habitat

Town Planning Report

Use and Development of Land for a 5MW Solar Energy Facility

181 Cobden-Terang Road, Cobden

NOVEMBER 2021

Submitted to Department of Environment, Land, Water and Planning
On behalf of BE Pro CD Pty Ltd

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1. Introduction

This report has been prepared by Habitat Planning on behalf of BE Pro CD Pty Ltd in support of a planning permit application for use and development of land at 181 Cobden-Terang Road, Cobden for a 5MW solar energy facility, a 5MW/11MWh battery energy storage system (BESS), utility installation and associated works.

The subject land is zoned Farming Zone ("FZ") pursuant to the Corangamite Planning Scheme ("the planning scheme"). The land is not affected by any planning overlays.

A permit is required for:

- use of land for a renewable energy facility and utility installation associated with a renewable energy facility in the FZ pursuant to **Clause 35.07-1**
- buildings and works associated with a renewable energy facility in the FZ pursuant to **Clause 35.07-4**
- use of land for utility installation in the within the Road Zone Category 1 (RDZ1) pursuant to **Clause 36.04-1**
- development of land for utility installation in the within the Road Zone Category 1 (RDZ1) pursuant to **Clause 36.04-2**
- creating access to Cobden-Terang Road (for emergency access gate) within Road Zone Category 1 (RDZ1) pursuant to **Clause 52.29**

This report and accompanying information is provided in accordance with the requirements of the *Planning and Environment Act 1987* and the planning scheme. It provides a detailed description of the existing site and its context, an assessment against the relevant planning policies and matters for consideration within the planning scheme and other relevant documentation. This report is also accompanied by specialist technical reports as required.

The purpose of this report is to detail the proposed development and consider the proposal against the relevant matters for consideration and demonstrate the proposal is worthy of approval by the Department of Environment, Land, Water and Planning (DELWP).

1.1. Background

The proposed Cobden Solar Farm will comprise a 5MW facility connected to Powercor's 22kV network. This will generate and supply renewable energy to the surrounding Cobden and Camperdown townships.

The development proposes a micro solar farm to enable a more compact development on the land and avoid any substantial impacts on surrounding properties, and/or loss of productive agricultural land. The proposal also utilises the most up to date PV panel technology to generate maximum energy output over a smaller area of land.

The target for small scale solar facilities is primarily close proximity/access to a substation and an 11kv or 22kV power network. The suitability process also relies on the nearby substations and the line having sufficient capacity for a satisfactory connection to the facility. This site has been identified as a suitable candidate for operation as a solar facility primarily because it is direct access to the adjacent 22kv distribution line which transverses back to the Cobden Zone Substation. Most importantly, it eliminates the need for any significant reconfiguration of the power supply network and avoids the need to traverse any productive agricultural properties.

The site has excellent solar exposure and is predominantly cleared and modified of vegetation which limits potential sources of shading. Assessment has also been carried out that determines that the site is not subject to potential cultural heritage sensitivity, is not of significant biodiversity value and has no native vegetation/patches that would be impacted.

The landowner intends to continue operation on the balance of their property for dairy farming production. Given the landowners property is separated into two portions by Cobden-South Ecklin Road, consolidating their agricultural activities onto one portion is preferrable for farm management and to avoid potential conflicts in moving stock across public roads.

The site is also considered to be well suited for solar development as it will be located away from the Cobden township and on a site which is almost entirely screened by existing roadside vegetation. This ensures that the development will remain a very passive element in the surrounding context.

This development proposed measures to reduce potential impacts, including:

- Preservation of biodiversity features through use only of heavily cleared and modified rural lands and retaining existing vegetation on the property
- Minimise impacts to soil and water, through pile driven panel mounts rather than extensive soil disturbance and excavation;
- Preserve agricultural production values through retention of agricultural use of the subject site and enabling the land to be used for agriculture following decommissioning of the use; and
- Minimise visual impacts to neighbours by utilising existing well established screen plantings along property boundaries and integrating new landscaping.

1.2. Key Benefits of the Proposal

The facility provides a range of benefits in terms of delivery additional renewable energy production Victoria. At a state-wide level, the proposal contributes towards the state objective to reduce emissions by 28-33 per cent by 2025 and 45-50 per cent by 2030[1]. The site specifically has the potential to generate 12,897 MWh (megawatt hours) of electricity per year, which equates to:

- A saving of 10,075 tons of CO2 gases entering the atmosphere each year.
- A saving of co2 output of approximately 1,988 passenger cars driving on the road for one year.
- Providing electricity use of 1,660 average homes for one year.

A range of employment and supplier opportunities will be generated during construction. The proposal will take approximately 6 months to construct and will involve an estimated workforce of 50 people. There are significant opportunities for local staff to be sourced, as well as trades and other suppliers necessary for material and construction processes.

1.3. The Applicant

BE Pro CD Pty Ltd is a subsidiary of Bison Energy leading international company specialising in renewable energy. The company has many years of experience in developing, building and operating solar power projects in different countries, such as Germany, Italy, Spain, UK, and Japan, and has been operating in Australia since 2017, with regional offices in Albury. The proponent is currently establishing a series of solar farms across NSW and Victoria.

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[1] 'Climate Plan To Cut Emissions And Create Jobs', Premier of Victoria, May 2021 https://www.premier.vic.gov.au/climate-plan-cut-emissions-and-create-jobs

1.4. Supporting Plans and Documentation

This application is accompanied by:

- A copy of the Certificate of Title
- Proposed Plans of Development
- Landscape Concept Plans
- Traffic Impact Assessment Report
- Agricultural Impact Assessment Report
- Native Vegetation Assessment Report
- Noise Impact Assessment Report
- Glint and Glare Assessment Report

2. Site Analysis

2.1. Overview

The subject site is described as Lot 1 in TP601664 and is addressed as 181 Cobden-Terang Road, Cobden. A copy of the certificate of title and title plan is attached to this application. There are no covenants or Section 173 agreements registered on the title.

The subject site is located approximately 3 kilometres west of Cobden and is at the corner of Cobden-Terang Road and Cobden-South Ecklin Road. Figure 1 shows the subject site in context of the region and Figure 2 shows the location of the site in context to the local area.

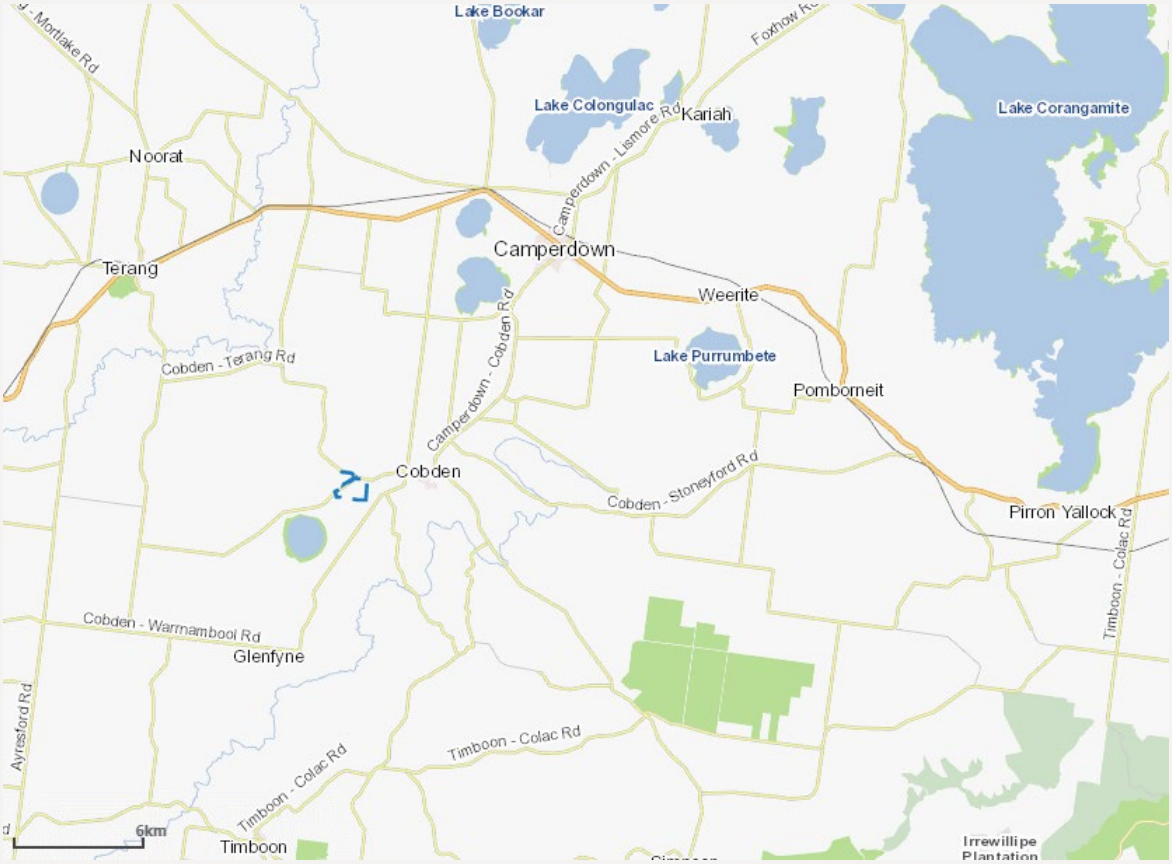

Figure 1 – Regional Context Map

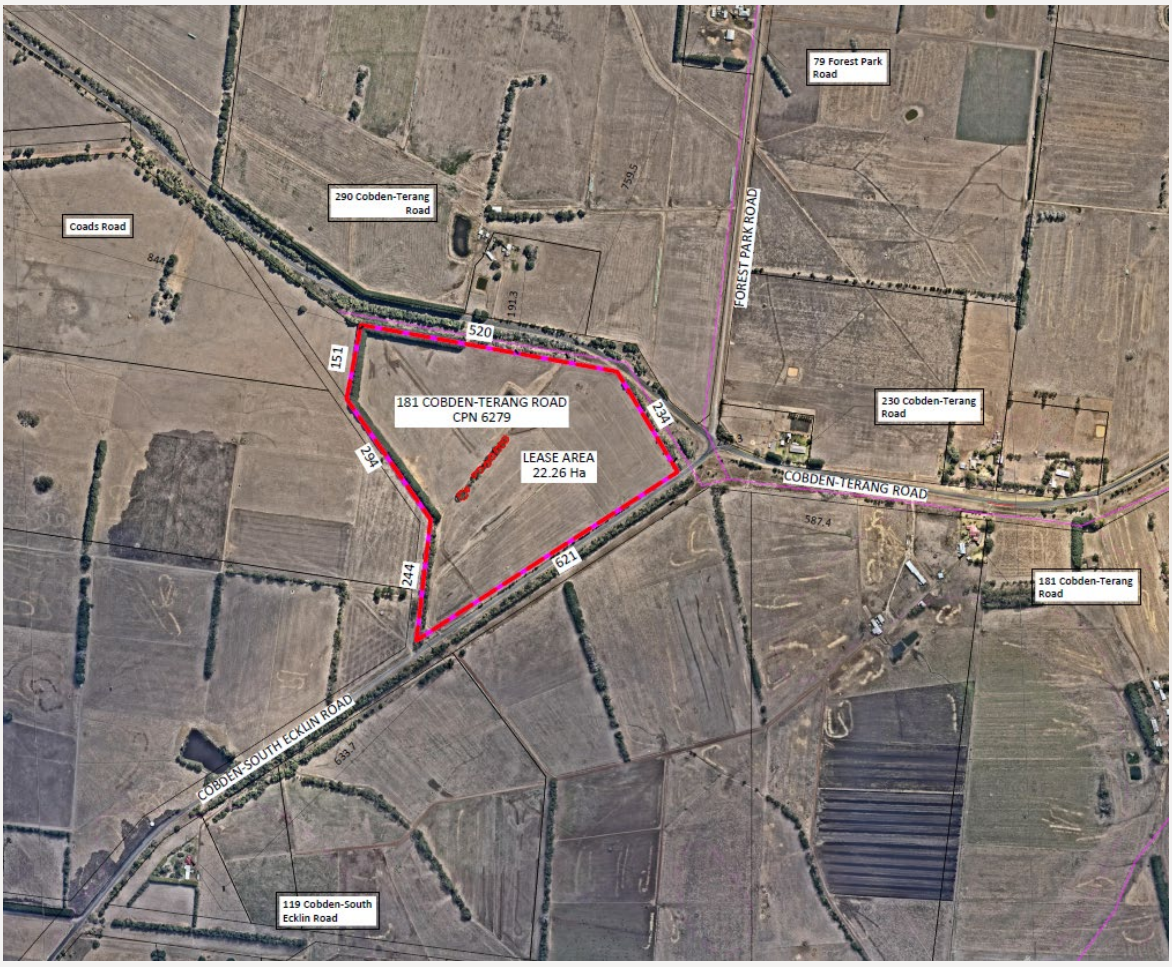

Figure 2 Site Context Map

2.2. Subject Site

The lot forms an irregular shape with a 618.25 metre frontage along Cobden-South Ecklin Road to the east and approximately 759.92 metres along Cobden-Terang Road to the north. The land has a total area of 22.26 hectares.

The subject site is a rural property containing cleared paddocks with some strips of planted trees existing around some of the boundary and internal fences. The land has been traditionally used for agricultural cropping purposes and an existing dam, associated with this use, occupies some of the central portion. Primary access is provided via a farm gate towards the south west corner of the land, and secondary existing access is provided at the site's northern boundary at the interface with Cobden-Terang Road, via another gate.

The land is relatively flat, although it experiences some minor undulation and a slight downslope in the north-west to south-east direction.

The proposed lease area itself is represented by cleared and gently undulating land. It has an average slope of 1.2% and very minor change in grade from west to south. A primary drainage line and farm dam runs through the northeast corner of the lot.

Vegetation throughout the land is minimal aside from small stands of planted vegetation running along the internal fence lines forming windbreaks. The ground layer is otherwise highly modified from its previous agricultural functions.

Figure 3 – Aerial view of site (Source: Nearmap 2018)

Figure 4 View south west from the intersection of Cobden-Terang Road and Cobden-South Ecklin Road looking towards the subject site (indicated)

Figure 5 View south west along Cobden-South Ecklin Road along the site boundary

Figure 6 View north from Cobden-South Ecklin Road across the subject site.

Figure 7 View north west from Cobden-South Ecklin Road across the subject site.

Figure 8 View north east along Cobden-South Ecklin Road along the site boundary

Figure 9 View west across the southern extent of the subject land, with the vegetation representing the western boundary.

Figure 10 View south west along Cobden-South Ecklin Road.

Figure 11 View south from Cobden-Terang Road across the subject site.

Figure 12 View south from Cobden-Terang Road across the northern corner of the development area.

Figure 13 View south from Cobden-Terang Road across the subject site.

Figure 14 View southwest from Cobden-Terang Road across the subject site.

Figure 15 View east along Cobden-Terang Road at the site boundary (indicated)

2.3. Surrounding Development

The subject site is located within a rural context approximately 3 kilometres west of Cobden and is predominantly surrounded by other smaller rural properties of similar proportions to the subject site.

Land to the north comprises rural properties and a number of scattered dwellings associated with the established rural activities. These properties extend along Forest Park Road, which is unsealed, and rise up to Torboys Road and Hallyburtons Road. The landscape of these properties is gently undulating and generally cleared, other than for scattered wind break and row plantings.

Land to the east comprises a mix of rural properties and smaller residential properties, approaching the fringe of Cobden. The majority of the dwellings have frontages to Cobden-Terang Road and are well screened by perimeter landscaping to the dwelling.

The Cobden Aerodrome is located approximately 1.8 kilometres to the east of the site and fronts Cobden-Terang Road and Grayland Street. The runway of the aerodrome is aligned in a north-south direction, with associated buildings and infrastructure located in the north east corner of the land.

The Fontera Milk Processing facility is located approximately 2 kilometres east of the subject land at the immediate fringe of Cobden. Other rural industries also occupy land on the fringe of Cobden, including rural supplies and stockfeed storage facilities on Cobden-Port Campbell Road.

Land to the south east, south and west represent larger open rural properties that are utilised for dairy farming and other broadacre rural enterprise. Lake Elingamite is identified approximately 2.4 kilometres south of the subject site and comprises a significant landform feature in the surrounding area.

Figure 16 View east along Cobden-Terang Road, beyond Cobden-South Ecklin Road, towards the Cobden township

Figure 17 View west along Cobden-Terang Road, beyond the subject site.

Figure 18 General rural conditions at Forest Park Road, north of the subject land

Figure 19 View west along Cobden-Terang Road towards the subject site.

Figure 20 Cobden Aerodrome runway, viewed from Cobden-Terang Road frontage.

Figure 21 View east along Cobden-Terang Road, adjacent to the Cobden Aerodrome, towards the Cobden township site.

3. Description of Proposal

3.1. Overview

The proposal seeks to use and develop the subject site for a solar energy facility with capacity of up to 4.95 Megawatts ("MW") of renewable electricity. The facility is also proposed to include a Battery Energy Storage System with capacity of 5MW/11MWh.

The site has been identified as a suitable candidate for operation as a solar facility primarily because it has direct access to the Powercor 22kV transmission line which extends along this frontage. The network has suitable capacity to accommodate the facility and the site enables placement of panels in a relatively passive manner through utilising extensive perimeter landscaping. The land is within close proximity to Cobden's Zone Substation.

The facility is to comprise installation of approximately 12,300-13,000 solar photovoltaic panels mounted in arrays on single axis trackers, cabling from the solar arrays to panel inverters and substation and connection into the local electricity network in the eastern road reserve land. The facility will include construction of a new internal substation, which is a sealed 40ft shipping container. It will also include internal access tracks, parking areas, construction waste and laydown areas.

A perimeter fence is to be constructed along the entire boundary of the development area to separate the PV panels from the remaining rural land. Existing roadside vegetation will provide significant screening to the facility and all native vegetation along boundaries will be retained. The large internal dam will be retained, however the planted windrow trees and some existing internal stock fencing will be removed.

Primary entry and exit site access will be provided through an existing dual gated access road away from any roadside vegetation. This access gate is located at the southeast of the subject site.

The proposed facility is expected to take approximately 6-9 months to complete construction dependant on weather constraints. It will operate for a period of up to 30 years, after which it will be subject to further operation, with upgrades, or decommissioned.

3.2. Project Details

Specifically, the proposal involves the following primary components:

- New rural type access and associated works from Cobden-South Ecklin Road
- Perimeter security fencing (1.8 metres high) comprising steel posts and transparent mesh panels
- Internal unsealed rural access track from the proposed access to the proposed central infrastructure;
- Internal unsealed rural access tracks within the development
- Unsealed car parking area and circulation
- Installation of approximately 12,300-13,000 solar panels, to be mounted on single axis trackers and pile driven into the ground
- 1 x pre-assembled Power Conversion Unit (PCU) configured in a containerised format incorporating inverters, control room, low voltage and medium voltage switch rooms
- 5MW/11MWh Battery Energy Storage System (BESS) comprising 4 x pre-assembled battery units and 1 x pre-assembled Power Control System (PCS) and Transformer

- Aboveground and underground cabling between panel arrays to combiner boxes and inverters
- New 53 metre aboveground powerline extension from the existing 22kV line within the adjacent road reserve, and approximately 300 metre underground powerline connection to central infrastructure.
- Above ground and underground cabling and electrical connections between the panel inverters substation
- Internal swale drains along the internal access tracks and small constructed basins for collection and outfall of stormwater (as required)
- 5 metre wide perimeter landscaping (to be generally located between existing rural fence and new security fence

The proposed site plan of the development is attached and reproduced below.

Figure 22 Concept plan extract for the proposed solar energy facility

3.3. Solar Infrastructure

3.3.1. Photovoltaic Panel Arrays

It is proposed to install approximately 12,384 photovoltaic panels (PV panels) which will have a multicrystalline, monocrystalline, or thin film technology. The panels are to be arranged in groups which are known as arrays. The proposed plan indicates the alignment of the proposed arrays on the property.

The solar panels primary function is to absorb the sunlight received and convert this into electricity so the panels are designed to reflect as little light as possible. The panels also absorb the majority of sunlight received (approximately 80-90%) and only reflect a small amount, resulting in a rate of reflection that is less than other common rural surfaces. The panels are finished with an anti-reflective coating on the glass surface.

The proposed solar panels are to be installed on a single axis tracking system to follow the sun from east to west each day and obtain the maximum solar exposure. The structure will be fixed in placed by pile driven posts at spacing of approximately 7 metres. The tracking system to be utilised for this development will enable the placement of two PV panels end to end (refer to Figure 23 below) to achieve greater panel surface area to each array.

Each proposed PV panel type used in the facility be approximately 2.1 metres x 1 metre and will be mounted onto the steel tracking structure.

The final height of the structure, including panels, when at full 60 degree tilt will be approximately 4-5 metres from natural ground level, dependent on the clearance needed beneath the panels usually ranging 300-400mm.

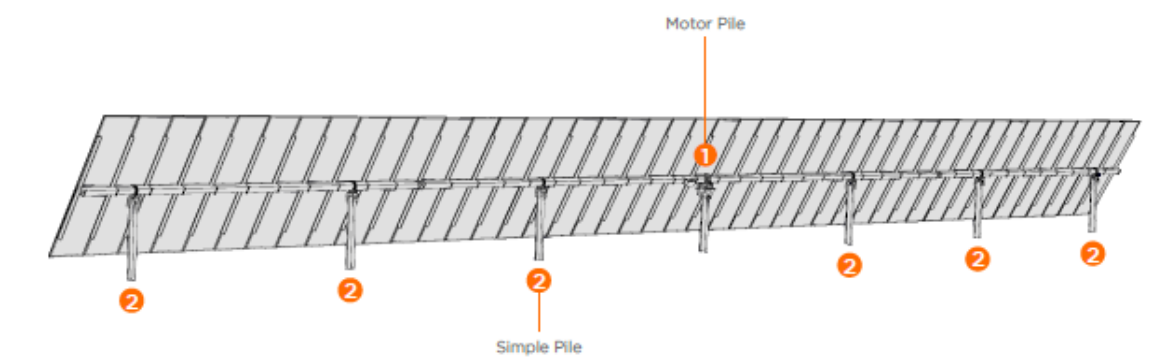

Figure 23 – Proposed single axis tracker system (Source: Soltec)

3.3.2. Power Conversion Unit and Inverters

The proposed development will include a Power Conversion Unit (PCU) within a dedicated substation yard to convert direct current from the modules into alternating current for use in the grid. Each PCU contains two inverter units and a LV/MV transformer and is arranged in a 'container format' for placement on the site. The PCU will measure approximately 12m x 3m x 2.5m and is proposed to comprise a muted natural colour to blend into the surrounding landscape.

The electricity generated by the proposed panel arrays are directed to inverters within the PCU facilities via cabling in strings. These strings will pass through combiner boxes and then to the inverters. The inverters are used to convert the low voltage DC power into low voltage AC power which can then be transformed to higher voltages. This allows for a step up of the voltage from the solar panels and conversion so that it can be connected to the grid.

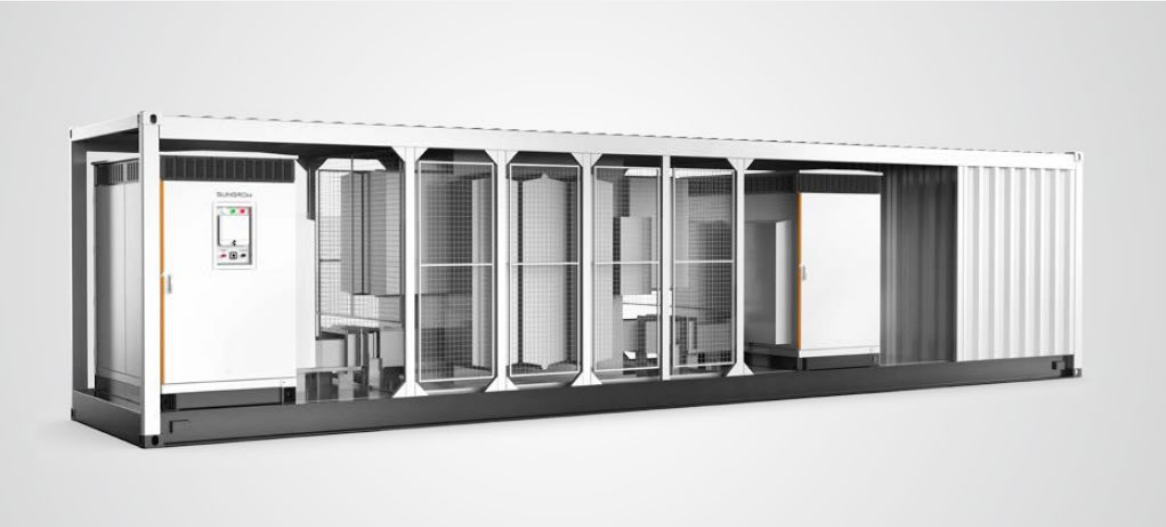

Figure 24 – Typical Power Conversion Unit to be installed on site (Sungrow SG4950HV-MV)

3.3.3. Battery Energy Storage System

In addition to the PCU, it is proposed to install associated Battery Energy Storage System (BESS) with a combined capacity of 11.008MWh, to provide grid stability services to the electricity network. During operation, electricity flows from the solar farm power conversion unit via underground electrical cabling to each battery container. The power flow is controlled and directed through the individual battery terminals, charging the internal battery storage cells. During discharge from the battery, the process is reversed with power flows from the battery cells back through an electrical cable connection to the power conversion unit.

The BESS system will comprise a containerised form, specifically being separate units incorporating internal Lithium-Ion type batteries with associated control systems, inverters, heating, ventilation and air conditioning units, transformers, and control rooms. The units are proposed to incorporate liquid cooling systems and will be fitted with an internal fire suppression system. The units will each have a battery capacity of 2,752KWh and a voltage range of 1,370-1,500 V. DC-to-DC converters will be contained internally within the container with the battery units.

Each unit will have approximate dimensions of 9.3 metres in length, 1.7 metres in width and a total height of 2.62 metres and will weigh 5.7 tonnes. The total estimated weight of the 4 units is therefore 22.8 tonnes.

The battery units will be transported to site pre-assembled and either attached to steel pilings or concrete slab base, subject to detailed design and depending on ground conditions.

Figure 25 - Example of Battery Energy Storage System to be installed for the development

3.3.4. Substation Area

A new substation area is proposed towards the centre of the proposed array area. The purpose of the internal substation area is to contain the PCU, BESS and other infrastructure components associated with converting power from the photovoltaic system to the electrical network.

The proposed substation area is located within the centre of the site in order to enable efficient connection with the proposed arrays. It will include a new Distributed Network Service Provider (DNSP) control unit with a new connection to the nearby 22kV power line at the corner of Cobden-Terang Road and Cobden-South Ecklin Road.

Components installed in this area will comprise containerised PCU, including inverters, control unit and switches; the proposed BESS are separate containerised units installed back to back in two blocks with a single PCS/Transformer container sending stored electricity to the main PCT along with electrical components provided connection into existing infrastructure.

The substation yard is to comprise a levelled and compacted area of land for movement of vehicles and personnel between proposed parking areas and the facilities. Power authority access to the facility will also be provided to the main solar facility, with pin access to the main gate to keep record of entry and exit.

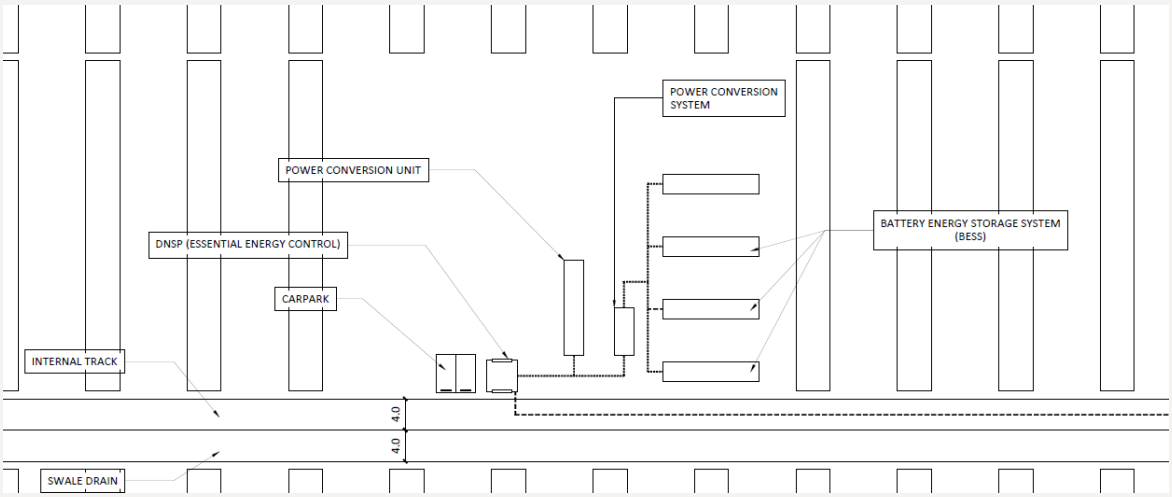

Figure 26 Concept layout of proposed substation area

3.4. Cabling

The proposal will comprise approximately a network of aboveground and underground cabling throughout the development. This will consist of DC cabling extending from the solar arrays to the inverters and AC cabling from the inverters to the substation.

Underground cabling will be installed between 0.5-1.0 metre below the surface and will be provided by trenching, installing cabling and conduit and backfilling. The disturbed area will be compacted to match the adjacent ground level.

Areas of aboveground cabling will be required at the solar panel arrays, with DC cabling being fed along the mounting structures to aboveground combiner boxes, which are installed on the pile driven poles vertical structure, before being fed to underground conduits.

3.5. Construction

The proposed solar panels are to be mounted on a steel structure with mounting posts to be driven into the ground using a vibrating pile driver. The piles will be driven approximately 1 to 2.5 metres into the ground, as to be confirmed by a geotechnical and structural engineer.

The internal site cabling will be installed by trenching up to 1 metre in depth, laying of electrical wiring and conduits and backfilling and compacted to natural ground level.

Combiner boxes, inverters and the proposed substation are to be installed above ground. The inverters and combiner boxes are to be established at the end of panel arrays, with the larger inverters installed on pre-built skids that enable easy placement on the site.

3.6. Access and Movement

Primary access to the site for both construction and operational stages is to be from Cobden-South Ecklin Road. A main entry and exit point is to be constructed approximately at the southwest corner of the site at this road frontage. This access will comprise a new rural entry in accordance with the Council's Infrastructure Design Manual (IDM) standard drawing for a Rural Entrance Drawing No. SD255. The access point will be an all-weather access rural standard crossover, capable of accommodating all construction and post-construction vehicles to the site.

Internal all-weather access tracks are to be constructed within the site, with internal access extending through the development along the western, and northern boundary. This road will also extend through the centre of the arrays, towards the central substation yard. Internal tracks are to be of a gravel standard

and capable of accommodating heavy vehicles and ensuring all vehicles to enter and exit the site in a forward direction.

3.7. Maintenance

Once operational, the facility will involve daily monitoring of plant and all associated infrastructure which will be carried out by staff. Staff will mainly monitor the site remotely, with a day to day management being carried out by a suitable maintenance and electrical contractor.

Where required, minor repairs and maintenance of components of the facility will be undertaken by either staff or contractors. Other occasional maintenance tasks will include washing panels, controlling grass and weeds on site, maintaining internal access tracks, general waste collection and disposal.

Regular inspections of the site will be carried out to ensure that grassland is managed to reduce the risk of bushfire to surrounding land and to control weeds. Mowing or slashing between rows of PV panels and in the area immediately surrounding the arrays would be carried out as required.

The proposal includes landscape buffers to all boundaries of the development, whether new or existing. Landscape treatments are considered based on the observed conditions along each frontage and considering the impacts and intended screening to each. Generally, the landscaping for the development is intended to screen the proposed solar facility while also provided a natural addition that will contribute well beyond the life of the development.

3.8. Landscaping

Landscaping is proposed to wrap the property along both the Cobden-South Echlin Road and the Cobden-Terang Road frontages.

All landscaping is to constitute a 3 to 5 metres wide landscaping strip and will incorporate existing tree plantings already established along the perimeter of the site. Emphasis will be placed on achieving height and density to mitigate the development to adjoining nearby dwellings to the north and east.

The proposed landscape response is detailed in the attached Landscape Plans and at Section 6.12 of this report.

3.9. Stormwater and Drainage

The development will include new internal access tracks with swale drainage able to be provided along one or both sides subject to final design. The extent of these tracks are unlikely to generate significant additional flows, with the final design able to ensure that the internal swales will accommodate enough capacity for the likely runoff and ensuring that it will continue to be directed to natural overland flow paths established on the site.

The runoff from the increased imperviousness of the solar panels is insignificant. As the entire solar array is not a continuous impervious surface, most of this runoff will infiltrate into the soil as per current conditions.

3.10. Security

Security of the solar facility will be critical to operations and ensuring safety of the public. A 1.8 metre high security fencing is to be established inside the subject site and set behind the proposed landscape buffers, to enclose the proposed solar panel arrays and internal tracks. Remote solar powered (battery backup) CCTV cameras will be installed at numerous parts of the facility. All proposed access gates will have a consistent height and include keypad controlled locks.

3.11. Decommissioning

The facility is intended to remain in operation for a minimum period of 30 years. This period of time represents the expected minimum useable life of a solar facility, after which the infrastructure and components would need to be upgraded to latest technologies for ongoing efficient operation.

If the facility ceases operations at this point, all infrastructure, panels, mounting frames including footings, inverters, cabling and other sub-surface materials would be disassembled and removed from the site to enable the site to be re-cultivated for cropping or grazing purposes.

3.12. Construction Summary

The following details the operational matters and components of the proposed facility during the construction stage. The construction phase is expected to comprise a period of up to 6-9 months, from project approval to energising of the facility.

Table 1 Summary of construction phase of the project

Component	
Site establishment	• Prepare and implement Construction Traffic Management Plan (CTMP) • Prepare and implement Environmental Management Plan (EMP) • Prepare Fire Risk Assessment and Bushfire Management and Response Plan • Establish of temporary construction signage and directional signage. • Construction of new internal fencing. • Establish primary property access to the site using an existing double gated entry • Establishment of a construction site office • Internal grading to establish new internal access tracks from the property access to the proposed substation location and the solar panel arrays; • Establish new parking area, loading and delivery areas inside the boundary;

Component	
Solar infrastructure construction works	• Direct pile driving using vibrating pile driver for installation of mounting poles. • Open trenching excavation for installation of underground cabling • Grading and compaction of areas for placement of infrastructure • Grading and compaction and installation of concrete slab-on-ground (if required) for establishment of new substation • Site grading and placement of gravel material for internal tracks between the property access, substation and panel arrays • Grading and placement of materials for establishment of perimeter access tracks
Fencing	• Construction of perimeter security fencing to the area containing the proposed panel arrays
Site Office	• A temporary construction site office is to be established within the development area, adjacent to the proposed property access. The office will be used for administrative functions and management during construction, including managing access and egress from the property.
Amenities	• Temporary toilet and wash room facilities will be placed on the site during construction. • Temporary water supply for services will be established by way of a portable tank or cart.
Parking and Drop-off Area	• A new construction parking area is to be constructed inside the property boundary, enabling parking and drop off for construction personnel. This location is adjacent to the temporary construction site office for suitable control of access to the site.
Laydown Area (Construction)	• Establishment of a defined construction laydown point at the southern extent of the proposed development. • The laydown area will be used during construction for: – delivery and set down of construction equipment, machinery and material; – parking areas – dedicated storage areas for equipment; – locked and secured area for storage of machinery, fuels, oils and other equipment.

Component	
Hours of work	• Monday to Friday, 7am – 6pm • Saturday, 8am – 1pm
Workforce	• 50 in total. Depending on the stage of the project, workforce will average of 20-30 at any one time.
Machinery/equipment	• Equipment required for the establishment of the solar farm will comprise various heavy machinery and plant, power tools and hand tools, including but not limited to: – Truck and dog combinations – Bulldozer – Grader – Skid Steer – Vibrating roller – Water cart – Piling rig and associated equipment – Crane – Trenchers and boring rig – Diesel generators – Power tools – Hand equipment
Traffic	• Predominantly, equipment and materials will be transported to the site in containers on rigid trucks. Delivery of some of the heavier components could be by semi-trailer or B-Double vehicles. • Months 1 to 4 will generate up to 4 light vehicle entries and 1 heavy vehicle entry per day • Months 5 and 6 represent the peak construction phase that is to generate 4 light vehicle and 4 heavy vehicle movements per day • Months 7 to 9 will generate up to 4 light vehicle entries and 1 heavy vehicle entry per day.

Component	
Noise	• Construction noise from machinery and equipment, including excavation, pile driving and movements. • Intermittent traffic and machinery noise as a result of movements to and from the property and maintenance works. • Temporary construction noise from construction personnel and plant/machinery.
Vibration	• Minor localised impacts, to be contained to within the internal areas of the site, resulting from pile driving works and compaction of roads and construction areas by vibrating rollers.
Waste	• Construction works will produce general packaging and construction waste, including plastics, recyclable cardboard, off-cut metals and steel, excess cable and the like. • A dedicated waste collection point is to be established in the southern corner of the site, close to the site access/egress with all necessary receptacles for collection and disposal off-site. • Wastewater from the temporary facilities will be held in tanks within the facilities, which will be regularly removed and replaced on site. • A Waste Management Plan (WMP) to be prepared and endorsed prior to works commencing on site.

3.13. Operational Summary

The operational phase of the facility is expected to be up to 30 years from construction. The following summarises the operational matters of the proposed solar facility during this period.

Table 2 Summary of operational phase of the project

Operational Item	
Hours of operation	• The facility will generate power during daylight hours, with all infrastructure being operational at all times. • Staff will only generally access the site during daytime periods. In emergency events, staff may be required to access the property.
Operations & Management	• Daily inspection and monitoring of the facility by full-time employed staff. • Maintenance and operational checks daily/weekly/monthly as per on-site operational guidelines • Off-site maintenance crews and contractors to be employed as required to undertake repairs.
Workforce	• 2 persons are to be employed for ongoing operation of the site. Not all personnel will be on-site at any one time.
Traffic	• On average, 1 vehicle per day or 5-10 vehicles per week. • The rate of traffic expected would be 1 vehicle per hour in the morning peak period and 1 vehicle per hour in the afternoon peak period. • Infrequent deliveries may be necessary to the site by large vehicles delivering parts, plant or equipment. • Access will be required from time to time by Powercor to the substation on site. Access will be facilitated via proposed internal track from Cobden-South Ecklin Road with direct access into the site through main access.
Car parking	• A parking area is to be established adjacent to the proposed substation area and will be accessible from the internal access track and main entry.
Maintenance	• Cleaning of PV Panels will be undertaken with water, to be sourced from water trucks brought to site. • Any repairs to panels or other equipment or infrastructure will be undertaken on an as needs basis either by employed staff or contractors.
Security	• Perimeter security fencing to the area containing the proposed panel arrays

	• The facility will utilise CCTV monitoring of access points and substation areas. • Security patrols of the property may also be carried out by private contractors.
Lighting	• Directional lighting may be provided to substation and surrounding parking area.
Noise sources	• The facility will operate in a generally passive manner generating very minimal noise. • Primary 'noise source' to be inverters within the central PCU. • Panel tracking systems move at a very slow speeds throughout the day while tracking the sun and there will not be any significant noise generated • Intermittent traffic and machinery noise as a result of movements to and from the property and maintenance works.
Storage	• There will be no storage of hazardous or dangerous goods or materials on site during the operation of the project. Proposed Lithium-Ion batteries will be a 'dry cell sealed battery module' and does not contain hazardous materials that may leak.
Waste	• Minimal waste is to be generated during operation and will be limited to: – General waste from site office, including paper, plastic and glass and putrescible waste including food waste, bottles, cans and paper; – Waste resulting from maintenance work, including packaging, and decommissioned/removed equipment. • All waste will be stored in bin or otherwise stockpile areas, which will divide waste into landfill and recycling streams. These waste materials will then be taken to off-site waste management facilities. • All cardboard and timber pallets will be recycled on site to be used as mulch in the vegetation areas. • A detailed Waste Management Plan (WMP) to be prepared and endorsed prior to works commencing on site, which will include management of any waste generated during operation.

4. Consultation

4.1. Overview

The applicant has undertaken consultation in relation to the proposed development with immediate neighbouring properties and a number of agencies. The consultation process and outcomes of this phase is summarised below.

4.2. Community Consultation

Community consultation has been carried out by the applicant representatives in the form of letter information delivered to landowners within a 1 kilometre radius of the site.

A project information sheet was prepared for the project which included an overview of the development and has been circulated to landowners with an opportunity to provide feedback and identify any issues or concerns. The information summarised the development location, scale and size, duration and other relevant details. No comments were received as a result of this notification.

Following a meeting with Council staff, the applicant discussed the proposal with representatives of the Cobden Aerodrome regarding the project. The applicant was advised that a number of small aircraft are flown from the Aerodrome and that there was no significant objection to the proposal facility. The applicant agreed to undertake appropriate glint and glare assessment, considering potential impact on the Aerodrome.

The applicant also met with the Cobden Business Chamber to discuss the proposal. This included a presentation to a meeting of the Chamber providing an overview of the proposal, discussion of indirect investment/employment opportunities and answering other queries.

4.3. Authority Consultation

The applicant and project team undertook consultation with DELWP as the determining planning authority for an application involving solar energy facilities of more than 1MW. The primary comments discussed with DELWP are addressed below.

Item	Comment
Provide overview of development proposal and the main components.	Applicant has discussed the main components of the proposal with DELWP and include more extensive information within this planning report.
Impacts on agricultural land must be carefully considered and discussed in the application.	An Agricultural Impact Assessment has been prepared for the proposed development and accompanies this application. The assessment determines that the site it is estimated that the project site represents 0.005% of all grazing modified pasture land use and 0.00002% total value of agricultural production within the Corangamite LGA and therefore removal of the land from large scale production is considered to have minimal impact. Despite this, the land accommodating the new solar facility is intended to be used for smaller scale grazing purposes to enable it to contribute to agriculture while in operation.

Item	Comment
Consultation is not mandatory, however consider undertaking neighbourhood and agency consultation.	Despite the impacts and limitations of various public health orders relating to COVID-19, the applicant has been able to undertake a level of consultation which is considered appropriate for this scale of development. It is noted that the applicant has undertaken targeted consultation with surrounding landowners, the Cobden Aerodrome, Cobden Business Chamber and Council. For a micro-scale scale solar facility, it is considered that this level of consultation is sufficient and above what is expected and required.
Consider design and interface treatments given surrounding dwellings.	The proposal incorporates generous landscape buffers to the perimeter of the site to compliment the screening provided by existing perimeter vegetation. Where possible, these buffers also include use of existing vegetation and will create long term linkages and connections within the landscape. Discussion of landscaping and visual impacts is provided within this report.
Connection to network also requires approval	The connection to the electricity network will be undertaken from within the property boundaries and is included within this application.
Consider all potential environmental impacts of development as per the Guidelines	This report and the accompanying technical assessments address the main issues for consideration as contained in the Guidelines.

Project team representatives sought preliminary comments from CFA on the proposed development. A written response was provided by CFA directing the applicant to consider the requirements of the CFA Guidelines for Renewable Energy Installations ("the CFA Guidelines"). CFA advised that these Guidelines are currently being reviewed in response to industry and other stakeholder feedback and will better respond to 'micro' solar farms, 5MW or less. Specifically, it was indicated that Sections 6.4.1, 6.4.2 and 6.4.3 could be excluded for a micro solar farm.

An Operational Environmental Management Plan will be prepared in consultation with DELWP, the CFA and other relevant Authorities post decision.

4.4. Council Consultation

Preliminary information on the proposal was provided to Council for comment and consideration prior to submission. Applicant representatives provided a briefing on the proposed development to Councillors on 25 August 2020 and considered feedback provided at this briefing.

On 2 October 2020, Corangamite Shire provided comments for consideration within the application. These are set out in the table below.

Table 3 – Summary of responses to Council comments

Item	Comment
Consultation **Council encourages the applicant to undertake direct and genuine consultation with nearby landowners and community members regarding the proposals. This may include further consultation with Cobden community to help shape the proposal and explain any economic or employment opportunities.**	Applicant has undertaken community consultation with surrounding landowners and encouraged further discussions with those immediately adjoining the property. Despite the impacts and limitations of various public health orders relating to COVID-19, the applicant has been able to undertake a level of consultation which is considered appropriate for this scale of development. Relevant comments and feedback has been considered and included within this application.
Grid Connection **Council have raised a question regarding existing grid capacity of the local system and whether the proposal would be affected by any curtailment on energy generation. Consideration should also be given to how the proposals will benefit electricity security within the Cobden and Camperdown areas.**	The applicant is required to undertake necessary assessments of grid capacity and network stability prior to agreement for connection by the relevant power authorities. Initial studies have been commissioned and show that there is sufficient capacity and stability in the network, however detailed modelling will be commenced concurrently with the planning permit application and beyond.
Landscape and Visual Impact Assessment **A LVIA must be undertaken and this needs to consider any recommendations for site landscaping to best minimise any adverse visual or amenity impact that may be caused.**	The proposal includes an overall landscaping plan for the development that seeks to minimise the risk of visual impacts on adjoining sensitive receivers. The landscape plan has been prepared based on consideration of the surrounding context, location of adjacent dwellings and potential view lines. A visual impact assessment is provided at Section 6.13 of this report.
Glint and Glare **Included within the LVIA or as a separate assessment, a glint and glare assessment should be undertaken. This must have regard to aviation operations and impact, and provide recommendations to manage solar panel reflectivity.**	Glare is assessed at Section 6.14 of this report and at Attachment G. The landscaping concept has also been informed by the assessed level of glare and potential interfaces that may be subject to higher periods of yellow glare.

Item	Comment
Fire Risk Assessment **As both proposed sites are location within rural areas which are subject to increase bushfire risk, fire risk assessments must be undertaken to consider impacts of fire entering the facilities or arising from the facility, including necessary management measures. This should include consultation with the CFA and local brigades, should the projects proceed.**	Preliminary fire risk has been considered in the design of the proposal, and is summarised at Section 6.6. The applicant has consulted with the CFA on bushfire risk and details are provided to demonstrate that the proposal will comply with the CFA's Guidelines for Renewable Energy Installations February 2019.
Agricultural Land Capability Assessment **Agriculture is the primary industry within the Corangamite Shire economy and is fundamental to local success and advantage. The proposals must be accompanied by agricultural assessments which consider the productive value of the land and any impacts or negative effects on primary production.**	An Agricultural Impact Assessment has been prepared for the proposed development and accompanies this application. The assessment is discussed at Section 6.5 of this report. The assessment determines that the site it is estimated that the project site represents 0.005% of all grazing modified pasture land use and 0.00002% total value of agricultural production within the Corangamite LGA and therefore removal of the land from large scale production is considered to have minimal impact. Despite this, the land accommodating the new solar facility is intended to be used for smaller scale grazing purposes to enable it to contribute to agriculture while in operation.
Micro-climate and Heat Island Effect **Concern was raised around the potential for a micro-climate or heat island to be created as a result of the proposals. Information should be provided which addresses this issue and consider the impact the development may cause on adjoining land.**	Impacts on micro-climate and urban heat island are considered at Section 6.11.

5. Statutory Planning Framework

5.1. Planning Policy Framework

This section responds to the relevant components of the Planning Policy Framework ("PPF"). The PPF seeks to develop the objectives for planning in Victoria and sets out the environmental, social and economic factors in the interests of community benefit and sustainable development.

The following clauses from the PPF are relevant to this application:

- **Clause 12 (Environmental and Landscape Values)** which refers to the protection of values including biodiversity and any potential impacts the amenity of the landscape.
- Clause 12.01-1S refers to the protection of biodiversity including consideration of any potential impacts regarding fragmentation, and the spreading of pest species and other biological hazards. Clause 12.01-2S refers to native vegetation management and seeks to ensure that there is no loss in biodiversity through vegetation removal. Clause 12.05-2S seeks to protect and enhance significant landscapes and open spaces that contribute to character, identity and sustainable environments. The proposal does not include the removal of the majority of any native vegetation from within the subject land or immediate fringes to facilitate the proposed works.
- **Clause 13 (Environmental Risks and Amenity)** which refers to the any considerations regarding natural hazards, including flooding or bushfire, amenity and other potential safety considerations.
- Clause 13.02-1S refers to bushfire planning and applies to the subject site as it is in a bushfire prone area. The proposal does not comprise any accommodation uses which may increase the risk of human life in a bushfire event. The property will be managed during its operation for a solar facility, including maintenance of grass and potential fuel loads, which will assist in minimising any risks of bushfire to surrounding properties.
- Clause 13.04-2S refers to erosion and landslip and is an applicable consideration given the potential of the proposed earthworks for the internal roads and array installation.
- Clause 13.05-1S relates to noise abatement. The proposal will involve activities which generate some ongoing noise as part of operation and therefore the strategies of this clause are relevant for consideration. The proposal is expected to generate low levels of noise from inverters and plant within the site. These are located well away from the nearby residences and are unlikely to adversely affect these properties. Noise from construction works will addressed in the Construction Management Plan prior to any works commencing.
- Clause 13.06-1S refers to air quality management and is relevant given the potential for the proposed facility to generate dust. Clause 13.07-1S refers to land use compatibility and seeks to ensure development is sited appropriately in consideration of safety and amenity.
- **Clause 14 (Natural Resource Management)** which refers to the management of natural resources, including agricultural land.
- Clause 14.01-1S refers to protection of agricultural land and aims to preserve productive farmland, which is relevant to the proposal as the facility will take a portion of existing agricultural land. The land is not considered to represent high value or strategically important rural land, as has been demonstrated by the submitted Agricultural Impact Assessment.
- Removal of the land from agricultural production is considered to have minimal impact on relevant industries and employment within the region. There is also the opportunity for the proposed solar renewable energy facility to be used for the strategic grazing of livestock and will help diversify farm income without reducing productivity.

- Clause 14.01-2S refers to sustainable agricultural land use, with the stated objective being to encourage sustainable agricultural land uses. While the proposal is not for the purposes of agriculture, it does seek to use a portion of agricultural land. The operation of a solar facility is considered to represent a sustainable use of agricultural land. There is also the opportunity for the land to be used for the strategic grazing of livestock and during operation, with decommissioning also envisaging returning the land to productive capacity at the completion of the lease term.

- **Clause 17 (Economic Development).** Clause 17.01-2S refers to innovation and research and aims to create opportunities for innovation and the knowledge economy within existing and emerging industries, research and education. The proposal responds to this policy through delivery of a facility which represents innovation in energy production.

- **Clause 19 (Infrastructure)** refers to new infrastructure. Clause 19.01-1S refers to energy supply generally and aims to facilitate appropriate development of energy infrastructure. The proposed development is responsive to this policy by establishing a new form of energy productions in a location that can take advantage of existing facilities, such as substation connection and convenient accessibility. Clause 19.01-2S relates more specifically to renewable energy, with the objective to promote the provision of renewable energy in a manner that ensures appropriate siting and design considerations are met.

5.2. Local Planning Policy Framework

This section of the application report responds to the relevant components of the Local Planning Policy Framework.

The MSS sets out future direction for the municipality and provides a vision and framework for the municipality. The intention is to further the objectives of planning in Victoria to the extent that the State Planning Policy Framework is applicable to the municipality and local issues, including a broad range of matters such as land use, social, economic and environmental sustainability and major infrastructure requirements. Local Planning Policies provide more detailed direction to inform the assessment of new land use and development. There are no Local Policies that apply to the proposed development.

The following sections of the MSS are relevant to the proposed development.

- **Clause 21.02 (Settlement, Built Form and Heritage).** This clause provides local content to support Clause 11 (Settlement), Clause 15 (Built Environment and Heritage) and Clause 16 (Housing) of the State Planning Policy Framework.

- Clause 21.02-3 refers to Built Form and Urban Design and includes strategies that ensure that all development has regard to the design, siting and landscaping qualities in towns, town entrances and town boundaries, and that the design, layout, height and appearance of new development contributes to the improvement of the character, presentation, amenity and visual qualities of towns.

- **Clause 21.03 (Environment and Natural Resources).** This clause provides local content to support Clause 12 (Environmental and Landscape Values), Clause 13 (Environmental Risks) and Clause 14 (Natural Resource Management) of the State Planning Policy Framework.

- Clause 21.03-1 identifies that the Shire contains important areas of remnant native vegetation which provide an insight to areas that have undergone significant environmental change. This clause has the objective to ensure land use and development protects and enhances biological diversity.

- Clause 21.03-3 refers to environmental risks and Parts of the Corangamite Shire are subject to environmental risk from a range of factors, such as flooding, erosion and land slippage and bushfire. The subject site is identified as bushfire prone and Objective 1 of this clause seeks to ensure development is only permitted where risks to life, property and community infrastructure from bushfire and flood is low. It is considered that the proposal does not increase the bushfire risk as considered elsewhere within this report in relation to bushfire.

- **Clause 21.04 (Economic Development).** This clause provides local content to support Clause 17 (Economic Development) of the State Planning Policy Framework.

- Clause 21.04-1 refers to Agriculture and highlights the significance of this sector to the Shire. Agriculture is the Shire's largest and most important industry, contributing approximately 19% of all agricultural production in Victoria, generating approximately $479 million worth of product and employing approximately one third of the Shire's workforce. The protection and enhancement of the agricultural industry is linked to the Shire's environmental and economic wellbeing. Given the importance of agriculture to the local economy, the preservation of agricultural land is necessary for the sustainable development of primary production within the Shire. Unplanned urban growth into productive agricultural land may compromise the viability of the industry and must be avoided.

- The proposed facility has been sited on grazing and cropping land that is not higher-productivity agriculture, as the land is outside any declared irrigation district; and is identified of only moderate agricultural utility. Further, assessment of the land has determined that the project site represents 0.005% of all grazing modified pastureland use and 0.00002% total value of agricultural production within the Corangamite LGA. Removal of the land from agricultural production is considered to have minimal impact on relevant industries and employment within the region.

- The proposed facility allows for co-location and continuation of existing agricultural operations on the property; in conjunction with a lease of part of the property for a small-scale renewable energy facility. The proposal allows the established landholder to diversify their operations, as well as enabling the municipality to expand its renewable energy capability. It should also be noted that the solar facility land will continue to be farmed for small scale enterprises.

- **Clause 21.05 (Infrastructure and Transport)**. This clause provides local content to support Clause 18 (Transport) and Clause 19 (Infrastructure) of the State Planning Policy Framework.

- Clause 21.05-1 notes that "The Shire is also well placed to take advantage of new renewable energy industries, particularly wind energy.". **Objective 4** goes on to state "… support the establishment and expansion of renewable energy industries."

- **Clause 21.06 (Local Areas)** sets out strategic issues relating to the various settlements within Corangamite. Clause 21.06-2 refers to Cobden.

5.3. Farming Zone

The subject site is located within the Farming Zone of Corangamite Shire. It is also identified within Schedule 1 to the FZ which refers to default farming areas of the LGA.

The relevant purpose of the FZ is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *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.*
- *To provide for the use and development of land for the specific purposes identified in a schedule to this zone*

The proposed use and development of the land is not for traditional agricultural purposes, however a renewable energy facility within the FZ is permissible with a planning permit.

Most significantly, the proposal ensures that surrounding agricultural uses are not compromised from its development and that high quality agricultural land is not removed from production. Renewable energy is commonly undertaken in rural areas given the larger areas and availability of land, and planning policy recognises that such uses can be appropriately accommodated in rural areas. In particular, it is noted that 'agricultural production' as defined by the planning scheme includes *"Any form of primary production of renewable commodities."*

A 'renewable energy facility' and 'utility installations' are listed as a Section 2 use requiring a planning permit. A permit is also required to construct a building or construct or carry out works on land in the Farming Zone for a Section 2 use. The proposed structures and works do not qualify under any exemptions listed and a planning permit is therefore required.

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate the decision guidelines of the FZ1. The decision guidelines considered against this proposal in **Table 4** below.

Table 4 Decision guidelines for the FZ1

Decision Guidelines	Response
General	
The Municipal Planning Strategy and the Planning Policy Framework	Addressed in Sections 5.1 & 5.2

Decision Guidelines	Response
Any Regional Catchment Strategy and associated plan applying to the land	The Corangamite Regional Catchment Strategy 2013-2019 applies to the region, including the subject site. The strategy refers to the significance of the rural and agricultural areas of the Shire and includes the objective to *"Work with local governments and the Department of Environment and Primary Industries to ensure that Regional Growth Plans minimise impacts on productive agricultural land in the planning and approval of land subdivisions, developments, energy and mineral exploration and extraction activities, and urban expansions."* The proposal is not inconsistent with the strategy.
The capability of the land to accommodate the proposed use or development, including the disposal of effluent.	The land is suitable to accommodate the proposed development as it has excellent site access for both construction and operational traffic, is flat is generally cleared and connections can easily be extended to the substation in the adjacent road reserve. No effluent disposal is required as the facility will be unmanned.
How the use or development relates to sustainable land management.	The use of the land in this instance is for an activity that will provide a sustainable renewable energy source. The earthworks required to establish the facility are not extensive and will involve only the driving of mounting piles and the establishment of the unsealed internal road. The use itself allows for transition to rural land in the future and will also ensure that surrounding land is not impacted and may still continue to be farmed. After the decommissioning of the land, the land can return to its former agricultural function.
Whether the site is suitable for the use or development and whether the proposal is compatible with adjoining and nearby land uses.	This Planning Report and the submitted technical assessments demonstrate that the land is suitable for development of a solar facility, particularly when considered against the siting and design requirements of the *Solar Facility Design Guidelines*. Residential dwellings are noted in the surrounding area, however will be appropriately buffered from the development utilising landscaping (refer to discussions elsewhere within this report). The site is also located on land directly adjacent to existing Powercor infrastructure that will provide for efficient distribution of generated electricity. The location also ensures simplified connection and avoids new overhead powerline infrastructure being created over productive land.

Decision Guidelines	Response
How the use and development makes use of existing infrastructure and services.	The proposal will not have any significant load on existing services in the area, and will be appropriately connected into the electricity network in accordance with Powercor's requirements. The proposal has a greater benefit of provide renewable energy input into the electricity system.
Agricultural issues and the impacts from non-agricultural uses	
Whether the use or development will support and enhance agricultural production.	The proposed use is for a renewable energy facility, however has been carefully considered and designed to be integrated into the agricultural context without significant impacts. The land will not be significantly compromised give the nature of construction works, and can be decommission and returned to an agricultural function at the end of its life.
Whether the use or development will adversely affect soil quality or permanently remove land from agricultural production.	The earthworks are minimal, as described above, and will not include significant disturbance of the site. The topography and other physical conditions will be generally unchanged.
The potential for the use or development to limit the operation and expansion of adjoining and nearby agricultural uses.	The development does not include any processes that will impact surrounding agricultural uses or expansion. The landowners will still operate approximately 50% of the lot for productive agricultural. There is still possibilities that the land could be added to larger holdings in the longer term, regardless of the use of the land for renewable energy.
The capacity of the site to sustain the agricultural use.	Not applicable as the proposal does not involve agricultural use.
The agricultural qualities of the land, such as soil quality, access to water and access to rural infrastructure.	The majority of soils across the Corangamite LGA are classed as Western Plains. The Victorian Western Plains are made up of low-lying undulating plains formed on both volcanic and sedimentary lithologies. The subject site has a small farm dam located on the northern portion and there are a number of concrete troughs throughout the site to provide water for livestock. The water supply on the land is consistent with the scale of production contained on the land.
Any integrated land management plan prepared for the site.	Not applicable. As above.
Environmental issues	

Decision Guidelines	Response
The impact of the proposal on the natural physical features and resources of the area, in particular on soil and water quality.	The proposal will not have any adverse impact on the natural qualities of the subject land. A Native Vegetation Assessment has been undertaken and confirms that the subject site is highly modified from intense grazing pressure and farming activities. Vegetation in the study area consisted predominantly of introduced pasture grasses, which included Rye Grass, Annual Meadow-grass and Canary Grass. Introduced Cypress is planted along the property boundary in the north west, with planted native vegetation wind rows of Bog Gum, Manna Gum, Sugar Gum, Black Wattle and Coast Wattle one along the south west boundary, and an internal fence line. Native vegetation was only found in the study area within the road reserves, with Blackwood being the dominant native species. Other observed native species include Cherry Ballart, Hop Goodenia, Prickly Tea-tree, Kangaroo Grass, Spear Grass and Sheep's Burr. The highest quality of native vegetation was present at the corner of Cobden-Terang Road and Cobden-South Ecklin Road. Within patches of native vegetation, and elsewhere along the road side, weed species were common in the understorey. Weed species included Blackberry, Spear Thistle, Spanish Heath, Cocksfoot and Toowoomba Canary-grass. Along Cobden-Terang Road, there was also a high density of introduced deciduous trees, with the occurrence of native Blackwood amongst them. The proposed works do not involve significant earthworks or physical changes to landform or topography, meaning that the land will retain its general physical condition. The intention is to ensure that the land can retain its patterns of runoff, ground conditions and the like during operation and may also be returned to its previous agricultural form when decommissioned.
The impact of the use or development on the flora and fauna on the site and its surrounds	As above, a Native Vegetation Assessment has been undertaken and confirms that the subject site contains no native vegetation. Native vegetation is identified along the road reserves, however will not be disturbed by the proposed works.
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 proposal will have a generally positive outcome on biodiversity by utilising a site which does not contain any significant overstorey or understorey conditions and will not remove any native vegetation.

Decision Guidelines	Response
The location of on-site effluent disposal areas to minimise the impact of nutrient loads on waterways and native vegetation.	There is no on-site effluent disposal required part of the proposal.
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 layout of all structures is distributed evenly across the development area, while incorporating generous setbacks and perimeter landscaping. The screening to the property will provide a substantial buffer to the surrounding properties, which is assisted by the provision of additional window plantings throughout the landscape. As discussed throughout, the placement of panels also allows generally minimal impact on the landscape and avoids large scale landform changes. The proposed parking area, substation and other components are to be sited within the centre of the site, with the construction storage and parking area located in the southern corner of the site.
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 subject site is not within a significant valley or ridgeline, however there are some longer range views that may occur from slightly elevated points in the surrounds. These impacts have been considered in terms of general visual impact and glare impacts, with the siting design response provided accordingly.
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 design of the facility to incorporate only a portion of the total lot area and will include suitable setbacks and utilise generally non-reflective components means that the facility should remain fairly passive in the landscape.
The location and design of existing and proposed infrastructure including roads, gas, water, drainage, telecommunications and sewerage facilities	The site is provided with existing public road frontage and access opportunities. The proposed use will require connections to electrical infrastructure and other essential services as required.
Whether the use and development will require traffic management measures.	A Traffic Impact Assessment has been completed and is attached to this application. This assessment did not anticipate a significant increase in traffic beyond the capacity of the road network, however recommends the construction of a new rural access driveway that can facilitate heavy vehicle movements.

5.4. Road Zone

The proposal also seeks to connect with existing electrical infrastructure within the adjoining Cobden-Terang Road reserve, which is zoned Road Zone Category 1 (RDZ1). The purpose of the RDZ1 is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To identify significant existing roads.*
- *To identify land which has been acquired for a significant proposed road.*

In this instance, the proposal seeks only to connect to existing electrical infrastructure, being an existing pole adjacent to the land, and install a new overhead connection into the subject land. The location of the connection point and new alignment will have no significant impact on the operation of the surrounding roads or the physical conditions of the site. It is considered to be an appropriate development within roadside land.

Pursuant to clause 36.04-1, use of land within the RDZ1 for a utility installation requires a planning permit. A planning permit is also required under clause 36.04-2 to construct a building or construct or carry out works for a section 2 use. A planning permit for use and development of the adjacent road reserve for utility installation is sought by this application.

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate the decision guidelines of the RDZ1. The decision guidelines considered against this proposal in **Table 5** below.

Table 5 Decision guidelines for the RDZ1

Decision Guidelines	Response
The Municipal Planning Strategy and the Planning Policy Framework	Addressed in Sections 5.1 & 5.2
The views of the relevant road authority.	The views of Transport for Victoria or Regional Roads Victoria will be sought as part of the referral of this application.
The effect of the proposal on the operation of the road and on public safety.	The proposal involves only the construction of an overhead power line extension in the road reserve, and will represent works that are typical for roadside locations. The works will include appropriate heights to match existing services and will not be located to cause any adverse impact to road users of the conditions of the existing road network.

5.5. Particular Provisions

5.5.1. Car Parking

Clause 52.06 sets out specific matters relating to car parking and seeks to ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities of the land and the nature of the locality, as well as ensuring that car parking does not adversely affect the amenity of the locality and is designed to a high standard. The provisions of clause 52.06 apply in this instance as the proposal is for a new use.

Clause 52.06-2 requires that before a new use commences, the number of car parking spaces required under Clause 52.06-5 (or in a schedule to the Parking Overlay) must be provided to the satisfaction of the responsible authority. Table 1 of clause 52.06-5 specifies parking requirements for particular land uses. The provisions of Clause 52.06 do not prescribe a car parking requirement for renewable energy facilities and therefore, pursuant to Clause 52.06-6, car parking must be provided to the satisfaction of the responsible authority.

The greatest demand for parking will be during the construction phase of the development, where up to 2 light vehicles and 2 minibuses are likely to access the site daily. Assuming all vehicles will be at the site at the same time, the subject site is likely to have a car parking demand of at least 4 spaces during construction. The provision of the proposed on-site parking area shown by the plans far exceeds the minimum expected requirements.

The car parking demand for the site post construction is one space which can easily be accommodated on site. There is not considered to be a requirement for bicycle parking at this remote location.

5.5.2. Native Vegetation

Clause 52.17 of the planning scheme refers to native vegetation and has the purpose to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. The requirements of the clause is supported by the three step approach in accordance with *Guidelines for the removal, destruction or lopping of native vegetation* (Department of Environment, Land, Water and Planning, 2017) (“the Guidelines”)

A planning permit is required pursuant to clause 52.17-1 to remove, destroy or lop native vegetation, including dead native vegetation, unless an exemption is otherwise specified.

A Native Vegetation Assessment report is provided attached to this application, which considers the impacts of the proposal. The assessment determines that native vegetation is contained only to the road reserves, and primarily at the Cobden-South Ecklin Road intersection where conditions represent the best quality. The internal windrow vegetation has been assessed by a qualified ecologist and determined to be planted vegetation that is not required to be offset.

The location of roadside native vegetation patches is shown on the proposed development plans. All works are proposed to avoid these areas and include a minimum 6 metre setback as per the recommendations of the assessment. The proposal will therefore not trigger a planning permit for native vegetation removal.

No matters listed under the EPBC Act were recorded during the assessment and none are considered to have the potential to occur, due to the highly modified and degraded nature of the site.

Having regard to the above, no permit is required under clause 52.17.

5.5.3. Land adjacent to a Road Zone, Category 1, or a Public Acquisition Overlay if the purpose of acquisition is for a Category 1 road

This policy applies to land adjacent to a Road Zone, Category 1, or a Public Acquisition Overlay if the purpose of acquisition is for a Category 1 road. The adjacent Cobden-Terang Road is a Road Zone Category 1 ("RDZ1") and a permit is required to create or alter access to a road in a RDZ1 or subdivide land adjacent to a road in a RDZ1.

An application to create or alter access to, or to subdivide land adjacent to, a road declared as a freeway or arterial road under the *Road Management Act 2004*, land owned by the Roads Corporation for the purpose of a road, or land in a Public Acquisition Overlay if the Roads Corporation is the acquiring authority for the land, must be referred to the Roads Corporation under Section 55 of the Act. Any other application must be referred to the owner of, or the acquiring authority for, the adjacent land in the Road Zone, Category 1, or the Public Acquisition Overlay.

No primary access is proposed to this Cobden-Terang Road, however the proposal does seek to rely upon an existing access gate for emergency access purposes. The proposal will therefore alter access to a road in a Road Zone Category 1 (RDZ1) and therefore triggers a permit under this clause.

Before deciding on an application, in addition to the decision guidelines contained in Clause 65, the responsible authority must consider the decision guidelines contained in Clause 52.29-6 as follows:

- The Municipal Planning Strategy and the Planning Policy Framework.
- The views of the relevant road authority.
- The effect of the proposal on the operation of the road and on public safety.
- Any policy made by the relevant road authority pursuant to Schedule 2, Clause 3 of the Road Management Act 2004 regarding access between a controlled access road and adjacent road.

The proposed alterations and additions are consistent with these decision guidelines as follows:

- Matters regarding the MPS and PPF have been addressed in this report;
- The application will be referred to the relevant roads authority for comment as part of the assessment process;
- The development is not expected to adversely affect the operation or safety of the adjoining Cobden-Terang Road as the access location is for emergency purposes and the extent of traffic that will utilise this location will be insignificant
- No new road intersections are proposed at this location given the informal emergency nature of the access; and
- The development does not involve works to a controlled access road.

5.6. Renewable Energy Facility

Clause 53.13 applies a renewable energy facility, other than a wind energy facility, and the considerations of this clause therefore apply to the proposal. The purpose of this clause is to provide the framework for facility design and site determination.

It is also noted that the Department of Environment, Land, Water and Planning (DELWP) has released the *Solar Energy Facilities Design & Development Guidelines* (August 2019), which outlines the key considerations for the use and development of solar facilities across Victoria. The guidelines include siting and design guidance along with recommendations for community consultation, design, consideration of off-site impacts, construction, operation and decommissioning. The relevant considerations of the Guidelines are discussed in the section below.

In accordance with Clause 53.13-2, an application must be accompanied by the information reproduced in the following table, as relevant.

Table 6 Application requirements for the development of a renewable energy facility (other than wind energy facility)

Requirement	Response
A site and context analysis, including:	
• **A site plan, photographs or other techniques to accurately describe the site and the surrounding area.**	The subject site is described at Section 2 of this report, and site plans are included attached.
• **A 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.**	As above.
A design response, including:	
• **Detailed plans of the proposed development including, 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 development is illustrated in the plans prepared by Bison Energy that show the dimensions of the development, proposed alignments, landscaping and materials to be used in the development. Generally, the facility will incorporate non-reflective and muted materials and colours to avoid impacts on the surrounding area. The facility is intended to connect directly to adjacent electrical infrastructure and the 22kV overhead power lines.
• **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 development and the surrounding area has been prepared.
• **The extent of vegetation removal and a rehabilitation plan for the site.**	The lease area is highly modified and there is the possibility of the removal of grasses and other small ground cover species in the road reserve to establish access points. This removal will be of little consequence to the biodiversity of the area.
• **Written report and assessment, including:**	

Requirement	Response
– **An explanation of how the proposed design derives from and responds to the site analysis.** – **A description of the proposal, including the types of process to be utilised, materials to be stored and the treatment of waste.** – **Whether a Works Approval or Licence is required from the Environment Protection Authority.** – **the potential amenity impacts such as noise, glint, light spill, emissions to air, land or water, vibration, smell and electromagnetic interference.** – **the effect of traffic to be generated on roads.** – **the impact upon Aboriginal or non-Aboriginal cultural heritage.** – **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.** – **A statement of why the site is suitable for a renewable energy facility including, a calculation of the greenhouse benefits.** – **An environmental management plan including, a construction management plan, any rehabilitation and monitoring.**	Assessment of these items have been completed and incorporated into this report, as relevant. Generally, these matters have been assessed within Section 3 and 6 of the planning report and where relevant within the submitted technical documents. The proposed development site has been sited with a suitable separation distance from any nearby viewpoints and will sit within a low point on the landscape. The proposed facility will be passive in that there are no processes that are carried out other than the unmanned collection and conversion of solar energy to electricity. Access and attendance at site will be very limited and occurs only for maintenance purposes. The proposed facility will be a passive facility and will not include any significant noise or light transfer to surrounding properties or major access roads. Panels are designed to be non-reflective and will be screened from surrounding properties by landscaping. The site has the potential to generate 12,897 MWh (megawatt hours) of electricity per year, which is a saving of approximately 10,075 tons of CO2 gases entering the atmosphere each year. This is the equivalent CO2 output of approximately 1,988 passenger cars driving on the road for one year.

Decision guidelines

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate the decision guidelines of clause 53.13-3 for the development of a renewable energy facility. The decision guidelines considered against this proposal in the following table.

Table 7 Decision guidelines for the development of a renewable energy facility (other than wind energy facility).

Decision guideline	Response
The Municipal Planning Strategy and the Planning Policy Framework.	Addressed in Sections 5.1 & 5.2
The effect of the proposal on the surrounding area in terms of noise, glint, light spill, vibration, smell and electromagnetic interference.	The subject site has considered the impact of the development on the surrounding landscape and sensitive receptors from a visual, noise, glint and glare perspective, with the mitigation measures within this report setting out the manner in which the site is to be treated to mitigate these impacts. The general operation of the facility is not anticipated to generate substantial noise, light spill, or vibration.
The impact of the proposal on significant views, including visual corridors and sightlines.	The subject site is not located along any ridgelines, valleys or other important sightlines. Long range views to the facility from the surrounding area have been considered and addressed within this report.
The impact of the proposal on strategically important agricultural land, particularly within declared irrigation districts.	An Agricultural Impact Assessment has been completed in support of the proposal and is attached. This assessment did not identify the land as being located in strategically important and also estimated that the project site represents 0.005% of all grazing modified pasture land use and 0.00002% total value of agricultural production within the Corangamite LGA.
The impact of the proposal on the natural environment and natural systems	As discussed within the assessment of impacts within this report and the attached technical documents, the proposal is designed to minimise impacts on the physical conditions of the site, by avoiding substantial landform changes and/or hardstand areas that may alter the site conditions
The impact of the proposal on the road network.	This is addressed in detail in the Traffic Impact Assessment attached. The proposal is not anticipated to significantly increase the traffic of the surrounding roads beyond their design capacity. The TIA recommends improvements to site access to enable heavy vehicles to safely enter and exit the site during construction without impact on the road network.
Solar Energy Facilities Design and Development Guideline (Department of Environment, Land, Water and Planning, August 2019).	The relevant matters of the *Solar Energy Facilities Design and Development Guideline* have been addressed within this report and the attached technical documents

5.7. General Provisions

5.7.1. Decision guidelines (Clause 65)

Before deciding on an application or approval of a plan, the responsible authority must consider a number of decision guidelines. **Table 7** below provides an assessment of the proposal against the relevant general decision guidelines at clause 65.01 - Approval of an application or plan.

Table 8 Response to decision guidelines at clause 65.01

Decision Guideline	Response
The matters set out in Section 60 of the Act	Refer to Section 5 and Section 6.
The State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.	Refer to Sections 5.1 & 5.2
The purpose of the zone, overlay or other provision.	Refer to Section 5.3 & 5.4
Any matter required to be considered in the zone, overlay or other provision.	Refer to Section 5.3 & 5.4
The orderly planning of the area.	The proposal involves the establishment of a small scale solar facility on rural lot. The site is generally cleared, does not represent significant agricultural value and is generally flat. The site is located appropriately to efficient road access and access to existing electrical infrastructure. The development itself is proportional to the site and allows for the appropriate setbacks and densities of the arrays to be maintained, and the perimeter road can be appropriately integrated.

Decision Guideline	Response
The effect on the amenity of the area.	The subject site is located within a rural area and there are no significant visual impacts considered likely from the operation of the facility. Dwellings are located within the surrounding area, however the proposed PV panels will be treated by existing planted trees on the sites perimeter and within adjacent road reserves. Additionally, these panels will be setback from the site boundaries, providing adequate separation from surrounding receptors. Lighting of the facility, if needed, will be directed into the facility to avoid light spill. There will be noise during the construction stage, however the operation of the facility will be relatively silent. The impacts from glint and glare are also considered as part of the assessment against potential environmental impacts.
The proximity of the land to any public land.	There is no nearby public land in regard to the subject site.
Factors likely to cause or contribute to land degradation, salinity or reduce water quality.	The development will comprise relatively minor disturbance of the site as the panels will be installed on racks rather than more substantial footings. Some trenching and road construction is required, however is designed to minimise impact on the surface conditions. Future drainage design will ensure that rate of flow is not increased to the adjoining rural properties which may impact upon their operations. Water quality is not expected to be impacted.
Whether the proposed development is designed to maintain or improve the quality of stormwater within and exiting the site.	The site will not modify drainage patterns and will not comprise any significant areas of hardstand that may increase runoff rates from the site. The mitigation measures, addressed above, will ensure that stormwater quality is maintained during construction.

Decision Guideline	Response
The extent and character of native vegetation and the likelihood of its destruction.	The subject site contains some planted vegetation along fence lines, which will be removed to make way for the proposed solar arrays. These trees are not regarded as significant given their planted and non-native characteristics. The ground layer of vegetation throughout the land is heavily modified as confirmed by the Native Vegetation Assessment. Higher value vegetation within the road reserves will be retained and avoided under the proposed design.
Whether native vegetation is to be or can be protected, planted or allowed to regenerate.	As above, the trees are not regarded significant and are not preferred to be retained within the panels. Their protection also cannot be avoided without compromising the layout.
The degree of flood, erosion or fire hazard associated with the location of the land and the use, development or management of the land so as to minimise any such hazard.	The subject site is not identified as having any risk from flooding. The land is not affected by the Bushfire Management Overlay however is mapped as Bushfire Prone Land. In response, the development incorporates design features as per the CFA Solar Facility Guidelines, including a minimum 10 metre wide perimeter fire break, internal access roads and emergency egress locations and onsite static water supply in the form the existing dam, which will be retained for this purpose.

6. Planning Considerations

6.1. Site Selection

The applicant has undertaken carefully consideration of the siting of the facility to firstly provide an efficient renewable energy development while not leading to any impacts on electrical network, physical and natural conditions of the site and surrounding area or on the amenity of the nearby properties.

The solar renewable energy facility has been strategically sited on land that is easily accessible off Cobden-South Ecklin Road and will not impact on the continuation of agricultural production on the balance of the property. The subject site has been selected due to its fragmented and will not result in the fragmentation of agricultural land. There is also the opportunity for the proposed solar renewable energy facility to be used for the strategic grazing of livestock and will help diversify farm income without reducing productivity.

The site has excellent solar exposure given that is predominantly cleared and flat. The Cobden area also receives sufficient solar access year round, allowing the system to function appropriately.

Native Vegetation Assessment has also been carried out which determines that the land is not of significant biodiversity value. Native vegetation is noted along the road reserve boundaries, however will be protected and enhanced to assist with screening of the development.

The land is also not subject to any cultural heritage sensitivity.

The subject site is well suited to a renewable energy facility for the following reasons:

- The site is located immediately adjacent to an existing 22kv power line which can be easily and efficiently connected;
- The land is flat and avoids the need for unnecessary or excessive earthworks or changes to the natural landscape;
- The proposal will not lease to the loss or removal of significant native vegetation and biodiversity, and will not require offsets;
- The site is well located in proximity to access roads and the broader arterial road network of the region, allowing safe and efficient access without need for upgrades of the road network;
- It is located with suitable separation distances from the Cobden urban area.
- The site is isolated from the property owners remaining lots. Currently, traffic is stopped for the crossing of livestock which at times has caused challenges for the land owner due to out of area personnel not understanding livestock crossing etiquette.

6.2. Design

The design and layout of the facility has been considered with a view to maximise energy production while having minimal impact on the site conditions. The solar energy facility will be operational for a period of at least 30 years, after which it is likely to be decommissioned and returned to agricultural production. The design is therefore considered on the basis of minimising the impacts on the natural conditions of the site so that it may be easily returned to its original state.

The proposal aims to retain as much of the overall property for agricultural production by only using the area necessary to generate the 5MW output. The proposal also utilises the most up to date panel technology to obtain higher energy outputs using less panel infrastructure. The ongoing maintenance of facility will ensure that any adverse impacts on nearby agricultural land are avoided.

The design has also been informed by the considerations of bushfire, observing the design, alignment and setback recommendations of the *Solar Energy Facilities Design & Development Guidelines* in August 2019. It has been designed to minimise potential impacts on the surrounding land uses ensuring that productive agriculture is not unreasonably impeded.

6.3. Construction

The majority of impacts are likely to occur during the construction and decommissioning phases of the solar energy facility's life. The construction period will be undertaken over a relatively short period of time (weather dependent) and will be entirely contained within the subject site to avoid impacts on adjoining properties.

The proposal does not include any permanent concrete areas or works on the land as part the construction process to ensure that decommissioning and recovery of the agricultural land can be a relatively simple transition. Any decommissioning will be undertaken as per the Guidelines for Solar Energy Facilities

The applicant intends to utilise a predominantly local workforce for the majority of the construction work, including for specialised technical contractors, subject to availability. The local workforce may also be sourced from nearby towns. During construction, the applicants will provide bus transport for the workforce, providing collection and drop-off from a defined location, corresponding with the construction shifts. This will enable a more efficient arrangement for workers to access the site and reduce demand on local roads and other transport services.

The proposal does not include any permanent concrete areas or works on the land as part the construction process. This ensures that decommissioning and recovery of the agricultural land can be a relatively simple transition once the solar energy facility is to decommissioned. The decommissioning will be undertaken as per the Guidelines for Solar Energy Facilities and best practice at that time for solar energy facilities.

6.4. Operation

Once operational, the facility will be operated as a passive development, with no significant off-site impacts in terms of noise, light or glare expected to be generated.

During operation, there will be limited staff required on site. Staff will only generally access the site during daytime periods, however in emergency events, staff may be required to access the property. Two persons are to be employed for ongoing operation of the site. Not all personnel will be on-site at any one time.

The proposed solar panels are to be installed on a single axis tracking system to follow the sun from east to west each day and obtain the maximum solar exposure. They are to be mounted to a fixed structure which is installed on mounting posts. The posts are to be direct pile driven or screw driven into the ground to a depth of approximately 2.5 metres at interval widths of up to 7 metres with the

panels then bolted to the top of the structure. The final height of the top most part of the panels from the ground is to be approximately 4-5 metres, depending on the required ground clearance.

The electricity generated by the proposed panel arrays are directed to inverters within the development along aboveground and underground cabling in strings. These strings will pass through combiner boxes and then to the inverters, which are to be spaced through the development as required. The inverters are used to convert the low voltage DC power into low voltage AC power which can then be transformed to higher voltages. This allows for a step up of the voltage from the solar panels and conversion so that it can be connected to the grid.

6.5. Agricultural Impacts

The majority of renewable solar energy development is undertaken on rural land, and the planning scheme and DELWP guidelines set out various considerations when proposing such uses on rural land.

An Agricultural Impact Assessment ("the AIA") has been undertaken by GHD and accompanies this planning permit application. The AIA uses a variety of information sources including current land use, Victorian geomorphology framework, gross value of agricultural production and employment statistics. The impact of removal has also considered the agricultural potential of the site, including soils, rainfall and the surrounding agricultural uses in the surrounding area.

The development site is non-irrigated and is not located within proximity to any nearby irrigation infrastructure. It is also not recognised as strategically important agricultural land. The AIA uses a variety of information sources including current land use, Victorian geomorphology framework, gross value of agricultural production and employment statistics. The impact of removal has also considered the agricultural potential of the site, including soils, rainfall and the surrounding agricultural uses in the surrounding area.

The subject site is part of larger agricultural property with dairy operations the core business. The total property size is 131.35 hectares with an additional 73 ha leased in the surrounding area. The subject site is separated from the remainder of the property via the Cobden-South Ecklin Road, which has made the regular and safe movement of dairy cattle challenging for the current owners.

Notwithstanding, the current landowner will maintain the option to undertake opportunistic grazing of sheep on the subject site once the solar farm is established. Such grazing could be used to maintain pasture height and ground cover and will allow agriculture to continue on the site, although at reduced capacity. The site is considered suitable for sheep grazing as it is already well fenced, has the availability of stock water (via a farm dam and network of connected water troughs).

The AIA also concludes that the subject land represents 0.005% of all grazing modified pasture land use and 0.00002% total value of agricultural production within the Corangamite LGA. Therefore removal of the land from agricultural production is considered to have minimal impact on relevant industries and employment within the region.

As discussed above, the development envisages a lifespan of at least 30 years, after which it may be continued (subject to upgrades) or would be returned to the original stage and used for agricultural functions. As such, the proposal is designed to be 'low impact' allowing the site to be easily returned to its original state. This includes maintaining dams on the site, retaining fences, strategically planting landscaping to defined paddock areas that will assist in longer term agricultural use.

Overall, while being located in a rural context, the proposal is considered appropriate as it is not strategically important and highly productive agricultural land that would be lost from production and the development will generally have a low impact on the site and its existing conditions. The design enables the site to be returned to its agricultural function at the end of its life for a solar facility.

6.6. Bushfire

The development of solar facilities should be informed by the CFA's Guidelines for Renewable Energy Installations February 2019 (the CFA Guidelines). Under these guidelines, the proposal represents a 'micro solar' facility and a number of components of the CFA Guidelines do not need to be considered for smaller scale facilities. The applicant has sought input from the CFA on the proposed development, with advice and direction provided that the facility should have regard to the CFA Guidelines.

The subject land is not mapped as Bushfire Management Overlay but is recognised as Bushfire Prone under the building regulations. Having regard to this, and the policy directions of clause 13.02-1S, it is appropriate that the facility be designed with regard to bushfire risks.

The proposed facility is considered to be fully compliant with the relevant provisions of the CFA Guidelines, which are discussed below.

Risk and Emergency Management

- A risk management process that meets occupational health and safety requirements for eliminating or reducing risk so far as is reasonably practicable provides the foundation for effective emergency and fire management planning, as per 2.1.1 to 2.1.4 of CFA Guidelines.
- The provision of an Emergency Information Container at site entrances, as per CFA's Guidelines for Renewable Energy Installations 2018 of an Emergency Information Book.
- familiarisation visit and explanation of emergency service procedures to CFA and other emergency services. Information in relation to the specific hazards and fire suppression requirements of the site should be provided to CFA during this visit.
- Appropriate training for staff operating and/or working in this facility

It is expected that appropriate management conditions will be imposed on any determination to require the preparation and maintenance of these procedures.

Access

- 3.1.2 Roads are to be of all-weather construction and capable of accommodating a vehicle of 15 tonnes.
- 3.1.3 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.
- 3.1.4 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 50 metres.
- 3.1.5 Dips in the road should have no more than a 1 in 8 (12.5% or 7.1°) entry and exit angle.
- 3.1.7 Road networks must enable responding emergency services to access all areas of the facility.
- 3.1.8 The provision of at least two (2) 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 should be informed through a risk management process.

All internal roads are designed to be an all-weather standard and will maintain appropriate grades and widths as required. Given the proposal is for a micro solar facility, no perimeter roads are necessary for the facility, however appropriate internal roads are identified to ensure safe access throughout.

Water Supply

- 3.2.1 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.

- 3.2.2 The static storage tanks shall be capable of being completely refilled automatically or manually within 24 hours.
- 3.2.3 The hard-suction point shall be provided, with a 150mm full bore isolation valve (Figure 1) 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 (Figure 2) with a matching blank end cap to be provided.
- 3.2.4 The hard-suction point shall be positioned within 4m to a hardstand area and provide clear access for fire personnel.
- 3.2.5 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, 8m long and 6m wide or to the satisfaction of the relevant fire authority.
- 3.2.6 The road access and hardstand shall be kept clear at all times.
- 3.2.7 The hard-suction point shall be protected from mechanical damage (ie bollards) where necessary.
- 3.2.8 Where the access road has one entrance, a 10m radius-turning circle shall be provided at the tank.
- 3.2.9 An external water level indicator is to be provided to the tank and be visible from the hardstand area.
- 3.2.10 Signage (Figure 3) shall be fixed to each tank.
- 3.2.11 Signage (Figure 4) shall be provided at the front entrance to the site, indicating the direction to the static water tank and being to the satisfaction of a CFA delegated officer.

The proposed facility is capable of complying with all above requirements pertaining to water supply and vehicle turning. The proposed plan anticipates the location of a water supply tank within appropriate locations of the site however it is also expected that the CFA may impose conditions or requirements in relation to water supply size and position. Additionally, the existing dam in the central portion of the lease area will be retained and can provide a static water source for fire fighting purposes.

Dangerous Goods Storage and Handling

- 3.3.1 The requirements of the relevant Australian Standards must be complied with, e.g. (DR) Australian Standard 5139: Electrical installations – Safety of battery systems for use with power conversion equipment; Australian Standard 3780: The storage and handling of corrosive substances; and Australian Standard 1940: The storage and handling of flammable and combustible liquids.
- 3.3.2 Signage and labelling compliant with the Dangerous Goods (Storage and Handling) Regulations 2012, and the relevant Australian Standards is to be provided.
- 3.3.3 All dangerous goods stored on-site must have a current safety data sheet (SDS). Safety data sheets must be contained in the site's emergency information book, in the emergency information container.
- 3.3.4 Appropriate material (including absorbent, neutralisers, equipment and personal protective equipment) for the clean-up of spills is to be provided and available on-site.

All electrical infrastructure is to be suitable contained inside purpose built container storage or other enclosed devices to avoid it being exposed. All components will be compliant with any regulations relation dangerous goods storage as required.

Vegetation Management

- 4.2.1 Grass is to be maintained at below 100mm in height during the declared Fire Danger Period.
- 4.2.2 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).
- 4.2.3 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).
- 4.2.4 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.
- 4.2.5 There is to be no long grass or deep leaf litter in areas where plant and heavy equipment will be working.
- 6.3.1 Solar arrays are to have grass vegetation maintained to 100mm under the array installation or mineral earth or non-combustible mulch such as stone.
- 6.3.2 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.

The facility incorporates a 10 metre wide firebreak to the full perimeter of the development area. This includes around all panel array areas and the proposed substation.

It is expected that appropriate management conditions will be imposed on any determination. The applicant intends to maintain the site as per the CFA requirements by having stock grazing within the site and beneath the panel areas.

Operation and Maintenance of Solar Facilities

- 6.2.1 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.

The proposal is for a small scale facility and it does not have the same temperature and other operational risks that may be present on larger scale facilities. It is considered that the arrangement and placement of facilities on the land is suitable to minimise potential bushfire risks.

6.7. Heritage

The site has been selected, in part, due to its separation from any identified areas of cultural heritage sensitivity. There is no mapped risk of cultural heritage within the subject site and no items that have been identified in previous studies. 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.

6.8. Biodiversity

A Flora and Fauna Assessment has been undertaken and is provided attached to this application.

The Assessment reviewed the existing conditions of the site and determined that it is highly modified from intense grazing pressure and farming activities and contains no native vegetation of significance. Within the boundaries of the site, it has been heavily cleared and farmed, leaving only introduced pasture grasses including Rye Grass, Annual Meadow-grass and Canary Grass. There are also several planted wind rows along the lot boundaries containing introduced Cypress trees, and internal wind rows containing planted Bog Gum, Manna Gum, Sugar Gum, Black Wattle and Coast Wattle. These internal trees have all been identified by a qualified ecologist as planted vegetation.

Native vegetation was identified along the adjacent road reserves of the site, dominated by Blackwood, with other native species including Cherry Ballart, Hop Goodenia, Prickly

Tea-tree, Kangaroo Grass, Spear Grass and Sheep's Burr. The highest quality of native vegetation was present at the corner of Cobden-Terang Road and Cobden-South Ecklin Road where there was a diversity of species. Weed species and introduced ground covers are also identified through the patches of native vegetation along the road reserves, and elsewhere along the road side, weed species were common in the understorey. Weed species included Blackberry, Spear Thistle, Spanish Heath, Cocksfoot and Toowoomba Canary-grass. Along Cobden-Terang Road, there was also a high density of introduced deciduous trees, with the occurrence of native Blackwood amongst them.

Figure 27 Mapped Native Vegetation within the subject site and interfaces (Source: Nature Advisory)

The Assessment determined that the removal of vegetation require an application under clause 52.17 and would also require would also require a Protected Flora Permit to remove the FFG Act listed Jersey Cudweed within areas of native vegetation (habitat zone B). The assessment therefore recommended that the proposal avoid all areas of native vegetation, particularly by location access points in areas identified as containing no native vegetation.

All of the identified native vegetation and patches are to be retained by the proposed development. Access points to the land have also been selected to avoid needing to create crossings within the sensitive portions of the land. All other works within the site will maintain a minimum 6 metre setback from the roadside native vegetation patches in accordance with the Native Vegetation Assessment.

The Assessment also recommended additional mitigation measures for the development:

- *Establish appropriate vegetation protection zones around areas of native vegetation to be retained prior to works.*
- *Ensure all construction personnel are appropriately briefed prior to works, and that no construction personnel, machinery or equipment are placed inside vegetation/tree protection zones.*
- *A suitably qualified zoologist should undertake a pre-clearance survey of planted trees to be removed (if this is the case) in the week prior to removal to identify the presence of any nests or hollows.*
- *If considered necessary based on the results of the pre-clearance survey, a suitably qualified zoologist should be on site during any tree removal works to capture and relocate any misplaced fauna that may be present.*

No planning permit under Clause 52.17 of the Planning Scheme is required as the proposal will not result in the loss or removal of native vegetation.

The assessment also determined that no matters listed under the EPBC Act were recorded during the assessment and none are considered to have the potential to occur, due to the highly modified and degraded nature of the site.

6.9. Traffic

A Traffic Impact Assessment has been prepared for the development and is attached to this application.

The Cobden-Terang Road is an arterial road (C156) managed by VicRoads. It is aligned in a west-east direction and provides a connection between Cobden to the east and Terang to the north west. Cobden-South Ecklin Road along the southern boundary of the subject property is a rural collector road managed by the Council. It is configured as a 6.0 metre wide sealed pavement, bounded by 1.0 metre unsealed shoulders and located centrally in a 20 metre road reservation.

An estimate of 2020 traffic volumes within the TIA indicated Cobden-Terang Road accommodates 680 vehicles per day (vpd), with a heavy vehicle content of around 13% of the daily traffic volumes. Traffic on Cobden-South Ecklin Road is estimated to carry 230 vehicles per day

During construction, a range of traffic will access the site to deliver equipment, infrastructure and transport the workforce. Equipment and materials will generally be transported to the site via light rigid trucks, although some semi-trailer and B-Double access may be required. The total construction period is estimated to extend over nine months, with months 1 to 4 generating up to 4 light vehicle entries and 1 heavy vehicle entry per day; months 5 and 6 generating 4 light vehicle and 4 heavy vehicle movements per day and months 7 to 9 generating up to 4 light vehicle entries and 1 heavy vehicle entry per day.

It is expected that the majority of the workforce will be accommodated at Camperdown, Cobden or Colac to the south, and will be bused to the site each day. It has been assumed that 100% of the heavy vehicle traffic, during the peak construction phase, will occur from via Cobden-Terang Road to the sites

main proposed entrance at Cobden-South Ecklin Road. These trips are expected to be spread throughout the day, with one arrival during the morning peak hour.

During the operational phase, the proposed facility is expected to generate one visit (or two vehicle movements) per day for maintenance and monitoring purposes.

6.10. Drainage

The proposal will include a number of internal gravel access roads and new hardstand areas surrounding the proposed substation which will alter runoff from the property. Accordingly, the proposal includes proposed on-site swale and detention facilities to collect, convey and discharge stormwater from the site at pre-developed levels.

All runoff from the gravel access roads and the hardstand areas of the property will be collected and conveyed to a proposed on-site basin via new swale drains along the internal access roads. The runoff will be collected in the proposed basin and will discharge at pre-developed flows, subject to detailed calculations on final hardstand areas and volumes. Both the swale and the basin will have capacities for the proposed hardstand areas and the basin/s will include outfall components into the site area.

Proposed basins are recommended to comprise a shallow construction with a small bank, enabling a more natural design with minimal excavation works. Proposed outfall will be provided with rock beaching to allow runoff at pre-developed levels to be made without increasing erosion risk. Internal swales and the basin will comprise appropriate surface treatments, including grass and other landscaping as required to prevent erosion and assist with treatment.

It is proposed that runoff from the proposed panels will runoff to the ground and will be dissipated into the natural ground. The proposed panels will be a single axis tacking system. The runoff from the increased imperviousness of the solar panels is insignificant. As the entire solar array is not a continuous impervious surface, most of this runoff will infiltrate into the soil as per current conditions. The installation of the panels will not significantly alter the existing ground conditions beneath the arrays that would affect runoff.

Research carried out in relation to the impact of solar farms on stormwater runoff in the USA and the UK has concluded that solar panels will not have a significant impact on the hydrology of the site under a number of conditions such as:

- where the soil profile has not been overly compacted and maintains suitable opportunities for infiltration
- where there is some surface vegetation cover that can be maintained,
- where the site has good sheet flow across the surface rather than concentrated flows along narrow flow paths,
- where there is sufficient separation between each row of solar panels to allow runoff to spread across the surface and encourage vegetation growth

These principles have been considered in the design of the proposed facility, with the site having been farmed for a long period of time and having suitable opportunity for infiltration of stormwater runoff. The site is generally flat and has uniform existing runoff via sheet flow and avoids channelling flows in particular paths. The design of the facility also includes suitable separation and spacing to ensure broader flows of runoff from the panels.

The proposal is therefore considered to represent a responsive design to stormwater and drainage consideration.

6.11. Noise

A Noise Impact Assessment Report has been prepared by Harwood Acoustics for the proposed development.

It is expected that some noise will be generated from the facility during construction, primarily relating to the construction processes and use of machinery. These periods of noise generation will be intermittent and generally short, as the proposal moves through its various stages of construction. It is expected that appropriate conditions would be imposed on any permit that would control the operations to suitable periods.

The assessment identifies a number of sensitive receptors within close proximity to the site, as follows:

- R1 – 290 Cobden-Terang Rd (circa 520 metres)
- R2 – 230 Cobden-Terang Rd (circa 240 metres)
- R3 – 180 Cobden-Terang Rd (circa 600 metres)
- R1 – 181 Cobden-Terang Rd (circa 600 metres)

The location of these receptors is shown in Figure 28 below.

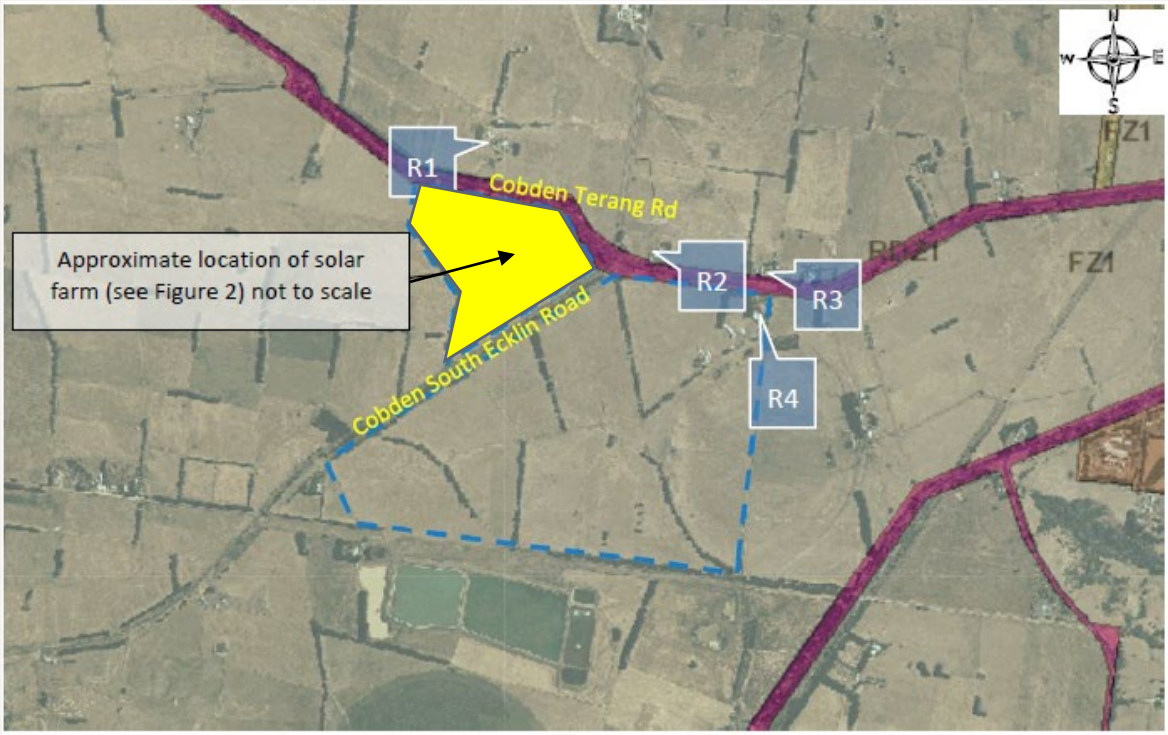

Figure 28 - Location of sensitive receivers within a surrounding 1 kilometre radius of the site

Acceptable noise levels are therefore derived from the Victorian EPA's guidelines 1411, Noise from Industry in Regional Victoria 2011 (NIRV). The NIRV Guidelines recommend maximum noise levels from commerce, industry and trade premises in regional Victoria and establish noise limits for various generating and receiving planning zones. In this instance the generating and receiving zones, for all receptors, are each FZ1 Farming Zone Schedule 1 and the resultant noise limits are 46 dBA (Leq, 30 minute) in the day time period, 41 dBA (Leq, 30 minute) in the evening period and 36 dBA (Leq, 30 minute) in the night time period.

Under the EPA's SEPP N-1, which prescribes the noise measurement and assessment methodology adopted by NIRV, adjustments are to be applied to the measured predicted noise level at the receiver to

account for a potential increase in annoyance due to the character of the noise. The resulting adjusted noise level becomes the Effective Noise Level.

Background noise level measurements were taken at the northern end of the property at the corner of Cobden-Terang Road and Cobden South Ecklin Road opposite Receptor R2. The lowest background noise levels measured in the absence of light rain and wind were found to be below 34 dBA L90, 30 minute and up to 40 dBA L90, 30 minute when affected by strong winds. The area is not considered to be a background affected area as defined by the NIRV Guidelines.

Noise modelling and calculations show that the level of noise emission from the operational phase of the development may exceed noise limits at Receptor R2 by 1dB in the day time and 6 dB in night time period. This assumes that the noise as received at this residence displays tonal characteristic as a worst-case scenario. Noise limits will not be exceeded at any other receptors. The central location of the inverters and transformer will further reduce their impacts, and further mitigation is not considered necessary. It is also noted that the noise modelling for the facility includes consideration of the PCU, PCS and BESS system, including cooling units. The cooling system of the BESS unit has the potential to operate in evening hours when noise is more sensitive and the proposed modelling indicates that appropriate treatments can be implemented to avoid adverse impacts on surrounding receivers.

6.12. Heat Island Effect

Heat island effect occurs where ambient temperatures around developments are higher than those of surrounding areas. In the context of a PV installation, this relates to the transfer of heat from the infrastructure to the surrounding areas.

Studies relating to heat island effect have identified that heat dissipation from solar infrastructure, on a larger scale facility, can increase ambient air temperatures within the perimeter by 3 to 4 degrees Celsius. However, it is also found that heat that was generated dissipated rapidly over a short distance, with ambient temperature generally indistinguishable at distance of 30 metres from the solar PV array

On a micro scale level, such as proposed by this development, it is considered any impact would be highly unlikely. The facility establishes minimum 60 metre setbacks (including road reserves) to all surrounding properties and 275 metres to the nearest dwelling. The proposal is also of a smaller scale (i.e. surface area) which reduces the potential for heat generation across the surrounding area. The establishment of generous landscaping also assists with the potential mitigation of any ambient heat changes.

The proposal therefore achieves and significantly exceeds this offset to any external site boundaries.

6.13. Landscaping

The proposal includes the establishment of landscape buffers along the site boundaries to the south, west, east and part of the northern boundary. The landscape concept intends to create a natural condition along the site perimeter to firstly enable a screening of the facility, but also provide a long term benefit to the natural conditions of the area.

The proposal includes landscape planting to the northern and eastern boundaries of development, being to Cobden-Terang Road and Cobden-South Ecklin Road respectively. Treatments to these interfaces have been considered in response to the already well-established vegetation screening and therefore propose to supplement with internal landscaping to ensure perimeters are completely screened.

The proposed landscaping outcome is intended to be a long term addition, being that it will contribute to the long term linkages within the area and serve as a useful boundary definition for ongoing agricultural operation.

Landscape type 1 will be applied to Cobden-South Ecklin Road along the south eastern boundary and Cobden-Terang Road along the northern boundary. Both of these frontages contain scattered road reserve vegetation, however contain patches of open portions where the development would be visible.

In response, these frontages will include 5 metre wide landscape zones, with a mix of vegetation types and heights, consisting generally of 7 canopy trees, 17 small tress and 77 shrubs for each 50 metre segment.

Landscape type 2 is to be applied to the corner of Cobden-South Ecklin Road and Cobden-Terang Road, where there is already extensive landscaping. This buffer is intended to provide a supplement to the existing roadside vegetation, to assist in screening the PCU and PV panels at the intersection. This section is proposed to include up to 10 small trees and 70 shrubs per 50 metre section.

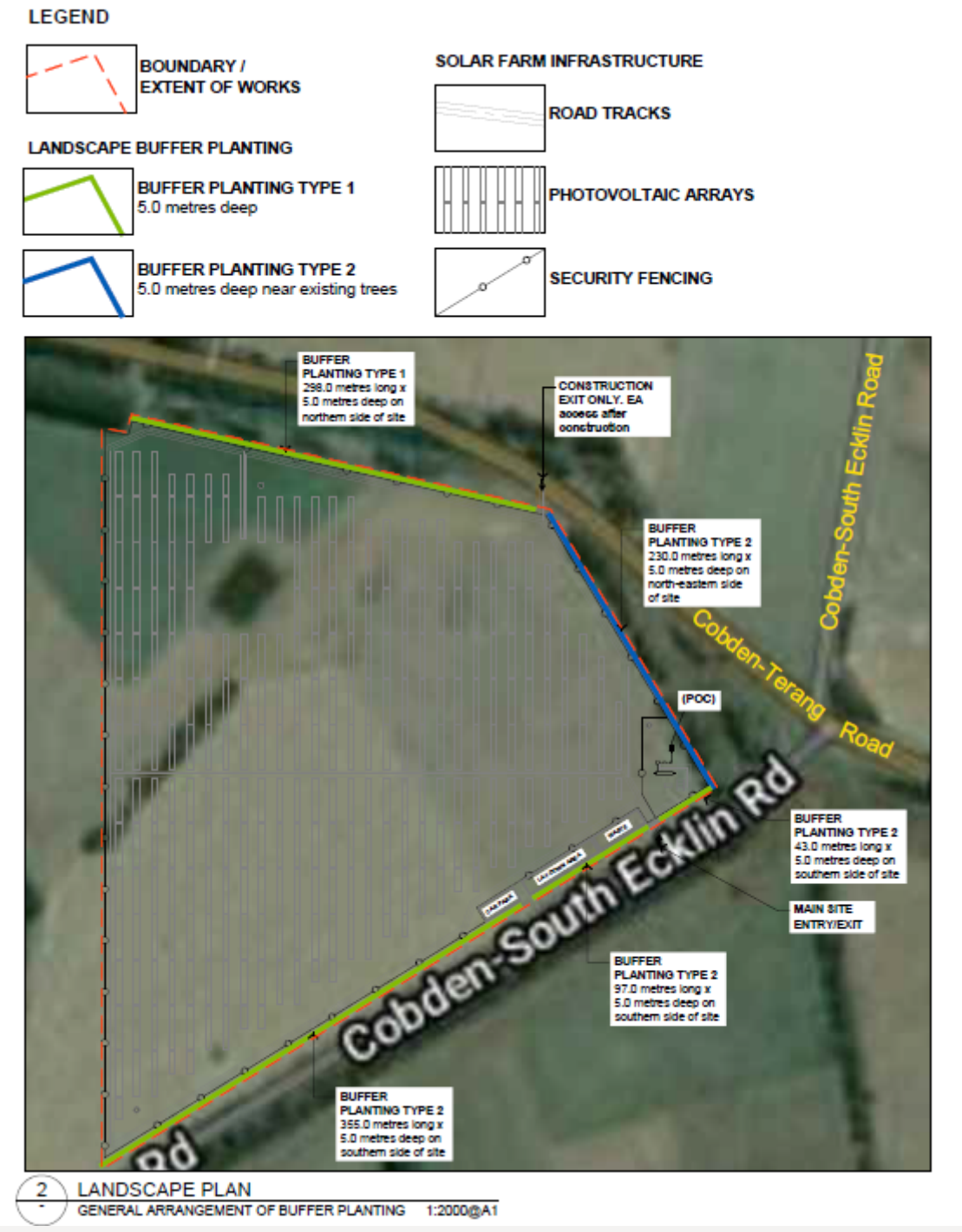

Figure 29 Proposed Landscape Concept Plan

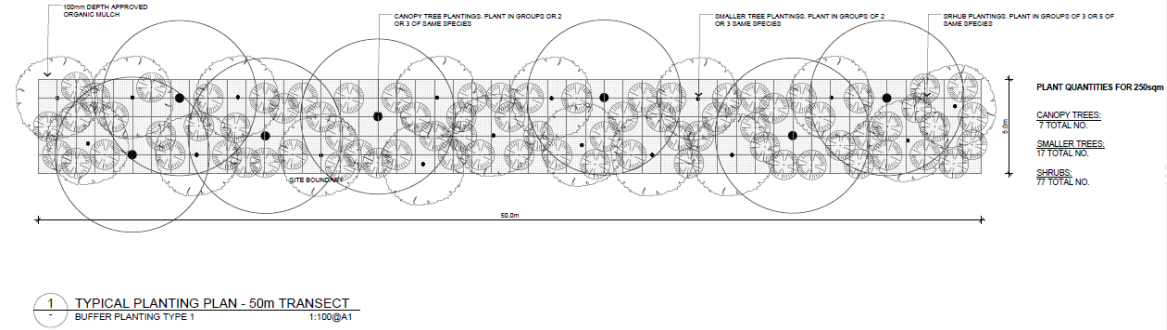

Figure 30 Proposed Landscape Buffer Type 1

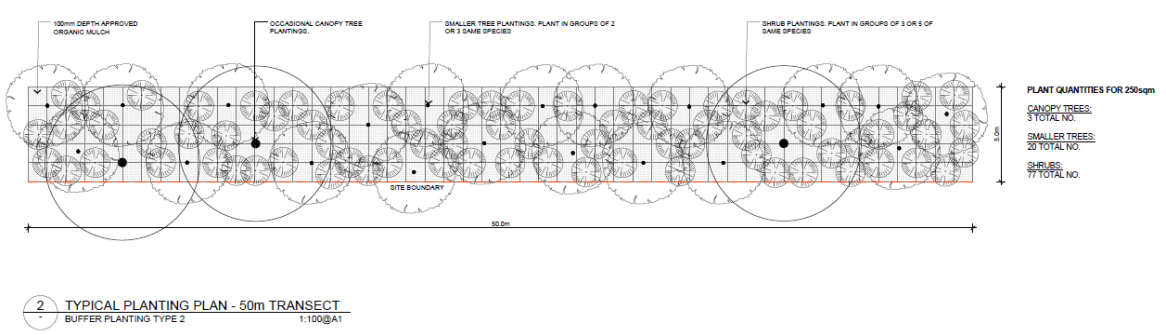

Figure 31 Proposed Landscape Buffer Type 2

6.14. Visual Impacts

The visual impact of solar farms depends on the scale and type of infrastructure, the prominence and topography of the site relative to the surrounding environment; vegetation; and any proposed screening measures to reduce visibility of the site. In this instance, the proposal represents a smaller scale facility and has been proposed within a site that is already extensively screened by well established landscaping along road frontages. It is also proposed to establish new infill planting on sensitive frontages to further soften the appearance of solar arrays to visible locations.

The site is generally well landscaped already and presents a minimised risk for visual amenity. Extensive landscape buffers are therefore not essential in areas where this landscaping is established.

The character of the landscape is predominantly a modified agricultural landscape that has been shaped by farming and contains only scattered patches of native vegetation internally and other planted vegetation along perimeter fencing. The landscape is gently undulating with no elevated viewpoints in the surrounds, and there is a relatively low distribution of dwellings given the fringe rural context of the land.

As such, the proposed design of the facility, including landscaping treatments has considered the long range view points and sought to avoid significant views to the facility. The proposed landscaping will be supported by existing windrow plantings throughout the landscape that screen the site from those areas.

Figure 32 - Viewpoint 1 at Cobden-Terang Road looking west towards the site

Viewpoint Summary: View from along Cobden Terang Road at the location of a cluster of dwellings.

Distance to site: Approximately 600 metres from the site boundary.

Sensitivity: Low. This location is potential most at risk of view impacts given the location of a small cluster of dwellings and the nearby Cobden Aerodrome, however there is extensive existing landscaping to the eastern boundary of the Cobden-South Ecklin Road and at the corner of Cobden-South Ecklin Road which results in the site being extensively screened.

Mitigation: No mitigation measures for this viewpoint are considered necessary, however it is noted that proposed panels are to be setback 30 metres from the eastern frontage and 5 metre landscape screening is to be applied.

Figure 33 - Viewpoint 2 at the intersection of Cobden-Terang Road and Cobden-South Ecklin Road

Viewpoint Summary: View from at the intersection of Cobden-Terang Road and Cobden-South Ecklin Road.

Distance to site: Approximately 150 metres from the site boundary.

Sensitivity: Moderate. This location has potential for risk of motorists using both roads along the frontage of the site, being subject to intermittent and glancing views of the property. The site is well screened at the corner of the property by existing vegetation, however gaps at some locations are likely to allow small reveals of the property and development area. Generally, it is noted that views will be from vehicles travelling along the road frontages at speed.

Mitigation: The major intersection location is generally well screened and vegetation has established to a height which will exceed the likely panel heights on the property. New infill vegetation screening is proposed along the frontages to screen the sections of the frontages which may be subject to glancing views of the property from the road.

Figure 34 – Viewpoint 3 from Cobden-South Ecklin Road at eastern corner

Viewpoint Summary: View towards the site from Cobden-South Ecklin Road looking west across the array area.

Distance to site: Immediate frontage.

Sensitivity: High. This location is presently unscreened in sections by any vegetation and is highly visible from the road reserve. A strip of well established roadside vegetation is located on the opposite side of Cobden-South Ecklin Road, which screens the development from land further east, leaving only the road reserve exposed. Again, the major potential impact will be to motorists using Cobden-South Ecklin Road. Given the lack of any existing vegetation screening, the impact of the proposed panels at this location will be high until screening establishes.

Mitigation: It is proposed that panels to this frontage will be setback at least 30 metres from the boundary. In addition, given the alignment of panels, there will be some staggering in the alignment to create greater separation.

A 5 metre wide landscape zone will be established along the full extent of the frontage to screen the panel arrays.

To mitigate the visual impacts while the proposed landscaping is established, it is proposed that an appropriate screening treatment be applied to the internal security fence.

Figure 35 – Viewpoint 4 from Cobden-South Ecklin Road at southern corner

Viewpoint Summary: View from the Cobden-South Ecklin Road at the immediate southern corner of the site looking north.

Distance to site: Immediate frontage.

Sensitivity: High. This location is presently unscreened by any vegetation and is highly visible from the road reserve. Potential impact will be to motorists using Cobden-South Ecklin Road and given the lack of any existing vegetation screening, the impact of the proposed panels at this location will be high until screening establishes.

Mitigation: It is proposed that panels to this frontage will be setback at least 30 metres from the boundary. In addition, given the alignment of panels, there will be some staggering in the alignment to create greater separation.

A 5 metre wide landscape zone will be established along the full extent of the frontage to screen the panel arrays.

To mitigate the visual impacts while the proposed landscaping is established, it is proposed that an appropriate screening treatment be applied to the internal security fence.

Figure 36 - Viewpoint 5 at Cobden-Terang Road on the northern boundary of the site

Viewpoint Summary: View from Cobden-Terang Road looking east across the array area on the northern boundary of the site.

Distance to site: Immediate frontage.

Sensitivity: High. Much of the northern boundary of the site is screened by established vegetation within the road reserve, however several gaps in the plantings are noted along the extent, including at this identified location approximately 240 metres west along the frontage from the intersection. The impact is considered to be potentially high in this location given the road alignment on the northern side of the arrays and the higher volumes of traffic along this frontage. The impact of the proposed panels at this location will be high until screening establishes. Generally, views will be from vehicles travelling along the road frontages at speed. It is noted though that the orientation of the arrays (east to west at different times of the day) and also the angle of the sin will have little glare impacts.

Mitigation: It is proposed that panels to this frontage will be setback at least 30 metres from the boundary to create visual separation and reduce the apparent impact of the panels at this viewpoint. A 5 metre wide landscape zone will be established along the frontage to screen the panel arrays. To mitigate the visual impacts while the proposed landscaping is established, it is proposed that an appropriate screening treatment be applied to the internal security fence.

Figure 37 - Viewpoint 6 at Cobden-Terang Road on the northern boundary of the site

Viewpoint Summary: View from Cobden-Terang Road looking east across the array area on the northern boundary of the site.

Distance to site: Immediate frontage in the north west corner of the facility

Sensitivity: Low to Moderate. More extensive landscape vegetation has established along the remaining northern frontage of the facility at Cobden-Terang Road. It is noted that the major potential impact would be for motorists on the road travelling west, where some glancing views of the site may be present at certain times of the year. The impact of the proposed panels at this location will be low to moderate (at certain points) until screening establishes. Generally, it is noted that views will be from vehicles travelling along the road frontages at speed.

Mitigation: It is proposed that panels to this frontage will be setback at least 30 metres from the boundary to create visual separation and reduce the apparent impact of the panels at this viewpoint. A 5 metre wide landscape zone will be established along the frontage to screen the panel arrays. To mitigate the visual impacts while the proposed landscaping is established, it is proposed that an appropriate screening treatment be applied to the internal security fence.

6.15. Glint and Glare

Glint refers to the momentary flash of bright light that can be caused by the reflectivity of solar panel installations. Glare is similar, however refers to the continuous source of light and is generally associated with stationary objects. Glint and glare (referred collectively as glare from this point on) can have potential safety or amenity implications and is associated with this proposal as reflections from PV panels may impair observers through inducing an after image.

Generally, solar panels will not create significant glare compared with other commonly existing surfaces. Likewise, photovoltaic solar panels are generally less reflective than other naturally occurring elements such as soils and crops.

The potential impacts associated with glare were assessed in relation to the proposed solar array and surrounding routes and observation points. The Forge Solar Glare Analysis tool was used to model the potential for glare on surrounding routes and the observation points (in this case, surrounding dwellings) and consider potential impacts at those locations. This tool determines the type of glint or glare hazard based off the likelihood to produce a potential after-image.

The modelling utilised the input data of the proposed PV panels and the proposed angle of tilt for the panels. The following chart is used be the Forge Solar tool to plot the likelihood and severity of glare for each receptor. In summary, red glare refers to potential for permanent eye damage from the observation location, yellow glare indicates the potential for after image effects and green glare refers to low potential for after image impacts.

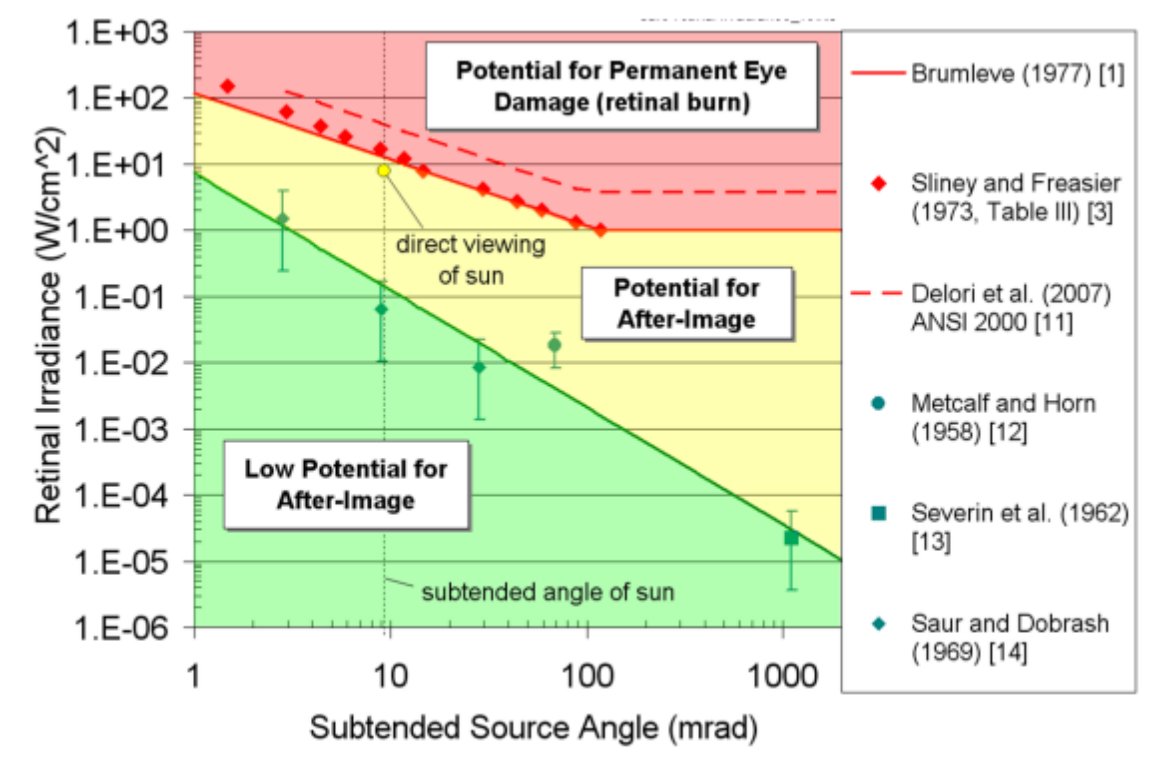

Figure 38 The chart used to plot the total minutes of glare for each receptor.

Figure 39 Routes and other receptors assessed for glare.

Figure 40 Receptors assessed for glare within the immediate surrounds of the site.

Of the 17 dwellings assessed, six were calculated to receive “yellow glare”, for being subject to potential after image, however one of these was only calculated for 2 minutes of glare. The nearby dwelling to the east (OP 3) was subject to the highest yearly glare with 2847 minutes, and all other dwellings that were subject to this glare are located to the east along Cobden-Terang Road. Dwellings identified as OP 4, 5 and 6 were subject to 1111, 1746, and 587 minutes of yellow glare per year, respectively.

Except for the Cobden-South Ecklin Road route and Hallyburtons Road, all other routes were subject to some yellow glare impacts. Cobden-Terang Road received the highest glare, with 3,473 minutes of yearly yellow glare. Other routes ranged from yearly exposure between 35 minutes and 616 minutes.

Flight paths associated with the Cobden Aerodrome were also assessed for glare impacts. None of the flight paths to the Cobden Aerodrome are affected by yellow glare. Only Flight Path 1 (FP1), which the northern approach to the aerodrome, was subject to glare and received 83 minutes of “green glare” per year. Of all the routes and other receptors, glare was regarded as relatively inconsequential. Additionally, the existing planted trees surrounding the border, will provide an extra degree of shielding, which should further reduce glare to those subjected dwellings.

Overall, the assessment determines that the glare generated by the proposal is acceptable and can be adequately mitigated. All receptors that were affected by glare were located to the east of the proposed array. These include all affected observation points, and segments of affected routes and flight paths. The eastern, northern and southern boundaries are provided with existing vegetation which will provide

an appropriate level of screening. Additionally, there will be landscaping within the works area itself along these borders, to provide an added level of screening to all affected receptors. Detailed recommendations are addressed in the attached Glint and Glare Assessment.

7. Conclusion

In conclusion, the proposal for use and development of land at 181 Cobden-Terang Road, Cobden for a 5MW solar energy facility, a 5MW/11MWh battery energy storage system (BESS), utility installation and associated works, deserves the support of Council because:

- it complies with the standards and objectives outlined within the Corangamite Planning Scheme;
- it represents orderly planning of a large farming lot in an area that minimises impacts on more sensitive land;
- it proposes a site responsive design which integrates with the existing topography and ensures the development does not significantly impact the amenity of the area;
- it proposed treatments to minimise conflicts with adjoining sensitive interfaces;
- access can be easily obtained through connections to the surrounding road network and
- existing infrastructure connections, including to a conveniently located distribution lines, can be easily extended with minimal works required;
- it contributes to the sustainability of the shire through providing an alternative renewable energy source;
- it contributes towards the state objective to reduce emissions by 28-33 per cent by 2025 and 45-50 per cent by 2030;
- it has the potential to generate 12,897 MWh (megawatt hours) of electricity per year with capacity to generate electricity for 1,660 average homes for one year;
- it has potential savings of 10,075 tons of CO2 gases entering the atmosphere each year; and
- it will have a positive economic effect through providing work and contracting opportunities to local businesses, and through indirect effects such as accommodation, hardware stores, or food premises';

In light of the above considerations, it is our opinion that the proposal is appropriate and orderly planning and is in the public interest. The proposed development warrants support by Council.

Appendix A: Certificate of Title

Appendix B: Development Plans

Appendix C: Landscape Concept Plan

Appendix D: Traffic Impact Assessment

Appendix E: Agricultural Impact Assessment

Appendix F: Native Vegetation Assessment

Appendix G: Glint and Glare Assessment

Appendix H: Noise Impact Assessment