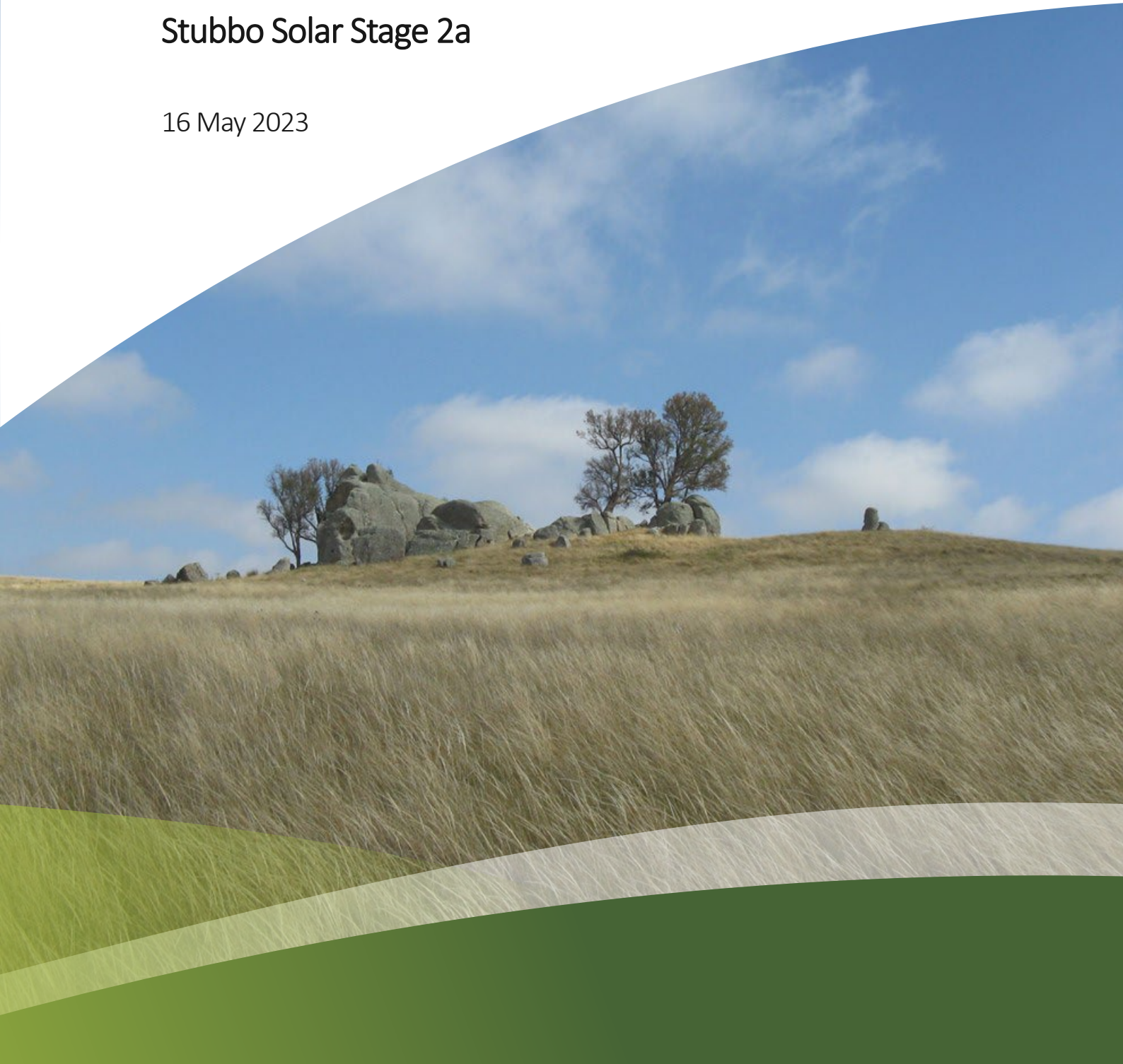
Soil and Water Management Plan

Stubbo Solar Stage 2a

16 May 2023



Soil and Water Management Plan
Stubbo Solar Stage 2a

AE1229

May 2023

Version V8			
Issued to			
Michael Yeo, Project Manager – Construction, Stubbo Solar, ACEN Australia Promit Roy, Design & Commissioning Engineer, PCL Constructors Pacific Rim Pty Ltd			
Prepared by		Reviewed by	Approved by
Ian Finlay, Principal Environmental Scientist, Accent Environmental		Michael Cramer, Director Accent Environmental	 Michael Cramer, Director Accent Environmental
Previous versions			
	V1	26 February 2023	Draft for PCL
	V2	7 March 2023	Draft for PCL and ACEN
	V3	21 March2023	Draft for PCL and ACEN
	V4	3 April 2023	Draft for PCL and ACEN
	V5	4 April 2023	Draft for DPE
	V6	20 April 2023	Draft for DPE
	V7	26 April 2023	Draft for DPE

www.accentenvironmental.com.au info@accentenvironmental.com.au

Contents

Appendices

Tables

Figures

Abbreviations

AC	alternating current
Accent	Accent Environmental Pty Ltd
ACEN	ACEN Australia Pty Ltd
BESS	battery energy storage system
BMP	biodiversity management plan
CEMP	construction environmental management plan
CoC	condition of consent
DAWE	Department of Agriculture, Water and the Environment (now DCCEEW)
DC	development consent
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DAWE)
DPE	Department of Planning and Environment
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EMP	environmental management plan
EMS	environment management strategy
EP	emergency plan
ESCP	erosion and sediment control plan
FC NSW	Forestry Corporation of NSW
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
HSE	health, safety and environment
KFH	key fish habitat
km	kilometre
kV	kilovolt
LGA	local government area
MWRC	Mid-Western Regional Council
MW	megawatt
NRAR	Natural Resources Access Regulator
NSW	New South Wales
PCL	PCL Constructors Pacific Rim Pty Ltd
POEO Act	*Protection of the Environment Operations Act 1997*
Ramboll	Ramboll Australia Pty Ltd
SDS	safety data sheet

Stubbo Solar	Stubbo Solar project
SWMP	Soil and Water Management Plan
WM Act	*Water Management Act 2000*

1 Introduction

The Stubbo Solar project (the Project) is a 400 megawatt (MW) alternating current development with an allowance for future battery storage of up to 200 MW/2 hour. The project is located between Blue Springs Road and Barneys Reef Road, approximately 10 km North of Gulgong and 85 km east of Dubbo in New South Wales (NSW) (Figure 1.1).

ACEN Australia (ACEN) is the project owner and has engaged PCL Construction Pacific Rim Pty Ltd (PCL) as the engineering, procurement and construction (EPC) contractor to manage the works for the 400 MW AC solar project, solar project substation and ancillary operational facilities.

ACEN has also engaged Transgrid to connect the Project to the transmission network used by Transgrid to provide transmission services, which includes certain works that need to be completed by Transgrid to enable Transgrid to connect the Project to the transmission network.

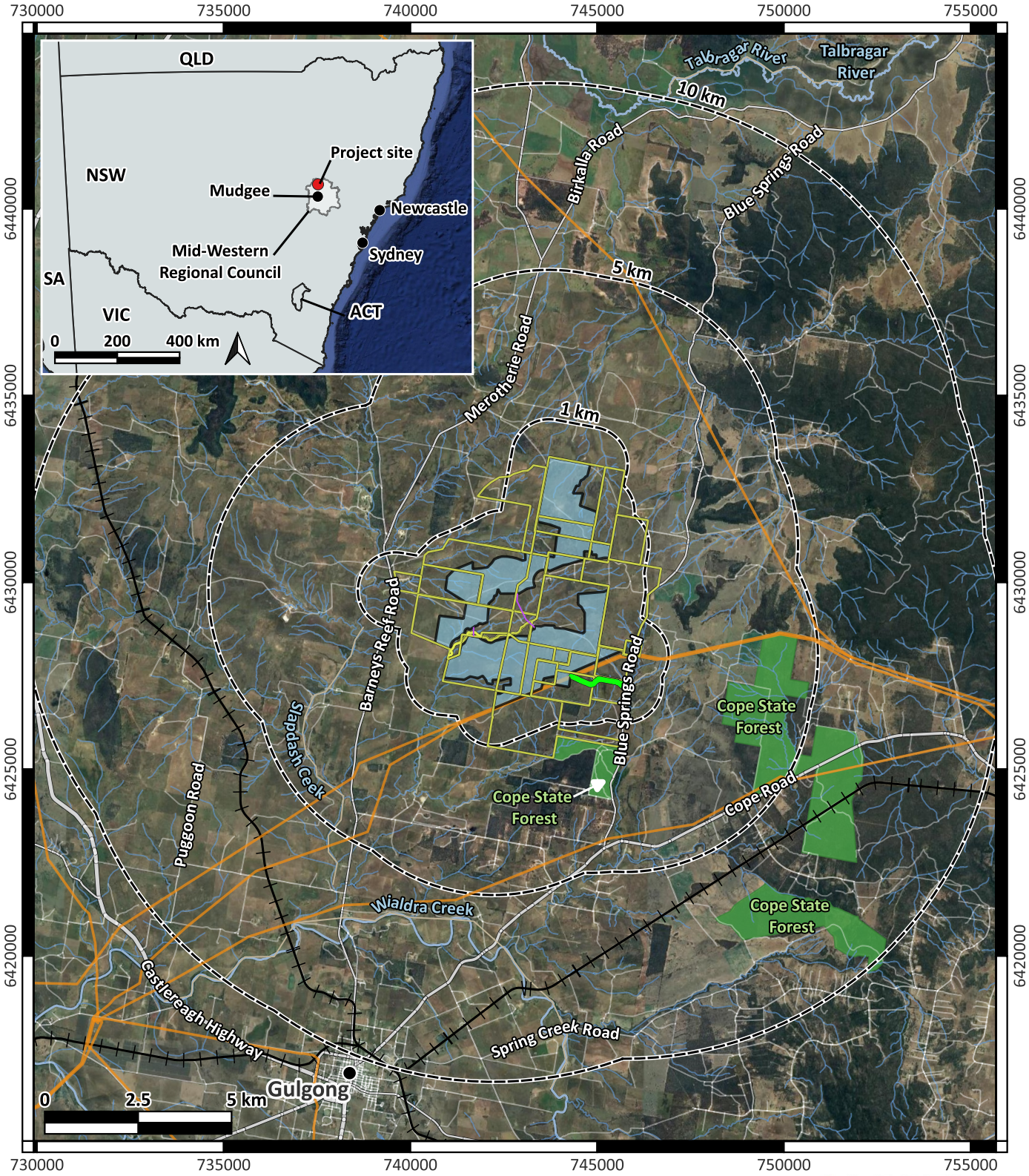
On 29 June 2021, the Executive Director, Energy, Resources and Industry Assessments granted consent to the development application for the Stubbo Solar Farm subject to conditions, under delegation from the Minister for Planning and Public Spaces and section 4.38 of the *Environmental Planning and Assessment Act 1979* (the Act).

In a letter dated 24 August 2022, the Secretary approved the Applicant's proposal to develop the project in two stages, comprising:

- Stage 1: Road upgrades including construction of the main site access; and
- Stage 2: Construction of the solar farm.

In a subsequent letter dated 10 May 2023, the Secretary approved the Applicant's request dated 8 May 2023 seeking the Planning Secretary's approval to revise the staging of the Stubbo Solar Project under Condition 3 of Schedule 4 of SSD-10452, and to develop the project in four stages comprising:

- Stage 1: Road upgrades (Blue Springs Road) and construction of the main site access.
- Stage 2: Solar project construction and operation including:
  - Stage 2a: Construction and commissioning of the solar facilities including solar array, substation and all ancillary infrastructure, including the switchyard and transmission line connection to be constructed by Transgrid.
  - Stage 2b: Operation of the Stubbo Solar Project.
- Stage 3: Construction, commissioning and operation of the Battery Energy Storage System (BESS), including substation and switchyard expansion (within the development footprint).
- Stage 4: Decommissioning of the Stubbo Solar Project at end of life.



- Access road, project Stage 1
- Existing transmission line
- Road
- Main watercourse
- Watercourse - tributary
- Project lot boundary
- Solar array extent
- Proposed access corridor
- State Forest
- Radius (1, 5, and 10 km) from project site

N

Accent 1129 Stubbo Solar project

Figure 1.1. Site locality

Created 24/03/2022

CRS: GDA 20 MGA 55

Scale: 1:150,000 at A4

Page size: A4

Base map: Google Satellite [Mar 2023]
Additional data: NSW RoadSegment, NSW Hydroline, NSW_Six_Mid_Western_Cadastral_data, NSW ElectricityTransmissionLine

ACCENT ENVIRONMENTAL

The project Development Consent (DC) - Application Number: SSD-10452 sets out a number of requirements in relation to environmental management, including a requirement to prepare a soil and water management plan (SWMP). The environmental impact statement (EIS) for the project (Ramboll 2020) also requires the preparation of erosion and sediment control plans (ESCP). An ESCP is appended to this document.

PCL has engaged Accent Environmental Pty Ltd (Accent) to prepare this SWMP and appended ESCP. The SWMP and ESCP are for Stage 2a of Stubbo Solar, as approved by the Planning Secretary in the letter dated 10 May 2023.

1.1 Purpose and scope of this document

The purpose of this SWMP is to provide management controls for impacts in relation to soil and water that may occur during the construction of the solar project. PCL engaged Accent Environmental Pty Ltd (Accent) to prepare the SWMP.

The purpose of this SWMP is to provide management controls for impacts that may occur during the construction and operation of the Stubbo Solar project. The SWMP is a subplan under the Construction Environmental Management Plan (CEMP) for the project. The relationship between this SWMP and the environmental management plans required for the construction and operation of the project are shown diagrammatically in Figure 1.2.

The SWMP covers the construction works to be undertaken by PCL as described in Section 3.1 during Stage 2a. It excludes construction works that were undertaken in relation to the External Road Upgrades which were associated with Stage 1.

It is expected that Transgrid will follow the approach to soil and water management set out in this SWMP during their Stage 2a construction works to meet relevant CoCs and commitments.

1.2 Project Overview

The Stubbo Solar project will generate energy through the conversion of solar radiation to electricity via photovoltaic (PV) modules (solar panels). The solar panels will generate direct current electricity that will be inverted to AC electricity via the use of power conversion units. The electricity output from the project will then be supplied to an existing 330 kilovolt (kV) transmission line (Line 79) operated by Transgrid.

1.3 Project Objectives

ACEN has established a number of objectives for the project which consider factors such as contribution to community, the environment and safety. These objectives include:

- zero injuries or environmental harm during construction and operation of the works
- design for the safety of people, livestock, fauna and flora, and the environment throughout the life of the solar project in accordance with good industry practices
- mutually beneficial relationships with host communities, First Nations and other stakeholders are in place throughout the life of the project

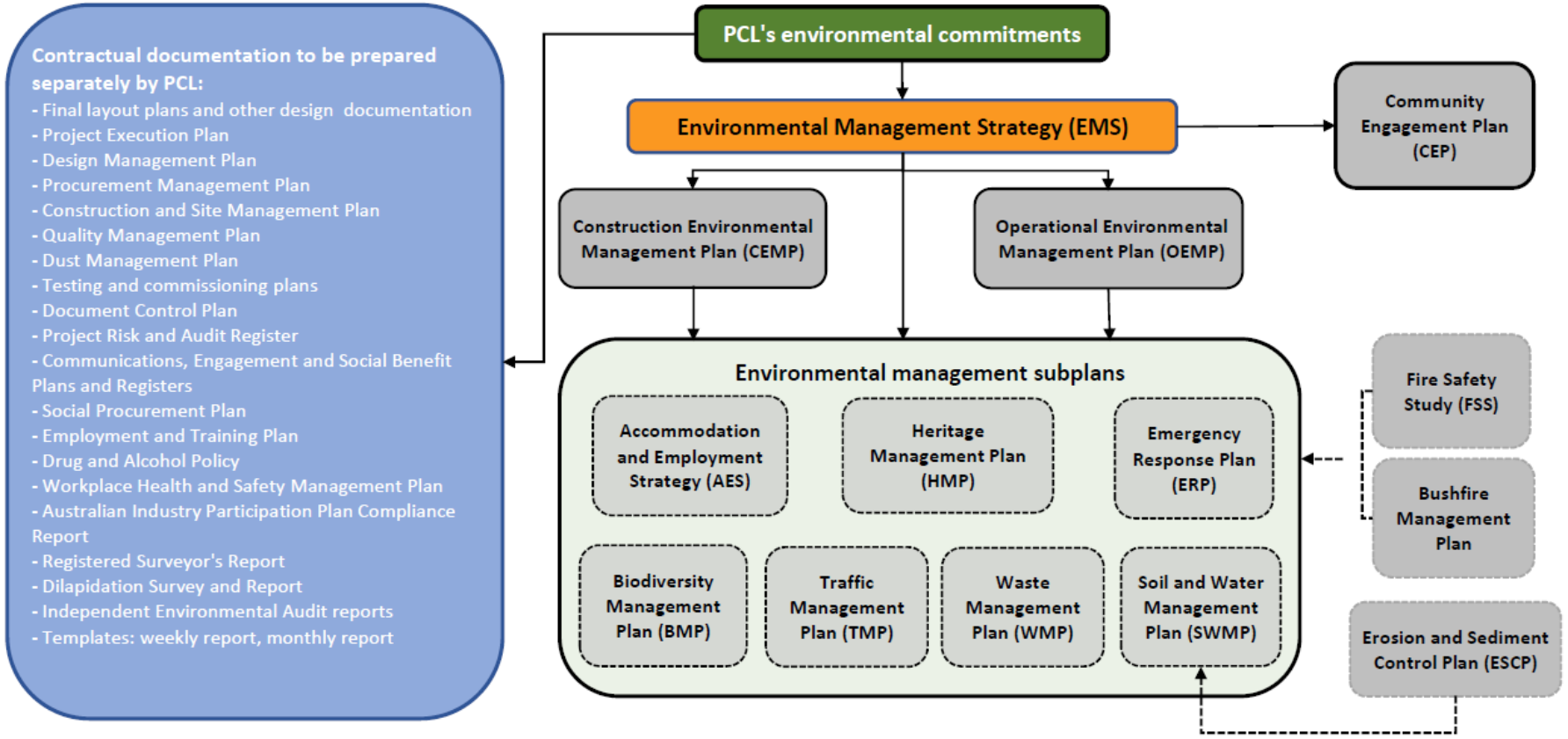


Figure 1.2 Schematic of environmental management documentation

- host communities and First Nations are provided with opportunities to actively participate in and benefit from the project through employment, training, social procurement and investment
- minimise adverse social and environmental impacts on the local community and environment
- allow for future grazing, by sheep, within the solar project (post construction phase)
- contribute to Australia's transition to a clean energy future.

In accordance with CoC 1 (Schedule 2) of the DC, in meeting the specific environmental performance criteria established under the DC, PCL and Transgrid will implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, upgrading or decommissioning of the development (as relevant).

ACEN requires PCL to proactively engage with the community and other key stakeholder groups in relation to the Project in coordination with ACEN. PCL is required at all times to involve ACEN's Representative with any Community discussions and keep ACEN informed of the outcomes of discussions.

1.4 Soil and water management objectives

The soil and water management objectives of the Stubbo Solar project are to:

- minimise soil erosion from construction areas and stockpiles
- control site runoff such that sediment laden water does not impact on downslope and downstream habitats
- ensure that the project does not cause any water pollution, as defined under Section 120 of the *Protection of the Environment Operations Act 1997* (POEO Act)
- meet all relevant regulatory requirements.

The SWMP enables ACEN, PCL, Transgrid and subcontractors to meet environmental obligations and to implement environmental management best practices to identify, manage and mitigate soil and water-related environmental impacts during the construction works.

In accordance with CoC 27, Schedule 4 ACEN will implement the Soil and Water Management Plan for construction upgrading, operation and/or decommissioning of the development.

1.5 Revising and updating the SWMP

In accordance with Schedule 4, CoC2, ACEN, with the support of PCL and Transgrid will:

- update the strategies, plans or programs required under the DC to the satisfaction of the Planning Secretary prior to carrying out any upgrading or decommissioning activities on site
- review and, if necessary, revise the strategies, plans or programs required under the DC to the satisfaction of the Planning Secretary within 1 month of the:
  - submission of an incident report under condition 7 of Schedule 4;

- submission of an audit report under condition 9 of Schedule 4; or
- any modification to the conditions of this consent.

As stated in Schedule 4, CoC3, with the approval of the Planning Secretary, the Applicant (ACEN) may submit any strategy, plan or program required by this consent on a progressive basis. To ensure the strategies, plans or programs under the conditions of this consent are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Planning Secretary for approval. With the agreement of the Planning Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all the parties referred to under the relevant condition of this consent.

2 Statutory requirements

2.1 Conditions of consent

This SWMP has been developed to comply with the relevant DC conditions of consent (CoCs). The CoCs relating to soil and water management are presented in Table A1 in Appendix A, along with a cross-reference to the section in which they are addressed.

2.2 Commitments in EIS and associated documentation

PCL and Transgrid are required to carry out the proposed construction generally in accordance with the EIS prepared by Ramboll (2020). This includes the relevant management and mitigation measures set out in Table 20-1 of the main EIS report. No specific waste management commitments are set out in the Response to Submissions Report (Ramboll 2021a) and the Amendment Report (Ramboll 2021b).

The commitments relevant to soil and water management are presented in Table A2 in Appendix A.

2.3 Key legislation

Key legislation used to develop this SWMP is listed in Table 2.1. The EMS presents and more fully describes additional legislation, guidelines and guidance materials of relevance to the environmental management of the solar project.

Table 2.1 Key legislation

Abbreviated title	Full name
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Water Sharing Plan	*Water Sharing Plan for the Macquarie Bogan Unregulated and Alluvial Water Sources 2012* (NSW)
Water Act	*Water Act 1912*
Water Management Act	*Water Management Act 2000*

3 Project description

3.1 Project works

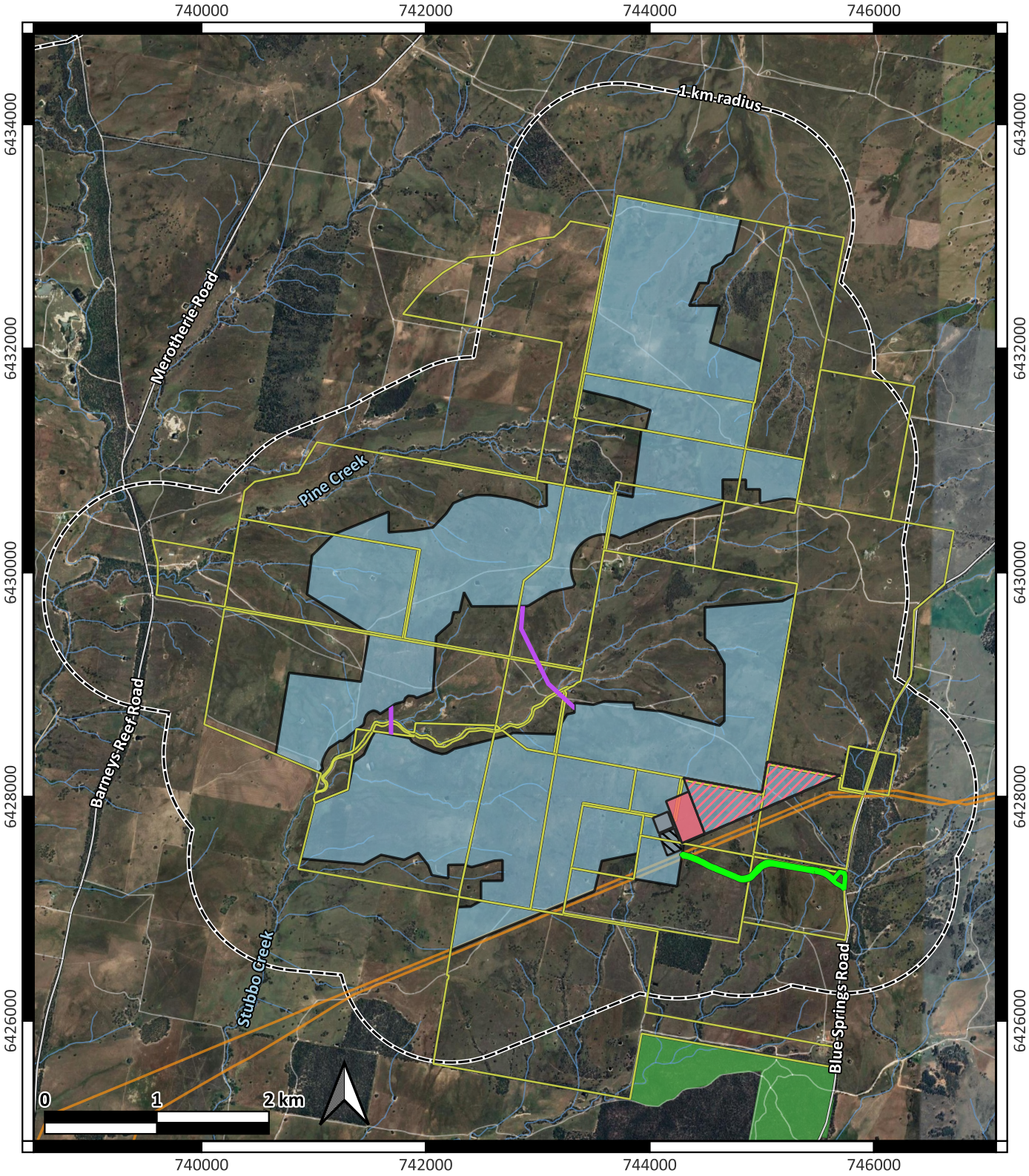
3.1.1 Stage 2a works

Key activities for Stage 2a include:

- site compound
- fencing works, including security fencing
- access roads including drainage and rehabilitation
- solar arrays that include:
  - general site wide cut to fill earthworks
  - piling installation
  - tracker installation
  - above ground and below ground cable installation and termination
  - module installation
- substation, switchyard and control buildings works that includes:
  - earthworks
  - structures and Footings
  - gantries and HV switchgear
  - transformer installation and connection (Substation only)
  - control building installations (both Substation and Switchyard)
- operations & maintenance building, including warehouse facility
- cold Commissioning works
- hot commissioning works including hold point testing for compliance to AEMO requirements
- site wide rehabilitation
- all other associated infrastructure.

3.1.2 PCL works

The works to be managed by PCL will convert energy from solar radiation into electrical energy to be fed into the electricity grid. The site configuration is shown in Figure 3.1 and the proposed lot configuration is shown in Figure 3.2 (note that Option A has been selected by ACEN). A series of PV Modules mounted on a horizontal single-axis tracking (Tracker) structure will convert solar radiation into direct current electrical energy which will be fed into power conversion units (PCUs). Using inverters and step-up transformers, the PCUs will convert the direct current electrical energy into alternating current electrical energy at an optimised reticulation voltage, envisaged by ACEN to be a Medium Voltage such as 33 kV.



Access road, project Stage 1
Existing transmission line
Road
Main watercourse
Watercourse, tributary
Project lot boundary
Substation (Transgrid)
BESS
Switchyard
Laydown area
Solar array extent
Proposed access corridor
State Forest
1 km radius from project site

Accent 1129 Stubbo Solar project
Figure 3.1. Site configuration
Created 24/3/2023
CRS: GDA 94 MGA 55
Scale: 1:50,000 at A4
Page size: A4

Base map: Google Satellite [Mar 2023]
Additional data: NSW RoadSegment, NSW Hydroline, NSW_Six_Mid_Western_Cadastral_data, NSW ElectricityTransmissionLine

ACCENT ENVIRONMENTAL

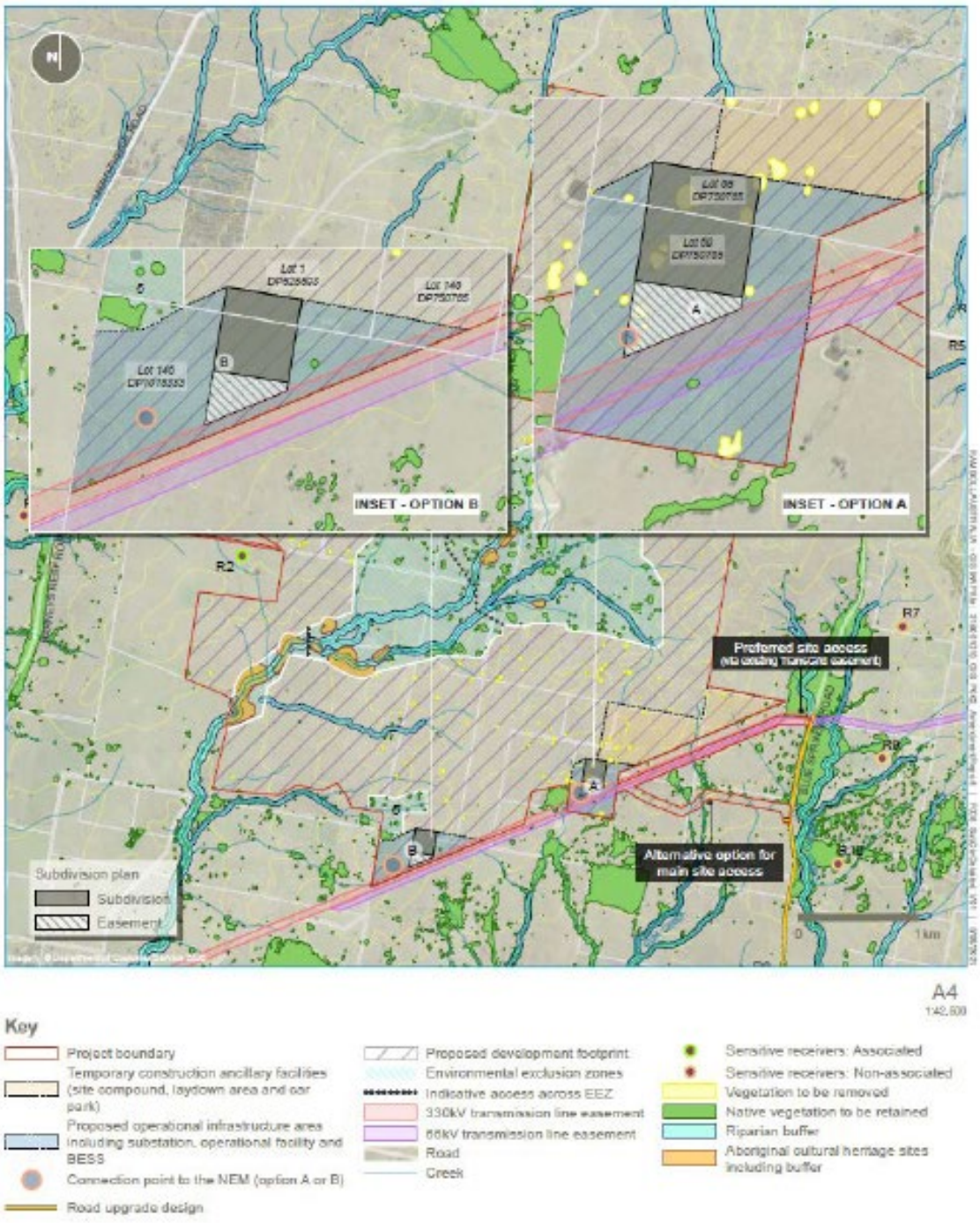


Figure 3.2 Subdivision Plan (Ramboll 2020)

The high voltage (HV) works will step up the voltage to 330 kV and connect the Solar project to the Connection Assets (see Section 3.1.3, below).

PCL's design and all activities (on Site or otherwise) will be undertaken in such a manner as to not hinder, cause conflict, or create additional work for the future development.

External road upgrade works were required in support of the project. These External Road Upgrades comprised an upgrade of the main site access road (Blue Springs Road) and

construction of the main site access. The External Road Upgrades were completed by others and are not the responsibility of PCL or covered in this plan.

PCL's works are designed to minimise the land required to achieve the rated electrical output as defined in the Development Consent.

3.1.3 Transgrid works

The Connection Assets will be constructed by Transgrid, under contract with ACEN. Work undertaken in relation to the Connection Assets will comprise the construction of the substation that will connect the solar project to the existing 330 kV transmission line (Line 79 – operated by Transgrid) which traverses the project area.

Once completed, the Connection Assets will be owned and maintained by Transgrid.

3.2 Project schedule

The proposed construction schedule for Stage 2a is summarised in Table 3.1. Construction will be undertaken in three overlapping sections:

- Section 1 comprises construction of the Connection Assets including substation by Transgrid and switchyard construction by PCL
- Section 2 comprises the construction of the first area of solar arrays (southern section) by PCL
- Section 3 comprises the construction of the second area of solar arrays (northern section) by PCL.

Construction will be followed by validation testing and a project closeout period.

Table 3.1 Construction schedule for Stage 2a

Activity	Start	Finish
Section 1		
Switchyard Construction – Notice to Proceed	21-Oct-22	21-Oct-22
Substation Construction – Civil and Electrical Works	24-May-23	7-May-24
Section 2 (Generating System #1)		
Material Procurement	22-Dec-22	26-Feb-24
Civil Works	15-May-23	27-Sep-24
Solar Array Construction	4-Jul-23	27-Sep-24
Section 3 (Generating System #2)		
Material Procurement	22-Dec-22	22-Apr-24
Civil Works	15-May-23	07-Nov-24
Solar Array Construction	11-Jul-23	07-Nov-24
R2 Validation Testing		
Section 2 Generating System #1	26-Jun-24	06-Jan-25

Activity	Start	Finish
Section 3 Generating System #2	26-Jun-24	19-Mar-25
Practical Completion		
Practical Completion – All Sections	-	06-May-25

3.3 Construction stockpile locations

The temporary construction stockpiles will be strategically located in areas where fill is required. Stockpiles will be located on high ground, a minimum of 40 m away from all watercourses and away from no-go areas within cleared areas or areas proposed for clearing, and a minimum of 40 m away from areas of retained native vegetation.

3.4 Controlled use of dangerous goods

Any use on site of dangerous goods will comply with the most stringent of (in each specific case):

- State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
- NSW EPA's Storing and Handling of Liquids: Environmental Protection – Participants Handbook
- Australian Dangerous Goods Code
- Australian Standard 4452 Storage and Handling of Toxic Substances.

It is considered unlikely that materials classified as dangerous goods will be used for the construction works, other than the hydrocarbon fuels of construction-related vehicles and equipment.

4 Organisational structure, roles and responsibilities

ACEN, as the Applicant and owner of the Stubbo Solar project has ultimate responsibility and accountability to ensure the project is designed, constructed, operated, upgraded and decommissioned in compliance with requirements.

Although ACEN has ultimate responsibility, PCL and Transgrid have been engaged and are contractually obliged to manage these works in accordance with the consent. Therefore, most of the obligations in this SWMP will sit with PCL and Transgrid.

4.1 Project organisational structure

Figure 5.6 is a schematic showing the organisational relationship between ACEN as project Applicant, PCL as EPC contractor, PCL's balance-of-plant (BoP) subcontractors, and Transgrid as the contractor for the grid connection (substation construction). The figure also shows the contractors for the Stage 1 road construction works.

The access road up to the project site boundary will be directly managed by ACEN.

4.1.1 Applicant

ACEN, formerly known as UPC\AC Renewables Pty Ltd is the Stubbo Solar project Applicant and the owner of the project.

4.1.2 EPC Contractor

ACEN has engaged PCL Constructors Pacific Rim Pty Ltd (PCL) as the EPC contractor to undertake the works described in Section 3.1.2.

As the EPC contractor for the solar project, PCL will design, procure, construct and commission the Stubbo Solar project for ACEN.

4.1.3 BoP Contractors

PCL will engage civil, electrical and mechanical BoP contractors to assist with the delivery of the works.

4.1.4 Substation construction contractor

ACEN has engaged Transgrid as the contractor to construct the Connection Assets (substation) as described in Section 3.1.3.

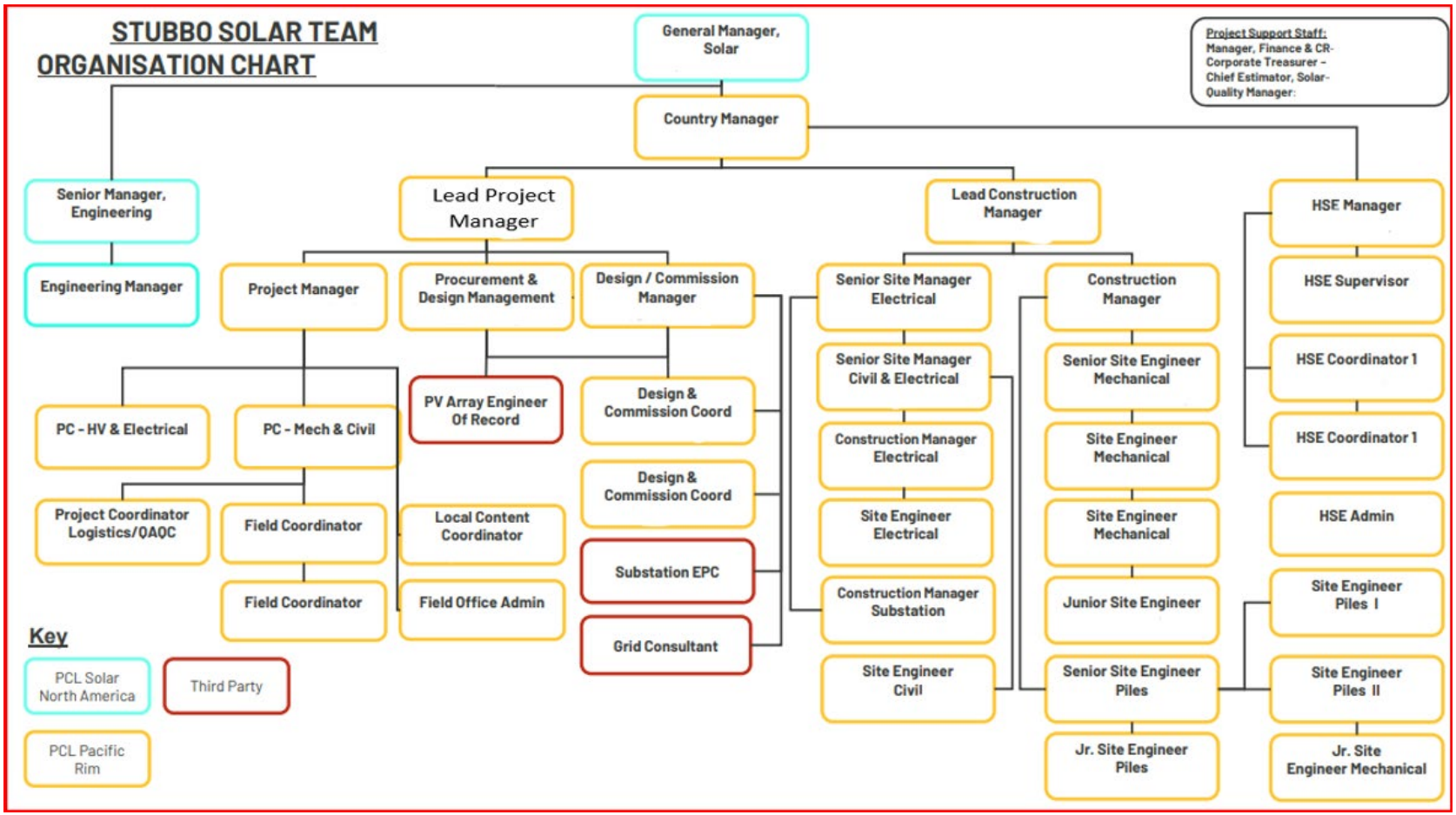


Figure 4.1 Project organisational structure

4.2 Roles and responsibilities

The main roles and responsibilities of ACEN, PCL and Transgrid personnel in relation to soil and water management are described below.

All personnel working on the Stubbo Solar project are responsible for:

- reporting all environmental incidents to their supervisor
- always carrying out work duties in an environmentally sensitive and responsible manner.

4.2.1 The ACEN management team

Project Manager

The ACEN Project Manager is to ensure that the Works that are the subject of this plan, including soil and water management, are undertaken according to the CoCs of Development Consent SSD 10452 and commitments outlined in the EIS. The ACEN Project Manager is accountable to ACEN Construction Manager & ACEN senior management.

The ACEN Project Manager is also responsible for engaging PCL and Transgrid to undertake the Works. In addition, the ACEN Project Manager will provide safety and environmental advice to the project team and engage with the regulators, host landholders and the community.

Assistant Project Manager

The Assistant Project Manager provides support to the Project Manager in ensuring the conditions of the Development Consent (SSD 10452) and the commitments under the EIS followed, and that all other project commitments with the relevant stakeholders are adhered to by the Project, including all contractual commitments with the EPC Contractor.

The Assistant Project Manager is accountable to ACEN Project Manager.

Health & Safety Advisor

The Health & Safety Advisor provides assistance and support to the ACEN Project team and, the EPC Contractor and its subcontractors to fulfil their contractual and legislative obligations with regards to Health and Safety.

The Health & Safety Advisor is accountable to the Project Manager.

4.2.2 PCL management team

Lead Project Manager

The PCL Lead Project Manager has ultimate responsibility within PCL for ensuring that soil and water management is undertaken according to the CoCs of Development Consent SSD 10452 and commitments outlined in the EIS.

Lead Construction Manager

The PCL Lead Construction Manager has the responsibility to plan, coordinate and supervise all on-site functions to ensure that the project is constructed in accordance with design and quality expectations, within the stipulated budget and schedule. This will include planning, coordinating and supervising soil and water management measures.

Health, Safety and Environment Manager

The PCL Health, Safety and Environment (HSE) Manager is responsible for direct supervision of the district HSE supervisors and coordinators as well as conducting project audits and inspections. The HSE Manager will support the Lead Construction Manager in the implementation of soil and water management requirements and will provide leadership in relation to soil and water management issues.

4.2.3 PCL BoP subcontractors

Each BoP subcontractor will have HSE staff. The HSE staff have an obligation to ensure that subcontractor personnel are meeting their commitments in relation to soil and water management.

4.2.4 Project Ecologist

A suitably qualified and accredited Project Ecologist will be subcontracted to the project and will have responsibility across PCL and Transgrid sites. The Project Ecologist will report to the Lead Construction Manager and will be responsible for management activities in relation to biodiversity management as set out in the Biodiversity Management Plan (BMP). The Project Ecologist will advise on soil and water management issues as they relate to biodiversity management.

4.2.5 Transgrid management team

Project Manager

The Transgrid Project Manager has ultimate responsibility within Transgrid for ensuring that soil and water management is undertaken according to the CoCs of Development Consent SSD 10452 and commitments outlined in the EIS.

Transgrid will manage soil and water issues, in accordance with relevant procedures in this SWMP and in accordance with relevant CoCs.

Construction Manager

The Transgrid Construction Manager has the responsibility to plan, coordinate and supervise all on-site functions to ensure that the project is constructed in accordance with design and quality expectations, within the stipulated budget and schedule. This will include planning, coordinating and supervising soil and water management measures.

Health, Safety and Environment Manager

The Transgrid HSE Manager is responsible for direct supervision of the district HSE supervisors and coordinators on all major projects as well as conducting project audits and inspections. The HSE Manager will support the Construction Manager in the implementation of soil and water management requirements and will provide leadership in relation to soil and water management issues.

Site Manager

The Transgrid Site Manager is accountable to and draws authority from the Construction Manager. The Site Manager will support the Construction Manager in the implementation of soil and water management requirements, particularly in relation to subcontractors.

5 Site characteristics

5.1 Topography and landform

The following observations were made during fieldwork conducted for the EIS (Ramboll 2020):

- the study area is an area of low rolling topography generally sloping to the east to northeast in the northern half and to the southeast and southwest in the south
- slopes were observed to be generally shallow (3-10 per cent) with remnant granite tors and pavements typically at the higher topographic areas
- at the time of the inspection, more regular rainfall had regenerated much of the cover since the previous drought conditions
- the land areas were heavily grassed, or in the case of the landholding to the north, planted in feed crop (oats)
- tree cover was sparse, comprising lone trees and occasional small stands of trees, (usually along watercourses)
- discussions with a landholder confirmed that where soil was exposed and subject to high water rainwater flows, erosion was rapid and would require repair (backfill) to remain trafficable
- in limited areas where soils had been exposed through water flow (from uncontrolled stormwater flows along tracks) or by stock traffic, moderate to severe rill and gully erosion was noted – this was exacerbated in the central watercourse (Stubbo Creek) which bisects the site west to east.

5.2 Geology and soils

Geology

Desktop geological mapping of the site (Ramboll 2020) indicates that the site is largely characterised by Carboniferous Intrusions, namely the Gulgong Plutonic Suite comprising Gulgong Granite which is described as leucocratic medium to coarse grained porphyritic megracrystic granite with minor aplite phases and minor quartz monzonite. Additional Carboniferous Intrusions within the development footprint include localised Aplite and quartz-feldspar porphyritic thyolite.

Caniozoic units are present along Stubbo Creek including Quaternary alluvial silts, clays and sands with variable humic content and sporadic pebble to cobble sized unconsolidated conglomeratic lenses. In the central western portion of the study area there are Tertiary Tholeiites described as alkali basalt, basanite, nephelinite, limburgite, trachyte and rare obsidian.

Soils

Desktop soil mapping of the site (Ramboll 2020) identified that two primary soil types have been mapped within the project area, comprising siliceous sands and yellow solodic soils/soloths.

Siliceous sands are present on mid-slopes and upper slopes. Topsoils within the siliceous sands are dark brown to brown loamy sand to clayey sand, have very weak structure and are slightly acidic, and typically extend to 200 mm depth. There is a distinct change to the subsoils which are bright brown to reddish-brown loamy sands to light sandy clay loams; circumneutral pH, typically extending to 500 mm depth. These subsoils grade into weathered granite or yellowish-brown, loamy sand to light sandy clay loams.

Yellow solodic soils/soloths observe topsoils described as weakly structured, brown to dull yellowish-orange to yellowish-brown coarse sandy loam, circumneutral pH and typically extending to 100 - 200 mm depth. Subsoils are yellowish-brown to dull yellowish-orange to bright yellowish-brown sandy clay loams with a neutral pH.

Basic Paralithic Black-Orthic Tenosols were also identified approximately 900 m north of the project area. Tenosols are mainly used for grazing of native pastures rather than cropping. Tenosols have a weakly developed soil profile which is typically very sandy without distinct horizons. The major part of these soils is not strongly acid, and no part of the soils is calcareous. The upper 500 mm of the solum colour class is black, overlies partially weathered or decomposed rock or saprolite, are not gravelly throughout, the soil material is either loose or only weakly coherent both moist and dry, may have aeolian cross bedding, and its texture is sandy throughout.

There are no known occurrences of acid sulfate soils within the study area.

This desktop soil mapping is shown in Figure 5.1.

The EIS review of the NSW DPIE soil profile and soil map information website, ‘eSPADE’, indicated the study area is located entirely within the Rouse soil landscape described as 335 square kilometres of undulating hills and low hills with granite outcropping as tors and sloping pavements, located 18 km north and 12 km east of Gulgong.

Field observations (Ramboll 2020) found the project area is consistent with the Rouse soil landscape type identified in the desktop assessment. A key characteristic of the Rouse soil landscape unit is that severe gully erosion may occur where the sodic dispersible subsoils in drainage lines and depressions are exposed.

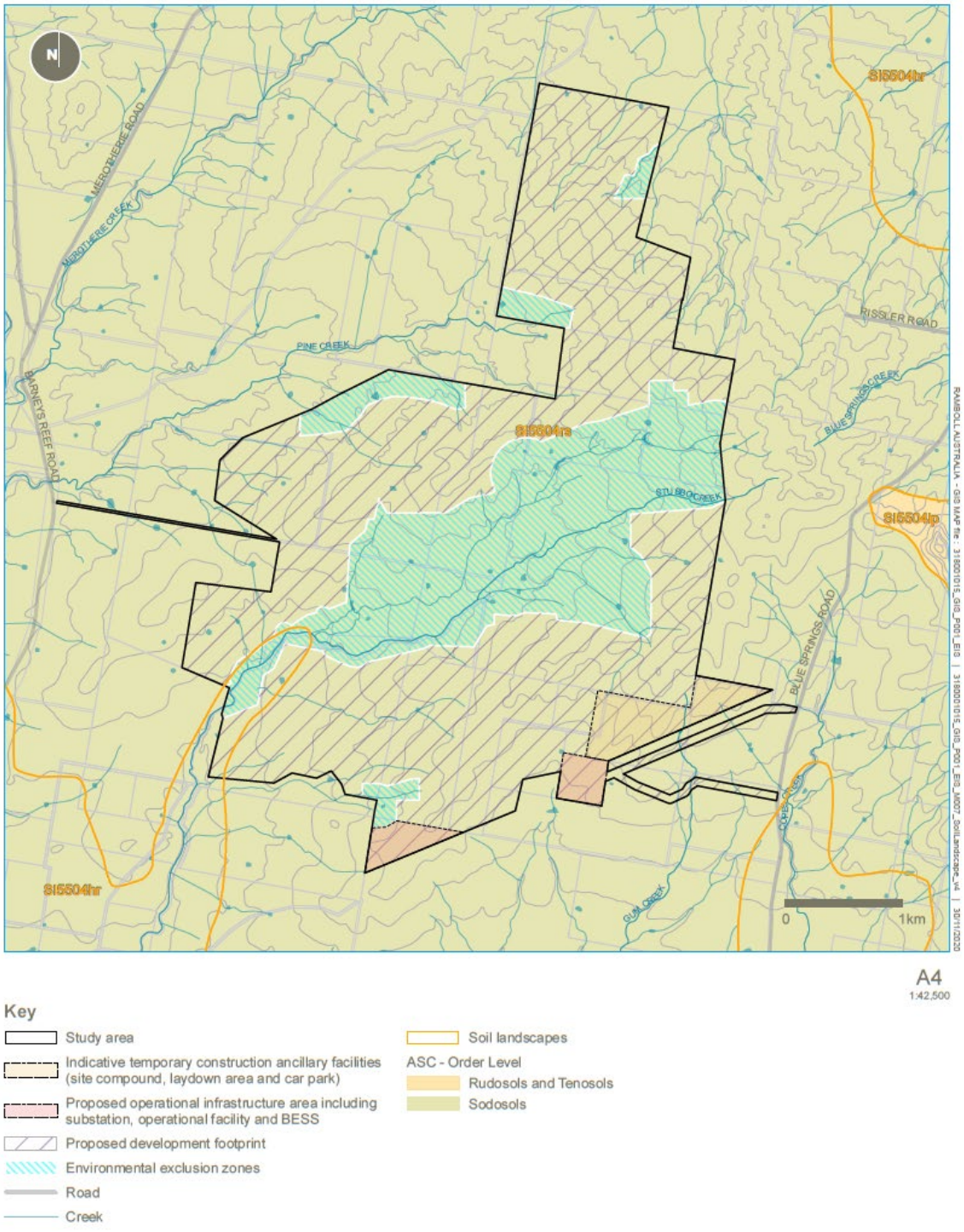


Figure 5.1 Site soils (Ramboll 2020)

5.3 Hydrology

The EIS (Ramboll 2020) noted that the site is located within the Macquarie-Bogan Rivers System and is within the upper catchment of Stubbo Creek. Surface water at the study area is managed under the *Water Sharing Plan for the Macquarie Bogan Unregulated and Alluvial Water Sources 2012,* which has been made under *Water Management Act*.

The waterways proximate to the study area are shown on Figure 5.2. The main surface water feature in the area is the Stubbo Creek, which transverses the study area within the main environmental exclusion zone. Stubbo Creek is a semi-permanent stream around 1 to 4 m wide and up to 30 cm deep, on a fine gravel substrate. Stubbo Creek is also mapped as key fish habitat (KFH).

Pine Creek and Merotherie Creek are located to the north of the project area. Both waterways discharge to Slapdash Creek, approximately 1.7 km west of the study area at its closest point. Gum Creek is located to the south of the study area and is also connected to Slapdash Creek. Slapdash Creek flows south and discharges to Waldra Creek, which flows into Cudgegong River, connecting to Lake Burrendong, located south of Gulgong.

Figure 5.2 (taken from the EIS) shows the drainage lines in the vicinity of the site. It shows Stubbo Creek, crossing the central part of the site is a 4th Order waterway in the western portion of the site and a 3rd and 2nd Order stream further upstream. It is fed by numerous 1st and 2nd Order creeks. The majority of Stubbo Creek and its tributaries are within a development exclusion zone (including Stubbo Creek). As can be seen on Figure 5.2, Pine Creek to the north of the site is 3rd Order stream that is fed by a number of 1st and 2nd Order on-site waterways.

5.4 Groundwater

The EIS (Ramboll 2020) noted that extraction of groundwater is not proposed for the project and therefore impacts to the groundwater resource or supported ecology from extraction are unlikely. The presence of shallow groundwater or springs would occur in association with rock fractures identified by valleys present in the study area. The majority of these occur within the central development exclusion zone.

Outside of these fracture zones, groundwater is expected to occur at greater depths from the surface and at depths greater than the development proposed excavation depths of 1.5 to 2.4 m.

5.5 Land use

The EIS (Ramboll 2020) noted that the study area primarily consists of cleared agricultural land used for livestock grazing (sheep and cattle) and intermittent cropping.

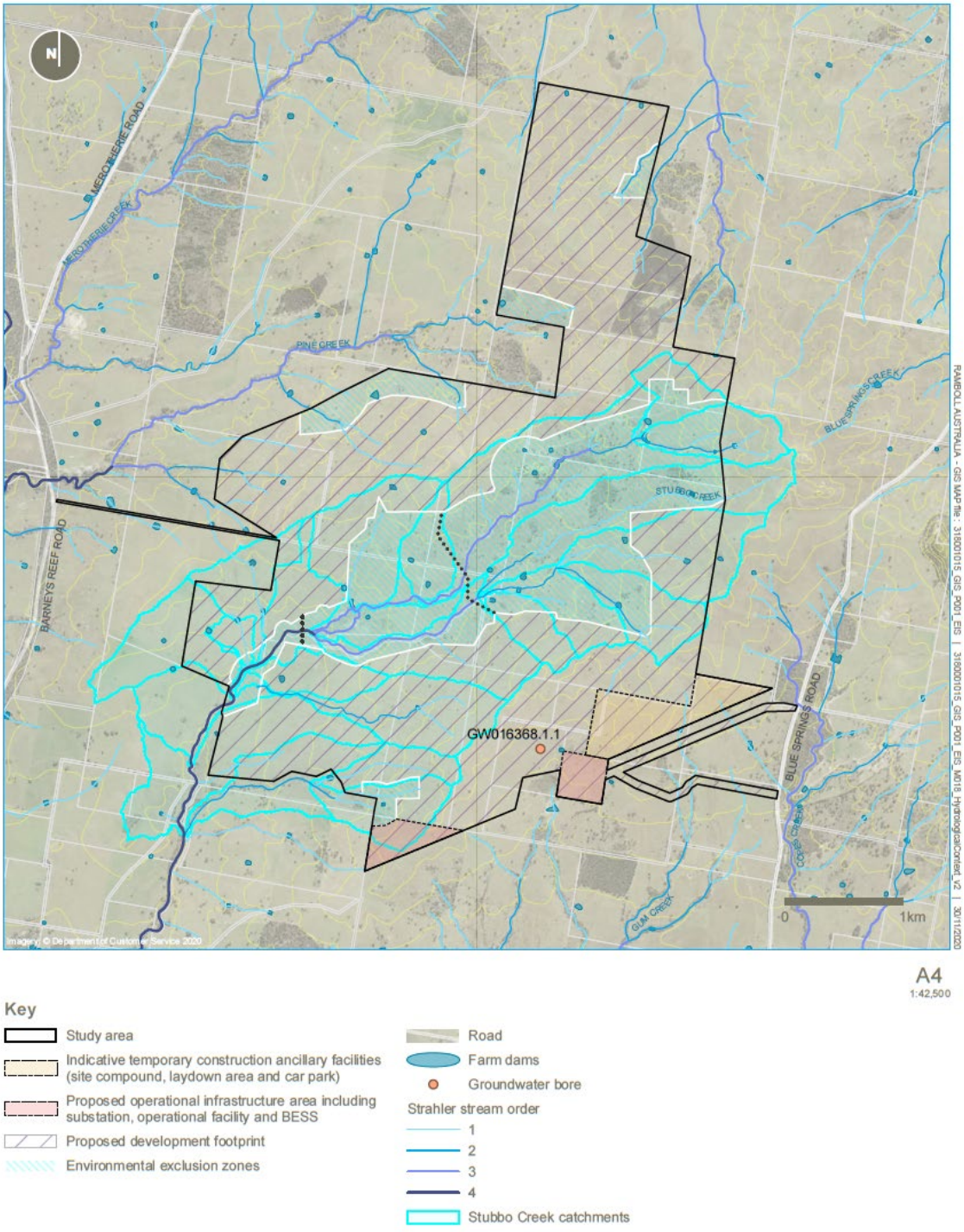


Figure 5.2 Site hydrology (Ramboll 2020)

6 Management measures

PCL and Transgrid are committed to implementing an SWMP that follows industry standard management guidelines. This includes general principles, disturbance minimisation principles, site access and construction controls principles and principles for specific site construction works and areas.

The management and mitigation measures described in the following subsections are designed to cover most construction scenarios.

6.1 General principles

Commitment W7 of the EIS states that erosion and sediment control measures will be implemented and maintained at all work sites in accordance with the principles and requirements in *Managing Urban Stormwater – Soils and Construction, Volume 1* (Landcom 2004) and *Volume 2D* (NSW Department of Environment, Climate Change and Water 2008b), commonly referred to as the "Blue Book". This includes:

- integrating erosion and sediment control into site and construction planning
- if working in a watercourse:
  - the natural channel and floodplain form will be maintained (i.e. the dimensions of the watercourse will not be changed)
  - construction activities will be designed to minimise erosion of waterways through the removal of vegetation from the banks, or sediment from bed or banks

  Note: More detail design guidelines for working in a watercourse can be found in Section 6.4.
- if installing services:
  - one or more drawings or maps (typically 1:500 to 1:1000 scale) will be prepared showing the layout and details of erosion and sediment control measures, including for:
    - access and haulage tracks / roads
    - stockpile and storage areas
    - temporary work areas
    - materials processing areas
    - crossings (road and creeks)
    - compound areas, such as the contractor's and the principal's facilities
    - any other activities that might affect water quality
  - construction activities will be designed to minimise erosion of waterways by minimising the removal of vegetation from the banks and erosion of sediment from bed or banks
- if constructing and using unsealed tracks / roads, PCL and Transgrid will ensure contractors have:
  - erosion and sediment control checklists

  - one or more drawings or maps (typically 1:500 to 1:1000 scale) showing the layout and details of erosion and sediment control measures
  - work method statements for works in sensitive areas (e.g. in or adjacent to creeks and rivers)
  - an inspection and audit schedule
- ensuring exposed dispersive soils are covered (e.g. by vegetation establishment, hydro mulch, polymers or topsoil) and/or ensuring runoff from these areas is directed to water containment structures that prevent dirty water flowing offsite (see ESCP Section 2.7)
- using diversion structures to separate 'clean' water runoff from disturbed area runoff, to minimise volumes of sediment-laden water requiring management
- ensuring sediment-laden runoff is treated via designated sediment control devices, including use of flocculants where required to settle suspended sediment from dispersive soils
- developing adaptive erosion and sediment controls based on anticipated soil, weather and construction conditions
- minimising the extent and duration of soil disturbance
- maximising sediment retention on site
- maintaining all erosion and sediment control measures in proper working order
- commencing revegetation within 10 days of completion of any construction or upgrading activities and establish ground cover within 3 months to minimise the risk of erosion
- monitoring the site and adjusting erosion and sediment control practices as required to maintain adherence to the above principles.

6.2 Disturbance minimisation principles

Land disturbance will be minimised by clearing only the working areas of land ahead of works and rehabilitating the working area as soon as possible after works have been completed (as outlined in the BMP). All clearing works will be undertaken using the following controls:

- confirming and delineating (using fencing or flagging tape) areas required to be disturbed (e.g. areas of road construction or widening, access tracks, stockpiles, lay-down area) prior to commencement of work and ensuring that disturbance is limited to those areas
- confirming and delineating (using fencing or flagging tape, as described in the BMP) any no-go zones requiring protection (such as habitat trees or high value vegetation)
- leaving native root-balls in the ground, where practicable, to facilitate regeneration after works are complete.

Disturbed areas will also be progressively stabilised and rehabilitated as construction is completed to minimise the extent of bare soil, as outlined in the ESCP (see Appendix C). The photovoltaic arrays will be designed to allow for enough space between rows of panels for establishment of groundcover and implementation of weed controls.

6.3 Site access construction and control principles

When site access tracks are being constructed, the following measures will be followed:

- restrict access to excessively wet or boggy areas by limiting or diverting vehicle movements around such areas
- confine plant movement to access points using temporary signage or similar to delineate areas that should not be entered.
- use a catch drain / roll-over at the base of the access track to divert and manage any sediment-laden (see ESCP (Appendix C))
- where a ramp must be excavated as part of the site access track, use clean compacted natural aggregate that will not cause environmental harm. Shape the surface to shed water to surrounding vegetated areas
- use rubber tyred/tracked vehicles where available
- ensure tracks are free draining
- include cross fall and outfall drainage, where required, to prevent the concentration of run-off.

Standard drawings of drain types and their construction are provided in Landcom (2004).

6.4 Working near waterways

When working within 40 m of a waterway (measured from high bank of stream), PCL and Transgrid will ensure works are undertaken in accordance with the following documents:

- Controlled Activities on Waterfront Land - Guidelines for watercourse crossings on waterfront land. (Office of Water NSW 2012a), or its latest version
- Controlled Activities on Waterfront Land - Guidelines for instream works on waterfront land. (Office of Water NSW 2012b), or its latest version
- Guidelines for Controlled Activities on Waterfront Land. (Natural Resources Access Regulator (NRAR) 2018a), or its latest version
- Guidelines for Controlled Activities on Waterfront Land – Riparian Corridors. (Natural Resources Access Regulator (NRAR) 2018b), or its latest version
- Working on Waterfront Land Fact Sheet (NRAR 2020)
- Policy and Guidelines for Fish Habitat Conservation and Management (DPI 2013), or its latest version.

All works within proximity to the drainage lines will have adequate sediment and erosion controls (e.g. sediment barriers, sedimentation ponds), such as those described in the ESCP (see Appendix C). Revegetation will also commence as soon as is practicable to minimise risks of erosion.

Appropriate controls will be implemented to manage exposed soil surfaces and stockpiles to prevent sediment discharge into waterways. Stockpile management measures are outlined in the ESCP.

All waterway crossings will be designed and constructed in compliance with the DPE, Office of Water, *Guidelines for riparian corridors on waterfront land* and *Guidelines for watercourse crossings on waterfront land*. Requirements for the construction of watercourse crossings are set out in the ESCP.

No artificial structures will be installed in the creek in the central environmental exclusion zone except for two waterway road and cable crossings. The waterway road and cable crossings will be designed and constructed in compliance with NRAR (2018a).

6.4.1 Requirements for riparian corridors

The site includes 1st, 2nd, 3rd and 4th Order waterways (see Section 5.3) which have requirements for riparian corridors.

1st Order streams

1st Order streams require a 10 m riparian corridor to be maintained on each side of the watercourse.

There are numerous 1st Order streams in the project area.

2nd Order streams

2nd Order streams require a 20 m riparian corridor to be maintained on each side of the watercourse.

There are a number of 2nd Order streams in the project area.

3rd Order streams

3rd Order streams require a 30 m riparian corridor to be maintained on each side of the watercourse.

As noted in Section 5.3, Stubbo Creek at the location of the eastern-most crossing is a 3rd Order waterway. Construction of this crossing would be undertaken in accordance with Section 6.4.

4th Order streams

4th Order streams require a 40 m riparian corridor to be maintained on each side of the watercourse.

As noted in Section 5.3, Stubbo Creek at the location of the western-most crossing is a 4th Order waterway. Construction of this crossing would be undertaken in accordance with Section 6.4.

6.4.2 Stubbo Creek as key fish habitat

Also as noted in Section 5.3, Stubbo Creek is considered key fish habitat and the document *Policy and Guidelines for Fish Habitat Conservation and Management (2013),* or its latest version has been considered in preparing this SWMP – see Appendix E.

6.4.3 Waterway road and cable crossings

No artificial structures are planned to be installed in the creek in the central environmental exclusion zone except for two waterway road and cable crossings. The waterway road and cable crossings will be designed and constructed in compliance with the *Guidelines for Controlled Activities on Waterfront Land* (NRAR 2018a).

6.5 Flood management

The solar panels and ancillary infrastructure (including security fencing) will be designed, constructed and maintained to reduce impacts on surface water, localised flooding and groundwater at the site.

Infrastructure with the potential to cause pollution to waterways in the event of flooding, such as inverters, will be located with a minimum 300 mm freeboard above the maximum 1% AEP flood level.

Solar panels will be designed to provide a minimum of 300 mm freeboard for the lowest edge above the maximum 1% AEP flood level.

The panel structure will be designed to withstand the flood velocities expected at the site and no infrastructure will be placed within 20 m of any Strahler 3 or above order streams.

The solar arrays are designed and installed in a way that inherently minimises disturbance to land and associated impacts on surface water and groundwater, with the arrays being mounted on steel posts that are driven directly into the ground without the need for foundation works. The solar panels are elevated well above potential flood levels and the mounting posts will do little to impede flow.

Fence design will minimise disruption to the passage of floodwater by adopting a suitable ratio of openings to solid structures.

As noted in the EIS (Ramboll 2020), while there may be some increase to the impervious fraction of the project site through the creation of roads and operational buildings occupying a small area, this increase is very minor when compared to the site as a whole. Accordingly, no significant increase to runoff volumes is anticipated.

As further noted in the EIS, the depth to which infrastructure will be installed (between 1.5 m to 2.4 m below ground level) is not considered to be deep enough to have any groundwater interaction. No changes to groundwater infiltration are expected and no groundwater extraction is proposed.

Further flood investigations and hydrological and hydraulic modelling will be carried out where required during detailed design to ensure the flood immunity objectives and design criteria for the project are met. The modelling will be used to define the nature of both main stream flooding and major overland flow across the development footprint under pre- and post-project conditions and to define the full extent of any impact that the project will have on patterns of both main stream flooding and major overland flow.

6.6 Hazardous chemicals

Water quality protection measures will be implemented to ensure that the project does not cause any water pollution, as defined under Section 120 of the POEO Act.

In addition to the measures outlined in Sections 6.1 to 6.5 and set out in the ESCP (see Appendix C), surface water and groundwater quality will be protected by the appropriate storage and use of hazardous chemicals (including Dangerous Goods). Further information regarding Dangerous Goods is provided in the Emergency Plan (EP).

Hazardous chemicals are any substance, mixture or article classified under a hazard category in the Globally Harmonized System (GHS) of Classification and Labelling of Chemicals https://www.safework.nsw.gov.au/hazards-a-z/hazardous-chemical/chemical-labelling.

PCL and Transgrid will implement the following measures for the safe storage and use of hazardous chemicals on site and to respond to chemical spills or emergencies:

Storage and use

- PCL and Transgrid will store and handle all chemicals, fuels and oils used on-site in accordance with:
  - a) the requirements of all relevant Australian Standards (including AS1216:2006: Dangerous Goods and AS1940:2017 Flammable Liquids Storage and Handling)
  - b) the NSW EPA's Storing and Handling of Liquids: Environmental Protection – Participants Handbook if the chemicals are liquids
- in the event of an inconsistency between the requirements (a) and (b) above, the most stringent requirement must prevail to the extent of the inconsistency
- the volume of hazardous chemicals stored and used on site will be minimised where possible and the use of environmentally friendly fuel, oil and chemical products will be considered
- all hazardous chemicals (including fuels) will be stored in designated chemical storage areas (temporary storage areas during construction)
- all hazardous chemical storage areas will be covered, bunded and located at least 40 m away from water bodies and drainage lines
- the storage and handling of hazardous substances will be in accordance with safety data sheet (SDS) requirements and applicable Safe Work NSW codes and guidelines https://www.safework.nsw.gov.au/hazards-a-z/hazardous-chemical/flammable-substances
- all hazardous chemicals will be labelled in accordance with the GHS
- conflicting chemicals (i.e. those that, when mixed, could compromise safety) will be stored separately in accordance with the SDSs
- all chemical storage containers will have functioning nozzles and/or lids to reduce dripping or spilling

- an up-to-date SDS Register will be maintained by PCL and Transgrid and their subcontractors, and copies will be kept at access gates, compound buildings and chemical storage cabinets
- temporary fuel storages and refuelling areas used during construction will include double-skinned self-bunded tanks providing 110% containment of material to prevent pollution in the event of a breach of primary containment
- refuelling of plant and machinery will be conducted via fuel delivery truck at the location of the equipment, this will be a minimum 50 m away from bodies of water. Bunded fuel areas will be accessible for vehicles that cannot travel to this location.
- regularly inspect and maintain machinery/vehicles to ensure that they remain in a clean condition free of fluid leaks
- all servicing of equipment and plant will be conducted over an impervious surface to prevent any oil or fuel drips to the land surface causing soil or groundwater contamination
- all chemicals must be returned to the site compound after each day of work
- all waste chemicals will be transported and disposed of off-site in accordance with relevant NSW government regulations and guidelines (see WMP)

Spill response

- all spills will be immediately controlled, contained, cleaned up and reported as an incident, with adequate spill kits available to be used in accordance with SDS recommendations
- a spill response procedure will be implemented and include an up-to-date plan showing spill kit locations in all areas where chemicals are being stored or handled or refuelling is occurring
- all personnel will be trained in relation to spill management actions, including the contents and use of spill kits
- spill kits will be present at all locations where refuelling and maintenance activities take place or where or where hazardous chemicals are stored
- spill kits will be well maintained and topped up immediately (e.g. with replacement spill pads) after use
- absorbent material used for clean-up will be placed in a suitable waste receptacle for disposal and managed in accordance with NSW government waste regulations (see WMP)

Emergency response

- emergency response equipment, including firefighting equipment, will be maintained at chemical, fuel and oil storage locations, as outlined in the EP
- emergency response will be as outlined in the EP.

EPA notification

- NSW EPA will be notified of any environmental or pollution incidents via the EPA Environment Line (telephone 131 555) in accordance with Part 5.7 of the POEO Act. The circumstances where this will take place include:
  - if the actual or potential harm to the health or safety of human beings or ecosystems is not trivial
  - if actual or potential loss or property damage (including clean-up costs) associated with an environmental incident exceeds $10,000 (Material Harm).

6.7 Unexpected contaminated finds

Construction activities involving ground disturbance have the potential to expose pre-existing contaminants (e.g. pesticides) that were not known previously to exist on the site. If areas of suspected contamination are identified during construction (e.g. due to factors such as visual appearance or odour), the following measures will be followed:

- ground disturbance activities will cease at the location of the potential contamination until the site is assessed (as below) and any required management has been implemented
- the potential contamination will be assessed by a suitably qualified and experienced specialist
- if required to determine an appropriate management response, soil and groundwater sampling will be undertaken to characterise the nature and extent of the contamination
- if the assessment by the specialist and the results of any analysis undertaken indicate that the contamination that poses an unacceptable environmental risk:
  - NSW EPA will be notified via the EPA Environment Line (telephone 131 555)
  - the contamination will be excavated and transported off-site for disposal in accordance with applicable NSW EPA guidelines.

6.8 Water supply

All water used on site will be obtained and used in accordance with the *Water Management Act 2000.*

PCL and Transgrid will ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development to match its available water supply.

The use of any farms dams during construction will be agreed with the landholder and the estimated maximum harvestable right dam capacity will not be exceeded. Water harvested from farm dams will only be used on the property to which the Harvestable Right applies (as required under the Act).

PCL and Transgrid will establish the amount of the basic landholder right, how much water is in storage on the farm and how much water is currently being used by the landholder. Accurate extraction records will be kept.

MWRC water may be purchased for use for dust suppression measures.

PCL and Transgrid are committed to implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the use of water during construction.

6.9 Impacts on surrounding agricultural land use

Impacts on surrounding agricultural land use will be managed and minimised with reference to the DPI Primefact document *Infrastructure proposals on rural land* (Kovac and Briggs 2013). Management measures will include:

- timing construction activities and planning the location / design of temporary fencing and temporary access routes to minimise impacts on farm operations and livestock as far as practical
- engaging with adjacent landholders regarding any proposal to undertake aerial spraying of weeds and notifying them at least 48 hours before spraying is to be undertaken
- ensuring that any aerial spraying of weeds is undertaken by suitably accredited and experienced practitioners on days of low wind speed
- implementing the additional weed and biosecurity measures set out in the BMP
- implementing the livestock management measures set out in the land management section of the CEMP
- implementing the bushfire management measures set out in the Bushfire Management Plan
- minimising soil erosion risk and managing site runoff in accordance with the ESCP (Appendix C)
- undertaking progressive site rehabilitation in accordance with the ESCP (Appendix C).

6.10 Site-specific construction management and control measures

Specific construction management and control measures are provided in the ESCP which is attached as Appendix C.

7 Monitoring, inspections and response

Inspections and monitoring are an important part of erosion and sediment control and are outlined below, along with the means of recording of these activities. Specific monitoring is provided in the monitoring table (attached as Appendix E).

7.1 Weather monitoring

Weather monitoring is an important aspect of construction planning as severe weather conditions can disrupt site activities. Weather will be monitored on a weekly basis, or more frequently during periods of unstable weather patterns.

Forecasts of rainfall of 25 mm (or more) over a 24-hour period will necessitate erosion and sediment control structure inspections. If substantial wet weather is forecast (i.e. a large weather system in which substantial rainfalls are predicted), works will be suspended, or strategies put in place in order to remove equipment from the ephemeral waterways.

7.2 Inspections

If there is a greater than a 50% chance of more than 25 mm rainfall occurring over 24-hours within the forecast period, the PCL and Transgrid HSE Managers (or delegates) will inspect the condition of all erosion and sediment controls. Repair and maintenance works will be actioned and, where practicable, completed before the onset of rain. Records will be kept and provided to ACEN at the completion of construction, or as requested.

Weekly inspections of all erosion and sediment controls will be conducted by the PCL and Transgrid HSE Managers (or delegates). The frequency of inspections has the capacity to increase as needed during periods of heavy rainfall (wet seasons).

The following indicators will be used to identify if the objectives of this plan are being met:

- visible evidence of deterioration of water quality (e.g. high turbidity) in downstream watercourses that is directly attributable to the site
- visible significant erosion
- failure of control measures.

If the above indicators are observed, investigation and maintenance will be triggered (see below).

7.3 Investigation and maintenance

If investigation and maintenance is triggered, the following remedial actions will be implemented:

- locating the source of water quality deterioration, the cause of erosion or the reason for the failure of a control measure
- limiting the continuing deterioration of water quality or the progression of erosion by implementing temporary controls

- repairing existing controls, implementing additional permanent controls and/or modifying procedures to prevent future deterioration in water quality or occurrence of erosion.

The investigation will occur as soon as an issue has been identified and maintenance works will be conducted as soon as practicable during and after the investigation.

7.4 Incident management

Any incident that results in harm to the environment and/or off-site receptors is to be regarded as an environmental incident. Incidents with be managed and notified in accordance with the procedures outlined in the CEMP.

As defined in the DC an incident is a set of circumstances that causes or threatens to cause material harm to the environment. Material harm is defined in the DC as harm that:

- involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or
- results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or makegood harm to the environment.

7.5 Register of activities

PCL and Transgrid will maintain registers of erosion and sediment control activities, including records of inspection and maintenance.

8 Compliance

8.1 Training and awareness

General soil and water management awareness training will be provided to new employees and contractors as part of the Stubbo SF induction program. Additional training will also be undertaken with specific people involved in soil and water management via the following forums:

- toolbox talks highlighting waste issues and obligations
- incorporation of soil and water management into crew training days
- Inductions highlighting sensitive areas and reporting instructions.

8.2 Audit

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with Project requirements, and other relevant approvals, licenses and guidelines – including those in relation to soil and water management. Audit requirements are detailed in the CEMP.

8.3 Reporting/incidents/non-compliances

8.3.1 Incident notification

In accordance with CoC 7 (Schedule 4), the Planning Secretary must be notified in writing via the Major Projects website immediately after ACEN becomes aware of an incident. Accordingly, the PCL or Transgrid Lead Project Manager will notify the ACEN Project Manager immediately after a reportable incident occurs to enable prompt reporting by ACEN to the Planning Secretary. The incident notification to ACEN must set out the location and nature of the incident.

The notification submitted by ACEN to the Planning Secretary must also identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident.

Requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 7 of the DC, which are:

- A written incident notification addressing the requirements set out below must be submitted by ACEN to the Planning Secretary via the Major Projects website within seven days after the ACEN becomes aware of an incident. Notification is required to be given under this condition even if ACEN fails to give the notification required under CoC 7 of Schedule 4 or, having given such notification, subsequently forms the view that an incident has not occurred.
- Written notification of an incident must:
  - identify the development and application number

  - provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident)
  - identify how the incident was detected
  - identify when the applicant became aware of the incident
  - identify any actual or potential non-compliance with conditions of consent
  - describe what immediate steps were taken in relation to the incident
  - identify further action(s) that will be taken in relation to the incident
  - identify a project contact for further communication regarding the incident.
- Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, ACEN must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.
- The Incident Report must include:
  - a summary of the incident
  - outcomes of an incident investigation, including identification of the cause of the incident
  - details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence
  - details of any communication with other stakeholders regarding the incident.

Reporting requirements including procedures for notification of incidents are further documented in the EMS.

8.3.2 Non-compliance notification

In accordance with CoC 8 (Schedule 4), ACEN is required to notify the Department in writing via the Major Projects website within seven days after becoming aware of any non-compliance with the conditions of this consent. Accordingly, the PCL or Transgrid Lead Project Manager will notify the ACEN Project Manager no greater than 24 hours after a non-compliance is identified to enable prompt reporting by ACEN to the Planning Secretary.

In accordance with CoCs 8, 9 and 10 (Schedule 4) the non-compliance notification to ACEN will set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. The notification submitted by ACEN to the Planning Secretary must also identify the development and the application number for it. A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

Reporting requirements including procedures for notification of non-compliances are further documented in the EMS.

8.4 Consultation with DPE

In accordance with CoC 27 (Schedule 4) prior to commencing construction the Applicant (ACEN (or PCL/Transgrid)) must prepare a SWMP for the development *in consultation with Department of Planning, Industry and Environment (DPIE)* (now DPE).

This SWMP for Stage 2a of the Stubbo Solar project incorporates comments on the SWMP prepared by Accent for Stage 1 of the project (Blue Springs Road Upgrade and site access construction), as relevant. The SWMP also incorporates advice sought from DPE in relation to the exemption of an SSD project from the need to obtain a Controlled Activity Approval for creek crossing works.

DPE has undertaken a review of this SWMP and the comments provided by DPE have been incorporated into this version of the plan.

Appendix F lists the consultation undertaken to date, including the review by DPE and the response by the project team.

Project engagement requirements are set out in the Community Engagement Plan.

9 References

DECC (2007). Storing and Handling of Liquids: Environmental Protection – Participant's Manual. Department of Environment and Climate Change NSW. May 2007.

DPI (2013). Policy and Guidelines for Fish Habitat Conservation and Management. Department of Primary Industries (2013).

Kovac, M. and Briggs, G. (2013). Infrastructure proposals on rural land. Primefact 1063, second edition, Department of Primary Industries (June 2013).

Landcom (2004). Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition, Office of Environment, New South Wales NSW EPA (2017).

NRAR (2018a). Guidelines for Controlled Activities on Waterfront Land. NSW Department of Industry May 2018.

NRAR (2018b). Guidelines for Controlled Activities on Waterfront Land – Riparian Corridors. NSW Department of Industry May 2018.

Office of Water NSW (2012a). Controlled Activities on Waterfront Land - Guidelines for watercourse crossings on waterfront land. NSW Department of Primary Industries July 2012.

Office of Water NSW (2012b). Controlled Activities on Waterfront Land - Guidelines for instream works on waterfront land. NSW Department of Primary Industries July 2012.

Ramboll (2020). Stubbo Solar Farm: Environmental Impact Statement, prepared for UPC\AC Renewables Australia Pty Ltd by Ramboll Australia Pty Ltd. December 2020.

Appendix A
Conditions of Consent reference table

Table A1 Relevant conditions from Development Consent - Application Number: SSD-10452

Condition No.	Condition Description	Reference
Schedule 3 Environmental Conditions - General		
Soil and Water: Water Supply		
24	*The Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development to match its available water supply.* *Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain the necessary water licences for the development*	See Section 6.8
Soil and Water: Water Pollution		
25	*The Applicant must ensure that the development does not cause any water pollution, as defined under Section 120 of the POEO Act.*	See Section 6.6
Soil and Water: Operating Conditions		
26	*The Applicant must:*	
26a	*minimise erosion and control sediment generation*	See Section 6 and Appendix C (ESCP)
26b	*ensure any solar panels and ancillary infrastructure and any other land disturbance associated with the construction, upgrading or decommissioning of the development have appropriate drainage and erosion*	See Section 6.1 and Appendix C (ESCP)

Condition No.	Condition Description	Reference
	and sediment controls designed, installed and maintained in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) manual, or its latest version	
26c	*ensure the solar panels and ancillary infrastructure (including security fencing) are designed, constructed and maintained to reduce impacts on surface water, localised flooding and groundwater at the site*	See Section 6.5
26d	*ensure all works are undertaken in accordance with the following, unless DPIE Water agrees otherwise:* • *Guidelines for Controlled Activities on Waterfront Land (NRAR, 2018), or its latest version; and* • *Policy and Guidelines for Fish Habitat Conservation and Management (2013), or its latest version*	See Section 6.4 and Appendix C (ESCP)
Soil and Water: Soil and Water Management Plan		
27	*Prior to commencing construction, the Applicant must prepare a Soil and Water Management Plan for the development in consultation with DPIE Water. This plan must:*	This document
27a	*demonstrate how the project will meet conditions 25 and 26(a) to (d); and*	See Section 6 and Appendix C (ESCP)
27b	*include details of the soil erosion control measures including sediment basins*	See Section 6 and Appendix C (ESCP)
Hazards: Storage and Handling of Dangerous Goods		
29	*The Applicant must store and handle all chemicals, fuels and oils used on-site in accordance with:* *a) the requirements of all relevant Australian Standards; and*	Section 6.6

Condition No.	Condition Description	Reference
	b) the NSW EPA's Storing and Handling of Liquids: Environmental Protection – Participants Handbook if the chemicals are liquids *In the event of an inconsistency between the requirements (a) and (b) above, the most stringent requirement must prevail to the extent of the inconsistency.*	

Table A2 Consolidated EIS and Amendment report commitments

ID	Management/ mitigation measure	Management plan/Timing
Biodiversity		
B5	*Appropriate controls will be implemented to manage exposed soil surfaces and stockpiles to prevent sediment discharge into waterways.* *All works within proximity to the drainage lines will have adequate sediment and erosion controls (e.g. sediment barriers, sedimentation ponds). Revegetation will also commence as soon as is practicable to minimise risks of erosion.*	See Section 6.4 and Appendix C (ESCP)
Landuse		
LU1	*Land management within the study area will include measures to minimise impacts to surrounding agricultural land use with reference to DPI's publication Infrastructure proposals on rural land (Kovac, M and Briggs, G, 2013). These measures will also be implemented during operation of the project and will include strategies to minimise impacts of aerial spraying. The land management measures will aim to minimise impacts on:* • *land and soil capability within the development footprint* • *biosecurity both at a local and regional level* • *soil erosion* • *surface water runoff* • *agricultural activities on neighbouring properties.*	See Section 6.9
Soils		
S1	*Disturbed areas will be progressively stabilised and rehabilitated as construction is completed to minimise the extent of bare soil.*	See Section 6.2 and Appendix C (ESCP)
S3	*The photovoltaic arrays will be designed to allow for enough space between rows of panels for establishment of groundcover and implementation of weed controls*	See Section 6.2
Water		
W1	*Infrastructure with the potential to cause pollution to waterways in the event of flooding, such as inverters and battery storage will be*	Section 6.5

ID	Management/ mitigation measure	Management plan/Timing
	located with a minimum 300 mm freeboard above the maximum 1% AEP flood level.	
W2	*Solar panels will be designed to provide a minimum of 300 mm freeboard for the lowest edge above the maximum 1% AEP flood level.*	Section 6.5
W3	*The panel structure will be designed to withstand the flood velocities expected at the site.*	Section 6.5
W4	*No infrastructure will be placed within 20 m of any Strahler 3 or above order streams.*	Section 6.5
W5	*All waterway crossings will be designed and constructed in compliance with the Department of Primary Industries, Office of Water, Guidelines for riparian corridors on waterfront land and Guidelines for watercourse crossings on waterfront land.*	Section 6.4
W6	*Further flood investigations and hydrological and hydraulic modelling will be carried out where required during detailed design to ensure the flood immunity objectives and design criteria for the project are met. The modelling will be used to define the nature of both main stream flooding and major overland flow across the development footprint under pre- and post- project conditions and to define the full extent of any impact that the project will have on patterns of both main stream flooding and major overland flow.*	Section 6.5
W7	*A construction soil and water management plan (CSWMP) will be prepared to outline measures to manage soil and water impacts associated with the construction works, including contaminated land. The CSWMP will provide:* • *measures to minimise/manage erosion and sediment transport both within the construction footprint and offsite including requirements for the preparation of erosion and sediment control plans (ESCP) for all progressive stages of construction Measures to manage waste including the classification and handling of spoil* • *procedures to manage unexpected contaminated finds* • *measures to manage stockpiles including locations, separation of waste types, sediment controls and stabilisation* • *measures to manage accidental spills including the requirement to maintain materials such as spill kits*	This report Section 6 and Appendix C (ESCP)

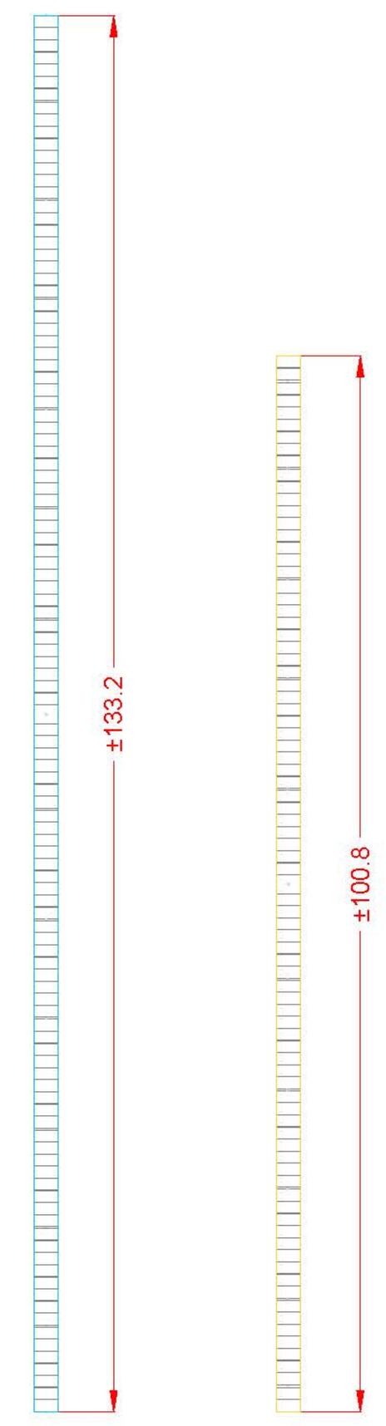
ID	Management/ mitigation measure	Management plan/Timing

	• *controls for receiving waterways which may include:*
	  ○ *Designation of 'no go' zones for construction plant and equipment*
	  ○ *Creation of catch/diversion drains and sediment fences at the downstream boundary of construction activities where practicable to ensure containment of sediment-laden runoff*
	• *erosion and sediment control measures will be implemented and maintained at all work sites in accordance with the principles and requirements in Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (NSW Department of Environment, Climate Change and Water 2008b), commonly referred to as the "Blue Book"*	

W8	*The use of any farms dams during construction will be agreed with the landholder and the estimated maximum harvestable right dam capacity will not be exceeded.*	Section 6.8
W9	*No artificial structures planned to be installed in the creek in the central environmental exclusion zone except for two waterway road and cable crossings. The waterway road and cable crossings would be designed and constructed in compliance with the Guidelines for Controlled Activities on Waterfront Land (NRAR 2018).*	Section 6.4

Appendix B
Site layout plan

Block #	Inverter #	Maximum Capacity @ Inverter Output (MW)	Ingeteam Power B Series 1640TL Maximum Rating (MVA)	Mod. Manufacturer	Panel Rating (W)	# of Modules	DC MW	Effective DC/AC Ratio	# Of Modules/ String	# Of Strings/ Block	4-String Trackers	3-String Trackers	Pitch Distance (m)	# of Combiner Boxes	PROJECT #
1	1.1	1.295	1.637	Risen	550	2,856	1.5708	1.2131	28	102	18	10	6.80	6	1
	1.2	1.295	1.637	Risen	550	2,856	1.5708	1.2131	28	102	21	6	6.80	5	
	1.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	21	7	6.80	5	
	1.4	1.295	1.637	Risen	545	3,192	1.7396	1.3435	28	114	15	18	6.80	6	
2	2.1	1.295	1.637	Risen	550	2,856	1.5708	1.2131	28	102	24	2	6.80	5	1
	2.2	1.295	1.637	Risen	545	3,304	1.8007	1.3906	28	118	28	2	6.80	5	
	2.3	1.295	1.637	Risen	545	3,164	1.7244	1.3317	28	113	11	23	6.80	5	
	2.4	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
3	3.1	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	11	25	6.80	5	1
	3.2	1.295	1.637	Risen	545	3,136	1.7091	1.3199	28	112	10	24	6.80	6	
	3.3	1.295	1.637	Risen	550	2,912	1.6016	1.2369	28	104	14	16	6.80	5	
	3.4	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
4	4.1	1.295	1.637	Risen	550	2,884	1.5862	1.2250	28	103	13	17	6.80	5	1
	4.2	1.295	1.637	Risen	550	2,856	1.5708	1.2131	28	102	12	18	6.80	6	
	4.3	1.295	1.637	Risen	545	3,248	1.7702	1.3671	28	116	11	24	6.80	5	
	4.4	1.295	1.637	Risen	545	3,360	1.8312	1.4142	28	120	12	24	6.80	6	
5	5.1	1.295	1.637	Risen	550	2,856	1.5708	1.2131	28	102	12	18	6.80	6	1
	5.2	1.295	1.637	Risen	550	2,884	1.5862	1.2250	28	103	22	5	6.80	6	
	5.3	1.295	1.637	Risen	545	3,360	1.8312	1.4142	28	120	12	24	6.80	5	
	5.4	1.295	1.637	Risen	545	3,360	1.8312	1.4142	28	120	12	24	6.80	6	
6	6.1	1.295	1.637	Risen	550	2,856	1.5708	1.2131	28	102	24	2	6.80	5	1
	6.2	1.295	1.637	Risen	550	2,828	1.5554	1.2012	28	101	23	3	6.80	7	
	6.3	1.295	1.637	Risen	545	3,360	1.8312	1.4142	28	120	12	24	6.80	5	
	6.4	1.295	1.637	Risen	545	3,360	1.8312	1.4142	28	120	12	24	6.80	6	
7	7.1	1.295	1.637	Risen	545	3,304	1.8007	1.3906	28	118	7	30	6.80	6	1
	7.2	1.295	1.637	Risen	550	2,828	1.5554	1.2012	28	101	11	19	6.80	6	
	7.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
	7.4	1.295	1.637	Risen	545	2,940	1.6023	1.2374	28	105	15	15	6.80	6	
8	8.1	1.295	1.637	Risen	550	3,304	1.8172	1.4034	28	118	22	10	6.80	5	1
	8.2	1.295	1.637	Risen	550	3,248	1.7864	1.3796	28	116	23	8	6.80	6	
	8.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	
	8.4	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
9	9.1	1.295	1.637	Risen	550	2,828	1.5554	1.2012	28	101	23	3	6.80	5	1
	9.2	1.295	1.637	Risen	545	2,800	1.5260	1.1785	28	100	22	4	6.80	6	
	9.3	1.295	1.637	Risen	550	2,744	1.5092	1.1655	28	98	14	14	6.80	5	
	9.4	1.295	1.637	Risen	545	2,968	1.6176	1.2492	28	106	16	14	6.80	6	
10	10.1	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	1
	10.2	1.295	1.637	Risen	550	2,828	1.5554	1.2012	28	101	11	19	6.80	6	
	10.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	
	10.4	1.295	1.637	Risen	545	2,800	1.5260	1.1785	28	100	25	0	6.80	6	
11	11.1	1.295	1.637	Risen	550	3,304	1.8172	1.4034	28	118	10	26	6.80	6	1
	11.2	1.295	1.637	Risen	550	2,716	1.4938	1.1536	28	97	13	15	6.80	6	
	11.3	1.295	1.637	Risen	550	2,856	1.5708	1.2131	28	102	21	6	6.80	6	
	11.4	1.295	1.637	Risen	550	2,800	1.5400	1.1893	28	100	25	0	6.80	6	
12	12.1	1.295	1.637	Risen	545	3,360	1.8312	1.4142	28	120	21	12	6.80	6	1
	12.2	1.295	1.637	Risen	545	3,304	1.8007	1.3906	28	118	25	6	6.80	6	
	12.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	7	
	12.4	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
13	13.1	1.295	1.637	Risen	550	2,856	1.5708	1.2131	28	102	21	6	6.80	6	1
	13.2	1.295	1.637	Risen	550	2,632	1.4476	1.1179	28	94	16	10	6.80	6	
	13.3	1.295	1.637	Risen	545	3,276	1.7854	1.3788	28	117	18	15	6.80	6	
	13.4	1.295	1.637	Risen	550	2,828	1.5554	1.2012	28	101	11	19	6.80	6	
14	14.1	1.295	1.637	Risen	550	2,828	1.5554	1.2012	28	101	23	3	6.80	6	1
	14.2	1.295	1.637	Risen	550	3,052	1.6786	1.2963	28	109	19	11	6.80	6	
	14.3	1.295	1.637	Risen	550	2,688	1.4784	1.1417	28	96	6	24	6.80	5	
	14.4	1.295	1.637	Risen	550	3,304	1.8172	1.4034	28	118	10	26	6.80	6	
15	15.1	1.295	1.637	Risen	550	2,800	1.5400	1.1893	28	100	22	4	6.80	5	1
	15.2	1.295	1.637	Risen	545	3,248	1.7702	1.3671	28	116	26	4	6.80	6	
	15.3	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	20	13	6.80	5	
	15.4	1.295	1.637	Risen	550	2,800	1.5400	1.1893	28	100	4	28	6.80	6	
16	16.1	1.295	1.637	Risen	550	2,856	1.5708	1.2131	28	102	12	18	6.80	6	1
	16.2	1.295	1.637	Risen	545	3,136	1.7091	1.3199	28	112	10	24	6.80	5	
	16.3	1.295	1.637	Risen	550	3,164	1.7402	1.3439	28	113	5	31	6.80	5	
	16.4	1.295	1.637	Risen	545	3,248	1.7702	1.3671	28	116	20	12	6.80	6	
17	17.1	1.295	1.637	Risen	550	2,660	1.4630	1.1298	28	95	20	5	6.80	5	1
	17.2	1.295	1.637	Risen	550	3,192	1.7556	1.3558	28	114	12	22	6.80	6	
	17.3	1.295	1.637	Risen	550	3,304	1.8172	1.4034	28	118	10	26	6.80	5	
	17.4	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
18	18.1	1.295	1.637	Risen	545	3,220	1.7549	1.3553	28	115	19	13	6.80	6	1
	18.2	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
	18.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	
	18.4	1.295	1.637	Risen	550	2,968	1.6324	1.2607	28	106	13	18	6.80	5	
19	19.1	1.295	1.637	Risen	550	2,968	1.6324	1.2607	28	106	13	18	6.80	5	1
	19.2	1.295	1.637	Risen	550	2,744	1.5092	1.1655	28	98	8	22	6.80	6	
	19.3	1.295	1.637	Risen	550	2,996	1.6478	1.2726	28	107	23	5	6.80	6	
	19.4	1.295	1.637	Risen	550	3,304	1.8172	1.4034	28	118	10	26	6.80	5	
20	20.1	1.295	1.637	Risen	550	2,772	1.5246	1.1774	28	99	15	13	6.80	5	1
	20.2	1.295	1.637	Risen	550	2,772	1.5246	1.1774	28	99	15	13	6.80	5	
	20.3	1.295	1.637	Risen	545	3,248	1.7702	1.3671	28	116	14	20	6.80	6	
	20.4	1.295	1.637	Risen	545	3,472	1.8922	1.4613	28	124	16	20	6.80	5	
21	21.1	1.295	1.637	Risen	550	2,772	1.5246	1.1774	28	99	15	13	6.80	6	1
	21.2	1.295	1.637	Risen	545	3,164	1.7244	1.3317	28	113	17	15	6.80	6	
	21.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
	21.4	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	17	17	6.80	6	
22	22.1	1.295	1.637	Risen	550	2,772	1.5246	1.1774	28	99	15	13	6.80	6	1
	22.2	1.295	1.637	Risen	545	3,164	1.7244	1.3317	28	113	17	15	6.80	6	
	22.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
	22.4	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	17	17	6.80	6	
23	23.1	1.295	1.637	Risen	550	3,080	1.6940	1.3082	28	110	20	10	6.80	5	1
	23.2	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	3	31	6.80	5	
	23.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	
	23.4	1.295	1.637	Risen	550	3,136	1.7248	1.3320	28	112	16	16	6.80	7	
24	24.1	1.295	1.637	Risen	550	3,052	1.6786	1.2963	28	109	19	11	6.80	6	1
	24.2	1.295	1.637	Risen	545	3,304	1.8007	1.3906	28	118	28	2	6.80	5	
	24.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
	24.4	1.295	1.637	Risen	545	3,136	1.7091	1.3199	28	112	16	16	6.80	6	
25	25.1	1.295	1.637	Risen	545	3,304	1.8007	1.3906	28	118	28	2	6.80	6	1
	25.2	1.295	1.637	Risen	550	3,080	1.6940	1.3082	28	110	14	18	6.80	5	
	25.3	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	17	17	6.80	5	
	25.4	1.295	1.637	Risen	550	2,744	1.5092	1.1655	28	98	14	14	6.80	6	
26	26.1	1.295	1.637	Risen	545	3,304	1.8007	1.3906	28	118	28	2	6.80	6	1
	26.2	1.295	1.637	Risen	545	3,192	1.7396	1.3435	28	114	24	6	6.80	5	
	26.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
	26.4	1.295	1.637	Risen	545	2,940	1.6023	1.2374	28	105	15	15	6.80	5	
27	27.1	1.295	1.637	Risen	550	3,360	1.8480	1.4272	28	120	12	24	6.80	6	1
	27.2	1.295	1.637	Risen	550	2,884	1.5862	1.2250	28	103	16	13	6.80	6	
	27.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	
	27.4	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
28	28.1	1.295	1.637	Risen	550	3,052	1.6786	1.2963	28	109	16	15	6.80	6	1
	28.2	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
	28.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	
	28.4	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
29	29.1	1.295	1.637	Risen	550	2,688	1.4784	1.1417	28	96	21	4	6.80	5	1
	29.2	1.295	1.637	Risen	550	2,800	1.5400	1.1893	28	100	22	4	6.80	5	
	29.3	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	17	17	6.80	6	
	29.4	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	
30	30.1	1.295	1.637	Risen	550	2,912	1.6016	1.2369	28	104	14	16	6.80	6	1
	30.2	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	17	17	6.80	5	
	30.3	1.295	1.637	Risen	545	3,248	1.7702	1.3671	28	116	29	0	6.80	5	
	30.4	1.295	1.637	Risen	550	3,080	1.6940	1.3082	28	110	26	2	6.80	5	
31	31.1	1.295	1.637	Risen	550	2,884	1.5862	1.2250	28	103	13	17	6.80	6	1
	31.2	1.295	1.637	Risen	545	3,276	1.7854	1.3788	28	117	15	19	6.80	6	
	31.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	
	31.4	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	17	17	6.80	6	
32	32.1	1.295	1.637	Risen	550	2,884	1.5862	1.2250	28	103	13	17	6.80	6	1
	32.2	1.295	1.637	Risen	545	3,276	1.7854	1.3788	28	117	15	19	6.80	6	
	32.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	
	32.4	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	17	17	6.80	6	
33	33.1	1.295	1.637	Risen	550	2,884	1.5862	1.2250	28	103	13	17	6.80	5	1
	33.2	1.295	1.637	Risen	545	3,276	1.7854	1.3788	28	117	15	19	6.80	6	
	33.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	6	
	33.4	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	17	17	6.80	6	
34	34.1	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	1
	34.2	1.295	1.637	Risen	545	3,416	1.8617	1.4378	28	122	14	22	6.80	5	
	34.3	1.295	1.637	Risen	550	2,996	1.6478	1.2726	28	107	11	21	6.80	5	
	34.4	1.295	1.637	Risen	545	3,332	1.8159	1.4024	28	119	17	17	6.80	6	
35	35.1	1.295	1.637	Risen	545	3,276	1.7854	1.3788	28	117	9	27	6.80	5	1
	35.2	1.295	1.637	Risen	550	3,052	1.6786	1.2963	28	109	10	23	6.80	6	
	35.3	1.295	1.637	Risen	545	3,528	1.9228	1.4840	28	126	15	22	6.80	5	
	35.4	1.295	1.637	Risen	545	3,360	1.8312	1.4142	28	120	12	24	6.80	5	
36	36.1	1.295	1.637	Risen	550	3,332	1.8326	1.4153	28	119	11	25	6.80	5	1
	36.2	1.295	1.637	Risen	545	3,276	1.7854	1.3788	28	117	9	27	6.80	5	
	36.3	1.295	1.637	Risen	550	2,856	1.5708	1.2131	28	102	21	6	6.80	6	
	36.4	1.295	1.637	Risen	550	2,688	1.4784	1.1417	28	96	24	0	6.80	6	
37	37.1	1.295	1.637	Risen	550	3,360	1.8480	1.4272	28	120	15	20	6.80	5	1
	37.2	1.295	1.637	Risen	550	3,220	1.7710	1.3677	28	115	13	21	6.80	6	
	37.3	1.295	1.637	Risen	550	2,828	1.5554	1.2012	28	101	17	11	6.80	5	
	37.4	1.295	1.637	Risen	550	2,800	1.5400	1.1893	28	100	7	24	6.80	6	
38	38.1	1.295	1.637	Risen	550	2,744	1.5092	1.1655	28	98	14	14	6.80	6	1
	38.2	1.295	1.637	Risen	550	2,828	1.5554	1.2012	28	101	11	19	6.80	5	
	38.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	15	15	6.80	5	
	38.4	1.295	1.637	Risen	550	3,080	1.6940	1.3082	28	110	20	10	6.80	6	
39	39.1	1.295	1.637	Risen	550	2,772	1.5246	1.1774	28	99	9	21	6.80	6	1
	39.2	1.295	1.637	Risen	550	2,912	1.6016	1.2369	28	104	14	16	6.80	5	
	39.3	1.295	1.637	Risen	550	2,940	1.6170	1.2488	28	105	3	31	6.80	6	
	39.4	1.295	1.637	Risen	550	2,884	1.5862	1.2250	28	103	13	17	6.80	6	
40	40.1	1.303	1.637	JA	575	3,248	1.8676	1.4337	28	116	26	4	6.80	5	2
	40.2	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	22	4	6.80	5	
	40.3	1.303	1.637	JA	580	2,772	1.6078	1.2342	28	99	12	17	6.80	6	
	40.4	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	12	19	6.80	5	
41	41.1	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	22	4	6.80	6	2
	41.2	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	22	4	6.80	7	
	41.3	1.303	1.637	JA	580	2,772	1.6078	1.2342	28	99	12	17	6.80	6	
	41.4	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	12	19	6.80	5	
42	42.1	1.303	1.637	JA	575	2,884	1.6583	1.2730	28	103	16	13	6.80	6	2
	42.2	1.303	1.637	JA	570	3,276	1.8673	1.4335	28	117	18	15	6.80	6	
	42.3	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	3	31	6.80	5	
	42.4	1.303	1.637	JA	575	3,024	1.7388	1.3348	28	108	0	36	6.80	5	
43	43.1	1.303	1.637	JA	575	2,884	1.6583	1.2730	28	103	13	17	6.80	5	2
	43.2	1.303	1.637	JA	575	3,080	1.7710	1.3596	28	110	11	22	6.80	6	
	43.3	1.303	1.637	JA	575	3,108	1.7871	1.3719	28	111	3	33	6.80	6	
	43.4	1.303	1.637	JA	575	3,108	1.7871	1.3719	28	111	0	37	6.80	6	
44	44.1	1.303	1.637	JA	575	2,884	1.6583	1.2730	28	103	10	21	6.80	5	2
	44.2	1.303	1.637	JA	575	3,080	1.7710	1.3596	28	110	14	18	6.80	7	
	44.3	1.303	1.637	JA	570	3,332	1.8992	1.4580	28	119	20	13	6.80	6	
	44.4	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	6	
45	45.1	1.303	1.637	JA	575	2,884	1.6583	1.2730	28	103	13	17	6.80	6	2
	45.2	1.303	1.637	JA	580	2,688	1.5590	1.1968	28	96	12	16	6.80	6	
	45.3	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	5	
	45.4	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	6	
46	46.1	1.303	1.637	JA	580	2,772	1.6078	1.2342	28	99	15	13	6.80	6	2
	46.2	1.303	1.637	JA	575	2,968	1.7066	1.3101	28	106	10	22	6.80	5	
	46.3	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	10	20	6.80	5	
	46.4	1.303	1.637	JA	575	3,080	1.7710	1.3596	28	110	11	22	6.80	5	
47	47.1	1.303	1.637	JA	575	2,828	1.6261	1.2483	28	101	17	11	6.80	6	2
	47.2	1.303	1.637	JA	575	3,052	1.7549	1.3472	28	109	13	19	6.80	6	
	47.3	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	10	20	6.80	6	
	47.4	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	10	20	6.80	5	
48	48.1	1.303	1.637	JA	580	2,576	1.4941	1.1470	28	92	14	12	6.80	6	2
	48.2	1.303	1.637	JA	575	2,856	1.6422	1.2607	28	102	12	18	6.80	6	
	48.3	1.303	1.637	JA	575	3,080	1.7710	1.3596	28	110	20	10	6.80	6	
	48.4	1.303	1.637	JA	580	2,772	1.6078	1.2342	28	99	18	9	6.80	5	
49	49.1	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	5	2
	49.2	1.303	1.637	JA	575	3,416	1.9642	1.5079	28	122	14	22	6.80	5	
	49.3	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	10	20	6.80	5	
	49.4	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	10	20	6.80	5	
50	50.1	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	6	2
	50.2	1.303	1.637	JA	575	2,828	1.6261	1.2483	28	101	11	19	6.80	5	
	50.3	1.303	1.637	JA	575	2,884	1.6583	1.2730	28	103	13	17	6.80	6	
	50.4	1.303	1.637	JA	575	2,688	1.5456	1.1865	28	96	24	0	6.80	5	
51	51.1	1.303	1.637	JA	575	3,304	1.8998	1.4584	28	118	28	2	6.80	6	2
	51.2	1.303	1.637	JA	575	3,248	1.8676	1.4337	28	116	26	4	6.80	6	
	51.3	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	22	8	6.80	5	
	51.4	1.303	1.637	JA	575	3,080	1.7710	1.3596	28	110	8	26	6.80	5	
52	52.1	1.303	1.637	JA	575	3,080	1.7710	1.3596	28	110	11	22	6.80	5	2
	52.2	1.303	1.637	JA	575	3,220	1.8515	1.4214	28	115	7	29	6.80	6	
	52.3	1.303	1.637	JA	575	3,192	1.8354	1.4090	28	114	15	18	6.80	5	
	52.4	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	28	0	6.80	5	
53	53.1	1.303	1.637	JA	575	3,108	1.7871	1.3719	28	111	18	13	6.80	6	2
	53.2	1.303	1.637	JA	575	3,192	1.8354	1.4090	28	114	27	2	6.80	6	
	53.3	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	21	7	6.80	5	
	53.4	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	6	
54	54.1	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	25	0	6.80	5	2
	54.2	1.303	1.637	JA	575	2,996	1.7227	1.3225	28	107	14	17	6.80	6	
	54.3	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	28	0	6.80	6	
	54.4	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	28	0	6.80	6	
55	55.1	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	28	0	6.80	5	2
	55.2	1.303	1.637	JA	575	2,968	1.7066	1.3101	28	106	22	6	6.80	6	
	55.3	1.303	1.637	JA	580	2,744	1.5915	1.2218	28	98	14	14	6.80	6	
	55.4	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	16	16	6.80	6	
56	56.1	1.303	1.637	JA	570	3,360	1.9152	1.4703	28	120	24	8	6.80	5	2
	56.2	1.303	1.637	JA	575	2,884	1.6583	1.2730	28	103	13	17	6.80	6	
	56.3	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	18	11	6.80	6	
	56.4	1.303	1.637	JA	575	2,828	1.6261	1.2483	28	101	20	7	6.80	5	
57	57.1	1.303	1.637	JA	580	2,632	1.5266	1.1719	28	94	4	26	6.80	6	2
	57.2	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	10	12	6.80	5	
	57.3	1.303	1.637	JA	575	2,996	1.7227	1.3225	28	107	5	29	6.80	6	
	57.4	1.303	1.637	JA	575	3,024	1.7388	1.3348	28	108	6	28	6.80	6	
58	58.1	1.303	1.637	JA	575	2,996	1.7227	1.3225	28	107	17	13	6.80	7	2
	58.2	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	16	12	6.80	6	
	58.3	1.303	1.637	JA	575	3,024	1.7388	1.3348	28	108	18	12	6.80	6	
	58.4	1.303	1.637	JA	575	2,968	1.7066	1.3101	28	106	16	14	6.80	5	
59	59.1	1.303	1.637	JA	575	3,080	1.7710	1.3596	28	110	26	2	6.80	7	2
	59.2	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	5	
	59.3	1.303	1.637	JA	575	3,192	1.8354	1.4090	28	114	15	18	6.80	5	
	59.4	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	10	20	6.80	5	
60	60.1	1.303	1.637	JA	575	2,856	1.6422	1.2607	28	102	12	18	6.80	6	2
	60.2	1.303	1.637	JA	575	2,884	1.6583	1.2730	28	103	13	17	6.80	6	
	60.3	1.303	1.637	JA	570	3,360	1.9152	1.4703	28	120	12	24	6.80	5	
	60.4	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	10	20	6.80	5	
61	61.1	1.303	1.637	JA	575	2,856	1.6422	1.2607	28	102	12	18	6.80	6	2
	61.2	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	18	11	6.80	5	
	61.3	1.303	1.637	JA	580	2,800	1.6240	1.2467	28	100	10	20	6.80	5	
	61.4	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	28	0	6.80	5	
62	62.1	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	22	8	6.80	5	2
	62.2	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	19	8	6.80	5	
	62.3	1.303	1.637	JA	580	2,772	1.6078	1.2342	28	99	21	5	6.80	6	
	62.4	1.303	1.637	JA	575	2,856	1.6422	1.2607	28	102	0	34	6.80	6	
63	63.1	1.303	1.637	JA	570	3,332	1.8992	1.4580	28	119	17	17	6.80	5	2
	63.2	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	6	
	63.3	1.303	1.637	JA	575	2,828	1.6261	1.2483	28	101	11	19	6.80	6	
	63.4	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	16	16	6.80	6	
64	64.1	1.303	1.637	JA	575	3,136	1.8032	1.3843	28	112	16	16	6.80	7	2
	64.2	1.303	1.637	JA	575	2,828	1.6261	1.2483	28	101	11	19	6.80	6	
	64.3	1.303	1.637	JA	575	3,108	1.7871	1.3719	28	111	18	13	6.80	6	
	64.4	1.303	1.637	JA	580	2,688	1.5590	1.1968	28	96	18	8	6.80	6	
65	65.1	1.303	1.637	JA	575	3,024	1.7388	1.3348	28	108	18	12	6.80	6	2
	65.2	1.303	1.637	JA	575	2,912	1.6744	1.2854	28	104	14	16	6.80	6	
	65.3	1.303	1.637	JA	580	2,772	1.6078	1.2342	28	99	15	13	6.80	6	
	65.4	1.303	1.637	JA	575	3,080	1.7710	1.3596	28	110	20	10	6.80	6	
66	66.1	1.303	1.637	JA	575	2,912	1.6744	1.2854	28	104	20	8	6.80	5	2
	66.2	1.303	1.637	JA	570	3,332	1.8992	1.4580	28	119	17	17	6.80	6	
	66.3	1.303	1.637	JA	575	3,080	1.7710	1.3596	28	110	20	10	6.80	6	
	66.4	1.303	1.637	JA	575	3,080	1.7710	1.3596	28	110	20	10	6.80	5	
67	67.1	1.303	1.637	JA	575	2,968	1.7066	1.3101	28	106	16	14	6.80	5	2
	67.2	1.303	1.637	JA	575	3,024	1.7388	1.3348	28	108	21	8	6.80	6	
	67.3	1.303	1.637	JA	575	2,660	1.5295	1.1742	28	95	14	13	6.80	6	
	67.4	1.303	1.637	JA	575	2,856	1.6422	1.2607	28	102	21	6	6.80	6	
68	68.1	1.303	1.637	JA	575	3,024	1.7388	1.3348	28	108	27	0	6.80	5	2
	68.2	1.303	1.637	JA	575	3,024	1.7388	1.3348	28	108	27	0	6.80	6	
	68.3	1.303	1.637	JA	570	3,136	1.7875	1.3722	28	112	28	0	6.80	6	
	68.4	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	25	0	6.80	5	
69	69.1	1.303	1.637	JA	575	2,772	1.5939	1.2236	28	99	24	1	6.80	5	2
	69.2	1.303	1.637	JA	575	3,024	1.7388	1.3348	28	108	27	0	6.80	6	
	69.3	1.303	1.637	JA	575	3,052	1.7549	1.3472	28	109	25	3	6.80	6	
	69.4	1.303	1.637	JA	575	3,024	1.7388	1.3348	28	108	27	0	6.80	5	
70	70.1	1.303	1.637	JA	575	2,772	1.5939	1.2236	28	99	15	13	6.80	6	2
	70.2	1.303	1.637	JA	580	3,164	1.8351	1.4088	28	113	17	15	6.80	6	
	70.3	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	5	
	70.4	1.303	1.637	JA	570	3,332	1.8992	1.4580	28	119	17	17	6.80	5	
71	71.1	1.303	1.637	JA	570	2,772	1.5800	1.2130	28	99	15	13	6.80	6	2
	71.2	1.303	1.637	JA	575	3,164	1.8193	1.3966	28	113	17	15	6.80	6	
	71.3	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	6	
	71.4	1.303	1.637	JA	580	3,332	1.9326	1.4836	28	119	17	17	6.80	6	
72	72.1	1.303	1.637	JA	575	2,884	1.6583	1.2730	28	103	13	17	6.80	7	2
	72.2	1.303	1.637	JA	575	2,884	1.6583	1.2730	28	103	13	17	6.80	6	
	72.3	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	6	
	72.4	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	6	
73	73.1	1.303	1.637	JA	580	2,688	1.5590	1.1968	28	96	12	16	6.80	7	2
	73.2	1.303	1.637	JA	580	2,884	1.6727	1.2841	28	103	13	17	6.80	6	
	73.3	1.303	1.637	JA	575	2,744	1.5778	1.2112	28	98	14	14	6.80	5	
	73.4	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	6	
74	74.1	1.303	1.637	JA	575	2,828	1.6261	1.2483	28	101	20	7	6.80	6	2
	74.2	1.303	1.637	JA	575	2,996	1.7227	1.3225	28	107	20	9	6.80	6	
	74.3	1.303	1.637	JA	570	3,276	1.8673	1.4335	28	117	15	19	6.80	6	
	74.4	1.303	1.637	JA	570	2,968	1.7066	1.3101	28	106	13	18	6.80	6	
75	75.1	1.303	1.637	JA	575	2,828	1.6261	1.2483	28	101	14	15	6.80	6	2
	75.2	1.303	1.637	JA	575	3,108	1.7871	1.3719	28	111	12	21	6.80	6	
	75.3	1.303	1.637	JA	575	2,968	1.7066	1.3101	28	106	16	14	6.80	5	
	75.4	1.303	1.637	JA	570	3,248	1.8514	1.4212	28	116	17	16	6.80	6	
76	76.1	1.303	1.637	JA	575	3,052	1.7549	1.3472	28	109	22	7	6.80	6	2
	76.2	1.303	1.637	JA	575	2,884	1.6583	1.2730	28	103	19	9	6.80	5	
	76.3	1.303	1.637	JA	575	2,800	1.6100	1.2360	28	100	16	12	6.80	6	
	76.4	1.303	1.637	JA	570	3,332	1.8992	1.4580	28	119	17	17	6.80	5	
77	77.1	1.303	1.637	JA	570	3,192	1.8194	1.3967	28	114	18	14	6.80	5	2
	77.2	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	5	
	77.3	1.303	1.637	JA	570	3,332	1.8992	1.4580	28	119	17	17	6.80	6	
	77.4	1.303	1.637	JA	575	2,940	1.6905	1.2978	28	105	15	15	6.80	5	
	PROJECT 1	202.00	255.372			474,404	260.076	1.2875		16,943	2,459	2,369		867	
	PROJECT 2	198.00	248.824			452,732	260.317	1.3147		16,169	2,471	2,095		849	
	TOTAL	400.00	504.196			927,136	520.393	1.3011		33,112	4,930	4,464		1,716	



NEXTRACKER 4 & 3 STRINGS SAT

PROJECT 1 COLLECTOR LINES:

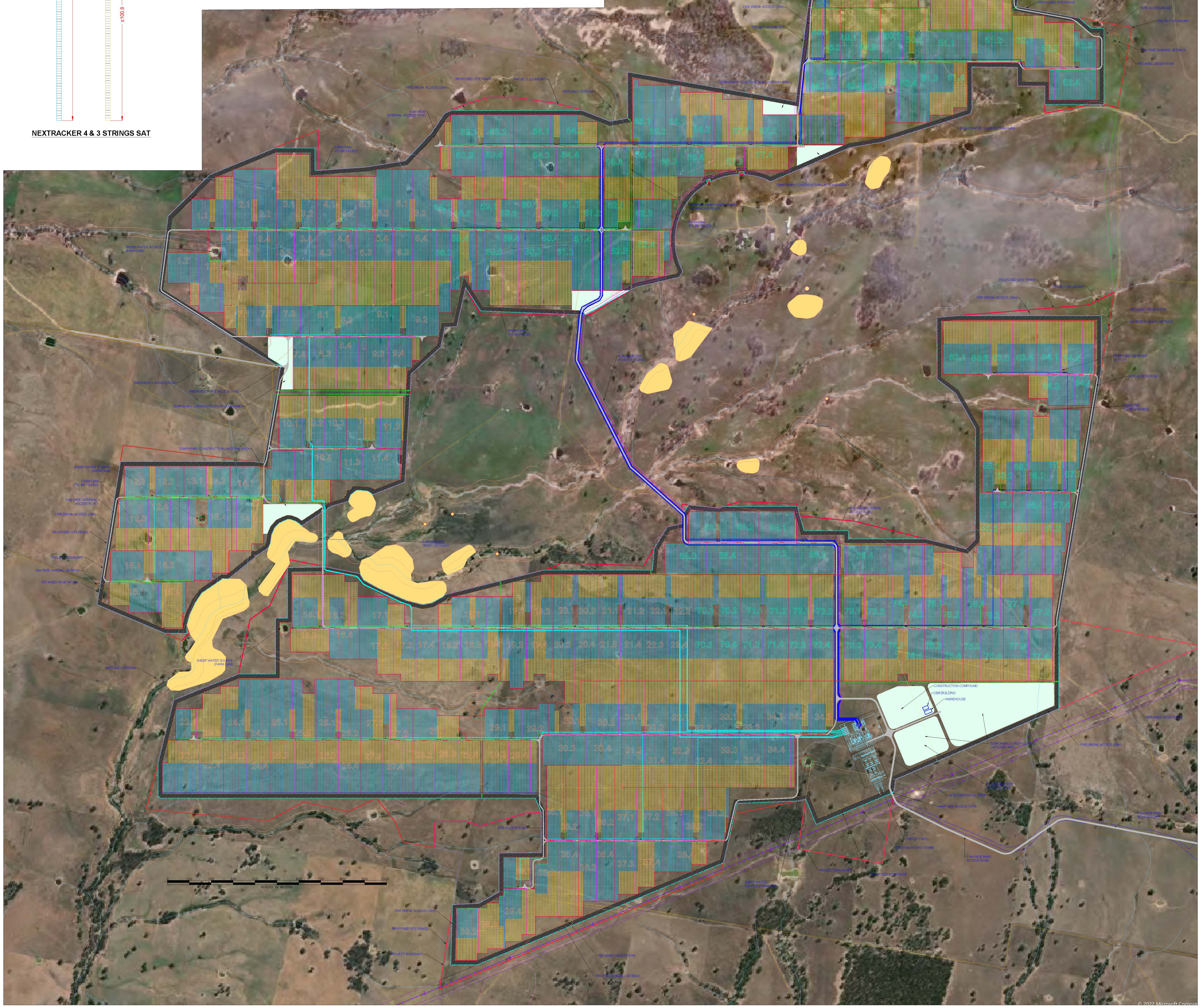
SWITCHGEAR 1:
FEEDER 1: 15-12-13-14-SST
FEEDER 2: 1-2-7-SST
FEEDER 3: 6-5-4-3-SST
FEEDER 4: (9-8)&(11-10)-DBJB2-SST
FEEDER 5: 16-17-18-19-SST

SWITCHGEAR 2:
FEEDER 6: 20-21-22-34-SST
FEEDER 7: 23-24-25-26-SST
FEEDER 8: 27-28-29-30-SST
FEEDER 9: 37-31-32-33-SST
FEEDER 10: 39-35-36-38-SST

PROJECT 2 COLLECTOR LINES:

SWITCHGEAR 1:
FEEDER 1: 43-42-41-40-SST
FEEDER 2: 47-46-45-44-SST
FEEDER 3: 52-51-50-49-SST
FEEDER 4: 48-57-56-55-SST
FEEDER 5: 58-59-60-61-SST

SWITCHGEAR 2:
FEEDER 6: (65-73)&(68-69)-DBJB1-SST
FEEDER 7: 63-64-67-66-SST
FEEDER 8: 77-76-75-74-SST
FEEDER 9: 70-71-72-SST
FEEDER 10: (53-54)&62-DBJB2-SST



PCL CONSTRUCTION
TORONTO DISTRICT
2201 Bristol Circle, Suite 500
Oakville, Ontario, L6H 0J8
Phone: 905-276-7600

LEGEND

- 4 X 1.637 MVA INVERTER
- 6.548 MVA TRANSFORMER
- FUTURE BESS AREA

BLOCK OUTLINE
INVERTER OUTLINE
PROJECT SITE BOUNDARY
PROPOSED FENCE
PROPOSED INTERNAL FENCE
20m FIRE BREAK ZONE
4m WIDE ACCESS ROAD
33kV AC COLLECTOR FEEDERS
DC TRENCH
DC PV HARNESS IN U/G PVC CONDUIT
COMBINER BOX/DISCONNECT SWITCH - SEPARATE PILE TBD
15m TREE SHADING SETBACK
HIGH EROSION AREA
ROCK OUTCROP/ BOULDERS
WEATHER STATION

6	JS	1/6/22	REVISED LAYOUT
5	JS	12/7/22	REVISED LAYOUT
4	JS	12/2/22	REVISED LAYOUT
3	JS	11/18/22	ISSUED FOR REVIEW
2	LS	09/06/22	REVISED LAYOUT
1	LS	08/25/22	AC DETAILS ADDED
0	TN	08/16/22	ISSUED FOR REVIEW

Plot Scale: As Shown
Date: Dec. 02, 2022
Drawn By: J.S.
Checked By:
Sheet Title:
Stubbo Solar Project
Site Layout (400MWAC)
PCL Job No.:
Sheet No.: PCL-1

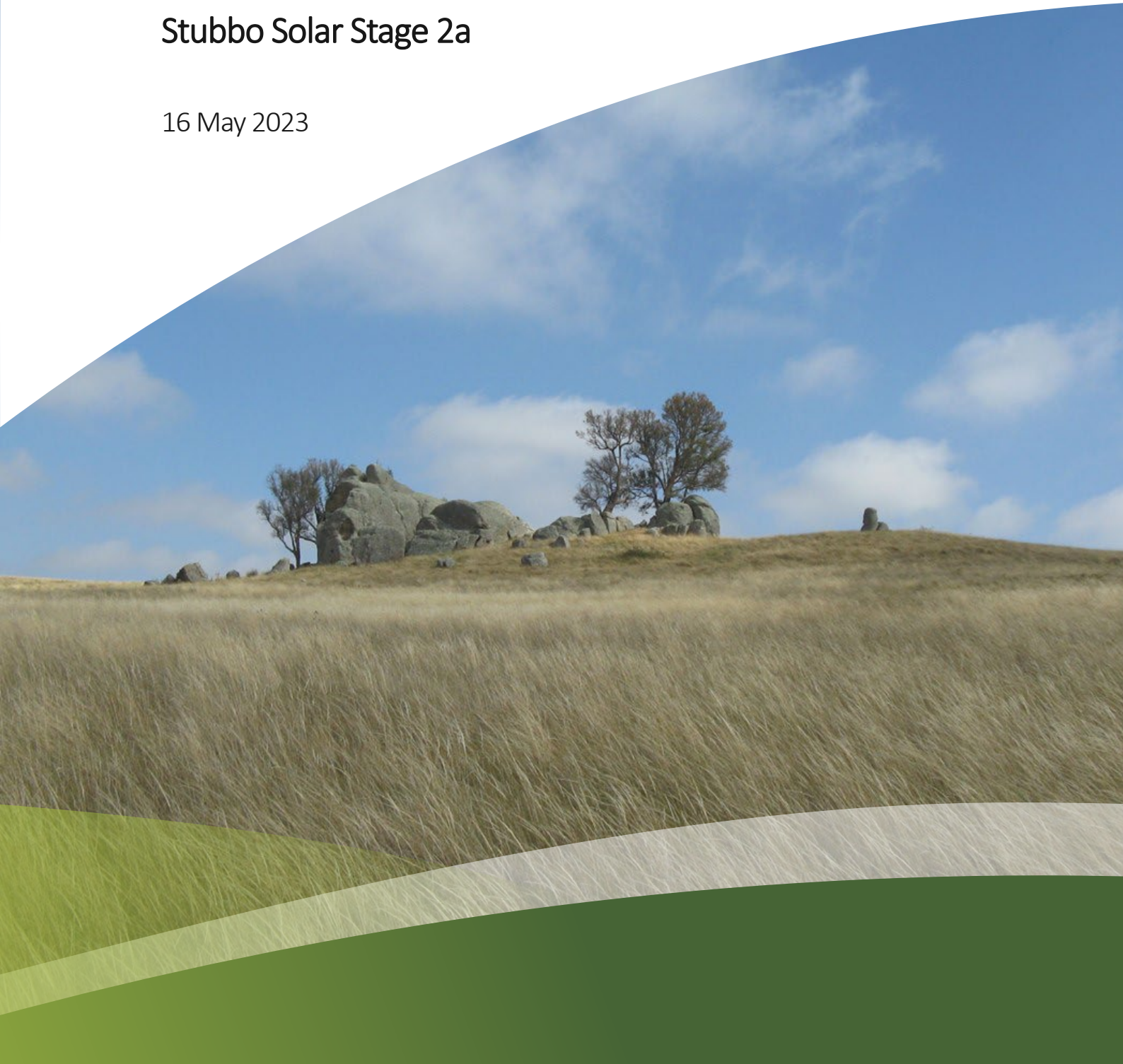
ACCENT ENVIRONMENTAL

Appendix C
Erosion and Sediment Control Plan

Erosion and Sediment Control Plan

Stubbo Solar Stage 2a

16 May 2023



Erosion and Sediment Control Plan
Stubbo Solar Stage 2a

AE1229

May 2023

Version V6			
Issued to			
Michael Yeo, Project Manager – Construction, Stubbo Solar, ACEN Australia Promit Roy, Design & Commissioning Engineer, PCL Constructors Pacific Rim Pty Ltd			
Prepared by		Reviewed by	Approved by
Ian Finlay, Principal Environmental Scientist, Accent Environmental		Michael Cramer, Director, Accent Environmental	 Michael Cramer, Director, Accent Environmental
Previous versions			
Version:	V1 V2 V3 V4 V5	26 February 2023 7 March 2023 23 March 2023 3 April 2023 4 April 2023	Draft for PCL Draft for PCL and ACEN Draft for PCL and ACEN Draft for PCL and ACEN Draft for DPE

www.accentenvironmental.com.au info@accentenvironmental.com.au

Contents

Abbreviations

Accent	Accent Environmental Pty Ltd
AC	alternating current
ACEN	ACEN Australia Pty Ltd
BESS	battery energy storage system
CPESC	Certified Professional in Erosion and Sediment Control
DAWE	Department of Agriculture, Water and the Environment (now DCCEEW)
DC	development consent
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DAWE)
DECC	Department of Environment and Climate Change
DPE	Department of Planning and Environment
DPIE	Department of Planning, Industry and Environment (now and formerly DPE)
EIS	environmental impact statement
EMS	environment management strategy
ESCP	erosion and sediment control plan
ESP	exchangeable sodium percentage
H:V	horizontal to vertical
IECA	International Erosion Control Association
km	kilometre
kV	kilovolt
MW	megawatt
NSW	New South Wales
NTU	Nephelometric turbidity unit
PCL	PCL Constructors Pacific Rim Pty Ltd
PCU	power conversion unit
Ramboll	Ramboll Australia Pty Ltd
SCADA	supervisory control and data acquisition
SDS	safety data sheet
SWMP	soil and water management plan

1 Introduction

The Stubbo Solar project (the Project) is a 400 megawatt (MW) alternating current development with an allowance for future battery storage of up to 200 MW/2 hour. The project is located between Blue Springs Road and Barneys Reef Road, approximately 10 km North of Gulgong and 85 km east of Dubbo in New South Wales (NSW) (Figure 1.1).

ACEN Australia (ACEN) is the project owner and has engaged PCL Construction Pacific Rim Pty Ltd (PCL) as the engineering, procurement and construction (EPC) contractor to manage the works for the 400 MW AC solar project, solar project substation and ancillary operational facilities.

ACEN has also engaged Transgrid to connect the Project to the transmission network used by Transgrid to provide transmission services, which includes certain works that need to be completed by Transgrid to enable Transgrid to connect the Project to the transmission network.

On 29 June 2021, the Executive Director, Energy, Resources and Industry Assessments granted consent to the development application for the Stubbo Solar Farm subject to conditions, under delegation from the Minister for Planning and Public Spaces and section 4.38 of the *Environmental Planning and Assessment Act 1979* (the Act).

In a letter dated 24 August 2022, the Secretary approved the Applicant's proposal to develop the project in two stages, comprising:

- Stage 1: Road upgrades including construction of the main site access; and
- Stage 2: Construction of the solar farm.

In a subsequent letter dated 10 May 2023, the Secretary approved the Applicant's request dated 8 May 2023 seeking the Planning Secretary's approval to revise the staging of the Stubbo Solar Project under Condition 3 of Schedule 4 of SSD-10452, and to develop the project in four stages comprising:

- Stage 1: Road upgrades (Blue Springs Road) and construction of the main site access.
- Stage 2: Solar project construction and operation including:
  - Stage 2a: Construction and commissioning of the solar facilities including solar array, substation and all ancillary infrastructure, including the switchyard and transmission line connection to be constructed by Transgrid.
  - Stage 2b: Operation of the Stubbo Solar Project.
- Stage 3: Construction, commissioning and operation of the Battery Energy Storage System (BESS), including substation and switchyard expansion (within the development footprint).
- Stage 4: Decommissioning of the Stubbo Solar Project at end of life.

PCL has engaged Accent Environmental Pty Ltd (Accent) to prepare this ESCP, which is an appendix to the SWMP. The ESCP has been prepared for Stage 2a of Stubbo Solar, as approved by the Planning Secretary in the letter dated 10 May 2023.

1.1 Project overview

The Stubbo Solar project will generate energy through the conversion of solar radiation to electricity via photovoltaic (PV) modules (solar panels). The solar panels will generate direct current electricity that will be inverted to AC electricity via the use of power conversion units. The electricity output from the project will then be supplied to an existing 330 kilovolt (kV) transmission line (Line 79) operated by Transgrid.

In constructing the project, earthworks which have the potential to impact on soil and water erosion and sediment loads will be undertaken. The EIS for the project considered erosion and sediment impacts from project construction works (Ramboll 2020). The EIS described these works as follows:

> *Earthworks would be undertaken in areas that require resurfacing activities for temporary construction activities as part of initial site preparation (including vegetation clearance, establishment of laydown areas, construction compounds, carparking areas and access roads), along with permanent operational infrastructure. Minor earthworks would also be required to prepare the arrays including grading or levelling where required.*
>
> *The extent of excavations required would depend on the geotechnical conditions and final locations of infrastructure, however heavy earthworks such as grading/levelling and compaction would be minimised as much as practicable.*
>
> *Following initial site preparation activities, the following construction activities are expected to require earthworks:*
>
> - *installation of steel piles and mounting system for the solar panels*
> - *installation of direct current cabling*
> - *installation of power conversion unit (PCU) footings*
> - *construction of permanent site office, meeting facilities and amenities, spare parts storage facility, supervisory control and data acquisition (SCADA) facilities and workshop*
> - *construction of the onsite substation and connections*
> - *removal of temporary construction facilities.*
>
> *As a result of the identified characteristics of the existing soils at the site, the above construction activities may lead to increased levels of soil erosion during construction. The disturbance of soils in the study area may therefore result in the following impacts:*
>
> - *removal of topsoil during vegetation clearing and other ground disturbance works, resulting in increased erosion and sedimentation, and associated impacts on waterways*
> - *reduced soil stability resulting in an increased potential for erosion due to vegetation removal or exposure to elements such as wind or precipitation*
> - *reduced permeability of the soil as a result of soil compaction for hardstand areas and access roads, resulting in increased run-off*
> - *potential for disturbance and exposure of contaminants (e.g. pesticides) as a result of ground disturbance activities.*
>
> *In addition to the potential disturbance of contaminants that may be present within the project area, there is potential for soil contamination during construction as a result of:*

- *accidental spills and leaks of chemicals, fuel or oil*
- *inappropriate storage of hazardous materials*
- *poorly maintained vehicles, plant and equipment.*

The EIS concluded that significant erosion, runoff, and contamination is not anticipated with implementation of the measures described in the EIS. These measures have been carried through to this ESCP.

1.2 Purpose and scope of this document

The purpose of this ESCP is to provide management controls for impacts that may occur during the construction of the Stubbo Solar project. The ESCP is appended to the SWMP, which is a subplan under the Construction Environmental Management Plan (CEMP) for the project.

The ESCP covers the Stage 2a construction works to be undertaken by PCL and Transgrid . It excludes construction works that were undertaken in relation to the External Road Upgrades which are associated with Stage 1.

Condition 26 of the DC requires that the applicant (PCL and Transgrid on behalf of ACEN) must:

(a) minimise erosion and control sediment generation

(b) ensure any solar panels and ancillary infrastructure and any other land disturbance associated with the construction, upgrading or decommissioning of the development have appropriate drainage and erosion and sediment controls designed, installed and maintained in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) manual, or its latest version

(c) ensure the solar panels and ancillary infrastructure (including security fencing) are designed, constructed and maintained to reduce impacts on surface water, localised flooding and groundwater at the site

(d) ensure all works are undertaken in accordance with the following, unless DPIE Water agrees otherwise:

- *Guidelines for Controlled Activities on Waterfront Land (NRAR 2018), or its latest version; and*
- *Policy and Guidelines for Fish Habitat Conservation and Management (2013), or its latest version.*

This ESCP addresses the above aspects as they relate to erosion and sediment control. The ESCP should be read in conjunction with the SWMP.

1.3 Area-specific ESCPs

PCL will prepare a Construction and Site Management Plan that includes area-specific ESCPs. Such ESCPs should be either prepared by a Certified Professional in Erosion and Sediment Control (CPESC) or be approved by a CPESC prior to being issued for construction.

2 Site-specific construction management and control measures

2.1 Design of erosion and sediment control structures

Appropriate drainage and erosion and sediment controls will be designed, installed and maintained in accordance with *Managing Urban Stormwater: Soils and Construction*, the *Blue Book* (Landcom 2004). The Blue Book will be a key source of guidance when designing such structures.

2.2 General site layout

Prior to commencement of each construction phase, PCL and Transgrid will produce ESCPs at a scale of 1:500 or 1:1000 scale that shows the layout and details of erosion and sediment control measures, including:

- access and haulage tracks
- stockpile and storage areas
- temporary work areas
- materials processing areas
- crossings (road and creeks)
- compound areas, such as the contractor's and the principal's facilities
- any other activities that might affect water quality.

2.3 Site compounds

The placement of site amenities and temporary work areas / laydown areas during construction will be in accordance with the *Blue Book* (Landcom 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2A Installation of Services* (DECC 2008a).

Site compounds during construction will be at least 40 m from watercourses and above the 10%AEP flood level in accordance with ACEN's project requirements. The compounds will be of sufficient size to store tools and materials after each workday. The compounds will be positioned in areas cleared of trees in accordance with the BMP.

The location of the site compounds will consider the suitability of access track to and from the work area from an erosion risk perspective (e.g. avoiding steep slopes or erosion-prone soil types, such as within the Rouse soil landscape which has sodic dispersible subsoils).

2.4 Road construction

The access road construction and upgrade of Blue Springs Road has been completed as part of Stage 1 of the project and is not covered by this ESCP.

The construction of roads/tracks at the site will be undertaken in accordance with the *Blue Book* (Landcom 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2C Unsealed Roads* (DECC 2008b).

Internal access roads, tracks and the designated carparking areas during construction will be designed with adequate run-off controls to minimise the risk of erosion from concentrated flows. These will include:

- assessing the risk of erosion from concentrated flows by mapping underlying soil types and calculating road/track gradients
- developing runoff controls based on the erosion risk (e.g. apply greater controls in areas with sodic dispersible subsoils – see Section 2.7.1 – or where road/track gradients are higher)
- constructing unsealed roads or tracks, where practical, with longitudinal grades less than 10 degrees (18%) – and if feasible, not exceeding 18 degrees (33%) in areas with sodic dispersible subsoils (DECC 2008b)
- ensuring unsealed roads and tracks have at least a slight cross-sectional grade to allow free surface drainage and to avoid excessive ponding in wheel tracks
- appropriate design and spacing of water disposal points (such as mitre or spoon drains) along the road/track to limit the concentration and velocity of flows
- locating designated parking and laydown areas on flat land
- where required to control erosion, intercepting runoff from parking and laydown areas in perimeter table drains with appropriate design and spacing of water disposal points
- ensuring areas receiving flows from water disposal points are well grassed or otherwise stabilised (e.g. with rip-rap)
- using sediment traps or basins to retard large flow volumes.

Water management and erosion controls associated with roads, tracks and the designated carparking areas will be specified and shown diagrammatically in the area-specific ESCPs.

2.5 Material storage

The placement of materials laydown areas and temporary work areas will be considered according to the *Blue Book* (Landcom 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2A Installation of Services* (DECC 2008a).

Vehicle parking and machinery storage will be constructed within cleared areas or areas proposed for clearing, and not in areas of retained native vegetation (see BMP).

Materials will be stored within the site compound where applicable. Bulk materials such as sands or aggregates will be stored 40 m away from the watercourses to reduce the risk of pollution during significant rainfall events. Sediment controls will be in place for stockpiles that will remain in place longer for than 48 hours.

2.6 Soil exposure

Exposure of soil during construction, maintenance or upgrade activities will be minimised and, where practical, covered within 48 hours with mulched native vegetation re-used from clearing

of the development site. The use of mulched vegetation will help protect against the erosive effects of rainfall and assist with stabilising bare ground.

High erosion-risk areas including steeper slopes and batters will be stabilised as soon as practical by mulching and seeding.

Grass will be seeded and maintained as soon as possible after disturbance, with grass species selected in accordance with the EIS commitments and the BMP.

Silt fence will be installed where practical, seeding will take place following construction. This will be staged as construction proceeds.

2.7 Soil management and stockpiling

2.7.1 Dispersive soil management

Care will be taken during site clearance activities and excavation to minimise soil impacts, particularly where sodic dispersible subsoils in drainage lines and depressions are exposed.

Sodic soils on site will be mapped and earthworks will be designed and conducted to minimise the exposure of sodic subsoils as far as practical.

The potential for exposed sodic soils to disperse and erode will be reduced where required by the application of gypsum. IECA (2015) recommends that the upper 300 mm of sodic soil should be treated with gypsum to reduce exchangeable sodium percentage (ESP) to approximately 4% or less, and/or capped with a 300 mm layer of (site sourced) non-dispersive soils. However, rates of gypsum application will be determined by soil sampling and analysis conducted under the advice of a suitably qualified and experienced specialist.

Sediment-laden stormwater within sediment ponds or retention basins will be treated using flocculants to settle the suspended sediment prior to release. The use of flocculants is outlined in Appendix E of the Blue Book (Landcom 2004).

The management of dispersive soils in relation to cable installation is outlined in Section 2.8.

2.7.2 Stockpiles

Any topsoil that is removed during construction works will be stockpiled for later rehabilitation. If subsoil is excavated, the subsoil and topsoil will be stockpiled separately to avoid mixing and returned in the same sequence in which it was excavated.

Stockpiles of topsoil or other earthen materials will be:

- a maximum of 2 m in height and located at least 40 m from the nearest watercourse and in areas where flood risk is low
- constructed within cleared areas or areas proposed for clearing, and not in areas of retained native vegetation (or within the dripline – extent of foliage – of any tree)
- constructed on the contour at least 2 m (preferably 5 m) from hazard areas, particularly areas where concentrated water flows may occur (e.g. drainage channels, roads, etc.)

- stabilised by re-seeding where necessary and kept weed free, if they are to be in place for more than 10 days, or if at high-risk of erosion, by using geofabric, hydro mulch or geotextiles
- protected from run-on water by installing water diversion structures upslope
- formed with sediment control placed immediately downslope to protect other lands and waterways from pollution.

Before spreading topsoil, the ground surface will be scarified along the line of the contour to break any compacted and/or smooth materials and enable key bonding of the materials to one another. Topsoil will not be applied to batters where keying is not possible.

Where volumes allow, topsoil will be applied to a minimum depth of:

- 40 mm (up to 60 mm) on lands where the slope exceeds a horizontal to vertical (H:V) ratio of 4(H):1(V) or
- at least 75 mm on sites where the slope is less than 4(H):1(V).

When the respreading process is completed, disturbed lands will be left with a surface scarified along contour to inhibit soil erosion, encourage water infiltration and help with keying topsoil later.

2.8 Cable installation

The installation of underground cables in dispersive subsoils presents a major erosion risk that requires a high level of management. Upslope runoff reaching a cable trench during construction, or even after backfilling, can quickly become a highly erosive concentrated flow if not appropriately managed. In dispersive soils, this erosive effect can be greatly magnified.

The advice regarding dispersive soils management in Landcom (2004) (see Section 2.7.1, above) is complemented in relation to cable installation by the guidance provided by the International Erosion Control Association (IECA) in *Appendix P Land-based pipeline construction* in *Best Practice Erosion and Sediment Control* (IECA 2015).

Area-specific ESCPs prepared for the Stubbo Solar project will consider the guidance in both Landcom (2004) and IECA (2015) as it relates to cable installation, particularly in dispersive subsoils.

The guidance in IECA (2015) includes the following measures during the design, construction and reinstatement of cable trenches (e.g. see Sections P3.2 and P6.6):

- wherever practical, favour cable alignments that minimise longitudinal gradient with the aim of minimising the potential for tunnel erosion
- maximise the retention of soil surface cover, especially where dispersive soils are present (this can be achieved, for example, by minimising the width of the trench in areas of dispersive soils, and modifying construction practices to further reduce the duration that such soils are exposed during those times when rainfall is likely)
- divert clean run-on water away from cable trenches (if practical), or ensure this water passes through the trenched area in a controlled manner

- consider using trench breakers at regular intervals to minimise tunnel erosion in the cable trench – the trench breakers must be keyed into the base and sides of the trench
- consider treating dispersive backfill with gypsum (see Section 2.7.1) prior to backfilling to minimise the risk of tunnel erosion, especially immediately adjacent to waterway crossings
- stockpile topsoils and subsoils separately and take all reasonable measures to minimise the mixing of the topsoil with dispersive subsoils during trenching and backfilling
- place subsoil layers back in the trench in the same order as excavated
- compact the backfilled subsoils to the equivalent compaction of the surrounding soil on steep slopes and other areas where the risk of tunnel erosion within the trench is a major concern.

Tables P16 and P17 of IECA (2015) provide guidance in the event that gully erosion or tunnel erosion forms along the reinstated cable trench.

2.9 Watercourse crossings

All works undertaken within the riparian zone are done in accordance with the following documents:

- *Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018), or its latest version
- *Policy and Guidelines for Fish Habitat Conservation and Management* (2013), or its latest version.

Waterfront land includes the bed and bank of any river, lake or estuary and all land up to 40 m from the highest bank of the river, lake or estuary.

Watercourses have riparian corridors made up of:

- the channel which comprises the bed and banks of the watercourse (to the highest bank) and
- the vegetated riparian zone (VRZ) adjoining the channel.

To achieve compliance with the above guidelines, the design and construction of crossing structures should consider, but not be limited to:

- identifying the width of the riparian corridor in accordance with the department's guidelines for riparian corridors
- considering the full width of the riparian corridor and its functions in the design and construction of crossings. Where possible, the design should accommodate fully structured native vegetation
- minimising the design and construction footprint and extent of proposed disturbances within the watercourse and riparian corridor
- maintaining existing or natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse

- demonstrating that where a raised structure or increase in the height of the bed is proposed there will be no detrimental impacts on the natural hydraulic, hydrologic, geomorphic and ecological functions
- maintaining natural geomorphic processes:
  - accommodate natural watercourse functions
  - maintain the natural bed and bank profile
  - ensure the movement of sediment and woody debris is not inhibited
  - do not increase scour and erosion of the bed or banks in any storm events
  - avoid locating structures on bends in the channel
  - where bed degradation has occurred, address bed degradation to protect the structure and restore channel and bed stability
- maintain natural hydrological regimes:
  - accommodate site hydrological conditions
  - do not alter natural bank full or floodplain flows or increase water levels upstream
  - minimise the change to the gradient of the bed except where necessary to address existing bed and bank degradation
  - minimise the increase to velocities by constricting flows, for example filled embankments on approaches
- protect against scour:
  - provide any necessary scour protection, such as rock rip-rap and vegetation
  - ensure scour protection of the bed and banks downstream of the structure is extended for a distance of either twice the channel width or 20 metres whichever is the lesser
  - if cutting into banks, protect cuttings against scour
- stabilise and rehabilitate all disturbed areas including topsoiling, revegetation, mulching, weed control and maintenance in order to adequately restore the integrity of the riparian corridor.
- causeways or bed level crossings – additional design considerations
  - the deck of the crossing shall be at the natural bed elevation
  - the crossing should have a vertical cut-off wall on the downstream side of the crossing to a minimum depth of one metre and minimum width of 100 millimetres
  - approaches to crossings should be sealed and incorporate appropriate roadside drainage, such as stabilised table drains where necessary.

As applicable, works will also consider:

- *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (NSW Fisheries 2003).

2.10 Uncontaminated water diversion

Uncontaminated water diversions will be constructed upslope of areas to be disturbed to convey clean water run-off away from disturbed areas and prevent water from entering active areas and sediment-laden water systems. Bunding (earth banks) of the ephemeral waterways upstream of works will enable any water that flows into the waterway to pool where it will be

diverted further downstream by gravity, pump or pipe and discharged onto stable, vegetated landforms.

2.11 Catch drains and sediment traps

Catch drains / cut-off drains / roll overs may be established to convey run-off from the disturbed areas to sediment ponds or dams. If necessary, a catch drain / cut-off drain / roll-over will be located near the access track to divert any sediment-laden water into a small excavated sediment trap or U-shaped sediment trap formed with a sediment fence.

Catch drains / roll overs will also be used downstream of working areas. When considered appropriate, drawings showing where low flow berms are to be installed will be provided.

Where appropriate, drains will be lined with geotextile or plastic, to reduce erosion.

Sediment traps and retention basins will be constructed in accordance Section 6.3 of Landcom 2004) where required to control site runoff and minimise the off-site release of sediment-laden waters. The requirement for and design of sediment traps will be dependent on soil type and initial soil testing to minimise the risk of exposing sodic subsoils and to ensure embankment stability. The location and management of sediment traps and retention basins will be specified in the area-specific ESCPs, including figures showing the location of the traps/basins and the basin discharge points.

Dosing with flocculant will be required where runoff from dispersive soils has been captured prior to its release see Section 2.7.1).

Built up sediment will be regularly removed from catch drains and sediment traps as necessary and disposed to an appropriate location.

2.12 Sediment fences

Sediment fences may be necessary following vegetation removal to capture any material eroded from the disturbance area prior to stabilisation. Sediment fences will be installed in accordance with Section 6.3 of Landcom (2004). Where required, suitable sediment control filters will be installed. This will be determined by the soil characteristics and site location.

Sediment fences will be installed parallel to the banks of the creek following any vegetation clearing due to site access tracks. When considered appropriate, drawings showing where sediment fencing are to be installed will be provided.

2.13 Straw bale filters

Straw bale filters may be necessary and would be installed parallel to the contour of the site.

2.14 Stabilised site access

To retain sediment, stabilising works may be necessary at site access points. These would be installed as per Landcom (2004) parallel to the contour of the site.

2.15 Water disposal

Contaminated water trapped anywhere on site must be removed. If the water is contaminated with chemicals, it must be pumped into a container and removed off-site to be disposed of at an appropriate facility. If trapped water is contaminated only with sediment, it can be managed by pumping and disposed of by spreading it onto well-vegetated lands at least 40 m from the ephemeral waterways (provided that flocculant is first applied to sediment-laden water from dispersive soils, see Section 2.7.1). The water is to be spread evenly so it infiltrates and does not scour. If it is not possible to spread the water 40 m from the waterways, it must be removed off-site and disposed of at a suitably approved location or facility.

2.15.1 Water quality monitoring

Prior to discharge, water trapped in a retention basin will be tested to ensure that it is not contaminated and suitable for release. Water quality parameters, criteria, and sampling and analytical methods are shown in Table 2.1.

Turbidity can also be used as a guide to suspended solids concentrations if a turbidity equivalent can be established, providing a more immediate means of estimating sediment concentrations and suitability for discharge.

Information on water sampling and analysis methods is found in *Approved Methods for Sampling and Analysis of Water Pollutants in NSW* (NSW EPA 2022).

Table 2.1 Water quality criteria for on-site discharge

Parameter	Acceptance criteria	Sampling method	Analytical method
Suspended solids	50 mg/L[a] or adopted turbidity [NTU] equivalent	Grab sample	Laboratory analysis
pH	6.5 - 8.5[b]	Probe or grab sample	Field analysis and confirmed as required with laboratory assessment
Hydrocarbons, tannins, paint	No visible trace	Grab sample	Field observation and confirmed as required with laboratory assessment
Waste	No waste or litter	Field observation	Field observation

[a] Landcom (2004)

[b] ANZG (2018)

Monitoring would be conducted prior to any controlled discharge. All water sample results will be stored electronically as they are received. Water sample results will be collated into a

spreadsheet for the site for the duration of construction. Water sample results will be used to manage the reuse of runoff or discharge waters off-site.

Contaminated water will be treated where required prior to release (e.g. addition of flocculent to reduce suspended solids, lime to raise pH).

2.15.2 Contaminated water disposal

Contaminated water that is unable to be treated must be disposed of offsite at an appropriate facility by an appropriately-licenced contractor.

2.16 Site rehabilitation

Progressive rehabilitation by stabilisation and revegetation is to be conducted as areas are no longer required to be used. Revegetation will commence within 10 days of completion of any construction or upgrading activities and ground cover will be established within 3 months to minimise the risk of erosion.

Topsoil removed during construction phases will be stored and reused during rehabilitation. Soil stabilisation controls such as topsoil re-establishment, stabilisation matting, rock armouring, seedbed establishment, and tube stock planting will be considered.

Following construction, revegetation of areas of the development site with groundcover plant species compatible with pre-existing landuse. This should be done in accordance with the Biodiversity Management Plan.

Following construction, in areas where cropping is not to occur, revegetation with groundcover plant species compatible with the existing native species composition will occur.

3 References

ACOR (2022). Mid-Western Regional Council Stubbo Solar Farm: Detailed Design – Blue Springs Road (NSW212453-DD-REVA), prepared for UPC\AC Renewables Australia Pty Ltd by ACOR Consultants. 22 April 2022.

ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines

Catchments and Creeks (2012). Principles of Construction Site Erosion and Sediment Control – A Training Tool for the Construction Industry, V1. Catchments and Creeks, December 2012.

DEC (2006). Considering Environmental Values of Water when Issuing Prevention Notices: Guidelines issued by the Environment Protection Authority to appropriate regulatory authorities under s 96(3A) of the Protection of the Environment Operations Act 1997. Department of Environment and Conservation NSW, 2006.

DECC (2008a). Managing Urban Stormwater: Soils and Construction, Volume 2A: installation of Services. Department of Environment and Climate Change NSW, 2008.

DECC (2008b). Managing Urban Stormwater: Soils and Construction, Volume 2C: Unsealed Roads. Department of Environment and Climate Change NSW, 2008.

IECA (2015). Appendix P Land-based pipeline construction Best Practice Erosion and Sediment Control. International Erosion Control Association (Australasia), Picton NSW.

Landcom (2004). Managing Urban Stormwater: Soils and Construction. Office of Environment and Heritage, NSW (*The Blue Book*), Landcom, 2004.

NRAR (2018). Guidelines for Controlled Activities on Waterfront Land (NRAR, 2018). Natural Resources Access Regulator, NSW Department of Industry. INT19/15607.

NSW EPA (2022). Approved methods for the sampling and analysis of water pollutants in NSW. https://www.epa.nsw.gov.au/licensing-and-regulation/licensing/environment-protection-licences/licensing-under-poeo-act-1997/licensing-to-regulate-water-pollution/approved-methods-for-sampling-and-analysing-water-pollutants

NSW Fisheries (2003). Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings, NSW Fisheries, Cronulla.

Ramboll (2020). Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings, NSW Fisheries, Cronulla.

ACCENT ENVIRONMENTAL

Appendix D
Guidelines for controlled activities on waterfront land - Riparian corridors

Guidelines for controlled activities on waterfront land

Riparian corridors

Published by NSW Department of Industry

Guidelines for controlled activities on waterfront land—Riparian corridors

First published May 2018.

More information

Natural Resources Access Regulator

industry.nsw.gov.au/nrar

INT19/15607

Guidelines for controlled activities on waterfront land

Contents

Natural Resources Access Regulator

The Natural Resources Access Regulator (NRAR) is an independent regulator established under the NSW *Natural Resources Access Regulator Act 2017*. The current regulatory focus of NRAR is water regulation, a key part of which is to prevent, detect and stop illegal water activities.

The NRAR seeks to ensure effective, efficient, transparent and accountable compliance and enforcement measures through the natural resources management legislation and, in doing so, maintain public confidence in the enforcement of natural resources management legislation.

Controlled activities on waterfront land

Controlled activities carried out in, on, or under waterfront land are regulated by the *Water Management Act 2000* (WM Act). The NRAR administers the WM Act and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the controlled activity.

Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary.

This means that applicants must obtain a controlled activity approval from the NRAR before commencing the controlled activity.

What is a riparian corridor?

A riparian corridor (RC) forms a transition zone between the land, also known as the terrestrial environment, and the river or watercourse or aquatic environment. Riparian corridors perform a range of important environmental functions such as:

- providing bed and bank stability and reducing bank and channel erosion
- protecting water quality by trapping sediment, nutrients and other contaminants
- providing diversity of habitat for terrestrial, riparian and aquatic plants (flora) and animals (fauna)
- providing connectivity between wildlife habitats
- conveying flood flows and controlling the direction of flood flows
- providing an interface or buffer between developments and waterways
- providing passive recreational uses.

The protection, restoration or rehabilitation of vegetated riparian corridors is important for maintaining or improving the shape, stability (or geomorphic form) and ecological functions of a watercourse.

Changes to controlled activities within riparian corridors

On 1 July 2012, new rules commenced regarding controlled activities within riparian corridors. The new rules amend the riparian corridor widths that apply to watercourses, providing more flexibility in how riparian corridors can be used and making it easier for applicants to determine the NRAR-controlled activity approval requirements. Key aspects of the changes include:

- provision of greater flexibility in the allowable uses and works permitted within riparian corridors
- the core riparian zone and vegetated buffer have been combined into a single vegetated riparian zone (VRZ)
- the width of the VRZ within the riparian corridor has been pre-determined and standardised for first, second, third and fourth-order and greater watercourses
- where suitable, applicants may undertake non-riparian corridor works or development within the

outer 50 per cent of a VRZ, as long as they offset this activity by connecting an equivalent area to the RC within the development site

- a new 'riparian corridors matrix' enables applicants to determine what activities can be considered in riparian corridors.

These changes will simplify the controlled activities application and assessment process; provide greater flexibility; help make more land available for housing; support floodplain, stormwater and bush fire management; and allow riparian corridors to be used for public amenity whilst continuing to deliver environmental outcomes required under the WM Act.

The riparian corridor consists of:

- the channel which comprises the bed and banks of the watercourse (to the highest bank) and
- the vegetated riparian zone (VRZ) adjoining the channel.

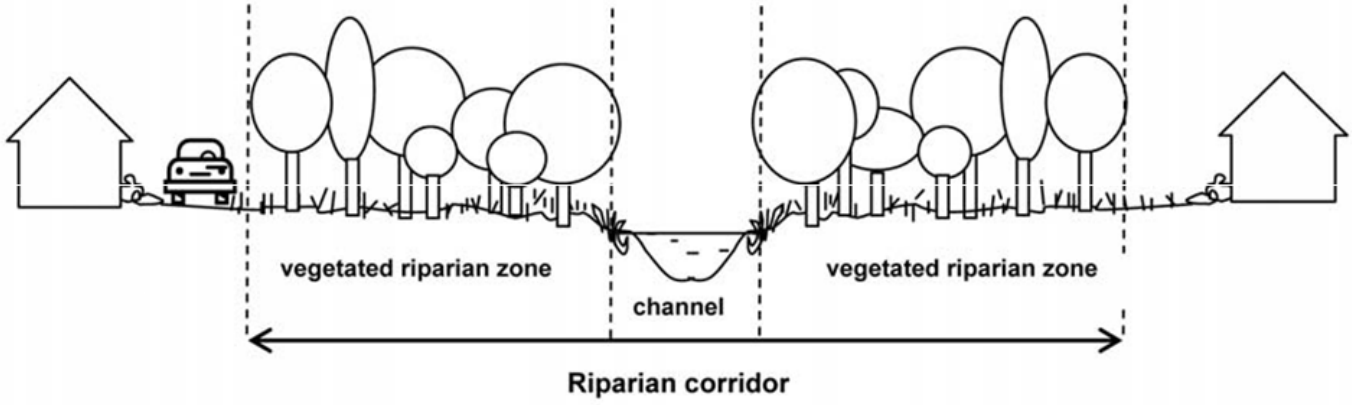


Figure 1. Riparian corridor

Riparian corridor widths

The NRAR recommends a VRZ width based on watercourse order as classified under the Strahler System of ordering watercourses and using Hydroline Spatial Data which is published on the department's website . The width of the VRZ should be measured from the top of the highest bank on both sides of the watercourse (see Figure 2 and Table 1).

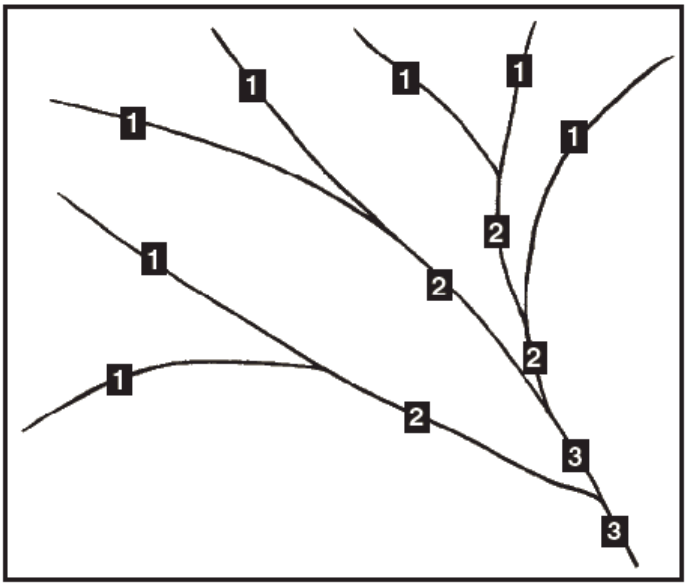


Figure 2. The Strahler System

Table 1. Recommended riparian corridor (RC) widths

Watercourse type	VRZ width (each side of watercourse)	Total RC width
1st order	10 metres	20 metres + channel width
2nd order	20 metres	40 metres + channel width
3rd order	30 metres	60 metres + channel width
4th order and greater (includes estuaries, wetlands and parts of rivers influence by tidal waters)	40 metres	80 metres + channel width

Note: Where a watercourse does not exhibit the features of a defined channel with bed and banks, the NRAR may determinethat the watercourse is not waterfront land for the purposes of the WM Act.

Objectives for riparian corridor management

The overarching objective of the controlled activities provisions of the WM Act is to establish and preserve the integrity of riparian corridors.

Ideally, the environmental functions of riparian corridors should be maintained or rehabilitated by applying the following principles:

- identify whether or not there is a watercourse present and determine its order in accordance with the Strahler System
- if a watercourse is present, define the RC/VRZ on a map in accordance with Table 1
- seek to maintain or rehabilitate a RC/VRZ with fully structured native vegetation in accordance with Table 1
- seek to minimise disturbance and harm to the recommended RC/VRZ
- minimise the number of creek crossings and provide perimeter road separating development from the RC/VRZ
- locate services and infrastructure outside of the RC/VRZ. Within the RC/VRZ provide multiple service easements and/or utilise road crossings where possible.
- treat stormwater run-off before discharging into the RC/VRZ.

NRAR however, does allow for a range of works and activities on waterfront land and in riparian corridors to better meet the needs of the community, so long as they cause minimal harm as outlined in the riparian corridor matrix below.

What is the averaging rule?

Non-riparian corridor works and activities can be authorised within the outer riparian corridor, so long as the average width of the vegetated riparian zone can be achieved over the length of the watercourse within the development site. That is, where appropriate, 50 per cent of the outer vegetated riparian zone width may be used for non-riparian uses including asset protection zones, recreational areas, roads, development lots and infrastructure. However, an equivalent area connected to the riparian corridor must be offset on the site (see Figure 3) and the inner 50 per cent of the vegetated riparian zone must be fully protected and vegetated with native, endemic, riparian plant species.

Bridges, cycleways, paths, stormwater outlets and other essential services do not need to be offset, but must comply with the requirements set out in the riparian corridor matrix (Table 2) and other relevant controlled activities guidelines. Offline detention basins do not need to be offset so long as

there is anequivalent VRZ for the corresponding watercourse and they are built in compliance with *Controlled activities: Guidelines for watercourse crossings* and *Controlled activities: Guidelines for in-stream works.* [1]

If a proposed basin will not have an equivalent VRZ for the corresponding watercourse, it may still be built in the outer 50 per cent of the VRZ but must be offset.

The averaging rule should generally be applied to cleared waterfront land. Development proposals involving waterfront lands that contain existing native vegetation should seek to preserve that riparian vegetation in accordance with the minimum riparian corridor requirements outlined in Table 1.

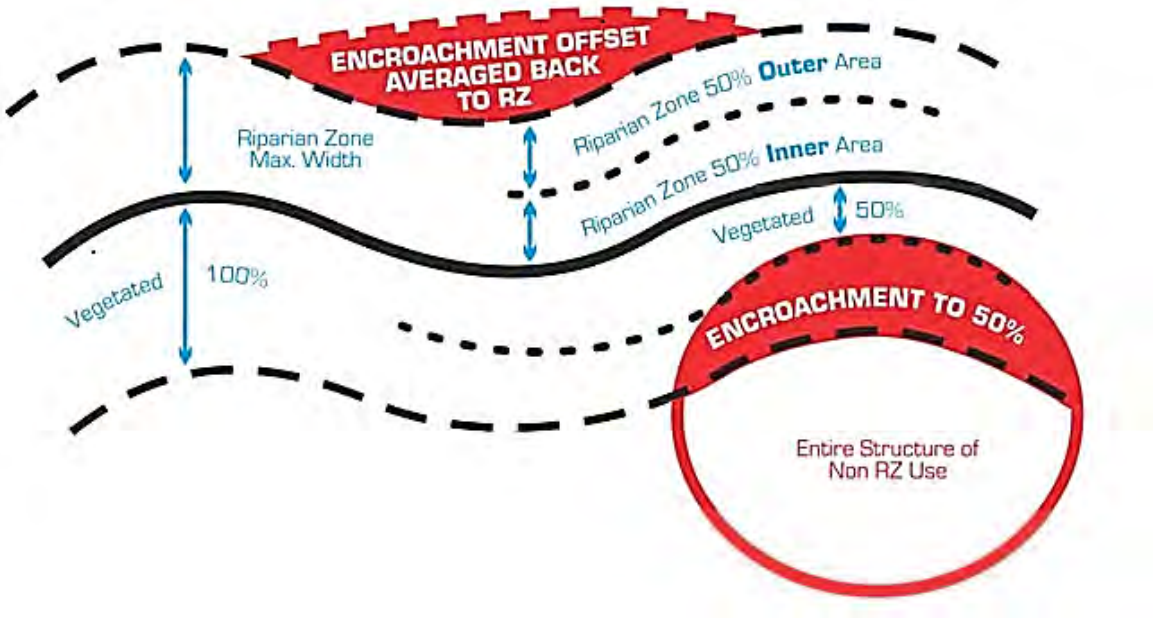


Figure 3. Averaging rule

Riparian corridor matrix

The riparian corridor matrix enables applicants to identify certain works and activities that can occur on waterfront land and in riparian corridors. Applicants should note that the matrix relates to controlled activity approvals under the WM Act only. Applicants are still required to comply with other relevant government legislation, such as threatened species, flood planning levels and fisheries guidelines.

[1] www.industry.nsw.gov.au/nrar

Table 2. Riparian corridor matrix

Stream order	Vegetated riparian zone(VRZ)	RC offsetting for non-RC users	Cycleways andpaths	Detention basins		Stormwater outlet structures and essential services	Stream realignment	Road crossings		
				Only within 50% outer VRZ	Online			Any	Culvert	Bridge
1st	10 m	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
2nd	20 m	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
3rd	30 m	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes
4th	40 m	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes

Key

Stream order: The watercourse order as classified under the Strahler System using Hydrospatial data as published on the Department's website. A full list is provided at Part 2, Schedule 2 of the Water Management (General) Regulation 2011.

Vegetated riparian zone (VRZ): The required width of the VRZ measured from the top of the high bank on each side of the watercourse.

Riparian corridor (RC) off-setting for non RC uses: Non-riparian uses, such as Asset Protection Zones are allowed within the outer 50 per cent of the VRZ, so long as offsets are provided in accordance with the averaging rule as seen in Figure 3.

Cycleways and paths: Cycleways or paths no wider than four metres total disturbance footprint can be built in the outer 50 per cent of the VRZ.

Detention basins: Detention basins can be built in the outer 50 per cent of the VRZ or online where indicated. Online basins must:

- be dry and vegetated
- be for temporary flood detention only, with no permanent water holding
- have an equivalent VRZ for the corresponding watercourse order
- not be used for water quality treatment purposes.

Stormwater outlet structures and essential services: Stormwater outlets or essential services are allowed in the RC. Works for essential services on a fourth order or greater stream are to be undertaken by directional drilling or tied to existing crossings.

Stream realignment: Indicates that a watercourse may be realigned

Road crossings: Indicates permitted road crossing methods

Applications for controlled activity approvals

Applications for controlled activities approvals should be informed by the riparian corridor matrix shown in Table 2 and prepared using the *Application for a Controlled Activity Approval* for works on waterfront land form and the Guideline for completing an application for a Controlled Activity Approval.

Other controlled activity guidelines are available on the NRAR website and outline relevant considerations for applicants when proposing activities and works on waterfront lands.

Streamlined assessment

Where applications are presented in accordance with the riparian corridor matrix (Table 2) and other controlled activity guidelines, the NRAR will assess them under a streamlined process. This may decrease the amount of time it takes the NRAR to make a determination, saving applicants time and money.

Applications that do not conform to the matrix and/or relevant controlled activity guidelines will continue to be subject to merit assessment to ensure that the proposals meet the requirements of the WM Act. All applications will still need to demonstrate that minimal harm will occur to waterfront land before the NRAR will issue a controlled activity approval.

More information

Find out more about controlled activities on the NRAR website at www.industry.nsw.gov.au/nrar

Contact us

By phone on 1800 633 362 or by email at nrar.enquiries@nrar.nsw.gov.au

Appendix E
Stubbo Solar soil and water management monitoring requirements

Table E - Erosion and Sediment Control Plan: Management and Monitoring Measures

Installation	Potential problems	Performance criteria	Mitigation and control measures	Monitoring requirements	Responsibility	Timing	Frequency
Vegetated buffer zones	Accidental clearance	No unauthorised clearing of vegetation in buffer zones	Revegetate	Check buffer zones for evidence of cleared vegetation	PCL	Duration of construction	Weekly
Other vegetation	Exposure of soil to erosion	Minimise exposed soil areas	Where practicable, vegetation clearing activities should be staged, so that areas of exposed soil are minimised	Check cleared areas for evidence of erosion	PCL	Duration of construction	Weekly
Access tracks and laydown areas	Dust	Dust should not impact off-site receptors	Pave haul roads and other areas with gravel or impervious sealant, wet down tracks on windy days	Inspect the site for dust generation	PCL	Duration of construction	At least daily
	Soil on paved roads	No off-site roads to be contaminated with tracked mud and or dirt	Install wheel wash and rumble grid	Inspect off-site roads for tracked mud and dirt			
			Manually wash vehicle wheels Increase road cleaning frequency				
Stockpiles and bare slopes	Erosion	No sediment-laden stormwater discharged off-site	Minimise exposure to run-off and action of wind and ensure stabilisation measures are effective	Check effectiveness of stabilisation measures	PCL	Duration of construction	Weekly
Drains and waterways	New drainage lines not controlled	No sediment-laden stormwater discharged off-site	Install appropriate sediment controls on new drainage lines	Check drainage lines for sediment controls	PCL	Duration of construction	At least once every two days in areas where earth-moving is occurring. Weekly elsewhere
	Sediment-laden stormwater contamination of waterways	No sediment-laden stormwater discharged off-site	Avoid or control erosion on the site as per the procedures in Section 6	Check for localised erosion on site and rectify as soon as is practicable. Monitor erosion and sediment control measures to ensure they are functioning adequately	PCL	Duration of construction	Once a week (as a minimum) Immediately following rainfall events that cause run-off
			Replace or repair damaged drains, redesign ineffective drains, relocate incorrectly placed drains	Check integrity and effectiveness of drains	PCL	Duration of construction	Weekly
Stream crossings and culverts	Unstable	No unstable crossings	Stop use until installation has been redesigned	Check integrity and stability of stream crossings	PCL	Duration of construction	When in use, but no less than weekly
Settlement basins, bunds, sediment fences, filters and screens	Sediments not effectively removed	No sediment-laden stormwater discharged off-site	Maintain the effectiveness of control measures as per the procedures in Section 6	Monitor sediment levels in water holding areas and sediment fencing, check for integrity of bunds and other control structures	PCL	Duration of construction	Once a week (as a minimum) Immediately following rainfall events that cause run-off
			Sediment and erosion controls take many forms and one or a combination of controls may be appropriate for a given circumstance. The management controls should be in accordance with the measures described in *Managing Urban Stormwater: Soils and Construction*				
			Any excess contaminated stormwater and process waste water that cannot be reused on-site will be disposed of in accordance with the *Managing Urban Stormwater: Soils and Construction*	Undertake visual inspections for turbidity downstream of any discharge points	PCL	Duration of construction	Hourly when discharging
Chemical storage areas	Spills and contamination	No release of fuels or chemicals to land or water	Locate storage and refuelling areas 50m from sensitive area such as waterways, wetlands and native vegetation	Check location for distances	PCL	Prior to construction	As necessary
			In the event of discovery of contaminants, stop work, remediate and dispose of contaminants as necessary	Inspect the site for contamination	PCL	Duration of construction	Continual
			Maintenance and refuelling areas adequately bunded	Check integrity and adequacy of bunding	PCL	Duration of construction	Weekly

Table E - Erosion and Sediment Control Plan: Management and Monitoring Measures

Installation	Potential problems	Performance criteria	Mitigation and control measures	Monitoring requirements	Responsibility	Timing	Frequency
Placement of infrastructure	Infrastructure impacts stream	No infrastructure to be placed within 20 m of any Strahler 3 or above order streams	Ensure infrastructure is placed at 20 m or greater from any Strahler 3 or above order streams	Check location for distances	PCL	Prior to construction	As necessary
Crossing points over 3rd and 4th Order streams	Infrastructure impacts stream - Construction of this crossing is considered a controlled activity.	No infrastructure to to be placed without "Working within the riparian corridor (including crossings) licence"	Obtain a "Working within the riparian corridor (including crossings) licence" from NRAR/DPE	Check location for distances	PCL	Prior to construction	As necessary
Crossing points over 3rd and 4th Order streams	Infrastructure impacts stream - Construction of this crossing may impact on key fish habitat (KFH)	No infrastructure to to be placed without considering impacts to KFH	All waterway crossings will be designed in accordance with Policy and Guidelines for Fish Friendly Waterway Crossing where appropriate.	Check against requirements	PCL	Prior to construction	As necessary
'No go' zones for construction plant and equipment	Increase to erosion and sediment loss	No unauthorised use of no-go zones	Ensure 'no go' zones for construction plant and equipment are in place	Check no-go zones for signage, barriers and unautrhorised vehicles and/or plant	PCL	Duration of construction	Continual

Appendix F
Consultation register

Stubbo Solar Farm - Consultation Register

Entity	Date	Type of contact	Contact name	Topic of engagement	Details	Agreed outcome(s)
ACEN	mid 2022	Email	Cedric Berge	Review of Soil and Water Management Plan for Blue Springs Road Upgrade	ACEN provided the Soil & Water Management Plan to DPE for comment	DPE to provide comment
DPE	31-Aug-22	Email	Jeremy Morice	Review of Soil and Water Management Plan for Blue Springs Road Upgrade	DPE provided comment on the Soil & Water Management Plan	Comments incorporated into a revised version of the plan (v3)
ACEN	21-Nov-22	Email/ Phone	Patric Millar, Ecosite Solutions, on behalf of ACEN	Controlled Activities within the development footprint	ACEN sought clarification from DPE Water that a Controlled Activity Application CAA is not required to install culverts where the Access Road crosses three first order streams within the Development Footprint	DPE Water to provide clarification
ACEN	16-Jan-23	Email	Patric Millar, Ecosite Solutions, on behalf of ACEN	Clarification of NRAR's requirements for creek crossings within the project area	ACEN sought advice from NRARA, via CS Connect, whether the exemption as stated in 4.41(g) in Section 91 of the /Water Management Act 2000 applies to the proposed creek crossings or whether a Controlled Activity Approval is required	NRAR to provide advice
DPE	25-Jan-23	Email	Jessica from DPE Licensing and Approvals	ACEN's enquiry in relation to creek crossings at Stubbo Solar Farm	DPE Licensing and Approvals provided clarification and advice regarding the proposed creek crossings and Controlled Activity Approvals	A Controlled Activity Approval is not required for SSD projects if works are assessed in the SSDA (SSD-10452). The design of the creek crossings should still be in accordance with the Guidelines for Controlled Activities on Waterfront Land even if a Controlled Activity Approval is not required.
DPE	18-Apr-23	Letter	Liz Rogers from DPE Manager, Assessments, Knowledge Division	ACEN's request for advice in relation to the Stubbo Solar Farm SWMP	DPE Assessments, Knowledge Division provided clarification and advice regarding regarding Session 6.4.1 of the Soil & Water Management Plan, DPE Water notes that 40m each side of a watercourse measured from top of the bank is required for 4th order watercourses, not 80m each side to be in accordance with the Guidelines for Controlled Activities	Amend the report to reflect the advice
DPE	9-May-23	Email	Charissa Pillay from DPE Major Projects (see attached)	Stubbo Solar - Soil and Water Management Plan SSD-10452-PA-15 - Request for Additional Information	The Department requested that ACEN provide additional information in relation to the Stubbo Solar - Soil and Water Management Plan.	Amend the report to reflect the information request (see attached response table)

Department of Planning and Environment

David McKay

Project Controls Manager

ACEN Australia

Suite 2, Level 2

15 Castray Esplanade

Battery Point, TAS, 7005

09/05/2023

Dear Mr. McKay

Stubbo Solar Farm (SSD-10452)
Soil and Water Management Plan - Request for Additional Information

Thank you for submitting the Soil and Water Management Plan to the Department of Planning and Environment (the Department) as required under the conditions of consent for the Stubbo Solar Farm (SSD-10452-PA-15). After careful consideration, the Department is requesting that you provide additional information.

You are requested to submit a revised document that addresses the comments attached in the 'Action Required' column of the Review Table.

You are requested to provide the information, or notification that the information will not be provided, to the Department by Tuesday 06 June 2023. If you are unable to provide the requested information within this timeframe, you are required to provide, and commit to, a timeframe detailing the provision of this information.

If you have any questions, please contact Charissa Pillay, who can be contacted on 0299955944/ at Charissa.Pillay@planning.nsw.gov.au.

Yours sincerely
APPROVERSIGNATUREANDDETAILSWILLBEINSERTEDHERE

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

Obligation to Minimise Harm to the Environment, Condition 1, Schedule 2	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
In meeting the specific environmental performance criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, upgrading or decommissioning of the development.	No	Section 6.8 discusses water supply and no details to address the requirement.	Include a commitment to implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction	Included in Section 1.3 of the SWMP. Commitment included in Section 6.8 (although unsure of its relevance here)
Water Supply 24. The Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development to match its available water supply.	Yes	Section 6.8 addresses the requirement.	-	Noted
Soil and Water - Water Pollution, Condition 25, Schedule 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The Applicant must ensure that the development does not cause any water pollution, as defined under Section 120 of the POEO Act.	Yes	Section 6.6 addresses the requirement.	-	Noted
Soil and Water – Operating Conditions, Condition 26, Schedule 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The Applicant must:	-	-	-	-
(a) minimise erosion and control sediment generation;	Yes	Section 6.1 and Appendix C addresses the requirement.	-	Noted
(b) ensure any solar panels and ancillary infrastructure and any other land disturbance associated with the construction, upgrading or decommissioning of the development have appropriate drainage and erosion and sediment controls designed, installed and maintained in accordance with Managing Urban Stormwater: Soils	Partial	Appendix C section 2.4 discusses limited information on road construction controls.	Discuss on the run-off controls that will be designed to minimise the risk of concentration flows. Illustrate the controls on a Figure. Revise the section to be consistent with the stage of works	Proposed run-off controls included in Section 2.4 of the ESCP. Erosion controls will be specified in more detail and shown diagrammatically in the area-specific ESCPs

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

and Construction (Landcom, 2004) manual, or its latest version;				prepared by a CPESC as per the commitment in Section 1.3. This commitment has been added to Section 2.4. Section 2.4 has also been revised to ensure consistency with the stage of works (Stage 2a)
(c) ensure the solar panels and ancillary infrastructure (including security fencing) are designed, constructed and maintained to reduce impacts on surface water, localised flooding and groundwater at the site;	Partial	Section 6.5 discusses design for flood management but how will design address risk on surface water and groundwater.	Include a discussion on how solar panels, ancillary infrastructure (including security fencing) will be designed to reduce impacts on surface water and groundwater on site	Additional detail included in Section 6.5 of the SWMP.
(d) ensure all works are undertaken in accordance with the following, unless DPIE Water agrees otherwise: • *Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018), or its latest version; and • *Policy and Guidelines for Fish Habitat Conservation and Management* (2013), or its latest version.	Yes	Section 6.4 and Appendix C addresses the requirement.	-	Noted
Soil and Water Management Plan, Condition 27, Schedule 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
Prior to commencing construction, the Applicant must prepare a Soil and Water Management Plan for the development in consultation with DPIE Water. This plan must:				
(a) demonstrate how the project will meet conditions 25 and 26(a) to (d); and	Yes	Section 6 and Appendix C (ESCP) address the requirement.	-	Noted
(b) include details of the soil erosion control measures including sediment basins.	Partial	Section 6 and Appendix C (ESCP) discuss the details to address part of the condition.	Discuss the location and management of the sediment basin.	The location and management of sediment traps and

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

		There is limited detail on how the water is sediment basins will be managed. In section 2.15 of the ESCP will water be tested before it is release into the environment. Where is the discharge location?	Illustrate in a figure where is the discharge point. Include details on water testing and the parameters to be met so water is properly treated before discharge to the stormwater system	retention basins will be specified in the area-specific ESCPs prepared by a CPESC as per the commitment in Section 1.3., including figures showing the location of the basins and discharge points. This commitment has been added to Section 2.11 of the ESCP. Details on water testing including parameters and criteria has been included in Section 2.15.
The Applicant must implement the Soil and Water Management Plan for construction upgrading, operation and/or decommissioning of the development.	No	There are no details to address the requirement.	Include a commitment to implement the Soil and Water Management Plan for construction upgrading	Condition 2, Schedule 4 included in Section 1.4 of the SWMP
Condition 29				
The Applicant must store and handle all chemicals, fuels and oils used on-site in accordance with: a) the requirements of all relevant Australian Standards; and b) the NSW EPA's Storing and Handling of Liquids: Environmental Protection – Participants Handbook if the chemicals are liquids In the event of an inconsistency between the requirements (a) and (b) above, the most stringent requirement must prevail to the extent of the inconsistency.	Yes	Section 6.6 addresses the requirement.	-	Noted
Decommissioning and Rehabilitation, Condition 34, Schedule 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

Within 18 months of the cessation of operations, unless the Planning Secretary agrees otherwise, the Applicant must rehabilitate the site to the satisfaction of the Planning Secretary. This rehabilitation must comply with the objectives in Table 4. ***Table 4:*** *Rehabilitation Objectives* ***Feature*** / ***Objective*** Site: • Safe, stable and non-polluting • Minimise the visual impact of any above ground ancillary infrastructure agreed to be retained for an alternative use Solar farm infrastructure: • To be decommissioned and removed, unless the Planning Secretary agrees otherwise Land use: • Restore land capability to pre-existing use Community: • Ensure public safety at all times	N/A	Stage works do not include the condition.	To be addressed	Noted
Revision of Strategies, Plans and Programs, Condition 2, Schedule 4	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The Applicant must:				
(a) update the strategies, plans or programs required under this consent to the satisfaction of the Planning Secretary prior to carrying out any upgrading or decommissioning activities on site; and	No	The plan does not include the requirement of the condition.	Include requirements of condition 2	Condition 2, Schedule 4 included in Section 1.5 of the SWMP
(b) review and, if necessary, revise the strategies, plans or programs required under this consent to the satisfaction of the Planning Secretary within 1 month of the: • submission of an incident report under condition 7 of Schedule 4; • submission of an audit report under condition 9 of Schedule 4; or • any modification to the conditions of this consent.	No	The plan does not include the requirement of the condition.	Include requirements of condition 2	Condition 2, Schedule 4 included in Section 1.5 of the SWMP
Updating and Staging of Strategies, Plans or Programs, Condition 3, Schedule 4	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
With the approval of the Planning Secretary, the Applicant may submit any strategy, plan or program required by this consent on a progressive basis. To ensure the strategies, plans or programs under the conditions of this consent are updated on a	No	The plan does not include the requirement of the condition.	Include requirements of condition 3	Condition 3, Schedule 4 included in Section 1.6 of the SWMP

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Planning Secretary for approval.				
With the agreement of the Planning Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all the parties referred to under the relevant condition of this consent. *Notes:* • *While any strategy, plan or program may be submitted on a progressive basis, the Applicant must ensure that all development being carried out on site is covered by suitable strategies, plans or programs at all times.* • *If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*	No	The plan does not include the requirement of the condition.	Include requirements of condition 3	Condition 3, Schedule 4 included in Section 1.6 of the SWMP
Incident Notification, Condition 7, Schedule 4	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The Planning Secretary must be notified in writing via the Major Projects website immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 7.	No	Section 8.3 does not include the requirements of condition 7	Include condition 7	Section 8.3 revised to include Condition 7, Schedule 4
Non-Compliance Notification, Condition 8, Schedule 4	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The Planning Secretary must be notified in writing via the Major Projects website within seven days after the Applicant becomes aware of any non-compliance.	No	Not addressed	Include condition 8	Section 8.3 revised to include Condition 8, Schedule 4

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

Non-Compliance Notification, Condition 9, Schedule 4	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
A non-compliance notification must identify the development and the application number for it, set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.	No	Not addressed	Include condition 9	Section 8.3 revised to include Condition 9, Schedule 4
Non-Compliance Notification, Condition 10, Schedule 4	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	No	Not addressed	Include condition 10	Section 8.3 revised to include Condition 10, Schedule 4
Appendix 7: Incident Notification and Reporting Requirements, Condition 1	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
A written incident notification addressing the requirements set out below must be submitted to the Planning Secretary via the Major Projects website within seven days after the Applicant becomes aware of an incident. Notification is required to be given under this condition even if the Applicant fails to give the notification required under condition 7 of Schedule 4 or, having given such notification, subsequently forms the view that an incident has not occurred.	No	Not addressed	Include Appendix 7 reporting requirements.	Section 8.3 revised to include Appendix 7 conditions 1 to 4
Appendix 7: Incident Notification and Reporting Requirements, Condition 2	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
Written notification of an incident must: (a) identify the development and application number; (b) provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);	No	See above	See above	Section 8.3 revised to include Appendix 7 conditions 1 to 4

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

(c) identify how the incident was detected; (d) identify when the applicant became aware of the incident; (e) identify any actual or potential non-compliance with conditions of consent; (f) describe what immediate steps were taken in relation to the incident; (g) identify further action(s) that will be taken in relation to the incident; and (h) identify a project contact for further communication regarding the incident.				
Appendix 7: Incident Notification and Reporting Requirements, Condition 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, the Applicant must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.	No	See above	Include Appendix 7 condition 3	Section 8.3 revised to include Appendix 7 conditions 1 to 4
Appendix 7: Incident Notification and Reporting Requirements, Condition 4	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The Incident Report must include: (a) a summary of the incident; (b) outcomes of an incident investigation, including identification of the cause of the incident; (c) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and (d) details of any communication with other stakeholders regarding the incident.	No	Not addressed	Include Appendix 7 condition 4	Section 8.3 revised to include Appendix 7 conditions 1 to 4
EIS Project Commitments, S1	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

Disturbed areas will be progressively stabilised and rehabilitated as construction is completed to minimise the extent of bare soil.	Yes	See Section 6.2 and Appendix C (ESCP) addressed the requirement.	-	Noted
EIS Project Commitments, S2	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The following measures will be implemented to manage the risk of contaminants and impacts on surrounding environments: • appropriate storage (including bunding) of all potential contaminants (i.e. chemicals and fuels) onsite to reduce risks of spills contaminating waterways and land • protocol for the discovery of contaminants in the study area during works, including requirements to stop work, remediate and dispose of contaminants as necessary • measures for mitigating soil contamination by fuels or other chemicals (including notification to EPA, emergency response requirements etc) • measures for the ongoing inspection and maintenance of machinery/vehicles to ensure that they remain in a clean condition free of fluid leaks.	Partial	Section 6.6 discusses hazardous chemicals. However, the unexpected contaminated finds does not involve notification to the EPA. Nor does it include measures for ongoing inspection.	Discuss all the commitment requirements in section 6.6	Wording of inspection requirements modified in Section 6.6 of SWMP and requirement to notify EPA added. Section 6.7 revised to include EPA notification.
EIS Project Commitments, S3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The photovoltaic arrays will be designed to allow for enough space between rows of panels for establishment of groundcover and implementation of weed controls.	Yes	See Section 6.2 addresses the requirement.	-	Noted
EIS Project Commitments, S4	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
A baseline soil survey of the development footprint will be undertaken prior to construction. The baseline soil survey will be undertaken in conjunction with a geotechnical assessment to identify any potential amelioration that is required so as to ensure erosion is minimised and plant	Yes	Section 5 addresses the requirement.	-	Noted

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

growth establishment potential is maximised. The results of the baseline soil survey and geotechnical assessment will be used to inform the Decommissioning and Rehabilitation Plan and assist in recovering the development footprint to its original land and soil capability or better.				
EIS Project Commitments, LU1	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
Land management within the study area will include measures to minimise impacts to surrounding agricultural land use with reference to DPI's publication Infrastructure proposals on rural land (Kovac, M and Briggs, G, 2013). These measures will also be implemented during operation of the project and will include strategies to minimise impacts of aerial spraying. The land management measures will aim to minimise impacts on: • land and soil capability within the development footprint • biosecurity both at a local and regional level • soil erosion • surface water runoff • agricultural activities on neighbouring properties.	No	There is no discussion on land management that address the commitment.	Discuss land management within the study area and measures to minimise impacts to surrounding agricultural land use with reference to DPI's publication Infrastructure proposals on rural land (Kovac, M and Briggs, G, 2013).	Section 5.5 added to the SWMP identifying the land use in the area and Section 6.9 added, referencing Kovac and Briggs
EIS Project Commitments, W1	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
Infrastructure with the potential to cause pollution to waterways in the event of flooding, such as inverters and battery storage will be located with a minimum 300 mm freeboard above the maximum 1% annual exceedance probability (AEP) flood level.	Yes	Section 6.5 addresses the requirement.	-	Noted
EIS Project Commitments, W2	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
Solar panels will be designed to provide a minimum of 300 mm freeboard for the lowest edge above the maximum 1% AEP flood level.	Yes	Section 6.5 addresses the requirement.	-	Noted

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

EIS Project Commitments, W3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The panel structure will be designed to withstand the flood velocities expected at the site.	Yes	Section 6.5 addresses the commitment.	-	Noted
EIS Project Commitments, W4	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
No infrastructure will be placed within 20 m of any Strahler 3 or above order streams.	Yes	Section 6.5 addresses the commitment.	-	Noted
EIS Project Commitments, W5	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
All waterway crossings will be designed and constructed in compliance with the Department of Primary Industries, Office of Water, Guidelines for riparian corridors on waterfront land and Guidelines for watercourse crossings on waterfront land.	Yes	Section 6.4 addresses the commitment.	-	Noted
EIS Project Commitments, W6	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
Further flood investigations and hydrological and hydraulic modelling will be carried out where required during detailed design to ensure the flood immunity objectives and design criteria for the project are met. The modelling will be used to define the nature of both main stream flooding and major overland flow across the development footprint under pre- and post- project conditions and to define the full extent of any impact that the project will have on patterns of both main stream flooding and major overland flow.	Yes	Section 6.5 addresses the requirement.	-	Noted
EIS Project Commitments, W7	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
A construction soil and water management plan (CSWMP) will be prepared to outline measures to manage soil and water impacts associated with the construction works, including contaminated land. The CSWMP will provide:	Partial	Section 6 and Appendix C (ESCP) discuss operation and other works which are not consistent with the Stage request submitted to the Department.	Revise both the SWMP and Appendix C to be consistent with the Staged works request that was submitted to the Department.	Both SWMP and ESCP revised to remove references to Operation phase and other works not relevant to Stage 2a.

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

• measures to minimise/manage erosion and sediment transport both within the construction footprint and offsite including requirements for the preparation of erosion and sediment control plans (ESCP) for all progressive stages of construction Measures to manage waste including the classification and handling of spoil • procedures to manage unexpected contaminated finds • measures to manage stockpiles including locations, separation of waste types, sediment controls and stabilisation • measures to manage accidental spills including the requirement to maintain materials such as spill kits • controls for receiving waterways which may include: o Designation of 'no go' zones for construction plant and equipment o Creation of catch/diversion drains and sediment fences at the downstream boundary of construction activities where practicable to ensure containment of sediment-laden runoff • erosion and sediment control measures will be implemented and maintained at all work sites in accordance with the principles and requirements in Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (NSW Department of Environment, Climate Change and Water 2008b), commonly referred to as the "Blue Book".				
EIS Project Commitments, W8	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The use of any farms dams during construction will be agreed with the landholder and the estimated	Yes	Section 6.8 addresses the requirement.	-	Noted

Planning, Industry & Environment

Document: Soil and Water Management Plan (SWMP)
Revision: Version 06 April 2023"
Reviewed: "Charissa Pillay" May 2023

maximum harvestable right dam capacity will not be exceeded.				
EIS Project Commitments, W9	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
No artificial structures planned to be installed in the creek in the central environmental exclusion zone except for two waterway road and cable crossings. The waterway road and cable crossings would be designed and constructed in compliance with the *Guidelines for Controlled Activities on Waterfront Land* (NRAR 2018).	Partial	Section 6.4 includes part of the guidelines.	Include the guideline that the commitment requires, in compliance with the *Guidelines for Controlled Activities on Waterfront Land* (NRAR 2018).	A commitment to undertake works in accordance with the *Guidelines for Controlled Activities on Waterfront Land* Included in Section 6.4.3 of the SWMP
General Comments			**Action Required**	**Company Response**
The plan discusses construction and operation to be undertaken and it some section states the SWMP is for Stage 2 project. However, the document refers to other project stages and operation.			Revise section 1 to be consistent with the whole document and include approved staged works.	Section 1 edited to set out the approved staged works and make clear that the SWMP is for Stage 2b
Section 3 under project description discusses the battery storage to be completed as future development. This is inconsistent with the revised staged works.			Update the plan with staging works submitted to the Department on the 8 May 2023	Section 3 revised to reflect the fact that the SWMP is for Stage 2a
Revise Figures to be consistent with Appendix 4 of the condition of consent				Appendix 4 of the CoC included in the SWMP Section 3 (Figure 3.2).
Other Agency Comments			**Action Required**	**Company Response**
DPE Water comments.				
Regarding Session 6.4.1 of the Soil & Water Management Plan, DPE Water notes that 40m each side of a watercourse measured from top of the bank is required for 4th order watercourses, not 80m each side to be in accordance with the Guidelines for Controlled Activities			Closed	Noted