AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : BSF

Client Service ID : 757525

Power Generation Co Pty Ltd

Date: 28 February 2023

170 Cherry Lane
Laverton Victoria 3026

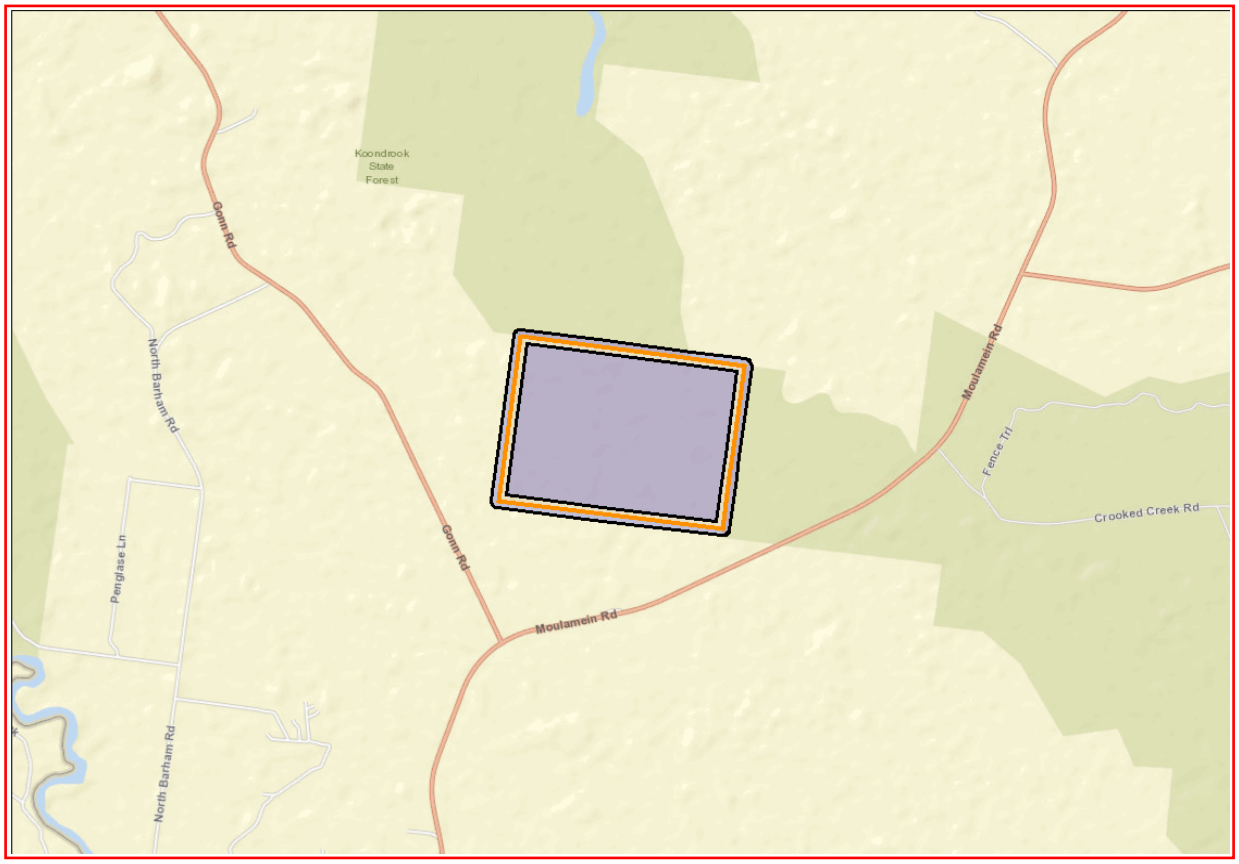
Attention: Arjun Vinod

Email: arjunvinod@gmail.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 9, DP:DP756592, Section : - with a Buffer of 50 meters, conducted by Arjun Vinod on 28 February 2023.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Pre-Lodgement Application Form

Portal Application number: PAN-319851

Applicant contact details

Title	Mr
First given name	Arjun
Other given name/s	
Family name	Vinod
Contact number	0406541480
Email	arjun@powergenco.com.au
Address	170 Cherry Lane, Laverton North VIC 3026
Application on behalf of a company, business or body corporate	Yes
ABN	73617006621
ACN	617006621
Name	POWER GENERATION CO. PTY LTD
Trading name	POWER GENERATION CO. PTY LTD
Is the nominated company the applicant for this application	Yes

Owner/s of the development site

Owner/s of the development site	There are one or more owners of the development site and the applicant is NOT one of them

Owner #	1
Title	Mr
First given name	Graham
Other given name/s	Lindsay
Family name	Heffer
Contact number	
Email	heffred@bigpond.net.au
Address	532 MOULAMEIN ROAD BARHAM 2732

Owner #	2
Title	Mrs
First given name	Tanya
Other given name/s	Joy
Family name	Heffer
Contact number	
Email	heffred@bigpond.net.au
Address	532 MOULAMEIN ROAD BARHAM 2732

I declare that I have shown this document, including all attached drawings, to the owner(s) of the land, and that I have obtained their consent to submit this application. - Yes

Note: It is an offence under Section 10.6 of the Environmental Planning and Assessment Act 1979 to provide false or misleading information in relation to this application.

Site access details

Are there any security or site conditions which may impact the person undertaking the inspection? For example, locked gates, animals etc.	Yes
Provide details	locked gates

Developer details

ABN	73 617 006 621
ACN	617 006 621
Name	POWER GENERATION CO. PTY LTD
Trading name	POWER GENERATION CO. PTY LTD
Address	
Email Address	arjun@powergenco.com.au

Development details

Application type	Development Application
Site address #	1
Street address	206 GONN ROAD BARHAM 2732
Local government area	MURRAY RIVER
Lot / Section Number / Plan	2/-/DP233772 ☐ 7/-/DP756592 ☐ 18/-/DP756592 ☐ 8/-/DP756592 ☐ 37/-/DP756592 ☐ 9/-/DP756592 ☑
Primary address?	Yes
Planning controls affecting property	Land Application LEP Wakool Local Environmental Plan 2013 Land Zoning RU1: Primary Production Height of Building NA Floor Space Ratio (n:1) NA Minimum Lot Size 500 ha Heritage NA Land Reservation Acquisition NA Foreshore Building Line NA Riparian Lands and Watercourses Watercourse Terrestrial Biodiversity Biodiversity Wetlands Wetland

Proposed development

Proposed type of development	Other
Description of development	Solar FarmThe Barham Solar Farm is a two-stage utility-scale solar farm development, situated on Moulamein Road. Spanning across 15 hectares, the first stage of the project will be a 7MWp solar tracking installation comprising of approximately 12,168 solar panels mounted on a north facing fixed tilted frame. While further Battery storage systems has with 2 battery storages containers planned as second stage.
Provide the proposed hours of operation	
Proposed to operate 24 hours on Monday	

Monday	-
Proposed to operate 24 hours on Tuesday	
Tuesday	-
Proposed to operate 24 hours on Wednesday	
Wednesday	-
Proposed to operate 24 hours on Thursday	
Thursday	-
Proposed to operate 24 hours on Friday	
Friday	-
Proposed to operate 24 hours on Saturday	
Saturday	-
Proposed to operate 24 hours on Sunday	
Sunday	-
Dwelling count details	
Number of dwellings / units proposed	1
Number of storeys proposed	
Number of pre-existing dwellings on site	
Number of dwellings to be demolished	
Existing gross floor area (m2)	0
Proposed gross floor area (m2)	0
Total site area (m2)	0
Cost of development	
Estimated cost of work / development (including GST)	$9,669,476.00
Do you have one or more BASIX certificates?	No
Subdivision	
Number of existing lots	
Is subdivison proposed?	
Proposed operating details	
Number of additional jobs that are proposed to be generated through the operation of the development	
Number of staff/employees on the site	

Number of parking spaces

Number of loading bays	
Is a new road proposed?	
Concept development	
Is the development to be staged?	Yes, this application is for staged development which may include concept and/or multiple stages.
Description of the proposed staging of the development	The first stage of the project will be a 7MWp solar tracking installation comprising of approximately 12,168 solar panels mounted on a north facing fixed tilted frame. While further Battery storage systems has with 2 battery storages containers planned as second stage.
Crown development	
Is this a proposed Crown development?	No

Related planning information

Is the application for integrated development?	No
Is your proposal categorised as designated development?	No
Is your proposal likely to significantly impact on threatened species, populations, ecological communities or their habitats, or is it located on land identified as critical habitat?	No
Is this application for biodiversity compliant development?	No
Does the application propose a variation to a development standard in an environmental planning instrument (eg LEP or SEPP)?	No
Is the application accompanied by a Planning Agreement ?	No
Section 68 of the Local Government Act	
Is approval under s68 of the Local Government Act 1993 required?	No
10.7 Certificate	
Have you already obtained a 10.7 certificate?	
Tree works	
Is tree removal and/or pruning work proposed?	No
Local heritage	
Does the development site include an item of environmental heritage or sit within a heritage conservation area.	No
Are works proposed to any heritage listed buildings?	No
Is heritage tree removal proposed?	No
Affiliations and Pecuniary interests	
Is the applicant or owner a staff member or councillor of the council assessing the application?	No
Does the applicant or owner have a relationship with any staff or councillor of the council assessing the application?	No
Political Donations	
Are you aware of any person who has financial interest in the application who has made a political donation or gift in the last two years?	No
Please provide details of each donation/gift which has been made within the last 2 years	

Payer details

Provide the details of the person / entity that will make the fee payment for the assessment.

The *Environmental Planning and Assessment Regulation 2021* and Council's adopted fees and charges establish how to calculate the fee payable for your development application. For development that involves building or other works, the fee for your application is based on the estimated cost of the development.

If your application is for integrated development or requires concurrence from a state agency, additional fees will be required. Other charges may be payable based on the Council's adopted fees and charges. If your development needs to be advertised, the Council may charge additional advertising fees.

Once this application form is completed, it and the supporting documents will be submitted to the Council for lodgement, at which time the fees will be calculated. The Council will contact you to obtain payment. Note: When submitting documents via the NSW Planning Portal, credit card information should not be displayed on documents attached to your development application. The relevant consent authority will contact you to seek payment.

The application may be cancelled if the fees are not paid:

Company Name	Power Generation Co. PTY LTD
ABN	73 617 006 621
ACN	
Trading Name	
Email address	Arjun@powergenco.com.au
Billing address	170 Cherry Lane, Laverton North, VIC 3026

Application documents

The following documents support the application.

Document type	Document file name
Aboriginal Cultural Heritage Report	AHIMS Search - Barham Solar Farm (1)
Construction Management Plan	Barham Solar Farm Construction Environmental Management Plan V1.1 (2)
Cost estimate report	MCG Quantity Surveyors Development Application Cost Plan, Barham - 2R3B7PY (1)
Owner's consent	Owners Consent (Form A) - Murray River Council Singed - LEase Agreement
Statement of environmental effects	Memorandum - Environmental assessment, 206 Gonn Road, Barham v1 statement-of-environmental-effects_PAN-317630
Survey plan	212455_BARHAM SOLAR FARM
Title Documentation / Certificate of Title	Certificate of Title c2NATSTitleSearchS (1)
Traffic report	MSF Traffic Management Plan V1.0 (1)

Applicant declarations

I declare that all the information in my application and accompanying documents is , to the best of my knowledge, true and correct.	Yes
I understand that the development application and the accompanying information will be provided to the appropriate consent authority for the purposes of the assessment and determination of this development application.	Yes
I understand that if incomplete, the consent authority may request more information, which will result in delays to the application.	Yes
I understand that the consent authority may use the information and materials provided for notification and advertising purposes, and materials provided may be made available to the public for inspection at its Offices and on its website and/or the NSW Planning Portal	Yes
I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the Government Information (Public Access) 2009 (NSW) (GIPA Act) under which it may be required to release information which you provide to it.	Yes
I agree to appropriately delegated assessment officers attending the site for the purpose of inspection.	Yes
I have read and agree to the collection and use of my personal information as outlined in the Privacy Notice	Yes
I confirm that the change(s) entered is/are made with appropriate authority from the applicant(s).	

Barham Solar Farm

Construction Environmental Management Plan

Client

POWER Generation Co

Prepared by

GREENBOX

Revision History

Version	Author	Date	Description
Version 1.0	D.Su	1/3/2023	First draft
Version 1.1	D.Su	18/3/2023	Minor edit for review

Disclaimer

The preparation of this document has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the contracted third parties engaged to assess the site and conditions being acceptable for a utility-scale photovoltaic and Battery Energy storage system installation.

All the contained information within this Construction Environmental Management Plan is prepared for the exclusive use of Barham Solar Farm project, Greenbox Solutions Pty Ltd (as Greenbox), acting on behalf of Power Generation Co., in applying for construction approval for the Barham Solar Farm from Murray River Council.

Greenbox accepts no responsibility for any loss, damage suffered or inconvenience arising from any person or entity using the plans or information in this CEMP for purposes other than those stated above.

Abbreviations

AC	Alternating Current
AHMP	Aboriginal Heritage Management Plan
APZ	Asset Protection Zone
AS	Australian Standards
BoS	Balance of System
CCA	Copper Chrome Arsenate
CEMP	Construction Environmental Management Plan
RFS	Country Fire Service
CoA	Condition of Approval
CSSP	Construction Site Safety Plan
DBYD	Dial Before You Dig
DC	Direct Current
DECCW	Department of Environment, Climate Change and Water
DEMP	Decommissioning Environmental Management Plan
DNSP	Distribution Network Service Provider
DEW	Department of Environment and Water
DPTI	Department of Planning, Transport and Infrastructure
EAR	Environmental Assessment Report
EMP	Emergency Management Procedures
EMS	Environmental Management System
EPA	Environmental Protection Authority
EPC	Engineer, Procurement and Construction contractor
ER	Environmental Representative
ERP	Emergency Response Plan
ESCP	Erosion and Sediment Control Plan
FFMP	Flora and Fauna Management Plan
GCMP	Ground Cover Management Plan
GSW(P)	General Solid Waste (putrescible)
GSW(NP)	General Solid Waste (non-putrescible)
Ha	Hectare
HSE	Health, Safety Representative
HTC	High Temperature Creosote
HW	Hazardous Waste
kL	Kilolitre
kV	Kilovolt
LOSP	Light Organic Solvent Preservative
LW	Liquid Waste
m	Metre
mm	Millimetre
MSDS	Material Safety Data Sheet
BESS	Battery energy storage system
BRSF	Barham Solar Farm
MV	Medium Voltage
MVS	Medium Voltage Station
MW	Megawatt
MWp	Megawatt Peak
NMP	Noise Management Plan

O&M	Operation and Maintenance
OEH	Office of Environment and Heritage
OEMP	Operation Environment Management Plan
OOHW	Out of Hours Work
PoC	Point of Connection
PV	Photovoltaic
PPE	Personal Protective Equipment
RAV	Restricted Access Vehicle
RST	Restricted Solid Waste
SIR	Service and Installation Rules
SWMS	Safe Work Method Statement
SoC	Statement of Commitments
SDS	Safety Data Sheet
TMP	Traffic Management Plan
GIS	Geographic Information System
VIVR	Visual Impact Verification Report
VENM	Virgin Excavated Natural Material
WI	Work Instruction

Table of Contents

1. Introduction

1.1 Barham Solar Farm Project

The Barham Solar Farm is a two-stage utility-scale solar farm development, situated on Moulamein Road. Spanning across 15 hectares, this project located just outside the township of Barham New South Wales, which is on the New South Wales - Victorian border, between Swan Hill, Victoria and Echuca, Victoria.

The first stage of the project will be a 7MWp solar tracking installation comprising of approximately 12,168 solar panels mounted on a north facing fixed tilted frame. While further Battery storage systems has with 2 battery storages containers planned as second stage.

There will be two MV collecting stations situated throughout the site to collect the solar array electrical DC output, then transfer to AC output via the 39 x 125kW string inverters, which will be housed inside the MV stations. Two battery storage container or cabinets will be connected to each of the INV station as DC coupled solutions.

The inverter AC output will be stepped up to a distribution level voltage and fed back into the distribution network, via a newly installed overhead pole arrangement. The connection point on the distribution line, for this project, is 1.5 kms downstream from the Barham Zone Substation. This feeds electricity for local consumption. The Barham Zone Substation is also connected to the Deniliquin Zone Substation for transmission to a wider network.

Barham Solar Farm is expected to generate over 12 GWh of electricity annually, enough clean energy to supply around 1,714 homes with clean renewable energy.

This will assist Australia in reducing carbon dioxide emissions by roughly the equivalent of 106,000 tonnes per year (comparable to taking over 44,000 fuel-burning cars off the road) and support a transition towards a more sustainable economy.

1.2 Overview of the Barham Solar Farm Site

The site is a traditional farming property which has previously been used for multiple purpose. The terrain is undulating with large sections of relatively flat area and a small amount of trees and vegetation. There are two distribution network line across the site where easement boundary has been set and have clear boundary to the solar farm development.

There is a small amount of remove and relocated of the internal flora during construction, after fencing has been placed around these areas and the installation is being developed on previously cleared land.

Power had performed soil investigation of the site. Various sample trenches and selected holes were used to obtain the soil samples to analyse the site. It was determined that there are very few zones where shallow lying rock is present. Based on this sampling, it is expected that there may be more zones within the construction envelope that will show the presence of further rocks.

It is possible to ram the steel piles in most of the site unimpeded, and in the event of a rocky outcrop being encountered, there may be the need to pre-drill holes in the rock for the ramming and pile driving process to help achieve a solid foundation.

For the reticulation of power cabling there will be a mix of buried direct and conduit enclosed cabling, with pits located along the route, to enable access which will be required for cable pulling of the longer route cables.

The project site will be serviced by a small compound comprising temporary site offices, amenities and storage during the construction phase, all of which will be removed once the construction phase is completed.

There will be an internal access road that will help reduce construction related dust. There will also be laydown areas for the delivered materials and compacted road base areas for the site compound including car parking. We anticipate car-pooling will be used to reduce construction traffic.

1.3 Proponent

Barham solar farm project is owned and operated by Power generation co., as the proponent.

1.4 Function

This Construction Environmental Management Plan (CEMP) has been prepared by Greenbox Solutions Pty ltd on under the contract of the proponent, to satisfy the Murray river Council development plan consent conditions relating to development application, in order to limit the impact from the construction of the proposed development on adjoining owners and occupiers.

1.5 EPC Contractor

Greenbox solutions pty ltd has been engaged by Power generation co. as the engineering and project management consultant for this project.

Solar Farm Constructions, based in Echuca VIC, under contract from Power Generation Co. is the main EPC sub-contract for Barham solar farm project. As such, Power generation co. will be responsible for the management and implementation of this CEMP.

1.6 Structure

This CEMP is a living document and from time to time will be amended in order to keep up to date with installation specific requirements.

In general, it comprises the following:

(a) A description of relevant activities to be undertaken on site prior to, during and after construction, where relevant;
(b) Identification of the potential for cumulative impacts with other construction activities occurring in the vicinity and how such impacts will be managed;
(c) Details of any construction and mitigation, monitoring, management and rehabilitation measures specific to the site;
(d) Statutory and other obligations that the proponent is required to fulfil during construction, including all relevant approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies;
(e) Evidence of consultation with relevant public authorities required under this condition and how issues raised by the agencies have been addressed;
(f) A description of the roles and responsibilities for all relevant employees involved in the construction of the project;
(g) Details of how the environmental performance of construction will be monitored, including actions to be taken to identify potentially adverse environmental impacts;

(h) The complaints handling procedure during construction;
(i) Maps or plans which clearly identify the area(s) of the project that have been altered due to mitigating flora and fauna impact;
(j) A construction risk matrix along with SWMS to be prepared for the anticipated level of risk for each task;
(k) Have plans in place to monitor and manage soil and water impacts to the project, including control and mitigation methods to be adopted as well as a reporting mechanism;
(l) Flood management plan for the project including measures for controlling debris from contaminating other waterways/properties;
(m) Dust management plan for the construction of the project from pre-construction to post construction;
(n) Emergency response management plan including bushfire mitigation.

The CEMP will be amended from time to time after reviews and/or updated requirements during construction.

Some triggers for an amendment can be:

- When there is a need for improvement;
- As a result of changes to environmental legislation;
- Where SWMS identify a need for change to the CEMP;
- As a result of any incident in order to prevent future incidents.

Modifications to CEMP will require the following process to be followed:

- Proposed change to CEMP to be identified;
- The Quality and Environment Manager will prepare a case and draft amendment and present to the Environmental Representative; and
- Subject to approval gained from Environmental Representative, the CEMP will be updated and a digital copy issued to all stakeholders, as well as updated copies made available to the construction site and all personnel affected by the changes, including work parties.

The Barham Solar Farm CEMP will be required to be kept in digital format, inclusive of all sub-plans, and will be provided to the site office and all key sub-contractors.

2. Construction Activity

2.1 Requirement

The CEMP rules state that a description of all activities which are to be performed are clearly outlined.

2.2 Construction Phases

The Barham Solar Farm will be broken up into key phases:

- Site mobilisation and the preparation of civil/mechanical works;
- Electrical installation of the array including DC, AC and medium voltage (MV) infrastructure;
- Grid interconnection activities;
- Installation commissioning, usually involving cold, warm and hot commissioning stages;
- Stage 2 BESS system installation and commissioning.
- Demobilisation and site restoration.

2.3 Construction Activities

The Barham Solar Farm will undergo the following construction activities:

- Early works including identification of any existing services;
- Permits being granted prior to construction beginning;
- Site preparation prior to erection of site fences;
- Site earthworks including grading, drainage, trenching, piling and road construction;
- Material deliveries, including tracker components, solar modules, electrical cables, concrete deliveries, electrical switchgear and site buildings, including permanent infrastructure;
- Installation of the tracking piers and array module mounting structures;
- Module assembly and wiring of string cabling to DC combiner boxes;
- Electrical distribution wiring, buried and in conduits;
- Installation of electrical infrastructure foundations;
- Installation of electrical infrastructure to the foundations;
- Fit-off of all electricals to allow commissioning activities;
- DNSP to erect new assets for interconnection;
- Construction of interconnection assets owned by BRSF;
- Grid connection and commissioning activities;
- Delivery, installation and commissioning of the BESS system.
- Site remediation and demobilisation.

2.4 Scheduling

The scheduling of detailed work tasks has been developed by the EPC team and it was expected the site works would commence by 10/10/2023 and be completed by 30/2/2023. This included the DNSP testing and energisation related activities which are to be coordinated with DNSP

2.5 Cumulative Impacts

2.5.1 Requirement

The CEMP shall identify any potential for any cumulative impacts with other construction activities occurring within the construction vicinity, and how those impacts will be managed.

2.5.2 Impact

There are no other construction activities known in the immediate vicinity of the Barham Solar Farm. There is a nearby release of land parcels to the north-east which has already had all civil construction activities completed. The development is further away from the public road or any adjacent property. It may be expected that some domestic dwelling construction may occur during the BRSF construction phase

2.5.3 Management

The EPC construction manager will make themselves familiar with any contractors working in the nearby development estate. In the event of any unforeseen incidents, the EPC manager will notify key contacts of the risks associated as well as notifying any local bodies including RFS, Police etc.

2.6 Site Compound

2.6.1 Requirement

CEMP is to include details of monitoring and mitigation measures specific to the site compound that will be used.

2.6.2 Temporary Facilities

The BRSF temporary compound will consist of:

- Site offices;
- Site lunch room;
- Site ablution facilities;
- Site equipment storage containers;
- Fuel bulk storage with bund containment;
- Diesel genset for powering the temporary facilities;
- Parking area for machinery and vehicles;
- Laydown areas for equipment deliveries.

The site is mostly clear; however, it will require a laying of road base in order to minimise dust to the trafficable areas during the construction phase.

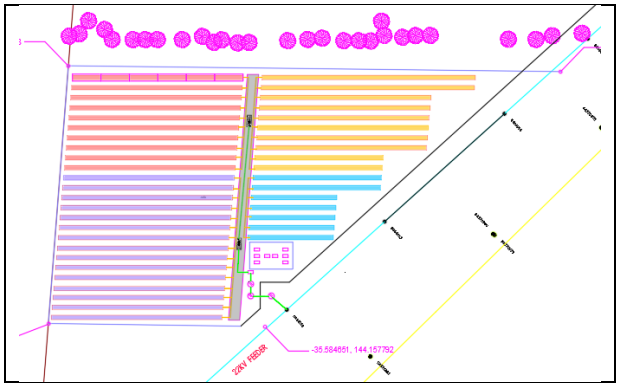
2.6.3 Construction Footprints

There are several activities to be undertaken at BRSF which will require some form of earthworks and they include:

- Entry to site access to be levelled and road base (crusher dust/gravel) to be applied along the Moulamein road side of the project;
- Some light clearing along the boundary of Moulamein road to enable the testing of existing services (telecommunications and water pipes etc), then to allow the old fence to be removed so the new site fencing can be installed to the perimeter of the installation;
- The preparation and construction of temporary and permanent access roads and laydown areas along with the compound;
- Foundation works for the electrical infrastructure;
- Trenches for electrical distribution and earth grading rings for the MV equipment.
- The erosion and sediment control plan is included as section 12.2.

All these items are shown in the BRSF Site Layout

APPENDIX 1 SF001-BRSF-E1-101-03-6.87MW GENERAL LAYOUT MASTER PLAN



Drawing 1 BRSF Site Layout

Drawing 2 BRSF Development location

2.6.4 Restoration

There will be site remedial works to be performed at the end of the construction phase, prior to the demobilisation phase. These will include:

- Any plantings required for screening purposes;
- Returning all areas disturbed by construction to former or better environmental health, where practicable.

2.6.5 Monitoring

The EPC contractor will retain the responsibility for construction phase monitoring of the installation. A handover will occur to the BRSF O&M contracting party prior to demobilisation occurring.

3. Obligations

3.1 Requirement

The CEMP is required to outline all the proponent's obligations that must be met during the construction phase of BRSF. This includes any relevant approvals, consultation findings and agreements that are required from authorities, as well as key stakeholders, legislation and policies.

It is the proponent's responsibility to obtain all necessary permits, licences and approvals for the installation to be built and operated. No conditions of this CEMP prevent the proponent meeting their obligations.

It is the proponent's obligation to ensure that all necessary copies of this CEMP, and other key documents, are always kept on site throughout the project construction phase and continuously during the O&M phase.

3.2 Development Consent and Approvals

BRSF Pty Ltd is obliged to meet all conditions placed on the development application consent by the Murray River Council.

3.2.1 Approvals

The following are the known approvals required by BRSF:

- BRSF is to abide by the approval conditions from Council in relation to taking advanced deliveries to the site;
- BRSF is to abide by all findings and conditions placed on the DA by Council;
- BRSF is obliged to undertake any necessary underground services identification as requested in the DBYD case number;
- BRSF is to have the BRSF Traffic Management Plan approved by NSW Government Department of Planning, Transport and Infrastructure prior to any construction commencing;
- BRSF is to meet all requirements as per the DNSP Connection Agreement.

3.3 Commitments

The Statement of Commitments is specified in Section 7, Statement of Commitments (SoC) within this CEMP. BRSF pledges to meet all commitments detailed in the SoC, based on the DA being issued.

3.4 Agreements

BRSF presented a community consultation paper outlying the proposed development. This was used to highlight any community issues and then to allow the development of plans to mitigate any issues prior to construction.

The Environmental Representative will maintain the CEMP and make it available to members of the public as and when requested to do so.

3.5 Easements

There are existing easements for the DNSP power lines which run through the development area. These areas will be kept as they are. No works are permitted within 15m of the centre line of the easement, as per the SIRs.

3.6 Hot Works Permits and Exemptions

If hot weather is forecast the BRSF construction will not perform any hot works unless express permission has been given by the RFS.

3.7 Consultation

BRSF has engaged service providers to determine the responsibilities that BRSF must meet with respect to relevant legislation, policies, Australian standards and regulatory bodies.

3.8 Legislation

BRSF as the proponent and POWER GENERATION CO. as the EPC are obliged to fulfil all legal requirements relating to the following legislation:

- Protection of the Environment Operations act 1997
- Environmental Planning and Assessment Act 1979
- Fisheries Management Act 1994
- National Parks and wildlife Act 1974
- Water Management Act 2000
- Waste Avoidance and Resource Recovery Act 2001
- Rural Fires Act 1997
- Noxious Weeds Act 1993
- Local Government Act 1993
- Roads Act 1993
- Electricity Supply Act
- DNSP SIR
- All relevant Australian standards

4. Agency Consultation

4.1 Requirement

The CEMP requires the proponent show evidence of any consultation with public and government bodies with relation to the BRSF is to meet its obligations

Below is a list of items BRSF has sought guidance on to ensure it is meeting its obligations:

- DBYD
- Flora and Fauna Management Plan
- Ground Cover Management Plan
- Construction Noise Management Plan
- Traffic Management Plan
- Aboriginal Heritage Plan

4.2 Public Authorities

The following are the public authorities relevant to the project.

Authority/Stakeholder	Requirement
Murray River Council	Preparation of CEMP
DEW	Flora & Fauna Management Plan
	Ground Cover Management Plan
	Aboriginal Heritage Plan
DPTI	Traffic Management Plan

Table 1 – Public Authorities

5. Roles and Responsibilities

5.1 Requirement

The roles and responsibilities for all relevant employees in the construction of Barham Solar Farm are shown in the following chart.

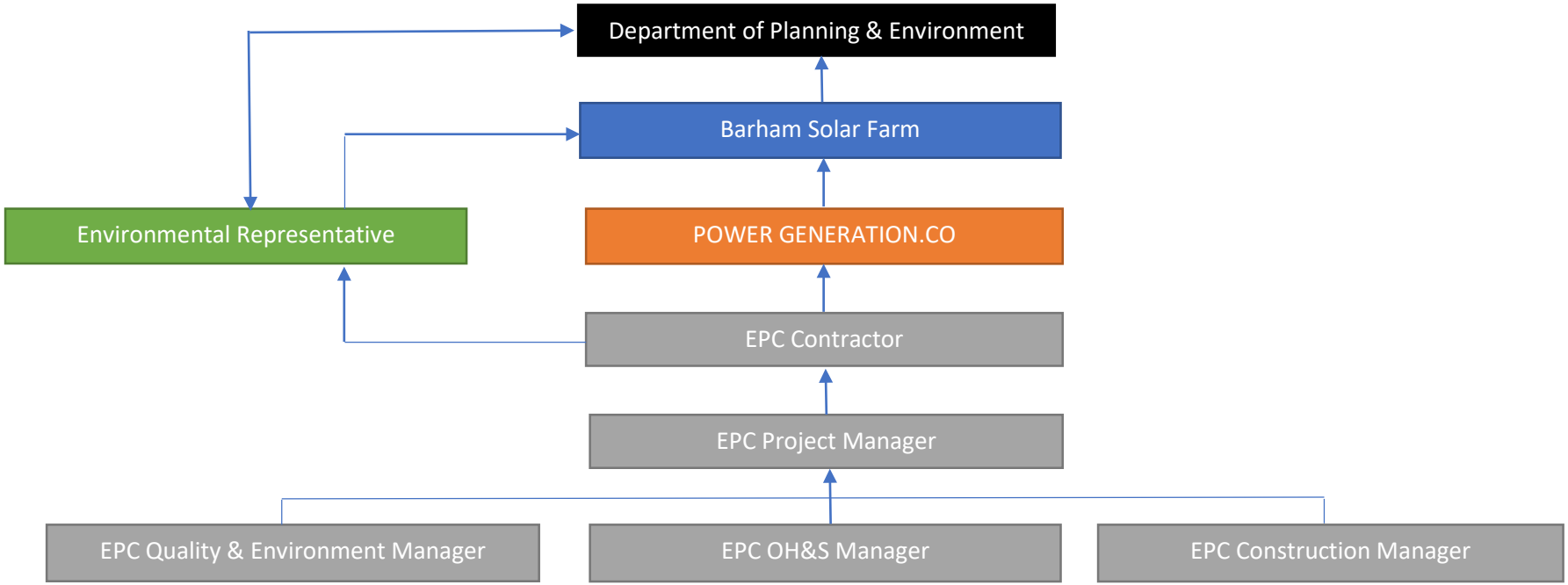


Chart 1 – Barham Solar Farm Roles and Responsibilities

5.2 Overview

POWER GENERATION CO. , is the engineering, procurement and construction (EPC) contractor with the responsibility for the detailed design and construction of the Barham Solar Farm. POWER GENERATION CO has the responsibility to ensure it and its sub-contractors are fulfilling all the obligations associated with this CEMP.

POWER GENERATION CO will assign a suitably qualified Environmental Representative (ER) that is independent of the personnel engaged in the design, construction and operation of the project.

5.3 Key Personnel

The key personnel for the project are:

- Site Project Manager(s)
- Site Construction Manager
- Site Quality and Environmental Manager
- Site OH&S Manager
- Environmental Representative

The accountabilities and relationships of the key personnel for the Barham Solar Farm are detailed in the following sections.

5.3.1 Site Project Manager

The role of a Site Project Manager is to ensure the Site Construction Manager and Site Quality and Environment Manager exercise their responsibilities and roles as defined in this CEMP.

5.3.2 Site Construction Manager

The role of a Site Construction Manager is to work collaboratively and efficiently with the Quality and Environmental Manager to ensure that all tasks in the construction of Barham Solar Farm are in accordance with this CEMP.

5.3.3 Site Quality and Environmental Manager

The Site Quality and Environmental Manager is responsible for implementing all procedures and processes outlined in this CEMP as well as:

- Ensure all personnel undertaking works on site are familiar with and understand their obligations as outlined in this CEMP;
- Attend the Environmental Due Diligence induction;
- Undertake weekly inspections to ensure All activities are as per this CEMP;
- Undertake regular site audits;
- Provide reports to management team and key stakeholders;
- Keep all documentation as required in this CEMP;
- Ongoing monitoring to ensure the CEMP is being adhered to;
- Undertake investigation into any incidents or complaints which occur during construction;
- Ensure all incident, non-conformance and/or complaint registers are maintained and up to date for reporting;
- Conduct environmental risk inspections of the site;
- Commission external compliance auditing if necessary.

5.4 Work Health and Safety

There will be a Barham Solar Farm Safety Policy and it will be meet AS 4801. A site OH&S officer will ensure compliance with this maintained during all phases of the construction.

Construction activities will be carried out as per the Construction Site Safety Plan, available as a separate attachment to the CEMP.

The Site PM and Site Construction Manager will ensure daily toolbox meetings are performed and all OH&S relevant topics are discussed. Any items raised for improvement will be discussed and then implemented.

The OH&S officer will ensure all daily toolbox meetings are documented and all workers are signed onto the required SWMS.

All workers must have an industry White Card as a minimum.

All operators of machinery must be holding a valid licence and up to date with training qualifications required to operate the machinery.

5.5 Environmental Representative

The Environmental Representative (ER) will monitor all Environmental Plans and any Monitoring Programs which fall under this CEMP.

The ER will monitor outcomes of all plans and programs and advise the proponent of all outcomes

The ER has responsibility for considering and advising the proponent on any matters which are outlined in this CEMP, as well as all other licences and approvals relating to environmental performance and impacts of this project.

The ER is responsible for undertaking environmental audits which may be required under this CEMP, and reporting to key stakeholders and third parties, if applicable.

5.6 Training and Induction

All workers are to attend the site specific Environmental Due Diligence induction.

All workers will be made aware of the requirements of this CEMP, specifically those relating to their respective activities. SWMS will be signed on to by the work parties.

5.6.1 Competency Register

There is to be an Environmental Due Diligence Register that will be signed off by all attendees as part of the daily sign in process (see form BRSF 01).

6. Environmental Performance

6.1 Requirement

The Barham Solar Farm project construction work will be carried out using the environmental protocols shown in the table below, to ensure that the correct measures are taken to address any potentially adverse environmental impacts that may be identified.

CRITERIA	OBJECTIVE	TARGET	EVIDENCE
Environmental Compliance	Construction to be undertaken as per BRSF Development Consent	100% compliance with Development Consent	Weekly Inspection Checklist BRSF 02
		Zero reportable environmental incidents	External Audits CEMP Audit BRSF 03
Legal Compliance	Compliance with all environment legal requirements	100% compliance with all environmental legal requirements	CEMP Audit BRSF 03
		Zero reportable environmental incidents	Environmental Incidents Register Form BRSF 06 Environmental Incident Form BRSF 07
Best practice environmental management	Effective implementation of CEMP to ensure best practice environmental management	100% compliance with measurable management measures outlined in this CEMP	CEMP Audit Form BRSF 03
		Zero reportable environmental incidents	Environmental Incidents Register Form BRSF 06 Environmental Incident Form BRSF 07
Environmental complaints	Minimise environmental complaints and adequately address any environmental complaints in a timely manner	Zero community complaints	Complaints Register Form BRSF 04
		100% compliance with complaints response timeframes specified in CEMP	Complaints Record Form BRSF 05
Incidents	Minimise, avoid and appropriately manage all environmental incidents	Zero reportable environmental incidents	Environmental incidents Register Form BRSF 06

		100% compliance with incident reporting, investigation and implementation of corrective action timeframes	Environmental Incident Form BRSF 07 CEMP Audit BRSF 03
Non-conformance	Minimise, avoid and appropriately manage all environmental non-conformances	Zero reportable environmental non-conformances	Weekly Inspection Checklist Form BRSF 02
		100% compliance with timeframes for the investigation and implementation of corrective actions	CEMP Audit Form BRSF 03
Audit & Inspection	Undertake environmental site audits and inspections in a timely manner	100% compliance with the timeframes for environmental audits and inspections	Weekly Inspection Checklist Form BRSF 02
		100% compliance with the timeframes for implementation of identified corrective actions	External Audits CEMP Audit Form BRSF 03
Environmental Due Diligence	All persons involved in construction to be aware of their environmental obligations	100% compliance with Environmental Due Diligence induction training	Environmental Due Diligence Induction Register Form BRSF 01
		Zero reportable environmental incidents	CEMP Audit Form BRSF 03

Table 2 – Environmental Protocols

6.2 Monitoring

6.2.1 Environmental Management System

The Barham Solar Farm environmental performance will be monitored through the implementation of the BRSF Environmental Management System. This will include weekly site inspections and a monthly CEMP compliance audit. The evidence of the BRSF monitoring will be the internal documentation and reporting.

Below is a list of the referenced documentation:

Form Number	Use
BRSF 01	Environmental Due Diligence Induction Register
BRSF 02	Weekly Inspection Checklist
BRSF 03	CEMP Audit
BRSF 04	Complaints Register
BRSF 05	Complaints Record
BRSF 06	Environmental Incidents Register
BRSF 07	Environmental Incident Report
BRSF 08	Waste Register
BRSF 09	Corrective Action Register
BRSF 10	Continuous Improvement Notice
BRSF 11	Out-of-Hours Works Register
BRSF 12	Work Instruction Register
BRSF 13	Weed Inspection and Washdown Register

Table 3 – List of BRSF Forms

6.2.2 Weekly Inspections

Barham Solar Farm weekly inspections will be conducted by the Quality and Environmental Manager. This will be using form BRSF 02.

All site construction areas will be inspected to ensure the environmental controls are adequate.

6.2.3 Compliance Audits

The Quality and Environment Manager will conduct monthly compliance audits against the CEMP to ensure all items are being fulfilled.

The audits will cover the following:

- Determine whether the controls, procedures and documentation associated with the CEMP has been effectively implemented and maintained;
- Confirm that all actions listed are being completed and signed off;
- Ensure that reporting requirements, incident investigations and incident close-outs are occurring in accordance with the CEMP; and
- Check that there are no outstanding follow-up actions that are yet to be closed off.

Form BRSF 03 will be used for this audit.

6.2.4 Compliance Tracking

EPC will engage a third party to undertake a review of the audits to ensure the systems are compliant.

Prior to commencement of the BRSF a Compliance Tracking Program will be developed to track the progress with the requirements of the Development Approval.

The Compliance Tracking Program will ensure that:

- Periodic reporting to the proponent of the BRSF status of compliance is occurring;
- There are procedures for rectification of any non-compliance identified during environmental auditing or review of compliance;
- Mechanisms are in place for recording environmental incidents and other actions taken in response to those incidents;
- Provisions exist for ensuring all employees, contractors and sub-contractors are aware of and comply with, the conditions of this CEMP, with regard to their respective activities.

6.3 Corrective Actions

The following corrective action processes will be adopted to identify appropriate actions to be taken to address any identified potential adverse environmental impacts. These processes apply in circumstances where either the required safeguards in this CEMP have not been followed or where it is apparent that the safeguards contained in the CEMP are inadequate in preventing adverse environmental impacts.

6.3.1 Major Non-Conformance

The Quality and Environmental Manager will have the authority to temporarily stop any work activity that is not being undertaken in accordance with requirements of the CEMP, or presents an unacceptable or unanticipated environmental risk.

Any major non-conformance will trigger the issuance of a required corrective action. The corrective action will specify what needs to happen before works can re-commence and will be recorded in the Corrective Actions Register (BRSF Form 09).

6.3.2 Continuous Improvement Notice

In a circumstance where it is apparent that the safeguards contained in the CEMP are being adhered to, but are not adequate to minimise adverse environmental impacts, or can be improved, the Quality and Environment Manager will have authority to temporarily stop that work activity and prepare a Continuous Improvement Notice (BRSF Form 10).

The CEMP will be updated as required and the changes to that work activity will be communicated to the relevant persons before work re-commences.

6.3.3 Non-Conformance Close out

The BRSF target date for closing out non-conformance issues will be 14 days.

7. Statement of Commitments

7.1 Requirement

This CEMP is to outline the BRSF commitments that are in place including:

- BRSF proponent is obliged to ensure the site activities will not in any way adversely affect the surrounding Flora and Fauna and this CEMP outlines the obligations which will be adhered to.
- BRSF EPC is to meet all conditions as laid out in the DA and the CEMP. This covers all contractors and sub-contractors.

7.2 Compliance

Below is a summary of standard compliance requirements for solar farm construction, including an indication of their relevance to the construction phase of Barham Solar Farm.

Issue	Ref. No.	Commitment	Relevance to Construction	CEMP Reference
Managing Visual Impacts				
Potential adverse visual impact of extension of Distribution Lines	V.1	A careful and considered route selection process has been undertaken to avoid sensitive views and loss of existing vegetation where possible	No	Incorporated in BRSF Design
Potential adverse visual impact of Distribution Line Structures	V.2	Wherever possible, angle positions selected and placed in a strategic location to minimise potential visual impact and to provide a maximum setback from nature strip and roads	No	Incorporated into BRSF Design
Visual effects of construction stages	V.3	Use appropriate control methods to remove spoil from construction areas	Yes	Site Layout
Visual effects of construction materials and equipment storage	V.4	Use of selected areas for laydown of site materials and ensuring minimum visibility from any residences	Yes	Site Layout
Managing Potential Noise Effects				
Protection of noise amenity for residential properties – construction stages	N.1	Construction hours generally restricted to 6:00 AM to 6:00 PM Monday to Friday and 6:00 AM to 2:00 PM on Saturday. Work outside of these hours would only occur if: • Agreed and approved by the proponent • Activities do not cause a noise nuisance to any neighbouring residential buildings • Emergency work to avoid loss of lives and/or property • Delivery of materials which are outside of hours due to safety reasons and request by police or other authorities	Yes	

Informing residents about activities	N.2	Development and implementation of a community relations program to inform residents and the community of the progress of activities and potential noise and vibration impacts of each phase of the project.	Yes	
Protection of noise for residential properties – construction phase	N.3	A noise Management Plan (NMP) will be prepared as a component of this CEMP and will manage construction noise and vibration, and methods to manage impacts. This NMP would be prepared in consultation with approval party and the contractor(s) performing the relevant tasks and address: Selection of plant based on acoustic performance; Noise certification of plant prior to commencement of works phase; Works practices to minimise potential noise and vibration effects; A monitoring program to ensure construction noise and vibration emissions are controlled and that best practice are used; Noise and vibration monitoring shall be conducted in response to community complaints in timeframes outlined in this CEMP;	Yes	
Managing Potential Ecological Effects				
Protection of any identified native vegetation	E.1	Following Final Design of the Distribution Line Extension, any losses of native vegetation will be re-quantified	No	Site Layout
Protection of identified native vegetation areas	E.2	The BRSF has identified some areas of native vegetation and as such has been designed in a way to not use those parcels	Yes	Site Layout
Protection of identified native vegetation areas	E.3	A vegetation management plan will be prepared outlining the minimal (expected) proposed plans for the local trees including: Fencing of the BRSF installation to exclude the native vegetation from the installation	Yes	Site Layout
Protection of identified native vegetation areas	E.4	The management plan will include appropriate fire management regime as well as access to existing DNSP and TNSP service access track and fencing. These areas are South of the proposed installation	Yes	Site Layout
Protection of identified native vegetation areas	E.5	During construction vegetated areas are to be fenced out of the construction zone	Yes	Site Layout

Managing Potential Effects of Aboriginal Cultural Heritage				
Protection of Aboriginal heritage	A.1	Preparation of an Aboriginal Heritage Management Plan to identify any significant overlay in the proposed BRSF.	No	
Managing Potential Traffic impacts				
Ensuring traffic safety and efficiency prior to construction stage	T.1	Upgrading the site entry for mobilisation and delivery phase	Yes	Pre-Construction Site Layout
Ensuring safety and efficiency during site construction phase	T.2	Site Traffic Plan Construction phase including implementation of ways to mitigate any potential issues during the works phase: • Access roads during construction; • Watering Management Plan to mitigate dust during construction	Yes	Construction Phase Traffic Plan
Traffic Speed Limits	T.3	An appropriate speed limit in the site will be displayed at entry gates	Yes	Site Plans
Ensuring structural integrity of road system including internal access roads	T.4	Preparation of a construction issue roads management/maintenance plan to include: • Existing road assets and identifying areas of concern prior to construction works; • Regular inspections during construction phase to assess any damage or remedial work to be done during construction phase; and • Ongoing plan for maintenance of internal and access roads to the BRSF	Yes	Traffic and Site Layout Plan
Managing Bushfire Impacts				
Ensure adequate asset protection	B.1	Ensuring an asset management buffer is applied to the asset area, including the DNSP infrastructure and MV equipment zones throughout the BRSF installation including: Oil containment bunds to MV transformers; Fuel Bunds for machinery fuel storage during the construction phase and O&M phase for any back-up generators if required; Ensure adequate access for any potential RFS plant to access BRSF; Ensure adequate egress paths maintained for BRSF in case of an incident or natural event	Yes	Site Plans
Minimising bushfire risks to on-site buildings	B.2	Any buildings to be provided with operational Fire Extinguishers;	Yes	MVS Plans

		Any permanent buildings to be fitted with gutter guards and to be flammability index of <5 All permanent buildings to be provided with ember attack preventing steel mesh to maintain an aperture of <2mm to al building envelopes; All permanent buildings to be fitted with draught stopper having a flammability index of <5		
Minimising ignition risk from Distribution Line to Connection Kiosk	B.3	Maintenance and vegetation around the DNSP incoming feeder pole to BRSF Connection Kiosk to be kept in order with a vegetation plan to be utilised when operation as part of the ongoing O&M package which is to be maintained as part of an ongoing LIVE documents as part of the O&M service providers obligations	Yes	Site Layout and O&M service package
Ensuring access design and construction is consistent with proper bushfire risk	B.4	The proposed access roads from Moulamein road entries to the BRSF Control Room/Kiosk and MVS throughout the BRSF are to comply with section 4,2,7 of Planning for Bushfire Protection 2006 A perimeter fire trail will be provided within the Asset Protection Zone in accordance with requirements of Planning for Bushfire Protection 2006	Yes	Site Layout and O&M service package Incorporated into the BRSF design
Minimising risk from combustible fencing	B.5	Combustible fencing not to be installed within 10m of a structure	No	Incorporated into BRSF design
Ensuring sound risk management planning in the event of an emergency	B.6	A Grassfire Evacuation Plan will be prepared consistent with RFS guidelines	Yes	Fire Management Plan
Ensuring water supply meets bushfire protection requirements	B.7	A 10,000L Static Water Supply is to be provided to the Site before the commencement of any construction works	Yes	Site Layout Plan
Ensuring site landscaping does not exceed fuel load requirements	B.8	The proponent and O&M Service provider must ensure the BRSF is kept under control and excess fuel in the form of dead vegetation is removed from the installations	Yes	Site Layout and O&M service package
Managing Potential Land and Impacts				
Potential for runoff from site to adversely affect local streams	LW.1	Arrangements for all machinery and vehicles onsite, including refuelling and storage to minimise potential for any spills to be documented in the CEMP Preparation of Spill Response Plan as a component for CEMP and the O&M Management Plan	Yes	

		Plan for handling any contaminated waste found during construction phase		
Ensuring appropriate site vegetation	LW.2	There will be a requirement for site restoration works at the completion of construction, including revegetation of disturbed ground, control of erosion and sedimentation	Yes	
Flooding	LW.3	A flood Management Plan for the BRSF will be prepared prior to Construction and incorporated into the CEMP	Yes	CEMP
Managing Potential Health Risks				
Health risks associated with EMF	H.1	There will be consideration given to the design to further reduce electromagnetic field strength in the detailed design of the Distribution Assets by DNSP and the BRSF Connection point in accordance with the principles of prudent avoidance	No	Incorporated into design
Managing Potential Decommissioning Risks				
Managing potential decommissioning risks	H.2	Within a timeline of 18 months from BRSF ceasing to operate, the site shall be decommissioned and returned as far as practicable to its condition prior to the construction phase. Decommissioning will be in accordance with a Decommissioning Management Plan to be prepared at such time by a suitably qualified third party	No	Operations
Managing potential decommissioning risks	H.3	All materials including piles, panels, cables, pits, MV plant will be disposed/recycled of in a responsible manner. All roads may stay if it doesn't pose any impediment on the sites land use moving forward. (T.B.D)	No	Operations

Table 4 – Statement of Commitments for Barham Solar Farm

8. Complaints Handling Procedure

8.1 Requirement

There is a requirement under this BRSF CEMP for there to be a clear and defined method for complaints handling and an obligation to complete responses and resolutions in a timely manner.

As Barham Solar Farm's proponent, and in accordance with EPC contractor arrangements, EPC or BNSF Owner will assume responsibility to ensure that the following are available for community complaints for the life of the project:

- A 24-hour telephone number on which complaints may be made about the construction and operational activities;
- A postal address to which written complaints may be made; and
- An email address to which electronic complaints may be registered.

All these items shall be advertised in a circulating newspaper in the vicinity on at least one occasion prior to construction, and at six monthly intervals during and after construction, for a period of two years.

Furthermore, the telephone number and email address must be shown clearly on the site signage, near the entrance, in a clear viewing position for members of the public.

8.2 Procedure

Upon receiving any notifications of complaints from BRSF, EPC will immediately investigate the cause of the complaint and identify any actions required to avoid a recurrence.

EPC will report back to the Proponent (BRSF) within 24 hours with the investigation and report. EPC will complete all forms and registers as applicable.

The Quality and Environment Manager will be responsible for the investigation and documentation.

In the event that EPC is alerted to complaints through other means, such as complaints made directly to contractors, the Quality and Environment Manager will notify BRSF of the complaint immediately and commence proceedings.

8.2.1 Complaints Register

Any complaint received in relation to the BRSF will be recorded on the BRSF Complaints Register (BRSF Form 04). All complaints will be handled using BRSF Form 05 and all pertinent details will be added to the register.

Complaints Records (BRSF Form 05) will contain:

- The date and time of the complaint;
- The means in which the complaint was made;
- Any personal details of the complainant that were provided, or if no details were provided, a note to that effect;
- The nature of complaint;
- Any actions taken in relation to the complaint, including timeframes for implementing the action; and
- If no action was undertaken in relation to the complaint, the reasons why no action was taken.

A copy of the updated Complaints Register and specific Complaints Record will be provided to BRSF.

8.2.2 Complaint Resolution

The timeframe for resolving a complaint is within 48 hours of EPC being made aware of the complaint. The responsibility for responding to the complainant lies with BRSF not EPC.

9. Incident Management

9.1 Requirement

It is required under this CEMP for any Incident with the potential to cause an environmental Impact to be reported to the Quality and Environment Manager immediately.

9.2 Internal Reporting

The Environmental Due Diligence induction will emphasise this obligation to all contractors and personnel working on-site.

9.3 Emergency Response

In the event of an emergency, the initial response is critical to ensure that the necessary assistance is provided in a timely manner to safeguard life.

In these circumstances the protocols and procedures are specified in the Emergency Response Plan (also known as EPC "Emergency Management Procedures"), with a hardcopy kept on-site the Site Office.

The Emergency Management Procedures are detailed in the EPC Construction Site Safety Plan, available as a separate attachment to the CEMP.

9.4 Immediate Response

Upon receiving notification of an incident with the potential to cause an environmental impact, but not constituting an emergency, the Quality and Environment Manager will:

- Isolate the area affected by the incident;
- Stop all work in the area;
- Implement containment measures to prevent the impact of the incident spreading;
- Decide as to the significance of the potential environmental impact and, as appropriate, undertake appropriate external notifications.

9.5 External Notifications

9.5.1 Material Harm

The EPA shall be notified where any pollution incident occurs in the course of an activity such that material harm to the environment is either caused or threatened.

Under the Protection and Environment Operations Act 1997, "Material Harm" is defined as:

(a) Harm to the environment is material if:
  (i) It involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or
  (ii) It results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations), and

(b) Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

As soon as the immediate response actions have been implemented, the Quality and Environment Manager will decide as to whether material harm has been caused or is threatened.

9.5.2 EPA Notification Due to Material Harm

If the Quality and Environment Manager determines material harm exists, they will notify the EPA as soon as practicable and provide the following information:

- The time, date, location, nature and duration of the incident;
- The location of the place where the harm is occurring or is likely to occur;
- The nature, the estimated quantity or volume and the concentration of any pollutants involved, if known;
- The circumstances in which the incident occurred (including the cause of incident, if known); and
- The action taken, or proposed action to be taken, to deal with the incident, and any resulting pollution or threatened pollution, if known.

Following EPA notification, the Quality and Environment Manager will also inform the Murray River Council Environmental Representative of the situation. This initial notification to these stakeholders will be for information purposes only. EPC will continue to concentrate exclusively on responding to any instruction or request from the EPA.

9.5.3 No Material Harm

Where an incident has occurred that has not resulted in material harm, the Quality and Environmental Manager will immediately notify the Murray River Council Environmental Representative and provide the following information:

- The time, date, location, nature and duration of the incident;
- The location of the place where the harm is occurring or is likely to occur;
- The nature, the estimated quantity or volume and the concentration of any pollutants involved, if known;
- The circumstances in which the incident occurred (including the cause of incident, if known); and
- The action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution if known.

9.6 Incident Investigation

9.6.1 Avoid Recurrence

As soon as the incident has been contained and external notifications have been made, the Quality and Environment Manager will undertake an incident investigation. One purpose of the investigation is to identify and understand the cause of the incident with a view to modifying the procedures to avoid the potential for recurrence. The types of preventative actions could include revision to work instructions or undertaking targeted environmental due diligence sessions at tool box meetings prior to works recommencing.

9.6.2 Restoration

The other purpose of the incident investigation will be to define the appropriate remediation work required in order to address any biophysical impact of the incident. The appropriate remediation work would be determined by the specific circumstances of the incident. An example of what

remediation could include would be stabilising and re-seeding an area that was inappropriately cleared.

9.7 Incident Reporting

9.7.1 Documentation

Any environmental incident will be recorded on an Environmental Incident Report (BRSF Form 06) and will be maintained throughout the construction period. Each Environmental Incident Report will include the following details:

- The date, time and duration of the incident;
- Clarify whether there was material harm to the environment or not;
- Detail the nature of the incident;
- Climatic conditions;
- The location of the incident;
- Any pollutants involved;
- The circumstances in which the incident occurred; and
- Corrective action taken;
- Details of any external notification, such as to the EPA.

9.8 Dissemination

For any environmental incident for which there is no material harm, the Quality and Environment Manager will provide a copy of the Environment Incident Report to both Council and the Environmental Representative, within a five working day period of the incident occurring.

For any incident where material harm has, or could have resulted, and the EPA has been notified, the Quality and Environmental Manager will provide a report to the EPA as may be instructed, in accordance with the timeframes that may be so specified by the EPA.

Copies of any EPA reporting associated with an environmental incident will also be provided to the Department of Environment and Water, Council and the Environmental Representative.

10. Work Instructions

10.1 Requirement

The BRSF has a matrix of construction Safe Work Method Statements (SWMS) to be prepared that will allow the anticipated level of risk associated with each activity to be determined.

Work Instructions (WI) are documents that will be prepared to detail how discrete and specific construction activities will be undertaken. These WI will constitute the construction SWMS mentioned in this CEMP.

10.2 Scope

Any Work Instruction will include, at minimum:

- The techniques and construction methodology required for an activity;
- Plant, equipment and personnel involved; and
- Environmental controls and safeguards to be adopted during the works.

Sign off for each WI will be prepared and approved prior to any work activities commencing. Specifically, each WI will be developed by the work crew that is to undertake a construction activity and will be signed off by the Quality and Environmental Manager as well as the Site Construction Manager.

The trigger for requiring a WI will be an assessment by the Quality and Environmental Manager in conjunction with the Site Construction Manager, of the environmental risk(s) associated with the actual tasks to be performed and before they are undertaken.

The objective of preparing a WI and having these approved prior to works being undertaken is to ensure that appropriate environmental safeguards are incorporated into the construction methods in order to ensure that the risks are appropriately managed, consistent with the Risk Matrix.

The appropriate management means that the anticipated environmental risks, after the safeguards have been considered and incorporated into a WI, will be LOW, not MEDIUM or HIGH.

10.3 Timing

As and when discrete and specific construction activities are refined and scheduled, the need for a WI will be assessed by the Quality and Environmental Manager. This is a process that will continue throughout the construction phase. It is anticipated that each WI will be completed within two weeks.

BRSF Form 12 will be used to demonstrate compliance with the process. The EPC will also keep hard copies of all approved WIs at its office.

10.4 Assigning Risk

When provided with detail on a work activity, (i.e. when, how and where) the following risk assessment principles will be applied by the Quality and Environmental Manager to assign risk to determine whether a WI is required or not.

The decision will be based on whether, in the absence of identified environmental safeguards being adopted, the environmental risk associated with that work activity would have a medium or high-risk rating. That is, the decision will be made on the assumption that no environmental safeguards or controls are proposed.

The following rating method is assumed, where "Likelihood" is interpreted as:

- Very likely – expected to occur
- Likely - probably will occur
- Unlikely – might occur
- Very unlikely – could occur but doubtful

Whilst "Environmental Consequence" is interpreted as:

- Catastrophic – irreversible and material harm
- Major – significant but reversable impact
- Moderate – serious impact but readily managed
- Minor – localised and acceptable impact

10.4.1 Environmental Risk Matrix

Environmental Consequence	**Likelihood**			
	Very Unlikely	Likely	Unlikely	Very Unlikely
Catastrophic	High	High	High	Medium
Major	High	High	Medium	Medium
Moderate	High	Medium	Medium	Low
Minor	Medium	Medium	Low	Low

Table 5 – Environmental Risk Matrix

The matrix above will be used by the Quality and Environmental Manager to apply risk analysis principles to help identify the activities which will trigger the requirement for the preparation of a WI.

10.4.2 Environmental Risk

Judgments on the consequence and likelihood of risk require an understanding of what potential environmental risks exist. When the detail in the discrete work package is known (i.e. how, where and when), then relevant environmental risks can be identified and considered.

To inform this decision making, the following list shows the key potential environmental risks associated with the construction effort:

- Damage to Aboriginal sites;
- Spread of weeds;
- Causing a bushfire;
- Generating excessive dust;
- Generating excessive noise;
- Damage to the water tables, groundwater interference;
- Damage to local flora;
- Damage to local fauna or fauna habitats;
- Soil contamination;
- Contributing to flooding off-site.

10.4.3 Preliminary Environmental Risk Matrix

A preliminary risk matrix for the various construction phase tasks is provided below. The Quality and Environmental Manager will ensure that a WI is prepared for those activities that are defined as MEDIUM or HIGH risk.

As other work activities are detailed (i.e. how, when and where) the risk assessment will be applied by the Quality and Environmental Manager to analyse the risk and decide whether a specific WI is required.

10.4.4 Preliminary Environmental Risk Register

#	Project Phase	Risk	Cause	Effect/Impact	Current Risk Rating					
					Consequence		Likelihood		Rating	
1	Mobilisation	Increased Traffic movements	Vehicle and equipment movement Construction personnel movement	Road congestion	1	Minor	L	Likely	1L	MEDIUM
2	Mobilisation	Increased traffic movements	Vehicle and equipment movement Construction personnel movement	Vehicle collisions	2	Moderate	U	Unlikely	2U	MEDIUM
3	Mobilisation	Increased traffic movements	Vehicle and equipment movement Construction personnel movement	Animal collisions	1	Minor	U	Unlikely	1U	LOW
4	Mobilisation	Noise	Vehicle and equipment movement Construction personnel movement	Impact on local noise	2	Moderate	L	Likely	2L	MEDIUM
5	Mobilisation	Dust generation	Vehicle and equipment movement	Short term impact on air quality	3	Major	L	Likely	3L	HIGH

			Construction personnel movement							
6	Mobilisation	Community not engaged	Lack of community information dissemination, website not established	Community uproar	2	Moderate	VU	Very Unlikely	2VU	LOW
7	Site civil works	Soil and water impact	Lack of measures and maintenance	Water pollution Movement of soil off-site	2	Moderate	U	Unlikely	2U	MEDIUM
8	Site civil works	Flora and fauna impact	Extensive clearing required Undertaking clearing works at wrong time	Impacts on local flora and fauna	3	Major	U	Unlikely	3U	MEDIUM
9	Site civil works	Fire	Hot work, machinery, sparks	Uncontrolled bushfire	3	Major	U	Unlikely	3U	MEDIUM
10	Site civil works	Increased traffic	Vehicle, machinery movement	Road congestion	2	Moderate	U	Unlikely	2U	MEDIUM
11	Site civil works	Dust generation	Vehicle, machinery movement and lack of dust control	Local air quality impacts	3	Major	L	Likely	3L	HIGH
12	Site civil works	Lack of water	No site water storage	Potential dust generation	3	Major	U	Unlikely	3U	MEDIUM
13	Site civil works	Noise	Machinery movement	Impact on local noise levels	2	Moderate	L	Likely	2L	MEDIUM
14	Site civil works	Spreading of weeds	Machinery movement	Spreading of weeds	2	Moderate	U	Unlikely	2U	MEDIUM

15	Site civil works	Air emissions	Machinery movement, poor maintenance	Local air quality impacts	1	Minor	U	Unlikely	1U	LOW
16	Site civil works	Litter generation	Lack of waste containments	Local impact	1	Minor	U	Unlikely	1U	LOW
17	Site civil works	Flooding impacts	Creating barriers to flood movement	Redirection of floodwaters	2	Moderate	U	Unlikely	2U	MEDIUM
18	Site civil works	Flooding impact	Not locating MV equipment above flood areas	Potential flooding and floodwater pollution	1	Minor	U	Unlikely	1U	LOW
19	Site civil works	Spills	Refuelling Chemical Storage	Surface water pollution Soil contamination	2	Moderate	U	Unlikely	2U	MEDIUM
20	Mechanical Works	Noise	Hammering posts Air wrenches Machinery movements	Impact on local noise amenity	3	Major	L	Likely	3L	HIGH
21	Mechanical Works	Waste Generation	PV Module packaging Excess steel materials	Increase local waste at landfill	1	Minor	U	Unlikely	1U	LOW
22	Mechanical Works	Air emissions	Vehicle and equipment movement Poor machinery maintenance	Local air quality	1	Minor	U	Unlikely	1U	LOW
23	Mechanical Works	Increased traffic movements	Vehicle and equipment moving	Road congestion	1	Minor	L	Likely	1L	MEDIUM

			Construction personnel movement Delivery of materials							
24	Mechanical Works	Soil and water movement	Inappropriate ESCP measures Lack of ESCP Maintenance	Water pollution Movement of soil off site	2	Moderate	U	Unlikely	2U	MEDIUM
25	Mechanical Works	Fire	Hot work	Uncontrolled bush fire	3	Major	U	Unlikely	3U	MEDIUM
26	Electrical Works	Flora and Fauna	Fencing of existing vegetation zones	Impacts on flora and fauna	2	Moderate	U	Unlikely	2U	MEDIUM
27	Electrical Works	Waste generation	Excess waste construction materials	Impact on local landfill	1	Moderate	U	Unlikely	1U	LOW
28	Electrical Works	Increased traffic movement	Vehicle and traffic movement Deliveries and personnel movement	Road congestion	1	Major	L	Likely	1L	MEDIUM
29	Electrical Works	Spills	Refuelling	Surface water pollution	3	Major	U	Unlikely	3U	MEDIUM
30	Electrical Works	Fire	Hot work	Uncontrolled bushfire	3	Major	U	Unlikely	3U	MEDIUM
31	Electrical Works	Soil and water movement	Inappropriate ESCP measures Lack of ESCP Maintenance	Water pollution Movement of soil off site	2	Moderate	U	Unlikely	2U	MEDIUM

32	Demobilisation	Visual impact	Lack of screening	Local visibility	1	Minor	U	Unlikely	1U	LOW
33	Demobilisation	Increased traffic movements	Vehicle and equipment movement Personnel movement	Road congestion	1	Minor	L	Likely	1L	MEDIUM
34	Demobilisation	Increased traffic movements	Vehicle and equipment movement Personnel movement	Collisions	2	Moderate	U	Unlikely	2U	MEDIUM

Table 6 – Preliminary Environmental Risk Register

10.5 Safe Work Methods

Procedures are in place for daily hazard and risk assessments and workforce sign-off for safe work methods. The site will conduct a daily Pre-Start Meeting for all contractors before they start work. All contractors will sign onto the Pre-Start document after the Pre-Start Meeting has concluded.

Below is a table which highlights how the hazards will be captured and communicated to all site personnel daily.

Reporting Method	Action Required
Daily Pre-Start Meeting	Hazards will be identified in the previous shift and for the coming shift are discussed by the crew, identify the person in charge of each work group and its work methods; recorded on the Pre-Start Meeting Record
Site Inspection	Inspecting personnel assign a response and a priority; tracked to implementation and completion.
Toolbox Meeting	Site Manager assigns a response and a priority; tracked to implementation and completion
Ad-hoc report during the days work verbally or by using BRSF SF-08. Hazard and incident Report to Supervisor	Intermediate response and control by supervisor, reported at the next daily pre-start meeting. If required the Site Manager may implement further control measures.
New hazard identified during project planning or construction	SWMS prepared or noted, prepared and presented before the task is undertaken. SWMS signed by all personnel involved with the task
Accident investigation	Project Manager assigns a response and a priority; tracked to implementation and completion.

Table 7 – SWMS Hazard Capture Methodology

10.6 Minimising Environmental Risk

10.6.1 Intent

The intent is to have a WI prepared for any construction activity that is initially assessed as having a MEDIUM or HIGH environmental risk rating, and for those works not to commence until a WI has been approved on the basis that the anticipated risk (i.e. after controls are put in place) is minimised to a LOW rating.

10.6.2 Process

The process of preparing a WI will be as follows:

- A discrete work activity will be identified and scheduled;
- Detail on this activity will be provided to the Quality and Environmental Manager who will assign a risk rating;
- Any activity assigned a MEDIUM or HIGH risk rating will require a WI to be prepared;
- A WI will be submitted to the Quality and Environmental Manager;

- The Quality and Environmental Manager will review the WI, inspect the proposed works location, check that applicable safeguards and requirements specified in this CEMP have been incorporated into the construction method, and then add any relevant safeguards required to minimise the anticipated risk rating to LOW;
- The Construction Manager will then sign off on the WI;
- BRSF 12 Work Instruction Register will be updated, and a copy of the approved WI kept in hardcopy at the site; and
- The approved WI will then be explained to the work crew undertaking the activity prior to commencement of works. This explanation will be delivered at the toolbox meeting before works commence.

11. Aboriginal Heritage Plan

11.1 Requirement

The BRSF Aboriginal Heritage Plan is to identify, monitor and manage any Aboriginal heritage and shall be developed in consultation with the Aboriginal stakeholders, and include the following:

- Details of further archaeological investigations and/or salvage measures to be carried out prior to construction;
- Procedures for the management of identified objects within the project area;
- Procedures for dealing with unidentified objects and/or human remains;
- Aboriginal cultural heritage induction processes for construction personnel; and
- Procedures for ongoing Aboriginal consultation and involvement.

11.2 Objective of the AHP

The AHP addresses any specific issues associated with the management of any Aboriginal cultural heritage which is of significance to the local indigenous people of the Barham area.

This CEMP AHP is to provide information and actions to:

- Protect any identified and unidentified Aboriginal cultural heritage from damage or harm;
- Ensure that if any Aboriginal cultural heritage cannot be protected that appropriate management measures, such as salvage and storage or Aboriginal cultural heritage material, are implemented; and
- Ensure that effective and open consultation with the local indigenous people occurs through the establishment of a continued consultation protocol and site-specific consultation oversight management.

11.3 Background

BRSF proponent has undertaken Aboriginal Heritage Assessments for the project and found that there is no cultural heritage of significance.

11.4 Aboriginal Community Consultation

The site has been checked on the Aboriginal Heritage Information Management System of NSW and has 0 Aboriginal sites recorded & 0 Aboriginal sites declared for this area. Based on the AHIMS Web Service search for the following area at Lot : 9, DP:DP756592, Section : - with a Buffer of 50 meters, conducted by Arjun Vinod on 28 February 2023.

There are no areas of significance for aboriginal heritage on the proposed BRSF site, hence aboriginal community consultation has not been required.

12. Soil and Water Impacts

12.1 Requirement

This CEMP is to elaborate on the measures used to monitor the soil and water impacts the BRSF has during construction. It is the responsibility of the Quality and Environment Manager and the Site Construction Manager to adhere to the policies and put WIs in place to ensure the BRSF has no detrimental effects to the surrounding environment and habitats.

12.2 Erosion and Sediment Control Plan

The BRSF site represents a low risk environment. The site is relatively flat with a slight contour to the north-west that slopes towards the centre and the north-east.

There are a range of other earthwork related activities that will occur as part of the site preparation and these include:

- New access to BRSF from Moulamein road in the form of an access road with road base to double gates, which will allow the entry of semi-trailers and machinery needed for the construction of BRSF;
- New internal access roads for BRSF to be used for machinery and logistics during construction, also to help mitigate dust during construction;
- Use of water cartage trucks during construction, as required, for dust suppression;
- The use of excavators for the electrical cable trenches and foundation preparations;
- Concrete trucks for the construction of foundations for electrical plant;
- Mechanical ramming machines for the driving of module mounting structure piles for the project (approximately 2,000 piles in total);

Earthworks, regardless of the site, create a risk of erosion and sedimentation, and as such, the earthworks construction drawings are being prepared by a third party and civil service provider for the project and will consider the conditions present at the BRSF site in order to mitigate any issues during construction.

As is standard practice, these earthworks drawings will include erosion and sedimentation control plans that will specify soil and water management controls that will be adopted to minimise soil erosion and any discharge of sediment and other pollutants to lands and/or waters during construction activities.

The Erosion and Sediment and Control Plans (ESCPs) will be kept as a hard copy on site. The Quality and Environmental manager will be responsible for the ESCPs being carried out to design specifications.

All ESCPs will be reported on in the Weekly Inspection Checklist (BRSF Form 02).

12.2.1 Erosion and Sediment Risk Minimisation Best Practice

The following procedures will also be implemented to minimise erosion and sedimentation risks at BRSF:

- Ensure that a minimum of land to the risk of erosion for the shortest period;
- Ensure no stockpiles of spoil, fill or erodible material are placed in or near drainage lines;
- Following any rainfall event, access tracks will be inspected to ensure that they can be used without causing erosion or sedimentation, and that erosion control structures and measures are in place;
- Works will not be undertaken immediately prior to or during periods of high rainfall; and
- When and wherever possible, works will be undertaken in a manner to facilitate progressive revegetation.

12.2.2 Dangerous Goods Storage

Dangerous goods will be stored in a way that mitigates any risk of contamination or incident occurring. Fuel will be stored, where portable, in site fuel bunds, in a dedicated area away from any

waterways. A large bulk diesel fuel storage tank will be kept in site compound with protective barriers to prevent any risk of contamination from damage to the tank.

Hazardous substances that are to be used in the construction of BRSF are indicated below in the table, along with the typical expected quantities that will be stored as per the MSDSs from suppliers. There will be copies of the MSDSs on hand to be used during SWMS and Toolbox meetings.

Substance	Maximum Quantity Stored on Site
Diesel	500L
PVC Cement	10L
Unleaded Petrol	100L
Galvanising Paint	10L
PVC Priming Fluid	20L
Marking Paint	5L
Jointing Compound	5kg

Table 8 – Hazardous Substances Stored on Site

The materials above will be stored as per specifications and OH&S best practice and they will always be used as per the relevant MSDS, using appropriate PPE during construction phase.

As a precaution there will be spill kits kept on-site in case of an emergency or incident. In the event of any such incident the following procedures will be followed:

- Immediate notification to the Quality and Environment manager;
- Isolation of any spill using PPE and emergency spill kit(s);
- Scrape and collect soil to a depth where there is no visible contamination staining and place the material into a secure covered receptacle;
- The Quality and environmental Manager will have samples analysed to establish the waste classification; and
- The material will be transported and disposed of at a waste treatment facility that is permitted to accept the material.

An Environmental Incident Report (BRSF Form 07) is to be completed for any spill occurrence.

Refuelling is only to be performed at the fuel storage area and never anywhere near a drainage point. Plant maintenance, which includes pre-start checks, shall also be performed in the fuel storage area or machine compound.

12.3 Waterway Crossings

A WI will be created for this crossing, and the access road across the same section, in order to keep the bed in the same condition for water course prior to the construction phase. The Quality and Environmental Manager will be responsible for ensuring this is managed to the requirements.

12.4 Groundwater Interference

It is anticipated that there will be no construction activities at BRSF that are likely to pose any risk of interference to the groundwater.

Activities requiring sub-surface works include the following:

- Shallow excavation which is associated with tracker system pile driving, which will be to a maximum depth of 3m;

- Shallow trenching required to form the electrical infrastructure foundations and equipment stands;
- Shallow trenches for the electrical underground distribution system within the installation. This is to be to depths of no more than 900mm for DC reticulation, 1300mm for MV reticulation and 500mm for Comms and earthing trenches; and
- A new Stobie power pole to be installed by DNSP to the nature reserve.

In the extremely unlikely event that groundwater is intercepted, and any dewatering is required, the following criteria will be applied. Discharge of water to the environment will be undertaken in a manner that avoids any environmental impacts. The Quality and Environmental Manager will oversee this and in the event of any groundwater interception they will contact local water service immediately.

The BRSF will use contained site toilets. All associated effluent will be contained and emptied regularly, as required by, septic pumping tank, so that there is to be no treatment on the BRSF site. The septic tank will be pump out locally at the accepted location.

12.5 Water Sources

The water used by BRSF during construction will be brought on site by water cartage and stored in water tanks. There will be potable water used on-site for drinking purposes and personnel will be asked to bring their own water in reusable containers to mitigate the use of single-use plastic bottles.

13. Flood Management Plan

The BRSF flood management plan is set out to identify the risk associated with the Barham Solar Farm including contingency measures for the site during any potential floods, including measures for the removal of any debris on the BRSF site, which will avoid any deviations of natural and existing flood paths at the location.

Prior to commencing the SF construction phase consideration will be given to ensure there are no adverse impacts to the pre-existing flood paths on the site;

The 100 year Average Recurrence Interval (ARI) flood level at the Barham gauge of 6.20 metres is only 0.20 metre higher than the 5 year ARI flood level of 6.00 m AHD. This is because much of the Murray River flow upstream of Barham passes into the Wakool River system to the north of town via the Thule Creek and Barbers Creek floodways.

In addition to this, There is a Private Flood Levee that has been pre-existing, to mitigate any flood related issues. This flood levee is built north of the solar farm project site and will collect flood waters from the site, and will flow into the pollock swamp area.

It is to be noted that this land has been used for grazing cattle for a few decades and has kept the lofestock safe in the case of heavy rains and possible flood situations.

14. Ground Cover Management Plan

14.1 Dust Suppression

This BRSF CEMP is required to outline the measures and procedures used by the BRSF EPC to mitigate any associated issues due to the presence of dust.

Below is a list of activities to be undertaken which may cause dust to become airborne:

- Low-level site levelling;
- Minor works to remove the old fence around the perimeter and to erect a new site fence;
- The distribution of materials around the construction envelope;
- The pile driving machinery moving across the site;
- Machinery associated with access road construction;
- Logistics;
- Personnel vehicle access;
- Machines used for excavations and trenches; and
- Mobilisation and demobilisation activities.

The construction will be done in a manner that minimises dust generation from the site, including from vehicle movements. All project related activities on the site will be undertaken with the

objective of preventing visible emission of dust from the site. Watering for dust suppression will be used when required to avoid excessive dust.

A watering program will be developed once construction commences and the Quality and Environment Manager will ensure that triggers are in place to require a water truck to water the site in affected areas, when required due to excessive dust.

Any stockpiles can be placed in areas where wind exposure is limited and other measures such as wind breaks, and watering of the stock piles may be implemented from time to time.

Weekly reporting will monitor the dust mitigation and the program will adapt to suit the weather and site conditions.

Other measures are put in place to limit the impact of dust at BRSF, this includes dedicated access roads, and minimising vehicle speed within the site.

14.2 Access Roads

There will be road-base placed at the site entry and access roads will consist of compacted road-base to prevent construction and maintenance personnel disturbing the soil in the field.

14.3 Monitoring

The Quality and Environmental Manager together with Site Construction Manager will oversee the dust management plan and reporting into reports will be managed accordingly.

15. Flora and Fauna Management Plan

15.1 Requirement

The Barham Solar Farm proponent has developed the construction site with an emphasis on retaining the local vegetation parcels on the site. It has been designed in such a way that the treed environs will be left undisturbed and the solar project installation will be fenced off from the existing environment and habitats. Only few Flora may be relocated outside of the development but within the land owner's property.

15.2 Objective

Under relevant regulations it is imposed that "the clearing of native vegetation is to be limited to the minimal extent practicably required". This objective has been adopted throughout the construction zone.

15.3 Performance Criteria

BRSF will adopt measurable performance criteria in order to actively monitor the construction activities with the Quality and Environmental Manager adhering to the measures in this FFMP. The risk matrix will be used in order to adapt WIs for relevant tasks such as:

- During the old fence removal and the new fence installation, there will be some sections where DNSP will need to identify easement assets to determine where fence posts can be installed, so care will be taken to ensure minimal disturbance to those areas affected;

- A buffer zone has been allowed for, by the setback of work zones away from the existing flora.

15.4 Assessment

The Quality and Environmental Manager will perform weekly inspections and follow up with any required WI for tasks associated with the FFMP.

If there are any native trees required to be moved as part of the construction, the Quality and Environmental Manager will seek clarification and approval from the Environmental Representative for Murray River Council. BRSF will relocate or replace any lost flora with same variety to ensure the population is maintained at the location.

15.5 Pre-Construction

All personnel, contractors and sub-contractors on BRSF will be inducted and made aware of their obligation to adhere to the FFMP and a record will be kept of all inductees. This will highlight the need for compliance on the project by all workers in the aim of maintaining the site's condition pre-post construction phase.

15.5.1 On-Site Flora

The site has been previously used for grain cropping and there are no known endangered varieties of flora within the proposed construction envelope.

15.5.2 On-Site Fauna

Inductees will be advised during the induction process that there is to be no interaction with any fauna in the construction zones. In the event of the appearance of any snakes in the construction zone, the Quality and Environmental Manager will be notified immediately, so contact can be made with the correct departments to have the creature relocated safely. The area is to be quarantined and no works to continue until the relocation has been completed.

Native magpies and other bird varieties are in the vicinity and currently co-exist with the grazing sheep at the site. This is expected to remain unchanged once construction commences and plans and WI will be adapted to cover the risks associated with tasks in these nearby locations to mitigate any potential for contact and/or disturbance.

15.6 Post Construction

Once the construction phase has been completed, site remediation and maintenance will be performed. There will be an ongoing O&M management plan that will be adapted from time to time to meet any changing requirements.

The proponent will engage an O&M service provider who will perform the necessary maintenance of the solar farm and the property.

The O&M management plan will outline the tasks, roles and responsibilities and will be developed as the project nears completion and the O&M service contract is awarded.

There will be ongoing records of the installation as it will be a restricted access venue and all contractors will be required to be inducted, licenced and capable of performing the tasks required.

The site vegetation management will be outsourced to a suitable contractor who is authorised to perform work in MV installation scenarios and who understands the risks associated with such installations.

Map 2 – Site Map Showing Existing Vegetation

The above map of the BRSF site shows the vegetation pockets which a few will be relocated to other land of the property while outside of the fenced development area.

16. Landscape Plan

The Barham Solar Farm project will retain a significant amount of native vegetation at the site which will be preserved due to a reduction in construction zone to accommodate this.

The fenced areas will provide a perimeter for the native flora and fauna habitats existing at the location and will greatly reduce any risk of interference throughout the project lifetime.

Weed management will be monitored throughout the project. The Quality and Environmental Manager will introduce relevant WIs when required to manage any work activities which could lead to the distribution of weeds.

It is proposed that as part of the ongoing post-construction phase and dust management plan, that a suitable, non-aggressive, local native species of ground cover, will be selected to create a soil-retention blanket on site. The cover would be selected in order to not introduce any risks associated with:

- Bushfire;
- Weed management;
- Aboriginal Site Heritage, if applicable; and
- Land management.

All workers will be inducted and familiarised with the environmental plans for the BRSF and the Quality and Environmental Manager will manage this process throughout the project. This includes making sure that no foreign living material is introduced to the site. It is BRSF's objective to establish

a healthy, self-sustaining, weed-free ground cover beneath the solar trackers, which will not become a fuel hazard. The proponent and O&M service provider will be responsible for this upkeep once construction is completed.

A stabilisation and rehabilitation plan will be created once the construction phase is nearing its end, so plans and strategies can be implemented to fast track the landscape rejuvenation of the BRSF project site.

17. Construction Noise Management Plan

In general, there will be some mechanical tasks involving machinery which will create noise at BRSF. These are listed below:

- Truck movement during mobilisation, construction and demobilisation phases;
- Excavators used for site preparation, fence removal, trench excavations, foundation preparations, trench infills, access roads preparation and construction and site remediation work;
- Pile rammers deployed for the pile installation phase;
- Cranes used for the delivery of heavy payloads such as MV equipment and unloading of site buildings etc;
- Septic tank cleaner to empty toilets at regular interval during construction phase;
- Trucks for delivery of equipment such as solar panels, solar tracker, BoS, site buildings;
- Cars for personnel access to site throughout the construction phase with periodic visits for the O&M lifetime of installation;
- Small plant such as generators for power to site, vi-plate for compaction of trenches and access roads etc.; and
- Small handheld tools used such as impact drivers for module installation, hammer drills for installing equipment to concrete bases etc.

BRSF will have several construction activities requiring machinery that will have a noise impact. The items of machinery that will cause the bulk of the high-level noise are listed below:

- D-9/Grader
- Telehandler
- Compactor
- Front End Loader
- Truck/Delivery
- Truck /Removal
- Ramming Machine
- Cement Truck
- Cable Winch

Some tasks will require personnel to use PPE in order to have effective protection from excessive noise levels experienced during these tasks. This will be discussed at all Pre-Start discussions and enforced by the Quality and Environmental Manager and the site OH&S Manager. All high noise impact activities will have modified hours, if required after any public consultation. The pile ramming is potentially noisiest of all the activities, in that is has long durations of generating a high-level noise with impulsive, intermittent, low frequency or tonal characteristics. Other construction activities with high levels of noise include jack hammering, pile driving, rock hammering, saw cutting, vibration, rolling and blasting. Where possible the noise producing times will be reduced to start from 7:00 AM Monday to Friday and from 8:00 AM on Saturdays.

The EPC will prioritise the selection of low noise emitting machinery in the contractor selection phase and implement specific work practices to minimise noise where possible. A dedicated WI will be developed for the pile ramming as it is not a low impact construction task.

The planned hours of work at BRSF are Monday to Friday 6:00 AM to 6:00 PM (note the requirement of Pre-Start and Tool Box meetings at start of day) and Saturday 7:00 AM to 2:00 PM, with no work during public holidays, without consent through the community consultation process.

Any out-of-hours works will be planned for and may consist of out-of-hours deliveries for large loads which may be programmed by local traffic management authorities. The Quality and Environmental Manager will engage with any local neighbours in the event this is required in a bid to engage local public support to mitigate any construction related complaints.

In the event of any complaints being made to the proponent, the Quality and Environmental Manager will immediately investigate the source and investigate any measures to be implemented to avoid recurrence. All complaints will be added to the register.

Should any out of hours noise activities be required for any reason, a Noise Impact Statement will be developed and handled by the Quality and Environmental Manager, and will contain:

- Location, nature, timing and out of hours works proposed;
- Clarification of buffer distances to receptors;
- A jurisdiction for the request, including an explanation as to the need for the activities to be undertaken during varied construction hours;
- Any other information necessary to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of receptors in the vicinity of the site; and
- A conclusion as to whether the activities constitute low or high environmental risk.

The effectiveness of the Construction Noise Management Plan will be the responsibility of the Quality and Environmental Manager, who will work closely with the Site Construction manager in enforcing the operational times and conduct of all personnel, in order to maintain community satisfaction with the noise levels experienced.

18. Traffic Management Plan

Refer to the BRSF Traffic Management Plan.

19. Emergency Response Plan

The BRSF will have an Emergency Response Plan that will be displayed in all site buildings and explained in full clearly to all personnel during induction.

It will be managed by the Quality and Environmental Manager and put in place in conjunction with the selected EPC Safety Policy and in general be carried out in the framework of:

- EPCs Safety Policy – to AS4801;
- Certification to the Australian Government Building and Construction OHS Accreditation Schemes;
- Responsibility exercised by Senior Management, Project and Site Managers and the Proponent;
- With support from the Health & Safety Advisors; and
- Encourage ownership of personal health & well-being.

19.1 Emergency Response Procedures

The EPC will be contractually responsible to implement the Barham Solar Farm Emergency Response Plan (ERP – also known as "Emergency Management Procedures") prior to construction activities commencing on the project.

The Emergency Management Procedures are detailed in the Construction Site Safety Plan, available as a separate attachment to the CEMP.

The ERP will include a grassfire evacuation plan which is consistent with RFS Guidelines and will include evacuation triggers in Catastrophic and Extreme fire danger rating periods.

The Fire Danger Rating for the BRSF can be found by:

- Listening to local radio and news broadcasts;
- Visiting the RFS website at: https://www.rfs.nsw.gov.au/

20. Waste Management

Building Barham Solar Farm will generate a range of waste materials that must be disposed of. The range of liquid and non-liquid wastes generated during construction is detailed in the table below.

Information is provided on the source and waste classification. The waste classification is as defined in Schedule 1 of the Protection of the environment Operations Act 1997.

The Quality and Environmental Manager is responsible for implementing the correct disposal measures during construction of Barham Solar Farm.

20.1 Waste Classification Types

Source	Waste	Classification
Personnel rubbish	Glass/Food scraps/plastics	General Solid Waste (non-putrescible)
Packaging	Plastic	General Solid Waste (non-putrescible)
Packaging	Rubber	General Solid Waste (non-putrescible)
Packaging off cuts	Metal	General Solid Waste (non-putrescible)
Packaging Office	Paper	General Solid Waste (non-putrescible)
Located Debris on site	Concrete	General Solid Waste (non-putrescible)
Packaging Office	Cardboard	General Solid Waste (non-putrescible)
Weed, Wash Down	Residual Solids	General Solid Waste (non-putrescible)
Earthworks	Virgin Excavated Natural Material (Note 1)	General Solid Waste (non-putrescible)
Clearing	Vegetation (Note 2)	General Solid Waste (non-putrescible)
Packaging	Wood (Note 3)	General Solid Waste (Putrescible)
Personnel	Food scraps and contents of bins	General Solid Waste (non-putrescible)
Amenities	Effluent	Liquid
Survey Marking	Spray Cans	General Solid Waste (non-putrescible)
Spill	Hydrocarbon contaminated soil	Subject to testing
Spill	Rags and oil absorbent material (Note 4)	General Solid Waste (non-putrescible)

Table 9 – Waste Classification Types

Table Notes

- Note 1: VENM means natural material such as clay, gravel, sand, soil or rock fines) that has been excavated from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities, and does not contain sulfidic ores or soils or any other waste.
- Note 2: Garden waste includes waste that consists of branches, grass, leaves, plants, lopping's, tree trunks, tree stumps and similar materials, and includes any mixture of those materials.

- Note 3: Means sawdust, timber offcuts, wooden crates, wooden packaging, wood shavings and similar materials. Includes any mixture of those materials but does not include wood treated with chemicals such as copper chrome arsenate (CCA), high temperature creosote (HTC), pigmented emulsified creosote (PEC) and light organic solvent preservative (LOSP).
- Note 4: Only if rags and material contain non-volatile petroleum hydrocarbons and do not contain free liquids.

It should also be noted that the construction of BRSF will not generate building or demolition waste, as this type of waste must comprise amongst other things, unsegregated material. Waste segregation will be encouraged to maximise the recycling opportunities. Metals, cardboard, untreated and cables will be recycled.

Wash down from vehicle cleaning associated with weed hygiene will be evaporated.

No quantities of hazardous waste are expected to be generated during the BRSF construction, whilst it is conceivable that problematic waste would be restricted to quantities of hydrocarbon contaminated soil that is the result from a spill or burst hydraulic hose.

If this occurs, or if any unanticipated waste does possess hazardous characteristics, a check will be made that it hasn't been pre-classified by the EPA and if not, it will be chemically assessed to determine whether it is hazardous, restricted solid or general solid waste (putrescible and non-putrescible).

This assessment process will be undertaken in accordance with the Department of environment Climate Change and Water's (2009) Waste Classification Guidelines.

The EPA may classify waste as restricted or hazardous solid waste from time to time. All currently gazetted restricted wastes will be listed on the EPA's website at: https://www.epa.nsw.gov.au/

No Burning

No burning of any waste type, including vegetation will be undertaken at BRSF.

20.2 Storage

Wastes containing putrescible material (generated from the amenities office and including food scraps, lunch wrappers, etc.) will be stored in secure covered bins and removed by rubbish sub-contractor and disposed of correctly.

20.3 Recycling

All materials possible to be recycled will be, including cables, cardboard, timber etc.

20.4 Disposal

All waste construction materials that cannot be recycled or re-used on-site will be disposed of off-site at the nearby Transfer Station, such waste disposal facility will be an EPA licenced landfill and recycling facility.

The following items will be placed in a recycling bin on-site for off-site recycling at the Local Transfer Station:

- Glass
- Metal
- Paper

- Concrete
- Wood (if any)
- Vegetation (if any).

It is anticipated that there will be very little wood and vegetation waste because the construction zones are already cleared and the existing creek bed and native vegetation habitats are to remain as undisturbed as possible.

20.5 Waste Tracking

All waste from the BRSF will be tracked using the Waste Register (BRSF Form 08).

This register will identify the following, at a minimum:

- Date and time that loads departed site;
- Who inspected the load and type of waste;
- Vehicle registration and load quantity; and
- Fate of waste (disposal, recycling or composting).

21. Compliance Tracking Program

21.1 Requirement

The BRSF proponent is required to develop and implement a Compliance Tracking Program to track compliance with the requirements of the BRSF approval during the construction and operation of the project.

The construction phase and operational phase may see different contractors providing services and hence shall be treated as separate phases of the BRSF project for purposes of this CEMP.

21.2 Compliance Reporting

The following information will be submitted to the Barham Solar Farm and Proponent:

- Results of monthly internal compliance audits;
- Constantly updated Complaints/Incidents Register, and
- Results of any external audits.

MCG QUANTITY SURVEYORS

DEVELOPMENT APPLICATION COST PLAN

YOUR PROPERTY / OUR EXPERTISE

PH: 1300 795 170

WWW.MCGQS.COM.AU

SYDNEY MELBOURNE BRISBANE ADELAIDE CANBERRA NEWCASTLE

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Level 45, 680 George Street
Sydney NSW 2000

p 1300 795 170
w www.mcgqs.com.au
e steve.weeks@mcgqs.com.au

December 7, 2022

Arjun Vinod
Power Generation Co.
170 Cherry Lane
Laverton North VIC 3026

RE: Development Application Cost Plan - 206 Gonn Road, Barham NSW 2732

Dear Arjun,

MCG Quantity Surveyors have prepared the following Development Application Cost Plan for Power Generation Co., and not in any other capacity.

1.0 Development Location

Development Type:	Solar Farm
Client Details:	Power Generation Co.
Address:	206 Gonn Road
Suburb:	Barham NSW 2732

1.1 Development Summary

The development consists of the construction of a 6.87MWh solar farm including solar panels, battery storage, inverter, HV switchboard, boundary security fencing, road works and landscaping.

Please note the attached Indicative Development Application Cost Plan has been calculated from the total development costs. Therefore this only provides a broad indication of the likely percentages of the total development cost against each of the projects trade elements.

2.0 Financial Summary

MCG Quantity Surveyors believe that the attached Development Application Cost Plan and subsequent development cost, reflects a fair and competitive cost to complete the proposed development, based on the material provided to our offices.

The MCG Quantity Surveyors Development Application Cost Plan for construction costs totals $8,576,032 exclusive of GST or $9,433,635 inclusive of GST, with a further $214,401 payable in consultants fees.

Trade	Total GST Exclusive	Total GST Inclusive
Total Construction Cost	8,576,032	9,433,635
Consultant Fees	214,401	235,841
Total	**8,790,433**	**9,669,476**

The development consists of a total site area of 118,394 square metres.

3.0 Construction Program

MCG Quantity Surveyors anticipate a period of 12 months to be appropriate for the construction of a development of this scope and nature.

4.0 Descriptive Summary

The development involves the construction of a Solar Farm located at 206 Gonn Road, Barham NSW 2732.

An appropriate level of finishes and quality has been allocated to the development.

Please refer to attached Schedule of Finishes and Assumptions which have been included for within the MCG Quantity Surveyors Development Application Cost Plan.

The development construction cost per watt is $1.28 exclusive of GST or $1.41 inclusive of GST.

5.0 Disclaimer

MCG Quantity Surveyors have prepared this report on the basis of information supplied by Power Generation Co..

Whilst all professional care and skill have been exercised to ensure the accuracy of this report, MCG Quantity Surveyors are unable to provide any guarantee on any estimates relying on information provided by the client or other third party, and will not be liable to any party for any loss arising as a result of any such information subsequently being found to be inaccurate or lacking authenticity.

6.0 Report Conclusion

It is the recommendation of MCG Quantity Surveyors that the contents of the aforementioned report be treated as advice on the likely construction cost of the development, and is not a reflection of the current market valuation of the development.

Please do not hesitate to contact our office should you have any further queries.

Yours Sincerely,

Steve Weeks
Quantity Surveyor
MCG Quantity Surveyors

Schedule of Finishes

The following is a schedule of the finishes assumed by MCG Quantity Surveyors in the preparation of the Development Application Cost Plan.

- Boundary security fencing
- Landscaping
- Unsealed entry road
- Excavation
- Inverter stations
- Power conversion unit
- Solar panels and infrastructure
- ESS
- DC/DC Converters
- Battery Containers
- Testing and Commissioning

Schedule of Information

The following is a schedule of the information used by MCG Quantity Surveyors in the preparation of the Development Application Cost Plan.

- Written and verbal information provided by Power Generation Co.
- Site Plans - Drawing Numbers SF001-BRSF-E1-101 Rev 4, 10202 Rev 3, 10201 Rev 4, 105 Rev 1, 10402 Rev 1, 10401 Rev 1 as prepared by GB Solutions

Schedule of Exclusions

The following is a schedule of the exclusions within the MCG Quantity Surveyors preparation of the Development Application Cost Plan.

- Design contingency
- Land and legal costs
- Rise and fall
- Holding costs, interest charges and finance costs
- Unknown ground conditions and rock excavation
- Goods and services tax
- Leasing and marketing costs
- Removal of hazardous materials and contaminated soils
- Staging, phasing or delay costs
- Cost increase beyond July 13, 2022
- Works not clearly noted on the provided plan documentation
- All authority fees

Indicative Development Application Cost Plan

Indicative Development Application Cost Plan

Development Type: Solar Farm
Development Address: 206 Gonn Road, Barham NSW 2732
Gross Floor Area: 118,394 m2

No	Trade Description	% Job	Cost ($/m2)	Total Cost Excl GST	Total Cost Incl GST
	Trade Breakup				
1	Preliminaries	6.70	0.08	574,594	632,054
2	Substructure		0.00	-	-
	Superstructure				
3	Columns		0.00	-	-
4	Upper Floors		0.00	-	-
5	Staircases		0.00	-	-
6	Roof		0.00	-	-
7	External Walls & Windows		0.00	-	-
8	External Doors		0.00	-	-
9	Internal Walls		0.00	-	-
10	Internal Screens		0.00	-	-
11	Internal Doors		0.00	-	-
	Finishes				
12	Wall		0.00	-	-
13	Floor		0.00	-	-
14	Ceiling		0.00	-	-
	Fittings				
15	Fitments		0.00	-	-
	Services				
16	Plumbing		0.00	-	-
17	Mechanical		0.00	-	-
18	Fire		0.00	-	-
19	Electrical	89.40	1.12	7,666,973	8,433,670
20	Transportation		0.00	-	-
21	External Works	3.90	0.05	334,465	367,912
	Sub Total	**100.00**	**1**	**8,576,032**	**9,433,635**
	Consultant Fees	2.27	0.03	214,401	235,841
	Contingency			-	-
	Totals		**1**	**8,790,433**	**9,669,476**

Indicative Development Application Cost Plan

Development Type: Solar Farm
Development Address: 206 Gonn Road, Barham NSW 2732
Gross Floor Area: 118,394 m2

Trade Description	Total Cost Excl GST	Total Cost Incl GST
Demolition & Site Prep	**-**	**-**
Demolition & Site Prep (Cost per m2 Site Area)		
Excavation	**59,197**	**65,117**
Excavation (Cost per m2 Site Area)	0.50	0.55
Construction - Commercial	**8,244,000**	**9,068,400**
Construction - Commercial (Cost per m2 Commercial Area)	1.20	1.32
Construction - Residential		
Construction - Residential (Cost per m2 Residential Area)		
Construction - Retail		
Construction - Retail (Cost per m2 Retail Area)		
Construction - Site Works	**272,835**	**300,119**
Construction - Car Park (Cost per m2 Site Area)	2.30	2.53
Fit Out - Commercial		
Fit Out - Commercial (Cost per m2 Commercial Area)		
Fit Out - Residential		
Fit Out - Residential (Cost per m2 Residential Area)		
Fit Out - Retail		
Fit Out - Retail (Cost per m2 Retail Area)		
Sub Total	**8,576,032**	**9,433,635**
Consultant Fees	**214,401**	**235,841**
% of Construction Cost		2.50%
% of Development Cost		2.44%
Totals	**8,790,433**	**9,669,476**

Total GST	**879,043**

Marty Sadlier

Director - Senior Quantity Surveyor (Associate Member of the Australian Institute of Quantity Surveyors - AAIQS - 9374)

MCG Quantity Surveyors

Memorandum

TO: Arjun Vinod, Power Generation Co.

FROM: Steve Hamilton, Hamilton Environmental Services

DATE: 20th October 2022

SUBJECT: Environmental assessment of proposed solar farm development area, 206 Gonn Road, Barham

---

An environmental assessment has been conducted on the 10.9 ha proposed solar farm site at 206 Gonn Road, Barham, within Lot 9 DP756592; the site is approximately 5.1 km north-north-east of the township of Barham (see Fig. 1).

The property is contiguous with the Koondrook State Forest to the north, and Grasses Island Reserve to the east (see Fig. 1).

Power Generation Co. are to lease the site from the landholder for the purposes of establishing the solar farm (Arjun Vinod pers. comm. 2022).

The site is accessed from an earth/gravel that runs north from the Moulamein Road, and this existing track alignment is proposed to be utilised for access to the solar farm site (Arjun Vinod pers. comm. 2022).

There are high voltage transmission lines that border the eastern boundary of the proposed solar farm site (see Fig. 2).

The site is enclosed within a rectangular cropping irrigation bay, which at the time of assessment, does not appear to have been cropped for 12 months. This irrigation bay has a remnant linear stand of mostly juvenile Black Box (*Eucalyptus largiflorens*) along a track on the northern boundary of the bay, and a single row discontinuous plantation of River Red Gum (*E. camaldulensis*) on the southern boundary of the bay.

The ground layer of the irrigation bay was dominated by a range of perennial and annual introduced ground layer species, with only indigenous species found on the very northern edge of the proposed development site.

Aerial imagery from 2020 (the most recent imagery available) shows that were other sections of single row linear plantations along the east-west check banks within the irrigation bay, and also shows what appear to be up to 12 scattered remnant native trees of mixed age (based on their canopy dimensions from aerial imagery)(see Fig. 2).

However, at the time of assessment, there was no woody vegetation present within the proposed development area; all trees had clearly been removed. Indeed, there was clear evidence of where these trees had been, as there were burnt areas where plant material and tree stumps had been recently burnt.

The area assessed is shown in Fig. 2, images of the area can be seen in Plate 1, recent drone image of the site in Plate 2, and images of the burnt remnants of the former trees can be seen in Plate 3.

Method

The site was assessed on the 16th September 2022, by vehicle and on foot over a period of 1 hour, with the following assessments undertaken:

- Compilation of a detailed flora species list;

- Recording and location of any specific instances related to land management, such as noxious weed or pest animal infestations, etc.

Seventeen (17) images were taken across the site during assessment.

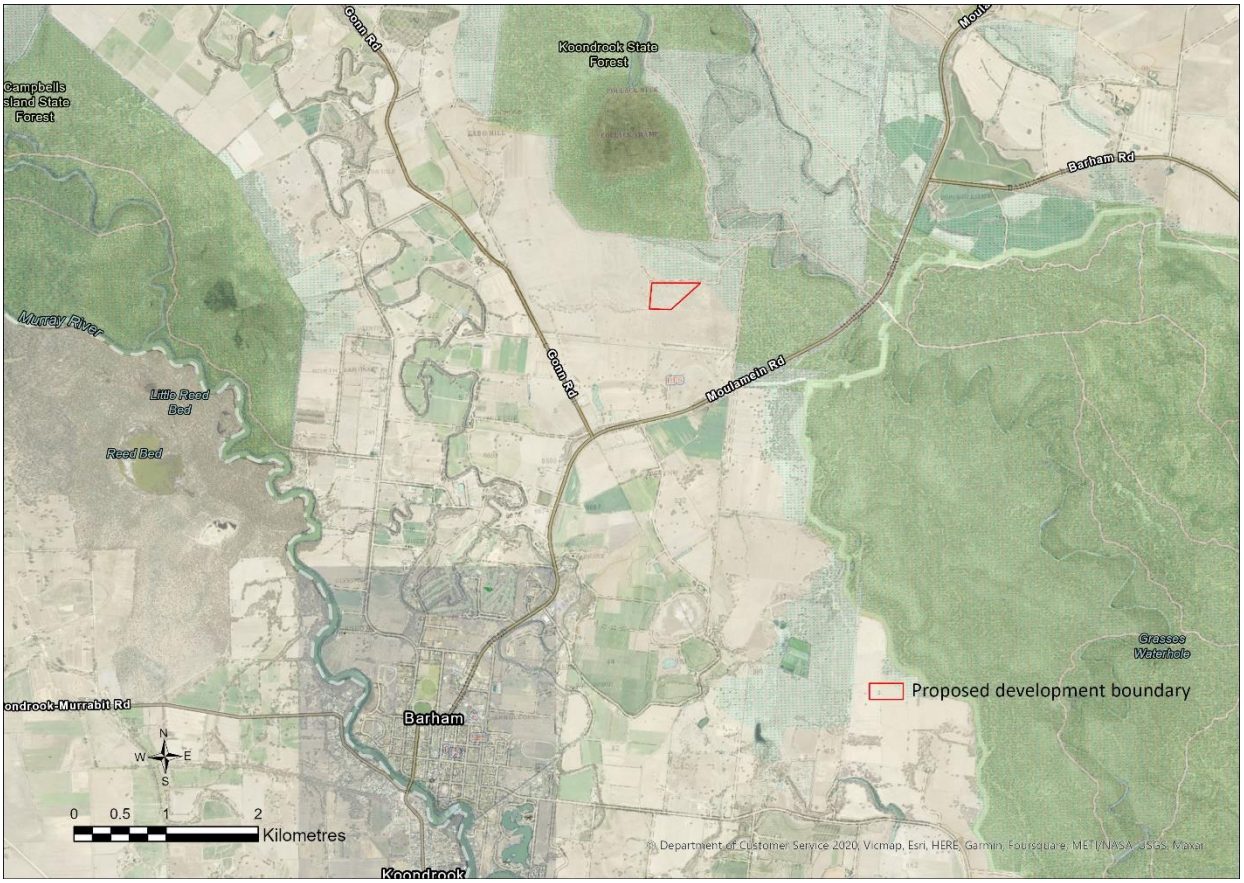

Figure 1 The location of the proposed development site within the district (Image from ESRI Australia 2020).

Vegetation, Fauna and Habitat

As indicated, there was no woody vegetation located within the assessed area at the time of assessment.

The ground layer of the proposed development area was dominated by a range of perennial and annual introduced species, such as Barley Grass (*Hordeum leporinum*), Capeweed (*Arctotheca calendula*), Paterson's Curse (*Echium plantigineum*), Wimmera Ryegrass (*Lolium rigidum*), Curled Dock (*Rumex crispus*), Common Stork's-bill (*Erodium cicutarium*), Wild Oat (*Avena fatua*), Subterranean Clover (*Trifolium subterraneum*) and Milk Thistle (*Sonchus oleraceus*)(90 % projective foliage cover).

There were indigenous ground layer species present, including Woolly New Holland Daisy (*Vittadinia gracilis*), Blue Crowsfoot (*Erodium crinitum*), Small White Sunray (*Rhodanthe corymbiflora*) and Climbing Saltbush (*Einadia nutans*)(up to 20 % projective foliage cover in small patches); however, as previously stated, these species are only found on the northern boundary of the proposed development area, adjacent to the linear remnant Black Box strip (and track) on the northern boundary, and the small patches of these species, intermingled with introduced species would coincide with the proposed development area by < 100 m^2 along the northern boundary.

There were no threatened species observed across the proposed development site (DPE 2022a).

Therefore, no native trees would be removed as a consequence of the development, and < 100 m^2 of native ground layer vegetation would be removed as a consequence of the development.

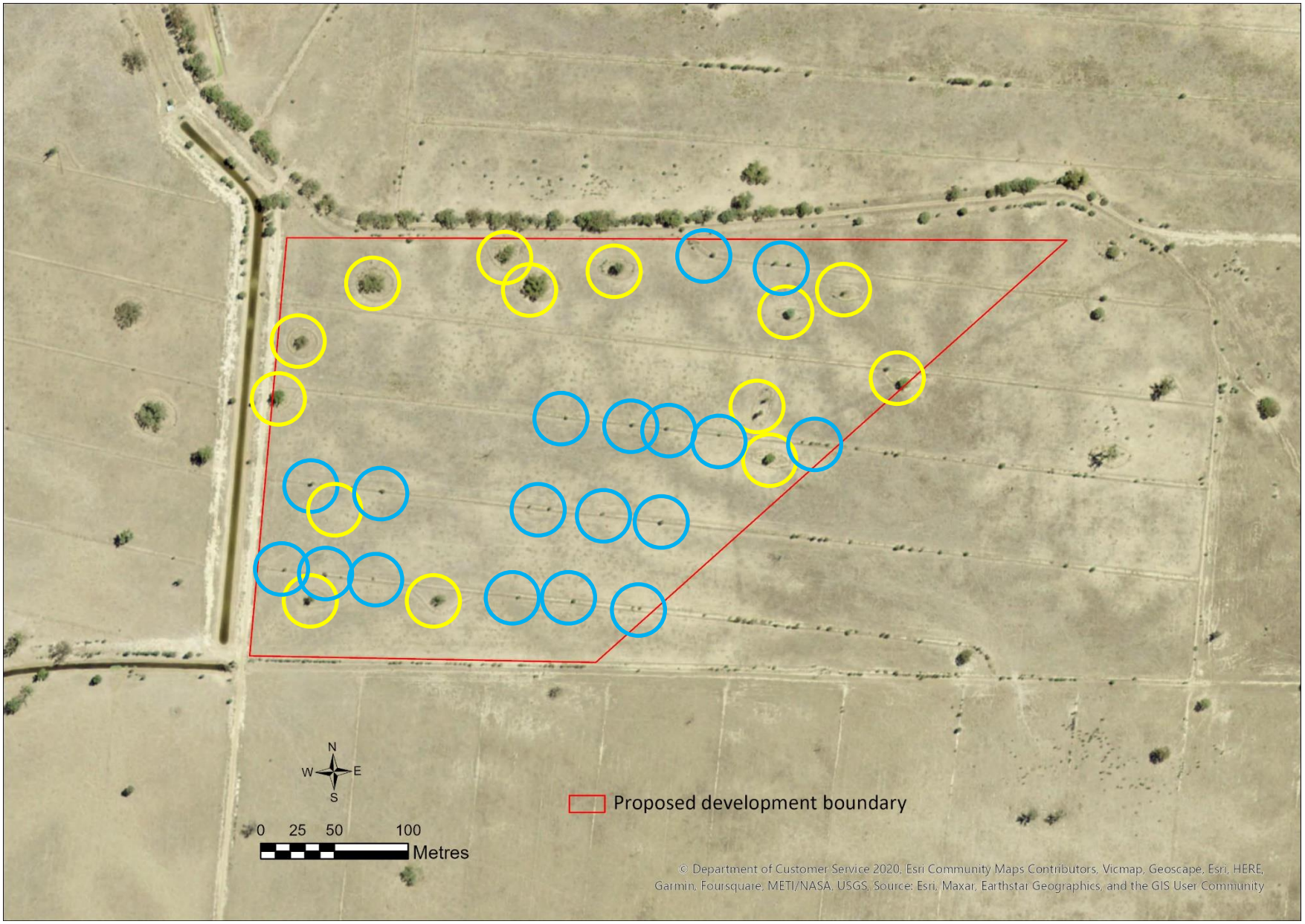

Figure 2 **Layout and extent of the development footprint for the proposed solar farm at Barham (Imagery from ESRI Australia 2020). Remnant trees that are evident in the aerial imagery but were not present at assessment are circled in yellow, and plantation trees that are evident but were not present at assessment are circled in blue.**

Plate 1 **Views of the assessed development: looking east along the northern boundary from the north-west corner (top left), looking south-west along the eastern boundary form the north-east corner (top right), looking south-west along the eastern boundary from its centre, and looking north-east across the site from the south-west corner (right). Approximate boundaries of the development area are shown as red lines. Images taken by the author 16/9/22.**

The completely cleared proposed development site provides minimal habitat for any native fauna as a consequence of the highly modified and simplified structure, and a ground layer dominated by introduced species. There is fallen wood on the ground (other some unburnt debris), and no effective litter layer.

Based on these poor habitat attributes, and despite the relative connectedness of the site as a consequence, it is no surprise that the site would provide no effective habitat for most native fauna.

The only species observed at the site during the assessment were Australian Raven, Australian Magpie, and Sulphur-crested Cockatoo, all generalist species that are common in such cleared agricultural environment.

Based on remnant vegetation at the site and in adjacent areas, it is likely that the whole property is former *Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)* (NSW Plant Community Type (PCT) 13; Environment and Heritage 2012 and DPE 2022d). This former PCT is not a Threatened Ecological Communities (TECs) listed in the schedules of the *Biodiversity Conservation Act 2016*. As noted, there are negligible elements of this community remaining at the proposed development site, and the site is no longer representative of this community.

Plate 2 **Drone aerial imagery of the site. These images demonstrate that there is no longer any woody vegetation present on the proposed development site. Approximate boundaries of the development area are shown as red lines. Images taken by Gen Li on the 4/10/22.**

Summary
An environmental assessment has been conducted on the 10.9 ha proposed solar farm site at 206 Gonn Road, Barham, within Lot 9 DP756592.

Power Generation Co. are to lease the site from the landholder for the purposes of establishing a solar farm (Arjun Vinod pers. comm. 2022).

The site is enclosed within a rectangular cropping irrigation bay, which at the time of assessment, does not appear to have been cropped for 12 months. This irrigation bay has a remnant linear stand of mostly juvenile Black Box along a track on the northern boundary of the bay, and a single row discontinuous plantation of River Red Gum on the southern boundary of the bay.

Aerial imagery from 2020 (the most recent imagery available) shows that were other sections of single row linear plantations along the east-west check banks within the irrigation bay, and also shows what appear to be up to 12 scattered remnant native trees of mixed age (based on their canopy dimensions from aerial imagery)(see Fig. 2).

However, at the time of assessment, there was no woody vegetation present within the proposed development area; all trees had clearly been removed. Indeed, there was clear evidence of where these trees had been, as there were burnt areas where plant material and tree stumps had been recently burnt.

The proposed development is not in a declared area of outstanding biodiversity value, is not mapped as *Vulnerable or Sensitive Regulated Land* according to the Section 60F of the *Local Land Services Act 2013*, and is also not mapped as an area of Biodiversity Value (DPE 2022e).

The ground layer of the proposed development area was dominated by a range of perennial and annual introduced species (90 % projective foliage cover).

There were indigenous ground layer species present (up to 20 % projective foliage cover in small patches); however, as previously stated, these species are only found on the northern boundary of the proposed development area, adjacent to the linear remnant Black Box strip (and track) on the northern boundary, and the small patches of these species, intermingled with introduced species would coincide with the proposed development area by < 100 m^2 along the northern boundary.

There were no threatened species observed across the proposed development site (DPE 2022a).

Therefore in summary, the extent of the native vegetation loss is < 100 m^2 of poor quality indigenous ground layer vegetation along the northern boundary of the proposed development site. There was no native trees within the proposed development area at the time of assessment, and therefore there will be no trees lost as a consequence of the proposed development.

Given the highly disturbed and modified condition of the site, the minimal loss of native vegetation as a consequence of the development, the absence of any threatened flora and fauna species, and the highly modified and very poor quality habitat provided by the proposed development site, it is clear that no threatened community or species will be impacted by the proposed development.

The generation of a Biodiversity Offset Scheme Entry Threshold Report (BOSET Report)(Attachment 1; DPE 2022f) reveals that the minimum Lot Size according to the *Murray River Local Environmental Plan 2011* is 500 ha (5,000,000 m^2), and that the Area Clearing Threshold required to enter the Biodiversity Offset Scheme (BOS), and for a Biodiversity Development Assessment Report (BDAR) to be completed, is 1 ha (10,000 m^2).

Therefore, for the development to avoid entering the BOS and requiring a BDAR to be undertaken, native vegetation clearance must be < 1 ha, and the proposed native vegetation loss – of 0.010 ha (100 m^2) - is significantly less than this threshold amount; a BDAR is not required.

Plate 3 **Some images of burnt woody debris and burnt stump holes where apparent remnant trees have been removed with the proposed development area. Images taken by author 16/9/33.**

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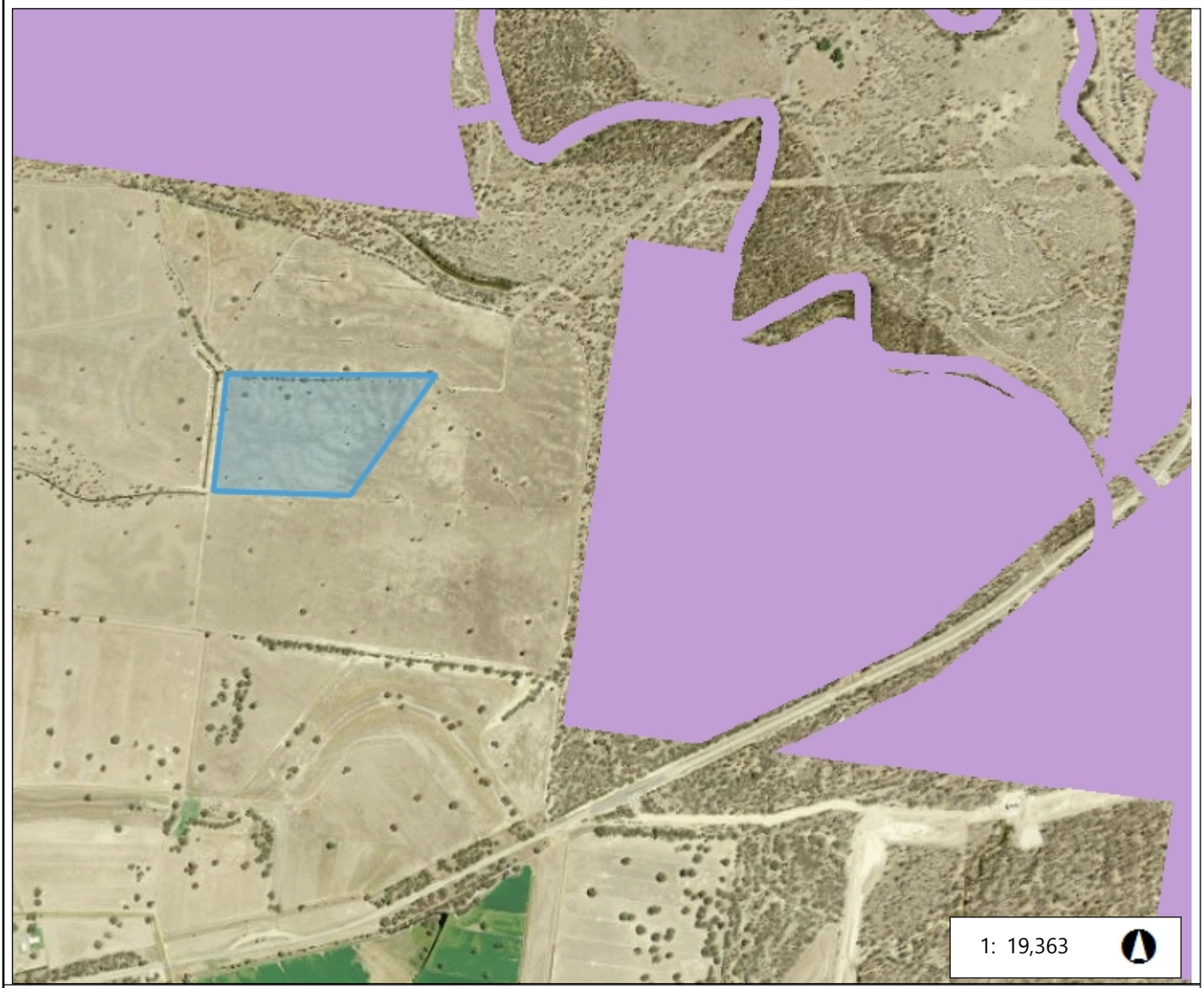
Personal Communication

Gen, Li (2022). Power Generation Co., Laverton North.

Vinod, Arjun (2022). Power Generation Co., Laverton North.

Attachment 1
Biodiversity Offset Scheme Entry Threshold (BOSET) Tool Report Dated 23rd August 2022

Biodiversity Values Map



983.7 0 491.83 983.7 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	23/08/2022 7:13 PM	**BDAR Required***
Total Digitised Area	137,834.5 sqm	
Minimum Lot Size Method	LEP	
Minimum Lot Size 10,000sqm = 1ha	5,000,000 sqm	
Area Clearing Threshold 10,000sqm = 1ha	10,000 sqm	
Area clearing trigger Area of native vegetation cleared	Unknown #	Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no	no
Date of the 90 day Expiry	N/A	

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is '"likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BMAT user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Department of Planning and Environment and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016.*

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

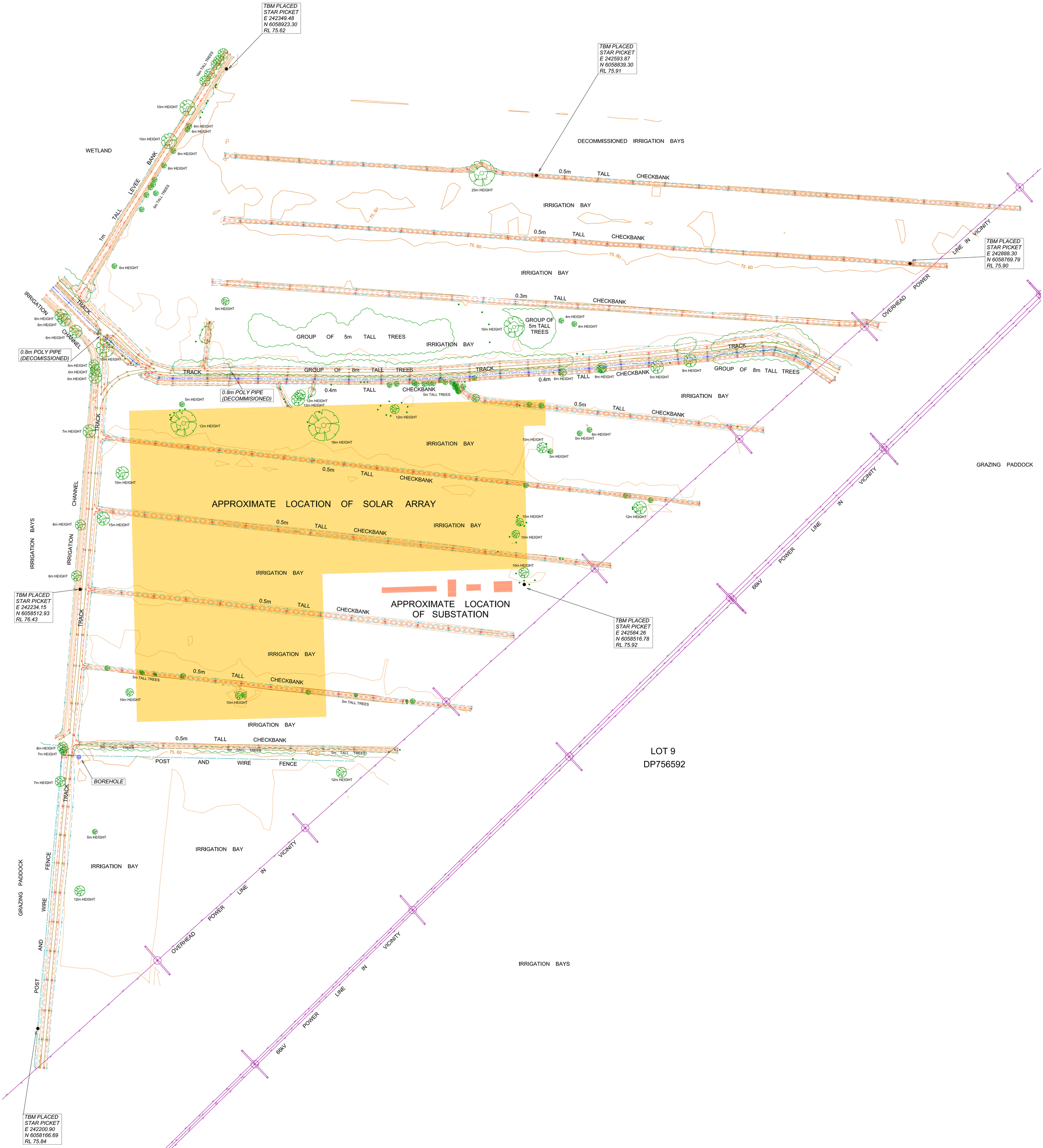
Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature_____ Date:23/08/2022 07:13 PM

Should you seek clarification or any further comment on this Memorandum, please contact me according to any of the means outlined below.

Steve Hamilton (Dr.)
Hamilton Environmental Services
2345 Benalla-Tatong Road
Tatong VIC 3673
0357 672358
0409 356331 (no coverage when in the office)
steve.hamilton@hamiltonenviro.com.au
www.hamiltonenvironmental.com.au
ABN: 89 108 410 911
ACN: 108 410 911



MGA NORTH ZONE 54 GRID

Legend

Perm Survey Mark	Edge of Track	Spouting	
Ref Mark–General	Edge Of Concrete	Window	
Permanent Cadastral Mark	Sign Post	Electricity Pit / Box & cable	E
Existing Surface	Multi Sign Post	Electricity Pole & Overheads	
Finish Floor Level	Light Pole	Telecommunications	T
Single Tree> 2m	Rubbish Bin	Sewerage Pit	S
Shrub Tree> 2m	Shed	Stop Valve	
Canopy	Major Building	Septic Tank	
Junction Pit	Verandah	Fire Plug / Hydrant	
Grated Pit Lid	Weatherboard Building	Man Hole	
General Service Pit Lid	Channel	Water Meter & Main	W
Centre Of Bitumen	Toe of Bank	Water Tap/Connection	
Edge Of Bitumen	Top of Bank	Gate	
Edge of Shoulder	Steep Batter / Bank	Fence	
Back Of Kerb/Channel	Change of Grade	Title	
Pedestrian Path	Appex	Easement	
Edge of Paving	Parapet	PV Array	
Driveway	Ridge Line	Substation	

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATION OF UNDERGROUND SERVICES SHOWN ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE

ONE CALL SYSTEM DIAL 1100 DIAL BEFORE YOU DIG

NOTE
BEWARE OF EXISTING OVERHEAD ELECTREAL CABLES !

WARNING
BEWARE OF UNDERGROUND SERVICES
The locations of underground services are approximate only and their exact position should be proven on site. No guarantee is given that all existing services are shown.

REV	DATE	DESIGN REVIEW	REV'D PMCR	APP'D PMCR	REVISIONS	DRN	CHKD	APP

TITLE REFERENCES

PARISH: BARHAM
CROWN ALLOTMENT: --
SECTION: --
PLAN REFERENCE: --
VOL/FOL: --

PLAN NO.

NOTES
1) DATE OF PLAN 28/06/2021
2) LEVELS SHOWN THUS 75.20 ARE TO AHD PM 70439 R.L. 76.546
3) CONTOUR INTERVALS: 0.2 METRES SHOWN ORANGE
4) SURVEY CONDUCTED USING RTK GNSS
5) BOUNDARIES NOT RE-ESTABLISHED

SCALE OF METRES
10 0 20 40 60 80 100

NORTHERN LAND SOLUTIONS
LICENSED SURVEYORS, TOWN PLANNING & LAND DEVELOPMENT CONSULTANTS
L1 270 Campbell Street
PO Box 1054 Swan Hill 3585
P: (03) 5033 0035
F: (03) 5033 0036
M: 0409 015 326
E: wes@northernlandsolutions.com.au
W: www.northernlandsolutions.com.au

DATUM DETAILS: CO-ORDS ARE MGA Z54 – GRID
HEIGHT DATUM: AUSTRALIAN HEIGHT DATUM VIDE PM 70439 R.L. 76.546

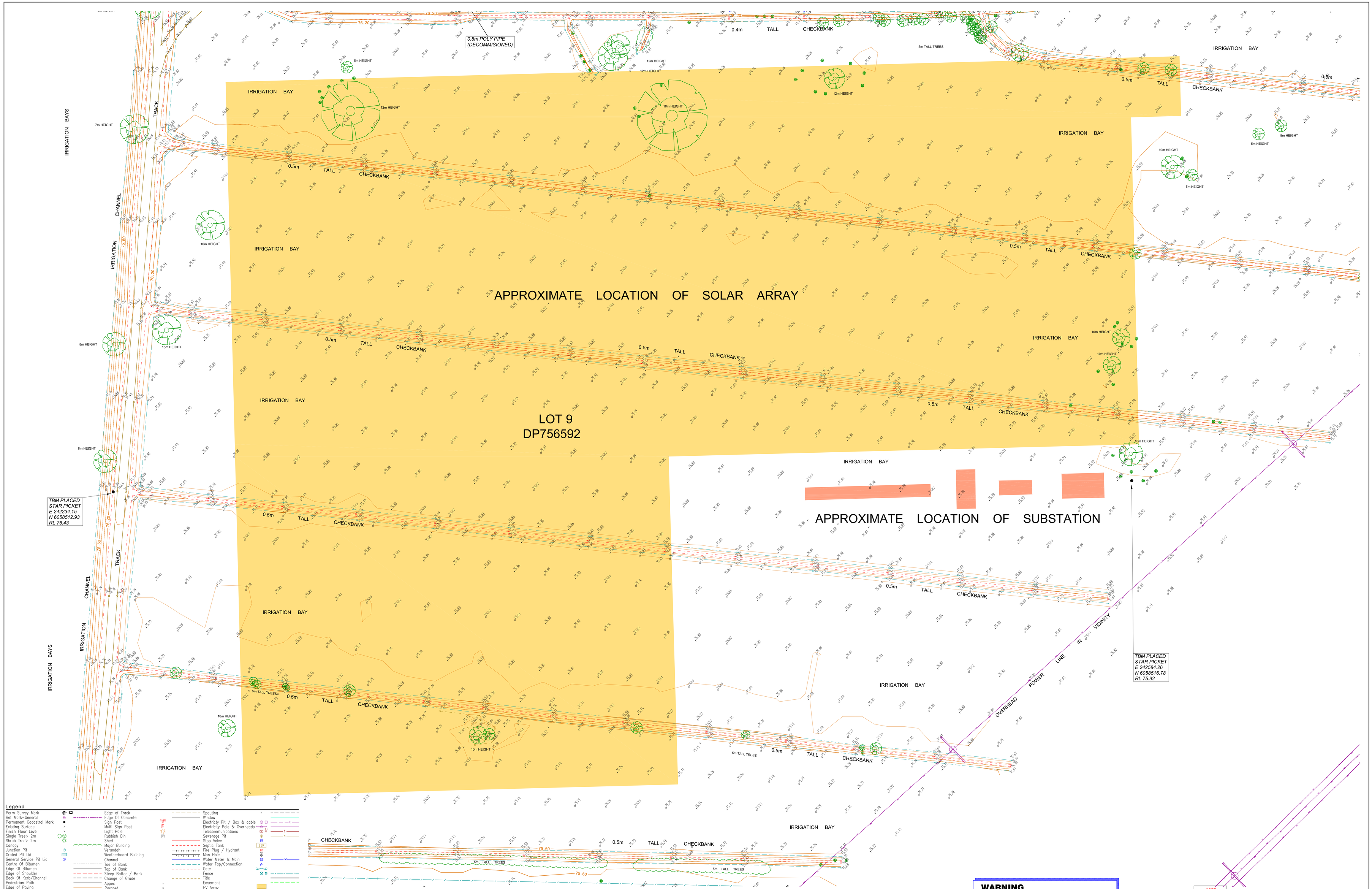
SURVEYED	G.K. & R.W.	DRAWN	G. KAYLOCK
DESIGNED	N/A	CHECKED	W.J. PYE
SURVEY MANAGER	W.J. PYE	APPROVED	W.J. PYE

JOB TITLE
FEATURE AND LEVEL SURVEY BARHAM SOLAR FARM

SURVEY DATE	CLIENT:	SHEET NUMBER	SURVEYORS REF:	VERSION
JUNE 2021	POWER GENERATION CO.	1 OF 2	212455	1

0 1 2 3 4 5 6 7 8 9 10 cm
FULL SIZE ON ORIGINAL

A0



Legend

Perm Survey Mark	Edge of Track	Spouting	
Ref Mark–General	Edge Of Concrete	Window	
Permanent Cadastral Mark	Sign Post	Electricity Pit / Box & cable	E
Existing Surface	Multi Sign Post	Electricity Pole & Overheads	
Finish Floor Level	Light Pole	Telecommunications	T
Single Tree> 2m	Rubbish Bin	Sewerage Pit	S
Shrub Tree> 2m	Shed	Stop Valve	
Canopy	Major Building	Septic Tank	SEP
Junction Pit	Verandah	Fire Plug / Hydrant	
Grated Pit Lid	Weatherboard Building	Man Hole	
General Service Pit Lid	Channel	Water Meter & Main	W
Centre Of Bitumen	Toe of Bank	Water Tap/Connection	
Edge Of Bitumen	Top of Bank	Gate	
Edge of Shoulder	Steep Batter / Bank	Fence	
Back Of Kerb/Channel	Change of Grade	Title	
Pedestrian Path	Appex	Easement	
Edge of Paving	Parapet	PV Array	
Driveway	Ridge Line	Substation	

REV	DATE	DESIGN REVIEW	REV'D PM/CR	APP'D PM/CR	REVISIONS	DRN	CHK'D	APP

0 1 2 3 4 5 6 7 8 9 10 cm
FULL SIZE ON ORIGINAL

TITLE
REFERENCES

PARISH:	BARHAM
CROWN ALLOTMENT:	--
SECTION:	--
PLAN REFERENCE:	--
VOL/FOL:	--

PLAN NO.

NOTES
1) DATE OF PLAN 28/06/2021
2) LEVELS SHOWN THUS 75.60 ARE TO AHD PM 70439 R.L. 76.546
3) CONTOUR INTERVALS: 0.2 METRES SHOWN ORANGE
4) SURVEY CONDUCTED USING RTK GNSS

SCALE OF METRES
4 0 8 16 24 32 40

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JOB TITLE
FEATURE AND LEVEL SURVEY
BARHAM SOLAR FARM

SURVEY DATE	CLIENT:	SHEET NUMBER	SURVEYORS REF:	VERSION
JUNE 2021	POWER GENERATION CO.	2 or 2	212455	1

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATION OF UNDERGROUND SERVICES SHOWN ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE

ONE CALL SYSTEM 1100 DIAL 1 DIG DIAL BEFORE YOU DIG

NOTE
BEWARE OF EXISTING OVERHEAD ELECTRICAL CABLES !

WARNING
BEWARE OF UNDERGROUND SERVICES
The locations of underground services are approximate only and their exact position should be proven on site. No guarantee is given that all existing services are shown.

MGA NORTH ZONE 54 GRID

A0

Statement of Environmental Effects

ABN: 30 308 161 484 | PO Box 906, Moama NSW 2731
1300 087 004 | admin@murrayriver.nsw.gov.au

This template may be used for development proposals which require a development application, and which is development not classed as designated development or State significant development. *(Note: Please review the Statement of Environmental Effects Fact Sheet before completing this template. If you require assistance in completing this form please contact Council's Duty Planner on 1300 087 004 or email admin@murrayriver.nsw.gov.au).*

Property details *(Note: To obtain this information refer to the NSW ePlanning Spatial Viewer on the NSW Planning Portal)*

Lot	9	Section	-
Deposited Plan/Strata Plan	756592		
Unit No.	-	House No.	-
Street	206 Gonn Road		
Suburb	Barham	Postcode	2732

Description of the proposed development

What is the proposed development?

Describe the development in detail

(Note: the proposed development must be a land use that is listed in the Dictionary of the Murray Local Environmental Plan 2011 or the Wakool Development Plan 2013).

Include details such as:

- *whether the development will use whole or part of the building(s) or land(s)*
- *whether new buildings are proposed*
- *the physical features of the proposed building(s)*
- *the nature of the building(s) e.g. dwelling house, materials and colour scheme, signage etc.)*
- *if demolition is proposed*

The proposal is for a 11-hectare solar facility on a property with a total area of approximately 194 hectares at 206 Gonn Road, Barham NSW. The proposed facility is designed to provide approximately 4.87MW (megawatts) of electricity to the local distribution network. To generate this electricity The proposed facility is designed to provide approximately 12 GWh (Giga-Watt-Hour) per year of electricity to the local distribution network. To generate this electricity, the proposed project would occupy approximately 15 hectares of land in the south property, while leave the remainder of the farm as-is for ongoing primary use. The Murray River Council is located within a region which presents an excellent opportunity for a regional municipality to capitalise upon and become a key player in the growth of the Renewable Energy industry due to its strategic geographical location and availability of grid connections.
The proposal includes a no larger than 4.87MW grid-connected solar PV installation. The solar farm will be connected to the existing Essential Energy Distribution Network which runs along the west of the proposed site.
The proposed development aims to erect an estimated 12,168 solar PV panels each with a nameplate rating of 570W. Other electrical generation infrastructure is proposed on the site including a Power Conversion Station (PCS) consisting of inverters, transformer, switchgear and auxiliary plant. Due to the capacity of the inverter system, the proposed development will produce less than 4.87MW. Most of the infrastructure would be prefabricated off-site, delivered and assembled on-site.
The solar PV panels measuring approximately 2.84m by 1.13m with 600mm clearance above the existing ground surface. The panels will be positioned on fixed tilt frames facing North. The PV mounting structure will comprise aluminium posts driven to approximately 1.5m below ground using a small pile driver. Additional support structures will be attached to the piles, which would then support the PV panels.
The proposed development will not require the entire removal of ground vegetation within the development area. The proposed solar farm, once operational, is expected to re-establish grasslands on site whilst managing dust generation and encouraging continued agricultural activities through livestock grazing. Weed management and control will be included as part of the standard operation procedures of the facility.

Operational and management details

If applicable, describe the operational and management details of the proposed development.

Include details such as:

- *hours and days of operation*
- *number of car parking spaces provided and location of spaces*
- *servicing arrangements (location and frequency) for deliveries and waste collection*
- *total number of staff and number on duty at any one time*
- *expected number of clients/ customers per day and at any one time*
- *expected vehicle types*

The solar PV farm would operate 24 hours a day, 7 days a week, with no permanent staff on site.
Maintenance inspections will be undertaken daily or on an as needs basis.
During the construction period there is estimated to be up to 30 personnel on site for up to 6 months.
Vehicular access to the proposed development will be via Moulamein Road approximately 850 metres towards west, from the corner of Gonn Road and Moulamein Road in Barham. The solar farm will be fully fenced with a 2.2m security fencing including barbed wire at the top. Gate access is provided on the Western border of the site with emergency access gates on each boundary of the lease area. Designated areas for temporary construction office, temporary car parks, temporary loading and unloading bays, temporary storage will be set up within the proposed land closest to the proposed site. Motion activated security lighting will be installed at the site.
Only vehicles shorter than 26 metres will be permitted on site. Any vehicles greater than 26 meters in length will not be permitted access.
Some of the vehicle types and the number of day trips that will be allowed on site, during construction phase, are,

- Articulated 19m Semi-Trailer with 40 Foot Container – 6 trips / day
- Articulated 26m B double – 6 trips / day
- Low-Bed Semi-Trailer Carrying Excavator – 1 trip / day
- Rigid Truck Carrying Solar Equipment – 6 trips / day
- Service Vehicle for Personnel and Small Tooling – 6 trips / day

Property details

What is the area of the site

15 hectares

Describe the site

Include information such as:

- *physical features of the site (i.e. slope and vegetation)*
- *existing structures at the site and whether these are to be retained or demolished*
- *existing services at the site*
- *location of any view corridors*
- *availability of public transport etc.*
- *present use of the site*
- *previous uses of the site*
- *adjoining land uses*
- *Planning overlays applying to the site*

The proposed site location is currently zoned as RU1 – Primary Production under the Wakool Local Environmental Plan. This land has been used primarily for the purpose of grazing cattle. The site is flat grazing land and has a lack of trees or vegetation in the area.
The proposal does not involve removing or clearing of any trees or protected vegetation. Following the establishment of the proposed solar farm, grasslands are expected to be re-established on site, managing dust generation and encouraging continued agricultural activities through livestock grazing. Weed management and control will be included as part of the standard operation procedures of the facility.
The proposed site will be fenced off with no access to general public.
The proposed developed site is located within the central spot of the property. All other land within the property outside of the proposed site has been used for grazing cattle and will continue as-is.

Planning considerations

Do any State Environmental Planning Policies (SEPPs) apply to the proposed development (such as SEPP64 – Advertising and Signage)? Yes ◯ No ◉

If any SEPPs apply, discuss how they apply and how the proposed development complies.

STATE ENVIRONMENTAL PLANNING POLICY (State and Regional Development) 2011
Regional development classification applies to both local and designated development applications exceeding certain criteria defined by Schedule 7 of the SEPP SRD.
5 Private infrastructure and community facilities over $5 million
Development that has a capital investment value of more than $5 million for any of the following purposes:
(a) air transport facilities, electricity generating works, port facilities, rail infrastructure facilities, road infrastructure facilities, sewerage systems, telecommunications facilities, waste or resource management facilities, water supply systems, or wharf or boating facilities,
(b) affordable housing, child care centres, community facilities, correctional centres, educational establishments, group homes, health services facilities or places of public worship.
The proposed electricity generating works is considered to be private infrastructure with a Capital Investment Value (CIV) greater than $5 million (refer to Appendix H) and as a result the development is deemed to be regionally significant development and the application will be referred to the Regional Planning Panel (RPP) for determination.

STATE ENVIRONMENTAL PLANNING POLICY (Infrastructure) 2007

Division 4: Electricity generating works or solar energy systems
One of the aims of SEPP (Infrastructure) 2007 is to provide greater flexibility in the location of infrastructure and service facilities. This SEPP identifies certain electricity generating works that are permitted with consent, without consent, as exempt development, as complying development and works that are prohibited.
In this Division—
electricity generating works has the same meaning as it has in the Standard Instrument.
Note—
The term electricity generating works is defined by the Standard Instrument as follows— electricity generating works means a building or place used for the purpose of—
(a) making or generating electricity, or
(b) electricity storage.

Clause 34: Development permitted with consent
(1) Development for the purpose of electricity generating works may be carried out by any person with consent on the following land—
(a) in the case of electricity generating works comprising a building or place used for the purpose of making or generating electricity using waves, tides or aquatic thermal as the relevant fuel source—on any land,
(b) in any other case—any land in a prescribed rural, industrial or special use zone.

Definition:

prescribed rural, industrial or special use zone means any of the following land use zones or a land use zone that is equivalent to any of those zones—
(a) RU1 Primary Production,
(b) RU2 Rural Landscape,

Local Environmental Plan (Murray LEP 2011 or Wakool LEP 2013).

What is the land zoned?

RU1: Primary Production

(Note: refer to the NSW ePlanning Spatial Viewer on the NSW Planning Portal)

What is the proposed land use (as listed in the Dictionary of the applicable LEP)?

Solar Energy Systems

Is this use permissible within the zone? Yes ◉ No ◯

(Note: refer to the applicable land use table)

How does the proposed development meet the objectives of the zone?

Note: refer to the applicable land use table in the LEP

The proposed solar farm comes the classification as "Solar Energy Systems". This is not defined under the Murray Local Environmental Plan 2011. Hence, we are referring this under the State Environmental Planning Policy (Transport and Infrastructure) 2021.

Chapter 2—State Environmental Planning Policy (Transport and Infrastructure) 2021

Planning considerations

List and address all relevant Sections to your development from the applicable LEP

Part 1 – Preliminary - Application of SEPPs
(1) This Plan is subject to the provisions of any State environmental planning policy that prevails over this Plan as provided by section 3.28 of the Act"
Pursuant to the provisions of Clause 1.9 of the Murray LEP, the applicable State Environmental Planning Policies have been considered in conjunction with the Murray LEP.
In particular, the prevailing provisions of ISEPP with regard to the allowability of the development within the RU1 under the LEP.
Primary Production Zone
The proposed site within the subject property is zoned RU1 – Primary Production under the provisions of the Murray LEP 2011.
The Primary Production Zone comprises the following objectives for development:
- "To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones."

Pursuant to the Dictionary of the Murray LEP, the proposed development is considered to be "electricity generating works" which is defined as:
"a building or place used for the purpose of making or generating electricity."
This use is prohibited in zone RU1. However, the SEPP (Infrastructure) prevails over the LEP to this extent, the use of land for a solar energy system is permitted with consent on any land in accordance with the SEPP (Infrastructure).
The proposed use and development of land for a solar energy system is considered to be consistent with the RU1 Zone.
In considering the nature of the proposed use, a solar facility is a land use that is compatible with surrounding agricultural use and the intended purposes of the RU1 Zone.
Miscellaneous Provisions - Flood planning
(1) The objectives of this clause are as follows—
(a) to minimise the flood risk to life and property associated with the use of land,
(b) to allow development on land that is compatible with the flood function and behaviour on the land, taking into account projected changes as a result of climate change,
(c) to avoid adverse or cumulative impacts on flood behaviour and the environment,
(d) to enable the safe occupation and efficient evacuation of people in the event of a flood.
In response to the aims of flood planning, the proposed development will be an unmanned facility that would not have any permanent residents or staff that would be potentially impacted by flooding.
There is a flood bank towards the north of the property, which will help alleviate any potential floodwater flow on the site.
A solar facility is a relatively low-risk development from a flooding standpoint, as materials and built form are such that flood paths would not be heavily obstructed – owing to the permeable nature of the fencing and solar arrays.
(2) Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development—
(a) is compatible with the flood function and behaviour on the land, and
(b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and
(c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and
(d) incorporates appropriate measures to manage risk to life in the event of a flood, and
(e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.
The development site is a significant distance from the Murray River. Despite being within the floodplain, the development is unlikely to create an on-site risk, or exacerbate any existing flood risks within the area.
(3) In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters—
(a) the impact of the development on projected changes to flood behaviour as a result of climate change,
(b) the intended design and scale of buildings resulting from the development,
(c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,
(d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.
The form of the proposed solar facility provides for free passage of floodwaters. The proposed solar farm is anticipated to be on the site for a 30-year-lease and is not considered a permanent installation.

Planning considerations

The Murray Development Control Plan 2012 and the Wakool Development Control Plan 2013 details requirements for development which must be taken into account when preparing a development application. Please list and address all relevant clauses to your development contained in the applicable DCP.

Murray Development Control Plan 2012

Wakool Development Control Plan 2013

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781-1917

PLAN

OF PORTIONS 8.5.12.13.14.15 & 126

PARISHES OF WHYMOUL AND BARHAM.

COUNTY OF WAKOOL.

MURRUMBIDGEE DISTRICT.

APPLIED FOR UNDER THE 30TH CLAUSE OF THE CROWN LANDS ALIENATION ACT OF 1875 BY

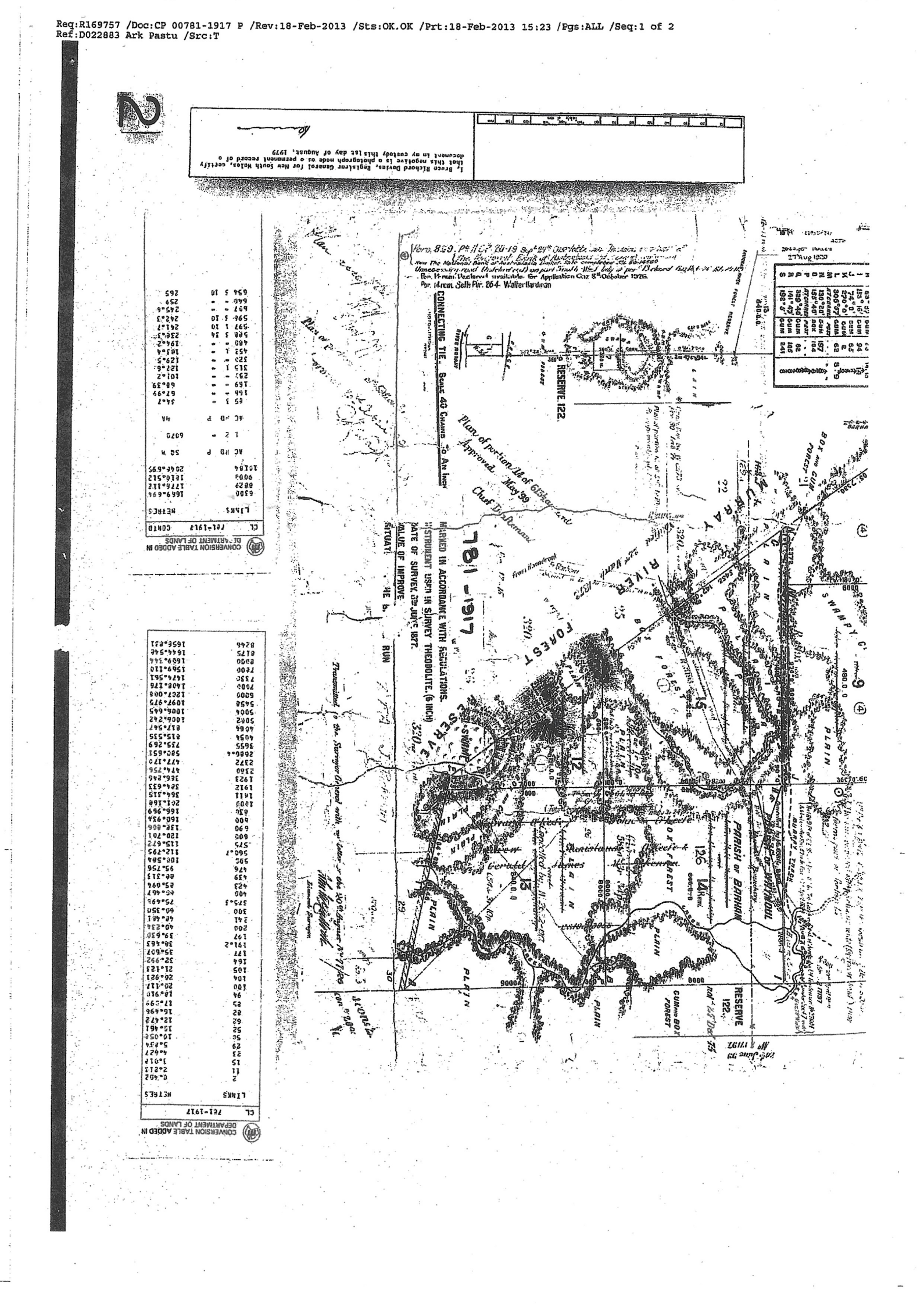
J.B. CHIRNSIDE and J.C. DOUGHARTY.

SCALE

REFERENCE TO CORNERS.				
COR.	BEARING	FROM	LINKS	BY on TREE
A	345°0'	GUM	15	
B	AT CORNER	POST	. .	
C	352°25	BOX	62	
D	322°25'	Box	172	
E	55 °20'	GUM	11	
F	AT CORNER	POST	. .	
G	AT CORNER	POST	. .	
H	63°37'	GUM	23	
J	155°15'	GUM	94	
K	74°0'	GUM	86	
L	270°0'	GUM	2	
M	306°57'	GUM	62	
N	AT CORNER	POST	. .	
P	138°20'	Gum	157	
Q	155°40'	Box	104	
R	AT CORNER	POST	. . .	
S	329°40	GUM	82	
T	141°45'	Gum	185	
U	192°5'	GUM	241	

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 1st day of August, 1979

Reg:R169757 /Doc:CP 00781-1917 P /Rev:18-Feb-2013 /Sts:OK.OK /Prt:18-Feb-2013 15:23 /Pgs:ALL /Seq:2 of 2
Ref:D022883 Ark Pastu /Src:T



I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 1st day of August, 1979

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: AUTO CONSOL 10699-64

SEARCH DATE	TIME	EDITION NO	DATE
11/8/2022	2:58 PM	3	2/9/2018

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
LOCAL GOVERNMENT AREA MURRAY RIVER
PARISH OF WHYMOUL COUNTY OF WAKOOL
TITLE DIAGRAM SEE SCHEDULE OF PARCELS

FIRST SCHEDULE

GRAHAM LINDSAY HEFFER
TANYA JOY HEFFER
AS JOINT TENANTS (T AJ171278)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 Q295522 EASEMENT FOR TRANSMISSION LINE AFFECTING LOTS 9 & 37 OF THE LAND WITHIN DESCRIBED SHOWN IN DP450980
3 AJ171279 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS	TITLE DIAGRAM
LOTS 8-9 IN DP756592	CROWN PLAN 781.1917
LOT 37 IN DP756592	CROWN PLAN 2019.1917.

*** END OF SEARCH ***

PRINTED ON 11/8/2022

Barham Solar Farm

Traffic Management Plan

Client

POWER Generation Co

Prepared by

GREENBOX

Revision History

Version	Author	Date	Description
Version 1.0	D.Su	16/3/2023	First draft

Disclaimer

The preparation of this document has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the contracted third parties engaged to assess the site and conditions being acceptable for a utility-scale photovoltaic installation.

All the information contained within this Traffic Management Plan is prepared for the exclusive use of Barham Solar Farm project, Greenbox Solutions Pty Ltd (as Greenbox), acting on behalf of Power Generation Co.

Greenbox Solutions Pty Ltd accepts no responsibility for any loss, damage suffered or inconvenience arising from any person or entity using the plans or information in this Traffic Management Plan for purposes other than those stated above.

Table of Contents

1. Introduction

Greenbox solutions pty ltd, has been engaged by Power generation co., on behalf of Barham solar farm project, to provide a Traffic Management Plan (TMP) for a solar farm construction project at Barham Solar Farm, which is a two-stage utility-scale solar farm development, situated on Moulamein Road. Spanning across 15 hectares, this project located just outside the township of Barham New South Wales, which is on the New South Wales - Victorian border, between Swan Hill, Victoria and Echuca, Victoria.

2. Overview

The construction and operation of the Barham Solar Farm will be completed in four phases:

1. Mobilisation
2. Construction
3. Demobilisation
4. Operations

The traffic flow for each of these phases will be different and is discussed in more detail below.

3. Traffic Management Control Strategy

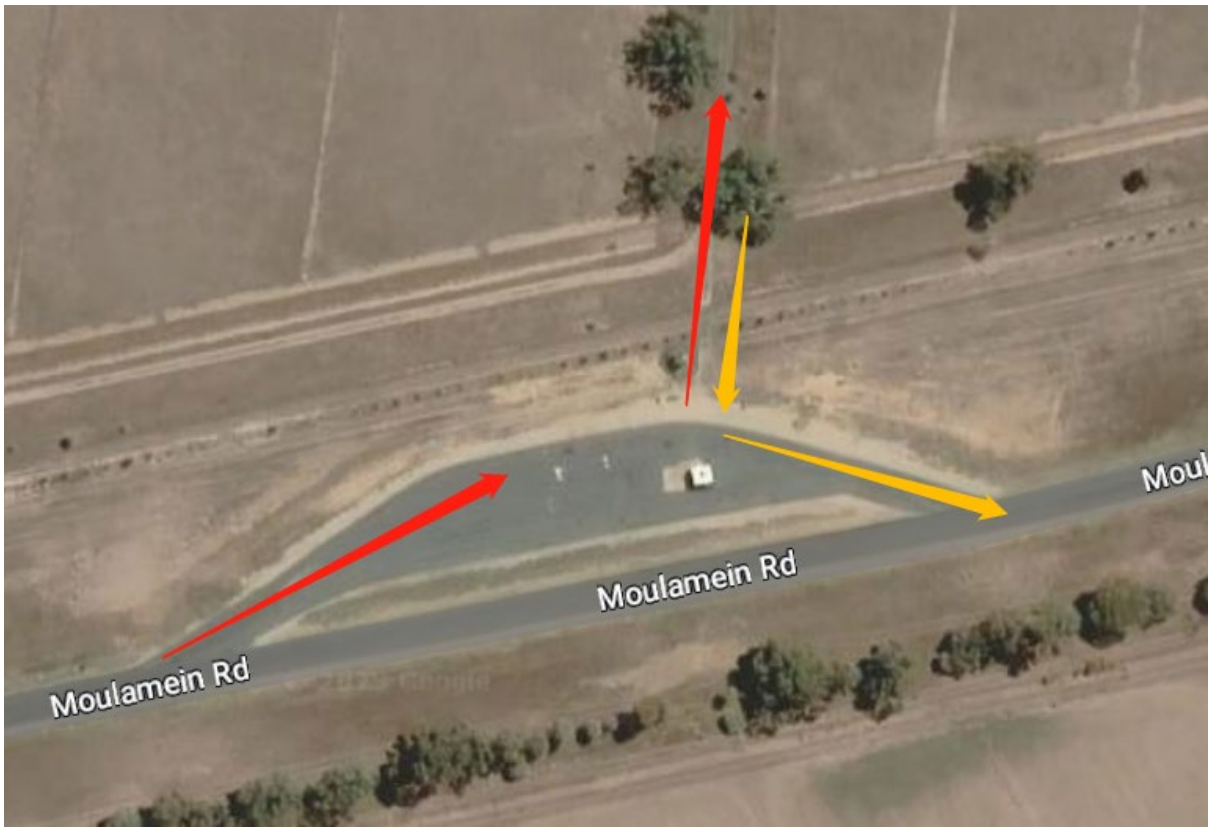
All vehicular access to the site will be at the approved designated access point, located south of the existing access point serving the adjoining dwelling, the main entrance to the solar farm project site is within the private land. The access to the private land is through the Main Entrance through Moulamein Road.

3.1 Designated Access Point

All vehicular traffic will be required to access the site at Main Entrance through Moulamein Road. This is the only external access point for the site, crossing the private land. All vehicles will enter and exit in a forward direction.

One gate will be constructed at a access point at site and the access road will be sealed and designed in accordance with the *Austroads Guide to Road Design Part 44 – Intersections and Crossings: General*.

The map below shows the designated entry point from the main road to the site, in relation to the existing (old) access point.



Map 1 – Designated Access Point for Traffic

Diagram 1 – Detail of Gate 1 at the Designated Access Point

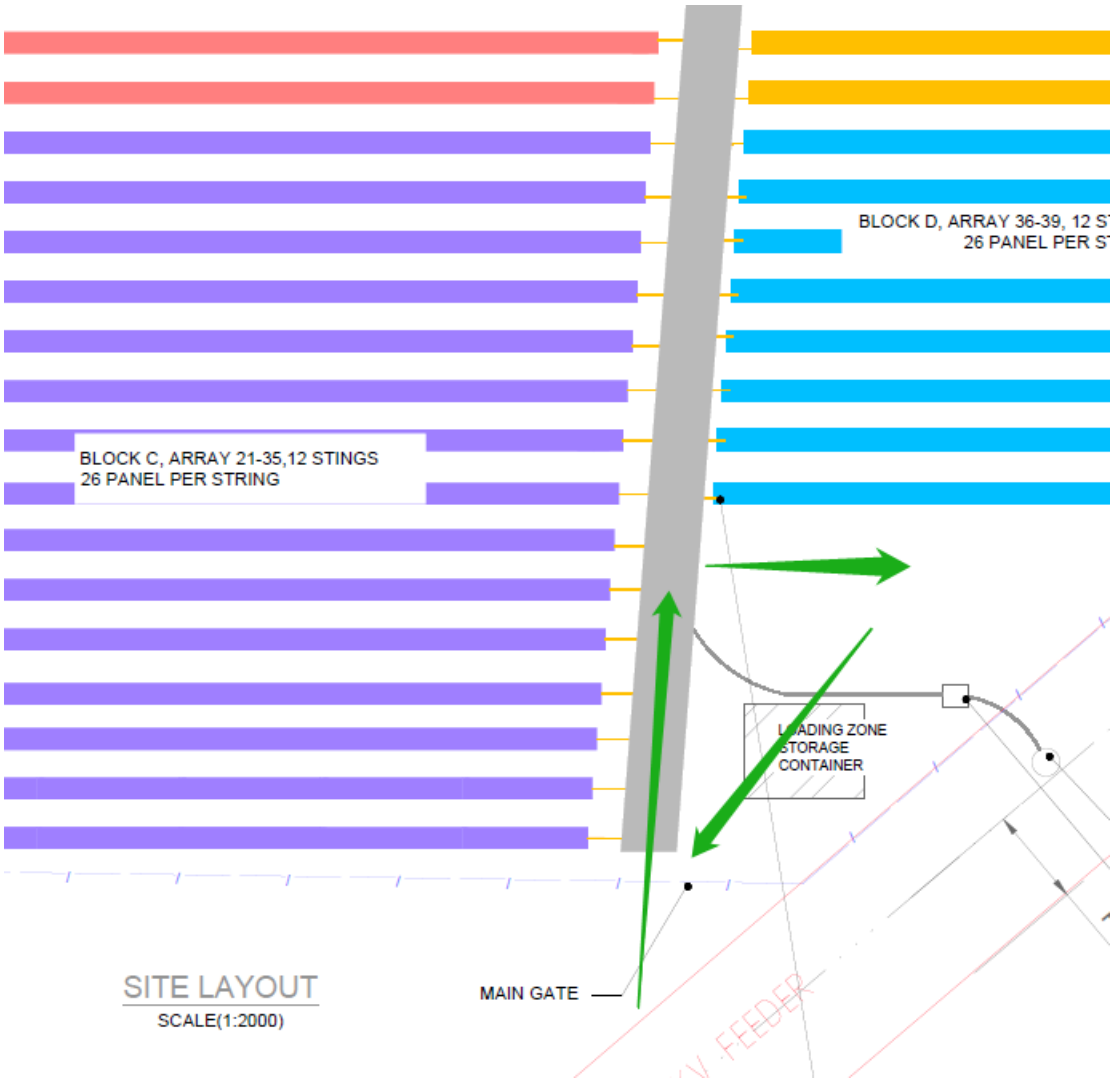


Diagram 1 – Detail of loading area and traffic turning point

There will be a single gate at the access point to ensure compliance the requirement of a single crossing point that is generally consistent with Figure 7.4 of *Austroads Guide to Road Design Part 44 – Intersections and Crossings: General*. The gate will be set back so that large vehicles can be temporarily parked off the road, in the truck waiting zone, while waiting for the gate to open.

3.2 Driver Induction

All drivers will be inducted as per the CEMP (Construction Environmental Management Plan).

3.3 Permitted Vehicles

Only vehicles shorter than 26 metres will be permitted on site. Any vehicles greater than 26 meters in length will not be permitted access.

3.4 Types of Vehicles

The following images show examples of the types of heavy vehicles that will be performing deliveries and removals at the site.

3.4.1 Articulated 19m Semi-Trailer with 40 Foot Container

3.4.2 Articulated 26m B double

This is the largest permitted vehicle that will be on site.

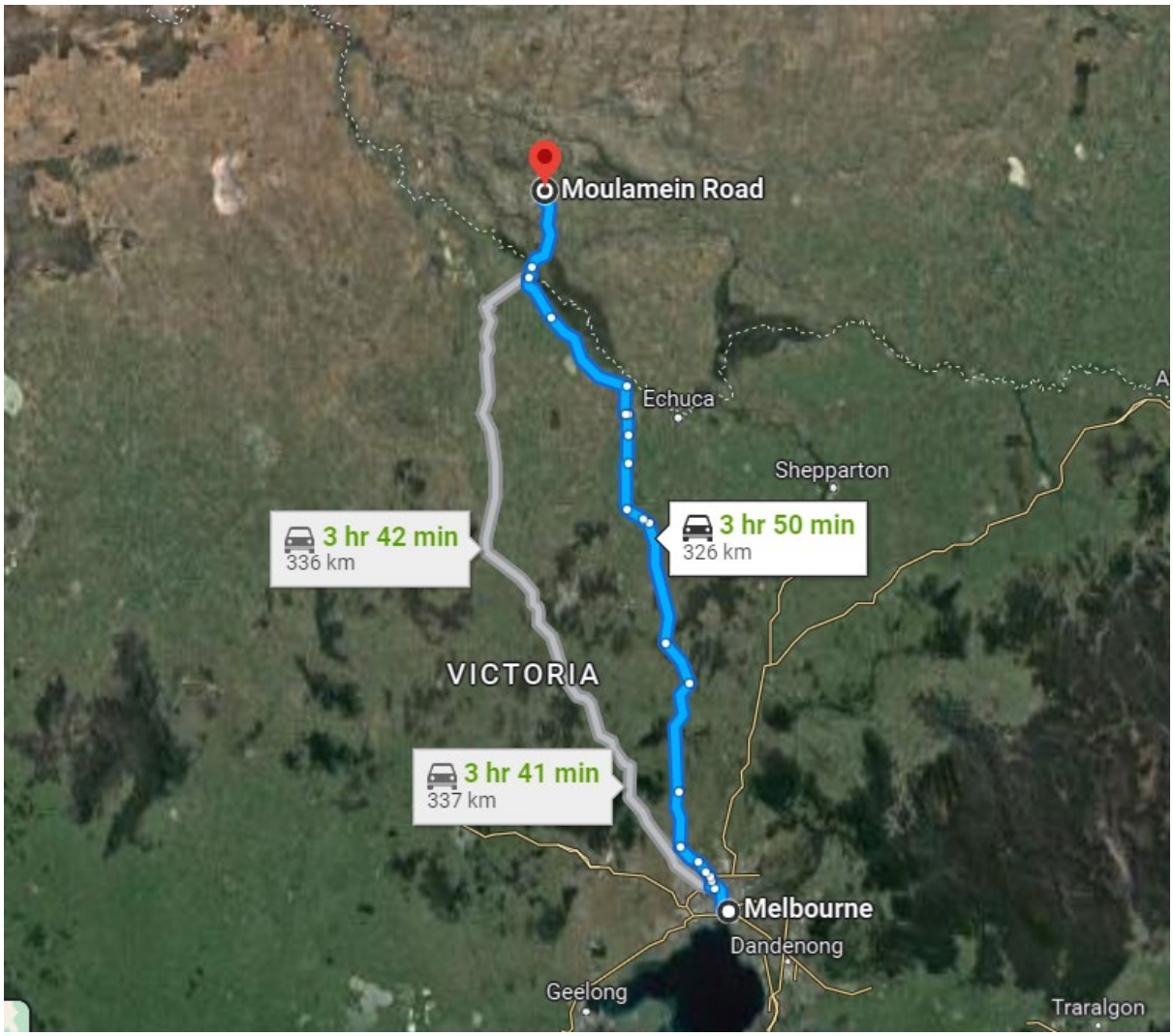
3.4.3 Low-Bed Semi-Trailer Carrying Excavator

3.4.4 Rigid Truck Carrying Solar Equipment

3.4.5 Service Vehicle for Personnel and Small Tooling

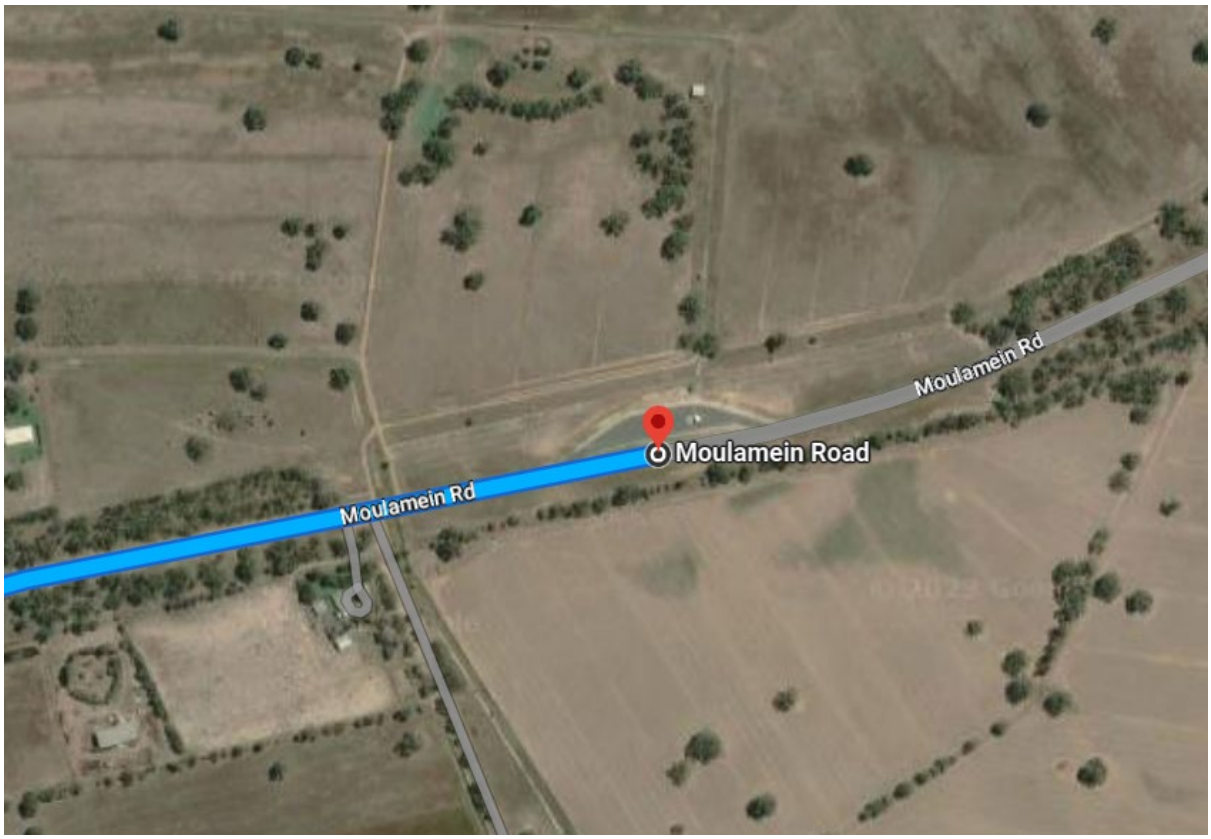
3.4.6 Delivery Vehicle Route

The route from Port Adelaide to the project site is to proceed North from Melbourne, via the M79 passing Echuca or Alternatively passing Kerang via Bendigo.



Map 2 – Delivery Route from Port Adelaide to Project Site

The trucks will turn around on site, at one of the internal roundabout turns, so they can leave the site in a forward direction. No reversing onto Moulamein Rd will be allowed for any vehicle exits.



Map 3 –Delivery Route along Barham Road to Project Site

3.4.7 Vehicle Turning Movements

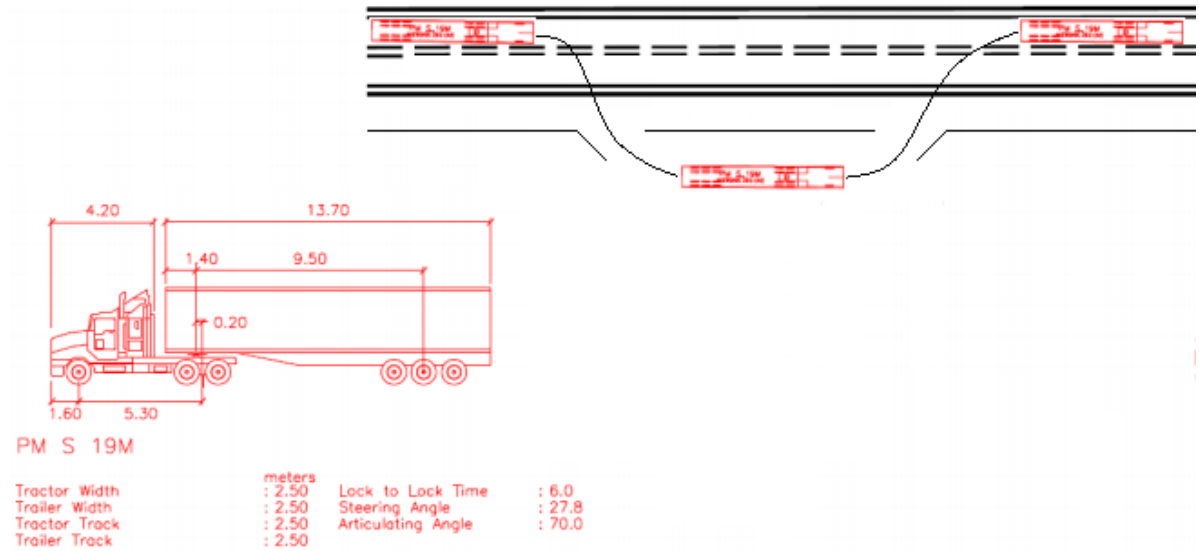


Diagram 2 – Vehicle Turning Movements

This single-gate configuration for Gate 1 has been designed to allow a 19m semi-trailer to pull off the road, and wait in the truck waiting zone, while waiting for the gate to open.

3.4.8 Expected Delivery Hours

Truck delivery times will be during on-site working hours, 6:00 AM to 6:00 PM, Monday to Saturday, excluding public holidays. There will be no out-of-hours deliveries.

3.5 Proposed Road Signage

As per the Page Street Services recommendations, Barham solar project will ensure that traffic control sign and marking schemes will be installed on either side of the site entry, following the *Guide to Traffic Management Part 10 (Austroads 2009d))*.

3.6 Proposed Road Upgrades

The access road will be sealed and designed in accordance with Figure 7.4 of *Austroads Guide to Road Design Part 44 – Intersections and Crossings: General*. No public roads are proposed to be upgraded.

3.7 Proposed Road Closures

There are no proposed road closures.

3.8 Vehicle Numbers

The number of vehicles accessing the site per day will vary with the phase of the project. Vehicle numbers for the four phases are details in the following sections.

3.8.1 Mobilisation Phase Vehicle Numbers

The mobilisation phase is required for early delivery of material that must be on site prior to construction. This will help alleviate traffic during the construction phase.

Mobilisation Phase (scheduled for March 2019)		
Vehicle Type	Use/Materials being delivered	Daily Trips (In & Out)
26m Articulated Vehicle	Machinery and construction materials/components	6
19m Articulated Vehicle	Machinery and construction materials/components	6
Large Rigid Vehicles	Machinery and general construction materials/components	2
Concrete/Water Trucks	Concrete	0
Light Vehicles	Staff transportation	8

Table 1 – Barham Solar Farm Traffic Overview for Mobilisation Phase

Solar module and mounting components will be delivered by 19m articulated semi- trailers in 40-foot shipping containers. There will be a total of 19 containers for tracker mountings and a further 27 containers for solar modules. These will be staggered deliveries approximately 3 hours apart, of up to four containers per day using two trucks.

The machinery will be shipped on either 19m articulated semi-trailers truck in 40-foot containers or with machinery onboard low-bed articulated semi-trailers.

The following is an estimate of the traffic direction distribution for the mobilisation phase.

Direction	Percentage
From SW (Adelaide)	90%
From NE (Barham)	10%
Total	100%

Table 2 – External Traffic Distribution for Mobilisation Phase

Most of the traffic will come from Adelaide (south-west direction), with local personnel coming from the Barham township (north-east direction).

3.8.2 Construction Phase Vehicle Numbers

The construction phase will see fewer large vehicles, as the deliveries of the bulk of material will have been completed during the mobilisation phase. For example, the concrete truck deliveries will occur over a 10-day block at the very start of the construction phase, for fencing installation, and then another few days in the middle of construction for the foundation pouring.

Most traffic will be from personnel vehicles as most of the key components and machinery will have been mobilised in the mobilisation phase, which will help keep the traffic even and eliminate a peak period. Car-pooling will be used to minimise the amount of vehicular access along Barham Road.

There will be a few singular deliveries such as cables, but this will all be contained on one single delivery event.

Construction Phase (scheduled for March 2019 to August 2019)		
Vehicle Type	Use/Materials being delivered	Daily Trips (In & Out)
19m Articulated Vehicle	Machinery and construction materials/components	2
Large Rigid Vehicles	Machinery and construction materials/components	2
Concrete/Water Trucks	Concrete	2
Light Vehicles	Staff transportation	10

Table 3 – Barham Solar Farm Traffic Overview for Construction Phase

The following is an estimate of the traffic direction distribution for the construction phase.

Direction	Percentage
From NE (SYDNEY)	20%
From S (Melbourne)	80%
Total	100%

Table 4 – External Traffic Distribution for Construction Phase

In the construction phase there will be a shift to local traffic as most materials required for construction will have been delivered in the mobilisation phase.

3.8.3 Demobilisation Phase Vehicle Numbers

The work at the site, and the associated traffic, will scale back significantly after commissioning in the demobilisation phase. The major equipment for construction will have been removed during construction phase.

It is expected at the demobilisation stage the total number of workers will drop to around ten.

De-mobilisation Phase (scheduled for August 2019		
Vehicle Type	Use/Materials being delivered	Daily Trips (In & Out)
19m Articulated Vehicle	Machinery and construction materials/components	3
Large Rigid Vehicles	Machinery and general construction materials/components	1
Concrete/Water Trucks	Concrete	2
Light Vehicles	Staff transportation	4

Table 5 – Barham Solar Farm Traffic Overview for Demobilisation Phase

The following is an estimate of the traffic direction distribution for the construction phase.

Direction	Percentage
From NE (SYDNEY)	20%
From S (Melbourne)	80%
Total	100%

Table 6 – External Traffic Distribution for Demobilisation Phase

The demobilisation phase will see the key machinery taken back to Adelaide and the balance of traffic will be for local personnel based in Barham township.

3.8.4 Operations Phase Vehicle Numbers

After the construction is completed and the project transitions to the operations phase, there will be very few activities on-site, with typically four visits per year from a service vehicle, as illustrated above in section 3.4.4. This will be far less traffic than for the existing agricultural land use.

3.8.5 Impact to Existing Traffic

There will be minimal impact to existing traffic as there will be no road closures and heavy vehicle entry and exit will only be through Gate 1.

3.9 Required Permits

There are no permits required as there will be no oversized loads.

4. Internal Work-Site Traffic

Once a vehicle has entered the site, it will be managed in the following ways.

4.1 Sign-In

All vehicles visiting the site will be signed in with their details.

4.2 Speed Limits

The internal speed limit will be 10 km per hour to ensure good dust suppression and safety for all vehicles and workers on site.

4.3 Livestock Safety

There is livestock on the proponent's property, currently housed in a secure paddock. The completion of the site fencing will ensure no entry from any livestock to the construction site. Daily checks to ensure that livestock are no threat to internal traffic, and vice versa, will be carried out by the Quality and Environment manager and the Site Manager, as per the CEMP (Construction Environmental management Plan).

5. Monitoring and Review

The Quality and Environmental Manager together with the Site Construction Manager will monitor and periodically review the traffic management plan.