Planning Report

5MW Solar Energy Facility

Dane Road, Stawell

January 2021 Ref: 20103

Applicant:

Greentech 7 Pty. Ltd.

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1 Introduction

This report is provided in support of an application for a **5MW Solar Energy Facility** on the 81.64-hectare parcel **(Crown Allotment 20, Section Z, Parish of Stawell)**, being the southern-most parcel that forms part of a 166-hectare property at **105 Dane Road, Stawell**. The subject land also includes a portion of **58 Dane Road, Stawell** – where an underground power line (**Utility Installation**) will connect to the existing power pole on the property.

The subject land technically includes the road reserve and the adjacent property at 58 Dane Road – due to the proposed Utility Installation. However, as the proposed Utility Installation will be an underground cable that will be unnoticeable from a land use perspective, for the purpose of this planning permit application the report largely references Crown Allotment 20 as the 'subject land', only.

The proposed solar energy facility will have a total area of **approximately 8.3 hectares** – located in the south-eastern corner of the property – thereby providing for the continued agricultural use of the remaining 158 hectares. By leasing a small portion of the landholder's land, the applicant will provide the farmer with a means of diversifying their income and providing an added degree of resilience for their continued agricultural operation.

In considering the proposed facility from a holistic standpoint, ACEnergy typically provides rural communities with smaller, site-responsive solar energy facilities that will integrate into the existing Powercor power grid – with a focus on servicing the local community – **all electricity generated from this facility will remain within Western Victoria**. The subject site itself has been chosen due to its proximity to existing Powercor 22kV lines. Due to these existing transformers and power lines, the site requires limited connection to assets that service local population centres and commercial operators – ensuring electricity is most efficiently transferred from the source facility.

The proposal includes **landscaping of at least 2-metres-in-height** which will be used to screen the proposed solar panels – typically being less than one (1) metre above ground level.

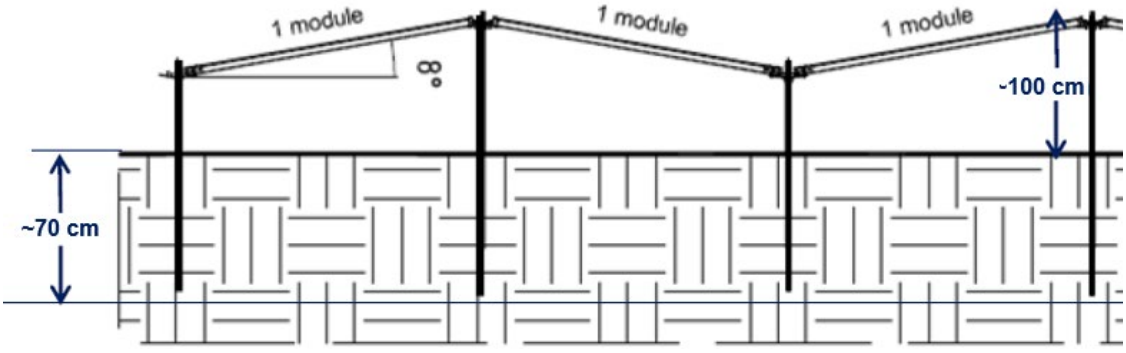


Figure 1. PEG Solar Panel Cross-Section

The proposal will allow the current farmer to continue to farm over 95% of the property for the duration of the leasing period as well as providing a supplementary income to strengthen resilience of the existing property through diversification, as well as contributing to a net community benefit in the form of renewable energy. The proposed solar energy facility allows for the existing farmer to temporarily divest

themselves of a less-productive portion of their land to be used for the period of the lease for renewable energy production – which will then be used to service the immediate community.

2 Executive Summary

The proposed use and development of land for a solar energy facility is in accordance with all relevant provisions of the Northern Grampians Planning Scheme and contributes to a net community benefit. The proposal:

- Provides for a renewable energy facility within the Northern Grampians municipality, consistent with federal, state and local policy which supports transition to a renewable energy economy;
- Creates affordable renewable energy option for western Victorian consumers – with the electricity generated by this facility to remain within the local power grid;
- Proposes a renewable energy facility in accordance with the Victorian State government's *'Solar Energy Facilities Design and Development Guidelines'*;
- Avoids land that is conducive to higher-productivity agriculture, as the facility:
  - Is outside any declared irrigation district; and
  - Comprises land that is considered to be of only moderate agricultural utility;
- Allows for full remediation and re-use of the proposed development site upon de-commissioning of the facility upon completion of leasing period;
- Provides for co-location with established agricultural land – providing for diversification and directly strengthening the resilience of the current agricultural enterprise;
- Will have limited earthworks and would not involve an alteration to soil or require substantial footings for any part of the development;
- Will contain landscaping along the entirety of the facility's perimeter – thereby limiting potential visibility from public spaces and nearby rural dwellings;
- Has been sited to capitalise upon existing topographical and physical features of the site – sitting below the highest topography of the site, which gently rises toward the north of the parcel
- The site is largely screened as a result of the substantial existing vegetation along the adjacent road frontages – effectively obscuring visibility of the site from adjoining landholders; and
- Does not create any significant adverse impacts, through noise, dust, reflectivity or otherwise.

3 Site & Context Analysis

3.1 Subject Land

Property Overview – 105 Dane Road, Stawell

The proposed development forms part of a 165-hectatre dryland farming property consisting of four separately transferable parcels forming a contiguous, slightly irregular shaped property. The parcels are formally described as Allotments 19, 20, 22 and 38, Section Z, Parish of Stawell. The above parcels are addressed jointly as **105 Dane Road, Stawell**, and are configured as outlined below:

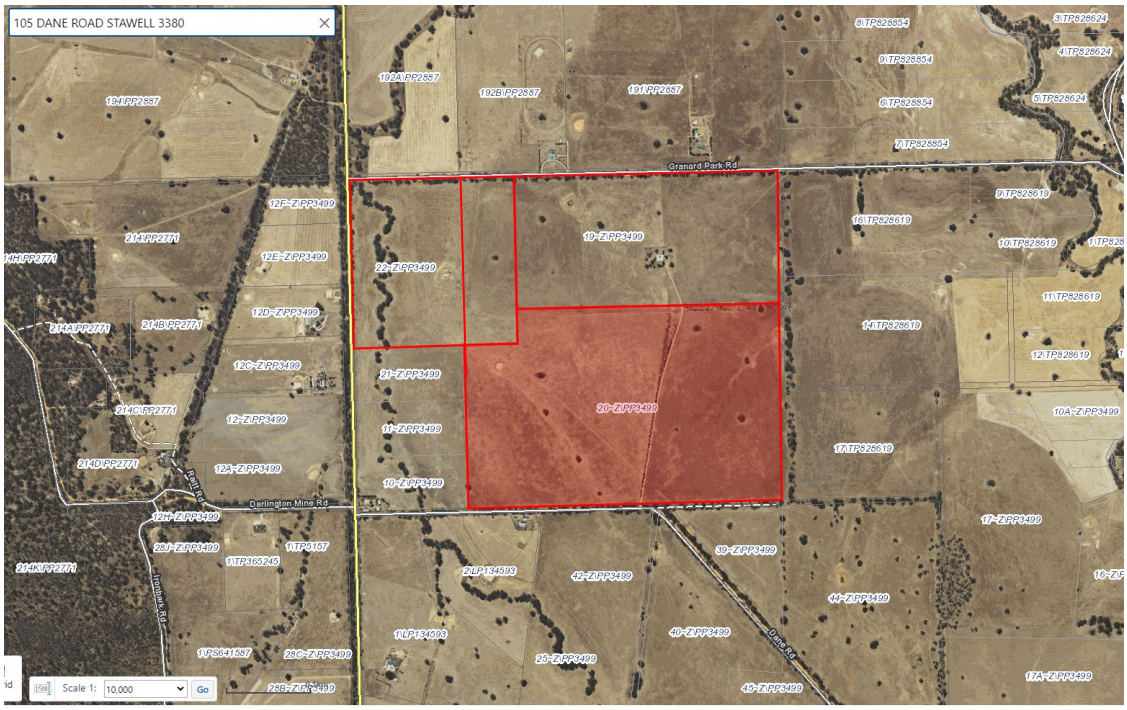


Figure 2. 105 Dane Road, Stawell (Source: VicPlan)

Parcel	Area	Parcel Features
Crown Allotment 20, Section Z, Parish of Stawell	**81.64ha**	**<u>Subject Site</u>, south-east parcel containing frontage to Dane Road and 22kV transmission lines.**
Crown Allotment 19, Section Z, Parish of Stawell	47.14ha	Rectangular shaped parcel in north-east corner, contains dwelling and several isolated remnant trees
Crown Allotment 22, Section Z, Parish of Stawell	25ha	Rectangular parcel in north-west corner of property, contains some tracts of remnant vegetation generally following Jerrywell Creek alignment
Crown Allotment 38, Section Z, Parish of Stawell	12.15ha	Rectangular shaped parcel to the north – wedged between C.A.'s 19 and 22 – with sone remnant tree

The property is bounded by Dane Road for most of southern boundary – apart from a section towards the south-east corner where the road diverges to the south of the property boundary is fronted by an unnamed road reserve rows of native vegetation and a narrow access track. The north-western boundary fronts onto Stawell-Donald

Road and Granard Park Road runs along the northern boundary. A road reserve adjoins part of the eastern boundary; however, is unmade and effectively serves as a tree belt between rural properties.

Figure 3. Access track off Dane Road at the south-east of the property
Functioning as an informal tree belt/access track (photo: Google streetview)

Crown Allotment 20

The subject site, for the purpose of this application, is **Crown Allotment 20**, only. This parcel is the southern-most parcel and largest of the four contiguous parcels that form the farmer's property – with an area of approximately 81.64 hectares.

The site is largely flat – with limited discernible topography. The site has been largely cleared for agricultural use and is currently used for dryland grazing and cropping. Consequently, the site has not been set out for any degree of modern irrigation and has limited access to rural water – other than a handful of existing farm dams.

The parcel contains several isolated remnant native trees and planted trees that line the driveway to the dwelling located on the parcel to the north. The adjoining road reserves are lined with native trees. However, the proposed solar energy facility site at the south-eastern corner of the parcel is completely cleared of vegetation from its long-term use for agriculture.

58 Dane Road, Stawell

This property is a 17-hectare property that contains an existing dwelling and some small cropping land on the north-east half of the property. The south-west portion of the site contains two watercourses and some agricultural dams for on-site water supply. These watercourses are identifiable by the linear native vegetation.

3.2 Local Context

The surrounding area is a mix of flat or slightly undulating agricultural land and some steeper land that contains a degree environmental and scenic value.

Generally, the land to the east of Donald-Stawell Road is conventional dryland agriculture on relatively flat, cleared land. Conversely, the land to the west of Donald-Stawell Road contains agricultural land and large tracts of vegetated public and private land. Points of interest include:

- Deep Lead Nature Conservation Reserve, approximately 1.3km west of the site (**light green pin**),
- Concongella Creek, approximately 1.3km east of the subject site (**red pin**),
- Jerrywell Creek – approximately 200m west of the subject site (**blue pin**), and

Due to the topography and tracts of mature vegetation in the area, visibility and site lines are generally limited. Accordingly, the site's visibility of the above points of interest is limited – if not non-existent.

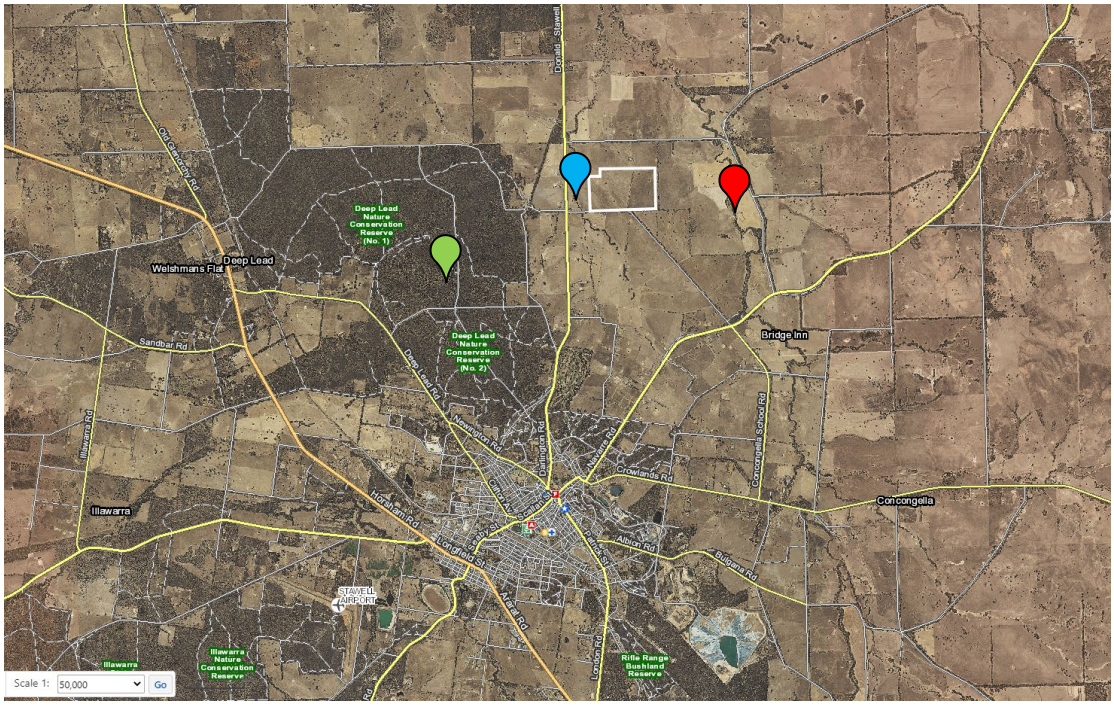


Figure 4. Stawell Locality Plan
Facility outlined in **white;** points of interest marked by pins as described below

The subject site is located approximately 3.5km north of Stawell and approximately 14.5km south-east of Glenorchy – being defined by the nearest urban zoned land in each settlement. Given the substantial separation distances, topography and tracts of established vegetation there will no visibility or sightlines to the facility from the nearest settlements.

West of Donald-Stawell Road and south of Dane Road is Rural Living Zoned land. The nearest dwelling (not in common ownership) would be approximately 539m west of the proposed facility fence – at 58 Dane Road, Stawell (Lot 2 on LP134593). The nearest panels will be approximately 570m from this dwelling, which be screened by proposed landscaping to the perimeter fence and established trees within the road reserve.

The site has excellent access to the arterial road network with Donald-Stawell road providing a north-south link between the Western and Wimmera Highways – serving as major routes to regional centres Stawell and Horsham – providing access to the site, particularly during construction on decommissioning periods.

4 Applicant & Application Details

This application has been prepared by Chris Smith & Associates on behalf of **Greentech 7 Pty. Ltd**, as the applicant in this matter.

Greentech 7 Pty. Ltd. is a subsidiary of **ACEnergy.**

ACEnergy has been in negotiations with the landholder to lease the proposed area to enable ACEnergy to operate on part of the property under agreement for a 30-year lease.

4.1 ACEnergy – Company Overview

ACEnergy Pty. Ltd. (ACEnergy) specialises in renewable energy development, they have extensive experience with past renewable projects across most of Australia.

The most prominent of ACEnergy's renewable energy projects has been the "micro solar farm" network that has been rolled out across north-central and western Victoria, with an emphasis on co-locating and complementing existing farming operations.

ACEnergy has also been involved in other high-profile international renewable projects – this has included both solar and wind power stations across Asia, Europe and North America.

In addition to the micro solar farm network, ACEnergy has approval for a 100MW facility at Derby – 20 mins from Bendigo. This is anticipated to provide Bendigo and north-central Victoria with a secure renewable energy future.

The Micro Solar Farm Project

As touched upon above, this site forms part of the broader network of micro solar farms (each with a capacity of approximately 5MW) across regional Victoria.

The intention of this project is to functionally generate the equivalent output of the larger conventional farms, through a network of smaller facilities that can be rolled out in a site-sensitive manner and deliver renewable energy to regional Victoria. These micro sites can locate on rural land, without extensive land requirements and therefore can avoid the most productive agricultural land.

Project Features:

- Approximately 1-metre-high for each PV panel. Less visual impact to the public
- Cutting edge mounting kits – environmentally-friendly, designed and supplied by world-leading German manufacturers.
- The proposed arrays do not include any concrete works on farmland to allow for the PV panel installation. This ensures that decommissioning and recovery of the agricultural land will be a relatively simple transition once lifespan of the solar energy facility has been exhausted.
- Low-maintenance – the site will be unattended, periodical maintenance will be carried out by local contractors.

- Less construction traffic on road during construction when compared to conventional solar energy facilities which require bulkier equipment and a vastly larger number of contractors.

Benefit to Municipality, Ratepayers and Residents

- More employment opportunities: local electrical and construction companies will be hired for the installation and ongoing operation and maintenance jobs are required as well in the next 30 years.
- Reliable power supply to the local agricultural enterprises and households – each 5MW solar energy facility can supply local households.
- The proposal will place very little burden on the electricity network in the area – it would not require upgrading existing power assets such as poles, wires and substations. This will ultimately pass savings on to electricity consumers in costs. As such, with the installation of local electricity generation, the electricity price can remain affordable.

International Renewable Energy Experience

International projects that ACEnergy has been involved in include the following renewable energy projects:

- Mugga Lane Solar Park (ACT) – 13MW Solar Farm
- Cirrus, Texas (USA) – Installed capacity: 61.2 MW (17 x 3.6MW turbines)
- Minneapolis, Minnesota (USA) – 1.5MW (1 x 1.5MW turbine)
- Lubbock, Texas (USA) – 10MW (10 x 1MW turbine)
- Tooele, Utah in (USA) – 1MW (1 x 1MW turbine)
- Ralls, Texas (USA) – 10MW (5 x 2MW turbine)
- Bulgaria wind farm project – 4.5MW (3 x 1.5MW turbine)
- 12MW above-ground photovoltaic project in Essex (UK)
- 1.6MW shared photovoltaic project of the organ directly under People's Government of Inner Mongolia Autonomous Region.
- The photovoltaic power station project of Wuyuan County of Inner Mongolia – 25.5MW
- 33MW photovoltaic power station project in Alxa League, Inner Mongolia

5 Project Overview

ACEnergy has pioneered the 'Micro Solar Farm' project, which involves a series of small-scale 5MW Solar Energy Facilities that are intended to deliver renewable energy to regional Australia, where it is most needed – at a scale responsive to the surrounding environment – including nearby agriculture and sensitive uses.

Unlike larger facilities, which typically feed the resultant energy into major urban centres such as Melbourne or Victoria's regional cities, the output of these facilities will generally stay within the locality in which it is generated.

The proposed facility at Dane Road, Stawell will contain the following specifications:

Fenced Compound Area	**8.3 ha (approx.)**
Proposed Tenure	**30-year Lease**
Project AC Size	**Sub-5 MW**
Connection Type	**22 kV Tee (Powercor to extend into land)**
Mounting Kit	**PEG Design**

Figure 5. Typical PEG Solar Panels

Relative to the larger, conventional solar energy facilities, the proposed 5MW facility is a significantly lesser installation – using a land mass significantly less than the aforementioned facilities.

The site has been deliberately located on a property nearby to existing overhead Powercor lines. The proposal includes the construction of approximately 700m of new overhead line internal to the property, where it will connect via underground cable to an existing power pole within the neighbouring property at 58 Dane Road. This will

ensure the electricity generated by the facility is transferred efficiently into the grid and consistent with recent changes to planning policy by the Victorian State Government.

The proposed equipment, including the panels and supports are prefabricated and would be transported to the proposed site, in batch loads for immediate installation.

Consequently, there would be very limited manufacture/assembly on the land – reducing the impact and potential degradation of agricultural land as part of the installation process.

5.1 General Project Considerations

To inform the design and locational considerations of the proposed facility, the provisions of **Clause 53.13** of the Planning Scheme provides the framework for facility design and site determination. The considerations of the site context are largely addressed within Section 3, above.

- ***Site plan, photographs or other techniques to accurately describe the site and the surrounding area.***

Provided as **Appendix E (Site Context Analysis)** and **Appendix F (Proposal Plans)**, respectively. Both have been prepared by ACEnergy to assist with the assessment process and provide greater clarity of the proposal.

- ***Location plan showing the full site area, local electricity grid, access roads to the site and direction and distance to nearby accommodation, hospital or education centre.***

An Electrical Grid Overview has been incorporated into the locality plan prepared by ACEnergy. This plan provides a simple illustration of the proposal's immediate connection into the existing Powercor grid and servicing area.

This figure demonstrates the facility's intended catchment, *the generated electricity is to be directly fed into the adjacent 22kV lines that run along the southern side of the Dane Road Reserve*. The use of this existing infrastructure would then feed into nearest Powercor zone substation, which would ultimately feed regional consumers and directly service the local community.

Design Response

- ***"…the layout and height of the facility and associated building and works, materials, reflectivity, colour, lighting, landscaping, the electricity distribution starting point (where the electricity will enter the distribution system), access roads and parking areas."***

The proposed built form is illustrated in the plans prepared by ACEnergy that clearly dimensions and quantifies the physical extent of the development. This includes landscaping and materials to be used – which would be of muted, non-reflective colours.

The facility is intended to 'plug-in' to existing infrastructure immediately proximate to the facility – namely the local road network and the Powercor 22kV overhead power lines – thereby reducing the burden of extensive additional works to facilitate the proposal.

- ***…accurate visual simulations illustrating the development in the context of the surrounding area and from key public view points.***

A site and context analysis of the surrounding area has been prepared by ACEnergy and provided as **Appendix E** to this report.

These photos provide a visual illustration of the site in the context of the surrounding area and illustrate the extent of the anticipated built form and visibility from local points of interest.

The proposed facility will be screened from at sensitive interfaces to mitigate visibility of the site and would not impact on any key "viewpoints" in the surrounding area.

- ***…the extent of vegetation removal and a rehabilitation plan for the site.***

The proposed development site is clear of native vegetation; however, some vegetation removal will be required for the creation of an access.

Lopping or removal of some native vegetation may also be required for the in order to connect to facility to the existing transmission line on the opposite side of the road reserve. This will be subject to Powercor requirements with regard to clearance from assets.

An Ecological Assessment by Cumbre Consulting has been appended to this report to gauge the potential vegetation impacts – which will amount to one (1) yellow gum that will be partly impacted – the development will not require its removal, however.

- ***…an explanation of how the proposed design derives from and responds to the site analysis.***

The proposed development has been sited with a suitable separation distance from any nearby viewpoints and dwellings – with the site typically falling to the north-east – see **Appendix D (Feature and Level Survey)**. The proposal has therefore ensured that any visual prominence on the surrounding area will be limited. Further, the equipment itself is quite low to the ground – with the panels having a maximum height of approximately one (1) metre.

- ***…a description of the proposal, including the types of process to be utilised, materials to be stored and the treatment of waste.***

The proposed facility will be static – no processes being carried out other than passive collection of solar energy and conversion into electricity. There will be no materials to be stored on site during operation.

The solar components largely consist of prefabricated equipment – the only construction to occur on the site is the assembly of the panels and the cabling connections. A works approval is not required for a solar energy facility. Any waste generated during construction (packaging, etc) will be managed by the respective waste management and construction management plans.

- ***…the potential amenity impacts such as noise, glint, light spill, emissions to air, land or water, vibration, smell and electromagnetic interference.***

The proposed facility will be an un-manned facility and will not include any light emissions.

Potential noise impacts have been assessed in the Acoustic Report by Watson Moss Growcott Acoustics (see **Appendix B**). Noise sources assessed are battery storage air conditioning units, inverter units and inverter transformer. The expected noise output was assessed against the NIRV guidelines assuming all units operating at full

capacity with weather conditions that propagate noise emissions in the direction of the sensitive receiver (i.e. a 'worst case' scenario). The table below shows the results of the noise modelling indicating the facility will comply with NIRV guidelines at the nearest sensitive receptor – being the dwelling at 58 Dane Road.

Noise Sensitive Receptor (58 Dane Road)	Predicted Noise Level During Relevant Assessment Period		
	Day Period	Evening Period	Night Period
Predicted Contribution due to Solar Farm	28 dB(A)	28 dB(A)	28 dB(A)
Tonal adjustment	+2 / +5 dB(A)	+2 / +5 dB(A)	+2 / +5 dB(A)
Effective noise level at receptor	30 / 33 dB(A) L_{eq}	30 / 33 dB(A) L_{eq}	30 / 33 dB(A) L_{eq}
Noise Emissions Compliant with NIRV RMNL	✔ *(Note 1)*	✔ *(Note 1)*	✔ *(Note 1)*

From a glint and glare perspective, the panels are designed to be non-reflective – as any reflection of sunlight significantly impacts the production capacity of the facility through lost sunlight capture. Typically, any potential reflection would be from the metal framing. The PEG system used by ACEnergy contains aluminium framing, which it is our understanding does not reflect – as illustrated in the Glint and Glare Assessment report by Vipac Pty. Ltd. (see **Appendix C**). The report concludes that solar facility should be considered as having "No Impact" – as described in the "*Solar Energy Facilities – Design and Development Guidelines"* where solar reflection is not geometrically possible; and no mitigation measures are required.

Aviation infrastructure including any nearby air traffic control tower or runway approach path was also considered in the glint and glare assessment. The proposal is considered to have no impact in terms of glint and glare "*in all areas of interest".*

- ***…the effect of traffic to be generated on roads.***

The anticipated traffic effects are addressed within this report and are deemed to be negligible – the facility will be un-manned and peak traffic will occur during construction. This can be suitably managed through appropriate construction management practices. Once operational the existing road network will have ample capacity to accommodate the minimal traffic generated without any particular management measures.

- ***…the impact upon Aboriginal or non-Aboriginal cultural heritage.***

An area of Aboriginal cultural heritage sensitivity is identified along Jerrywell Creek, affecting a small section of the south-west corner of the subject site. The facility itself, however, is located approximately 700m west of this area and is completely clear of Aboriginal cultural heritage sensitivity areas.

In the unlikely event there should be any artefacts discovered at any stage, the applicant will uphold their legal obligations under the Aboriginal Heritage Act.

- ***…the impact of the proposal on any species listed under the Flora and Fauna Guarantee Act 1988 or Environment Protection and Biodiversity Conservation Act 1999.***

The proposed development site is currently a cleared agricultural paddock, clear of any native vegetation. An Ecological Assessment by Cumbre Consulting (See **Appendix A**) is provided with this application detailing any impact on biodiversity from this proposal.

- ***…a statement of why the site is suitable for a renewable energy facility including, a calculation of the greenhouse benefits.***

As a point of reference, various sources stipulate that the energy requirements to create 1MW of energy via conventional coal power can be as high as half a tonne per hour. The proposed 5MW facility is intended to contribute enough electricity to power approximately 1,000 dwellings and reduce reliance on conventional fossil fuel-driven energy.

- ***…an environmental management plan including, a construction management plan, any rehabilitation and monitoring.***

In considering the relatively benign nature of the proposal, it is anticipated that any potential permit would include appropriate conditions relating to environmental and construction management.

5.2 Construction Schedule & Works

The construction works proposed will typically be as follows:

- There will be a comprehensive weed eradication program implemented for the proposed solar energy facility location – to ensure that noxious weeds are not present at installation.
- The proposed compound site will be cleared, levelled and resurfaced, with tractor and excavation machines – therefore there will be limited soil removed from site.
- All mounting kits for the solar panels will be installed by PEG driver only. This will involve hammering the 20 – 30 mm diameter steel pipe supports into the ground (with no concrete foundations). The supports will be driven to a depth of approximately 700 mm by pneumatic hammer.
- Installation of five (5) DC coupled energy storage containers (batteries) contained in a 40ft shipping containers. The batteries would be powder coated in a neutral colour (typically olive green) and set on concrete footings with a maximum height of approximately 3.3 metres.
- The construction traffic will be minimal, and works will typically occur in dry weather to ensure that vehicles do not damage the surrounding road network.
- The construction is expected to be completed within three (3) months from commencement – all works will be in accordance with a construction management plan, in accordance with Council and/or relevant authority requirements and conditions. During the construction period, contractors will operate between 7am and 7pm, Monday to Sunday.

Figure 6. SMA inverter

The proposed compound will be surrounded by a fully secured steel wire 1.8-metre-high chain mesh fence, which can be covered with a shaded cloth to further mitigate any visual impacts (if required), as well as landscaping in accordance with the attached plans. The ongoing security of the compound, and identification of any issues will be managed by a local security company – providing additional employment within the region.

The facility contains a central power station, as illustrated above. This power station will comprise an inverter, transformers and switchgears. The proposed power station will be located within the compound and will be located as the primary conduit for electricity from the facility prior to being transferred via overhead and underground lines into the nearby Powercor network.

The proposed solar energy facility will have remote monitoring in real-time, allowing for constant surveillance and monitoring of the facility without the requirement for ongoing staffing.

The compound contains key infrastructure that requires a high degree of security. Therefore, the abovementioned control centre will remotely monitor inverters in real-time to ensure that systems function as intended, and that security is not compromised. Upon identification of any potential issues, action can be taken indirectly from control centre or by deploying a local contractor to site.

5.3 Proposed Building Works

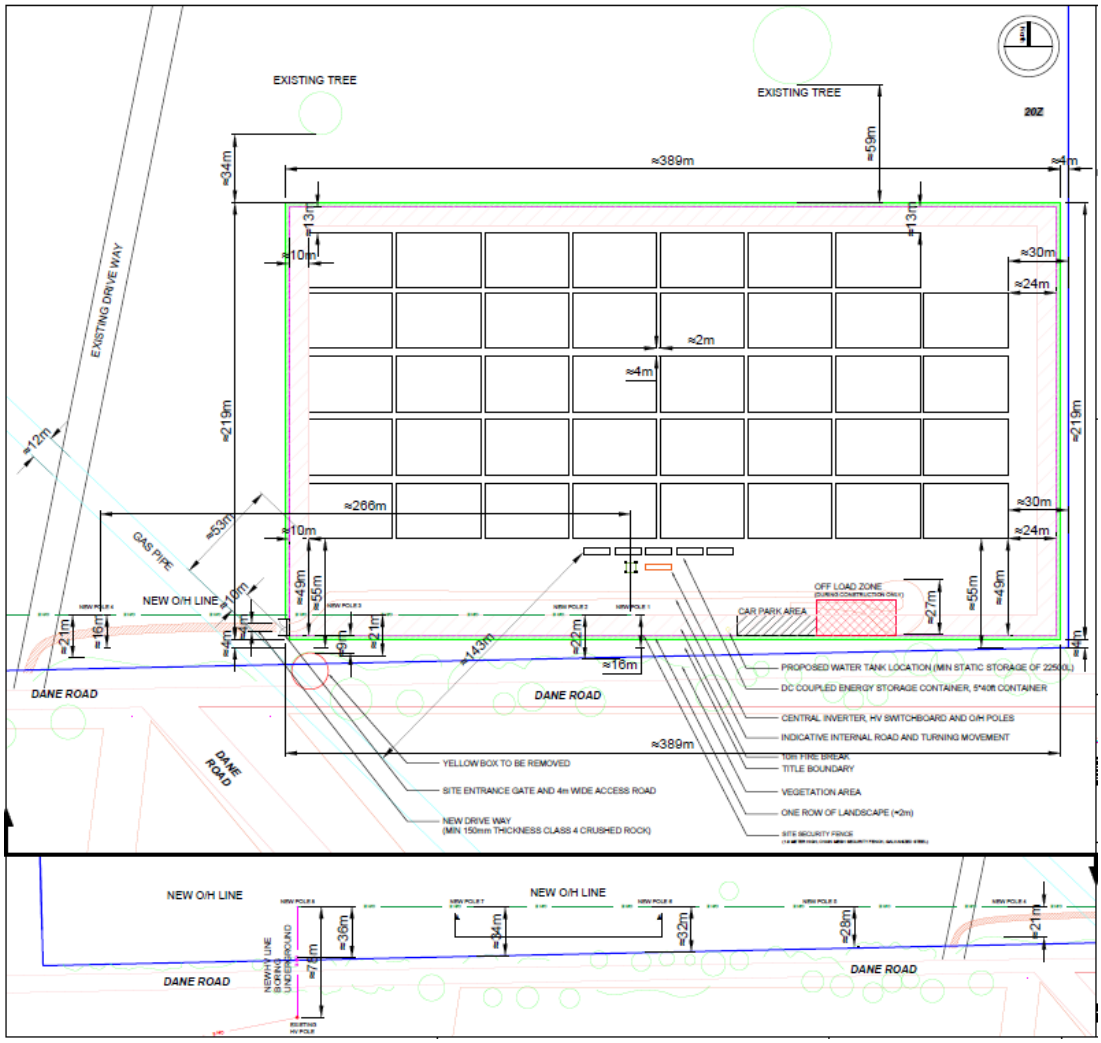


Figure 7: Extent of Proposed Building Works

A detailed overview of the proposed building works associated with the proposed 5MW solar energy facility are listed thus:

- Construction of approximately **18,500 x 435W polycrystalline solar panels**, on PEG mounting system, with the following specifications;
  - Each panel to have dimensions of approx. 2000mm by 1000 mm; with a width of 40 mm
  - PEG Design to be mounted at no more than one metre above ground level
  - The facility would contain a total of **thirty-nine (39) arrays**; to be configured into blocks with dimensions of 42m x 28m
- Installation of **one (1) prefabricated Central Inverter with integrated MV Power Station** (13m long, 3m wide, 3m high) set on concrete footings 300mm above ground level.
- Installation of **five (5) DC Coupled Energy Storage Containers** (Batteries) installed on concrete footings.
- Proposed compound fence would be approximately 1.8-metres-high, with mesh fencing and capable of being screened, as appropriate.

- Landscaping will be provided with fast-growth indigenous trees planted in accordance with permit condition/s.
- Access gate with a width of 8m along southern fence of the facility.
- All-weather 4-metre-wide internal accessway that will connect the facility to Dane Road to the south.
- Creation of a new vehicle crossing from Dane Road reserve to the southern property boundary, to the requirements of the relevant road authority (Northern Grampians Shire Council).
- **762 metre overhead power line** running east to west, internal to 105 Dane Road property.
- **78 metre underground cable** extending south from 105 Dane Road to the existing Powercor power pole in the adjoining property at 58 Dane Road.
- The proposed overhead power line will also include approximately eight (8) new power poles (within the property boundary) at a height of approximately twelve (12) metres to support the overhead lines.

5.4 Proposed Landscaping

The proposed 5MW Solar Energy Facility has been designed to be of lesser visual impact than typical large-scale facilities which typically use tracking panels that can be well over three metres high.

The facility is intended to be designed so that the facility blends into the surrounding landscape. The proposed facility will install PEG solar panels that would face skyward – with the panels mounted at an 8° angle to the horizontal, oriented due east and west. As such, reflectivity would generally be limited at surface level, which would further limit the necessity for extensive landscaping typically required for larger and solar-tracking solar facilities.

It is considered that a **single-row landscaping buffer around the entirety of the compound perimeter** with small/medium indigenous trees and shrubs that would grow to an approximate height of 2 metres would be appropriate.

The proponent would plant fast-growing indigenous species to the satisfaction of the respective authority. In past projects, this has typically included various ***Wattles*** due to their fast-growth and suitability of size.

PLANT SCHEDULE					
BOTANICAL NAME	COMMON NAME	PLANTING SIZE	MATURE SIZE	EXPECTED TIME TO REACH MATURITY	APPROX. TOTAL NUMBER
Acacia acinacea	Gold Dust Wattle	50mm tube with guard	1m - 3m	3y - 5y	APPROX 223 No.
Acacia aspera	Rough Wattle	50mm tube with guard	1m - 2m	3y - 5y	APPROX 223 No.
Acacia montana	Mallee Wattle	50mm tube with guard	2m - 3m	3y - 4y	APPROX 223 No.
Dodonaea cuneata	Wedge-leaved Hop Bush	50mm tube with guard	2m - 4m	3y - 5y	APPROX 223 No.

The landscaping barrier will be located **outside the perimeter fence and will be planted along with tree guards to ensure that they are not damaged or grazed upon by livestock grazing** on the balance of the farmer's property.

Figure 8. Illustration of Conceptual Landscaping at maturity; showing mature wattle trees

It is assumed that a comprehensive landscape plan; including specific species to be planted, ongoing management and cross-sections would be a condition of the sought planning permit.

6 Solar Energy Facilities Guidelines

The Department of Environment, Land, Water and Planning (DELWP) released the Solar Energy Facilities Design & Development Guidelines in August 2019, which superseded the previous Draft Guidelines and outlines the key considerations for the use and development of solar facilities across Victoria.

Of particular note, these Guidelines clearly set out the best practice for proponents, and includes recommendations for community consultation, design, consideration of off-site impacts, construction, operation and decommissioning. For the sake of simplicity, a general overview of the proposal's considerations is provided in the below sub-sections. It is noted that these practices are recommended practice only and are not a mandatory requirement of the application process.

Additionally, the Guidelines encourage the co-location of solar energy facilities with existing agricultural enterprises, as is the case with this application, which will enable the existing farmer to continue agricultural operations on the balance of the property.

Design

The proposed facility has been designed to minimise potential impacts on the surrounding land uses – ensuring that productive agriculture is not unreasonably impeded. All sensitive interfaces are proposed be suitably landscaped where potential sensitive uses are proximate to the proposed facility.

Whilst much of the design has been informed by the considerations of bushfire, the proposed facility observes setbacks as per the recommendations of the Guidelines – including 30 metre setbacks from any property boundaries.

However, it should be noted that the actual solar panels are no more than one (1) metre in height, with the compound fencing to be approximately 1.8 metres in height, with comparable landscaping along the perimeter of the solar energy facility compound (typically two metres and higher in height).

Off-site Impacts

The proposed facility will be an un-manned facility that will have a setback from the **nearest dwelling by approximately 540 metres** (from the compound's south-western boundary fence – see subject site and context assessments).

The most impactful period will be the construction and decommissioning phases of the solar energy facility's life.

In previous high-profile solar energy facility matters, community concern has centred around the potential heat generated by solar energy facilities leading to a 'micro-climate' in the immediate vicinity. In cases of significantly larger solar facilities of over 100 hectares, the impact of such an effect has been proven to be entirely negligible. In considering the significantly smaller size of the matter-at-hand, this is even more so.

Additionally, the impact of the 'heat island' affect from solar facilities has been repeatedly proven to be oversold and that there is very little evidence to support this assertion. Any ambient heat from panels would have wholly dissipated by the time it reaches the facility's fence.

Subsequently, as touched on with the Design provisions; the Guidelines provide for 30-metre-setbacks from any property boundaries to completely remove any potential for off-site ambient heat.

Construction

The proposed solar energy facility is a largely prefabricated facility – with on-site construction largely limited to assembly and connection of components. The typical solar panel weighs 22.8 kg and is readily transportable via smaller, rigid-type trucks, as detailed in the below construction management guide.

The site is directly fronted by an all-weather rural road, which is considered to have the capacity to accommodate the expectant construction traffic and delivery trucks (i.e. typically a 3 or 4-axle rigid, with larger loads by semitrailer to be undertaken as outlined in the below construction schedule). It is assumed that suitable permit conditions would stipulate appropriate hours and conditions during construction, that would reduce off-site impacts such as noise, dust and damage to roads during this period.

Traffic to the site during the construction site at peak times is anticipated to see **two (2) trucks per day**, in addition to a forecast of **eleven (11) light vehicles**. It is stressed that this is only anticipated during the absolute peak construction times.

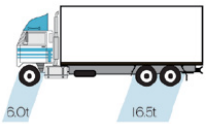
Installation will involve relatively shallow earthworks, which would be limited to a site scrape of the proposed compound to remove weeds on the solar energy facility site – the balance of the land will remain untouched during this period.

For the most part, all equipment will be shipped to the site via smaller rigid trucks, with only the inverter / transformer / power station and batteries being required to be brought in by a semitrailer. This unit is designed to share dimensions with a shipping container and will be a standard cargo that will be readily be de-mounted and located on-site.

Common
5 Axle Semitrailer

Type of Mass Limits	Maximum Length (metres)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	19.0m	39.0t	6.0t*	N/A	N/A	16.5t per tandem axle group	N/A
CML	19.0m	40.0t	6.0t*,a	N/A	N/A	17.0t per tandem axle group	N/A
HML	19.0m	40.0t	6.0t*	N/A	N/A	17.0t per tandem axle group	N/A

Common 3 Axle Rigid
Truck



Type of Mass Limits	Maximum Length (metres)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	12.5m	22.5t	6.0t*	N/A	N/A	16.5t	N/A
CML	12.5m	23.0t	6.0t*,a	N/A	N/A	17.0t	N/A
HML	12.5m	23.0t	N/A	N/A	N/A	17.0t	N/A

Figure 9. Typical dimensions of proposed haul vehicles (Source: NHVR)

Construction Delivery Schedule

Construction will be undertaken over a twelve (12) week period. During this period, the hours of construction are to be between **7am to 7pm, Monday to Sunday**, which is considered as appropriate in a rural environment where agricultural activities are conducted seven-days-a-week

	Site Works	Notes
Week 1	▪ Site mobilisation: shed container storage	▪ Site Amenities will be delivered by single articulated truck within one day only
Weeks 2 – 3	▪ Site Scrape ▪ Fencing and gate installation ▪ Trenching for underground cables (200 mm – 400 mm)	▪ Excavators will be delivered to site for the civil works. ▪ Materials to be delivered to site by small trucks
Weeks 4 – 9	▪ Installation of PEG solar mounting kits & PV panels ▪ Installation of power station (transformers etc.) ▪ Installation of cables. ▪ Installation of Inverter and transformer	▪ Installed as delivered to site ▪ One day of delivery works for inverter & transformer by 5-axle semitrailer (below), the off-load will be undertaken on the same day by a crane. ▪ Smaller, 3-axle rigid trucks to be utilised for the delivery of PV panels once fortnightly
Week 10	▪ Landscaping	▪ Rigid Truck – Approximately one day
Weeks 11 – 12	▪ Site clean-up. ▪ Waste disposal	▪ Rigid Truck – Approximately one day

Operation

The operation and management of the proposed facility is detailed comprehensively throughout other sections of this report, thus, has not been repeated within this section.

Decommissioning

The proposed use is based on a thirty-year lease. Upon completion of this leasing period, assuming that the lease is not renewed, it will be incumbent upon the operator of the facility to decommission the facility, remove all installations, and remediate the site back to its pre-existing state.

Upon approval of this application, the responsible authority may stipulate a requirement for a decommissioning and rehabilitation plan to be submitted for endorsement.

6.1 Agriculture & Renewable Energy

Agricultural Considerations

The development site is non-irrigated and is not located within proximity to any nearby irrigation infrastructure that would be conducive to commercial-scale agricultural operations.

Contributary factors to 'highly-productive' agricultural land are outlined in the Solar Energy Guidelines; this includes a myriad of compounding assets such as water availability, land configuration, soil quality, rainfall and topography.

These factors have been used to determine the potential agricultural utility of the site, were it not used for a renewable energy facility. In considering the history of the site and the likely agricultural uses that the land would be likely to support.

The Northern Grampians Planning Scheme contains local policy (Clause 21.01-03 specifically) that clearly defines areas of productive agricultural land within the municipality – the site is well outside of these areas. Accordingly, whilst the land holds a degree of agricultural utility, this value is considered to be only of moderate potential productivity.

In light of the above factors, the site is unlikely to be used for 'high-quality' agriculture as per the definition under the Solar Energy Facility Guidelines – the proposed use for a renewable energy facility is considered to be a suitable use of rural land.

Renewable Energy

Transition to a renewable energy society is supported at all levels of government through various schemes and government incentives, including explicit policies within the Northern Grampians Planning Scheme.

The micro solar farm model is considered to be a relatively non-invasive generator of energy. This is especially so when other conventional energy producing methods permanently impact / remove agriculturally productive land (i.e. coal mining / fracking).

The proposed solar energy facility will be for a 30-year lease, at which point it is anticipated that there will be strict conditions on the decommissioning of facilities – as outlined within the Victorian state government's guidelines for Solar Energy Facilities.

The proposal retains as much of the site for continued dryland agriculture, with the facility occupying approximately 8.3 ha of the 165ha landholding. The facility will ultimately provide a supplementary income to the farmer – particularly in the current environment for the local agricultural sector where diversification has become necessary for many farmers to remain viable.

The ongoing maintenance of facility will ensure that any adverse impacts on nearby agricultural land are avoided.

The site has been selected by the proponent after extensive negotiations with the farmer, who has recommended the least agriculturally productive / useful tract of the property. The remainder of the subject site not within the proposed solar energy facility compound will continue to be used for productive agriculture – or at least continue the established land uses on the site.

In considering the trade-off between the use of agricultural land for renewable energy, planning has identified the need to balance the objectives of planning between community benefit, preservation of agricultural land and sustainable development.

In considering the community benefit as a result of the proposal, the use and development of only moderate-quality agricultural land for a renewable energy facility preserves the higher-quality agricultural land for agriculture, whilst also promoting and supporting the transition to renewable energy.

For these reasons the current farmer obtains only marginal agricultural utility from his land resource; *the leasing of this portion of the property for renewable energy is considered to be of greater community benefit than the current and continued use for dryland agriculture*.

6.2 Electromagnetic Radiation (EMR)

From an environmental health perspective, any potential EMR given off by solar panels and inverters is non-ionizing, i.e. the EMR produced is at a level highly unlikely to cause any adverse impacts to any cellular structures. Various studies have been undertaken into the impact of photovoltaic technology and potential impacts or health dangers to neighbours.

The scientific consensus and evidence overwhelmingly state that there is no reasonable risk as a result of either off-site or on-site radiation impacts, as per the below citations.

The intention of these facilities is to generate and convey electricity in the most efficient manner possible, therefore radiation will be absorbed by the panels, and will be contained within insulated cabling to maximise solar yield.

Electromagnetic Radiation from the proposed 22kV overhead line, pole and transformers will be in accordance with Powercor standards and requirements. All proposed equipment will be consistent with installation works standards equivalent to residential subdivisions within the municipality.

The intention of the solar energy facility is not to 'emit' EMR, the levels of EMR generated by the proposed facility would be negligible, if not entirely unregistrable. See the below **references**:

- Moss, Coram, Blashki, (2014) *'Solar energy in Australia: health and environmental costs and benefits',* The Australian Institute. http://www.tai.org.au/content/solar-energy-australia-health-and-environmental-costs-and-benefits

- NCSU, (2017) *'Health and safety Impacts of Photovoltaics',* N.C. Clean Energy Technology Center at N.C. State University

6.3 Heat Island Effect

The heat island effect occurs where ambient temperatures around developments are higher than those of surrounding areas. This is similar to the urban heat island effect.

However, while the heat island effect is known to exist in large urban areas, there is little evidence of impacts on other land uses such as orchards due to heat dispersal from solar energy facilities.

This has been discussed and addressed as part of previous high-profile solar energy facility matters where members of the community have raised concern regarding the 'heat island effect' as a result of using land for the purpose of a solar energy facility – particularly around the potential off-site impacts.

In response to these concerns, specialist investigations by independent third-party consultants into sites within the Goulburn Valley have been undertaken to assess impacts on neighbours where solar energy facilities have been proposed adjacent to high-value agricultural land.

The outcome from these assessments determined that any off-site impacts would be unlikely – with even the temperatures within the solar energy facility unlikely to see a marked temperature increase

For reference, the above reports can be found within the Greater Shepparton Solar Panel Report documents via this link:

- https://www.planning.vic.gov.au/project-panels/panels-and-committees/greater-shepparton-solar-farm-panel)

As touched upon in assessment of the proposal against the provisions of the Solar Energy Facilities Guidelines, any ambient temperatures from a solar facility would have wholly dissipated by the time it reached the property boundary – approximately 30 metres from the nearest panels. The proposal achieves this offset to any external site boundaries.

6.4 Bushfire Management

From previous projects, ACEnergy has discussed the expectations and appropriate standards for solar energy facilities with the Country Fire Authority (CFA). In particular, the ***"Guidelines for Renewable Energy Installations"*** which were released in February 2019, (the Guidelines, under this Section) which superseded the previous *"Emergency Management Guidelines for Wind Energy Facilities"* which served as the only framework for renewable energy facilities prior.

From past project experience with the CFA regarding other micro solar energy facilities across regional Victoria, the CFA have acknowledged that the Guidelines have been prepared with conventional solar energy facilities in mind – which are quite often in

excess of several hundred hectares. As such, many of these standardised requirements are not necessarily appropriate for an 8.3-hectare facility.

Written advice from the CFA has been provided in support of the below as **Appendix F** to this application.

The requirements deemed to be inappropriate for smaller solar energy facilities have been 'struck through' to indicate their partial or complete waiver in accordance with CFA advice.

The proposed facility is considered to be fully compliant with all other provisions of the Guidelines, detailed below.

Risk and Emergency Management

- *The undertaking of a comprehensive risk management process, as per CFA's Guidelines for Renewable Energy Installations 2018.*
- *The development of an Emergency Information Book, provided in an Emergency Information Container at site entrances, as per CFA's Guidelines for Renewable Energy Installations 2018.*
- *If applicable to the installation, adherence to (DR) AS/NZS 5139-2017: Electrical installations – Safety of battery systems for use with power conversion equipment for any battery installations, and CFA's Guidelines for Renewable Energy Installations 2018.*
- *If applicable to the installation, adherence to dangerous goods storage and handling requirements, as per the dangerous goods regulatory framework and any relevant Australian Standards.*

These guidelines include preventative measures associated with lightning protection, heat barriers, smoke detection and suppression systems.

Suitable permit conditions can be incorporated on the sought planning permit to ensure that construction and emergency protocols are consistent with CFA standards.

Access

- ~~*A four (4) metre perimeter road should be constructed within the ten (10) metre perimeter Fire Break.*~~
- *Roads are to be of all-weather construction and capable of accommodating a vehicle of fifteen (15) tonnes.*
- *Constructed roads should be a minimum of four (4) metres in trafficable width with a four (4) metre vertical clearance for the width of the formed road surface.*
- *The average grade should be no more than 1 in 7 (14.4% or 8.1°) with a maximum of no more than 1 in 5 (20% or 11.3°) for no more than fifty (50) metres.*
- *Dips in the road should have no more than a 1 in 8 (12.5% or 7.1°) entry and exit angle.*
- *Incorporate passing bays at least every 600 metres which must be at least 20 metres long and have a minimum trafficable width of 6 metres. Where roads are less than 600 metres long, at least one passing bay is to be incorporated.*
- *Road networks must enable responding emergency services to access all areas of the facility.*
- *Two but preferably more access points to the site, to ensure safe and efficient access to and egress from areas that may be impacted or involved in fire. The number of access points is to be informed through a risk management process.*

The proposed plans have made provision for a 10m firebreak in-line with CFA requirements; however, this **does not include an all-weather 4m perimeter access track**.

Further, the proposed primary power station, switchboard, inverters and transformer are all readily accessible from the compound entrance, to provide ease of access / control in fire events. The proposed facility provides suitable access and manoeuvring areas for CFA firefighting vehicles to access and traverse the site with relative freedom – compliant with the typical access requirements of the CFA.

Water Supply

On-site water supply is an important part of the fire suppression system which will assist in the safe, effective and timely fire suppression activities of responding brigades. Static water storage tank installations are to comply with AS 2419.1 and the following conditions:

- *The static water storage tank shall be of ~~not less than 45,000 litres effective capacity.~~*
- *The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel. The location and number of tanks should be determined as part of the site's risk management process and in consultation with a CFA delegated officer.*
- *The static storage tanks shall be capable of being completely refilled automatically or manually within 24 hours.*
- *The hard-suction point shall be provided, with a 150mm full bore isolation valve equipped with a Storz connection, sized to comply with the required suction hydraulic performance. Adapters that may be required to match the connection are 125mm, 100mm, 90mm, 75mm, 65mm Storz tree adapters with a matching blank end cap to be provided.*
- *The hard-suction point shall be positioned within 4 metres to a hardstand area and provide clear access for fire personnel.*
- *An all-weather road access and hardstand shall be provided to the hard-suction point. The hardstand shall be maintained to a minimum of 15 tonne GVM, 8 metres long and 6 metres wide or to the satisfaction of the relevant fire authority.*
- *The road access and hardstand shall be kept clear at all times.*
- *The hard-suction point shall be protected from mechanical damage (i.e., bollards) where necessary.*
- *Where the access road has one entrance, a 10 metre radius-turning circle shall be provided at the tank.*
- *An external water level indicator is to be provided to the tank and be visible from the hardstand area.*
- *Signage shall be fixed to each tank.*

The proposed facility is capable of complying with all above requirements pertaining to water supply and vehicle turning. The CFA has acknowledged in-writing that **it is appropriate to reduce water supply to a 22,500L tank** for a micro solar farm.

Fuel/Vegetation Management

- *Grass is to be maintained at below 100mm in height during the declared Fire Danger Period.*
- *A fire break area of ten (10) metres width is to be maintained around the perimeter of the facilities, electricity compounds and substations. This area is to be of non-combustible mulch or mineral earth.*

- *The fire break area must commence from the boundary of the facility or from the vegetation screening (landscape buffer) inside the property boundary.*
- *The fire break must be constructed using either mineral earth or non-combustible mulch such as crushed rock.*
- *The fire break must be vegetation-free at all times.*
- *No obstructions are to be within fire break area (e.g., no stored materials of any kind).*
- *Adhere to restrictions and guidance during the Fire Danger Period, days of high fire danger and Total Fire Ban days (refer to www.cfa.vic.gov.au).*
- *All plant and heavy equipment is to carry at least a 9-litre water stored-pressure fire extinguisher with a minimum rating of 3A, or firefighting equipment as a minimum when on-site during the Fire Danger Period.*
- *There is to be no long grass or deep leaf litter in areas where plant and heavy equipment will be working.*

A 10-metre firebreak has been observed between the solar arrays and compound fencing on all sides, it is anticipated that suitable conditions will be implemented on the sought permit to govern all of the above points.

Conditions Specific to Solar Installations

- ~~*Solar facilities are to have a 6-metre separation between solar panel banks/rows. Where this cannot be achieved, advice is to be sought from CFA's State Infrastructure and Dangerous Goods Unit (sidgu@cfa.vic.gov.au).*~~
- *Solar farm operators must provide specifications for safe operating conditions for temperature and the safety issues related to electricity generation, including isolation and shut-down procedures, if solar panels are involved in fire. This information must be provided within the content of the Emergency Information Book at the main entrance of the facility.*
- *Solar arrays are to have grass or other vegetation maintained to 100mm under the array installation or mineral earth or non-combustible mulch such as stone.*
- *Where practicable, solar energy installations can be sited on grazed paddocks. In this case, vegetation is to be managed as per the requirements of this guideline, or as informed through a risk management process.*

Due to the small size of the proposed facility, a 'bank' of solar panels governed by the above provision is generally larger than the entirety of the proposed solar energy facility. Therefore, CFA have agreed that it would generally be unfeasible for a micro solar farm to observe a 6m separation between arrays.

The proposed facility will comply will all other requirements of the above solar energy facility-specific standards.

Battery Installations

- *Containers/infrastructure for battery installations are to be located so as to be directly accessible to emergency responders (eg provided with a suitable access road).*
- *Adequate ventilation of the battery container/storage area is to be provided where required under (DR) Australian Standard 5139 Electrical Installations – Safety of battery systems for use with power conversion equipment; the manufacturer's requirements and/or SDS for battery storage.*

- *Containers/infrastructure for battery installations are to be provided with appropriate spill containment/bunding that includes provision for fire water runoff.*
- *Battery installations that contain dangerous goods may have to comply with the requirements of the Dangerous Goods Act 1985; the Dangerous Goods (Storage and Handling) Regulations 2012; and relevant Australian Standards.*
- *Battery storage manufacturers must provide specifications for safe operating conditions for temperature and the effects on battery storage if involved in fire. This information must be provided within the content of the emergency information book.*
- *Battery installations are to be kept free of extraneous materials and combustible materials of all kinds. Regular inspections and housekeeping is to be conducted to ensure materials do not accumulate.*
- *Battery installations are to be serviced/maintained as per the manufacturer's requirements.*
- *Containers/infrastructure for battery installations must be clear of vegetation for 10 metres on all sides, including grass. CFA requires non-combustible mulch such as stone or mineral earth within this 10-metre area*

The five (5) batteries will be located at the south of the facility to ensure they are readily accessible, and will be within the cleared firebreak area.

7 Proposal & Planning Permit Triggers

It is proposed to use and develop a portion of land at (Crown Allotment 20) 105 Dane Road, Stawell for a 5MW **Solar Energy Facility** in accordance with the provisions of Clause 53.13 of the Northern Grampians Planning Scheme.

Pursuant to the VC157 amendment that redefined associated power lines as utility installations, the road reserve adjacent to the property also forms part of the subject site. Accordingly, a planning permit is sought for a **Utility Installation** for the construction of overhead and underground power lines in the Dane Road reserve and adjacent property at 58 Dane Road to the south of the site.

A planning permit is also sought for the **removal of native vegetation** pursuant to Clause 52.17 of the Northern Grampians Planning Scheme for the – owing to the encroachment into the TPZ of native vegetation in the road reserve to the south of the solar energy facility site.

7.1 Existing Planning Controls

The subject land containing the proposed Solar Energy Facility is within the **Farming Zone** – while the land to the south of Dane Road is within the **Rural Living Zone 3**.

The subject site is not affected by any Overlays.

7.2 Other Statutory Controls

The subject land, in addition to the surrounding area is wholly within the **Bushfire Prone Areas** mapping, which applies the provisions of the Building Regulation 2018 to development.

In response, the proposal has been designed in accordance with the CFA's Guidelines for solar energy facilities to ensure that bushfire risk is managed. This is addressed elsewhere within this report.

Portions of the subject land to the west of the subject land are identified as an area of **Aboriginal Cultural Heritage Sensitivity**. The proposed facility is however located well clear of this. Due to the substantial separation of all proposed development from this area, a Cultural Heritage Management Plan is not a statutory requirement for this proposal.

7.3 Planning Permit Triggers

Under the Northern Grampians Planning Scheme, a planning permit is triggered for the proposal pursuant to the following Clauses:

Rural Living Zone

- 35.03-1 – To Use land for a Utility Installations.
- 35.03-4 – Building and Works associated with a Section 2 Use (Utility Installation); and

Farming Zone

- 35.07-1 – To Use land for a Solar Energy Facility (in accordance with the requirements of Clause 53.13) and Utility Installations.
- 35.07-4 – Building and Works associated with a Section 2 Use (Renewable Energy Facility); and

Native Vegetation

- 52.17-1 – To remove and lop native vegetation in association with the construction of an access way and utility installations.

8 Northern Grampians Planning Scheme

The proposed development has been assessed against the relevant Clauses of the Northern Grampians Planning Scheme, specifically:

11	Settlement
12	Environmental and Landscape Values
13	Environmental Risks
14	Natural Resource Management
15	Built Environment and Heritage
17	Economic Development
19	Infrastructure
21.01	Northern Grampians Shire Strategic Themes and Vision
21.02	Settlement, Housing, Built Environment and Heritage
21.03	Environmental Risk and Landscape Values
21.04	Economic Development
21.05	Infrastructure and Community Development

21.06	Transport
35.03	Rural Living Zone
35.07	Farming Zone
52.06	Car Parking
52.17	Native Vegetation
53.13	Renewable Energy Facilities
65	Decision Guidelines

8.1 Planning Policy Framework

11.01-1 Settlement

Planning is to anticipate and respond to the needs of existing and future communities through provision of zoned and serviced land for housing, employment, recreation and open space, commercial and community facilities and infrastructure.

Planning is to recognise the need for, and as far as practicable contribute towards [relevant matters included below]*:*

- *Health and safety.*
- *Diversity of choice.*
- *Adaptation in response to changing technology.*
- *Economic viability.*
- *A high standard of urban design and amenity.*
- *Energy efficiency.*
- *Accessibility.*
- *Land use and transport integration.*

Planning is to:

- *prevent environmental problems created by siting incompatible land uses close together;* and
- *facilitate sustainable development that takes full advantage of existing settlement patterns, and investment in transport and communication, water and sewerage and social facilities*

The proposed use of the land for an approximately 8-hectare solar energy facility is compatible with adjoining agricultural and rural residential land uses. The use and development of land would generate negligible impacts on the surrounding area – in considering the impact that solar panels may have on surrounding amenity and/or utility – **VCAT precedent has established that the visual impact of solar energy facilities is largely benign** – accordingly, the potential for adverse impact on surrounding landholders as a result of visual impacts are unlikely.

12.01-1S Protection of biodiversity

- *To assist the protection and conservation of Victoria's biodiversity*

Native vegetation will be impacted to the minimum extent necessary to allow for the creation of an accessway and utility installations – no native vegetation removal will be required internal to the facility.

An ecological assessment has been sought to ensure that the biodiversity of the area is not unduly impacted and offset as appropriate.

13.02-1S Bushfire

- *To strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life.*

The subject site is within the Bushfire-Prone Areas mapping. A detailed assessment against bushfire risk is undertaken against the CFA's Guidelines for Renewable Energy Facilities elsewhere within this report.

13.05-1S Noise Abatement

- *To assist the control of noise effects on sensitive land uses.*

The facility will be an un-manned facility that would see only limited active work – generally when periodic maintenance contractors are present on site.

The noise issues would primarily and almost exclusively be centered around the construction and de-commissioning of the site, which can be suitably managed through a construction management plan via suitable permit condition/s – to the satisfaction of the responsible authority.

Noise from the ongoing operation of the facility will fall within EPA guidelines at sensitive receivers, as demonstrated by the attached Acoustic Assessment Report by Watson Moss Growcott Acoustics.

14.01-1S Protection of Agricultural Land

- *To protect the state's agricultural base by preserving productive farmland.*

The proposed micro solar energy facility would be located on approximately **8 ha** of farmland, on a parcel of land which has a total area of approximately 166 hectares – the balance of which will remain available for agricultural production. This **represents less than 5% of the total area of the property** – thereby providing for co-location consistent with the Solar Energy Facility Guidelines.

The proposed use of the site for a renewable energy facility is a temporary use and the site will be fully capable of re-integration back to agricultural use once the tenure period expires.

14.01-2S Sustainable Agricultural Land Use

- *To encourage sustainable agricultural land use.*

The proposed 5MW solar energy facility will be developed in conjunction with an existing farming enterprise, retaining the majority of the subject land for continued agricultural production.

The additional income from the leasing arrangements provides an opportunity for the existing operator to diversify their enterprise and provide for the flexibility of operations responsive to market changes and the current economic environment for primary producers.

15.02-1S Energy and Resource Efficiency

- *To encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions.*

The intention of solar energy facilities is to generate electricity that has significantly less greenhouse emissions than conventional fossil fuel sources.

Additionally, the development itself has sought to minimise the removal of any indigenous vegetation that would contribute to a net increase in carbon – noting that carbon emission reduction over the operational life of the facility will far exceed that of the impacted vegetation – pursuant to the following strategies, whereby planning is to:

- *Improve efficiency in energy use through greater use of renewable energy technologies and other energy efficiency upgrades.*
- *Encourage retention of existing vegetation and planting of new vegetation as part of development and subdivision proposals.*

17.01-1S Diversified Economy

- *To strengthen and diversify the economy.*

The use and development of land is supported by planning policy that promotes the diversification of the economy, specifically to:

- *Protect and strengthen existing and planned employment areas and plan for new employment areas.*
- *Facilitate regional, cross-border and inter-regional relationships to harness emerging economic opportunities.*
- *Facilitate growth in a range of employment sectors, including health, education, retail, tourism, knowledge industries and professional and technical services based on the emerging and existing strengths of each region.*
- *Improve access to jobs closer to where people live. Support rural economies to grow and diversify.*

The use and development of a renewable energy facility within the Northern Grampians Shire will promote an opportunity for a regional municipality to become to transition to a sustainable, renewable future – consistent with state and regional policy.

17.01-1R Diversified Economy – Wimmera Southern Mallee

Regional policy for a diversified economy is very clear that planning should:

> *"Capitalise on economic development opportunities through building on the region's assets, particularly agriculture, **energy**, mining and tourism."*

The selected site is ideally located – being a suitable distance from the nearest township (**Stawell**) approximately 3.5km north of the site to the nearest 'urban zoned' land along Donald-Stawell Road. Therefore, the proposal is considered to be suitably-separated from the urban areas to ensure encroachment is not an issue.

17.01-2S Innovation and Research

- *To create opportunities for innovation and the knowledge economy within existing and emerging industries, research and education.*

The proposal represents a significant opportunity for a low-impact, sustainable diversification of the municipality's economic base, by supporting a new, emerging industry.

19.01-1S Energy Supply

- *To facilitate appropriate development of energy supply infrastructure.*

The proposed site has been selected as it is a suitable distance from the nearest Powercor substation; the proposed facility represents an efficient generator of low-carbon electricity into the immediately adjacent electricity network.

Thus, the proposed facility provides an excellent location for essential infrastructure to provide a significant proportion of the local population and economic base with a low-carbon energy source. This is supported by the following strategies to:

- *Support the development of energy facilities in appropriate locations where they take advantage of existing infrastructure and provide benefits to industry and the community.*
- *Support transition to a low-carbon economy with renewable energy and greenhouse emission reductions including geothermal, clean coal processing and carbon capture and storage.*
- *Facilitate local energy generation to help diversify the local economy and improve sustainability outcomes.*

19.01-2S Renewable Energy

- *To promote the provision of renewable energy in a manner that ensures appropriate siting and design considerations are met.*

State planning policy seeks to support renewable energy in appropriate locations. The proposed facility is a result of months of planning and assessment of potential candidate sites. A detailed overview of the selection process by ACEnergy is contained elsewhere in this report.

The proposed facility will provide approximately 5MW of electricity directly to the Northern Grampians municipality and surrounding LGAs, increasing the efficiency of electricity conveyance directly to the consumer, and where it is needed.

The proposed development site is not considered to be highly-productive agricultural land – as defined by the Solar Energy Facilities Guidelines. Further, the regional policy for renewable energy with the **Wimmera Southern North** region, Clause **19.01-2R**, stipulates that planning should:

- *Support the development of locally generated renewable energy, including bioenergy clusters.*

8.2 Local Planning Policy Framework

21.01-03 Northern Grampians Shire Strategic Vision

The overarching objective of planning for the Northern Grampians municipality is to *"improve the social and economic viability of the shire. Deliver targeted projects and core services."*

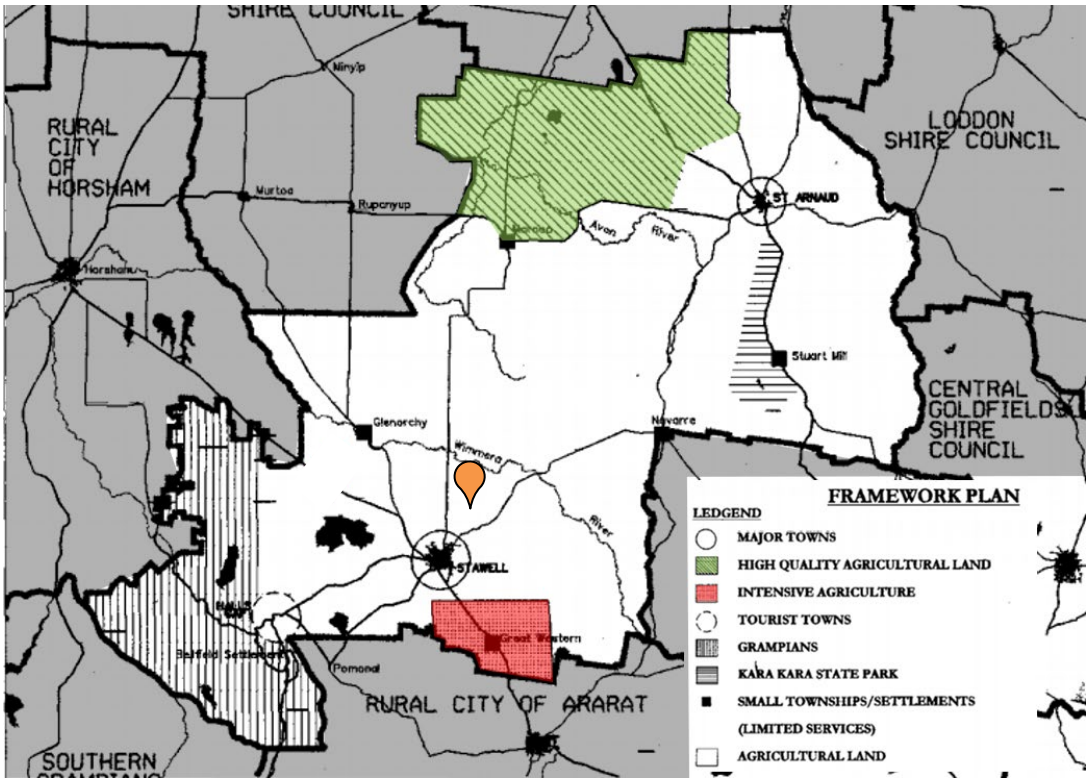


Figure 10. Northern Grampians Shire Strategic Framework Plan
Framework Plan has been colourised for emphasis – **subject site denoted by orange pin**

Additionally, Clause 21.01 identifies five key planning themes to promote the Shire's strategic vision, which are centred around:

- *"Settlement, housing, built environment and heritage*
- *Environmental risk and landscape values*
- *Economic development*
- *Infrastructure and community development*
- *Transport"*

The proposed solar energy facility is a substantial infrastructure project that will provide a major economic, environmental and community stimulus for the Northern Grampians municipality. The proposal will provide jobs during the construction period as well as ongoing maintenance and support an established agricultural operator.

21.02-1 Settlement

The stated key issues facing the Northern Grampians municipality are:

- *"Promoting the growth of Stawell as the shire's largest town.*
- *Managing the development of Halls Gap whilst protecting its environmental and tourism values.*

- *The need to maximise the use of existing infrastructure."*

The proposal is adjacent to existing 22kV power lines that run parallel to the property in the Dane Road reserve. These power lines provide electricity to regional centres. By locating the facility directly adjacent to existing infrastructure, the proposal limits any requirements for extensive construction of additional infrastructure to "plug in" the facility to the existing grid.

21.03-1 Environment, landscape values and risk

In considering the proximity of the subject site to notable environmental features within the Northern Grampians, Lake Lonsdale and nearby watercourses and vegetation, the proposal upholds the relevant objectives:

- *"To ensure land use and development does not increase the level of bush fire risk and includes adequate fire protection measures.*
- *To protect local flora and fauna.*
- *To recognise areas in the shire that are liable to flooding and inundation and minimise potential risk to life, property and the environment.*
- *To protect the environmental and landscape values of the Grampians National Park."*

The proposal is located on a site that is well-screened from prominent vistas of significant landscapes and is suitably well set back from any areas of environmental value or native vegetation that would be impacted.

21.04-1 Agriculture

Clause 21.04-1 identifies agriculture as the dominant industry within the Northern Grampians municipality, noting that the Key Issues facing the municipality are:

- *"The importance of agriculture to the shire's economy.*
- *Protecting high quality agricultural land.*
- ***Supporting the diversification of rural land use through expansion of renewable energy generation in appropriate locations."***

The proposal allows an established farmer – who operates a substantial rural holding – to diversify their operations, as well as enabling the municipality to expand its renewable energy capability.

In considering the relevant Objective of Clause 21.04-1, the proposal is consistent with the intention of planning for agriculture:

- *"To support the development of sustainable agriculture and horticultural industries, as the foundation to a strong and prosperous economy."*

21.05-1 Electricity generation and distribution

There is very explicit local policy that supports the transition to renewable energy within the Northern Grampians Shire, notably the Objective:

- "*To reduce the municipality's reliance on non-renewable* energy."

Further, provision is made whereby planning "is to encourage renewable electricity generation and distribution in the shire". Accordingly, the current application is overwhelmingly supported by local policy.

21.06-3 Stawell Aerodrome

A key consideration of the Solar Energy Facility Guidelines is the potential impact of any facility on nearby transport infrastructure – this extends to aviation infrastructure. Further, the Northern Grampians Planning Scheme seeks to preserve the ongoing operation and expansion of the Stawell Aerodrome as a key Issue for the municipality.

Despite the significant distance between the facility and the Stawell Aerodrome, the applicant has undertaken a Glint and Glare assessment. This assessment has considered the potential impact of the facility on the Stawell Aerodrome and any potential offsite amenity impacts.

The outcome of this assessment was that it was considered to have **no impact** on aviation infrastructure.

8.3 Rural Living Zone

As the proposed underground cable extends into the adjacent land within the Rural Living Zone (RLZ), a permit is triggered to both use and develop the land for a Utility Installation.

In considering the minor nature of the proposal that encroaches upon the RLZ, being wholly underground, the proposed use and development has been assess favourably against the relevant decision guidelines of the RLZ.

The proposed underground cable would be consistent with the stated objectives of the RLZ which outlines that planning is:

- *"To provide for residential use in a rural environment.*
- *To provide for agricultural land uses which do not adversely affect the amenity of surrounding land uses.*
- *To protect and enhance the natural resources, biodiversity and landscape and heritage values of the area.*
- *To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision."*

8.4 Farming Zone

The subject site, at 105 Dane Road, Stawell is wholly within the Farming Zone. The relevant objectives of the Farming Zone are:

- *To provide for the use of land for agriculture.*
- *To encourage the retention of productive agricultural land.*
- *To ensure that non-agricultural uses, including dwellings, do not adversely affect the use of land for agriculture.*
- *To encourage the retention of employment and population to support rural communities.*
- *To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision*

Whilst the proposed land use and development is for a "Solar Energy Facility", which requires a permit within the Farming Zone, the use of the land for renewable energy production is consistent with **Agricultural production** – as defined under Clause 73.01 of the VPPs as:

- "**any form of primary production of renewable commodities**. It does not include stone extraction, mineral extraction, or timber production from native forest."

The above definition is quite explicit as to what does and does not constitute agricultural production, with the operative wording being renewable commodities (as highlighted above) which includes electricity from renewable sources. Accordingly, the Farming Zone quite clearly supports the proposed use – subject to consideration of the relevant Decision Guidelines of the Farming Zone.

Mindful of the purpose of the Farming Zone, the proposal has been assessed favourably against each of the relevant decision guidelines of the Farming Zone, as set out within the provisions Clause 35.07-6 of the Northern Grampians Planning Scheme – which are set out and responded to below:

General issues

- Any *Regional Catchment Strategy and associated plan applying to the land.*
- *The capability of the land to accommodate the proposed use or development, including the disposal of effluent.*
- *How the use or development relates to sustainable land management.*
- *Whether the site is suitable for the use or development and whether the proposal is compatible with adjoining and nearby land uses.*
- *How the use and development makes use of existing infrastructure and services*.

The subject land is unaffected by any mapped flood-prone land – nor would it risk contamination of groundwater. Accordingly, the use and development is unlikely to have any adverse impact on floodplain management.

The use and development will not generate any effluent – as there will be no permanent staffing facilities on-site.

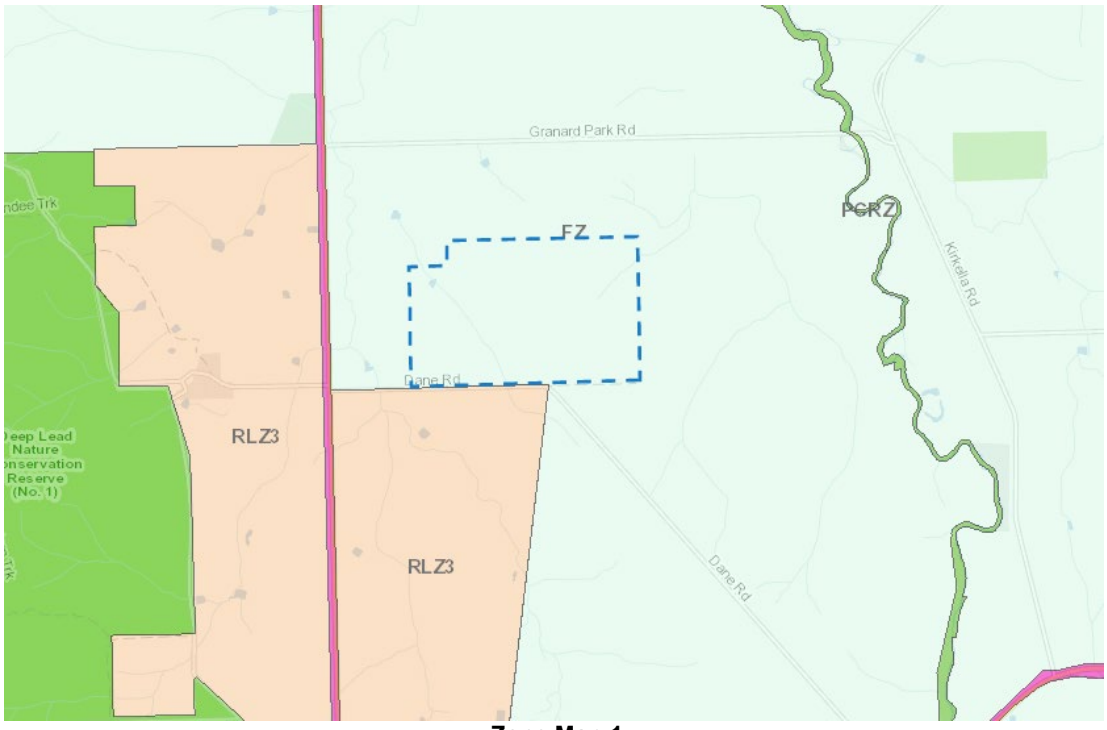
The site is located nearby to existing Powercor infrastructure that will provide for efficient distribution of generated electricity. By citing the facility close to existing infrastructure, the proposal reduces the requirement for extensive overhead lines that could impact productive agricultural uses or landscape amenity, either on the subject land or off-site – consistent with recent changes to the Planning Scheme (namely VC157).

Agricultural issues and the impacts from non-agricultural uses

- *Whether the use or development will support and enhance agricultural production.*
- *Whether the use or development will adversely affect soil quality or permanently remove land from agricultural production.*
- *The potential for the use or development to limit the operation and expansion of adjoining and nearby agricultural uses.*
- *The capacity of the site to sustain the agricultural use.*
- *The agricultural qualities of the land, such as soil quality, access to water and access to rural infrastructure.*
- *Any integrated land management plan prepared for the site.*

The proposal has been carefully designed to ensure that it will complement existing agriculture within reason. The use of the land for a solar energy facility will be a low-

impact use and has been carefully sited to avoid any adverse impact upon rural infrastructure or productivity.



Zone Map 1
Farming Zone

Environmental issues

- *The impact of the proposal on the natural physical features and resources of the area, in particular on soil and water quality.*
- *The impact of the use or development on the flora and fauna on the site and its surrounds.*
- *The need to protect and enhance the biodiversity of the area, including the retention of vegetation and faunal habitat and the need to revegetate land including riparian buffers along waterways, gullies, ridgelines, property boundaries and saline discharge and recharge area.*
- *The location of on-site effluent disposal areas to minimise the impact of nutrient loads on waterways and native vegetation*.

Renewable energy represents the major challenge to the Victorian economy, with the State government setting a target of 25% renewable energy by 2020, which it is yet to achieve. The proposed facility will inject approximately 5MW of renewable energy into the Victorian grid.

The proposed system will require minimal soil disturbance and can be easily remediated should the land be returned to agricultural use at the end of the solar facility tenure. As such there will be no significant earthworks – other than an initial scrape to cleanse topsoil (which will be retained on-site).

The proposed site of the facility avoids the removal on any native vegetation within the property boundary. All vegetation proposed to be removed is to the minimum extent for the creation of an accessway within the road reserve.

Design and siting issues

- *The need to locate buildings in one area to avoid any adverse impacts on surrounding agricultural uses and to minimise the loss of productive agricultural land.*
- *The impact of the siting, design, height, bulk, colours and materials to be used, on the natural environment, major roads, vistas and water features and the measures to be undertaken to minimise any adverse impacts.*
- *The impact on the character and appearance of the area or features of architectural, historic or scientific significance or of natural scenic beauty or importance.*
- *The location and design of existing and proposed infrastructure including roads, gas, water, drainage, telecommunications and sewerage facilities.*
- *Whether the use and development will require traffic management measures*.

All equipment will be located inside the compound fence, with the exception of the overhead lines that connect the facility to the existing electricity network. The perimeter of the facility will be screened with vegetation to all sides to restrict visibility from the public realm.

The site will be accessed from the southern boundary and will provide ready access to transformers, inverters and switchgears for maintenance and emergency purposes.

8.5 Particular Provisions

Clause 52.06 Car Parking

Pursuant to Clause 52.06-1, planning must consider the provision of car parking for all new land uses. The relevant purposes of this provision of the Scheme is:

- *To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.*
- *To support sustainable transport alternatives to the motor car.*
- *To promote the efficient use of car parking spaces through the consolidation of car parking facilities.*
- *To ensure that car parking does not adversely affect the amenity of the locality.*
- *To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.*

The provisions of Clause 52.06 do not prescribe a standardised car parking requirement for renewable energy facilities. Therefore, pursuant to Clause 52.06-6, car parking must be provided to the satisfaction of the responsible authority.

The proposed solar energy facility will be largely un-manned – capable of operating with irregular staffing that would be largely limited to maintenance and site inspections.

The highest staffing of the site will be during the construction phase – where various contractors and machinery will be required for duration of approximately three (3) months.

Upon completion an establishment of the facility, persons accessing the site will typically be contractors with purpose-built vehicles and equipment, which would be driven directly to the point of work, rather than being parked in a designated space and the contractors walking to the work site.

In considering the infrequent and inconsistent requirements of car parking on the site, *the proponent has nominated a 40-metre-by-10-metre area reserved for car parking purposes during the construction period* (see attached site plan), this is considered more than adequate for the proposed use.

This provision of car parking spaces would provide adequate car parking in scenarios where multiple contractors are required on the site concurrently. However, during the operation of the solar energy facility, the demand for car parking spaces would be zero.

In considering the relevant Decision Guidelines of Clause 52.06-10, and the information provided in this report, the proposed 400m^2 of car parking is comfortably in excess of what would reasonably be required for an un-manned facility.

Clause 52.17 Native Vegetation

Figure 12. Existing vegetation with unmade reserve (Dane Road)
Yellow Gum considered to be lost due to TPZ encroachment **outlined in red**

The proposal will impact upon **one (1) native tree** – being a 91cm diameter yellow gum – identified in the Ecological Assessment at **Appendix A** and the below figure. This tree is within the abutting unmade road reserve (Dane Road), and while the proposal would not necessitate the removal of the tree – which would likely be retained – as greater than 10% of its TPZ has been compromised it must be considered lost and approval sought for its removal.

Pursuant to Clause 52.17-1, a planning permit must be sought for the removal of native vegetation. Accordingly, the proposal has been assessed against the three-step approach to avoid, minimise, offset biodiversity impacts from the removal of native

vegetation as detailed in the *Guidelines for the removal, destruction or lopping of native vegetation, 2017.*

The facility is sited on land that have been extensively cultivated for agricultural uses and thus has been extensively cleared of all but a few remnant trees. The facility is located to avoid these trees.

Vegetation removal has been kept to the minimum extent necessary for the creation of an accessway by locating the access via the existing crossover and river driveway to avoid further vegetation removal in the unmade section of the road reserve.

Clause 53.13 Renewable Energy Facility

The relevant application requirements of Clause 53.13 are addressed at length within the relevant Sections of this report – most of which are contained within Section 5 to inform the "General Project Considerations" and provide clarity around the considerations of the proposal.

8.6 General Provisions

Clause 65 Decision Guidelines

The matters set out at Section 65 of the Northern Grampians Planning Scheme are addressed in various sections of this report. The proposal has been assessed to be in accordance with all relevant guidelines.

The holistic considerations of the proposed renewable energy facility; primarily the weighing of the competing objectives of preserving agricultural land and promoting renewable energy have been addressed in detail within the various sections of this report.

It is considered that the proposal represents a net community benefit through usage of marginal value agricultural land for the purpose of a renewable energy facility in a location that would have limited impact on the surrounding area.

8.7 Recent Changes to Planning Policy

VC157 Utility Installation Changes

In March 2019, the Victorian State government introduced Amendment VC157 to the Victoria Planning Provisions (VPPs) to provide additional consideration to the planning process for renewable energy facilities.

Specifically, the stated intention of VC157 was *"to require planning approval for power lines to connect new large-scale electricity generation facilities to the electricity network"*.

Functionally, this amendment removed the exemption for power lines as '**Minor Utility Installations**' where they are *"directly associated with an Energy Generation Facility"*. Accordingly, the road reserve adjacent to the facility forms part of the subject land for this application and planning permission is sought for the use and development of a **'Utility Installation'** as *"Land used… to transmit, distribute or store power, including battery storage.*