Energy Forms Pty Ltd

Fosterville Solar Farm

Noise Assessment

AC01

V3 | 13 December 2021

Job number 278118-10

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ARUP

Document verification

ARUP

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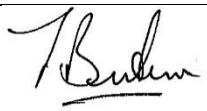
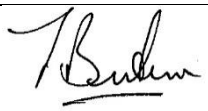
		Name	Nick Wedd	Frank Butera	Frank Butera
		Signature			
V2	7 Dec 2021	Filename	AC01 v2 Fosterville Solar Farm Noise Assessment.docx		
		Description	Updated receiver figure.		
			Prepared by	Checked by	Approved by
		Name	Nick Wedd		
		Signature			
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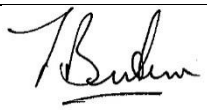
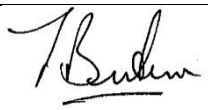
		Description	Finalised site plan.		
			Prepared by	Checked by	Approved by
		Name	Nick Wedd	Frank Butera	Frank Butera
		Signature			
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		Name			
		Signature			

Issue Document verification with document ✓

Contents

Appendices

1 Introduction

FRV Services Australia Pty Ltd are seeking Planning Permit for the operation of a 90 MW Solar plant with 120 MW/240 MWh battery energy storage located at Brownes Lane, Axedale, Victoria (the 'Subject Site').

Arup Australia Pty Ltd (Arup) has been engaged by Energy Forms Pty Ltd to prepare a noise impact report suitable for submission to the Responsible Authority. Arup has considered the following documents:

- *Solar Energy Facilities Design and Development Guideline*.
- *Technical Guide: Measuring and Analysing Industry Noise and Music (EPA Publication 1997)*
- *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues (EPA publication 1826.4)*

A desktop assessment of the noise impacts from the proposed development to nearest noise sensitive receivers has been conducted. This assessment has been based on manufacturer's noise levels, Arup's noise database, and noise calculations and predictions.

Planning permission of an adjacent solar farm (Axedale Solar Farm) has been granted. Axedale Solar Farm is proposed to be developed by separate proponent UPC\AC Renewables Australia. The proposed solar farm is split over land addressed as Knowsley-Barnadown Road, Axedale and Barnadown-Knowsley Road, Muskerry.

We understand that no noise impact assessment has been prepared for Axedale Solar Farm. On that basis, a desktop noise assessment based on typical equipment and proposed equipment has been undertaken to determine the cumulative noise impact of Axedale Solar Farm and Fosterville Solar Farm.

Acoustic terminology used throughout this report is provided in Appendix A.

2 Site Description

2.1 Site Surroundings

The Subject Site is currently undeveloped farmland addressed as Brownes Lane, Hamilton, Victoria. A site plan is provided in Appendix B.

The Subject Site is zoned Farming Zone (FZ). It is bounded by:

- **To the north:** Russells Bridge Road with Farming Zone (FZ) beyond. The nearest identified residential receiver to the north is approximately 1.6 km north west of the Subject Site.
- **To the east:** Farming Zone (FZ), where the Axedale Solar Farm is proposed and Knowsley-Barnadown Road beyond. The nearest identified residential receiver to the east is approximately 2 km east of the Subject Site. This receiver is the closest to the Axedale Solar Farm Site (760 Knowsley-Barnadown Road, Axedale).
- **To the south:** Farming Zone (FZ). The nearest identified residential receiver to the south is approximately 1 km south west of the Subject Site.
- **To the west:** Farming Zone (FZ) and Brownes Lane. The nearest identified residential receiver to the west is approx. 600 m west of the Subject Site. This is the nearest identified receiver to the Subject Site (611 Browne Lane Axedale).

A planning map of the area surrounding the Subject Site is presented in Appendix C. The Site layout for Axedale Solar Farm is presented in Appendix D. The layout of the sites and the location of nearby noise-sensitive receivers are presented in Figure 1 (provided by Energy Forms).

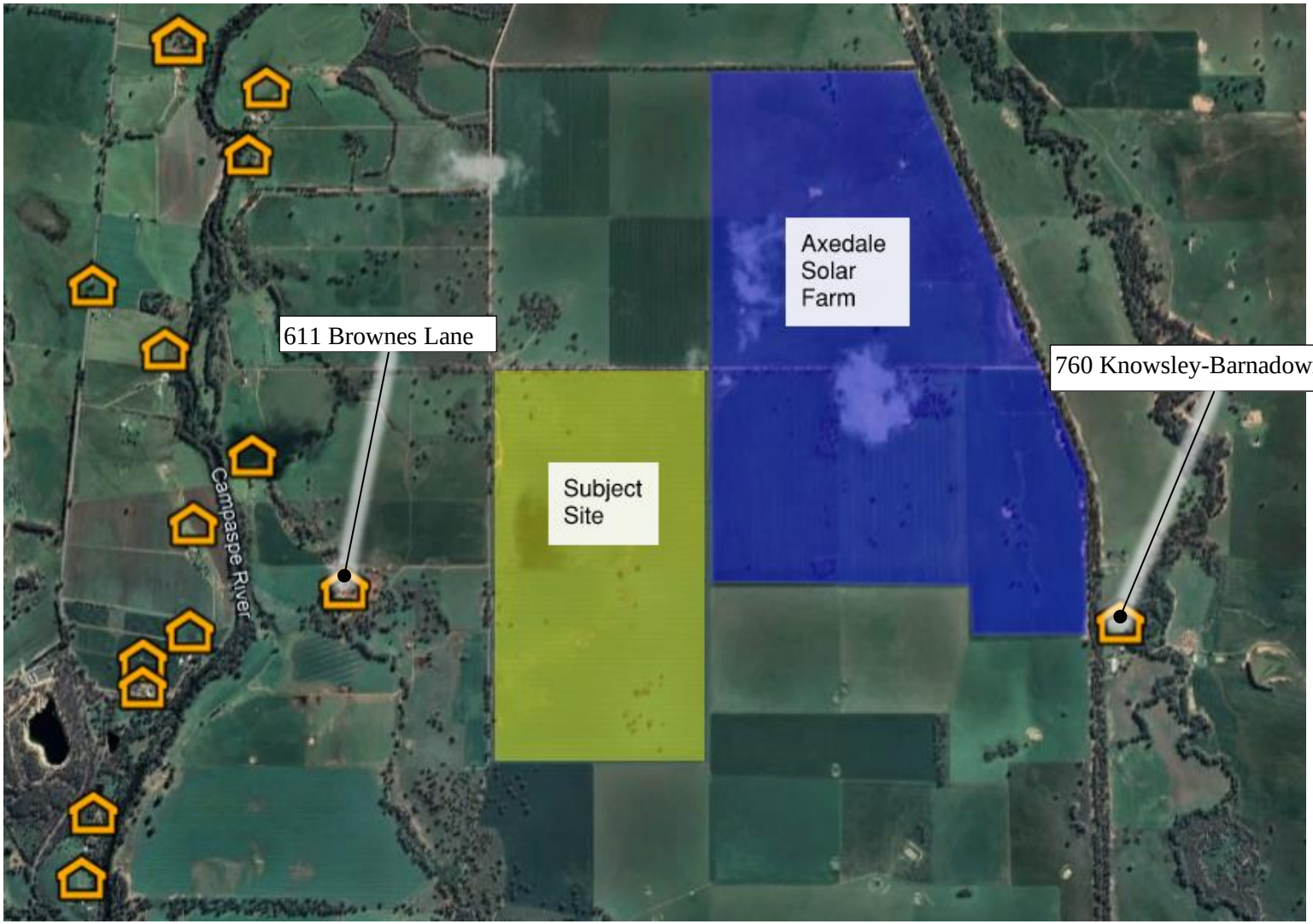

Figure 1: Subject Site plan

2.2 Site Description

A 90 MW solar energy plant with a 120 MW/240 MWh battery storage system is proposed to be installed at the Subject Site. Equipment specification for the plant is presented in Section 5. The solar farm is approximately 183 ha (1,830,000 m²).

2.3 Operations

Due to the battery storage the Subject Site may operate during and after daylight hours. As such, noise will be assessed for the most noise-sensitive night-time period.

3 Relevant Legislation

3.1 Noise Legislation & Regulation

On July 1, 2021 the new environmental protection (EP) legislation, the *Environment Protection Act 2017* (the Act) as amended by the *Environment Protection Amendment Act 2018*, was commenced. This new Act has superseded the previous *Environment Protect Act 1970.*

The centrepiece of the new EP legislation is the general environmental duty (GED). The GED requires Victorians to understand and reduce the risk of harm to human health and the environment from pollution and waste (including noise) resulting from their actions. Duty holders (in this instance, the Owner) need to comply with the general environmental duty (GED) under Section 25 of the *Environment Protection Act 2017* (the Act).

The Act introduces the concept of 'unreasonable noise', *Section 166 – Unreasonable noise*, to provide a legislative control for any noise emitted from a place or premises.

Part 5.3 – Noise of the *Environment Protection Regulations 2020* (the Regulations) prescribes situations which constitute 'unreasonable noise' from residential, commercial, industrial and trade premises, entertainment venues and outdoor entertainment events. The objective of the Regulations is to further the purpose of and give effect to the Act.

3.2 Criteria

The relevant noise criteria include:

- *Solar Energy Facilities Design and Development Guideline*.
- Noise levels emanating from the Subject Site must comply with the noise limits calculated using the Rural area method defined in the Regulations.

The *Solar Energy Facilities Design and Development Guideline* states that:

> *"A facility should keep its noise impacts at or below the levels in EPA Victoria's Noise from Industry in Regional Victoria guideline (NIRV).*

NIRV has been superseded by the new EPA Regulations, however the method for calculating noise limits remains effectively unchanged. Compliance with the new Regulations is consistent with NIRV compliance.

3.2.1 Rural Area Method

Outside of metropolitan and Major Urban Areas, noise emissions from commercial, industrial and trade (CIT) premises are governed by the Regulations, and noise limits are to be calculated using the 'rural method'. The Regulations supersede the *Noise from Industry in Regional Victoria (NIRV)* Publication 1411.

Both the Subject Site and the nearest residential property are located outside any metropolitan or Major Urban Area, as such the project is assessed in accordance with the rural method.

Applicable time periods from the Noise Regulations are presented in Table 1.

Table 1: Operating time periods

Period	Day of week	Time period
Day	Monday – Saturday	0700-1800hrs
Evening	Monday – Saturday	1800-2200hrs
	Sunday, Public Holidays	0700-2200hrs
Night	Monday – Sunday	2200-0700hrs

3.2.2 Cumulative Noise Levels

The Noise Limits established for a Subject Site apply to all combined industrial noise at the receiver, that is, it is not a single site's emission limit.

Clause 3.3.1 in the *Technical Guide: Measuring and Analysing Industry Noise and Music (EPA Publication 1997)* outlines guidance on *Noise Sharing*, where the cumulative noise contribution from multiple noise emitters must be taken into consideration and shared equally. In effect this means that when there are multiple significant noise sources, that the emission limits for each site are reduced, so that when combined they do not exceed the noise limit.

Since the Axedale Solar Farm is located on land directly adjacent to Subject Site there is a risk of cumulative noise impact exceeding noise criteria. We understand no noise assessment was prepared as part of the planning approvals process for Axedale Solar Farm, although this is a requirement of the planning permit (Item 7 PLN207/2019). As such, a desktop assessment based on typical equipment at proposed locations has been undertaken by Arup to predict the cumulative noise impact from both sites.

The cumulative noise level from both sites must be compliant with noise limits from the Regulations. The project noise criteria are summarised in Section 4.

4 Project Noise Criteria

The operational noise limits determined for the night-time period at the most critical identified residential properties are presented in Table 2. Note that only the night-time noise limits are presented. Compliance with the most onerous night-time noise levels demonstrates compliance with the noise limits during other time periods. Compliance at the nearest sensitive receivers indicates compliance at all other receivers.

Noise limits have been determined using the baseline Farming Zone (FZ) levels from the Rural method of the Noise Protocol.

Table 2: Noise limits at most sensitive residential properties during the night-period, dB re 20µPa.

Time Period	Receiver Address	Cumulative Noise Limit, L_{eq} dB(A)
Night	611 Browns Lane Axedale	36
	760 Knowsley-Barnadown Road, Axedale	36

The noise limit from each source (as described in Section 3.2.2) is presented in Table 3 below. In accordance with Publication 1997, a noise level 10 dB(A) below the noise limit contributes no measurable noise.

A noise level 10 dB(A) below the noise limit has been selected, such that the sites do not contribute measurable noise to the other site's nearest noise-sensitive receiver. A flowchart showing how the noise criteria was developed is shown in Appendix E.

Table 3: Noise limits from each solar farm for the most sensitive residential properties during the night-period, dB re 20µPa.

Time Period	Receiver Address	Night-time noise limit from source, L_{eq} dB(A)
Subject Site Fosterville Solar Farm	611 Browns Lane Axedale	36
	760 Knowsley-Barnadown Road, Axedale	< 26
Axedale Solar Farm	611 Browns Lane Axedale	< 26

It is our understanding that, for control of noise from commercial, industrial and trade premise compliance with the Regulations and Noise Protocol does not guarantee compliance with the GED. A noise emission risk assessment and consideration of practicable elimination, mitigation and operational controls will need to be undertaken by the duty holder at a later stage.

5 Noise Assessment

Noise to the receivers has been calculated using the noise propagation and attenuation algorithms in accordance with ISO 9613.2[1]. The distance between noise sources and receivers have been based on the closest location of that equipment, representing a conservative prediction.

5.1 Fosterville Solar Farm

Proposed equipment has been provided to Arup by Energy Forms via design drawings by FRV, dated 12 December 2021. The modelled noise sources are documented in Table 4. The locations of noise sources are shown in Figure 2. Note that inverters are distributed evenly throughout the Subject Site.

Table 4: Number of equipment

Equipment	Number
HV transformer – 120 MVA	2
Battery Energy Storage System (BESS) Tesla Megapack	90
Centralised Inverters SMA SC 4000 UP	25
5.434 MVA transformer	12
4.075 MVA transformer	12
Switchgear Cooling fans and condensers	2 Switchgear buildings
Office Fans, condensers, and other related mechanical services	1 Office building
Solar Panel Tracker motors	2060

FRV Services are in discussion with the Australian Energy Market Operator (AEMO) to determine the final HV transformer sizing. Either 2x 120 MVA transformers or 1x 240 MVA transformer will be selected. The noise contribution from both options is comparable, as such this noise assessment is valid for both equipment options.

[1] ISO 9613-2:1996 *Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation*

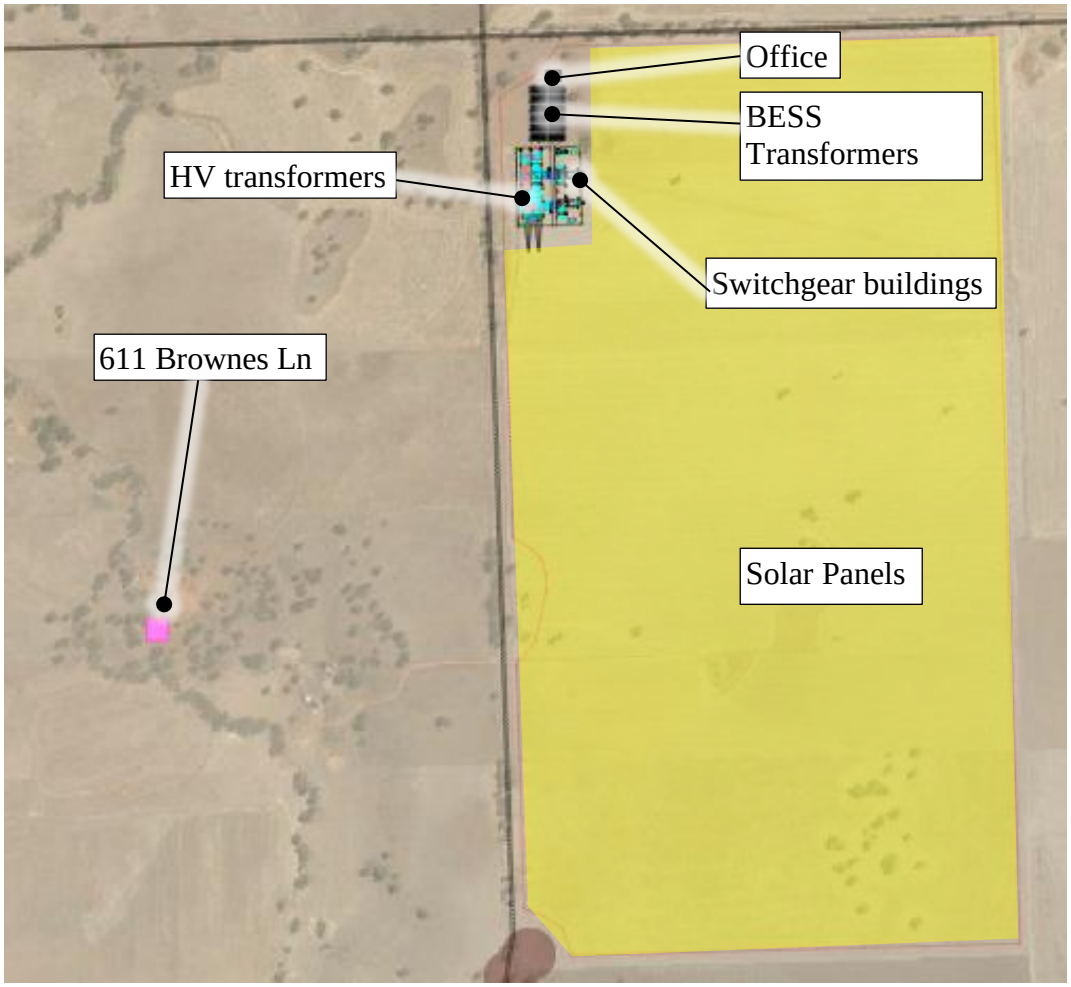

Figure 2: Location of plant items relative to nearest receiver

Noise levels of the proposed plant equipment are provided in Table 5.

Table 5: Noise levels of proposed plant, per single unit of plant.

Equipment	**L_w dB(A)**	**Predicted Sound Power Level, dB re 20 µPa Octave Band Centre Frequency, Hz**							
		63	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
HV transformer	95	98	100	95	95	89	84	79	72
BESS	83	88	90	85	80	77	72	65	68
Inverter	91	85	89	95	88	84	80	72	71
5.434 MVA transformer	80	83	85	80	80	74	69	64	57
4.075 MVA transformer	79	82	84	79	79	73	68	63	56
Switchgear	80	42	62	67	77	73	70	64	55
Office	85	47	67	72	82	78	75	69	60
Solar tracker motor	57	44	47	49	52	52	51	46	38

5.1.1 Predicted Noise Levels

Operational noise to the nearest affected residential properties has been considered in accordance with the criteria presented in Section 3.2.

A 2 dB(A) penalty has been applied to account for any tonality present in the noise from the operation of the solar farm plant. At this distance tonality is generally not audible, this represents additional conservatism.

The predicted noise levels at the nearest affected residential receivers with the solar farm operating at full capacity are presented in Table 6.

Table 6: Predicted noise levels

Time Period	Receiver Address	Noise Limit, L_{eq} dB(A)	Predicted Noise Level dB(A)	Complies?
Night	611 Brownes Lane	36	≤ 33	✓
	760 Knowsley-Barnadown Road	< 26	< 20	✓

Arup's assessment demonstrates that operational noise from the Subject Site is predicted to comply with the noise limits at the nearest affected residential properties. Additionally, the Subject Site is not predicted to contribute noise to the Axedale Solar Farm's most-sensitive noise receiver.

Compliance with the night-time noise-limits demonstrates compliance with the daytime and evening time noise limits. While operating at full capacity the solar farm is expected to be compliant with noise limits for all time periods.

5.2 Adjacent Axedale Site

Plant items for the Axedale Solar Farm have been based on available public information provided via the planning permit process and indicative site layouts, dated November 2019. The modelled noise sources are documented in Table 7. The locations of noise sources are shown in Figure 3. Note that inverters are distributed evenly around the site.

Table 7: Number of equipment

Equipment	Number
HV transformer – 180 MVA	1
Battery Energy Storage System (BESS) Battery Storage Containers	20
Centralised Inverters and transformers	64
Switchgear Cooling fans and condensers	2 Switchgear buildings
Office Fans, condensers, and other related mechanical services	1 Office building
Solar Panel Trackers motors	5760

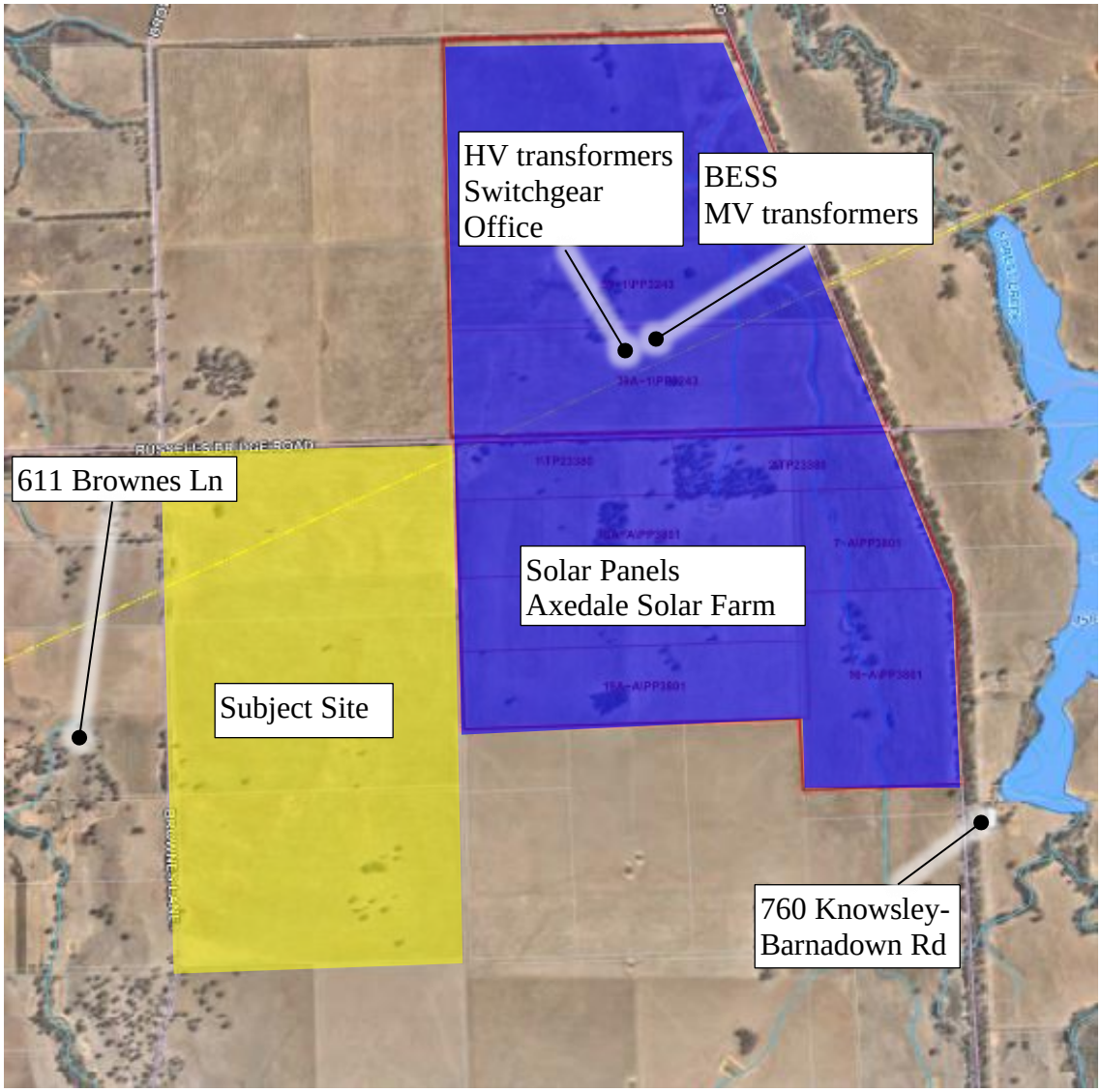

Figure 3: Location of plant on Axedale Solar Farm, relative to Subject Site.

5.2.1 Predicted Noise Levels

Operational noise to the nearest affected residential properties has been considered in accordance with the criteria presented in Section 3.2.

A 2 dB(A) penalty has been applied to account for any tonality present in the noise from the operation of the transformer and/or inverter. At this distance tonality is generally not audible, this represents additional conservatism.

The predicted noise levels at the nearest affected residential receiver with the solar farm operating at full capacity are presented in Table 8.

Table 8: Predicted noise levels

Time Period	Receiver Address	Noise Limit, L_{eq} dB(A)	Predicted Noise Level dB(A)	Complies?
Night	611 Browne Lane	< 26	≤ 23	✓

Arup's assessment demonstrates that operational noise from the Axedale Solar Farm is not expected to impact on the Subject Site's nearest noise-sensitive receiver.

5.3 Discussion

It is expected that noise levels for the day, evening, and night periods are consistent. Typically, equipment loading is reduced during the night-time period. As such, this assumption represents a conservative approach to the noise assessment. Note that the predicted noise levels have been based on plant noise levels provided by the manufacturers, or from secondary sources as required. Should final selection of plant or location of plant significantly differ from the assumptions stated in this report, the assessment of compliance may be revised.

The cumulative noise impact of both solar farms is predicted to comply with noise limits, provided Axedale Solar Farm complies with relevant noise criteria.

6 Summary

Arup has completed a desktop noise assessment to establish noise limits for noise emitted from the Subject Site. Noise limits have been determined through use of Noise Protocol Commercial Industrial and Trade rural assessment methodology.

The proposed operation of the solar plant at the Subject Site shall comply with the night-time noise limits. As the night-time represents the most noise-sensitive period, demonstrating compliance with the night-time noise limits demonstrates compliance with other time periods.

Based on Arup's assessment the Subject Site and Axedale Solar Farm, cumulative noise levels are predicted to comply with the noise limits. On that basis, noise emission from the solar farms will not adversely impact the noise sensitive community.

Appendix A

Acoustic Glossary

A1 Acoustic Terminology

Ambient Noise Level

The ambient noise level is the overall noise level measured at a location from multiple noise sources. When assessing noise from a particular development, the ambient noise level is defined as the remaining noise level in the absence of the specific noise source being investigated. For example, if a fan located on a city building is being investigated, the ambient noise level is the noise level from all other sources without the fan running. This would include sources such as traffic, biRoads, people talking and other nearby fans on other buildings.

Background Noise Level

The background noise level is the noise level that is generally present at a location at all or most times. Although the background noise may change over the course of a day, over shorter time periods (e.g. 15 minutes) the background noise is almost-constant. Examples of background noise sources include steady traffic (e.g. motorways or arterial roads), constant mechanical or electrical plant and some natural noise sources such as wind, foliage, water and insects.

Decibel

The decibel scale is a logarithmic scale which is used to measure sound and vibration levels. Human hearing is not linear and involves hearing over a large range of sound pressure levels, which would be unwieldy if presented on a linear scale. Therefore a logarithmic scale, the decibel (dB) scale, is used to describe sound levels.

An increase of approximately 10 dB corresponds to a subjective doubling of the loudness of a noise. The minimum increase or decrease in noise level that can be noticed is typically 2 to 3 dB.

dB(A)

dB(A) denotes a single-number sound pressure level that includes a frequency weighting (“A-weighting”) to reflect the subjective loudness of the sound level.

The frequency of a sound affects its perceived loudness. Human hearing is less sensitive at low and very high frequencies, and so the A-weighting is used to account for this effect. An A-weighted decibel level is written as dB(A).

Some typical dB(A) levels are shown below.

Sound Pressure Level dB(A)	Example
130	Human threshold of pain
120	Jet aircraft take-off at 100 m

Sound Pressure Level dB(A)	Example
110	Chain saw at 1 m
100	Inside nightclub
90	Heavy trucks at 5 m
80	Kerbside of busy street
70	Loud stereo in living room
60	Office or restaurant with people present
50	Domestic fan heater at 1m
40	Living room (without TV, stereo, etc)
30	Background noise in a theatre
20	Remote rural area on still night
10	Acoustic laboratory test chamber
0	Threshold of hearing

L_{90}

The L_{90} statistical level is often used as the "average minimum" or "background" level of a sound level that varies with time.

Mathematically, L_{90} is the sound level exceeded for 90% of the measurement duration. As an example, 45 dB $L_{A90,15min}$ is a sound level of 45 dB(A) or higher for 90% of the 15 minute measurement period.

L_{eq}

The 'equivalent continuous sound level', L_{eq}, is used to describe the level of a time-varying sound or vibration measurement.

L_{eq} is often used as the "average" level for a measurement where the level is fluctuating over time. Mathematically, it is the energy-average level over a period of time (i.e. the constant sound level that contains the same sound energy as the measured level). When the dB(A) weighting is applied, the level is denoted dB $L_{Aeq.}$ Often the measurement duration is quoted, thus $L_{Aeq,15\ min}$ represents the dB(A) weighted energy-average level of a 15 minute measurement.

Frequency

Frequency is the number of cycles per second of a sound or vibration wave. In musical terms, frequency is described as "pitch". Sounds towaRoads the lower end of the human hearing frequency range are perceived as "bass" or "low-pitched" and sounds with a higher frequency are perceived as "treble" or "high pitched".

Sound Power and Sound Pressure

The sound power level (L_w) of a source is a measure of the total acoustic power radiated by a source. The sound pressure level (L_p) varies as a function of distance from a source. However, the sound power level is an intrinsic characteristic of a source (analogous to its mass), which is not affected by the environment within which the source is located.

Appendix B

Fosterville Solar Farm Site Plan

ADVERTISED PLAN

PLANT SUMMARY "FOSTERVILLE"		
Total POC of Plant :		80 MW
Total Inverter Power of Plant @50ºC:		90.75 MVA
Total DC Peak Power (STC):		95.5MWp (final design may be up to 100MW maximum)
BESS @2hrs:		80-110MW/160-220MWh
PV Modules :		Approx. 175,000 panels
Inverter :		Approx. 14 inverter/power conversion stations
Panel row spacing:		Minimum of 6m
Total Site Area: 183.04 ha	Available PV area 153.78 ha	Fence length 5,488 m

GEOGRAPHICAL COORDINATES	
Country	Australia
Coordenates (UTM 55H)	279898.25 m E, 5932373.11 m S
Altitude	175 m

Main Site Entrance

Russells Bridge Road

Brownes Lane

SP Ausnet 220kV
Bendigo to Shepparton
(BETS-SHTS)
Overhead Transmission Line

Closest house

681m

Site Boundary of UPC's
Axedale Solar Farm

LEGEND

- Solar Panels in Single Axis Tracker (1V*3*27)
- Solar Panels in Single Axis Tracker (1V*2*27)
  To be used if necessary
- Power Convertion Station — MV Transformer
- Fosterville Solar Farm Property Boundary
- Axedale Solar Farm Property Boundary
- Fence
- 10m fire break setback from solar panels
- Internal Road (Typically 4m wide)
- Trees to be retained + 15m of diameter for tree protection zone
- Trees to be removed
- Aboriginal cultural sensitivity area + 20m offset

COMMENTS / APPROVED — A1

REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	DESCRIPTION	VERIFIED
01.09	21.12.09	M.L.G	M.G.	A.Q.	A.Q.	Council Application	
01.07	21.09.30	M.G.	M.G.	A.Q.	A.Q.	Revision of complete design	
01.02	21.06.29	M.G.	M.G.	A.Q.	A.Q.	Preliminar design	
01.01	21.06.24	M.G.	M.G.	A.Q.	A.Q.	Preliminar design	

PROJECT: FOSTERVILLE PV PLANT

FRV FOTOWATIO RENEWABLE VENTURES

TITLE: EXISTING SITE CONDITIONS

REF. N°:

SCALE

N° 01.09 Rev.

SHEET 01 FOLLOWS –

PLANT SUMMARY "FOSTERVILLE"		
Total POC of Plant :		80 MW
Total Inverter Power of Plant @50ºC:		90.75 MVA
Total DC Peak Power (STC):		95.5MWp (final design may be up to 100MW maximum)
BESS @2hrs:		80-110MW/160-220MWh
PV Modules :		Approx. 175,000 panels
Inverter :		Approx. 14 inverter/power conversion stations
Panel row spacing:		Minimum of 6m
Total Site Area:	Available PV area	Fence length
183.04 ha	153.78 ha	5,488 m

GEOGRAPHICAL COORDINATES	
Country	Australia
Coordenates (UTM 55H)	279898.25 m E, 5932373.11 m S
Altitude	175 m

LEGEND

- Solar Panels in Single Axis Tracker (1V*3*27)
- Solar Panels in Single Axis Tracker (1V*2*27) *To be used if necessary*
- Power Convertion Station — MV Transformer
- Fosterville Solar Farm Property Boundary
- Axedale Solar Farm Property Boundary
- Fence
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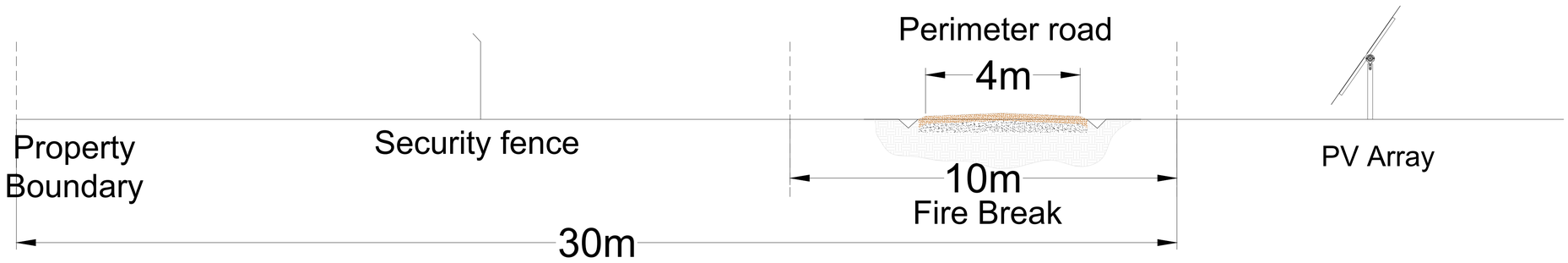
- Aboriginal cultural sensitivity area + 20m offset



ADVERTISED PLAN

Perimeter Road and Firebreak as per CFA Guidelines. Minimum setback from Property Boundary to PV panels = 30 meters

COMMENTS / APPROVED — A1

REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	DESCRIPTION	VERIFIED
01.09	21.12.09	M.L.G	M.G.	A.Q.	A.Q.	Council Application	
01.07	21.09.30	M.G.	M.G.	A.Q.	A.Q.	Revision of complete design	
01.02	21.06.29	M.G.	M.G.	A.Q.	A.Q.	Preliminar design	
01.01	21.06.24	M.G.	M.G.	A.Q.	A.Q.	Preliminar design	

PROJECT: FOSTERVILLE PV PLANT

FRV FOTOWATIO RENEWABLE VENTURES

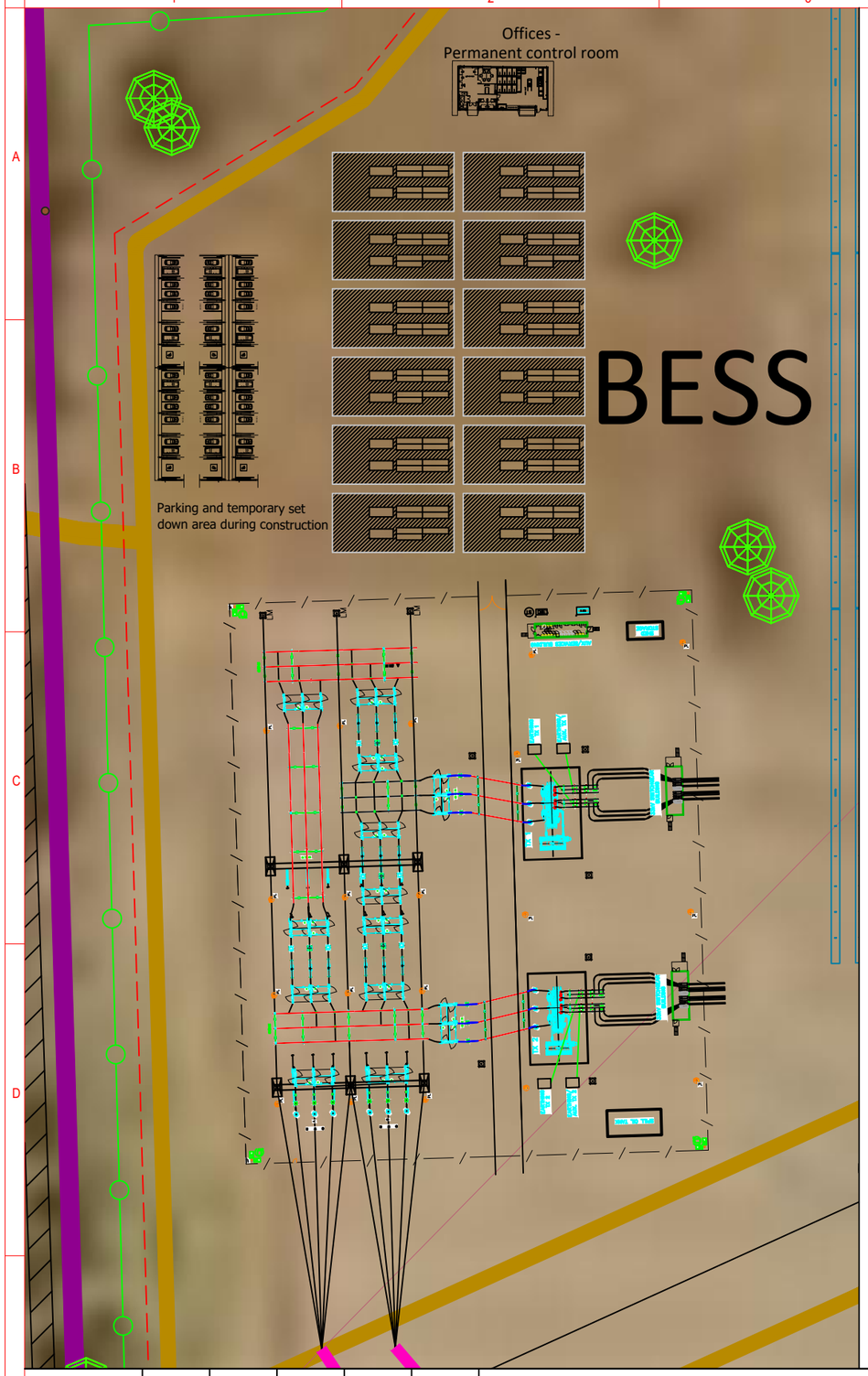
TITLE: GENERAL LAYOUT

REF. N°:

SCALE

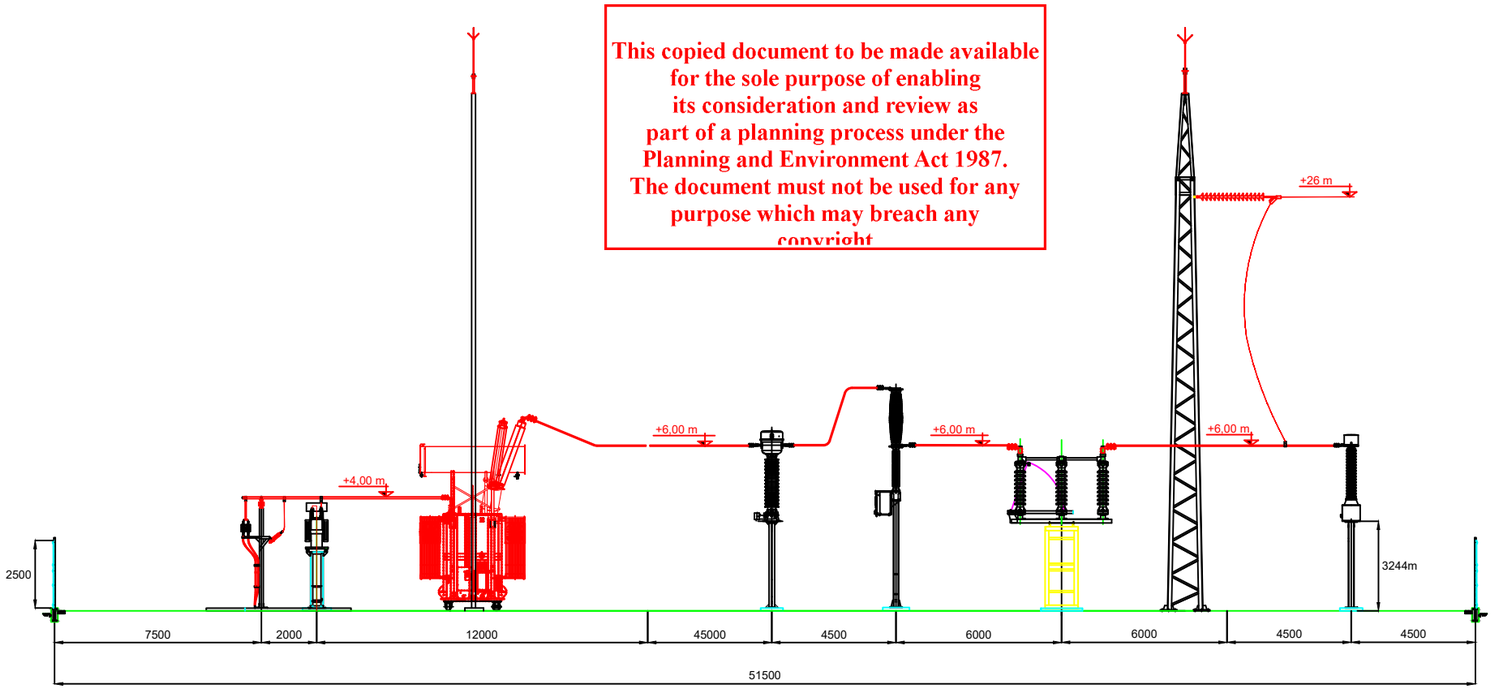
N° 01.09 Rev.

SHEET 01 FOLLOWS –



Substation height will be no greater than the existing on site overhead power line.

Height of the connection tower (connecting the substation to the existing overhead line) is estimated at 35m.



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01.09	21.12.10	M.L.G	M.G	A.Q	A.Q	Council Application	
01.07	21.09.30	M.G	M.G	A.Q	A.Q		
01.06	21.09.22	M.G	M.G	A.Q	A.Q	Complete design	

PROJECT
FOSTERVILLE PV PLANT

A3

TITLE
INTERCONNECTION

REF. N°: –

N.° – 01.09 Rev.

SHEET FOLLOW –

Typical Tesla BESS Layout

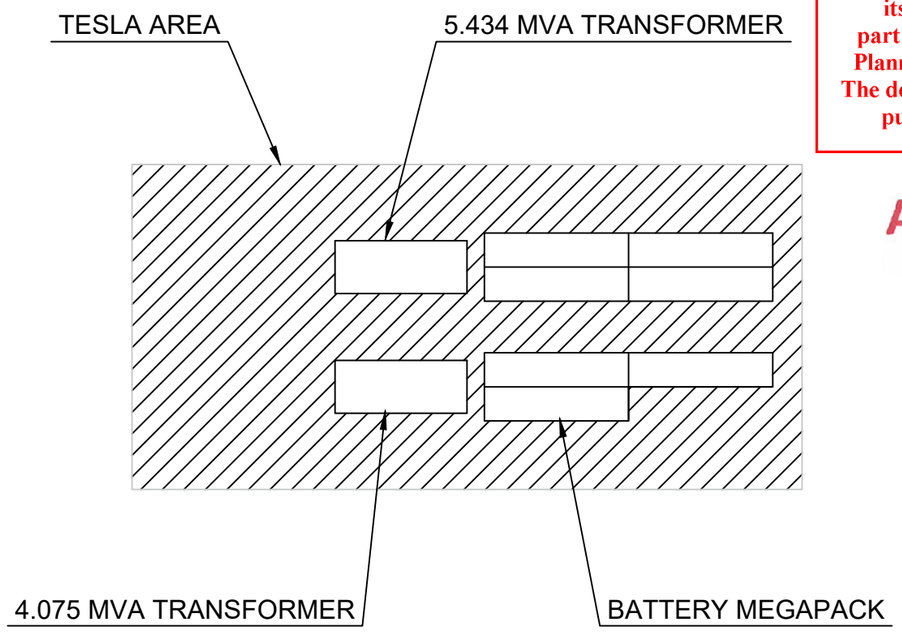
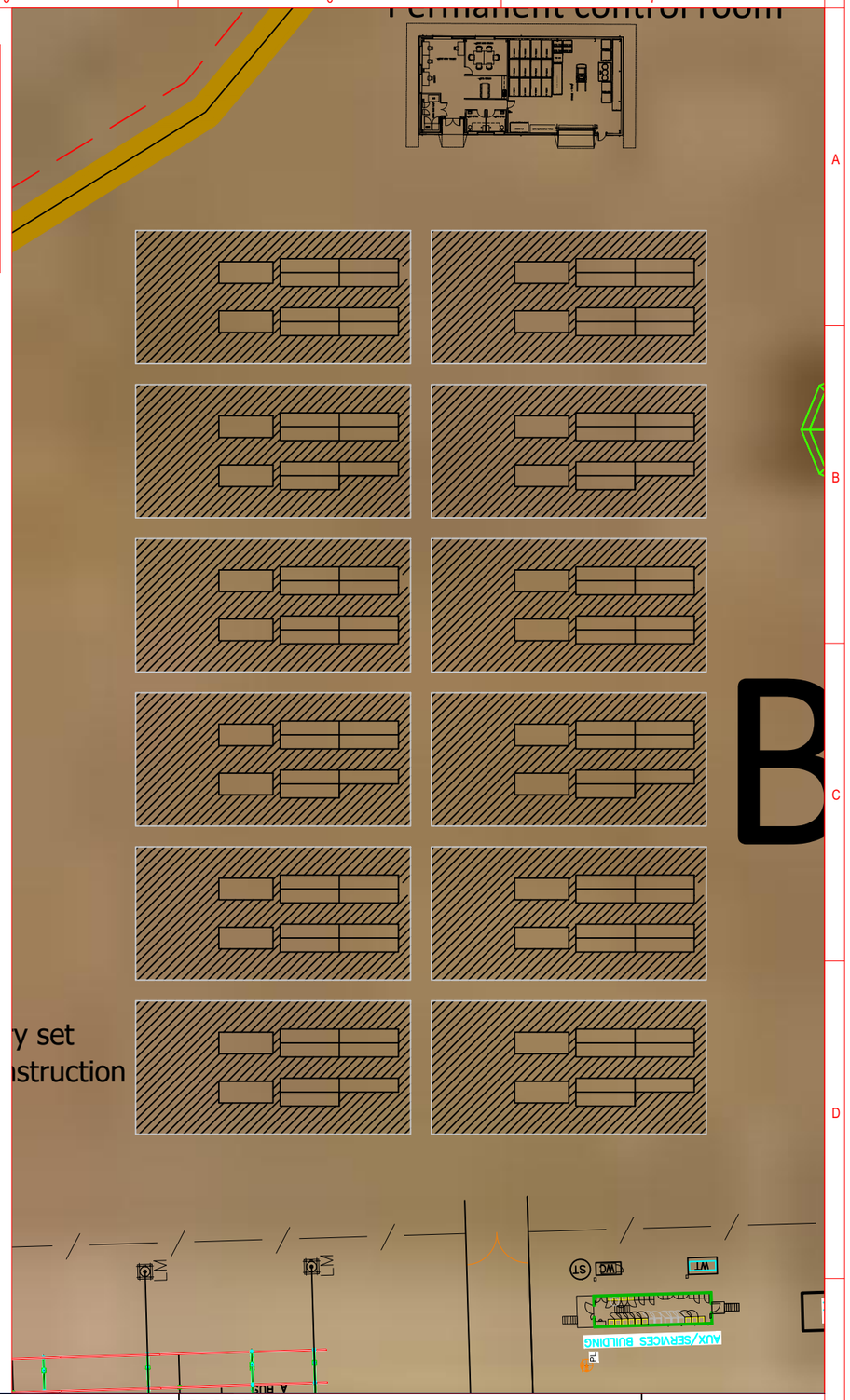


Figure 2. Example Megapack

1. Battery module bays (*Battery Modules* on page 10)
2. Thermal bay (*Thermal Components* on page 11)
3. Customer Interface Bay (*Customer Interface Bay* on page 12)
4. Thermal roof (*Thermal Components* on page 11)
5. IP66 enclosure (*The Megapack IP66 Enclosure* on page 12)



REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	DESCRIPTION	VERIFIED
01.09	21.12.10	M.L.G	M.G	A.Q	A.Q	Council Application	
01.07	21.09.30	M.G	M.G	A.Q	A.Q		
01.06	21.09.22	M.G	M.G	A.Q	A.Q	Complete design	

PROJECT
FOSTERVILLE PV PLANT

FRV FOTOWATIO RENEWABLE VENTURES

A3

TITLE
BESS DETAILS

REF. N°: –

N.° – 01.09 Rev.

SHEET FOLLOW –

Appendix C

Planning Map

PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

From www.planning.vic.gov.au at 01 June 2021 10:04 AM

PROPERTY DETAILS

Address:	**BROWNES LANE AXEDALE 3551**
Crown Description:	**More than one parcel - see link below**
Standard Parcel Identifier (SPI):	**More than one parcel - see link below**
Local Government Area (Council):	**GREATER BENDIGO** www.bendigo.vic.gov.au
Council Property Number:	**205032**
Planning Scheme:	**Greater Bendigo** Planning Scheme - Greater Bendigo
Directory Reference:	**Vicroads 45 A5**

This property has 3 parcels. For full parcel details get the free Property report at Property Reports

UTILITIES

Rural Water Corporation:	**Goulburn-Murray Water**
Urban Water Corporation:	**Coliban Water**
Melbourne Water:	**Outside drainage boundary**
Power Distributor:	**POWERCOR**

STATE ELECTORATES

Legislative Council:	**NORTHERN VICTORIA**
Legislative Assembly:	**EUROA**

OTHER

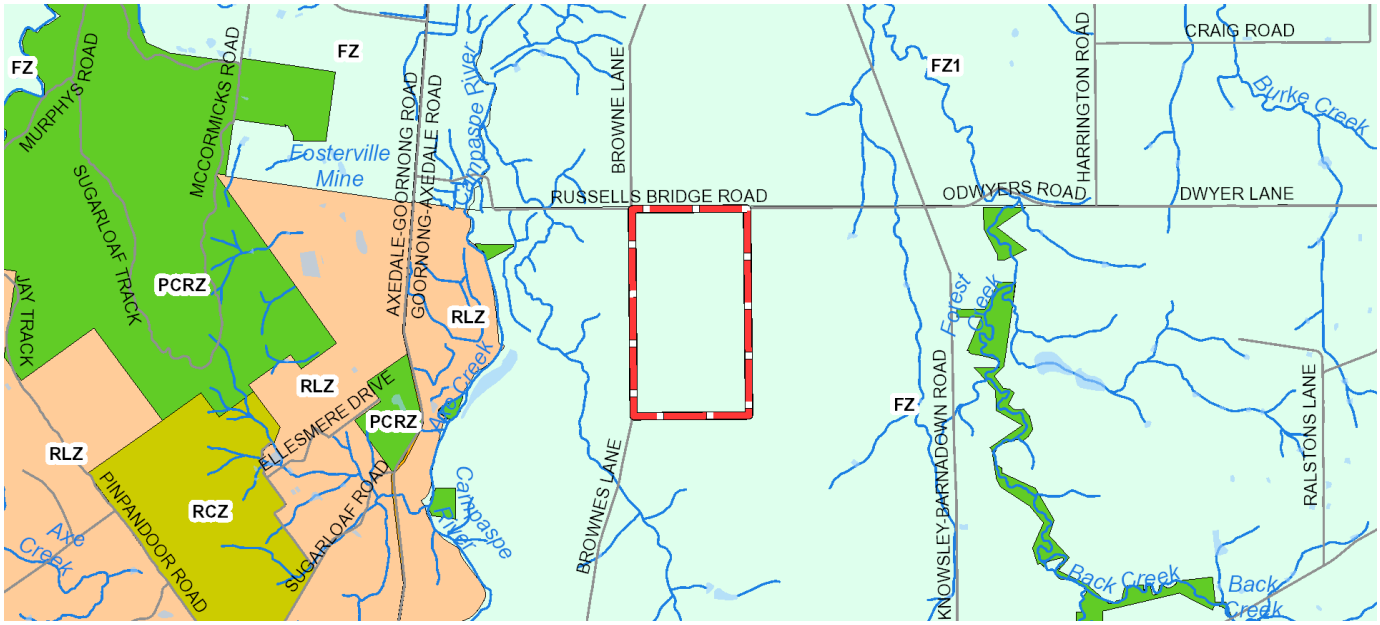
Registered Aboriginal Party:	**Taungurung Land and Waters Council Aboriginal Corporation**

View location in VicPlan

Planning Zones

FARMING ZONE (FZ)

SCHEDULE TO THE FARMING ZONE (FZ)



FZ - Farming
PCRZ - Public Conservation and Resource
RCZ - Rural Conservation
RDZ2 - Road-Category 2
RLZ - Rural Living
Water area
Water course

Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

ADVERTISED PLAN

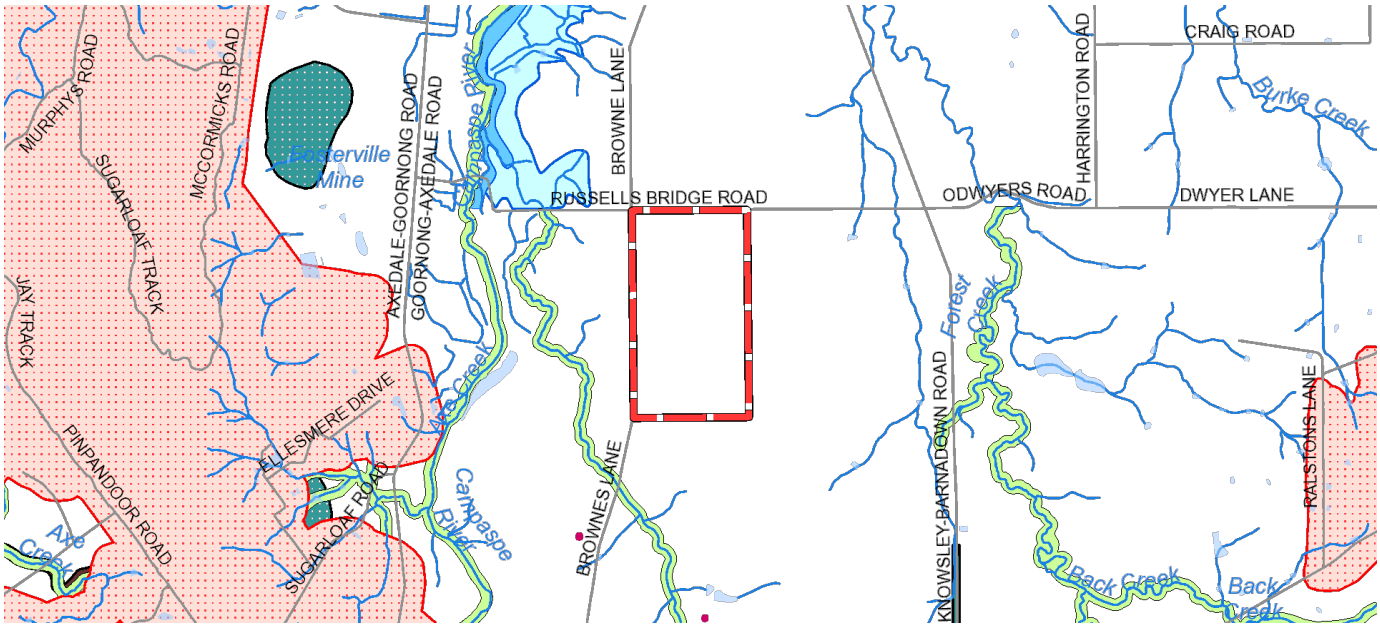
PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

Planning Overlay

None affecting this land - there are overlays in the vicinity

BUSHFIRE MANAGEMENT OVERLAY (BMO)
ENVIRONMENTAL SIGNIFICANCE OVERLAY (ESO)
FLOODWAY OVERLAY (FO)
HERITAGE OVERLAY (HO)
LAND SUBJECT TO INUNDATION OVERLAY (LSIO)
SALINITY MANAGEMENT OVERLAY (SMO)
VEGETATION PROTECTION OVERLAY (VPO)



Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

Areas of Aboriginal Cultural Heritage Sensitivity

All or part of this property is an 'area of cultural heritage sensitivity'.

'Areas of cultural heritage sensitivity' are defined under the Aboriginal Heritage Regulations 2018, and include registered Aboriginal cultural heritage places and land form types that are generally regarded as more likely to contain Aboriginal cultural heritage.

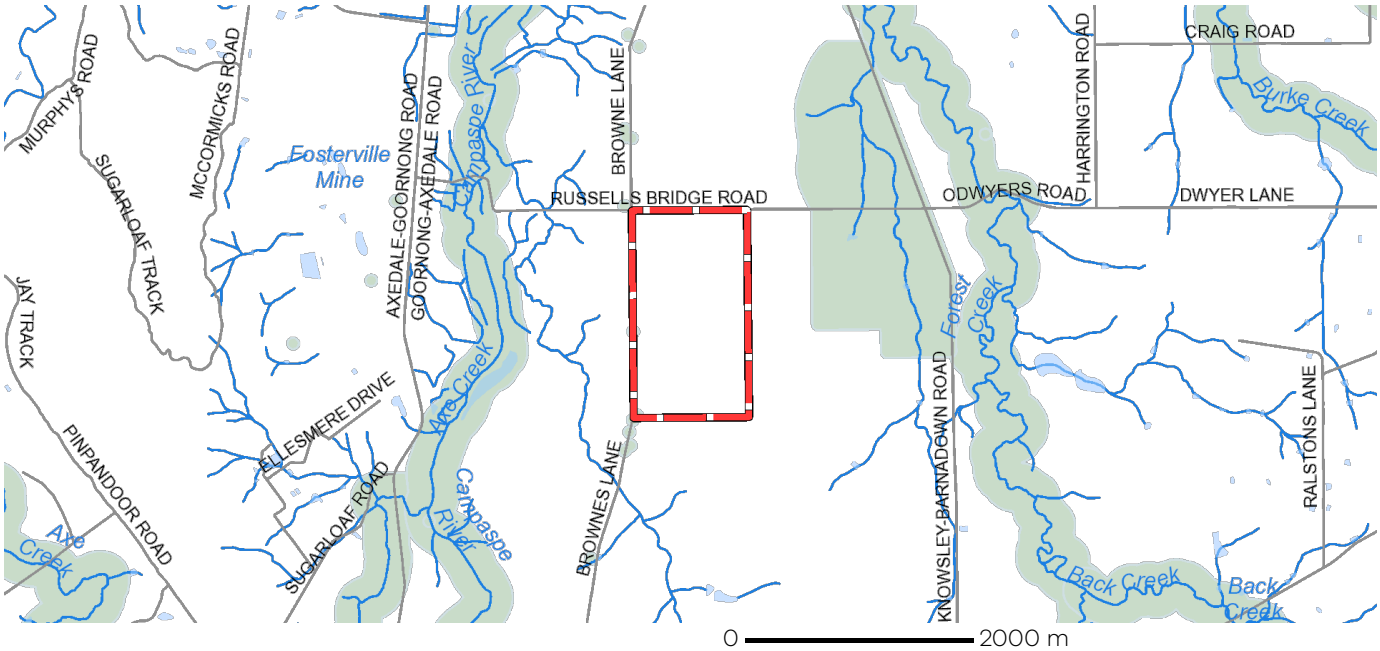
Under the Aboriginal Heritage Regulations 2018, 'areas of cultural heritage sensitivity' are one part of a two part trigger which require a 'cultural heritage management plan' be prepared where a listed 'high impact activity' is proposed.

If a significant land use change is proposed (for example, a subdivision into 3 or more lots), a cultural heritage management plan may be triggered. One or two dwellings, works ancillary to a dwelling, services to a dwelling, alteration of buildings and minor works are examples of works exempt from this requirement.

Under the Aboriginal Heritage Act 2006, where a cultural heritage management plan is required, planning permits, licences and work authorities cannot be issued unless the cultural heritage management plan has been approved for the activity.

For further information about whether a Cultural Heritage Management Plan is required go to http://www.aav.nrms.net.au/aavQuestion1.aspx

More information, including links to both the Aboriginal Heritage Act 2006 and the Aboriginal Heritage Regulations 2018, can also be found here - https://www.aboriginalvictoria.vic.gov.au/aboriginal-heritage-legislation



PLANNING PROPERTY REPORT

Further Planning Information

Planning scheme data last updated on 27 May 2021.

A **planning scheme** sets out policies and requirements for the use, development and protection of land.
This report provides information about the zone and overlay provisions that apply to the selected land.
Information about the State and local policy, particular, general and operational provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting https://www.planning.vic.gov.au

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the ***Planning and Environment Act 1987.***
It does not include information about exhibited planning scheme amendments, or zonings that may abut the land.
To obtain a Planning Certificate go to Titles and Property Certificates at Landata - https://www.landata.vic.gov.au

For details of surrounding properties, use this service to get the Reports for properties of interest.

To view planning zones, overlay and heritage information in an interactive format visit https://mapshare.maps.vic.gov.au/vicplan

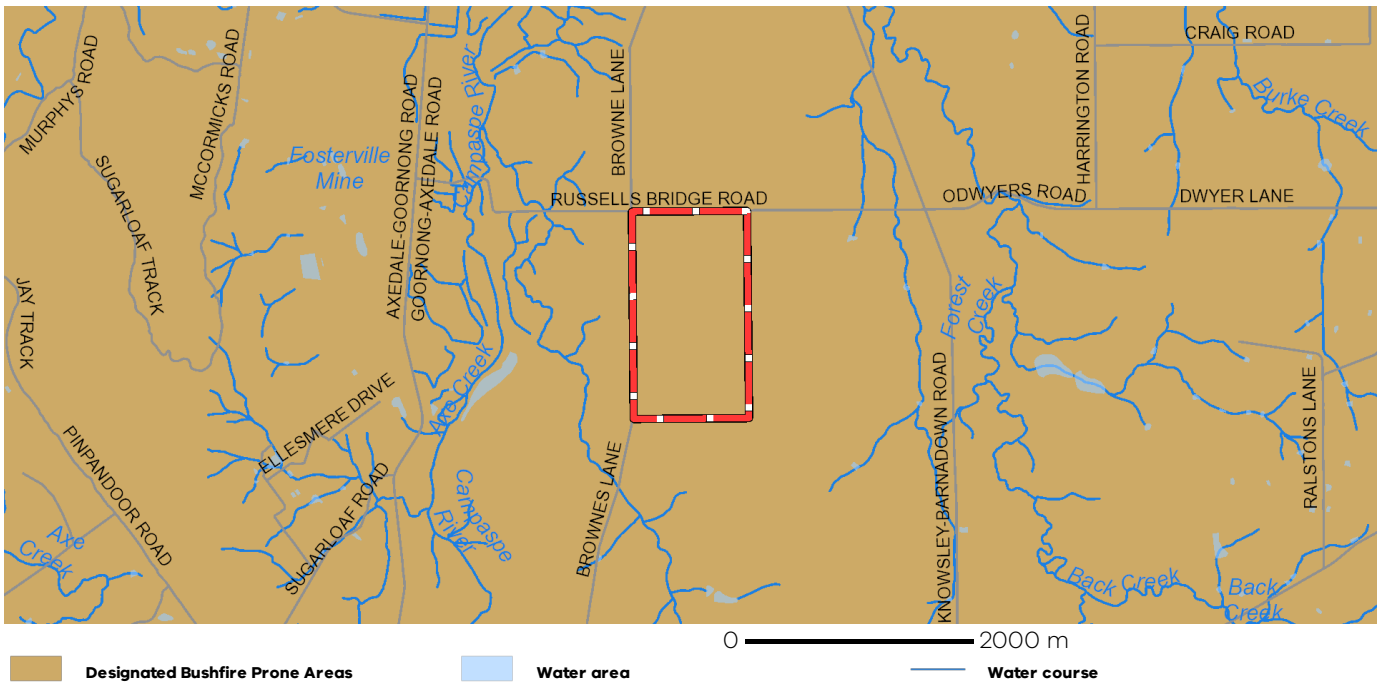
For other information about planning in Victoria visit https://www.planning.vic.gov.au

PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

Designated Bushfire Prone Areas

This property is in a designated bushfire prone area.
Special bushfire construction requirements apply. Planning provisions may apply.



Designated bushfire prone areas as determined by the Minister for Planning are in effect from 8 September 2011 and amended from time to time.

The Building Regulations 2018 through application of the Building Code of Australia, apply bushfire protection standards for building works in designated bushfire prone areas.

Designated bushfire prone areas maps can be viewed on VicPlan at https://mapshare.maps.vic.gov.au/vicplan or at the relevant local council.

Note: prior to 8 September 2011, the whole of Victoria was designated as bushfire prone area for the purposes of the building control system.

Further information about the building control system and building in bushfire prone areas can be found on the Victorian Building Authority website https://www.vba.vic.gov.au

Copies of the Building Act and Building Regulations are available from http://www.legislation.vic.gov.au

For Planning Scheme Provisions in bushfire areas visit https://www.planning.vic.gov.au

Native Vegetation

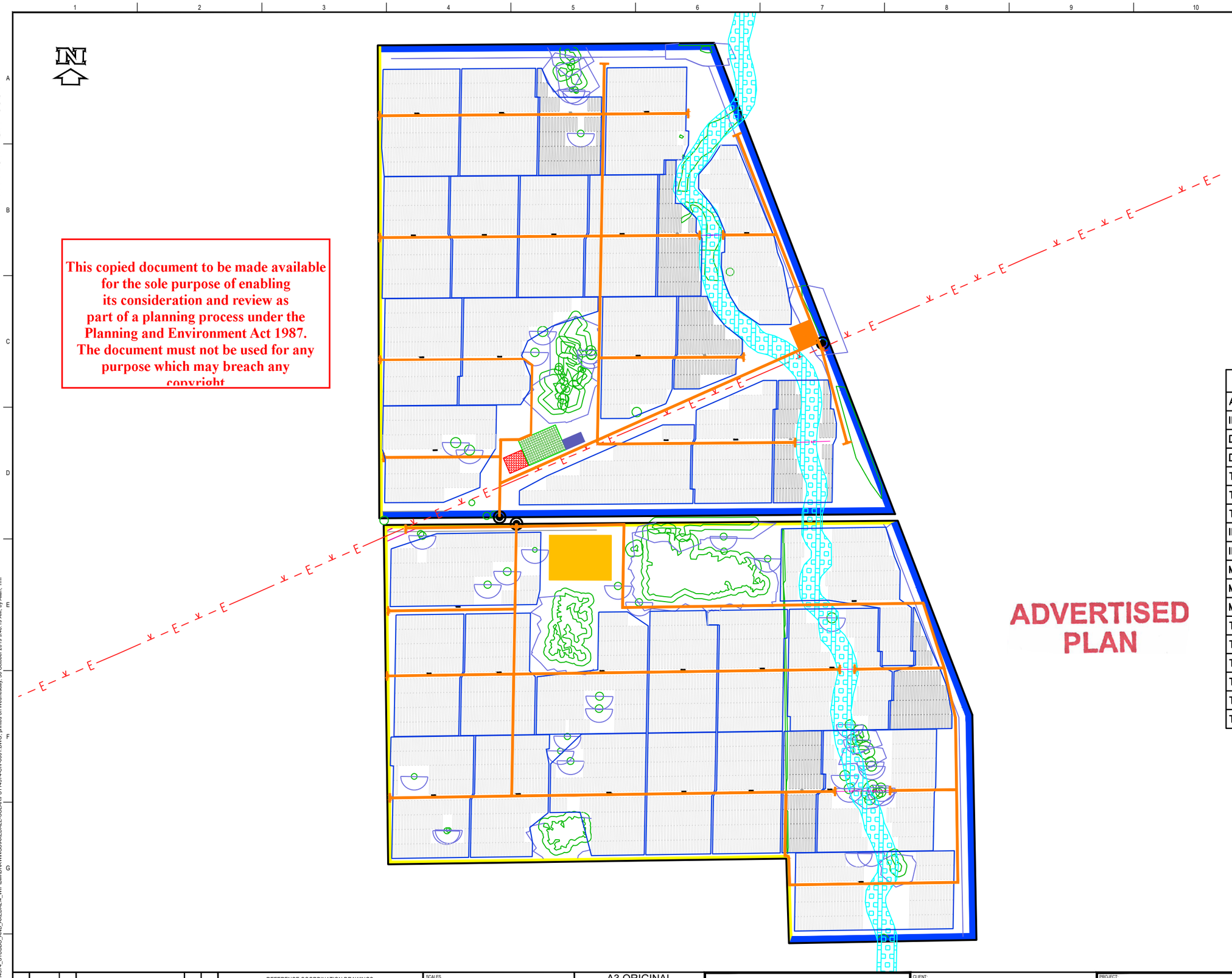
Native plants that are indigenous to the region and important for biodiversity might be present on this property. This could include trees, shrubs, herbs, grasses or aquatic plants. There are a range of regulations that may apply including need to obtain a planning permit under Clause 52.17 of the local planning scheme. For more information see Native Vegetation (Clause 52.17) with local variations in Native Vegetation (Clause 52.17) Schedule

To help identify native vegetation on his property and the application of Clause 52.17 please visit the Native Vegetation Information Management system https://nvim.delwp.vic.gov.au/ and Native vegetation (environment.vic.gov.au) or please contact your relevant council.

You can find out more about the natural values on your property through NatureKit NatureKit (environment.vic.gov.au)

Appendix D

Axedale Solar Farm Site Plan



LEGEND

- PROJECT BOUNDARIES CONSTRAINT
- INTERNAL ROADS (WIDTH 5.5 m)
- TRACKER GROUP
- ECOLOGICAL CONSTRAINT
- BOUNDARY SETBACK MINIMUM 10m
- BOUNDARY SETBACK MINIMUM 20m
- TEMPORARY CONSTRUCTION LAYDOWN AREA
- SITE OFFICE AND CAR PARK
- O&M BUILDING
- SITE ACCESS LOCATIONS
- SUBSTATION AREA
- BATTERY ENERGY STORAGE SYSTEM
- WATERWAY CONSTRAINT
- 220kV TRANSMISSION LINE
- (33kV) AC CABLE CROSSING
- (LV) DC CABLE CROSSING
- SINGLE INVERTER PCU
- DUAL INVERTER PCU

TABLE OF QUANTITIES		
AC CAPACITY AT 25°C	160.00	MW ac
INSTALLED AC CAPACITY AT 25°C	192.00	MVA
DC CAPACITY AT STC	198.374	MW dc
DC: AC RATIO	1.240	
TRACKER PITCH	9.0	m
TRACKER AZIMUTH	0	°
TRACKER CONFIGURATION	2P	
INVERTER CAPACITY (MAX)	3.00	MVA
INVERTER CAPACITY	2.5	MW
MODULE POWER	410	W
MODULES PER STRING	28	
MODULES PER TRACKER	84	
TRACKERS PER INVERTER	90	
TOTAL PCU WITH 1 INVERTER	6	
TOTAL PCU WITH 2 INVERTERS	29	
TOTAL INVERTERS	64	
TOTAL TRACKERS	5,760	
TOTAL MODULES	483,840	

ADVERTISED PLAN

REV	DATE	BY	DESCRIPTION	CHK	APPD
B	24.10.19	T.A	UPDATED WITH DETAIL	S.B	S.B
A	30.07.19	T.A	PRELIMINARY ISSUE	S.B	S.B

REFERENCE COORDINATION DRAWINGS

DESCRIPTION	DRAWING NO.	REV	CHK

SURVEY DATUM

HORIZONTAL DATUM:	VERTICAL DATUM:
AHD	MGA56

SCALES
0 100 200 300
Full Size 1:11000 A3;
SCALE (m)

A3 ORIGINAL
DO NOT SCALE THIS DRAWING

APPROVED
SIGNED:
DATE: RPEQ:

wsp
Level 3, 51-55 Bolton Street, Newcastle
PO Box 1162, NSW 2300, Australia
Tel: +61 2 4929 8300 Fax: +61 2 4929 8382
wsp.com

CLIENT: UPC AC Renewables AUSTRALIA

PROJECT: AXEDALE SOLAR FARM

TITLE: AXEDALE SOLAR FARM
PRELIMINARY LAYOUT

DRAWING STATUS: PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

DESIGNED:	CHECKED:	APPROVED:
S.BAMBROOK	S.BAMBROOK	S.BAMBROOK
PROJECT No:	DRAWN:	DATE:
PS114574	T.ALLAN	24.10.19

DRAWING No: PS114574 - CIV - 0001 REV: B

PS114574-CIV-0001

File name U:\PROJECTS\PS114574_STUBBO_AND_AXEDALE\4_WIP\BIM\DRAWINGS\AXEDALE-SOLAR\PS114574-CIV-0001.DWG, printed on Wednesday, 30 October 2019 9:48:19 AM, by Allan, Tim

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Appendix E

Noise Criteria Flowchart

E1 Noise Criteria Flowchart