

Planning Report

4.95MW Solar Energy Facility

331 Sydney Road, Benalla



Applicant: Southern Sustainable Electric
Rev. 1; January 2020 **Ref: 19167**

Level 1 135 Fryers Street, Shepparton, Vic, 3630
Telephone (03) 5820 7700 Facsimile (03) 5822 4878

■ Visiting Offices: ■ Shop 3, 11-13 Sydney Street, Kilmore, Vic. 3764 ■ Ph: (03) 5781 1939
■ Suite 3, 33 Nish Street, Echuca, Vic. 3564 ■ Ph: (03) 5482 9100

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1 Introduction

This report has been prepared by Chris Smith and Associates for Southern Sustainable Electric (Australia) Pty Ltd – referred to herein as “SSE”. The proposal is for a “small format” solar energy facility on land at 331 Sydney Road, approximately 3km northeast of Benalla’s central activity area.

The facility is described as “small format” as it is to be considerably smaller than the majority of the other solar facilities that have been approved or contemplated across northern Victoria in recent months. The small format solar facility is rated to export 4.95 Megawatts of electricity to the distribution network and will occupy approximately 8.9 hectares of land, which is considerably less land than some facilities that can spread across several hundred hectares of land. Notwithstanding this, the proposal is for a “large-scale” solar energy facility, as defined in the *Solar Energy Facilities Design and Development Guidelines, August 2019*, primarily as it has greater than one megawatt installed capacity that will be exported to the national electricity network.

The proposal also involves the construction of a utility installation (powerline) and new site access in the adjacent Sydney Road road reserve, which is within the Road Zone Category 1.

The subject site has been selected based on its highly suitable attributes, in accordance with the *Solar Energy Facilities Design and Development Guidelines, August 2019*, as set out in this report, including direct access to 22kV powerlines.

Key reference documents used to guide the site selection and design process for this proposal are:

- Hume Region Renewable Energy Roadmap
- Solar Energy Facilities Design & Development Guidelines, August 2019
- CFA Guidelines for Renewable Energy Installations, February 2019
- Benalla Planning Scheme

Supporting Documents

Plans and documents supporting this application are:

- Benalla Solar Farm Layout Plan (3 Sheets) by Southern Sustainable Electric
- Benalla Solar Farm Site Selection Analysis by RenewableAge, 11 Dec 2019
- Benalla Solar Farm Project Construction Brief by Southern Sustainable Electric
- Sound Power Outputs for Sunny Central Inverters, January 2020
- Glint & Glare Assessment Report by Vipac, 2020-02-10
- Peg PV Plant specification by Belectric
- Southern Sustainable Electric Capability Statement
- Property Report (Potential Agricultural Capacity) by Ruralco

2 The SSE Small-Format Concept

Southern Sustainable Electric (SSE) is an established Australian-based renewable energy provider. Since its beginning in 2010, SSE has carried out a number of projects across Australia, including utility-scale solar facilities and solar energy solutions for commercial clients, as set out in its Capability Statement that is attached herewith in this application.

SSE has designed and built a number of 'small-format' solar facilities across Australia and is now focussing on northern Victoria to provide strategically-placed facilities that are to be positioned to feed straight into the AusNet Services distribution network, for use by the local community. SSE has engaged RenewableAge to assist with site selection and community engagement for the proposed facilities.

SSE's managing director – Dong Wang – is an active and enthusiastic member of the **Electric Vehicle Council** and is planning to roll out a network of publicly available **electric vehicle charging stations** in conjunction with the solar energy facilities. Mr Wang has already had preliminary discussions with Benalla Rural City Council staff in relation to co-locating electric vehicle chargers alongside civic facilities in Benalla for community use and benefit.

The small format solar facility using PEG mounting system provides the following community, environmental and economic benefits for Benalla:

- Affordable clean energy for the local community. The 5MW output will supply local businesses, industry and houses and will produce enough electricity to supply 1,000 average households.
- The panels are fixed, no more than one metre high, and mounted on a steel rod system that does not require concrete footings. This equates to less impact on the site, less materials and less construction which means less impact on the local community and roads during construction and less visual impact ongoing.
- Local employment opportunities: electrical and construction jobs to build and install the facility; operations, maintenance and security jobs will be required ongoing.

3 Site and Context Analysis

The proposed solar energy facility is to be built on land at 331 Sydney Road, Benalla – referred to herein as “the subject land.”

The proposal also includes installations and works associated with the proposed solar energy facility (overhead powerline and site access) to be constructed within the Sydney Road road reserve, which is in the Road Zone. Accordingly, the permit application and triggers includes these ancillary elements and “the subject land” extends to the road reserve adjacent to 331 Sydney Road, Benalla.

The subject land is a 13.34-hectare rectangular parcel, with a frontage to Sydney Road of 195.94 metres and a depth of approximately 680 metres. The proposed facility is to be located on the rear two-thirds of the land so as to minimise any amenity impact on the road and adjoining land.

The subject land is bare, open and flat. It is fenced in one single paddock and has been used for sheep grazing in conjunction with adjoining land that is in the same family ownership. The site and wider area have a long term association with grazing and cropping; the land is outside any declared irrigation district.

The site selection and due diligence process by RenewableAge included seeking local opinion from Ruralco, that stated:

In an agricultural land standpoint it is of limited value for the following reasons.

1/ Lacks scale... at 33 acres with limited land available to add scale....ie fronts a major road.... Backs onto a rail line....in close proximity to higher value industrial land...either side are small allotments.

2/ Land is degraded... though the soil types are conducive to agricultural activities (a combination of shallow sandy loam and deep sandy loam over intractable clay) the soil is degraded as evidenced by long term plant productivity being half that of similar properties in the area.

3/ Lack of water.... Though town water is available for domestic purposes the catchment of water on the property is very limited....it has no viable dam within its boundaries and the slight inclination of the property of .15% is toward the seasonal creek on the property beside it would make the construction of a viable dam difficult.

A full version of this agricultural opinion is included in the Site Selection Analysis by RenewableAge. Further, Ruralco has provided a Property Report on the agricultural attributes of the site, which is also provided herewith this application.

The land contains approximately three isolated trees in toward the front of the land; however, these are outside the ‘compound’ extents of the facility and will not be impacted by the proposal or any associated works.

The land has frontage to Sydney Road, which is the former Hume Highway and still provides an important access link to Benalla. The property has an existing gate at the western side of its frontage, however there is no formed vehicle access at this point. We are advised that the property is usually accessed from the adjoining land.

The property is well set-back from the main road carriageway, with a wide verge that contains a number of mature trees separating the two, as shown on the photos over page. The location of the proposed works in the road reserve (overhead powerline and vehicle access) have been chosen to avoid any roadside trees.



Existing entrance to subject land



View of Sydney Road along frontage of subject land



View of proposed site, looking north towards the rear of the property

3.1 Surrounding Context

The subject land is located approximately **1.6km north-east of Benalla** – by direct measurement to the nearest urban zoned land.

The surrounding area is a mix of dryland agriculture and large-format industry. The nearest non-rural land uses are:

- East: industrial precinct along Lowens Lane, containing car wreckers and metal recyclers, sawmill and open timber seasoning/storage, concrete batching plant.
- West: D&R Henderson timber products factory
- North: LS Precast concrete factory that produces large concrete components for large infrastructure projects

The nearest dwellings to the proposed facility are as follows:

No	Property	Distance to property boundary of 331 Sydney Rd	Distance to nearest solar generation equipment	Distance to Compound Fence
1	321 SYDNEY RD	20m	120m	60m
	301 SYDNEY RD	240m	330m	300m
2	350 SYDNEY RD	220m	460m	450m
3	390 SYDNEY RD	457m	630m	610m
4	402 SYDNEY RD	637m	750m	730m

Note: all distances are approximate only (obtained from aerial photography)



Locality Plan (extract of Figure 3 by RenewableAge)

Also in the general vicinity of the subject land are: HP Excavations and landscape supplies (250m southwest); CAL Community farm (500m southwest); Hume Freeway (2km south); Benalla Airport (2.5km southwest).

The site is fronted by 22kV overhead distribution lines that feed into the Benalla substation, as shown on the locality plan over page. The land and the surrounding area are very flat, thus views to and from the site are limited to the immediately surrounding area.

The site is fronted by Sydney Road – a main road – however, the proposed facility is to be well set back within the property and the roadside and adjoining properties include mature trees that will limit views to the facility from passing vehicles. Similarly, the site is adjoined by the Winton-Benalla Discovery Trail; however, this interface is bounded by a thick belt of well-established trees, thus inter-visibility between the two is virtually impossible.



Location Plan by RenewableAge

3.2 Existing Planning Controls

The subject land is within the **Farming Zone** and is not affected by any overlays.



Extract from Planning Property Report (obtained from www.planning.vic.gov.au)

Adjoining land to the east, west and south is also in the Farming Zone and Sydney Road – along the frontage of the subject land – is in a Road Zone Category 1. To the rear of the subject land is the Winton Inlet Channel and Winton-Benalla Discovery Trail, which are in a Public Use Zone. Beyond this is land in the Industrial 1 Zone that is used for farming and LS Precast Concrete factory.

The property directly to the east of the subject site - at 355 Sydney Road - is vacant (other than a small shed) and had been used for grazing in conjunction with the subject land. Beyond this is a plantation that is affected by the Bushfire Management Overlay.

3.3 Other Statutory Controls

Bushfire Prone Area

The subject land, in addition to the surrounding area, is wholly within a designated **bushfire prone area**, as is much of rural and regional Victoria. This provision applies bushfire protection standards for new building works through the Building Code of Australia (BCA) under the Building Regulation 2018. We are advised that the proposed facility does not include any buildings to which the BCA would apply; however, the proposal has been designed in accordance with the CFA's Guidelines for Renewable Energy Facilities to ensure that bushfire risk to the facility and surrounding land is mitigated to an acceptable level.

Cultural Heritage

The extreme north western corner of the subject land is an **area of cultural heritage sensitivity**, due to its proximity to a named watercourse. The extent of the area is shown on the Layout Plan by SSE that is provided with this application. It is a small triangle of land with dimensions of approximately 10m x 20m.

This was identified early on in the site selection process and the facility has been designed to avoid impact on this area. Specifically, the facility's perimeter fencing has been setback inside the property boundary to be well clear of the area of cultural heritage sensitivity.

We are advised that the subject land has been previously cleared, ploughed and levelled and prepared for agriculture; thus, it is highly likely that the entire property has been subject to prior significant ground disturbance. However, this is a moot point, as the proposal does not extend over an area of cultural heritage sensitivity.

The online Aboriginal Heritage Planning Tool was utilised and the process list output determined that a Cultural Heritage Management Plan is not required under the Aboriginal Regulations 2018. A copy of the output of the online tool is attached herewith this proposal.

4 Proposal & Planning Permit Triggers

It is proposed to **use and develop** the rear portion of the land at 331 Sydney Road, Benalla, for a **solar energy facility** as shown on the submitted plans. The remainder of the property will be retained for continued grazing. The proposed solar energy facility has been designed in full consideration of the provisions of Clause 53.13 of the Benalla Planning Scheme.

It is also proposed to connect the solar facility to existing AusNet electricity distribution network via a new overhead 22kV connection within the adjoining road reserve (Sydney Road), on the south side of the road carriageway. This connection is considered as a **utility installation** under the land use terms at Clause 73.03 of the Benalla Planning Scheme.

The subject land does not have an existing vehicle access point that would be suitable for the facility, thus it is proposed to create a new **vehicle access** point and internal accessway, as shown on the submitted plans.

The proposal *does not* include any advertising signage (Clause 52.05), removal of native vegetation (Clause 52.17) or any other matter that requires a planning permit.

4.1 Planning Permit Triggers

Under the Benalla Planning Scheme, a planning permit is triggered for the proposal under the provisions

- 35.07-1 – To use land for a renewable energy facility (other than Wind energy facility), which includes a solar energy facility, in the **Farming Zone**. The use must meet the requirements of Clause 53.13.
- 35.07-1 – To use land for a utility installation (other than minor utility installation and telecommunications facility) in the **Farming Zone**.
- 35.07-4 – Building and works associated with the two abovementioned Section 2 Uses in the **Farming Zone**.

- 36.04-1 – To use land for a utility installation (other than minor utility installation and telecommunications facility) in the **Road Zone**.
- 36.04-2 – Building and works associated with Section 2 Uses (Utility installation and site access) in the **Road Zone**.
- 52.29-2 – To create an access to a road in a Road Zone, Category 1.

The proposal does not include or invoke the need for removal of any native vegetation, signage or any other matter required under the Benalla Planning Scheme.

4.2 Proposal Summary

The proposed solar energy facility, utility installation and associated works are to be as shown on the attached plans and supporting documents. Specifically it will consist of:

- **20,480 polycrystalline solar panels**, each having the following specification:
 - Nominal dimensions of 2m by 1m
 - 400W DC capacity
 - Mounted at 8 degrees above horizontal, facing east and west, on Belectric PEG mounting system
 - Maximum height of less than 900mm above ground (equivalent height as an average dining table)
- **2 medium voltage power station inverters (MVPS2500)**, positioned beside panel arrays
- **Storage shed and 22,000 litre water tank**, positioned inside front gate. The shed will be used to store spare componentry (panels, cables, etc).
- **2.4m high perimeter fence** (consisting of 1.8m high chain mesh and three rows of barbed wire above) around entire perimeter of facility, including two (2) gates – main gate at front and rear gate for maintenance and emergency access only.
- **Landscaping** along active/visible interfaces, as shown on Layout Plan. Landscaping will be outside the compound fence along the southern (Sydney Road) frontage and will be directly inside the perimeter fence along the western boundary for ease of maintenance.
- **Underground cable** to AusNet point of connection
- **E-Cube kiosk** at AusNet point of connection
- **Pole and 22kV overhead powerline** augmentation to AusNet electricity distribution network on Sydney Road.
- **Vehicle crossing (access point)** to the requirements of the Roads authority.
- **Internal access track** and associated facilities (car park, assembly area/unloading bays) for use during construction and for service operations and maintenance.

The panels will be set out in one contiguous “block”, in eight (8) east-west orientated rows that will have a sum total surface area of 24,250 square metres. Because of the oblique orientation of the land parcel and the need to achieve east-west orientation for solar efficiency, the rows are to be ‘staggered’. The minimum separation between the panels and the perimeter will be:

West: 30.7 metres to perimeter fence and property boundary
North: 10 metres to perimeter fence; 20 metres to property boundary
East: 22.6 metres to perimeter fence and property boundary

4.3 Facility Components

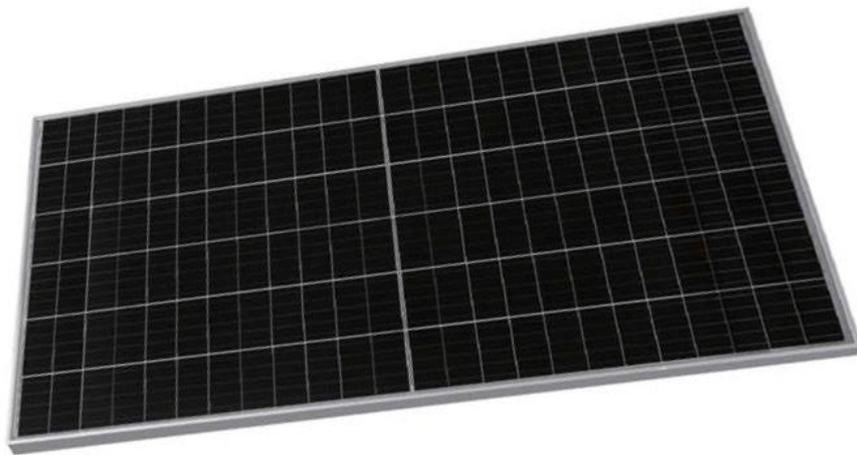


Image of typical 400W DC panel (2m x 1m)



Image of SMA MVPS2500 power station inverter
(6058mm x 2438mm x 2891mm high)



Image of typical storage shed (3m x2.4m x2.6m high)



Image of E-Cube kiosk
(2250mm x 995mm x 2500mm high)

5 Hume Region Renewable Energy Roadmap

The Hume Region has articulated its strong desire to support renewable energy by being the first Victorian region to finalise and adopt its Regional Renewable Energy Roadmap. The transformation to renewable energy provides the economic benefits of local job creation and access to cheap, clean energy; environmental benefits in response to climate change as well as social benefits such as education, energy justice and by infrastructure investment remaining in the local community.

The Hume Region Renewable Energy Roadmap sets out a high-level framework for what the region is trying to achieve and how it can achieve it in a coordinated and effective manner. It identifies the opportunities for the region and the reasons why it is suitable for renewable energy investment, especially due to its outstanding solar radiation levels.

The Hume region is truncated by major State-significant transmission lines that supply vast parts of the State and interconnect to New South Wales. However, large-scale renewable energy generation is likely to become limited due to thermal limitations on the transmission grid. This is where the “small-scale” model – to provide a network of strategically distributed smaller solar facilities in locations where they can readily supply the local community – becomes integral to achieving the regions aspirations and expectations for renewable energy by providing regional opportunities for the benefit of the regional community.

6 Site Selection & Design Considerations

Clause 53.13 of all Victorian planning schemes is the key planning policy for the establishment of renewable energy facilities in appropriate locations and so they have minimal impact on the amenity of the area.

The ***Solar Energy Facilities Design & Development Guidelines, August 2019***, outline the key considerations for the use and development of solar facilities across Victoria.

The ***CFA Guidelines for Renewable Energy Installations, February 2019*** provide standard requirements with regard to fire safety, risk and emergency management for consideration in the design, construction and operation of renewable energy facilities, including solar facilities.

As such, these documents have been a primary source of reference throughout the entire project lifecycle from site selection through to design, proposed construction methods, operation and maintenance as well as decommissioning. To this end, consideration of the matters required by these documents is demonstrated throughout this report and the supporting documents. Notwithstanding this:

- the application requirements of Clause 53.13 are set out and responded to at Section 7.5.3 of this report;
- an overview/response to the relevant provisions of the DELWP Guidelines is below as Section 6.1; and
- a response to the relevant provisions of the CFA Guidelines is below at Section 6.2;

6.1 Solar Energy Facilities Design & Development Guidelines

These Guidelines provide an overview of best practice advice for developers of solar energy facilities in Victoria, which includes recommendations for community consultation, design, consideration of off-site impacts, construction, operation and decommissioning. In addition to the detail throughout this report, the considerations and applications set out in the Guidelines have been grouped and responded to under the following sub-heading themes.

6.1.1 Identifying suitable locations

SSE Australia's business decision to facilitate a network of small-scale solar generation facilities across northern Victoria is based on a thorough research of many factors that contribute to a feasible and successful outcome. Northern Victoria has excellent solar resources and the Hume region is ready and willing to accept locally generated electricity into the State power grid.

The process of selection for appropriate sites is set out in the **Site Selection Analysis** report by RenewableAge, attached herewith; in particular – Section 3. Minimising potential impacts to existing communities, environmental values and amenity are prime considerations. This can occur through impacts to views and amenity; loss of native vegetation, increased environmental risk (bushfire, flood, etc) or loss of productive agricultural land.

Preliminary advice from Ruralco stated that the land is of limited agricultural value due to a lack of scale, inability to expand onto other allotments, in close proximity to higher value industrial land, degraded soils and lack of water. These – and other relevant factors such as land availability, and access and proximity to the electricity network – have been considered throughout the site selection process.

Existing electricity transmission network

The financial viability of a sub-5MW facility is dependent on the facility being within 100m of the distribution network, as beyond this, network augmentation costs become prohibitive. The subject site was initially selected for its direct abuttal to existing 22kV lines, as shown in the image below.

However, upon consideration of siting factors, the facility was 'pushed back' to the rear of the site to reduce potential amenity impacts.

Notwithstanding this, a financially-viable connection can still be achieved by providing an underground connection to the E-Cube kiosk, that will be positioned approximately 20 metres inside the property boundary and less than 100m from the existing AusNet network.

RenewableAge and SSE have been in discussions with AusNet Services to understand the new generation capacity of the Benalla substation and future electricity needs for the region. They have also investigated the thermal rating for the 22kV lines adjacent to the site and determined that there is capacity for the proposed facility.

SSE has begun negotiations with AusNet Services for a connection to the AusNet distribution network.



View of adjacent overhead powerlines, viewed from inside the subject site

Managing cumulative effects in area

There are no existing solar facilities in the wider area of the proposed site. RenewableAge is aware that generation connection enquiries have been made, but not aware of any other committed connections.

Accordingly, it is submitted that – at the time of application – there is no potential for the proposal to create any cumulative effect in the area.

Protecting environmental, site and amenity values

The site has been deemed suitable because of its visual lack of biodiversity. The site appears to be dominated by degraded pasture and opportunistic or invasive weed species that have limited grazing value. The land does not contain any mapped current wetland (MapshareVic; accessed 11/10/19). The site contains approximately three isolated trees toward the front of the land; however, these are outside the 'compound' extents of the facility and will not be impacted by the proposal or any associated works. Further, we are advised by RenewableAge, that in pre-application discussions with Benalla City Council officers, they are advised that it was the Council's consideration that the site did not contain any native grasses or biodiversity values that would impede the proposal.

The proposal is adjacent to an **area of cultural heritage sensitivity**, due to its proximity to a named watercourse. The extent of the area (a small triangle of land with dimensions of approximately 10m x 20m) is shown on the Layout Plan by SSE that is provided with this application. The development has been designed to be clear of this area so as to mitigate any potential impacts, as set out at Section 3.3 of this report.

The proposal site is not susceptible to any other known natural hazards. It does not have an elevated bushfire risk (not within a Bushfire Management Overlay) and is not susceptible to flooding (not within a Land Subject to Inundation or Floodway Overlay).

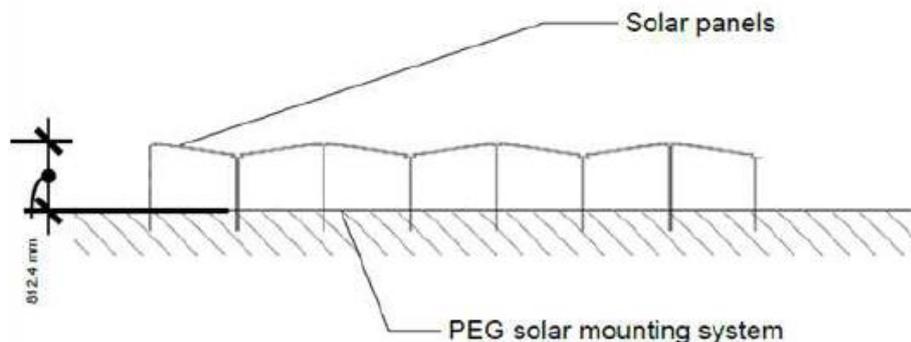
The site is not within an irrigation district or a designated water supply catchment (MapshareVic; accessed 11/10/19). We are advised that it is not considered as strategically important agricultural land, and this is evidenced by the Property Report by Ruralco as well as the abovementioned attributes review, its visual appearance and its low-value use (opportunistic/seasonal grazing) over past decades.

Minimising impact on landscape values

Solar facilities have the potential to create visual amenity impacts, dependent topography and landscape conditions in a site's area and depending on citing, height, size and magnitude of the facility. Detail as to how the proposal addresses specific impacts is provided below at Section 6.1.3.

The proposal is for a single block of fixed solar panels with a maximum height of approximately 800mm (about the height of an average dining table) and with a sum total surface area of 40,960m² (4.096ha). This is very small in comparison to most "standard-sized" facilities, that can occupy hundreds of hectares of land.

The proposal also includes two inverters, a small storage shed and water tank (for firefighting reserves) within the compound as well as a kiosk at the electricity network connection point. None of these components are particularly large or visually intrusive. The facility does not include any batteries or other above-ground componentry.



Elevation of solar panels on PEG mounting system

The subject land is within the Farming Zone and many surrounding properties are used for seasonal grazing; however, the site is approximately 1.6km from the periphery of town, where industrial uses (metal recyclers, sawmill, concrete batching plant) are long established. The nearby timber processing factory and recently established concrete products factory (to the east and north, respectively) and extensive industrial zoning in the wider area indicate the precinct's established character.

We are advised by RenewableAge, that in pre-application discussions with Benalla City Council officers, they advised that Council would be very likely to be supportive of the proposal because of the established "heavy industrial" character and associated amenity of the area.

The site and the surrounding area are very flat, which limits any views or vistas to and from the property. Established trees in the wider landscape further limit any potential views to the proposed facility site.

Of particular note, the site's interfaces include:

- South: Sydney Road roadside along the southern frontage of the land is wide and contains long-established trees (see images at Section 3, above);
- East: The property directly adjoining contains established paddock trees and beyond this is a plantation that is completely visually impermeable;
- West: The adjoining property contains an established tree belt longitudinally through the entire property;
- North: An established tree belt flanks the rear boundary of the subject land, which will screen the facility from the adjoining trail; additionally, the embankments of the inlet channel further impeded visibility.

The front and visible perimeter of the facility is proposed to be screened with a single row planting of Photinia Robusta, which is a thickly foliated shrub that grows to three or four metres in height. The applicant has chosen this species for its thick, rapid growth and drought tolerance.

Along the Sydney Road frontage, the landscaping will be positioned directly in front of the perimeter fence, so that it also obscures the high chain-wire-mesh. An additional post and wire farm fence will be erected in front of the plantation to protect the plants from grazing stock. Along the side, the landscaping will be positioned directly inside the perimeter fence, so that it can be managed and maintained by facility maintenance staff.

It is submitted that the proposal will have very little (negligible) visual impact on the locality, mostly due to the setback, height and scale of the facility together with existing established trees and proposed landscaping along active/visible interfaces will result in it being very difficult to see the proposed panels from adjacent roads and publicly accessible land. There are no other known existing, approved or planned solar facilities in the immediate vicinity and the proposal does not involve or necessitate the removal of any native vegetation.

In the wider landscape, the Winton Wetlands is approximately 4km northeast and the Benalla defence industries area is approximately 5km northwest of the subject site. Also, the Benalla airport is approximately 2.5km southwest of the subject site. However, it is not considered that the proposal will have any impact on any of these facilities, considering the separation distance to each and the magnitude of the proposal.

6.1.2 Community Consultation

The community consultation process for this facility has been extensive and has extended over a number of months, before beginning on a permit application.

After a thorough needs analysis and due diligence, SSE and RenewableAge then engaged with stakeholders such as has Benalla Rural City Council officers and AusNet Services.

An understanding of the site, its agricultural capability and its suitability for the proposed facility was sought from local stock and station agents, before proceeding to secure the site for the intended purpose.

RenewableAge has been in continued talks with closest neighbour, including two site visits and various telephone conversations. As a result of these discussions the design was completely re-visited and changed to the Belectric PEG system to address

concerns for visual amenity impacts. This PEG system also allowed the facility to be moved to the rear of the property (as it takes up less land) away from the neighbouring house.

Once the design was finalised, representatives of RenewableAge visited to each of the other properties surrounding the proposed site to discuss the proposal, show them the plans and provide any other information they may require and answer any questions they may have about the proposal. This landholder consultation occurred on 15 October, 2019. For properties where nobody was at home or the property was locked, RenewableAge left a business card and information in the letterbox.

Further, SSE's managing director – Dong Wang – has held preliminary discussions with Benalla Rural City Council staff in relation to co-locating an electric vehicle charger with a civic building in Benalla for community use and benefit. Mr Wang is an active and enthusiastic member of the **Electric Vehicle Council** and looking to roll out a network of publicly available **electric vehicle charging stations** in conjunction with the solar energy facilities.

6.1.3 Design

The proposed facility has been designed in consultation with the nearest neighbour, as set out in the attached Site Selection Analysis report by RenewableAge. After initial consultation, the design was modified in terms of componentry, siting, location, and orientation.

The proposed solar panel block has been orientated to achieve the required solar exposure, which means it is oblique to the property boundaries and the offset to each boundary, as shown on the Site Layout Plan, is the minimum to the point/ corner of the panel block, as follows:

- South (front): 240m between nearest panel and Sydney Road property boundary;
- East: 28.3m between nearest panel and property boundary and perimeter fence;
- West: 15.1m between nearest panel and property boundary and perimeter fence;
- North: 26.6m to property boundary; perimeter fence has been set back 10.4m inside property to avoid existing trees and area of cultural heritage sensitivity.

It is submitted that these setbacks are appropriate, considering the 'staggered' nature of the panel block. Additionally, these setbacks are to include at least ten (10) metres clear open space for emergency access and fire separation – as per the CFA Guidelines.

Inverters have been positioned close to the panel arrays, and away from neighbouring properties. Both inverters are to be at least 20m from the side boundary and more than 250m from the nearest dwelling. Under full operating conditions, the inverters emit noise from their internal cooling fans. A report has been prepared that sets out the sound power output of the inverters, including how it dissipates over distance, as provided by Sunny Central (submitted herewith this application). The report also sets out the recommended maximum noise levels for the area in accordance with EPA publication 1411 – **Noise from Industry in Regional Victoria** (referred to herein as NIRV). The information in the report shows that noise from the inverters dissipates over 100m to a value comparable to the acceptable level for a high traffic noise area. Through site-responsive design, the inverters have been positioned more than 250m

from the nearest dwelling. Thus, the report shows that the maximum noise levels recommended by NIRV will not be exceeded at the nearest dwelling.

Landscaping is to be provided along the front and visible perimeter of the facility, as shown on the Site Layout Plan. This is proposed to be a single row planting of Photinia Robusta, which is a thick foliated shrub that grows quickly and has a mature height of up to three or four metres and a width of two to three metres. It is submitted that this will provide a dense continuous screen, as shown on the image on Sheet 3 of the plan set by SSE.

The landscaping will be positioned directly outside the perimeter fence along the Sydney Road frontage, so that it also screens the fence; it will be protected from grazing stock by a second rural fence.

SSE engaged Vipac to carry out a glint and glare assessment of the proposed facility for potential reflection hazards. The assessment and report found:

The design as presented represents an acceptable level of reflectivity and the authors suggest that the design will perform without an adverse disposition to its environs in consideration of solar reflection and glare as described in this report.

For further details, refer to the Glint & Glare Assessment Report by Vipac that is submitted together with this application.

The facility will not have any external lighting, sirens or other security devices. It will be locked within a secure perimeter fence and monitored from remote and any issues will be managed by a local security company, which provides a local employment opportunity.

The perimeter fence is to be setback inside the rear property boundary so as to avoid the existing trees. This also provides opportunity for movement of wildlife within the area. A gate is to be provided at this point for maintenance and emergency access.

6.1.4 Construction Stage

Once built, the facility will remain static and largely unmanned. Accordingly, the construction period will be the most impactful period of the facility's lifespan. However, it is for a short finite period and – if managed appropriately – impacts can be controlled to an acceptable level.

The submitted **Project Construction Brief** by Southern Sustainable Electric includes a construction Gantt chart for an eleven (11) week construction period with an average of approximately 20 workers on site throughout.

The Project Construction Brief sets out how construction activities will be carried out, including site logistics and traffic management; details of operations and equipment to be used; construction hours and site management.

The Belectric PEG system requires minimal earthworks and no footings; thus less propensity for site and environmental impacts. It also equates to less materials, which means less site deliveries and less heavy traffic than more conventional systems. SSE intend to manage deliveries across the working week, which means that impact on the main road network due to construction traffic will be negligible – a total of approximately 30 shipping container deliveries scheduled across a three-week period. At five working days per week, this averages out to 2 trucks per day; however, the construction program allows for an average of 4-6 containers delivered each day.

It is submitted that Sydney Road will easily accommodate the abovementioned construction traffic without discernible disruption or safety impacts on existing road operations. It is anticipated that a Traffic Management Plan – that will set out actions and measures to manage traffic during construction – will be a condition of the sought permit.

6.1.5 Operation Stage

Other than during construction, the facility will be un-manned, other than intermittent periodical maintenance. The facility does not include batteries and there is no intention to store any dangerous goods on site.

The site will be remotely monitored in real time and local contractors would be rapidly deployed to deal with any fault or other matter, which provides the added benefit of local jobs for the local community.

Considering that the proposed facility will be un-manned, static (no moving parts) and approximately 0.85m high (about the same height as a standard desk), it is considered that it will have a very minimal impact on the landscape. However, the following subheadings address the specified operational impacts that community has questioned in relation to solar facilities.

Electromagnetic radiation (EMR)

Small amounts of electromagnetic radiation (EMR) can be produced (emitted) by electrical componentry associated with a solar facility such as inverters, transformers and high voltage powerlines. However, the level of radiation dissipates quickly to becoming indistinguishable from background levels, over distance from the component. The electromagnetic field (EMF) produced around an electric installation is non-ionising, within a range that exists in our daily lives from natural sources (which are most noticeably manifested in lightning discharges) and from appliances and electrical devices that surround our daily lives.

The inverters and E-Cube kiosk to be installed as part of the facility are proprietary built components within insulated cabinetry that are designed to be installed and safely operate in open conditions. We are advised that EMR from these types of components dissipates to indistinguishable levels over about 5 to 10 metres.

The E-Cube kiosk is located centrally on the site, approximately 20 metres inside the front boundary and the inverters are located approximately 20 metres inside the side boundary and compound fence. Therefore the components are located well away from the nearest house and sufficiently clear of any land that would be able to be accessed.

Heat island effect

In recent high-profile proposals, the community has raised concern for the potential of a “heat island effect” being created by the solar facility. This is where ambient temperatures are artificially raised by reflective heat from the facility, which could have impact on adjacent sensitive vegetation or horticultural operations.

Various studies have been undertaken and assessments presented as evidence for other contested solar facility proposals. In these instances, it was concluded that any

discernible impacts would be unlikely and would be quickly dissipated over a relatively short separation distance. To this end, the guidelines have recommended a 30 metre separation distance between facilities and the property boundary.

Due to the 'oblique' orientation of the site and the need to align panels east-west, it has been difficult to position the solar array blocks within the property and a 'staggered' configuration has been utilised. Generally, layout achieves greater than 30m separation between the property boundaries and solar panels. However, the extreme corners of some of the obliquely-oriented blocks protrude closer than 30 metres.

The actual offset to each array block is shown on the layout plan. In the "worst case" instance, a separation of 28.3m to the eastern boundary and 15.1 to the western boundary is achieved. Similarly, at the rear boundary, the extreme corner of the solar panel row has a 20m separation to the rear property boundary.

Considering that the panels are not aligned in parallel to the site boundaries, and therefore not at a consistent "blanket" separation, it is submitted that the designed distances to the site boundaries are suitable.

Environmental, risk and emergency management

The overview of an environmental management plan (EMP) is provided within the Project Construction Brief by SSE. However, it is anticipated that a detailed EMP will be required as a condition of the sought permit.

The EMP could be required to address detailed matters, to be approved before construction begins, such as site management, dust and sediment control and traffic during construction.

The proposed facility will be remotely monitored in real-time. Thus, it will be under constant surveillance and alarm reporting to 'on-call' staff will occur automatically in the event of a fault or potentially dangerous situation. An operational management plan will be an integral part of the operation of the facility.

As the facility will sit within a wider landscape of open grass land, the risk to grass fire exists. The proposal has been considered against the requirements of the CFA "*Guidelines for Renewable Energy Installations*" February 2019, as set out below at section 6.2 of this report.

Site access and traffic management

The subject land currently does not have an appropriate vehicle access point from Sydney Road, which in a Road Zone Category 1 and is managed by Regional Roads Victoria. Accordingly, a new access will be required to the satisfaction of the responsible authority and the roads corporation, which is included in this application. It is considered that the roads corporation will require its standard "Truck Access to Rural Properties, Type A" to be constructed to provide access to the land prior to any on-site construction activities or deliveries and that this will be included as a condition of the sought permit.

The site's direct main road abuttal is an advantage for construction, operation, maintenance and security of the proposed facility. During the eleven week construction period, the site will be accessed by an average of 20 workers on each working day. During the peak construction period (week 10), where various operations overlap, a maximum of 46 workers could be on site.

Componentry delivery will occur across the first three weeks of the construction period in a total of 30 shipping containers. The thirty delivery trucks will be sequenced across the period at an average of up to four or six trucks in any given day.

6.1.6 Decommissioning

The majority of components of proposed facility (including panels) has a thirty-year design life expectancy. At this stage, the intention is to maintain/upgrade the facility over its life, as components wear out and new technology becomes available. Accordingly, the facility is likely to remain functional and operating beyond the foreseeable future.

However, should the facility's useful life end – for any number of commercial or practical reasons – the site can easily be remediated and reverted back to agriculture or converted to industrial or another use, as allowable under the planning scheme of the time.

The non-invasive PEG mounting system makes decommissioning and removal of all panels and componentry a relatively simple process, as set out in the accompanying Project Construction Brief by SSE.

6.2 CFA Guidelines for Renewable Energy Installations

The Country Fire Authority (CFA) has recently published its *Guidelines for Renewable Energy Installations, February 2019*, in response to the Victoria's transition to renewable energy sources. With many projects under way and many others being planned, the CFA has been proactive in providing a framework for the assessment, design and operation of renewable energy facilities, including solar

It is noted that the CFA guidelines cater for all proposed facilities, from the proposal at hand – being 'small scale,' consisting of a single block of solar panels with a total surface area of approximately 4 hectares - through to many other facilities than can occupy in excess of 100ha and can be many hundreds of hectares. To this end, Chris Smith & Associates has sought advice from the CFA as to how the requirements would be considered "as appropriate" a small-scale facility.

The below subsections respond to the guidelines, as appropriate to the proposal.

1. Development of Installations

The proposal does not include batteries, and we are advised that there will be no storage of dangerous goods or buildings that must comply with the National Construction Code or will be considered at a workplace.

The information details set out in the guidelines are provided herein throughout this report and the supporting documents, including a Project Construction Brief by SSE. A detailed construction management plan, including emergency and risk management during construction will be developed prior to construction commencing.

2. Emergency Management

The CFA requires that facility operators develop an emergency management plan consistent with the requirements of Australian Standard 3745, including a fire management plan that specifically addresses risk management measures specific to fire risk and a fuel (vegetation) management plan. This will include site induction and risk overview for any staff or contractors accessing the facility.

It is considered that this requirement will be included in the conditions on the sought permit, to be provided and approved prior commencement of construction. The facility is to be provided with a clear perimeter for access and to provide a fire break between electrical installations and adjoining land. The soil beneath the panel block will be stripped of vegetation (grass) prior to construction and it is submitted that grass will not re-establish beneath the panels due to lack of sunlight and water.

Notwithstanding this, Belectric have a “mowing robot” that is specifically designed to autonomously traverse beneath the PEG system to manage grass, which could be implemented, if the operators considered it necessary.

3. Site Infrastructure

The provisions to be considered for **access** have been considered and incorporated into the facility design, as appropriate, including:

- Provision of a four (4) metre wide access road for the entire length along the eastern side of the facility and terminating in a turn around area. The road will be of all-weather construction and capable of accommodating a vehicle of fifteen (15) tonnes, with 4m height clearance and flat grade.
- Provision of a ten (10) metre perimeter fire break, that will allow fire and emergency vehicle access around the entire facility.
- A secondary access points to the rear of the site, to ensure safe and efficient access to and egress from areas that may be impacted or involved in fire.

The provisions to be considered for **firefighting water supply** have been considered and incorporated into the facility design, as appropriate, including:

- Provision of an above-ground 22,000 litre static water storage tank, located directly inside the facility main gate, where it is accessible and suitable for use by fire personnel. It is submitted that the provision of 22,000 litres of on-site water is suitable (rather than 45,000 l), considering the size of the facility.
- The tank can be installed and maintained as per the CFA conditions, including all weather access, a hard-suction point that is positioned and of correct fitting type so that it is usable by fire personnel; protected from mechanical damage (i.e., bollards) and with an external water level indicator and signage.

4. Site Operation

A 10-metre firebreak is to be provided between the compound perimeter fence and all componentry, including solar panels, inverters, container shed, etc.. It is submitted that suitable conditions will be included in the sought permit to mandate the **Fuel/Vegetation Management** requirements within the guidelines are achieved as part of “standard operational management’ of the site and the facility.

5. Wind Facilities

The provisions of **Section 5 – Wind Facilities** are not applicable to the current application as the proposal is for a solar energy facility, only.

6. Solar Facilities

Part 2 of the guidelines includes conditions that are particular to specific facility types, including solar facilities, including:

- *Solar facilities are to have a 6-metre separation between solar panel banks/rows.*
- *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.*
- *Solar arrays are to have grass vegetation maintained to 100mm under the array installation or mineral earth or non-combustible mulch such as stone.*

It is submitted that the proposed facility, contains one single ‘bank’ of solar panels with respect to the above provision. Relative to larger facilities have banks that are larger than the entire proposed facility – the current application represents a fraction of these facilities. Therefore, no internal separation would be warranted for a ‘small-scale’ facility.

It is submitted that the facility operator will provide the required information and uphold the other solar facility specific requirements, prior to commencement of use. This would be implemented though conditions on the sought permit.

6. Battery Installations

The proposed solar energy facility does not include any on-site batteries; therefore, assessment against the Section of the CFA Guidelines is not warranted.

7 Benalla Planning Scheme

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

- | | |
|----------------|--------------------------------|
| 11 | Settlement |
| 13 | Environmental Risks |
| 14 | Natural Resource Management |
| 15 | Built Environment and Heritage |
| 17 | Economic Development |
| 19 | Infrastructure |
| 21.03-2 | Landscape Character |

21.04-2	Bushfire
21.04-3	Climate Change
21.05-1	Agriculture
21.06-1	Industry
35.07	Farming Zone (FZ1)
52.06	Car Parking
53.13	Renewable Energy Facility
53.29	Land Adjacent to Road Zone Category 1...
65	Decision Guidelines

7.1 Planning Policy Framework

11.01 Settlement

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

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

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

Planning is to:

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

Clause 11.01 sets out the need for planning to provide land for a range of current and future uses. As set out throughout this report, the design of the proposed facility takes into account surrounding uses to minimize impacts on agricultural uses and amenity. The location is consistent with existing settlement patterns in that it is not within a residential growth corridor and outside the urban settlement boundary.

13.02-1S Bushfire

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

The subject site, along with most non-urban land in Victoria, is within the designated Bushfire-Prone Area. The facility has been designed in accordance with the CFA Guidelines for Renewable Energy Installations, February 2019. Further details on how compliance with the guidelines is achieved can be found at Section 6.2 of this report.

13.05-1S Noise Abatement

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

The site is located within the Farming Zone; therefore, any noise generated from activity on the site would be required to meet the requirements of the EPA Victoria's publication 1411 - *Noise from industry in regional Victoria (NIRV)*.

When operational, the facility will be unmanned and static (no moving parts). Noise generated from the operation of the facility will largely be limited to periodical service and maintenance vehicles attending the site, other than the inverters that, under full operating conditions, emit noise from their internal cooling fans.

The inverters have been positioned close to the panel arrays, and away from neighbouring properties. Both inverters are to be at least 20m from the side boundary and more than 250m from the nearest dwelling.

A report has been prepared that sets out the sound power output of the inverters, including how it dissipates over distance, as provided by Sunny Central (submitted herewith this application). The report also sets out the recommended maximum noise levels for the area in accordance with NIRV. The information in the report shows that noise from the inverters dissipates over 100m to a value comparable to the acceptable level for a high traffic noise area. Through site-responsive design, the inverters have been positioned more than 250m from the nearest dwelling. Thus, the report shows that the maximum noise levels recommended by NIRV will not be exceeded at the nearest dwelling.

14.01-1S Protection of Agricultural Land

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

The site has been selected based on its apparent marginal agricultural value, including a lack of irrigation and on-farm improvements. The construction footprint of the facility will be limited to approximately 8.9ha area toward the rear of the lot. The balance of the subject land will remain available for its agricultural use.

The Property Report by Ruralco (submitted herewith this application) sets out the agricultural attributes of the land from established national databases of soil type, topography, elevation, rainfall and climate to provide a rating of potential carrying capacity or production that would be expectant from the land.

The Ruralco report states that entire property has a potential carrying capacity of 228 sheep or 28 steers. The proposed facility will reduce the area available for agricultural production by approximately 70%, leaving 30% for continued agriculture (grazing).

It is submitted that – in consideration of the environmental benefits of renewable energy – the minor loss in agricultural production in terms of the State's agricultural base is an acceptable outcome when balancing all factors.

14.01-2S Sustainable Agricultural Land Use

- *To encourage sustainable agricultural land use.*

The proposal implements the strategy to “*support the development of innovative and sustainable approaches to agricultural and associated rural land use practices*” through a project design that is complementary to both the proposed facility and existing agricultural land uses.

The proposal also supports adaption of the agricultural sector to respond to the potential risks arising from climate change through the provision of low-carbon energy into the local electricity grid.

15.02-1S Energy and Resource Efficiency

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

The proposal improves energy efficiency and reduces greenhouse gas emissions through the local generation of energy from a low emission, renewable source.

The design of the project retains the existing trees toward the south end of the subject land. Additional vegetation is proposed as part of the landscape screening measures.

17.01-1S Diversified Economy

- *To strengthen and diversify the economy.*

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

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

The proposal will strengthen access to employment in the Benalla region during the construction phase of the project and for the ongoing operation and maintenance of the facility.

17.01-1R Diversified Economy -

- *Encourage appropriate new and developing forms of industry, agriculture, tourism and alternative energy production.*

The proposal will contribute to the emerging renewable energy industry in the region. Jobs created through the project will contribute to the creation of a skilled workforce in the renewable energy industry and will support the diversification of the local economy and potentially stimulate further investment in industry within the region.

17.01-2S Innovation and Research

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

The proposal encourages the provision of infrastructure that encourages people to learn new skills in the renewable energy industry, a growth industry that will promote local employment and economic growth.

19.01-2S Energy Supply

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

The proposal supports the development of energy facilities in a location appropriate for the size and scope of the project. Extensive site analysis was conducted by RenewableAge in selecting the site to take advantage of existing infrastructure.

19.01-2R Renewable Energy - Hume

- *Create renewable energy hubs that support co-location of industries to maximise resource use efficiency and minimise waste generation.*

This proposal contributes to the establishment of a clean and affordable energy source for the Benalla region, potentially encouraging further investment and development in business and industry.

7.2 Local Planning Policy Framework

21.03-2 Landscape Character

- *To manage and protect the landscape character of the municipality.*

The proposal minimises the impact of the facility on the surrounding landscape character through the implementation of setbacks and landscape screening. Furthermore, location of the facility is not within visual sightlines of significant landscapes identified within any local policy.

21.04-2 Bushfire

- *The protection of human life over all other considerations.*

The risk to human life in the event of bushfire is relatively low in relation to this development. Once operational, the facility will be largely unmanned and risks to human life can be managed through the regulation of activity on the site during days of high fire danger.

The site has been designed to comply with the CFA's Guidelines for Renewable Energy Installations.

21.04-3 Climate Change

- *Responding to climate change*
- *Minimising greenhouse emissions*
- *Identifying opportunities arising from climate change impacts*

The proposal responds to the key issues set out at Clause 21.04-3 as above. The facility minimises greenhouse gas emissions while capitalising on the economic opportunities arising from an expanding renewable energy industry.

21.05-1 Agriculture

- *To protect agricultural areas from inappropriate and unsustainable development.*

The subject land is not within an irrigation district, nor is it considered strategically important at a regional or local level. We are advised by the applicant that Benalla Rural City planning staff described the precinct as “heavy industrial”, despite its zoning, and considered the proposal an appropriate land use for the area.

Currently, the site is used for low-intensity grazing activities. It is considered that the site’s locational attributes – adjacent to a high-traffic road and nearby industrial and other urban uses - hamper its agricultural utility, particularly for stock security and safety. Accordingly, based on the Property Report by Ruralco and review of the site’s agricultural use and the visual condition of the land it is submitted that the proposal is an appropriate and sustainable use for the land.

21.06-1 Industry

- *To meet the demand for industry in appropriate locations that do not compromise existing assets and uses.*

Site selection analysis conducted by RenewableAge (report attached) sets out the process in determining the chosen location. It is concluded that the site chosen is the most appropriate, consistent with requirements of the planning scheme and the technical requirements of the facility. The ongoing operation and maintenance of the facility will have minimal impact on existing adjacent uses, which could continue unabated by the proposed development.

7.3 Farming Zone

Clause 35.07 sets out the decision guidelines for applications within the Farming Zone – which are set out below:

General issues

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

- *How the use and development makes use of existing infrastructure and services.*

Spatially, the land is capable of accommodating the proposed 5MW solar energy facility while allowing for a significant setback from Sydney Road – preserving visual amenity for both surrounding occupants and passing traffic.

Analysis conducted during the site selection stage of the proposal (RenewableAge report attached herewith) found the subject land to be suitable for the proposed use. Solar resources on the site are very good, the site is vacant, cleared, flat land of an appropriate size, avoids vegetation removal and the appropriate infrastructure for grid connection is within an acceptable distance.

Adjoining and nearby land uses, including low-intensity farming and industry, would not be impacted by the proposal. It is expected that the current land uses could continue unabated during construction and operation of the facility.

The subject land is well-serviced by existing infrastructure. Main road access is available from Sydney Road; the required electricity infrastructure is available (22kV powerlines) and the Benalla zone substation is approximately 8km away.

Agricultural issues and the impacts from non-agricultural uses

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

The proposal will allow continued low-intensity agricultural use (grazing) on the remaining portion of the land, toward the front, of the subject land that will remain. Indirectly, the proposed solar facility will feed into the local electricity grid, providing energy and grid security in support of local farming activities.

The subject land is approximately 13ha in area, within a peri-industrial corridor. If, in the future, agricultural production was to be intensified on the surrounding land within the Farming Zone, the undeveloped portion of the subject site could act as a land bridge between the lots to the eastern and western boundaries of the site, leaving potential for future larger scale agricultural activities.

The subject land is not deemed to be strategically important agricultural land at a regional or local level nor is it contained within an irrigation district. The soil is classified in the Property Report by Ruralco as shallow sand loam/loam over intractable clay. The compounding conditions of shallow topsoil and a problematic clay base render the land marginal and best suited for low-intensity grazing. This is further evidenced by its current condition and long-term use. As such, it is submitted that this proposal will not contribute to fragmentation of agricultural land in the area.

Environmental issues

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

The subject land is largely cleared of vegetation with the exception of a few paddock trees to the south of the site which will be retained under the proposal. The land does not contain any mapped current wetland (MapshareVic; accessed 11/10/19). Further, we are advised by RenewableAge, that in pre-application discussions with Benalla City Council officers, they are advised that it was the Council's consideration that the site did not contain any native grasses or biodiversity values that would impede the proposal.

The facility has been offset from the tree belt at the rear of the land to minimise any potential impacts to any biodiversity or habitat values. It is expected that due to minimal changes in vegetation on the subject land, the biodiversity of the area will not be materially affected nor will the faunal habitat of any native species. The proposal does not include any on-site facilities that will generate effluent.

Design and siting issues

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

The facility has been designed so that development on the subject land will be restricted to the rear of the site with the balance of the subject land remaining available for agricultural use, currently low-intensity grazing.

The siting, design, height, bulk, colours and materials to be used will not have a significant visual impact to the natural environment, major road or vistas (solar panels are approximately 800mm high – equivalent to an average dining table). Provisions have been made to reduce visual impact through revisions to the layout in response to issues raised during community consultation and preliminary assessment. A significant setback from Sydney Road and landscape screening to active interfaces have been incorporated in revised project plans to minimise visual impact on the neighbouring resident, passing traffic and the natural environment.

The landscape screening along the Sydney Road frontage of the facility will be planted outside the perimeter security fence, to further obscure the facility, as set out in other parts of this report.

The site has frontage to Sydney Road and a new entrance is proposed at the south eastern corner of the subject land and driveway access to the facility via a driveway along the eastern boundary. Connection from the solar facility to the existing 22kv overhead lines is via underground cabling to a pole at the south end of the subject land, where an above ground cable will connect to an existing AustNet post.

It is not expected that the facility will require traffic management measures once operational as the site will be largely unmanned with traffic to and from the site mostly restricted to contractors irregularly attending the site for maintenance and site inspections. A traffic management plan will be required for construction activities and it is anticipated that this will be a condition of the sought permit.

7.4 Overlay/s

Nil.

7.5 Particular Provisions

7.5.1 Clause 52.06 Car Parking

The purpose of Clause 52.06-1 includes: *To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.*

There is no prescribed car parking rate for renewable energy facilities at Table 1 in Clause 52.06. Notwithstanding this, an empirical car parking analysis has been undertaken to ensure car parking for the facility is appropriate, safe and convenient for users.

The proposed solar facility will be un-manned; with maintenance and site inspections occurring periodically – most likely by one or two workers at a time, who will be in specialised vehicles and will most likely drive to their desired location within the facility so that they have access to tools and equipment. In consideration of this, it is submitted that the two car spaces inside the front gate would be suitable.

During the construction phase the site will be accessed by up to 46 workers (at the peak week) and trucks with component deliveries. Accordingly, two large unloading/assembly areas (as shown on attached site plan) are to be provided to accommodate construction activities, however, these will remain and will be available for use throughout the operational life of the facility.

7.5.2 Clause 52.29 Land Adjacent to a Road Zone

The subject land is located on and obtains access from Sydney Road, which is a Road Zone Category 1 (RDZ1). Clause 52.29-2 of the Benalla Planning Scheme provides that a permit is required to create or alter access to a road in a Road Zone, Category 1.

The subject land currently has an informal entrance (gate) to Sydney Road, however this is not suitable for the proposed facility. Accordingly, a new entrance will be created at the location shown on the Layout Plan and on the photo over page.



View of proposed vehicle entrance adjacent to eastern boundary of subject land

The location for the new vehicle entrance has been determined based on site analysis and consideration of relevant factors. The entrance has been located away other entrances and existing dwellings; where it provides direct, visible and logical access to the facility, which makes it safe for vehicles accessing the site and other road users. The chosen location is clear of existing vegetation (see image above), which will allow construction of the vehicle crossing with minimal impact and provide safe sight lines for entering and exiting traffic.

The proposed entrance is well clear of any roadside trees and the designers advise that the ground cover consist of opportunistic (non-native) grasses and weeds. Accordingly, the application does not include (or is required to include) removal of native vegetation.

It is anticipated that the roads corporation will require the entrance to be constructed as per its Standard Drawing: Truck Access to Rural Properties Type A, as attached herewith at Appendix B. It is considered that this will be included as a condition of the sought permit, to be designed and constructed to the satisfaction of the responsible authority and the roads corporation.

7.5.3 Clause 53.13 Renewable Energy Facility (other than wind energy facility)

The purpose of Clause 53.13 is “To facilitate the establishment and expansion of renewable energy facilities, in appropriate locations, with minimal impact on the amenity of the area.”

The clause applies to an application to use or develop land for a renewable energy facility. Accordingly, it is the key planning policy for this proposal. The application requirements of this clause were key considerations in the site selection and design processes for this project and are integral to all documents within this submission. Notwithstanding this, an outline of each application requirement of Clause 53.13 is provided below.

- **A site and context analysis, including:**
 - A site plan, photographs or other techniques to accurately describe the site and the surrounding area.
 - 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.

A thorough site analysis, including description, photographs and diagrams has been provided in the **Site Selection Analysis** report by RenewableAge, provided herewith).

Figure 2 shows the subject site in context with surrounding features as well as the adjacent electricity distribution network, including connection to the Benalla substation.

Figure 3 shows the subject site and distances to the nearest dwellings from the property boundary. However, these dwellings will be the following distances to the nearest solar panel or associated electrical facilities:

PROPERTY	DISTANCE TO NEAREST SOLAR GENERATION EQUIPMENT	DISTANCE TO COMPOUND FENCE
321 SYDNEY ROAD	120m	60m
301 SYDNEY ROAD	330m	300m
350 SYDNEY ROAD	460m	450m
390 SYDNEY ROAD	630m	610m
402 SYDNEY ROAD	750m	730m

Note: all distances are approximate only (obtained from aerial photography)

The site fronts both 22kV and 66kV overhead high-voltage transmission lines that feed directly to the Benalla Substation and Sydney Road, which is a main road that is the primary route from Benalla to the north, including linking with the Hume Freeway.

The nearest urban land to the north, east and west is industrial and contains large-format industrial businesses including a timber processing factory, a precast concrete

factory as well as a sawmill, concrete batching plant, scrap yard and car recyclers to the west. The nearest accommodation is the Benalla Leisure Park and motels along Sydney Road that are in an industrial zone and located 2km from the proposed facility. The nearest residential zoned land (vacant LDRZ land at the rear of Inglis Rd, on the north side of the railway line) is 1.7km east of the proposed facility. Other urban facilities such as hospital, education, community and retail services are beyond this, in the urban centre of Benalla.

- **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.*
 - *Accurate visual simulations illustrating the development in the context of the surrounding area and from key public view points.*
 - *The extent of vegetation removal and a rehabilitation plan for the site.*
 - *Written report and assessment, including:*
 - *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.*
 - *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.*

The Site Layout Plan by SSE shows the proposed facility, including location and dimensions of all buildings, works and electrical componentry. Sheet 2 provides distances to compound fence and site boundaries; Sheet 3 provides elevations and details of height and built form, as well as images of individual components.

The point of connection to the AusNet network will be from the E-Cube kiosk to a new pole that is located approximately 20m inside the property boundary. From here, the AusNet network will be augmented via overhead lines across Sydney Road to existing overhead lines. The designers advise that the E-Cube kiosk and new pole is to be positioned where it has a clear line-of-site to the existing Ausnet pole, so as to avoid any removal or lopping of existing roadside trees and it has been proven by site inspection that this can be achieved. Accordingly, the proposal does not include or invoke any native vegetation removal for the proposed facility or any ancillary works, including access and electricity network connection.

Views to the site of the proposed facility from Sydney road are provided in this report (above); however, due to the very flat topography of the land and the wider area and considering that the proposed panels will be approximately 800mm high, and set back more than 230 metres from Sydney Road (behind roadside vegetation and a proposed vegetation screen) visual simulations have not been prepared, as we were advised that their usefulness would be limited.

It is submitted that the site is highly suitable for the proposed use considering its location, accessibility, proximity to the electricity distribution network and electricity users as well as its marginal agricultural usability. Once operational, the facility will be un-manned and static. There will be no processes carried out on site (other than photovoltaic conversion of solar radiation into electricity) or waste produced. The only materials to be stored on site will be some basic spare componentry – electrical components and spare solar panels – that will be secured inside the storage shed. We are advised that no EPA Works Approval is required.

A thorough analysis of all potential amenity impacts is provided at Section 6.1 of this report, including potential visual amenity impacts, emissions and noise for the construction period and ongoing operation. Section 6.1 also addresses potential impacts of electromagnetic radiation, any potential heat island effect and sets out how the proposed construction activities and ongoing use will allow for the ongoing safe operation of Sydney Road and the main road network in the area.

The proposed facility has been designed to avoid impact on the nearby area of cultural heritage sensitivity by setting back the facility and perimeter fencing inside the property boundary to ensure that no earthworks or other disturbance occurs in proximity to the mapped sensitive area.

The subject land is largely cleared of vegetation with the exception of a few paddock trees to the south of the site which will be retained under the proposal, as they are outside the proposed compound area. The land does not contain any mapped current wetland (MapshareVic; accessed 11/10/19). Further, we are advised by RenewableAge, that in pre-application discussions with Benalla City Council officers, they are advised that it was the Council's consideration that the site did not contain any native grasses or biodiversity values that would impede the proposal.

A calculation of greenhouse benefits has been prepared by RenewableAge and included in their Site Selection Analysis Report, and as shown below.

2.2 Environmental Benefit Analysis

The Carbon Dioxide Equivalent Intensity Index (CDEII) is measured in t CO₂-e/MWh and published by AEMO (Australian Energy Market Operator) on a regular basis.

The average CDEII for the VIC1 region on the NEM in 2018 was 1.02855⁴ (total emissions for VIC1 in 2018 / total energy sent out for VIC1 in 2018).

The Benalla Solar farm will generate 10,958 MWh of renewable energy per annum, in the first year of operation, and this will result in avoided greenhouse gas emissions of:

$$10,958 \times 1.02855 = 11,271 \text{ tonnes of CO}_2 \text{ equivalent per annum.}$$

The attached **Project Construction Brief** by SSE includes an overview of site logistics and traffic management, environmental management plan and site management during construction and ongoing operation. The Belectric PEG system requires minimal earthworks and no footings; thus less propensity for site and environmental impacts. It is considered that more detailed information – particularly for the construction period – will be required and included as a condition on the sought permit.

7.6 General Provisions - Clause 65 Decision Guidelines

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

8 Conclusion

The proposal is for a new solar energy facility within the Rural City of Benalla that will provide affordable clean energy for the local community, effectively contributing to the implementation of Victoria's transition to renewable energy. The proposal is supported by the Hume Region Renewable Energy Roadmap that sets out a high-level framework for achieving the region's aspirations and expectations for renewable energy by providing regional opportunities for the benefit of the regional community.

The 5MW output will supply local businesses, industry and houses and will produce enough electricity to supply 1,000 average households.

The panels are fixed, approximately the height of an average desk (800mm) and mounted on a steel rod system that does not require concrete footings. This equates to less impact on the site, less materials and less construction which means less impact on the local community and roads during construction and less visual impact ongoing.

The proposal will generate local employment opportunities for electrical and construction workers to build and install the facility; operations, maintenance and security jobs will be required ongoing.

It has been demonstrated in this report that the proposal meets the application requirements for a solar energy facility, including relevant sections of the Benalla Planning Scheme - particularly **Clause 53.13**; the ***Solar Energy Facilities Design & Development Guidelines, August 2019*** and the ***CFA Guidelines for Renewable Energy Installations, February 2019***.

Based on the information provided within this report and various supporting documents, it is submitted that the proposal merits support and planning approval.

Chris Smith & Associates
Rev. 1; January 2020

Appendix A

Photinia Robusta – Photinia

Photinia Robusta – Photinia



Photinia robusta is a dynamic, evergreen, thickly foliated bush with oval, sleek, dark green leaves, which are coppery-red while young. It is also a brilliant and admired hedging shrub that provides flushes of brilliant red plants in spring as well as after pruning. It'll grow up to three meters but can be pruned to any size as per your requirement.

Height: three to four meter tall and two to three meter width

Uses: it is a wonderful quickly growing hedge plant regarding privacy

Planting tips: it can be planted in cool, temperate, mid tropical, arid, and semi arid climate. Fertilize it regularly and ensure regular watering is performed

Soil type: Photinia robusta grows well in fertile, moist and well drained soil. You must keep it in partial sun shade for better growth.

Pruning: Photinia robusta needs pruning two times a year and this could be performed in spring or autumn. Keep in mind; you should always feed the plant at the time of pruning for encouraging new growth. However, you should never trim in the mid of the day while it's extremely hot since the shrub will experience stress and might start to fade. Always prune late afternoon or early morning.

Water requirement: it is extremely drought tolerant in terms of water requirements

Pests and problem: It'll also depress slugs, snails and several other kinds of *pests*. However it's susceptible to some mother kinds of pests.

Climate: it grows well in tropical climates, so most of the Australian regions suits for the plant growth.

