


**3348 PYRENEES HIGHWAY, CARISBROOK
3080 PYRENEES HIGHWAY, MOOLORT, AND
160 BALD HILLS ROAD, CARISBROOK**

**Planning Permit Application for a Renewable Energy Facility
(Solar Farm) and Associated Works**

August 2018

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We simply must balance our demand for energy with our rapidly shrinking resources. By acting now we can control our future instead of letting the future control us.

Jimmy Carter

1 INTRODUCTION

This report supports an application for a proposed Renewable energy facility (90MW Solar Farm) at 3348 Pyrenees Highway, Carisbrook, 3080 Pyrenees Highway, Moolort, and 160 Bald Hills Road, Carisbrook.

The solar farm is being proposed by IB Vogt GmbH (ib vogt) who are a Solar Photovoltaic development and Engineering, Procurement and Construction (EPC) company.

Ib vogt has been focussed on developing Solar PV projects since 2002 and over the past 15 years has developed or constructed over 900MW of solar projects in Europe and Asia. Ib vogt recently moved into the Australian market and is focussed on developing, building and operating a large portfolio of Solar Photovoltaic Cell projects in Australia. For more information on the company please visit their website: www.ibvogt.com.

The site is located in farmland approximately 3.5 kilometres east of Carisbrook, approximately 10km east of Maryborough, approximately 30km west of Castlemaine and approximately 126 kilometres north west of Melbourne.

It is intended that the proposed facility will be connected to the electricity grid via the existing power lines which run along the north side of Bald Hill Road, along the western boundary of the site.

The proposed Renewable Energy Facility will cover approximately 300h of the land area. The land is zoning Farming Zone under the Central Goldfields Planning Scheme. The subject site is free from any overlays, apart from the north western title, which is partly subject to an Erosion Management Overlay.

The majority of the site area has been highly modified due to development for agriculture, predominantly cropping and some plantation trees. Most of the site area has been significantly degraded and supports predominantly introduced vegetation that is of limited value for native fauna. However, the study area still supports a range of ecological features including areas of native vegetation, scattered trees and constructed dams.

A renewable energy facility (other than a wind energy facility) is a section 2 use requiring planning permit approval in the Farming Zone under the provisions of the Central Goldfields Planning Scheme (the planning scheme) the creation of access to a road in a Road Zone Category 1.

As demonstrated within this report, the proposed renewable energy facility will help achieve:

- Victoria's Renewable Energy Targets (see Appendix J)
- Will have positive social and economic effects on the community.
- Is consistent with and will achieve the objectives of the Central Goldfields Planning Scheme.

■

1.1 Proposed Development Profile

The key development details relating to the proposed subdivision, are summarised in **Table 1**.

Table 1 Summary of the Proposed Development

| | |
|--------------------------------|--|
| Site Address | 3348 Pyrenees Highway, Carisbrook, 3080 Pyrenees Highway, Moolort, and 160 Bald Hills Road, Carisbrook |
| Formal Description | The land comprises 12 lots. A copy of the Certificates Titles are provided in Appendix A. |
| Total Site Area | 300 ha (Approx.) |
| Proposal | The use and development of land for a renewable energy facility (90MW solar farm), the creation of access to a road in a Road Zone Category 1 |
| Development Components* | The development will comprise the following elements: Perimeter Security Fencing A Construction Compound and site office Internal Access roads Connection to the existing electricity supply along Bald Hills Road Substation Inverterstation / Transformer / Battery Storage Single axis tracking solar panels and associated framework Onsite cabling between solar panels and Inverters Landscaping Buffers Access of the Pyrenees Highway |

2 SITE AND CONTEXT

2.1 Site Context

The site is located within the Shire of Central Goldfields, approximately 3.5 km east of Carisbrook and has land frontage to both Bald Hill Road and the Pyrenees Highway.

The land in the surrounding area is all zoned farming zone apart from the land which is zoned Public Use Zone 4 (Transport) which follows the Moolort railway line, on the northern boundary of the site.

The land in the surrounding area is predominately very flat with only minor variations in elevations. Land in the area is generally either used for cattle and sheep grazing or cropping.

Where feasible, the proponent is looking for ways to provide for continued sheep grazing on the site beneath and around the solar structures.

The main topographic feature in the immediate area is Mount Moolort (Bald Hill) which is a low hill whose peak is about 1100m from the site

A feature and level plan of the site is contained within appendix D.



Figure 1: Rural Landscape typical to the area, Mount Moolort (Bald Hill) in the background

There is a cluster of rural dwellings near the intersection of Bald Hill Road and Donovans Road, to the west of the site.

Three of the dwellings are located at a similar elevation to the proposed solar farm, while one dwelling is elevated with views across the vineyard which is located on the east side of Bald Hills Road. The dwellings range from approximately 400 to 700m to the western edge of the proposed solar farm.

There is a second cluster of dwellings near the intersection of Bald Hill Road and Baringhup Road, to the north of the site, and these dwellings are approximately 900 to 1500m from the subject site. The views of the dwellings to the solar farm are discussed further in the landscape and visual assessment by Xurban Consultants contained in Appendix E.



Figure 2 Rail Crossing on Bald Hill Road at the north west corner of the site.

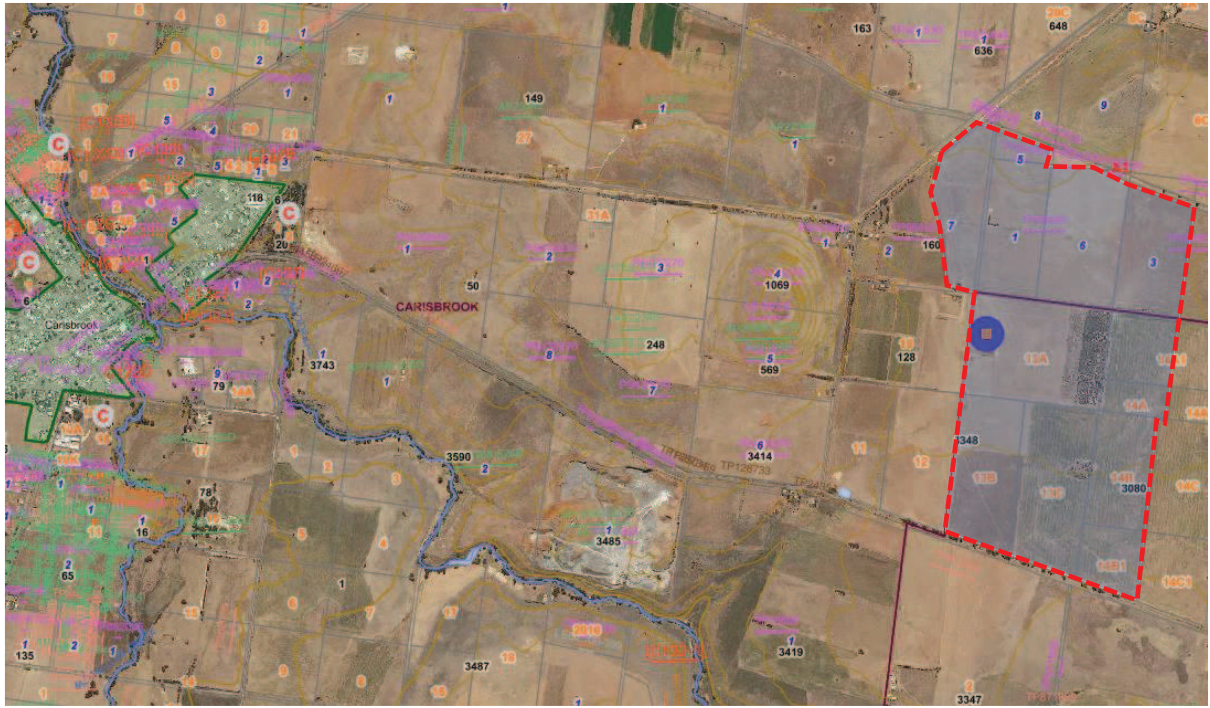


Figure 3: Site Context
 Source: LASSI

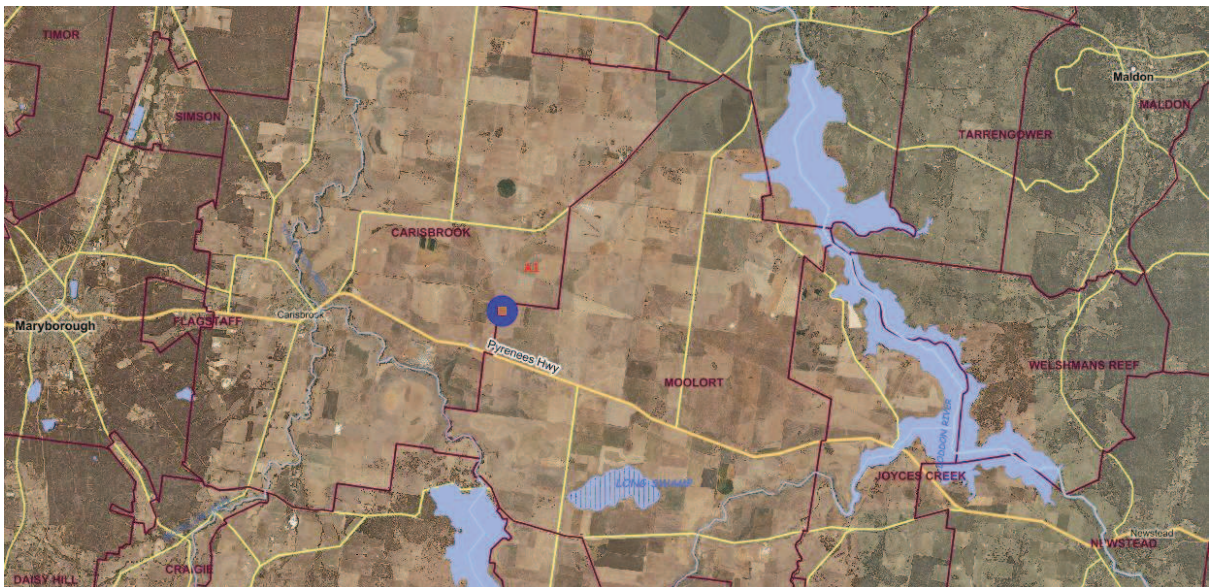


Figure 3a: Wider Site Context
 Source: LASSI, not to scale

2.2 Subject Site

This subject site is comprised of 12 land parcels which will be utilised in the solar farm use. The subject land is generally used for cropping and plantations.



Figure 4 – part of the site is used for plantations

There are no restrictive covenants registered on any of the Titles. There are also no dwellings located within the titles subject to this application.

This land is largely cleared for cropping purposes, with a number scattered trees remaining throughout the property. A full assessment of the native vegetation at the site has been completed by Biosis.



Figure 5 – View from Pyrenees Highway across the site

Figure 5 shows the view from the Pyrenees Highway across the site. The main proposed construction access will be from the Pyrenees Highway. This section of the Highway also contains a number of mature trees.

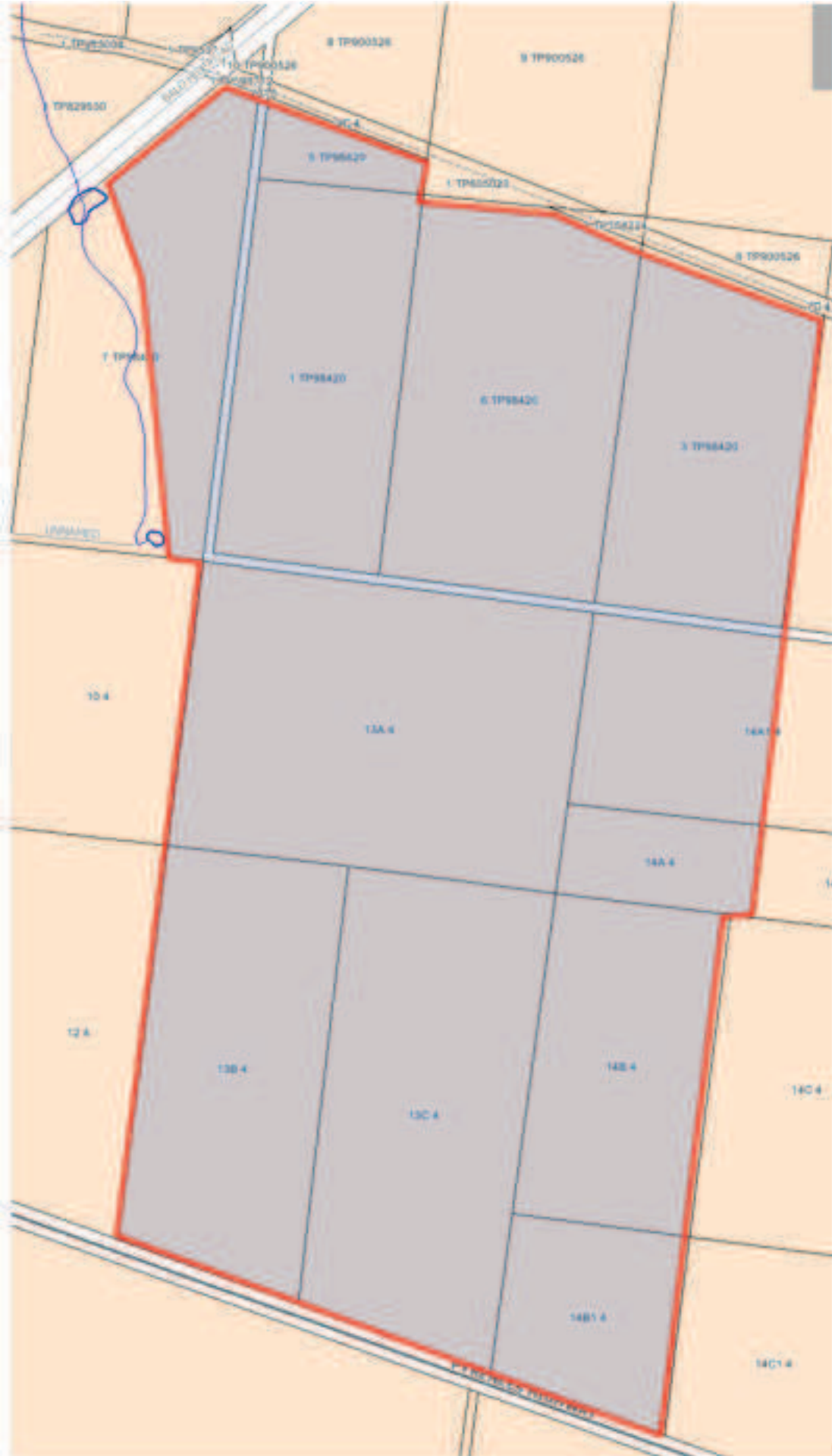


Figure 6 – Existing title configuration

Land Holder Details

| Title Description | Volume & Folio | Address | Owner |
|----------------------|---------------------------|---|--------------------------------------|
| CA 14A | VOLUME 10282 FOLIO 551 | 3080 PYRENEES HIGHWAY MOOLORT VIC 3465 | IAN RICHARD HURSE |
| CA 14A1 | VOLUME 00958 FOLIO 515 | 3080 PYRENEES HIGHWAY MOOLORT VIC 3465 | IAN RICHARD HURSE |
| CA 14B | VOLUME 01032 FOLIO 296 | 3080 PYRENEES HIGHWAY MOOLORT VIC 3465 | IAN RICHARD HURSE |
| CA 14B1 | VOLUME 01028 FOLIO 568 | 3080 PYRENEES HIGHWAY MOOLORT VIC 3465 | IAN RICHARD HURSE |
| CA 13A & 13B | VOLUME 10241 FOLIO 423 | 3348 PYRENEES HIGHWAY CARISBROOK VIC 3464 | BRIAN JOHN HURSE JULIE RUTH HURSE |
| Lot 7 | VOLUME 11812 FOLIO 001 | 160 BALD HILL ROAD, CARISBROOK VIC 3464 | DAVID ARTHUR HURSE |
| Lots 1, 3, 5, & 6 | VOLUME 11812 FOLIO 000 | 3080 PYRENEES HIGHWAY MOOLORT VIC 3465 | IAN RICHARD HURSE |
| CA 13C (S4) | VOLUME 08165 FOLIO 970 | 3080 PYRENEES HIGHWAY MOOLORT VIC 3465 | IAN RICHARD HURSE |



Figure 7 Carisbrook – Title Boundaries over Aerial Image
Source: LASSI, not to scale

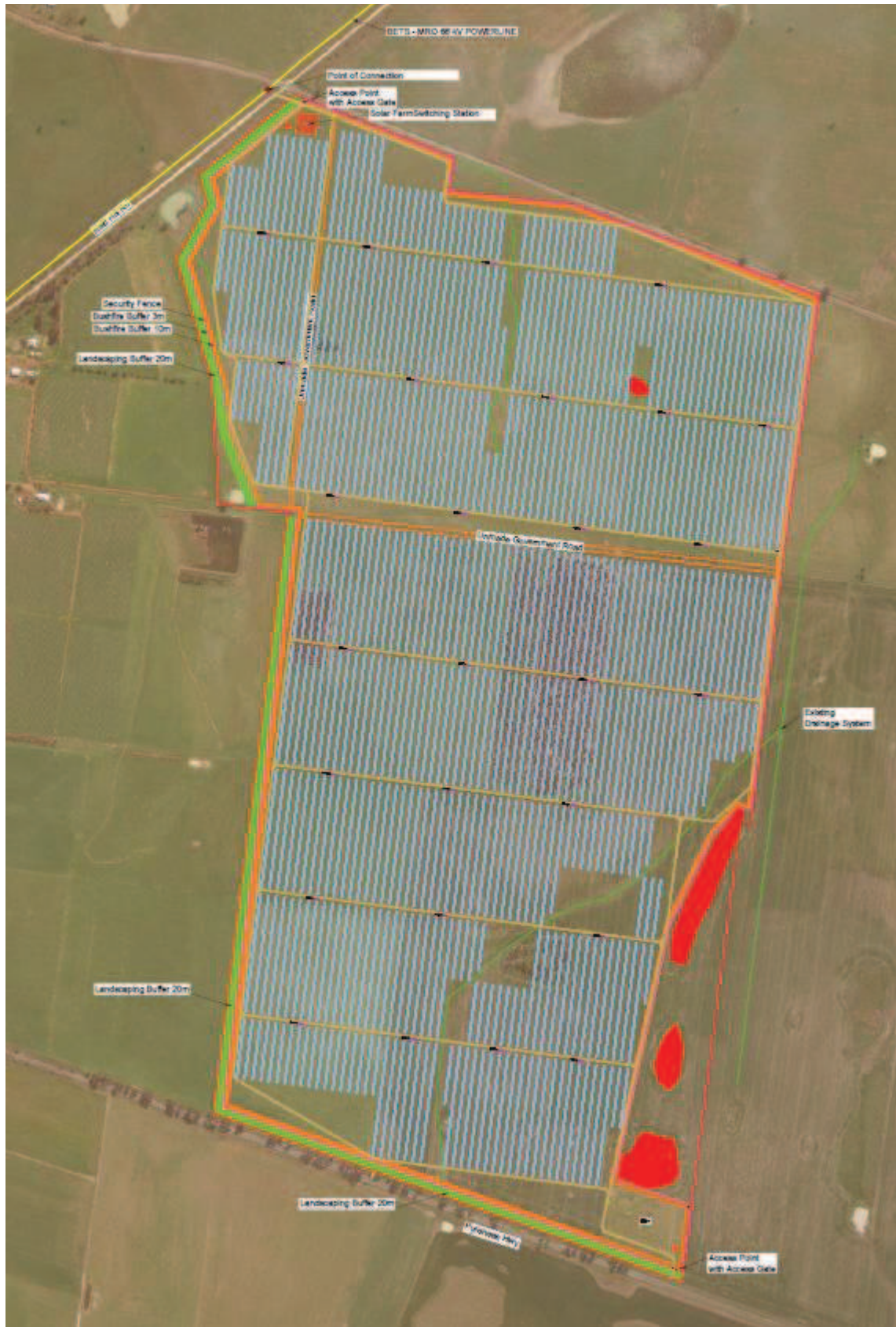


Figure 8: Extract from Development Plan

The overall development area comprises approximately 300 ha.

Four areas of Ecological Constraints were identified by Biosis in their report. These four areas have been excluded from the development footprint of the proposal as shown in Figure 8 (highlighted

red).The development footprint also avoids existing drainage lines and unconstructed road reserve areas across the property.

2.3 Stakeholder Consultation

Consultation has occurred with the following stakeholders prior to the lodgement of this application:

- North Central Catchment Management Authority
- VicRoads, South Western Region
- CFA – North East Region
- DELWP – Ballarat Region
- Central Goldfields Shire Council
- Adjoining landowners
- Community Open Day (3rd May 2018)

Although not a referral authority because no floodplain overlay or significant waterways cross the site, ib vogt wrote to the North Central CMA to obtain their feedback. The comments from the North Central CMA have been addressed through the provision of a detailed drainage report and avoidance of drainage lines across the site.

Comments from the CFA have also been incorporated in the layout of the proposed works. No comments were received from DELWP in respect to native vegetation, however native vegetation found on site has been avoided and this is indicated in the layout plan contained in Appendix D.

Representatives from ib vogt GmbH have met the landowners along Bald Hill Road which are the three nearest property owners to the proposed solar park. These residents raised concerns about perceived devaluation of their properties, traffic issues during construction along Bald Hill Road, the scale of the solar farm, noise and landscape impacts. The final layout has addressed some of these concerns and an entrance from Pyrenees Highway for construction vehicles will alleviate the issue of trucks and vehicles using Bald Hill Road during construction.

As a result of this consultation specialist glare and visual assessment reports were commissioned and have been provided as part of this submission.

Community Open Day

A Community Open Day was held on Thursday 3rd May at Carisbrook Senior Citizens Rooms, Urquhart Street, Carisbrook from 1pm to 7pm. The Open Day was advertised in the Carisbrook Mercury and the Maryborough Advertiser over two consecutive weeks leading up to the Open Day.

The aim of the Community Open Day was to inform the community of Carisbrook and the wider community about the proposed Carisbrook Solar Farm and to obtain initial feedback on the solar farm project at the pre planning permit application phase of the project.

Approximately 75 community people from Carisbrook, Maryborough and the region attended the Open Day. Some of the matters raised included what will the solar farm look like, will the local community benefit from the power generated, are there impacts from glare to neighbouring residents

and for drivers along the surrounding roads, and questions around the planning process. Hard copy surveys were provided to assist in identifying key issues from the community and stakeholders and these were made available on the day and also provided via the website.

As a result of the Community Open Day, ib vogt engaged a traffic engineer to investigate the provision of a site entry off the Pyrenees Highway. These drawings were prepared, and a preliminary set of drawings were provided to VicRoads for their comment.

It is planned that a majority of construction vehicles will enter and exit the site from the Pyrenees Highway. Some large construction vehicles will need to use Bald Hills Road in the delivery and construction of the 33/66 kV switching station/ transformer for the development which is proposed to be located in the far north west corner of the site. However, the majority of construction activities will be via the Pyrenees Highway.

VicRoads will continue to be consulted during the preparation of a Construction Environmental Management Plan and Traffic Management Plan.

As glare from the solar arrays was raised as a potential issue for those travelling along the Pyrenees Highway and existing residents, ib vogt engaged a glare impact assessment specialist who prepared an assessment to accompany the planning application. The assessment found no glare hazard potential is likely to affect rural dwellings within the vicinity of the Project. The modelling also identified no glare hazard potential is likely to affect travellers along the Pyrenees Highway or surrounding roads.

Summary of Survey Results

A total of seventeen surveys were provided back to ib vogt either at the Community Open Day or via the Carisbrook webpage online survey. All but one respondent stated that they value the landscape and views the most within the area, followed by family ties and sense of community (14 respondents). Respondents also valued the natural environment (10). When asked what people like most about solar farms, respondents stated that creation of renewable energy was what they liked most (11), followed by the creation of jobs and economic benefits (5).

Of most concern to the respondents when asked what they disliked about solar farms were the potential impact on land use (including the use of prime agricultural land) and property values (11), visual impacts (10), traffic impacts during both construction and operation (9) and noise during both construction and operation (9).

3 TECHNICAL INVESTIGATIONS & DESIGN CONSIDERATIONS

A series of technical site assessments have been completed to help inform the design response:

- **Aboriginal Cultural Heritage** – An assessment of the site’s Aboriginal cultural heritage has been completed by Archaeology at Tardis.
- **Ecology and Native Vegetation** – An assessment of native vegetation and fauna has been completed by Biosis.
- **Landscape & Visual Assessment** – An assessment of the landscape and recommendations for planting have been completed by Xurban.
- **Drainage and Water Plan** – a report on the existing water infrastructure at the site has been completed by CAF Consulting Services.
- **Glare Assessment** – A report on the potential of the proposal to create glare has also been produced by Environmental Ethos

A summary of findings and implications for the site design are detailed below.

3.1 Aboriginal Cultural Heritage

Archaeology at Tardis were engaged to review any Aboriginal Cultural Heritage matters as they relate to the proposed development of the site.

A review the statutory obligations associated with both the Aboriginal Heritage Act 2006 and the Victorian Heritage Act 2017 was undertaken. The consultants concluded that the proposed Carisbrook Solar Park, does not require the preparation of a mandatory Cultural Heritage Management Plan (CHMP) because the project infrastructure will not be constructed within an area of legislated cultural heritage sensitivity.

The consultants therefore concluded that there are no further historic archaeological or heritage matters that need to be addressed prior to the project works.

A copy of the advice from Tardis Advisors is contained in **Appendix G**.

3.2 Native Vegetation and Ecological Values

The majority of the study area has been highly modified due to past land use for cropping. Most of the site area has been significantly degraded and supports predominantly introduced vegetation that is of limited ecological value. Ecological features present within the site area are limited to areas of basalt rock that contain remnant patches of native grass, a few areas of planted trees which provide habitat for a range of birds and two remnant scattered trees.

Key ecological values identified within the total site area are as follows:

- 1.21 ha of native vegetation and two scattered trees.
- Some sections of the road reserve also contain native vegetation.
- Remnants of Plains Grassland which is considered an endangered ecological community within the Victorian Volcanic Plain bioregion.
- Patch of native vegetation present meets the definition of the nationally threatened ecological community: Natural Temperate Grasslands of the Victorian Volcanic Plain, and is a listed FFG Act community: Western (basalt) Plains Grasslands Community.
- Potential habitat for five EPBC listed (significant) species.

- Plantations of a mix of native and non-native tree species.
- Extensive areas of land depleted of native vegetation, currently used for cropping and grazing.

The surrounding landscape has primarily undergone extensive modification for agricultural purposes, with the closest sizable patch of remnant native vegetation being a series of conservation reserves surrounding the township of Maryborough (approximately 7 km west). There is no apparent habitat corridor that links these remnant patches to the study area.

DELWPs NatureKit mapping of extant native vegetation identifies broad areas of Plains Woodland across the study site. The extent of native vegetation currently present is greatly reduced, with only one small remnant patch of the related EVC Plains Grassland identified within the survey area.

No areas of the property drain directly into any natural creeks or rivers. The only source of water present is located in three manmade dams, which are primarily used for irrigation and as a water source for stock. It appears that there are low lying areas of poor drainage on the property where it would become seasonally waterlogged, with exotic grasses taking advantage of the wetter periods.

Ib vogt has considered these ecological values in determining a project design and a configuration of the site layout has been prepared that avoids impacts to native vegetation where possible while still retaining an efficient and functional configuration for the development.

Permitted clearing of native vegetation is assessed by the Biodiversity assessment guidelines (the Guidelines) / Guidelines for the removal, destruction or lopping of native vegetation Dec 2017. The purpose of the Guidelines is to guide how impacts to biodiversity should be considered when assessing a permit application to remove, destroy or lop native vegetation. The objective for the guidelines in Victoria is 'No net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation'.

As this project does not involve the removal of native vegetation (based on the current design), an assessment under the guidelines is not required.

The Biosis report also assesses the proposal against the requirements of the Flora and Fauna Guarantee Act 1988 (FFG Act), Catchment and Land Protection Act 1994 (CaLP Act), and the Environment Protection and Biodiversity Conservation Act 1999.

A copy of the assessment and advice from Biosis is provided at **Appendix H**.

3.3 Landscape Concept & Visual Assessment

A landscape and visual assessment report has been prepared which seeks to show the visual impact implications on viewers of the proposed development using the Pyrenees Highway and the local road network, as well as from residential properties within the viewshed of the solar farm. This report also describes the landscape design that responds to this setting.

A landscape plan has been developed to minimise the visual impacts of the proposal (in particular the arrays and the ancillary infrastructure) on adjacent landowners and from key view points along main roads.

Proposed planting within the site would consist of locally occurring species, with a particularly focus on using native species, including White Box, Blakely's Red-gum, River Red-gum Yellow Box, Grey Box and Buloke. The proposed landscape plan is at Appendix E, Xurban Landscape Plan.).

Vegetation would be planted within an approximately 20 metre wide buffer zone around the western and southern perimeter of the site in the vicinity of potentially impacted properties and key locations. Vegetation (i.e. trees) would be planted in three to 5 staggered rows. The position and selection of screening vegetation would ensure that the survival of vegetation is maximised.

The position of any screening vegetation would be confirmed during detailed design and following consultation with the relevant landowners.

Screening vegetation would be maintained for the life of the solar farm. This would include replacing any vegetation which does not survive.

Views from the Pyrenees Highway

The proposed solar farm is located adjacent to the Pyrenees Highway and for a while, before planting establishes, there will be some visual impact. But this is a highway that passes many forms of landscape, sheds and other constructions. The time that a viewer would be able to see the solar farm would be of short duration. Once landscaping was established, the solar farm would be largely screened from view, although filtered views through the trees may still be possible. Therefore, the level of visual impact from the Pyrenees Highway would be Low to Negligible.

Views from the local road network

Any views from the local road network are limited. A driver needs to be immediately adjacent to the solar farm on its western edge to obtain a view. These roads also have low usage and for these reasons the visual impact from the local road network is assessed as Negligible.

Views from residential properties

There appears to be only two dwellings that have a visual impact. Other dwellings are further removed and would be unable to see the proposed solar farm.

Only one dwelling has a panoramic view over the solar farm and that view would be partially mitigated once vegetation was established.

Therefore, the proposed solar farm is appropriately sited with an overall minimal visual impact. The landscape setting which is being established is consistent with the landscape of the Bald Hills area.

The proposed Visual Assessment Report and Landscape Plan is Shown in **Appendix E**.

3.4 Drainage Strategy

A flooding and drainage assessment has been undertaken by CAF Consulting. The report concluded that the site was suitable for the proposed use of the land for a solar farm. Recommendations have been made and have been adopted in relation to the layout and technical aspects of the design.

A full copy of the report is contained within **Appendix C**.

3.5 Glare Assessment

The scope of the Glare Assessment includes the following:

- Description of the methodology used to undertake the study;
- Description of the elements of the Project with the potential to influence glare including size, height, and angle of PV modules, and type and operation of the tracking system;
- Identification of the viewshed and potential visibility of the Project;
- Desktop mapping of potential glare at the location of sensitive receptors within the viewshed, based on Solar Glare Hazard Analysis and viewshed analysis,
- Assessment of the baseline conditions; and
- Assessment of the potential risk of glare on sensitive receptors during operation of the Project.

This assessment took into consideration the operation of the proposed Solar Farm during daylight hours throughout the year (Solar Glare Hazard Analysis Tool (SGHAT) modelling calculates the potential for glare at 1 minute intervals). SGHAT testing was undertaken for assumed sun energy

intensity of 2000 W/m², which is 2x the US Federal Aviation Administration modelling requirement standards. In addition as a conservative approach no allowance was made for atmospheric conditions.

In summary, based on the assumptions and parameters of this desktop assessment, the following results were identified:

- No glare potential was identified for surrounding existing rural dwellings and industrial complexes during normal operation of the solar farm, therefore the likely impact on these sensitive receptors within the viewshed was identified as insignificant;
- No glare potential was identified for the Pyrenees Highway during normal operation of the solar farm;
- No glare potential was identified for the surrounding roads during normal operation of the solar farm;
- Operation of a backtracking process up to an angle of 30 degrees was tested in the modelling with no increase in glare potential;
- Reverting or 'resting' the solar panels in a horizontal position (resting angle of 0 degrees) during the early morning and late afternoon resulted in the model identifying increased angles of incidence of the sun relative to the panels causing potential glare affecting minor roads (Bald Hill and Donovans Road) to the west of the Project;
- The proposed landscape screen planting on the western boundary will mitigate this glare potential.
- To avoid potential glare impacts prior to the establishment of the screen planting, the solar farm should be operated within the recommended parameters of this study, these parameters are:
 - Operation of a single axis tracking system with a maximum rotation of 60 degrees and a resting angle of 60 degrees.
 - Backtracking procedures to operate within normal parameters to maintain low angles of incidence relative to the sun.
 - Avoid 'resting' PV modules at 0 degrees, horizontal to the ground, notably during the early morning due to potential increase in glare as identified in the modelling.

A full copy of the report is contained within **Appendix I**.

3.6 Economic Impact Assessment

Essential Economics have completed an Economic Impact Assessment report to review the potential economic benefits of the proposal. This report is contained within Appendix K. The report notes that:

- The project will involve an investment of over \$100 million
- Will provide jobs in the construction and ongoing phase.
- Workers on the project will also inject over \$400,000 into the local economy in the construction phase.
- The project will reduce CO₂ emissions by approximately 168,000 tonnes per year.

4 PROPOSED SUBDIVISION AND ASSOCIATED WORKS

4.1 Proposed Development

Development summary

Initial Construction information for proposed 90 MW Solar Park

During the construction phase of the proposal there may be upwards of 240 workers at the site and it is anticipated that the construction phase will last up to approximately 7 to 9 months. At peak periods up to 160 heavy vehicle movements per week (return trips count as 2). A maximum number of 220 light vehicles per day would be required.

Development Summary

- **Number of construction workers:** Up to 240 during peak construction periods
- **Construction Period:** 7 – 9 months
- **No of construction vehicles:** At peak periods up to 160 heavy vehicle movements per week (return trips count as 2). A maximum number of 220 light vehicles per day would be required.
- **No of permanent car parking spaces:** 4
- **Size of temp construction compound and O&M building:** 30,000m².
- **No of Full time employees for maintenance:** 5

The proposed solar farm contains the following built elements:

Solar panels and associated framework

The proposed Solar Farm will consist of an arrangement of photovoltaic (PV) panels placed on galvanised steel piles that will be either driven or screwed in to the ground. This construction technique is proposed to limit the disturbance to the site.

The final location for the placement of the panels within the site is yet to be determined at this early stage of the project, although an indicative layout has been provided in the Site Development Plan in support of the application.

The panels proposed are to be single-axis tracking which tilt to follow the sun as its tracks from east to west throughout the day.

The maximum height of the panels, when erected will not exceed approximately 4.0m above the natural ground level. This height provides ready access to the panels for maintenance. It will also allow for sufficient light under the panels to facilitate the continued growth of the understorey/grasses to assist with the management of storm water, dust and prevent erosion.

The rows of the arrays will also be separated according to the topographical features of the site, but it is expected that each row of panels could be located at least 4 metres apart.

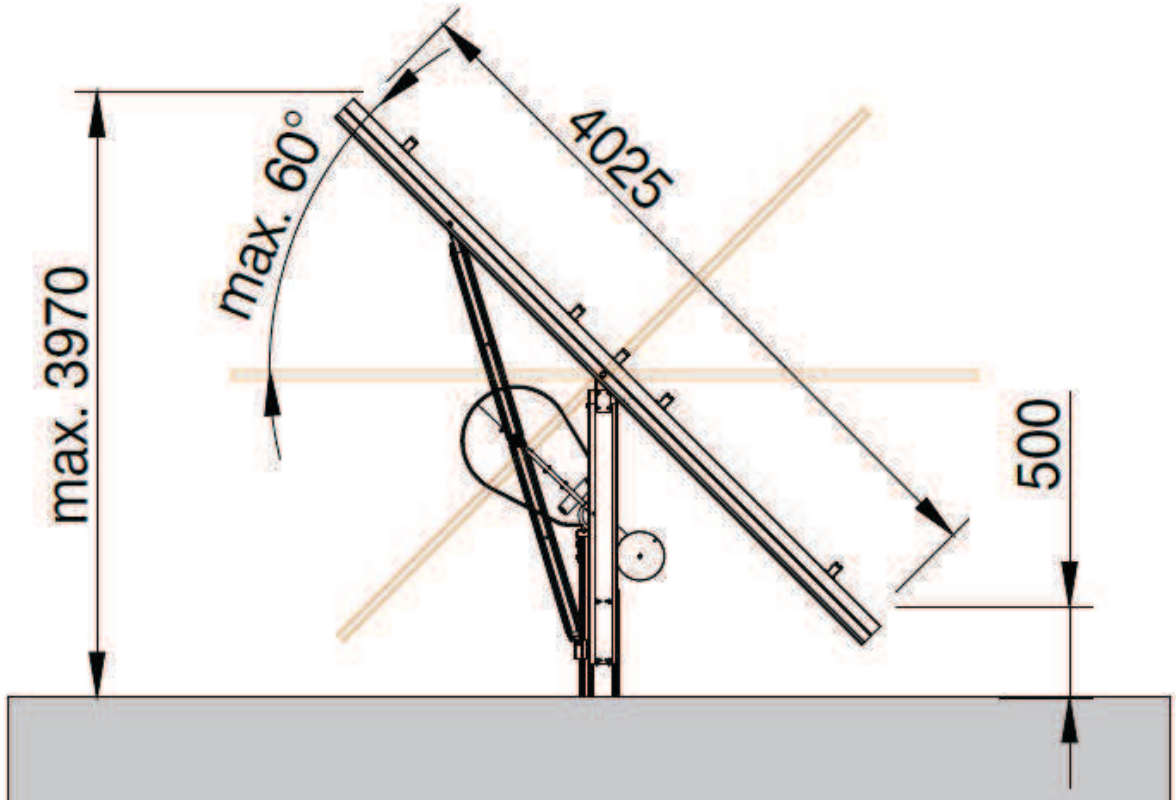


Figure 12 – Typical Panel Section



Figure 13: Example of Single Axis Solar PV Arrays



Figure 14: Example of Solar PV Arrays

Inverterstation / Transformer/ Battery Storage

The inverters which convert the energy generated by the solar panel into alternating current (AC) for input into the electrical grid, will be contained in shipping containers. The units will be approximately 12 metres in length, 2.5 metres in width and 2.6 metres in height. Up to twenty seven such containers will be located throughout the site, as identified on the plans provided with the planning permit application.

Next to the inverters will be another unit, which also resembles a shipping container which will contain proposed battery packs and DC/DC converters. The battery units will add flexibility to the solar farm in terms of the way it manages the timing of power distribution. The battery container and DC/DC Converter housing will be approximately 16.192m long and 2.438m wide and will have a height of 2.591m. There will also be up to twenty seven of these units at the site.

A copy of the inverter plan and battery storage plan is located in Appendix D.

The substation will be located in the north west corner of the development and will be located adjacent to the proposed connection point.

The site is proposed to be connected to the grid via the adjacent BETS - MRO 66 kV POWERLINE located in Bald Hill Road, along the north western boundary of the site.

It is anticipated the solar farm will interconnect directly into this infrastructure.

Powercor is the electrical distributor for this area.

The BETS-MRO 66 kV sub transmission lineruns for approx. 65 km between the Maryborough Zone Substation and the Bendigo Terminal Station.

A Construction Compound and Site Office

The construction compound is proposed to be located in the south east corner of the development area and will occupy an area of approximately 30,000m². The area will include a small site office and will also provide a car parking area for 4 vehicles.

Roads Layout, Access and Mobility

Construction access for the site will be from the Pyrenees Highway for the majority of the equipment for the site. A secondary access point will be via Ball Hill Road which will allow for the delivery and construction of the Switching Station and the works associated with the point of connection.

The Pyrenees Highway is zoned as a Road Zone Category 1. Plans have been prepared which show the layout and anticipated design of the proposed access from the Pyrenees Highway. These plans are shown in **Appendix J** and show both left and right turn entry and exit movements.

Internal Access roads will be constructed throughout the site to enable access to the solar panel arrays for maintenance access. These internal roads will typically be 4m - 6m in width.

Access to the site is shown in Figure 15 following.



Figure 15: Road Network Plan

Connection to the Existing Power Grid

The site has access to the power grid via the adjacent BETS - MRO 66 kV POWERLINE located in the Bald Hill Road road reserve.

It is anticipated the solar farm will interconnect directly into this infrastructure.

Powercor is the electrical distributor for this area.

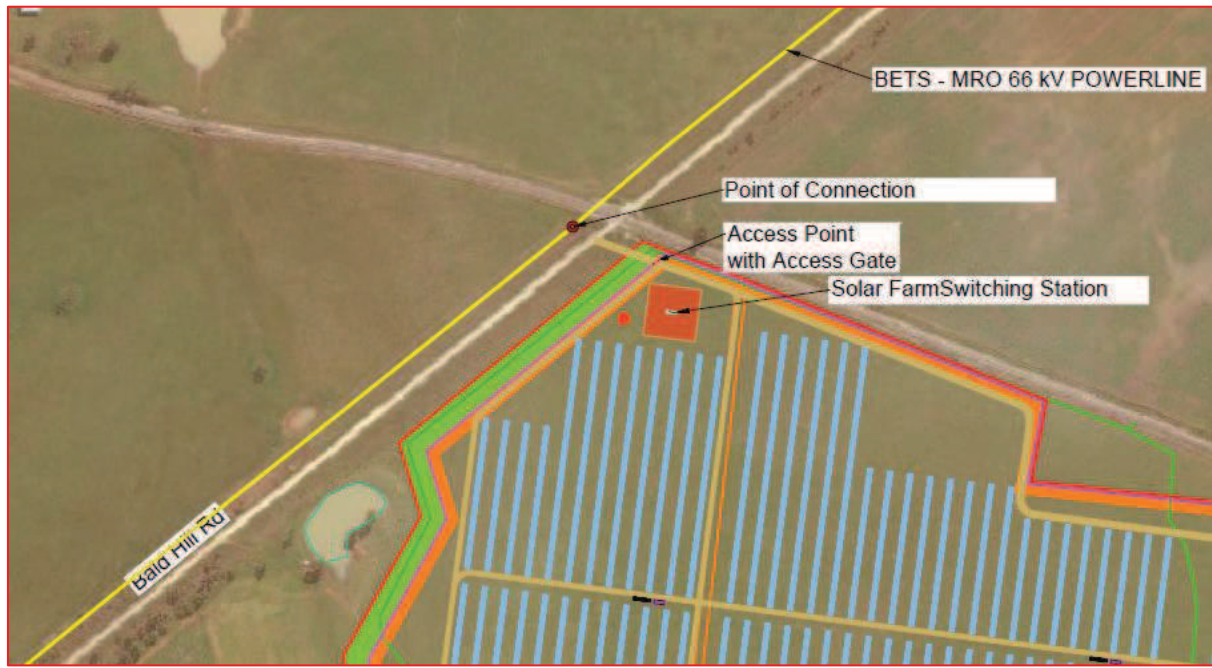


Figure 15: Proposed Connection to the Power Grid

Native Vegetation

The primary measure to reduce impacts to biodiversity values within the study area is to avoid and minimise removal of native vegetation and terrestrial and aquatic habitat.

Figure 16 shows the Ecological Vegetation Classes and also shows, scattered trees and potential habitat for the Striped Legless Lizard.

The results of the assessment have been incorporated into the project design, by adding the mapped flora and fauna areas into the design layout so that these areas are avoided, which ensures that the mapped vegetation/habitats are retained. A copy of the Flora and Fauna assessment by Biosis is contained in Appendix G.

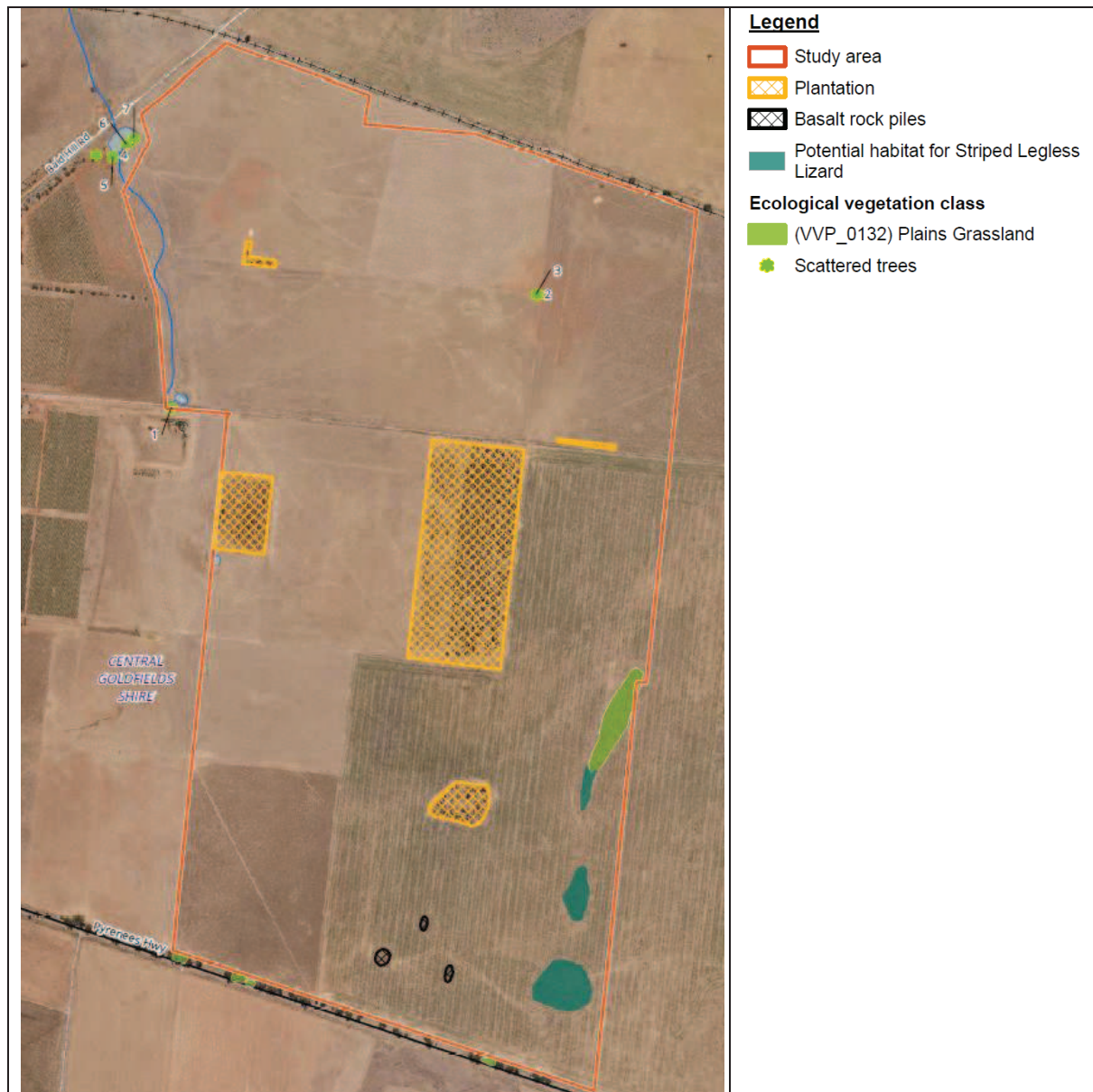


Figure 16: Native Vegetation at the site

Landscaping Buffers

Three strategically located 20m wide landscape buffers are proposed for the site. The first will be located along the southern boundary of the site fronting the Pyrenees Highway. The other two buffers are proposed along the western boundary.

The southern buffer will help screen the proposed development from views from the Pyrenees Highway, while the western buffers will assist in screening the proposal from those dwellings near the intersection of Bald Hill and Donovans Road, and the dwelling on the west of Bald Hill Road.

The landscape buffers have been recommended as a result of the Visual and Landscape Assessment undertaken for this project. A copy of the report is contained in Appendix E.

Perimeter Security Fencing

The site will be securely fenced, with a chain mesh fence of 2 metres in height to be located on the panel side of the landscape buffer. The fence will sit 0.2 metres off the ground to allow for the passage of water during a heavy rain or flood event. Details of the proposed fence are contained with **Appendix D**.

4.2 Environmental Management

A Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan (OEMP) will be prepared in accordance with relevant planning permit conditions. The design phase includes all requirements for infrastructure, services and construction works, such as roads, drainage and services (including any cables). All areas of vegetation/habitat nominated in the design plan as 'retained' will be treated as no-go zones and are not to be encroached upon as development progresses.

Noise

The proposal has the potential to generate noise throughout the construction period. Any noise impacts are considered minor in nature and temporary, as any impacts relating to noise will be limited to the seven to nine-month construction period.

Once operational the proposed development will generate low levels of noise and is unlikely to have an adverse impact on neighbouring properties.

Glint and Glare

The PV panels are designed to absorb light to maximise their input, rather than reflect it. Whilst the array will be visible it is not expected to generate significant glare concerns. Additionally, the galvanised steel supports generally oxidise over a period of time and become 'dull' in appearance.

The recommendations of the Glare Assessment report will also be incorporated into the CEMP documentation.

EMI (Electromagnetic Interference)

All electrical infrastructure for the proposed project will be designed and constructed to the required standards and specifications to ensure that the project is unlikely to cause electromagnetic interference on the proposed site and neighbouring properties.

5 PLANNING CONTROLS AND ASSESSMENT

The subject site is located within the Central Goldfields Shire Council and is subject to the provisions of the Central Goldfields Planning Scheme. This section outlines relevant policy and planning controls and makes an assessment of the proposed renewable energy facility and associated works.

5.1 State and Local Planning Policy

Table 2 sets out the relevant planning policy and controls set out within the Central Goldfields Planning Scheme and incorporated documents. These have been considered throughout the design of the development concept and following the table is a discussion on compliance.

Table 2: Applicable Planning Provisions

| | |
|---|---|
| State Planning Policy Framework (SPPF) | Clause 11.01-1S Settlement Clause 12.01 Biodiversity Clause 13.03 Floodplains Clause 15.02 Sustainable Development Clause 15.03 Heritage Clause 17 Economic Development Clause 19.01 Renewable energy |
| Local Planning Policy Framework (LPPF) | Clause 21.08 Agricultural Productivity Clause 22.04 Agriculture |

State Planning Policy Framework

The solar farm development of land is consistent with the State and Local planning policies. In particular, the solar farm will provide a renewable source of electricity to the region. The proposed development will create approximately 240 jobs during construction phase.

Once operational, 5 direct and 15 indirect jobs will be supported by the facility. Ib vogt estimates that the proposal will contribute to the local economy through employment, sourcing of local materials for construction and maintenance.

Clause 11.01-1S Settlement has the objective:

- To promote the sustainable growth and development of Victoria and deliver choice and opportunity for all Victorians through a network of settlements.

Clause 11.01-1S also references the Loddon Mallee South Regional Growth Plan (Victorian Government, 2014) which is listed as a background document at clause 72.08 of the planning scheme.

Under the heading Strengthen and diversify our economy it make the following comment in relation to renewable energy:

- Support and develop emerging and potential growth sectors such as tourism, renewable energy, resource recovery and other green industries.
- Enable residents to work and participate in the region by continuing to expand the region's diverse economy.

When specifically referring to energy in section 14.1 Water, energy and utilities the growth plan notes

- The traditional electricity network is capable of accommodating projected growth for the region. There are significant opportunities to produce energy through alternative methods, such as renewable energy and supplies from biomass (refer to Section 11.2 Working in the Loddon Mallee South region). Initiatives to support energy generation in the region should be pursued, such as agreeing on a target for regional energy generation.

The proposal will meet the objective of supporting a more diverse economy by expanding the presence of renewable energy providers.

Clause 12 Environmental and Landscape Values

The proposal has considered and appropriately responded to the environmental conditions of the site, allowing for appropriate drainage and tree reserve areas and minimising impact on biodiversity, where these latter values are limited through previous agricultural use of the land.

Clause 13 Environmental Risks

The proposal ensures that the development incorporates appropriate design principles to minimise amenity impacts, environmental degradation and the impact of hazards.

The proposal will facilitate an integrated drainage strategy which minimises the risks of flooding within the catchment. (Appendix F).

The site is located within a Designated Bushfire Prone Area, where special bushfire construction requirements apply. These requirements will be addressed during the construction phase and addressed as part of the construction management plan.

Clause 14 Natural Resource Management

The proposed development will result in the temporary loss of agricultural land. However, the subject land is not considered to be of strategic significant in the local or regional context.

Clause 15 Built Environment and Heritage

A Cultural Heritage assessment has been undertaken and the proposal will not be constructed within an area of Cultural Heritage Sensitivity.

Clause 15.2 also encourages improved efficiency in energy use through greater use of renewable energy.

Clause 19 Infrastructure

Clause 19.01-1 Provision of renewable energy details a number of strategies regarding renewable energy development.

This policy states that in considering proposals for renewable energy, consideration should be given to the economic and environmental benefits to the broader community of renewable energy generation while also considering the need to minimise the effects of a proposal on the local community and environment. We contend that there are good benefits for the broader community while amenity effects on the immediate and local community are minimal.

Having regard to the above, it is considered that the proposed subdivision appropriately responds to and achieves the intent of the SPPF.

Municipal Strategic Statement

Council's Municipal Strategic Statement (MSS) deals in detail with ensuring that development within the Shire of Central Goldfields achieves Council's long term land use aspirations. It explains Council's key planning objectives and shows how these will be used to evaluate and assess all applications for the use and development of land. The MSS provides strategic direction for various land use units and activity areas in the Shire taking into consideration a range of existing local, regional state and federal policies.

The MSS and LPPF do not specifically discuss renewable energy however renewable energy is discussed in the Central Goldfields Shire Council Plan 2017-2021, which has a strategic objective to support a thriving economy by seeking to:

- Remain cognizant of the Central Goldfields 2012–2020 Sustainability Plan and greenhouse gas targets

The Central Goldfields 2012–2020 Sustainability Plan also established targets for locally generated stand alone renewable energy to be established within the shire. The realisation of this proposal will help meet those targets.

5.2 Zones and Overlays

The subject site is zoned Farming Zone.

The purposes of the FZ, as set out in Clause 35.07, are:

- *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 table of uses in Clause 35.07-1 shows that Renewable energy facility is a Section 2 use for which a permit is required.

Clause 35.07-6 sets out decision guidelines for applications in the FZ. The following are of relevance when assessing the subject application:

- *Whether the site is suitable for the use or development and whether the proposal is compatible with adjoining and nearby land uses.*
- *Whether the use or development will adversely affect soil quality or permanently remove land from agricultural production.*
- *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 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.*



Figure 18 – Zoning Plan

The purpose of the farming zone as well as clauses 21.08 and 22.04 highlight the importance of the maintenance of productive agricultural land in the farming zone. The Economic Impact Assessment by Essential Economics (Appendix K) note the following in relation to the temporary loss of agricultural land:

Approximately 300ha of productive agricultural land (cropping and grazing) will temporarily be lost to accommodate the solar farm. However, this represents only 0.02% of all productive farming land supply in the North Central NRM Region with the proponent looking to continue grazing on the site, under and around the solar structure potentially reducing the amount of land lost to the Project. Importantly, the host landowners will improve their annual incomes, as operator payments will be greater than existing farm incomes from these landholdings and the land can be returned to farming activities at the end of the solar farms lifecycle.

On balance, we contend that the benefits of the provision of renewable energy far outweigh any temporary loss of land for agriculture. We also suggest that the proposal will have no impact on the operation of agricultural activities of adjoining agricultural land.

Schedule 1 to the farming zoning also specifies a setback from a road in a Road Zone Category 1. The subject application the southern boundary of the application area adjoins the Pyrenees Highway, which is a Road Zone Category 1 road. Figure 18a shows that part of the solar farm infrastructure is closer than 100m from the road zone. At its closest, the infrastructure will be approximately 33m from the road. We contend that this encroachment is reasonable as it only accounts for approximately 25% of the frontage and for that part that does encroach, it does so at a varying offset. There is also a proposed 20m landscape buffer which will mitigate any visual impact. The anticipated visual impact is also discussed in the visual impact assessment in Appendix E.

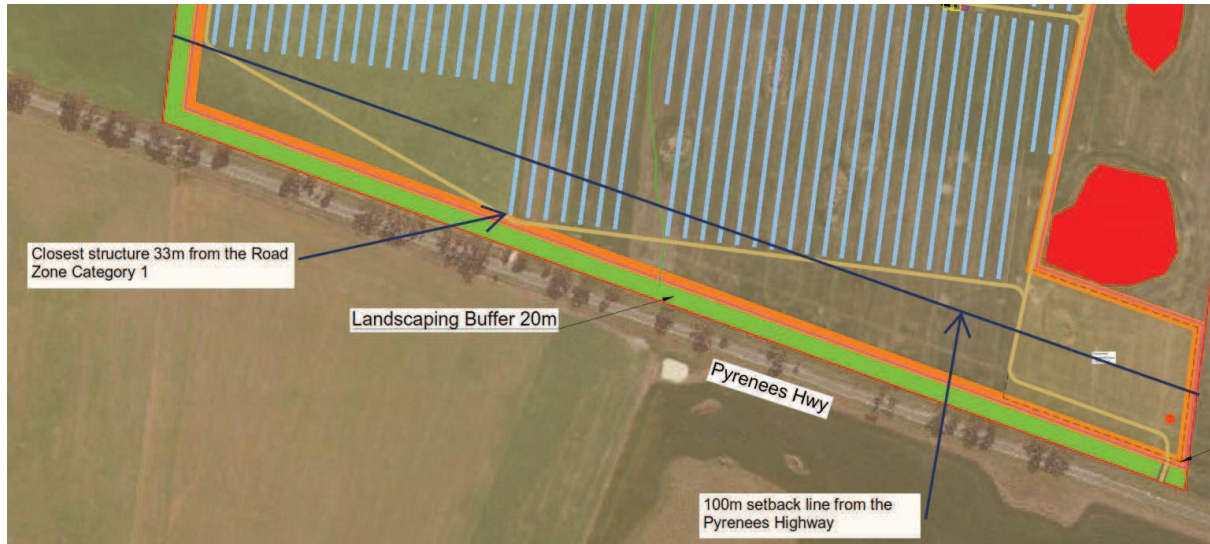


Figure 18a – Zoning Plan

The land is subject to the following overlays:

- Erosion Management Overlay

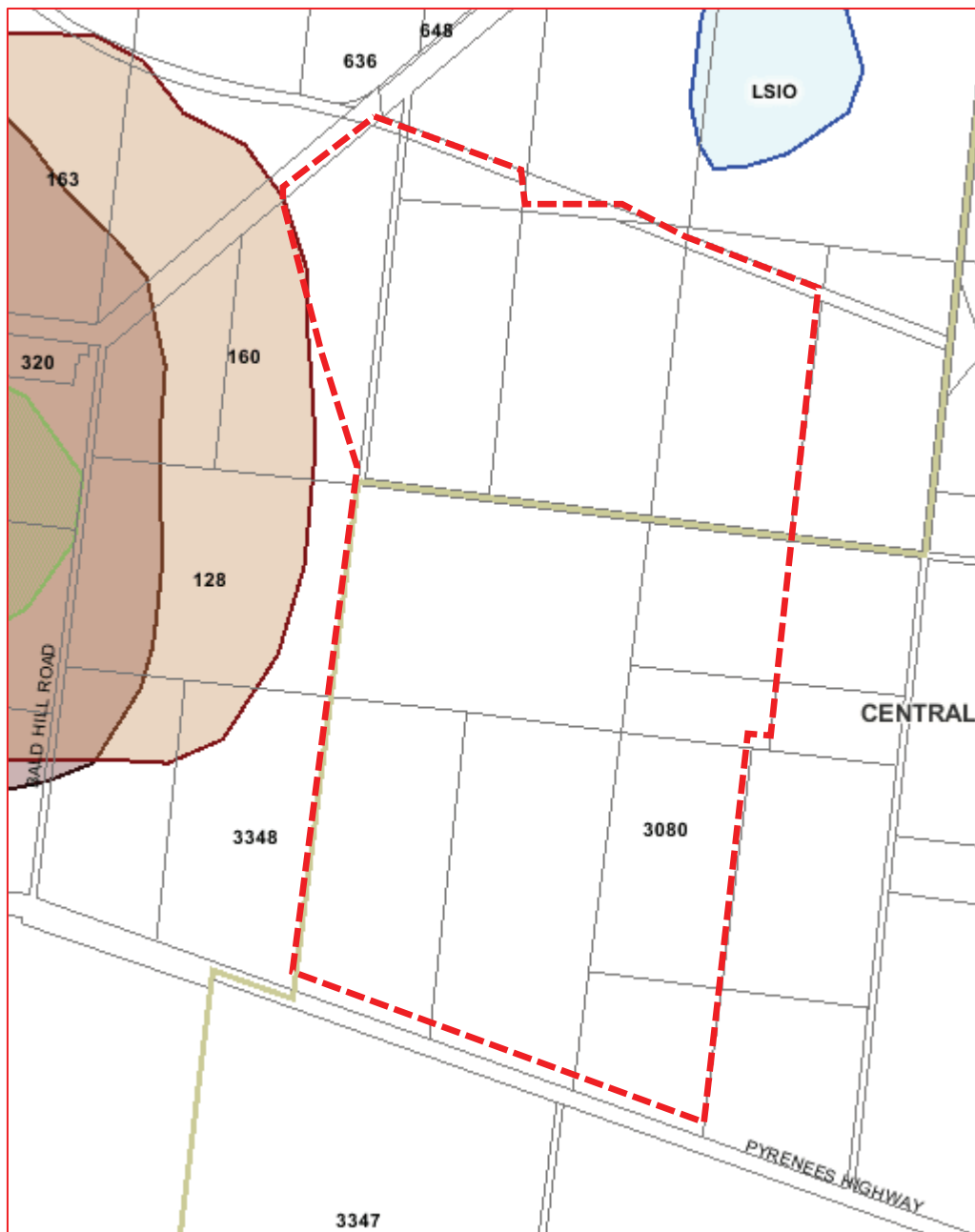


Figure 19: - Overlay Plan

Only one title in the proposed development is subject to the Erosion Management Overlay. Clause 44.1 indicates that the purposes of the overlay is:

- To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies. To protect areas prone to erosion, landslip or other land degradation processes, by minimising land disturbance and inappropriate development.

Clause 44.01 states that a permit is required to construct a building or carry out works in the EMO.

We note that only a very small portion of the proposed development will be located in the area subject to the Erosion Management Overlay and that a 20m landscaping buffer is proposed in this area. The provision of the 20m wide landscaping buffer in this area will assist in stabilising the land.

5.3 Particular Provisions

Clause 53.13 Renewable Energy Facility (Other Than Wind Energy Facility And Geothermal Energy Extraction)

A renewable Energy Facility is a Section 2 use in the Farming Zone and a planning permit is required for development and use. There is also a condition that any application for a Renewable Energy Facility meets the requirements of Clause 53.13.

Clause 53.13 nominates locational criteria and condition requirements. The proposed solar farm meets all locational criteria and conditions.

Clause 53.13-2

Site and Context Analysis

See **Appendix B**, the site is located approximately 3.5km from Carisbrook which is the closest local centre, while the closest regional centre is Maryborough which is approximately 10km away.

Design Response

| Design Response Assessment | |
|--|--|
| 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. | Note development plans contained within Appendix D which details the requirement for detaining the respective components of the proposal. |
| Accurate visual simulations illustrating the development in the context of the surrounding area and from key public view points. | Figures 13 and 14 show photographs of an operations solar farm completed by Ib vogt. Photomontages are also presented in the Visual Impact Assessment report contained within appendix E. |
| The extent of vegetation removal and a rehabilitation plan for the site. | The proposed layout of the solar farm have avoided areas of native vegetation such that no native vegetation is proposed to be removed as part of this application. A rehabilitation can be provided as a condition of permit. |
| | |

Design Response Assessment

| | |
|--|--|
| <p>An assessment of:</p> <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • Amenity impact have been discussed in the body of this report. Amenity impact have been assessed as being minor. Proposed landscape buffer strips will assist in minimising any potential visual impact. • A specialist report into the potential for glare has also been provided which states that glare will not have significant amenity impacts for existing surrounding dwellings. • Outside the construction period, traffic impacts will be minimal. The Construction Management Plan will contain directives with regard to traffic management which will minimise any construction traffic issues. • Aboriginal Cultural Heritage is discussed in the report by Tardis Advisors and conclude the Aboriginal Cultural heritage will not be impacted. |
| <p>A statement of why the site is suitable for a renewable energy facility including, a calculation of the greenhouse benefits.</p> | <p>The site is suitable for renewable energy generation as it is located close to existing electrical infrastructure, is locate outside of overlay areas in the planning scheme which highlight environmental or visual sensitivity, and the topography of the land is conducive to the development.</p> <p>Once fully-operational, the Carisbrook Solar Farm will result in the reduction of an estimated 168,500 tonnes in carbon dioxide (CO₂) emissions on an annual basis compared to the same level of electricity generation using fossil fuels.</p> |
| <p>An environmental management plan including, a construction management plan, any rehabilitation and monitoring.</p> | <p>An environmental management plan can be provided a part of any planning permit conditions which may issue.</p> |

Clause 52.17 Native Vegetation

Clause 52.17 states that the purposes of this Particular Provision is to:

- *Avoid the removal of native vegetation that makes a significant contribution to Victoria's biodiversity.*
- *Minimise impacts on Victoria's biodiversity from the removal of native vegetation.*
- *Where native vegetation is permitted to be removed, ensure that an offset is provided in a manner that makes a contribution to Victoria's biodiversity that is equivalent to the contribution made by the native vegetation to be removed.*

Clause 52.17-2 states that a planning permit is required for the removal of Native Vegetation. As noted in section 3.2 an assessment has been carried out by Biosis which assesses both the existing conditions and the requirement for the removal of any native vegetation.

The proposal avoids the removal of native vegetation with the design layout avoiding scattered trees, patches of native vegetation and potential habitat areas for native fauna.

Particular Provisions – Clause 52.29 Land Adjacent to a Road Zone Category 1

The proposal proposes to create a new access point to the Pyrenees Highway which is a road in Road Zone Category 1 under the Central Goldfields Planning Scheme.

Appendix J shows that proposed access to the highway. Preliminary discussions have also been had with VicRoads in relation to the proposed access.

The proposed location is considered the most efficient access location in light of topography and available lines of site and its relationship to the existing road network. After the main construction period, it is anticipated that there will be negligible traffic movement from the access point and that volumes will be similar to other rural uses in the area.

6 CONCLUSION

The proposed development of a Renewable Energy Facility (Solar Farm) at the subject site positively responds to the requirements of the Central Goldfields Planning Scheme and associated incorporated documents.

The proposal will contribute the achievement of renewable energy targets at both the State and Federal Government Level.

The Project has the capacity to supply sufficient clean energy to power approximately 44,000 homes and in the process reduce CO₂ emissions by 168,000 tonnes per year.

The specialist reports conducted that the proposal meets the key criteria in relation to:

- Cultural Heritage;
- Drainage
- Flora and Fauna;
- Glare Assessment, and
- Local amenity considerations.

The subject application will:

- give effect to the objectives of planning in Victoria and the State Planning Policy Framework and Local Planning Policy Framework;
- Provide economic stimulus for the local economy during the construction phase and provide some on-going jobs during the operational life of the proposal
- meet Victorian governments commitments regarding renewable energy; and
- not result in any significant effects on the environment and will not create any significant amenity or social impact.

Having regard to all of the above, and to the detail provided in this application and to the various expert reports provided, it is our opinion and the proposed development of a Renewable Energy Facility (Solar Farm) satisfies the requirements of the Central Goldfields Planning Scheme and associated incorporated documents. It also supports both the State and Federal Governments Renewable Energy Targets, while adding investment into Central Goldfields Shire producing local jobs and helping to diversify the economy.

For the reasons outlined above and detailed throughout the report it is respectfully requested that a planning permit be issued to allow for the land to be used for a Renewable Energy Facility (Solar Farm).

BEVERIDGE WILLIAMS & CO PTY LTD.

August 2018