

ADVERTISED PLAN

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PTY LTD

Planning Report

**5MW Solar Energy Facility
574 Hendys Road, Numurkah**



Image: Green Gold Project, SA

November 2020

Ref: 19225; Rev. 3

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5MW Solar Energy Facility 574 Hendys Road, Numurkah

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1 Introduction

This report has been prepared by Chris Smith and Associates for Green Gold Energy Pty. Ltd. – referred to herein as “Green Gold”. The proposal is for a 15.7 hectare solar energy facility on a 21.68 parcel of land at 574 Hendys Road, Numurkah, and the ancillary power lines within the adjacent road reserve.

The facility is considerably smaller than the larger facilities that have been approved in the Numurkah region. Green Gold’s proposed facility is designed to provide approximately 5MW (megawatts) of electricity to the local distribution network. To generate this electricity, the proposal would occupy approximately 15.7 hectares of land. Landscaping is to be provided along all active interfaces with neighbouring properties and road frontages.

The subject site, that is located approximately 2.9km north-east of Numurkah, has been selected based on its 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
- Pre-Permit Preliminary Assessment – Solar Farms in Irrigation Districts, obtained from Goulburn-Murray Water
- CFA Guidelines for Renewable Energy Installations, February 2019
- Moira Planning Scheme
- Greater Shepparton Solar Farm Planning Panel Report, May 2018

The site and proposal assessments, plans and documents produced to inform and support this application are:

- Certificate of Title Vol. 11115; Fol. 624
- Site Location Plan, Revision B, by Green Gold Energy
- Site Plan, Revision L, by Green Gold Energy (both with and without aerial photo underlay)
- Electrical Equipment Elevations and Network Connection Elevation Plan by Green Gold Energy
- Dynamic Mechanic Layout, Revision A, by Voyager Tracker
- Landscape Plan by Chris Smith & Assoc.
- Voyager Tracker Design information sheet, by FTC Solar
- Site Feasibility Report, by Green Gold Energy
- Construction Environmental Management Plan, by Green Gold Energy
- Photomontage, by Chris Smith & Assoc.
- Vegetation Site Assessment by Chris Smith & Assoc.
- Flood Risk Report by Chris Smith & Assoc

- Feature & Level Survey, by Onleys
- Pre-Permit Application for Preliminary Assessment – Solar Farm in Irrigation Districts, from Goulburn-Murray Water
- Agricultural Assessment, by Cadeema
- Glint and Glare Assessment by Environmental Ethos
- Noise Impact Assessment by ADP Consulting

2 Green Gold Energy Company Profile

Green Gold is a South Australian-based company that takes a collaborative approach to renewable energy. Green Gold seek to partner with landowners to identify land that balances the farmer's needs and the requirements for electricity generation for all solar energy facilities.

Green Gold's core business is centred around parcels of land that are typically no larger than 16 hectares (40 acres) that can support commercially viable Solar Energy Facilities with the necessary investment and infrastructure.

These solar energy facility projects are designed to export generated energy into the grid, enabling it to be sold on the National Electricity Market using the latest state-of-the-art PV technologies to ensure the most efficient, reliable power generation.

Green Gold projects deliver:

- Long-term, secure supplementary income to landowners
- Access to the Australian renewable energy market to investors and shareholders
- Sustainable returns for investors

These projects also bring significant benefits to the regional communities they are located in by creating jobs, providing local economies with the assets to improve energy infrastructure, and creating stronger, more sustainable communities.

The Green Gold executive team has commissioned more than 50 solar energy facilities in South Australia. Green Gold state: "We are proud of the role we're playing in powering our region's green energy transition".¹

3 Site Selection & Pre-application Process

The decision by Green Gold Energy to expand into providing solar energy facilities in northern Victoria was based on a sound business model, including consideration of the region's solar access, its trunk electricity network infrastructure and the region's desire for clean, efficient and affordable electricity. The Goulburn / Murray Valley region is largely flat and open with very little or no environmental constraints such as rock, terrain or native vegetation.

¹ <https://greengoldenergy.com.au/about/>

The subject site was secured by Green Gold Energy because it held the above mentioned conducive attributes, is directly adjacent to 22kV powerlines and has a willing owner – who was looking to divest the land as he could no longer viably farm the land.

The due diligence and site selection process undertaken by Green Gold is set out in its **Site Feasibility Report**, attached herewith.

Once it was determined that the site had the required physical and electricity network attributes – a flat open site, adjacent powerlines that have the capacity to accept electricity generated by the facility that can feed into the nearby Numurkah substation for use by the Numurkah community – an option to purchase the site was entered into and Chris Smith & Associates were engaged to carry out a rigorous pre-application investigation. This included the following three phase investigation and assessment process:

Phase 1: Initial investigation:

- Desk-top planning investigation to determine planning controls applying
- Liaison with Goulburn-Murray Water; utilising its 2 Stage Pre-permit application process², consisting of:
 - Stage 1 - Pre-Permit Application Information – Solar Farms in Irrigation Districts
 - Stage 2 – Pre-Permit Application for Preliminary Assessment – Solar Farm in Irrigation Districts (see attached written advice from G-MW)
- Discussion with Cadeema – a local agricultural consultancy with extensive knowledge of farming, land and water constraints in the Goulburn-Murray Irrigation District (GMID).
- Pre-application meeting with DELWP Renewables Development Approvals and Water officers on 27 February 2020, and a number of follow-up telephone conversations.

Phase 2: Detailed investigation:

- Engage Onleys Irrigation surveyors to carry out a Site Survey and Feature Plan of the subject land.
- Engage Cadeema to carry out an Agricultural Assessment of the agricultural and irrigation utility of the site and provide independent professional opinion of the likely impacts of the proposal on the irrigation district.
- Detailed planning assessment
- Meeting with Goulburn Broken Catchment Management Floodplain Manager, who verbally confirmed that the flooding to the eastern portion of the site should not cause undue impact on the proposed facility and there was no concern that the proposed facility would have undue impact on the flood storage or flood conveyance capacity of the land.

Phase 3: Concept design & specialist assessments:

² See: <https://www.g-mwater.com.au/water-resources/statutory-planning/solar-farms>

- Engage ADP Consulting and Vipac³ to carry out a Noise Impact Assessment and Glint and Glare Assessment (respectively) to determine if likely impacts caused by the proposal were within acceptable limits
- Refine solar facility layout and design, based on the recommendations of these investigations and assessments.

Our site and planning investigations confirmed the subject site's suitability, including being well clear of any areas of potential cultural heritage sensitivity. Accordingly, it is submitted that a detailed and balanced approach to all relevant site and planning considerations has been undertaken to provide a sound planning proposal, as set out in this report and supporting documents.

4 The Goulburn Murray Irrigation District

The competing objectives of planning that seek to balance the retention of agricultural land as well as facilitation of the transition to a renewable energy economy have been the subject of extensive precedent and discussion.

The central point of reference remains the Greater Shepparton Solar Farm Panel – which was commissioned by the Minister for Planning in mid-2018 to consider and weigh the merits of renewable energy within declared irrigation districts – notably the potential for loss of agricultural land, including adverse impact on the utility of surrounding land for ongoing agricultural use.

The Panel recommended a planning permit be issued for all four of the applications referred to it. The Panel also concluded *“that the Victorian Government should consider preparing relevant guidelines to assist with the preparation, assessment and decision of future permit applications proposing a solar energy facility.”* Subsequently, a dedicated provision (Clause 14.02-3S) was incorporated into all Victorian Planning Schemes, with the objective *“To plan and manage for sustainable change within irrigation districts declared under Part 6A of the Water Act 1989”*. The provision sets out five key Strategies to achieve the objective, as follows:

- ***Identify and plan for the future needs of communities to adapt and adjust to land use change within an irrigation district.***
- ***Protect agricultural land serviced by irrigation infrastructure to ensure the future viability of an irrigation district.***
- ***Ensure non-agricultural land use does not undermine the integrity of irrigation infrastructure and complements existing and future agricultural production.***
- ***Ensure land use change within an irrigation district does not negate the potential opportunities for a rural water corporation to make adjustments to the footprint of an irrigation district that are identified under an approved plan or strategy.***
- ***Ensure land use change does not limit the ability of future investment in irrigation infrastructure that achieves the intended benefits of minimising water loss, and improved irrigation service efficiency to the farm gate and overall agricultural production.***

³ A subsequent Glint and Glare Assessment was carried out by Environmental Ethos, to address specific matters raised by DELWP. The application now relies on the assessment by Environmental Ethos

As part of the site selection and suitability analysis, Cadeema - a qualified agricultural and environmental consultancy was engaged to undertake an assessment of the site relative to agricultural land within the Goulburn Murray Irrigation District (GMID). In completing the assessment of the site and weighing it against the strategies for land use within the GMID, the subject site was considered consistent with the five key strategies for planning within declared irrigation districts.

The site was formerly part of a larger property which was used for a dairy farm by the same owner for the past 18 years – Mr Carlo Sortino. The farmer advised that the subject land was used for dryland grazing or was ‘shoulder’ irrigated to boost winter fodder crops. The property’s irrigation water use was focussed on the adjoining land (Lot 1), which was also where most of the on-farm modernisation work was carried out.

The pre-existing property is connected to the G-MW No. 6/6 channel to the west. This is a backbone channel that also services eighteen downstream customers, including Goulburn Valley Water (the urban water authority) who purchase irrigation water, treat it and then supply potable water to Numurkah township - an urban population of approximately 5,000 people. We submit that the water supply to the Sortino property has little bearing on the viability of the 6/6/channel, as its delivery share is quite minute in terms of the total delivery capacity of the channel.

Notwithstanding this, the pre-existing property’s delivery share has been retained by Sortino, for use on Lot 1. The subject land is being sold to Green Gold with no delivery share or water-use allocation. Accordingly, the proposed use and development will not impact the viability of the district through the incremental loss of irrigated farmland as the water rights are not being ‘lost’, rather, they are being “retained”. The full allocation and delivery share will be used to irrigate the remaining Lot 1 in a consolidated and more intensive manner. Also, as there is to be no reduction in delivery share or water-use licence, there will be no loss of revenue to G-MW, who will continue to be paid the same annual fees.

G-MW’s pre-permit advice includes - in response to potential impacts to the viability of the irrigation district: *“By limiting the solar farm development to Lot 2 and retaining the balance of the land for irrigation, the service point in question will continue to be utilised and GMW’s investment in modernised irrigation infrastructure for the ongoing viability of the irrigation district will continue to (be) realised. However, for this to occur, lot 1 requires physical and legal access to water via lot 2. Should lot 2 be transferred to new ownership, an easement in favour of lot 1 would need to be created.”*

The transfer of Lot 2 to Green Gold includes the granting of an easement in favour of Lot 2 from the existing private pipe on the western boundary of Lot 2 along the western and northern boundaries of Lot 2 to provide Lot 1 with continuity of supply. This easement will be Registered on Lot 2 upon transfer to Green Gold.

The central tenet of planning discussion is around the promotion of a transition to a renewable economy whilst also upholding the integrity of declared irrigation districts. The crux of this consideration centres around the designation of land as ‘significant agricultural land’ and what constitutes State significant agricultural land.

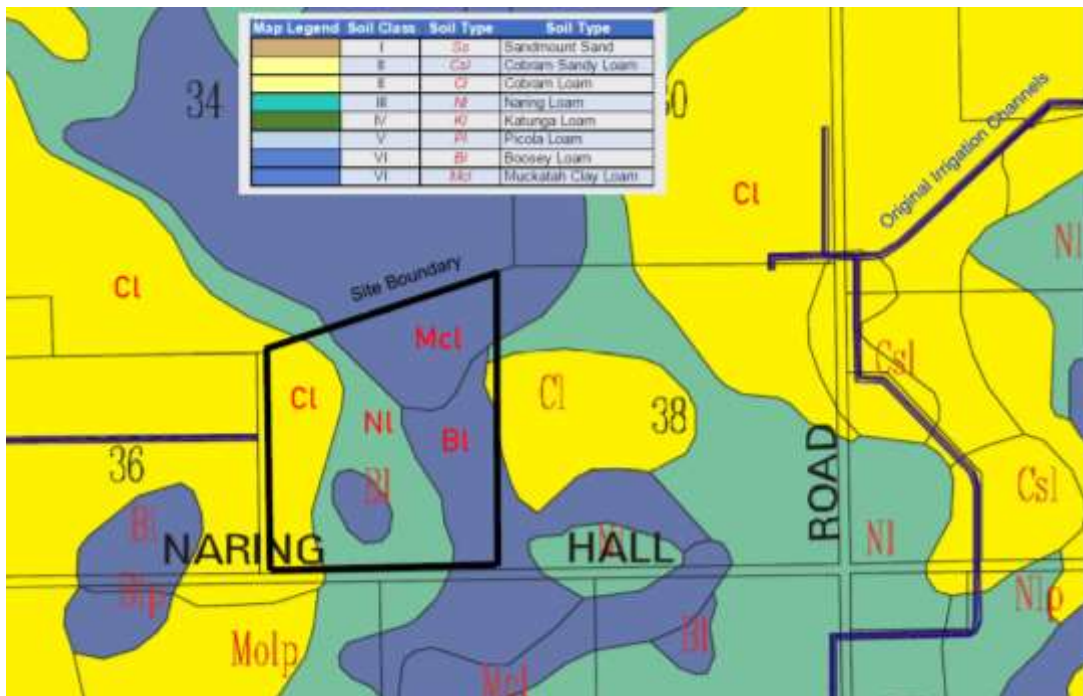
The 2019 Greater Shepparton Solar Farm Panel, commissioned by the Minister for Planning provides the key point of reference to this end, and provides a myriad of expert evidence regarding various facets of the development. Crucial excerpts from this Planning Panel acknowledges the primacy of water from:

“Water not land is limiting production in the region and will continue to do so into the future. Both within the local region, the GMID and within the wider southern Basin, there is plenty of land for all of the potential enterprises including horticulture and dairy. If the sites were to become solar panels then the water that is required for these sites to reach their maximum potential agricultural production, would still be available for use within the region as it currently is. Therefore, the actual loss of agricultural production is not either the current production levels or the potential irrigated agricultural production levels. Rather the loss is limited to the equivalent value of dryland production.”⁴

The same report goes on to acknowledge that the suitability of soils is a fundamental consideration in that:

“... the productivity of the land classified as “strategic” is very much a function of the soil type and depends upon the availability of water for irrigation.”

Accordingly, when considering the retention of land for agriculture (as opposed to providing for the renewable energy transition) the soil types inform the potential utility of land for agricultural viability. The subject site largely contains poorer soil (as outlined in the figure below) due to the low-lying land that is not generally conducive to high-value agricultural pursuits.



Soil profile – typically containing poor-quality soils unsuitable for commercial agriculture

The Agricultural Assessment by Cadeema states:

25% of the site could sustain good productivity irrigated agriculture, 30% of the site could sustain moderate productivity irrigated agriculture and due to flooding and soil type, 45% of the site is not suitable for commercial irrigated agriculture

The proposed conversion of the site from agriculture to a solar farm is not likely to adversely impact district irrigation water supply, be this in the local district, the GMID or in the Murray Darling Basin

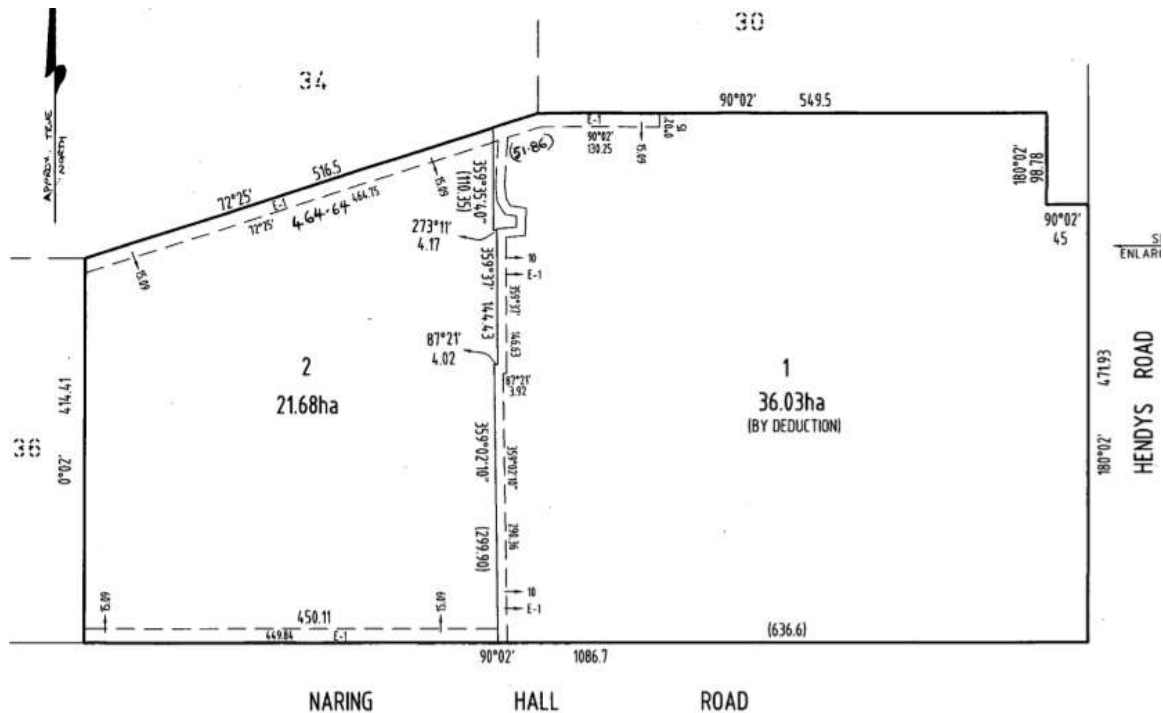
⁴ R. Rendell, RMCG, Greater Shepparton Solar Farm Panel

5 Site and Context Description

The proposed solar energy facility is to be built on land at 574 Hendys Road, Numurkah, that consists of two (2) separately-transferrable parcels – Lots 1 and 2 on PS613623U. Until recently these two parcels were held as one property by Carlo and Angela Sortino, who farmed the property as a whole. Green Gold Energy has recently purchased Lot 2 from the Sortinos, to develop it for a solar energy facility. (see extract from PS613623U below)

The proposal relates to the western parcel - **Lot 2 on PS613623U, only**, that fronts onto Naring Hall Road and is referred to herein as “the subject land”. A Certificate of Title for the subject land is attached herewith – C/T Vol. 1115, Fol. 624.⁵

The eastern parcel (Lot 1 on PS613623) *does not* form part of the subject site for this application. This lot – that has an area of 36.03ha and contains a house and farming infrastructure (dairy, sheds, stockyards, etc) is to be retained by the Sortinos for continued farming.



Extract from PS613623U (subject land Lot 2)

The subject land has an area of 21.68 hectares and a frontage of approximately 450 metres to Naring Hall Road along its southern boundary and a depth of 414 metres along its western boundary and 554 metres along its eastern boundary.

The lot contains an easement for drainage purposes in favour of State Rivers & Water Supply Commission (now Goulburn-Murray Water) along both the southern and northern boundaries. We are advised that these easements are to convey excess

⁵ Green Gold Energy has purchased the land from Sortino; a deposit was paid, and a binding contract has been signed by both parties. Settlement of the sale was scheduled to take place on 1 March 2020; however, due to circumstances with the vendor and the COVID-19 pandemic, the settlement ultimately took place on 1 May 2020.

surface drainage water from land to the west into the community surface drain immediately to the east of the site. However, there is no visible drainage infrastructure (open drain) in the southern easement.

Naring Hall Road is an unsealed all-weather access road that extends from Okanes Road to the west and intersects with Hendys Road to the west of the subject land.

The subject land is largely open, cleared land, with the exception of one (1) row of planted vegetation and a few scattered remnant trees near the northern boundary and in the south eastern corner of the land. The property has been laser graded with a fall from west to east for flood irrigation from a farm channel along the western property boundary. See the “Contour Survey & Feature Plan” by Onleys irrigation surveyors, attached herewith for details of topography and existing features on the site.

The proposed facility will occupy approximately 15.8ha of the 21.68ha site. The remaining land outside the facility’s compound fence - mostly along the eastern and northern boundaries – will remain “as is” and will be managed by seasonal slashing or allowing stock to graze seasonal growth. The subject land is abutted by farming land on all sides.

5.1 Surrounding Context

The subject land is located approximately 2.9km north-east of the Numurkah township – by direct measurement to the nearest urban-zoned land.

A photomontage has been appended to this application to illustrate the landscape of the site and context of the surrounding area.



Immediate site locality – nearest dwellings marked with orange dot

The surrounding area is a mix of dryland and irrigated agriculture, public land, and rural living:

- **East:** The east of the site is largely irrigated agricultural land, with some rural residences on these properties.
- **West:** To the west of the site is largely irrigated agricultural land – however, the exception to this is an isolated rural living enclave bounded by Okanes Road, Butts Road and Tocumwal Road (approximately 550 metres west of the subject land). G-MW No. 6/6 channel runs along the eastern side of OKanes Road.
- **North:** The land north is a mix of irrigated and dryland agricultural land, with the G-MW No. 6 main channel approximately 2.4km north of the subject site and running along the northern side of Allerts Road.
- **South:** The south of the site contains mostly irrigated farming land. The land directly south of the subject site (on the south side of Naring Hall Road) contains extensive remnant native vegetation and is not irrigated. To the south west is the Numurkah town water treatment facility that is within the Public Use Zone.

The site is fronted by 22kV overhead powerlines which run along Naring Hall Road and feed into the Numurkah Powercor substation, approximately 2.1km south-west of the subject land at the intersection of Naring Road and Tocumwal Road.

5.2 Existing Planning Controls

The subject land is within the **Farming Zone** and is partially affected by the **Rural Floodway and Land Subject to Inundation Overlays** as well as the **Specific Controls Overlay (SCO1)**.

5.3 Other Statutory Controls

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.

6 Proposal & Planning Permit Triggers

This application seeks planning approval to **use and develop** approximately 15.7 hectares of land at 574 Hendys Road, Numurkah for a **solar energy facility** as shown on the attached plans.

The proposal also includes development of the adjacent road reserve containing Naring Hall Road for a **utility installation** – being the extent of overhead lines that will connect into the existing 22kV overhead lines within the road reserve.

The proposed solar energy facility has been designed in compliance with the provisions of Clause 53.13 of the Moira Planning Scheme.

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

6.1 Planning Permit Triggers

Pursuant to the Moira Planning Scheme, a planning permit is triggered for the proposal under the provisions:

Farming Zone

- 35.07-1 – To use land for a Solar Energy Facility and Utility Installations, in the Farming Zone. The use must meet the requirements of Clause 53.13.
- 35.07-4 – Building and works associated with the abovementioned Section 2 Uses in the Farming Zone.

Rural Floodway Overlay

- 44.03-2 – to construct a building or to construct or carry out works, including a fence.

6.2 Facility Equipment

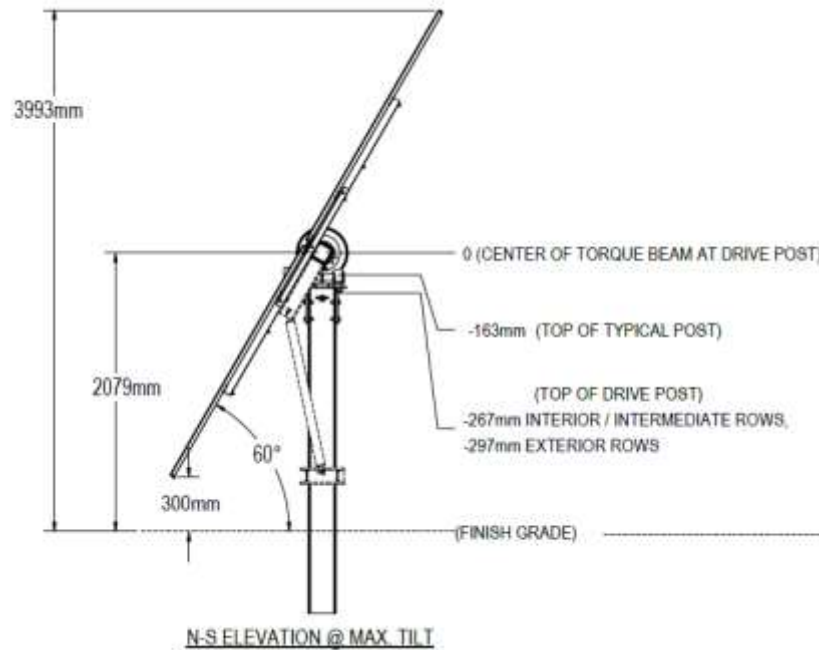
The proposed solar energy facility, utility installation and associated works are to be as shown on the attached plans and supporting documents.

Specifically, it will consist of:

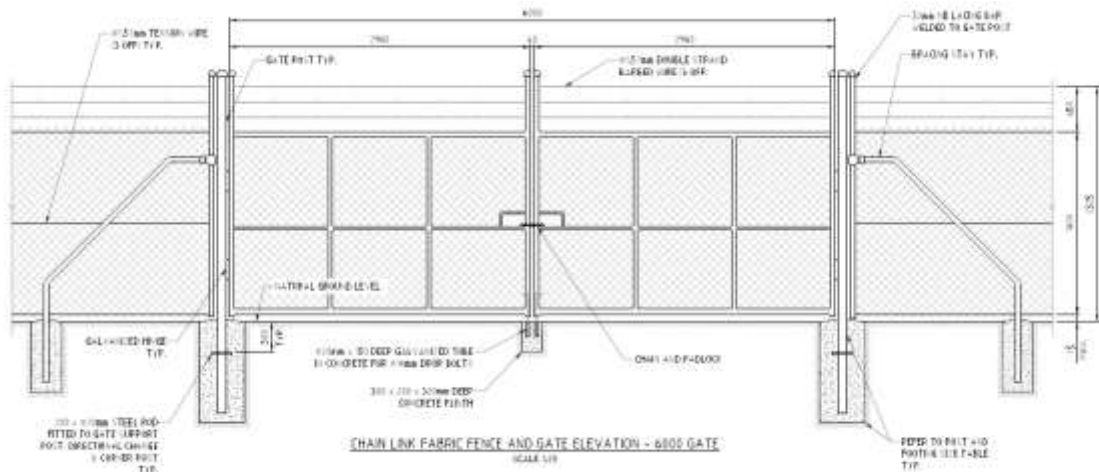
- **13,680 solar panels**, mounted on single axis tracking arrays, each having the following specification:
 - Nominal dimensions of 2.1m by 1m
 - Maximum height of 4m above ground (when at maximum rotation)

The panels will be arranged in **120 individual rows**, each will comprise **114 individual panels** dual-mounted on a central axis in a **57 x 2 solar panel configuration**.

TYPICAL VOYAGER TRACKING ASSEMBLY



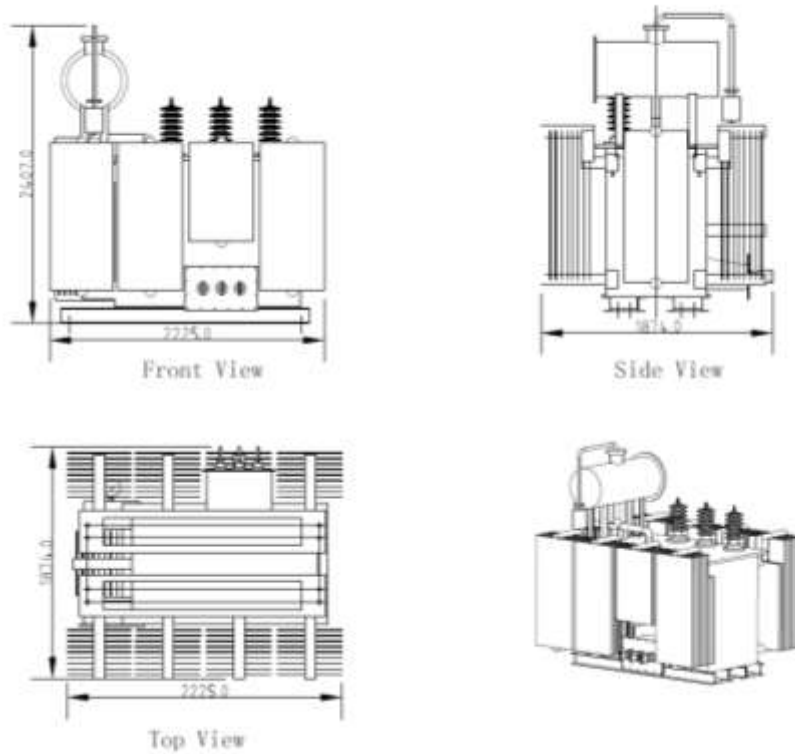
- **1.8m high chain mesh perimeter fence** with three double-stands of barbed wire along top, around entire perimeter of facility, including two (2) gates – positioned to the front of compound (as shown below).



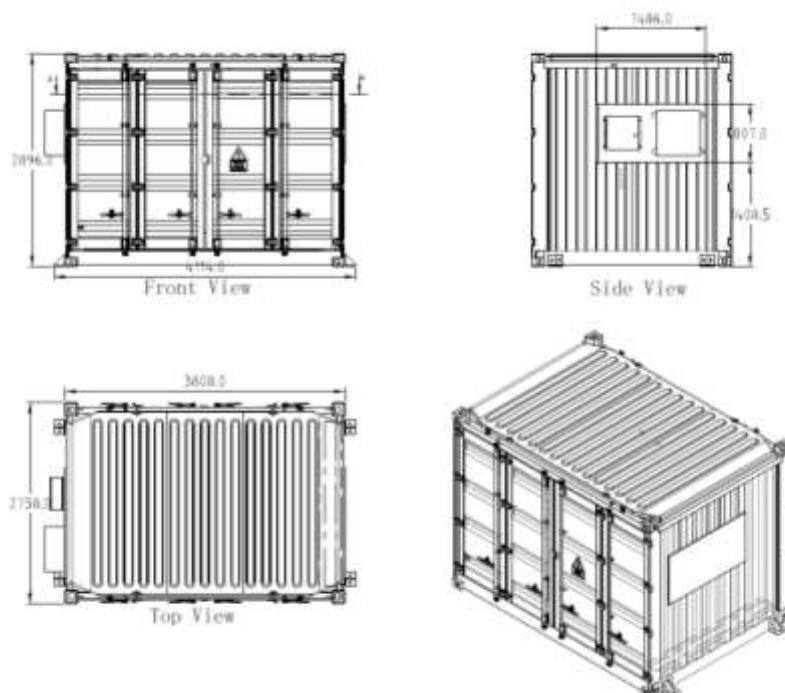
- **Two Vehicle crossings (access points)** from Naring Hall Road at the locations shown on the Site Plan, to the requirements of the relevant local road authority.
- **Internal access track** and associated facilities (car park, assembly area/unloading bays) for use during construction and for service operations and maintenance.
- **Landscaping** along active/visible interfaces, as shown on Landscape Plan, directly outside the compound fence.
- **Medium voltage power station inverter**, positioned central to the facility – between panel arrays

- **Pole and 22kV overhead powerline** connection to Powercor electricity distribution network on Naring Hall Road.
- **One (1) high voltage power switchboard**, positioned centrally at the front of the facility – between panel arrays

TYPICAL INVERTER TRANSFORMER ELEVATION DETAILS



TYPICAL HIGH VOLTAGE SWITCHBOARD ENCLOSURE ELEVATION DETAILS



7 Hume Renewable Energy Roadmap

The Hume Region has confirmed its 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 broad 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 irradiation 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, as the State transitions to renewable energy generation, thermal limitations on the transmission grid is likely to become an issue that will limit any further large-scale renewable energy facilities. This is where smaller renewable energy facilities work to provide a network of smaller solar facilities that are strategically positioned so that they can readily supply the local community, effectively eliminating potential impacts to the 'backbone' transmission network.

The facilities are therefore integral to achieving the region's aspirations and expectations for renewable energy, which in turn provides local opportunities for the benefit of the local community.

8 Design Considerations

Clause 53.13 provides the key planning framework for all new renewable energy facilities, ensuring that the facilities are located in appropriate locations so they have minimal impact on the amenity of the area.

The ***Solar Energy Facilities Design & Development Guidelines, August 2019***, are incorporated into the Scheme. The guidelines 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 informed the process – from the initial site selection through to design, proposed construction methods, operation and maintenance – right through to the ultimate decommissioning of the facility. 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 addressed in **Section 11.5.3** of this report;
- an overview/response to the relevant provisions of the DELWP Guidelines is below as **Section 9**; and

- a response to the relevant provisions of the CFA Guidelines is below at **Section 10**;

9 Solar Energy Facilities Design & Development Guidelines

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

9.1 Identifying suitable locations

Green Gold has past project experience in Australia – having commissioned approximately 50 solar energy facilities in South Australia – typically small-scale solar generation facilities, similar to the current proposal. Most of these facilities have been built and are currently providing clean and cheap renewable energy to the immediately surrounding local community.

Northern Victoria has been identified as having excellent solar irradiance and the Hume region is ready and willing to see local renewable electricity generation for the use and benefit of its local residents. Accordingly, Green Gold embarked on a process of securing suitable sites in northern Victoria. The process of site selection undertaken by Green Gold is set out in its Site Feasibility Report and at Section 3 of this report. Factors such as land availability, proximity to the electricity network, accessibility, topography and site constraints are all key considerations when first looking for potential sites.

Existing electricity transmission network

The financial viability of a sub-5MW facility is dependent on the facility being within immediate proximity 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.

The siting of the facility close to the existing transmission infrastructure allows efficient transmission of the energy generated into the grid; and for a financially viable connection to be achieved whilst also ensuring the proposal is consistent with recent changes to planning policy which seeks to regulate extensive overhead power line connections.

The facility design – in particular, positioning of the HV Switchboard - has considered existing trees on the land and the adjacent road reserve. A clear line of sight has been achieved for the overhead connection between the switchboard and the nearest Powercor pole on the south side of Naring Hall Road. Accordingly, the proposal will have no detrimental impact on the trees.



Looking west along Naring Hall Road, with subject land on right

Managing cumulative effects in area

The Solar Facility Guidelines state that planning is to consider the potential cumulative impacts of solar energy facilities. The proposal is for a sub-5MW facility that will occupy approximately 15.7ha of land, a relatively small portion of agricultural land; especially in comparison to the larger facilities to the south of Numurkah and around Wunghnu that have been approved.

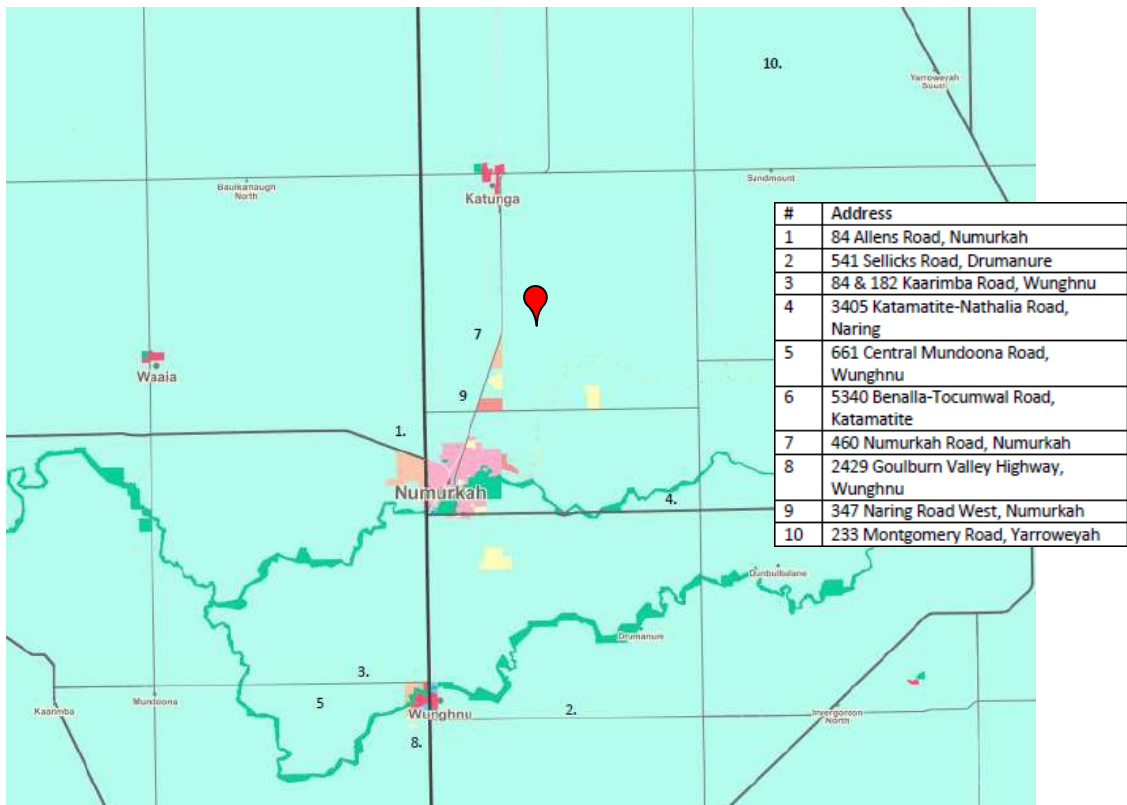
Publicly available information indicates that there are a number of approved facilities in the wider area (see Moira Shire map, over page), including two (2) to the west of the subject site:

- 460 Numurkah Road, Numurkah (900m north-west of proposed facility)
- 347 Naring Road West, Numurkah (1.6km south-west of proposed facility)

Each of these facilities are similarly sized to the proposed. Accordingly, the overall bulk and area of the combined sites remains far less than one “standard” facility, that can occupy hundreds of hectares alone.

The visual impact of the facility is to be further softened through the use of landscape screening. VCAT precedent has established that solar energy facilities are a typically benign land use that causes fewer impacts than many conventional rural land uses that are immediately present within the site’s locality.

Accordingly, it is submitted that when viewed in the context of their surrounds the cumulative impact of the approved and proposed solar facilities, in terms of both land use and visual impact, is minimal.



Approved/Constructed solar energy facilities within Moira Shire municipal area

Protecting environmental, site and amenity values

The site has been deemed suitable because of its apparent lack of biodiversity value. The site is dominated by degraded pasture and opportunistic or invasive weed species with limited grazing value.

The land does not contain any current mapped wetland. The site contains areas of scattered remnant trees and one row of planted vegetation; however, the proposal has been designed to completely avoid the existing paddock trees, thus, there will be no impact from the proposal or any associated works.

The subject land is not in an area of cultural heritage sensitivity.

Whilst the site is identified as being susceptible to flooding – via the Land Subject to Inundation and Floodway Overlay, investigations and discussions with the GBCMA have indicated that these risks are minor and easily managed via suitable permit conditions.

Minimising impact on landscape values

In considering size and magnitude of the facility, as well as the flat topography of the site and the built form of the development, landscape impacts are considered to be unlikely – a photomontage of the surrounding vistas is provided herewith.

With a total area of less than 16ha, the proposed facility is considered to be of substantially lesser scale than typical “standard-sized” facilities, that can occupy hundreds of hectares of land.

The proposal also includes a centrally located inverter, and a switchboard within the compound at the electricity network connection point. None of these components are particularly large or visually intrusive and are considered comparable to an agricultural shed. The facility does not include any batteries or other above-ground componentry.

The subject land is within the Farming Zone and many surrounding properties are used for seasonal grazing. The nearest dwelling to the proposal facility is located on the property directly to the west of the subject site. However, this dwelling is located within the Farming Zone and is therefore not considered a sensitive use for the purpose of planning.

The nearest perceivably “sensitive area” would be the Rural Living Zone land to the west of the site – beyond Okanes Road – approximately 580m from the western boundary of the facility. However, this area is well-screened by existing tree belts and plantings along road reserves that obscure the visibility of the proposed facility.

It is submitted that the proposal will have very little (negligible) visual impact on the locality, mostly due to the topography of the land and the height and scale of the proposed facility. Cumulative impact of all proposed solar facilities in the area has been managed through the careful site selection process which obscures views from most public interfaces.

9.2 Community Consultation

Pre-planning and detailed investigations for the proposal were completed in February 2020. It would have been at this time that Green Gold would have had the information needed to consult with the local community and provide information about the proposal. However, at this time the COVID-19 pandemic was becoming apparent and restrictions were imposed by the State’s Chief Health Officer. Accordingly, Green Gold was unable to make any to approach neighbours in-person and have therefore not been able to undertake face-to-face consultation with all nearby neighbours as would have been typical practice.

With ‘lockdown restrictions continuing to prevail in Victoria, Green Gold made the decision to do a ‘mail out’ consultation process. This involved sending a cover letter, information pamphlet and site plan to every property address within 1km of the proposed facility Tuesday 13 October 2020. The pamphlet provides a brief overview of solar energy generation, Green Gold Energy and the Numurkah proposal. It provides contact details where interested parties can phone in to speak to a Green Gold representative that will answer any questions. Green Gold representatives will be available to take phone enquiries during normal business hours on 21, 22 and 23 October, 2020.

Further, the notice provisions of Section 52 of the P&E Act will ensure all relevant stakeholders will be notified.

9.3 Design

The proposed solar panels are set back from each boundary of the site, as follows:

- South (front): 40m between the nearest panel and Naring Hall Road property boundary;
- East: 75m to property boundary (existing fence);
- West: 30m to property boundary (existing fence); and
- North: 45m at nearest point to property boundary; beyond the existing farm channel and water supply easement.

The entire perimeter (inside the compound fence) includes at least ten (10) metres clear open space for emergency access and fire separation – as per the CFA Guidelines.

The inverter has been positioned close to the panel arrays, and away from neighbouring properties.

Landscaping is to be provided along the front and sides of the facility, as shown on the Site Plan and Landscape Plan submitted herewith. This will be a staggered row planting of suitable massing locally indigenous medium shrubs as specified on the Landscape Plan. The landscaping will be positioned directly outside the compound fence.

Glint and Glare modelling by Environmental Ethos has found that the ***“under normal operation of the solar farm the risk of glare affecting roads and dwellings within 2km of the Project was identified as negligible.”*** Further, existing and proposed landscaping will visually screen the facility and the small amount of potential glare so that solar reflection at ground level on surrounding properties and roads would be unlikely.

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.

9.4 Construction Stage

Once built, the facility will remain largely static (with the exception of tracking arrays) 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 ***Construction-Environment Management Plan*** by Green Gold – attached herewith - includes a construction delivery timeframe of February to September. This is an approximate nine (9) month construction period, with the following expectant parameters:

Stage 1 – Early works - Site preparation. Up to 10 workers on site.

Stage 2 – Civil works - land clearing and earthworks, fencing, etc. Approx. 3-5 workers on site.

Stage 3 – Mechanical works - foundation piling, tracker installation, module installation. Approx. 10-15 workers on site.

Stage 4 – Electrical works - Cabling, connection to grid, testing and commissioning.
Approximately 10-20 workers on site.

The Construction Management Plan sets out how construction activities will be carried out, including site logistics, operations and equipment to be used, construction hours and site management.

The proposed solar array system requires minimal earthworks; the support system is augured and rammed into the earth. Thus, there is less propensity for environmental impacts.

Deliveries of components will be scheduled across Stages 2, 3 and 4, as required. Solar components (support system, trackers, panels and cabling) are delivered in pre-packed containers that are lifted from the delivery truck onto the lay-down area.

Naring Hall Road will provide two access points to the local road network which will ultimately connect to the state-managed arterial road network for traffic to and from the site.

Construction traffic management

The peak of construction activities will occur during the mechanical and electrical installation phases of construction. During these times, up to 20 workers could be on site during working hours. Workers will access the site in the morning and leave at the end of the working day in either their private car or work vehicle (ute or small truck). It is anticipated that there will be some car pooling, therefore it is expectant that **up to 15 cars/utes** would be accessing the site during the height of the construction period.

Materials deliveries will also occur throughout the construction period, with most components coming in during the mechanical works phase. Deliveries will be via rigid truck or semi-trailer and will be scheduled throughout the working day, to ensure efficient unloading and handing. It is anticipated that there will **up to 3 or 4 truck deliveries** during the height of the construction period.

Naring Hall Road and roads surrounding the site are local rural roads that are managed by Moira Shire Council. The Goulburn Valley Highway and Naring Road are declared roads, approved for B-double and heavy vehicle access. Hendys Road and Naring Hall Road are Conditionally approved Roads⁶. Accordingly, a construction traffic access route will need to be established in consultation with Moira Shire Council.

Most equipment and componentry will be delivered to site from Melbourne via the Hume Freeway and Goulburn Valley Highway. It is anticipated that trucks would then access the site via Naring Road, Hendys Road then Naring Hall Road.

It is considered that the local road network is more-than capable of safely accommodating the above mentioned construction traffic, especially considering that the road network is designed and maintained to accommodate agricultural traffic including milk tankers, harvest equipment and trucks as well as agricultural workers.

⁶ Source: Victoria's Gazetted B-Double Network - <https://vicroadsmaps.maps.arcgis.com/apps/webappviewer/index.html?id=636d0f14807e4b13a3414b8d48a56c0f>

9.5 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, with limited moving componentry (other than the tracking arrays), it is considered that it will have a very minimal impact on the landscape.

From past project experience, we are aware of community interest in the following matters 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.

EMR from these types of components dissipates to indistinguishable levels over about 5-to-10 metres. The inverter is centrally located within the facility, well in excess of 100 metres from any boundary.

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.

The proposed layout achieves a significant setback from any nearby properties – even greater when considering properties in private ownership. Any “heat island effect” created by the proposal would have no discernible effects over the setback distances.

Environmental, risk and emergency management

There are substantial elements of environmental management provided within the Construction Management Plan prepared by Green Gold. 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.

The site is partially affected by the Floodway and Land Subject to Inundation Overlays – however, pre-application meetings with the Floodplain Manager at the Goulburn Broken Catchment Management Authority provided some key information and context to flooding in the area.

To this end, flooding on the site is anticipated to be limited to shallow, low-volume overland flows, in which the proposed use and development would not be unduly impacted by, nor would the facility exacerbate or impede flood paths.

Site access and traffic management

Two (2) new access points will be provided to the satisfaction of the responsible road authority. This accords with the CFA requirement for two (2) or more access points for solar energy facilities, where possible.

As set out above, during operation the facility will be monitored from remote, thus there will be no permanent workers on site. The facility will remain largely unattended, other than periodical visits by maintenance contractors or the instance of a fault that requires site attendance. These contractors will carry out seasonal site maintenance (slashing and ground fuel control, etc), cleaning panels and periodical visual checks of componentry and equipment. Thus, it could be weeks between site visits and most visits would be no more than one or two contractors in a single vehicle (ute) carrying out visual checks for approximately one hour or so.

9.6 Decommissioning

The majority of components of the proposed facility (including panels) have 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 another use, as allowable under the planning scheme of the time.

The non-invasive mounting system makes decommissioning and removal of all panels and componentry a relatively simple process and would allow for the full remediation of the subject site to pre-development condition.

10 CFA Guidelines for Renewable Energy Installations

The Country Fire Authority (CFA) published its *Guidelines for Renewable Energy Installations*, in 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 a small-scale facility less than 20 hectares – through to facilities that can occupy several hundred hectares. To this end, 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 Construction Management Plan by Green Gold. 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 maintenance contractors will be engaged to manage seasonal grass and weeds, as 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 two (2) wide access points, in addition to a 4-metre wide internal access road that runs around the entire perimeter of the facility. 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.

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 45,000L), 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, 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.*

All banks of solar panels are approximately 8 metres apart and are configured to run parallel – therefore providing separation above the minimum standards prescribed by the CFA.

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 through conditions on the sought permit.

7. 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.

11 Moira Planning Scheme

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

11	Settlement
12	Environmental & Landscape Values
13	Environmental Risks
14	Natural Resource Management
15	Built Environment and Heritage
17	Economic Development
19	Infrastructure
21.02	Strategic Framework Plan
21.05	Environmental Risks
21.06	Economic Development
35.07	Farming Zone (FZ1)
44.03	Floodway Overlay
44.04	Land Subject to Inundation Overlay
52.06	Car Parking
52.17	Native Vegetation
53.13	Renewable Energy Facility
65	Decision Guidelines

11.1 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*

The proposed use of the land for a solar energy facility is considered to be compatible with adjoining agricultural land uses. The use and development of land would generate negligible impacts on the surrounding area – the primary concern for solar energy facilities is the visual impact that solar panels may have on surrounding amenity and/or utility. This has been established in VCAT case law as being relatively benign as a land use.

12.01-1S Protection of biodiversity

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

Strategies to achieve this objective include:

Use biodiversity information to identify important areas of biodiversity, including key habitat for rare or threatened species and communities, and strategically valuable biodiversity sites.

Strategically plan for the protection and conservation of Victoria's important areas of biodiversity.

Ensure that decision making takes into account the impacts of land use and development on Victoria's biodiversity, including consideration of:

- *Cumulative impacts.*
- *Fragmentation of habitat.*
- *The spread of pest plants, animals and pathogens into natural ecosystems*

The proposed facility has been designed to uphold the protection of biodiversity objective by implementing the abovementioned strategies. The site has sufficient area to accommodate the proposed facility, while avoiding and retaining the remnant trees. The facility layout has been carefully designed to provide adequate tree protection zones between trees and any site works or installations.

The site has been previously disturbed and re-graded for irrigation and – apart from the remnant isolated paddock trees - is currently dominated by degraded pasture and opportunistic or invasive weed species. It does not contain any current mapped wetland.

The site contains one row of planted vegetation that will be removed from within the compound area. However, the proposal has been designed to completely avoid the existing paddock trees, thus, there will be no impact on native vegetation or biodiversity sites on the land due to the proposal or any associated works.

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 and surrounding area is within a Bushfire-Prone Area – which applies to most non-urban areas of Victoria. A detailed assessment against bushfire risk in accordance with the CFA Guidelines for Renewable Energy Installations, February 2019, is undertaken within Section 10 of this report.

13.05-1S Noise Abatement

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

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

The noise issues would primarily and almost exclusively be centered around the construction and de-commissioning of the site, which can be suitably implemented through a construction management plan via permit condition – to the satisfaction of the responsible authority. A Noise Impact Assessment by ADP Consulting⁷ has assessed any potential impacts from the proposed equipment during operation stage and deemed there would be no undue impacts to surrounding farm residences.

14.01-1S Protection of Agricultural Land

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

The proposal is supported by an agricultural assessment by Cadeema – who have provided both qualitative and quantitative evidence of the agricultural utility of the site. As an overview of the site's productive capacity, approximately 45% of the site is considered to be not suitable for commercial irrigated agriculture.

14.01-2S Sustainable Agricultural Land Use

- *To encourage sustainable agricultural land use.*

The agricultural assessment by Cadeema concluded that the conversion of the subject land to a solar energy facility will not significantly compromise prior on-farm efficiency investment, not adversely impact site land use economics or adversely impact the district irrigation water supply. Thus, it is submitted that the proposal is a sustainable use of agricultural land.

14.02-3S Protection of Declared Irrigation Districts

Consideration of Clause 14.02-3S is discussed at length within Section 4 of this report.

15.02-1S Energy and Resource Efficiency

⁷ The ADP assessment is based on “a maximum of two (2) centrally located inverters”. Subsequent design refinements have confirmed that only one (1) TBEA inverter will be required, accordingly, sound power levels, thus potential impact to surrounding land will be less than modelled.

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

The intention of renewable energy facilities is to generate electricity that has significantly less greenhouse emissions than conventional fossil fuel sources. This is supported by the following strategies to:

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

17.01-1S Diversified Economy

- *To strengthen and diversify the economy.*

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

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

The use and development of a renewable energy facility within Moira Shire will promote an opportunity for a regional Shire to establish itself as a national leader in renewable energy and sustainability.

17.01-1R Diversified Economy – Hume

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

*“Encourage appropriate new and developing forms of industry, agriculture, tourism and **alternative energy production.**” (emphasis added)*

The selected site is ideally located – being a suitable distance from the nearest townships (Katunga and Numurkah) to ensure encroachment is not an issue, whilst also being close enough to efficiently support the grid of nearby settlements.

17.01-2S Innovation and Research

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

The proposal represents a significant opportunity for a low-impact, sustainable diversification of the municipality’s economic base, through the facilitation of investment in an emerging industry.

19.01 Energy Supply

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

As of the 2016 census, the Moira Shire is home to over 29,000 residents, the majority of whom reside within the regional townships of Cobram, Yarrawonga, Nathalia and Numurkah.

The proposed facility would be located within close proximity to the Numurkah substation, supporting one of the Shire's regional centres (Numurkah). Thus, the proposed facility provides an excellent location for essential infrastructure to provide a significant proportion of the Shire's population and economic base with a low-carbon energy source. This is supported by the following strategies to:

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

19.01-2S Renewable Energy

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

State planning policy seeks to support renewable energy in appropriate locations. The proposed facility is a result of months of planning and assessment of potential candidate sites.

The proposed facility will provide approximately 5MW directly to the Moira Shire where it is needed. Further, the regional policy for renewable energy with the Hume region, Clause 19.01-2R, stipulates that planning should:

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

11.2 Local Planning Policy Framework

21.02 Strategic Framework Plan

The subject land is identified within the irrigation district by the Moira Strategic Framework Plan. The proposed development will be undertaken on a small portion of the Shire's agricultural base and is intended to ensure maximum retention of productive agricultural land.



Extract from Clause 21.02 (MSS) – Moira Strategic Framework Plan
 Local Policy used to illustrate Moira population centres in relation to surrounding LGA's

21.05 Environmental Risks

This Clause stipulates the key planning issues and challenges relating to environmental risks (as relevant) include:

- *The effects of climate change*
- *Salinity*
- *Flooding*
- *Fire*

The risks associated with these factors are set out at other relevant sections of this report including in the response to the Floodway and Land Subject to Inundation Overlays as well as CFA Guidelines for Renewable Energy Installations.

21.05-2 Climate Change

- *To ensure future development considers the impacts of climate change.*

The use and development of land for a renewable energy facility within Moira Shire will provide clean, renewable energy that will be located within serviceable range of an existing urban centre, providing a significant proportion of the Shire's population with a readily available green energy source.

By reducing dependency upon fossil fuels, the proposal is contributory to reducing impact change climate on:

- *Agricultural uses both through the changing capability of the land, which is influenced substantially by the availability of water*
- *The intensity of both bushfire and floods*
- *The resilience of communities in times of drought.*

21.05-5 Fire

- *To ensure development responds to fire risk.*

The proposed facility has been designed in accordance with the CFA's Guidelines for Renewable Energy Facilities – which sets out requirements for access, separation and facility management.

21.06-2 Agriculture

- *To ensure that agriculture is and remains the major economic driver in the region.*

The significance of agriculture to the economic base of Moira Shire is undeniable. Consequently, the proposed facility has been carefully sited and designed in consideration of this factor in balance with other considerations.

Key factors in considering the proposal in comparison to agriculture include:

- The proposal will provide for a diversification of the Shire's economic base;
- the subject land's identification as less productive land, relative to other parts of the irrigation district; and
- it is envisaged that the site could be easily returned to agriculture with little remediation other than removal of the solar componentry.

The proposal is intended to attract investment into the Shire and has been designed to complement existing and potential rural land uses within the surrounding area. By being located close to existing urban centres, which support the agricultural sector, the flow-on effect of the proposal will have a tangible benefit to the Shire's agricultural sector. Further, it is considered that the proposed is generally supported by the following strategies:

- *Facilitate growth of existing farm businesses.*
- *Provide for small scale, specialized agriculture.*
- *Encourage growth and expansion of existing farm businesses and new investment in 'growth' and 'consolidation' areas.*
- *Encourage opportunities for smaller scale, specialised agriculture in 'niche' areas.*

21.06-3 Processing / Value Adding

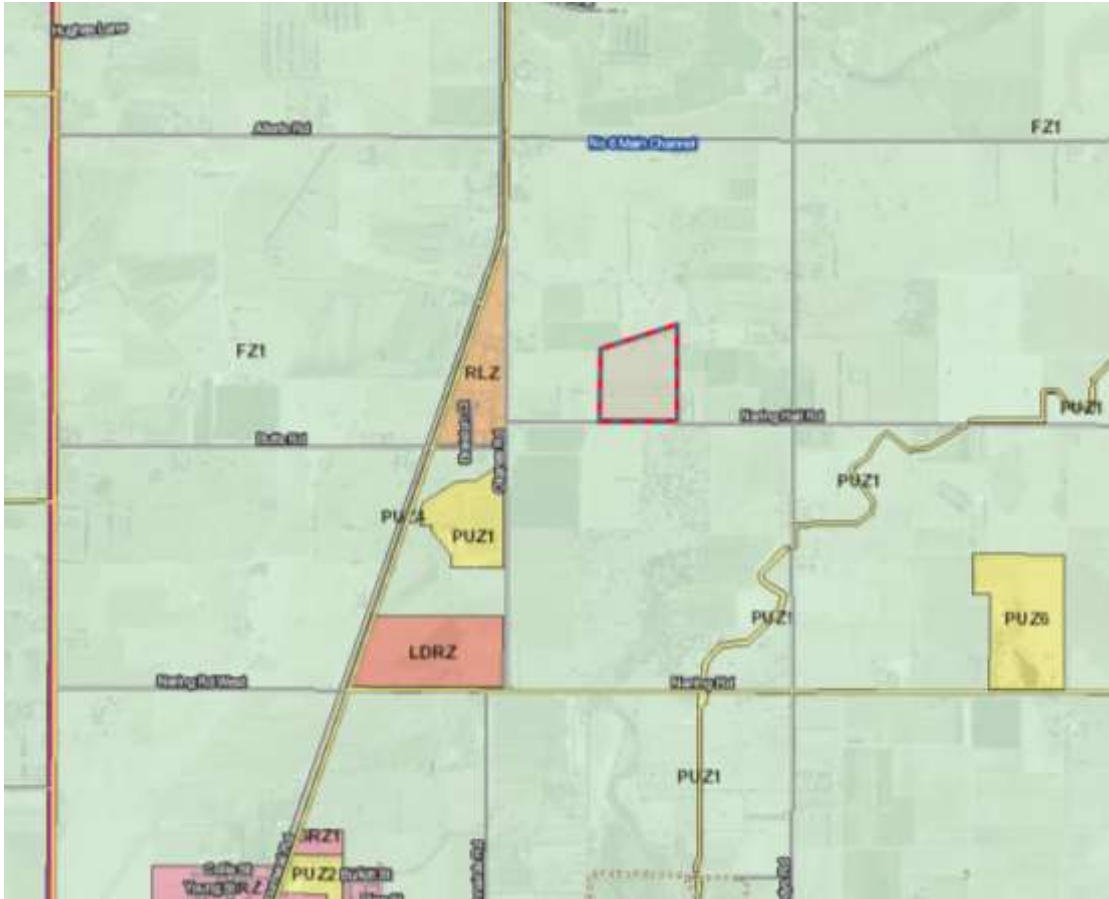
- *To facilitate the growth of new agricultural investment.*

The proposal will provide clean, renewable energy to the Moira Shire, which by extension will support a breadth of rural agricultural operations, through the provision of cheap, reliable and accessible energy within proximity to prime producers, as well as a regional settlement.

Consequently, the proposal is considered to be directly supportive of Council policy to support the value adding of its economic and agricultural base.

11.3 Farming Zone (FZ1)

The subject site, in addition to the entirety of the surrounding area is located within the Farming Zone. Pursuant to the relevant provisions of Clause 35.07, a permit is required to both use and develop the land for Renewable Energy Facility (Solar Energy Facility) and Utility Installation in the Farming Zone.



Zone Map

In considering the proposal to use agricultural land for a solar energy facility, the relevant purposes of this zone are:

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

Whilst the proposed land use and development is for a “Solar Energy Facility”, which requires a permit within the Farming Zone, the use of the land for renewable energy production is consistent with Agricultural production – as defined under Clause 73.01 of the VPPs as “any form of primary production of renewable commodities.”

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

Farming Zone Decision Guidelines	
<p>General issues</p> <ul style="list-style-type: none"> • 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. 	<p>The subject land is within the FO and LSIO. Detailed assessment against the considerations of flooding are provided against the relevant provisions</p> <p>The appended Feature Plan by Onleys Irrigation Surveyors illustrates the existing features and levels of the site – which drains toward the north-east of the site.</p> <p>By siting the facility in close proximity to existing Powercor infrastructure (being the overhead 22kV power lines along the southern side of the Naring Hall Road reserve), the proposal reduces the requirement for extensive overhead lines that could further impact productive agricultural uses or landscape amenity, either on the subject land or off-site.</p>
<p>Agricultural issues and the impacts from non-agricultural uses</p> <ul style="list-style-type: none"> • 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. 	<p>The proposal has been carefully designed to ensure that it will not impede existing agriculture within the surrounding area. The use of the land for a solar energy facility will be a low-impact use and has been carefully sited to avoid any adverse impact upon rural infrastructure – notably the existing farm channel that runs along the western and northern boundaries of the site; The proposed facility has been designed to be well clear of this infrastructure.</p> <p>In considering the site's agricultural capacity, whilst conducive to a limited range of agricultural pursuits, is not deemed be highly-productive agricultural land.</p> <p>Solar Energy Facilities are considered to be relatively benign in terms of their potential off-site impacts and it would be highly improbable that any existing and/or</p>

<ul style="list-style-type: none"> Any integrated land management plan prepared for the site. 	<p>future farmers would be impacted by the proposal. This has been established by previous VCAT precedent.</p> <p>The design of the facility is such that decommissioning of the facility will ensure that the land is capable of being returned to conventional agricultural land uses.</p>
<p>Environmental issues</p> <ul style="list-style-type: none"> 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. 	<p>The subject land and the surrounding area are typically quite flat. Additionally, the natural features of the site are largely limited due to the site's history for agricultural uses.</p> <p>The proposed solar energy facility has been sited to avoid impacts on any native vegetation, either directly or indirectly. The site has been an agricultural paddock for an extended period of time and is not identified as being within a biodiversity corridor. There are some isolated remnant trees and a row of planted native vegetation, however, the site is otherwise cleared of native vegetation and the proposal does not seek the removal of any native vegetation.</p> <p>Suitable drainage conditions can be imposed at the permit stage.</p> <p>The proposal is intended to facilitate the transition toward the State government's 25% renewable energy target by 2020. To this end, the proposed facility will contribute 5MW of renewable energy into the Victorian grid.</p>
<p>Design and siting issues</p> <ul style="list-style-type: none"> 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. 	<p>The facility is to be landscaped around the perimeter to reduce any potential visual impact of the facility from any nearby public land; all equipment will be located within the compound – behind the proposed landscaping – which will consist of native vegetation.</p> <p>The site will be accessed from the southern boundary from a local road managed by the Moira Shire Council – providing access to equipment with the facility compound for maintenance and emergency purposes.</p>

<ul style="list-style-type: none"> • 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. 	<p>During operation, the facility will be unmanned and would generate minimal traffic, with the peak traffic periods to be during the construction phase – as outlined within the relevant construction section of this report.</p>
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11.4 Floodway Overlay & Land Subject to Inundation Overlay

The western portion of the subject site is within both the Floodway Overlay (FO) and the Land Subject to Inundation Overlay (LSIO) intrudes across the northern boundary of the site by a very small slither. The proposed facility does not extend into the LSIO, but it is within the FO where a planning permit is triggered for the proposed building and works – including the fencing around the perimeter of the facility. The proposal has been considered against the relevant purposes of the FO, which seeks to:

- *“To identify waterways, major floodpaths, drainage depressions and high hazard areas which have the greatest risk and frequency of being affected by flooding.*
- *To ensure that any development maintains the free passage and temporary storage of floodwater, minimises flood damage and is compatible with flood hazard, local drainage conditions and the minimisation of soil erosion, sedimentation and silting.”*

Under the provisions of both the FO, before deciding on an application, the responsible authority must consider:

- *Moira Shire Interim Floodplain Management Plans – July 1997.*
- *‘Earthworks Controls in the Shire of Campaspe, City of Greater Shepparton and Moira Shire – August 2010’*



Overlay Map. Flood Overlay and Land Subject to Inundation Overlay on Subject Site

Pre-application discussions have been held with the Goulburn Broken Catchment Management Authority – who advised that flooding events on the subject site would be low volume and low velocity – either from sheet flow of surface water from the north or a ‘backing up’ on inundation from the Muckatah depression in a very extreme event.

Based on this we were advised that the proposed works would be unlikely to adversely impact floodplain integrity as the actual footprint of the development is generally minor –i.e. the fence would be permeable to floodwater and the panels themselves consist of a single post footings. All ‘sensitive’ equipment (inverters and transformer) are located away from the floodway overlay and should be positioned so that they are elevated above the 100-year ARI flood level which is 108.41m AHD.

The Contour Survey & Feature Plan by Onleys shows that existing surface levels across the land proposed for arrays is in the range of 108.0m to 108.6m AHD, with the lowest land being in the north-east corner. Accordingly, to achieve the floodplain manager’s requirement arrays in the north east corner will need to be elevated from the typical 300mm above ground level to be approximately 400mm above ground.

In the absence of a local floodplain development plan, a flood risk report must be prepared to the satisfaction of the responsible authority. Accordingly, a flood risk report has been prepared in consultation with the Goulburn Broken CMA Floodplain Manager and is attached herewith.

The Decision Guidelines at Section 2.0 of the Schedule to the Floodway Overlay requires the responsible authority to consider any provisions of the *Moira Shire Interim Floodplain Management Plans July 1997*, and the *Earthworks Controls in the Shire of Campaspe, City of Greater Shepparton and Moira Shire – August 2015*.

It is submitted that there is sufficient information within this report to enable the responsible authority to consider the relevant provisions of the *Moira Shire Interim Floodplain Management Plans July 1997*.

Similarly, the Application requirements at Section 8 of *Earthworks Controls in the Shire of Campaspe, City of Greater Shepparton and Moira Shire – August 2015* are either provided elsewhere in this report and the supporting documents or are irrelevant. The proposal does not include any earthworks (other than a site scrape to remove existing grass cover), nor does it include any irrigation works or any element that would be usually considered as part of a whole farm plan. The consent and requirements of the GBCMA floodplain manager has been obtained.

Accordingly, there are no additional considerations in these two documents or any of the 'relevant documents' listed at Section 9 that are relevant to the proposal or have not been considered within the application.

11.5 Specific Controls Overlay

The subject land is within the Specific Controls Overlay SCO1 that implements the *Goulburn Murray Water Connections Project Incorporated Document (June 2020)*. This incorporated document allows the use and development of land for irrigation modernisation works by or on behalf of Goulburn-Murray Water.

This overlay and the works it enables have not bearing on the proposed solar facility.

11.6 Particular Provisions

11.6.1 Clause 52.06 Car Parking

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

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

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

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

The most heavily staffed period of the site will be during the construction phase – where various contractors and machinery will be required for the construction duration.

Upon completion and establishment of the facility, persons accessing the site will typically be contractors with purpose-built vehicles and equipment, which would be

driven directly to the point of work, rather than being parked in a designated space with the contractors walking to the work site.

Notwithstanding this, once construction is completed, the site amenities and storage area – just inside the front entrance gate – provides a logical and convenient location for periodical visitors to the site can park, if required.

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

In considering the relevant Decision Guidelines of Clause 52.06-10, and the information provided in this report, the provision of a designated car parking area is comfortably in excess of what would reasonable be required for an un-manned facility.

11.6.2 Clause 52.17 Native Vegetation

As set out in other parts of this report, the site contains one (1) row of planted vegetation and a few scattered remnant trees near the northern boundary and in the south eastern corner of the land. These are shown in the Vegetation Site Assessment, that also shows a lack of any middle storey or understorey species in the vicinity of these trees.

A permit is required to remove, destroy or lop native vegetation under Clause 52.17, unless the table to Clause 52.17-7 specifically states that a permit is not required.

It has been set out in other parts of this report and demonstrated on the Site Plan that the proposed works have been designed to avoid the remnant paddock trees on the site.

The proposed facility will include two vehicle access points from Naring Hall Road, which are well clear of any roadside vegetation. One of these will utilise the existing farm access point that has been constructed and used by the previous farmer.

The proposed facility will impact on a row of planted trees. No permit is required to remove these trees, as specified in the Table of exemptions – ***planted vegetation***. The applicant was advised by the previous owner and farmer that these trees were planted along the fence line as a wind break for stock and that no public funding was provided. It is apparent by inspection of the trees' spacing, location, age and species that they have been planted in a straight row at even spacings. Accordingly, no permit is required to remove these trees.

The site had previously been laser graded and sown with pasture species. More recently it has been used for annual winter fodder crops, which are cut and baled annually. The site currently consists of weeds that are grazed by beef cattle.⁸

Based on the above, it is submitted that no native vegetation on the site will be impacted by the proposed facility. Accordingly, the permit requirement of Clause 52.17 is not triggered.

⁸ Cadeema, March 2020

11.6.3 Clause 53.13 Renewable Energy Facility

The provisions of Clause 53.13 apply where it is proposed to use and develop land for a renewable energy facility. Consequently, the following application requirements are set out, as appropriate:

- **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 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 above application requirements (where appropriate) are addressed at length within the relevant parts of this report (including Sections 2, 5 & 6). Clause 53.13 is a general provision that encompasses all renewable energy facilities, which includes solar energy facilities, but also extends to other renewable energy facilities. Consequently, not all provisions of the Clause are necessarily pertinent in all instances. For instance, a works approval is not required for a solar energy facilities.

As a point of reference, various sources stipulate that the energy requirements to create a single MW of energy via conventional coal power can be as high as half a tonne per hour – representing a significant consumption of natural resources and carbon emissions where the proposed solar facility will continue to operate with zero emissions and only replacement of equipment being the major determinant of waste.

The proposed site is flat, and the proposed landscaping (when mature) will be comfortably higher than the proposed solar panels and other installations, which will appropriately mitigate any siting and visual amenity concerns.

11.7 General Provisions

The holistic considerations of the proposed renewable energy facility and the primary considerations of the proposal, including the merits of both preserving agricultural land against promoting renewable energy have been addressed on at length in the various sub-sections of this report and the appended documentation.

Similarly, the orderly planning of the area, effect on the amenity of the area and other matters set out at **Clause 65.01** of the Moira Planning Scheme for the **Approval of an application or plan** are addressed throughout various sections of this report. Accordingly, it is submitted that the proposal has been assessed against and deemed as being appropriate in in terms of all relevant considerations.

12 Conclusion

The proposal is for a new solar energy facility within the Moira Shire municipality 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 energy to contribute to the transition of the Moira Shire into a renewable energy leader.

The panels would have a maximum height of approximately 4 metres – however for most of the day will be well below this height, as they track at right-angle to the sun, to maximise solar irradiation. The arrays are to be mounted on a light-weight rail and post system that would require limited earthworks and enables ease of decommissioning and conversion back to farming use (if appropriate at the end of the facility's design life).

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 Moira 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**.

It is submitted that the information provided within this report and various supporting documents demonstrate that the proposal warrants planning approval.

Chris Smith & Assoc.
Rev.3 November 2020