfall is 620 mm.

The varying temperature and rainfall conditions in the area can have a significant impact on summer growing species. It is therefore very important that any pasture established would have a mix of both Summer and Winter growing species.

4. Land Management Activities

4.1 Grazing Activities

Existing sheep grazing activities would continue to occur alongside the areas occupied by solar infrastructure. These grazing activities would ensure the ongoing management of pasture grasses within the Site.

The existing surface water infrastructure within the Site (i.e. existing dams and bore) would continue to be utilised for stock watering with no changes anticipated.

4.2 Cropping Activities

It is anticipated that any cropping activities within the Site would cease following the Proposal being approved due to potential proximity issues between solar farm infrastructure and any cropping machinery. The Site would essentially be allowed to return to pasture whilst solar operations are undertaken throughout the life of the Project.

Depending upon the decommissioning and remediation decisions following the proposed 30-year solar farm consent life, if it is determined that cropping would be recommenced, this would be undertaken in accordance with a closure plan and in consultation with the landowner/operator.

5. Ownership

5.1 Structure and Responsibility

The carriage and use of this plan would be the responsibility of SSF and the onsite management representative, whether it be a SSF employee or contractor.

5.1.1 Property Owner

SSF has a purchase agreement with the landholders for Lots 1, 2 and part Lot 3 DP 506925, Lot 122 DP 753238 and Lot 90 DP 657805. A reconfiguration of the above lots is proposed as part of the purchase agreement, such that a reconfiguration would allow the current Landowner to operate separately from the proposed solar farm.

It is proposed that the purchase arrangement will involve the joining of Lots 1, 2 and part Lot 3 DP 506925, Lot 122 DP 753238 and Lot 90 DP 657805 to create a new 513ha lot of which SSF will own. A 4ha section of Lot 3 DP 506925 will create the new subdivision that will be owned by the current landowner. Electricity Infrastructure Owner.

TransGrid operates and manages a large portion of the major high voltage electricity transmission network in NSW and the ACT, connecting power generators, distributors and major end users. Their core role is to connect electricity consumers to a safe, secure and reliable network through efficient maintenance and effective operation and management of electricity supply assets.

The Suntop Solar Farm will connect into the existing TransGrid 132 kV network. The easement for this network runs from north to south through the Site.

5.1.2 Contractors

Details of the contractor will be included when they are available.
5.1.3 Government Agencies

Agency consultation as part of the LMP would be limited to that required by specific conditions or to clarify specific issues. In recognition of this, the LMP would likely be prepared in consultation with the following list of agencies as relevant.

- Dubbo Regional Council
- NSW DPE
- NSW OEH.

6. Approvals and Licensing

Compliance with all relevant approvals and licences would be addressed in the OEMP. Table 2 provides a list of the likely key legal instruments relevant to the requirements of the LMP.

Table 2: Legislation reference for requirements of the LMP

Legal Instrument	Reference to LMP
Environmental Planning and Assessment Act 1979	Compliance with Conditions of Approval
Protection of the Environment Operations Act 1997	No pollution of waters
	Reporting environmental harm
Waste Avoidance and Resource Recovery Act 2001	Appropriate disposal of waste to a lawful facility
Noxious Weeds Act 1993	Treatment of noxious weeds
Rural Fires Act 1997	Compliance with Rural Fire Service directives

6.1 Conditions of Approval

Conditions of approval would be identified and addressed once specific conditions have been assigned to the Project.

7. Implementation

7.1 Risk Assessment

Potential impacts in relation to land management from the Suntop Solar Farm have been identified through consideration of the operations to be undertaken on site, along with issues identified in the EIS, specifically Chapter 6 Environmental Impact Assessment.

The potential impacts from these issues are treated as risks and need to be managed through environmental management activities, monitoring and controls which can be implemented to prevent or reduce the risks of the issues occurring.

Potential risks identified from the operation of the Suntop Solar Farm associated with land management practices, and addressed by this LMP, are outlined below:

- Loss of productive agricultural land. See Section 7.2.1
- Management of ongoing grazing activities. See Section 7.2.2
- Maintenance of adequate and suitable groundcover (e.g. pasture for grazing). See Section 7.2.3
- Weed and feral animal management. See Section 7.2.4

- Disturbances to soil and generation of dust. See Section 7.2.5
- Management of fuel loads and potential for bushfires. See Section 7.2.6.

Other operational risks identified in the EIS would be addressed in the CEMP, including incident response and management.

7.2 Management Activities and Controls

This section of the LMP details the environmental management activities, mitigation and control measures that would be used to prevent or minimise environmental risks and impacts associated with the management of the land.

Due to the similar nature of environmental controls to be implemented within the construction and operational phases of the Proposal in regard to land management, the following management activities and controls relate to both construction and operational phases.

Remediation of the Site is discussed within Section 8; however, it is expected that these management activities would be expanded upon within a separate Remediation Plan, a document that would be compiled and subsequently approved prior to any decommissioning activities towards the end of the Proposal's lifespan.

Specific management measures regarding erosion and sediment control, noise, etc. (i.e. non-land management related issues) are discussed within the EIS and would be managed in accordance with their own specific management plans (to be outlined within the Project's Conditions of Approval) and CEMP / OEMP. As a result of this, these specific measures are not discussed further in this document.

7.2.1 Agricultural Land Management

Objective

Ensure the potential loss of available agricultural land is minimised whilst ensuring that agricultural land is utilised for agricultural purposes within the Site where possible.

Management Measures

Managed grazing would continue within the Site by being used to maintain the height of ground cover during operation of the solar farm (see Section 7.2.2), in accordance with the permissible thresholds detailed within the vegetation and soil monitoring programs.

Following decommissioning activities and owing to the reversible nature of the Proposal, the land would be returned to its former agricultural use of grazing and cropping.

7.2.2 Grazing Management

Objective

Utilise stock grazing within the Site to continue the use the available land for agricultural purposes, whilst also minimising maintenance costs and reduce the requirement for slashing / herbicide use.

Management Measures and Monitoring

Grazing management and practicalities will be developed in consultation with the stock provider and updated as part of this LMP prior to commencement of operation. Strategic internal electric fencing and access to watering points would be discussed with the stock provider with management of grazing live stock. This would include details of the grazing regime (i.e. when sheep arrived, head numbers and when they were taken off the site) or the date of mechanical slashing and the location of the activity carried out.

7.2.3 Vegetation Management

Objective

Establish and maintain groundcover suitable for grazing with minimal weed incursion over the Solar Farm footprint that does not create or increase a fuel hazard and minimises the potential for erosion and sediment laden runoff.

Management Measures

Due to the existing environment in which the majority of the Site has a base groundcover of vegetation, the following measures relate to pasture improvement in order to maintain or exceed the proposed 80% of groundcover across the Site that would be suitable for grazing activities. Management measures to maintain suitable groundcover for grazing purposes are outlined below.

- A baseline of site vegetation conditions would be recorded prior to construction operations.
- Prior to any construction or grazing activities, the Subject Land would require at least an 80% groundcover of vegetation, including grasses and legumes, and assisted by fertiliser activities if required. Suitable grass and legume species are identified in Table 3.

Table 3: Appropriate Groundcover Vegetation Species

	Grass				Legumes		
•	Phalaris (<i>Phalaris</i> aquatica)	•	Lucerne (<i>Medicago sativa</i>)	•	Sub clover (Trifolium subterraneum)	•	Gland clover (Trifolium glanduferum)
•	Cocksfoot (Dactylis glomerata)	•	Snail medic (<i>Medicago scutellata</i>)	•	Rose clover (Trifolium hirtum)	•	Sulla (Hedysarum coronarium)
•	Fescue (Festuca arundinacea)	•	Barrel medic (<i>Medicago</i> <i>truncatula</i>)	•	Serradella (Ornithopus spp.)	•	Arrowleaf clover (<i>Trifolium vesiculosum</i>)
		•	Biserrula (Biserrula pelecinus)	•	Disc/Strand hybrid medic (<i>Medicago</i> tornata/ littoralis)	•	Purple clover (<i>Trifolium</i> <i>purpureum</i>)

- Revegetation activities would be undertaken upon land that has been disturbed as a direct result of construction activities (i.e. trenching)
- If any seasonal factors or overgrazing lead to a drop in vegetative cover stock grazing would be managed accordingly
- No grazing would occur until plants are initially higher than 15 cm.

Monitoring

To enable an effective groundcover being established and maintained over the life of the Proposal, a monitoring program would be implemented and involve visual analysis as outlined within Table 4 (preconstruction) and Table 5 (operational). Following the visual analysis, areas requiring improvement would be identified within a register, along with an accurate location plan, before measures are implemented to improve the health of the groundcover vegetation. Follow up monitoring would also occur to ensure the ameliorative measures implemented are successful before any further grazing works occur within these areas.

The results of the vegetation groundcover monitoring program would be collected as part of the ongoing monitoring program and record keeping for the operation.

The location component of the monitoring program would consist of representative plots being identified following the completion of construction works. These locations would be recorded on a map, similar to Figure 1. Opportunistic monitoring at other locations would also be undertaken as required, if it was identified that vegetation parameters varied from any established baselines during the operational phase.

Table 4: Vegetation Monitoring Program – Pre-construction Stage

Vegetation Parameter	On site Methodology	Location
Vegetation Type	Onsite – visual	
Groundcover Type	Onsite – visual	
80% groundcover	Onsite – visual	
Weed species present	Onsite – visual	
Species composition	Onsite – visual	

Table 5: Vegetation Monitoring Program – Operational Stage

Vegetation Parameter	On site Methodology	Frequency	Location
Bare patches / scalds	Onsite – visual	Monthly	
Vegetation condition	Onsite – visual	Monthly	
80% groundcover	Onsite – visual	Monthly	
Weed species present	Onsite – visual	Monthly	
Species composition	Onsite – visual	Annual	

If it is identified from the monitoring program that vegetation is being affected by grazing, cattle/sheep would be removed from the identified areas of land until groundcover has re-established to appropriate levels (i.e. 80% groundcover and/or appropriate species compositions). A revised grazing plan would be implemented to ensure that grazing activities are undertaken whilst maintaining 80% of vegetation groundcover.

Weeds would be identified and treated in accordance with Section 7.2.4.

7.2.4 Weed and Feral Animal Management

Objective

The objective of weed and feral animal management is to:

- Prevent the spread of noxious weeds and feral animals
- Ensure the operation of the Suntop Solar farm complies with the *Noxious Weeds Act 1993*.

Management Measures

Any noxious weed or feral animals detected on-site will be managed using appropriate methods.



Where this requires the application of pesticides, the Proponent would ensure an appropriately accredited (ChemCert) local contractor is engaged and a copy of the contractor's application treatment will be retained and filed on-site.

This treatment record would detail the date, chemical applied and at what rates, weather conditions and the weed species sprayed.

Noxious weeds as identified by the *Noxious Weeds Act 1993* will be notified to the relevant authority as required in accordance with the Act. If weeds are becoming an issue, advice will be sought from DPI or local agronomists of the best strategies.

Regular monitoring would be required, as weeds are more easily controlled when they first germinate, as outlined in Section 7.2.3.

The perimeter security fencing would provide a barrier for medium to large feral animals to entire the Site. Any smaller feral animals would be managed in accordance with standard rural feral management procedures.

Monitoring

The results of any weed removal and treatment operations would be reported as part of the ongoing vegetation monitoring program and record keeping for the operation, including location, date and type of species identified/targeted, treatment undertaken, any follow up treatment and sign off.

7.2.5 Soil Management

Objective

The objective of soil management on the Site is to minimise potential for impacts upon soil health including erosion and soil degradation.

Management Measures

Soil management measures are outlined below, noting that erosion and sediment control management measures would be included within the Soil and Water Management Plan.

- Maintain existing pasture vegetation beneath and surrounding the panels (excluding foundation points and internal access tracks) to be suitable and utilised for grazing purposes, ensuring limited potential for soil erosion to occur
- Monitor soil health through visual and chemical testing to improve soil health if deemed required, as outlined below:
 - Utilise ameliorants such as lime or organic mulches to adjust pH levels dependent upon acidity or alkalinity levels
 - Targeted addition of nutrients (i.e. fertilisers) to improve soil fertility levels
- Temporarily excavated soil and other materials that exhibit significant dust lift off would be wet down, stabilised or covered to manage dust.

Monitoring

To enable an effective analysis of soil over the life of the Proposal, a monitoring program would be implemented and utilise the existing baseline soil results to gauge overall soil health and coverage. The proposed monitoring program is outlined within Table 6 and would occur in locations that appropriately capture the health of the soil across the entirety of the Subject Land.



The results of the soil monitoring program and any related treatment operations would be reported as part of the ongoing monitoring program and record keeping for the operation.

Table 6: Soil Monitoring Program

Soil Parameter	On site / laboratory	Frequency
Bare patches / scalds	Onsite – visual	Monthly
Hard setting	Onsite – visual	Monthly
N, P, K, S	Laboratory	Annual
рН	Laboratory	Annual
ECe	Laboratory	Annual

7.2.6 Bushfire Management

Objective

The objective is to manage the occurrence of any bushfires and ensure the Site is managed accordingly during a bushfire.

Management Measures

EIS Section 6.9 provides a holistic detailed bushfire management section with the following information relating to land management activities should a bush fire occur.

- Construct and utilise an Asset Protection Zone (APZ) around all Site infrastructure
- Install a water supply tank with a capacity of 50,000L outside of the APZ suitable for firefighting uses
- Maintain vegetation fuel levels within the Site utilising grazing, slashing or mowing activities
- Develop an Emergency Response Plan (ERP) in consultation with NSW RFS District Control Centre prior to construction.

Monitoring

Bushfire monitoring activities such as fuel loads etc. will be collected within the vegetation monitoring program outlined in Table 4. External monitoring of known bush fires would be checked by the "fires near me" app for Wellington.

8. Remediation Plan

As has been documented in the Suntop Solar Farm EIS, the Solar Farm has a projected life span of 30 years. At this time, the infrastructure will be assessed and a decision will be made as to whether the Site will be refurbished to allow ongoing operation or to close and decommission the Site.

If the decision is made to decommission the Solar Farm, the Proponent has made a commitment to remove all above and below ground infrastructure and remediate the Site to allow it to be returned it to its original use and condition as agricultural land. At this time a specific Site Remediation Plan would be compiled to ensure the removal of material from the Site is done in a structured and appropriate manner in accordance with relevant approvals and permits, and in conjunction with all necessary works and processes to return the Site to its pre- development condition.

The specifics of the Remediation Plan would be established prior to decommissioning and in consultation with relevant stakeholders including Council. The following aspects would be address in the plan:

- Remediation goals
- Discussion of the extent of remediation
- Discussion of possible remedial options and risk reduction
- Rationale for the selection of recommended remedial actions
- Proposed testing to validate the site after remediation
- Contingency plan if the selected remedial strategy fails
- Interim site management plan (before remediation), including
 - Fencing
 - erection of warning signs
 - stormwater diversion
- Site management plan (decommissioning phase) including:
 - Site stormwater management
 - Soil management
 - Noise control
 - Dust control
 - Vegetation management
 - Waste and Contaminated material management
 - Occupational health and safety plan
- Remediation schedule
- Hours of operation
- Contingency plans to respond to site incidents, to minimise potential impacts on the surrounding environment and community
- Identification of regulatory compliance requirements such as licences and approvals
- Names and phone numbers of appropriate personnel to contact during remediation
- Community Consultation
- Staged progress reporting, where appropriate
- Long-term site management plan.

9. Audit and Quality Management

9.1 Review

This management plan is to be reviewed at an agreed appropriate interval in conjunction with other relevant plans that are subject to review.

The review will include an assessment of the effectiveness of the established controls and their performance against the LMP's objectives. In addition, progressive amendments / updates will be made to this LMP as / if required.

9.2 Records

All records associated with this LMP are to be retained by the Proponent.

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APPENDIX B BMP CONSULTATION



Our ref: DOC20/210568-2 Your ref: SSD 8696

Awais Imitiaz Senior Planning Engineer Bouygues Construction Australia Level 2, 77 Pacific Highway North Sydney 2060 a.imtiaz@bouygues-construction.com

Dear Awais,

Suntop Solar (SSD 8696) - Biodiversity Management Plan

Thank you for your email dated 11 March 2020 requesting comments from the Biodiversity and Conservation Division (BCD) of the Department of Planning, Industry and Environment (DPIE) on the Suntop Solar Farm Biodiversity Management Plan (BMP).

BCD has reviewed the BMP and Landscape Management Plan (LMP) against the requirements set out in Schedule 3, Condition 13 of the development consent.

The BMP references the Landscape Management Plan (LMP) to address some of the requirements set out for the BMP. Where relevant information has been addressed in the LMP, the BMP needs to provide at the very least a summary of what is included in the LMP and provide reference to the relevant sections of the LMP.

BCD's recommendations are provided in **Attachment A** and detailed comments are provided in **Attachment B**. If you require any further information regarding this matter, please contact Helen Knight, Conservation Planning Officer, via helen.knight@environment.nsw.gov.au or 6883 5327.

Yours sincerely

1 April 2020

Renee Shepherd Acting Senior Team Leader, Planning North West Biodiversity and Conservation Division

Enclosure: Attachments A and B

48-52 Wingewarra Street, Dubbo NSW 2830 | PO Box 2111 Dubbo NSW 2830 | dpie.nsw.gov.au | 1

Attachment A

BCD's recommendations

Suntop Solar Farm (SSD 8696) – Biodiversity Management Plan

- 1.1 Exposed trenches be checked for trapped fauna twice a day (morning and afternoon/evening) at a minimum.
- 2.1 Update the BMP to include details of the reuse of salvaged topsoil and vegetation and how this will be stockpiled and used on the site post clearing activities.
- 3.1 The BMP should be updated to include measurable performance targets that will meet the objectives of the weed and pest management actions.
- 3.2 The BMP should be updated to include trigger points and subsequent corrective actions to be implemented for weed and pest management when the monitoring program identifies that the performance targets are not being met.
- 3.3 The BMP should include completion criteria for pest animal management.
- 3.4 A baseline survey should be conducted to determine the current density of weeds and pest animals on site.
- 4.1 The BMP should be updated to include detailed monitoring plans for each of the proposed management actions.
- 5.1 The BMP should be updated to include detail on how all vegetation on the proposal site will be managed.
- 5.2 The BMP should include baseline data, targets, performance indicators, completion criteria and detailed management strategies for the management of all vegetation on site (including the remnant woody vegetation).
- 6.1 The BMP should be updated to included detailed implementation and management strategies for rehabilitation and revegetation of the temporary disturbance areas.

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Attachment B

BCD's detailed comments

Suntop Solar Farm (SSD 8696) – Biodiversity Management Plan

Acronyms

BMP	Biodiversity Management Plan
LMP	Landscape Management Plan
CWD	Course Woody Debris
BCD	Biodiversity and Conservation Division (formerly OEH)

1. Management of fauna along open trenches

Section 3.1.3 Table 3-2 of the BMP states '*Any trench sections left open for greater than a day would be inspected daily, early in the morning and any trapped fauna removed*'. It is recommended that exposed trenches be checked at least twice a day (i.e. morning and afternoon/evening) at a minimum, as species that are active during the day may become trapped after the morning check.

Recommendation:

1.1 Exposed trenches be checked for trapped fauna twice a day (morning and afternoon/evening) at a minimum.

2. More detail around the reuse of salvaged soil and vegetation is required

Section 8.2.1 of the BMP states 'felled timber Will be used as CWD for habitat enhancement and to maximise salvage of resources within the disturbance area for beneficial use' and Section 8.2.2 of the BMP states '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 Land Management Plan'.

Neither the BMP or the LMP provide adequate information regarding how and where salvaged soil and coarse woody debris (CWD) will be re-used on site.

Recommendation:

2.1 Update the BMP to include details of the reuse of salvaged topsoil and CWD and how this will be stockpiled and used on the site post clearing activities.

3. Management and monitoring of weeds and feral pests should be included in the BMP

Section 5.4 of the BMP lists the known weeds and pests that occur on site. This section does not contain any baseline data, targets, performance indicators, completion criteria or detailed management strategies for weed infestations or pest animals. Instead, it refers to the LMP for these details. BCD have reviewed the relevant sections of the LMP and have determined it also does not contain this information.

The BMP should clearly outline measurable performance indicators and targets that will be used to demonstrate the extent to which the proposed weed and pest management objectives have been achieved. The BMP should state the trigger points and subsequent corrective actions to be

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implemented if the monitoring program identifies that the performance targets and therefore biodiversity management objectives are not being met.

Recommendations

- 3.1 The BMP should be updated to include measurable performance targets that will meet the objectives of the weed and pest management actions.
- 3.2 The BMP should be updated to include trigger points and subsequent corrective actions to be implemented for weed and pest management when the monitoring program identifies that the performance targets are not being met.
- 3.3 The BMP should include completion criteria for pest animal management.
- 3.4 A baseline survey should be conducted to determine the current density of weeds and pest animals on site.

4. The BMP should detail all monitoring to be undertaken on the site

More information needs to be provided for the monitoring of native vegetation and weed and pest management. For example (and not limited to); what vegetation data will be collected during monitoring events, what weed species will be monitored, and what techniques will be used to monitor feral pests. The plan should also clearly identify who will be undertaking the monitoring activities.

Recommendation:

4.1 The BMP should be updated to include detailed monitoring plans for each of the proposed management actions.

5. There are no management strategies for the remnant woody vegetation on site

The BMP is required to address the management of both remnant vegetation and fauna habitat on the site. Table 3-1 of the BMP refers to the LMP for details around the management of remnant vegetation and fauna on the proposal site. However, the information provided only details the management of the grassland areas and not the remnant woody vegetation on site.

Recommendations:

- 5.1 The BMP should be updated to include detail on how all vegetation on the proposal site will be managed.
- 5.2 The BMP should include baseline data, targets, performance indicators, completion criteria and detailed management strategies for the management of all vegetation on site (including the remnant woody vegetation).

6. Rehabilitating and revegetating temporary disturbance areas

Section 8.5 of the BMP makes reference to 'rehabilitating and revegetating temporary disturbance areas'. Neither the BMP or LMP provide further detail around rehabilitation or revegetation of the temporary disturbance areas. The BMP should include detailed implementation and management strategies for these actions including, targets, performance indicators and completion criteria.

Recommendation

6.1 The BMP should be updated to included detailed implementation and management strategies for rehabilitation and revegetation of the temporary disturbance areas.

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Biodiversity Management plan Suntop Solar Farm

Response to OEH comments on draft BMP (1 April 2020).						
Issue ID	OEH	Response	Where Addressed in plan			
1.1	Exposed trenches be checked for trapped fauna twice a day (morning and afternoon/evening) at a minimum.	Morning and afternoon/evening checks of open trenches by SEQ/Forman.	Section 8.4., , 9.			
2.1	Update the BMP to include details of the reuse of salvaged topsoil and vegetation and how this will be stockpiled and used on the site post clearing activities.	Section 8.22 of the BMP updated to address topsoil windrows, stockpiles and reuse. Cleared woody vegetation will be sorted and large logs placed as CWD and treetops chipped to use as mulch for site rehabilitation and erosion control activities. CWD will be stored adjacent to access roads in stockpiles free of soils and less than 2m in height.	Section 8.2, 9.0			
3.1	The BMP should be updated to include measurable performance targets that will meet the objectives of the weed and pest management actions.	Performance targets for weed and pest management have been included.	Section 2.3, 5.4, 9.0			
3.2	The BMP should be updated to include trigger points and subsequent corrective actions to be implemented for weed and pest management when the monitoring program identifies that the performance targets are not being met.	The BMP has been updated to include monitoring and triggers for action on weed and pest control. Participation in LLS pest programs and decreasing warren activity and observations of foxes are measures of success.	Section 5.4, 9.0			
3.3	The BMP should include completion criteria for pest animal management.	Pest animal management will be ongoing due to the mobility of pests. Participation in LLS pest programs and decreasing warren activity and observations of foxes are measures of success.	Section 5.4.			
3.4	A baseline survey should be conducted to determine the current density of weeds and pest animals on site.	Seasonal survey by an ecologist/agronomist will be used to identify seasonal weeds and control options. Observations of pests onsite and participation in integrated pest programs will be used to trigger pest animal control.	Section 3.4,			

4.1	The BMP should be updated to include detailed monitoring plans for each of the proposed management actions.	Monitoring schedules are now included in the BMP. Section 9 updated with reporting.	Section 9, Table 10-1 and 10-2
5.1	The BMP should be updated to include detail on how all vegetation on the proposal site will be managed.	The Land Management Plan Suntop Solar Farm was submitted with the EIS in 2018. Revegetation information added to BMP.	Section 8.5 10
5.2	The BMP should include baseline data, targets, performance indicators, completion criteria and detailed management strategies for the management of all vegetation on site (including the remnant woody vegetation).	The Land Management Plan Suntop Solar Farm was submitted with the EIS in 2018. It provides a range of detail for the management of vegetation on site. The Suntop Solar Farm Landscape Plan (NGH 2020) details requirements for perimeter plantings. Targets have been updated. Baseline data will be gathered during construction.	Section 8.5, 10.
6.1	The BMP should be updated to included detailed implementation and management strategies for rehabilitation and revegetation of the temporary disturbance areas.	Temporary disturbance areas will be treated with fertiliser, lime, exotic pasture mix, and monitored for revegetation.	Section 8.5, 10



Our ref: DOC20/314101 Your ref: SSD 8696

Awais Imitiaz Senior Planning Engineer Bouygues Construction Australia Level 2, 77 Pacific Highway North Sydney 2060 a.imtiaz@bouygues-construction.com

Dear Awais,

Suntop Solar (SSD 8696) - Biodiversity Management Plan

Thank you for your email dated 21 April 2020 requesting comments from the Biodiversity and Conservation Division (BCD) of the Department of Planning, Industry and Environment (DPIE) on the revised Suntop Solar Farm Biodiversity Management Plan (BMP).

BCD has reviewed the BMP against the comments provided in our review of the previous version of the BMP. Further revision is required on some of the matters previously raised.

BCD's recommendations are provided in Attachment A and detailed comments are provided in Attachment B. If you require any further information regarding this matter, please contact David Geering, Senior Conservation Planning Officer, via david.geering@environment.nsw.gov.au or 6883 5335.

Yours sincerely

Jaman the Myrr

Samantha Wynn Senior Team Leader Planning - North West Biodiversity and Conservation Division

24 April 2020

Enclosure: Attachments A and B

Attachment A

BCD's recommendations

Suntop Solar Farm (SSD 8696) - Biodiversity Management Plan

- 1.1 Table 3-2 should be updated to be consistent with the sections 8.4 and 9.
- 2.1 Short, medium- and long-term objectives and targets, where appropriate, be developed for each of the broad management measures.
- 2.2 Quantitative performance measures and targets and trigger points for corrective action be developed.
- 3.1 A detailed monitoring plan to track performance towards completion criteria be developed.
- 3.2 A TARP be developed to ensure that a timely response to unforeseen circumstances are implemented.

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Attachment B

BCD's detailed comments

Suntop Solar Farm (SSD 8696) - Biodiversity Management Plan

Acronyms

BMP	Biodiversity Management Plan
CWD	Course Woody Debris
BCD	Biodiversity and Conservation Division (formerly OEH)

1 Management of fauna along open trenches

Section 3.1.3 Table 3-2 of the BMP states 'Any trench sections left open for greater than a day would be inspected daily, early in the morning and any trapped fauna removed'.

BCD notes that section 8.4 and Section 9 have been updated to include morning and afternoon/evening checks of open trenches, but Table 3-2 has not been updated.

Recommendation:

1.1 Table 3-2 should be updated to be consistent with the sections 8.4 and 9.

2 Targets should be clear and quantifiable

In BCD's previous correspondence it was noted that:

- measurable performance indicators and targets that will be used to demonstrate the extent to which the proposed weed and pest management objectives have been achieved were required; and
- management strategies were required for remnant vegetation and fauna habitat on the site.

The targets outlined in the BMP are very general in nature or absent. Short, medium- and longterm objectives and targets should be described for each of the broad management measures. In the case of long-term targets, the strategy 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, retained vegetation and 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.

Examples of these could be:

Weed Management

Objective 1: Noxious and environmental weeds are identified and mapped.

Year 1: Undertake a detailed inspection of the site and accurately map (GIS) noxious and environmental weeds.

Years 2 & 3: Undertake quarterly weed inspections, update GIS database with necessary changes.

Objective 2: A risk-based weed management plan is developed for the site.

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Year 1: Develop a risk-based weed management program

Years 2 & 3: Implement weed management program, undertake quarterly weed inspections and schedule and undertake necessary weed treatment.

Objective 3: Reduce presence of noxious and environmental weeds.

Year 1: Implement management actions for high risk areas identified in the detailed weed inspection. Develop specific actions e.g. Targeted spraying of (insert weed) in (insert area)

Years 2 & 3: Implement weed management program. List specific actions.

Completion and performance criteria should reflect the objectives and must be quantifiable. Examples for weed management may include the "the complete removal of all (insert noxious weed)" and that "non-native groundcover not exceed 10%".

Similar detail is required for other management actions.

Recommendations

- 2.1 Short, medium- and long-term objectives and targets, where appropriate, be developed for each of the broad management measures.
- 2.2 Quantitative performance measures and targets and trigger points for corrective action be developed.

3 Monitoring methodology is to be clear with definable triggers for management actions

In BCD's previous correspondence it was recommended that more information needs to be provided for the monitoring of native vegetation and weed and pest management. For example, what vegetation data will be collected during monitoring events, what weed species will be monitored, and what techniques will be used to monitor feral pests. It was requested that the BMP be updated to include detailed monitoring plans for each of the proposed management actions.

Monitoring is required to determine the effectiveness of management actions.

The monitoring plans presented in Section 10.2 are inadequate. No details, such as the timing of the monitoring or the monitoring methodologies, are provided. In addition, no triggers have been proposed that will guide the need for weed control, for example, or when additional measures may be required.

A Trigger Action Response Plan (TARP) that addresses all management actions on the site should be developed.

Recommendations:

- 3.1 A detailed monitoring plan to track performance towards completion criteria be developed.
- 3.2 A TARP be developed to ensure that a timely response to unforeseen circumstances are implemented.

Response to OEH comments on draft BMP (24 April 2020).					
Issue ID	OEH	Response	Where Addressed in plan		
0	Acronyms	BMP, CWD and BCD added to the acronyms table.	Acronyms table		
1.1	Table 3-2 should be updated to be consistent with the sections 8.4 and 9.	Table 3-2 has been updated to include morning and late afternoon inspection of open trenches.	Table 3-2		
2.1	Short, medium- and long-term objectives and targets, where appropriate, be developed for each of the broad management measures.	The mitigation and management table has been split into three tables for pre- construction, construction and operations. Numerical targets have been added where appropriate and processes for achieving requirements developed. Short, medium and long term objectives have been developed for each Project phase where appropriate.	Section 9		
2.2	Quantitative performance measures and targets and trigger points for corrective action be developed.	Measurable targets and trigger points have been developed and integrated into mitigation measures and monitoring tables.	Section 9 and section 10.2		
3.1	A detailed monitoring plan to track performance towards completion criteria be developed.	Detailed monitoring plans have been developed for pre-construction, construction and operation phases of the Project. Trigger points and corrective actions align with targets identified for each requirement in section 9. Where completion criteria aren't suitable processes aim to achieve ongoing compliance.	Section 10.2		
3.2	A TARP be developed to ensure that a timely response to unforeseen circumstances are implemented.	Trigger action responses have been built into the monitoring tables for pre-construction, construction and operation	Section 10.2		



Our ref: DOC20/408486 Senders ref: SSD 8696

Awais Imitiaz Senior Planning Engineer Bouygues Construction Australia Level 2, 77 Pacific Highway North Sydney 2060 a.imtiaz@bouygues-construction.com

Dear Awais

Suntop Solar (SSD 8696) - Biodiversity Management Plan (v 4)

Thank you for your email dated 27 May 2020 to the Biodiversity and Conservation Division (BCD) requesting review of the revised Suntop Solar Farm Biodiversity Management Plan (BMP).

BCD has reviewed the revised BMP against comments provided on the previous versions of the BMP.

Table 9-3 of the BMP now contains measurable targets for weed control, while Table 10-3 indicates that biannual weed monitoring will occur. The BMP has not indicated how monitoring will be undertaken other than "*exotic weeds will be surveyed for*". Monitoring programs should describe the intended monitoring methods and proposed analysis to be used to determine whether there is a trend towards completion criteria.

BCD notes that the BMP refers to a Weed and Pest Management Plan (WPMP) and Landscape Management Plan (LMP). BCD has reviewed these documents to determine if detailed monitoring programs are provided that may contain the minimum information required. The LMP indicates that monitoring of weeds will be "visual". No detail regarding monitoring is currently available in the WPMP. Monitoring should be sufficient to enable an annual review and revision of mapping of weed extent and density in accordance with the targets set.

A review of the tables in sections 9 and 10 is required to ensure consistency. For example, Table 9.3 provides targets for weeds at the commencement of operation of patches of high threat exotic weeds of no larger than 0.25 ha, a 12 month target of 0.15 ha and a 2 year target of 0.05 ha. Tables 10.3 and 10.4 have targets of 0.25 ha only.

BCD regards the use of tables to provide the level of detail required in a BMP as not ideal. BCDs correspondence of 24 April 2020 provided an example of how this detail might be best presented. Tables should be used to summarize information. BCD recommends, in future, the publication 'Department of Planning and Infrastructure 2013. '*Hunter Valley Coal Mines – Best Practice Guidelines for Biodiversity Offset Management Plans*' as a useful guide for the preparation of a rigorous BMP.

In order to facilitate the finalisation of the Suntop Solar Farm BMP, BCD recommends:

- the BMP give a commitment that annual mapping of weed extent and density is completed; and
- tables in the BMP be reviewed to ensure targets are consistent.

Should you require further clarification on the items above please contact David Geering, Senior Conservation Planning Officer, via david.geering@environment.nsw.gov.au or 02 6883 5335.

Yours sincerely

Jaman the Myrr

Samantha Wynn Senior Team Leader Planning - North West Biodiversity and Conservation Division

5 June 2020

Encl: Department of Planning and Infrastructure 2013. 'Hunter Valley Coal Mines – Best Practice Guidelines for Biodiversity Offset Management Plans

Biodiversity Management plan

Suntop Solar Farm

Response to OEH comments on draft BMP (5 June 2020).					
Issue ID	OEH	Response	Where Addressed in plan		
A	The BMP give a commitment that annual mapping of weed extent and density is completed; and	The BMP has been updated to include a commitment to annual mapping of weed extent and density.	Section 5.4 and Table 9.2		
В	Tables in the BMP be reviewed to ensure targets are consistent.	Tables have been reviewed and the weed target is consistent between sections Nine and Ten.	Tables 9.3, 10.3 and 10.4		

APPENDIX C SITE LAYOUT

This site layout will be updated with changes to the detailed design. Check with the Site PM for the latest version.

Biodiversity Management plan

Suntop Solar Farm

