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**Barnawartha Solar Farm and
Energy Storage**

Planning Application Report

Barnawartha Solar Pty Ltd

Revision:2

2022-07-07



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Document control record

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Executive Summary

This report is to support the planning permit application for the use and development of the proposed Barnawartha Solar Farm and Energy Storage Project (the Project) in northern Victoria. Wirsol Energy with ARP Australia Solar are co-developers on behalf of the Project entity, Barnawartha Solar Pty Ltd.

The Project will supply electricity generated from solar irradiation into the National Energy Market and is expected to have an installed capacity of up to ~64 Megawatts (MWac), with ~64MW of battery storage on the site. The facility will generate enough electricity on average to power ~20,000 Victorian homes per/annum resulting in a saving of over ~135,500 tonnes of CO₂ emissions.

The Project will support the achievement of renewable energy generation targets set out by the Victorian Government and is consistent with Victorian Planning Policy Framework and local planning policy of the Indigo and Wodonga Planning Schemes. The Project triggers planning approval for use and development of a 'renewable energy facility' (solar farm) in the Farming Zone, removal of native and non-native vegetation (in the ESO3) and display of signage. This application is supported by nine environmental impacts assessments outlining the overall benefit of the Project and outlining how the proposal complies with relevant policies.

The proponent has worked closely with the Project ecologist to avoid, minimise and mitigate any impacts to native vegetation, cultural heritage or overland flows, amending the layout to protect biodiversity and the landscape character of the area. A preliminary Environmental Management Plan has been prepared to accompany this application.

The Project will have no significant impact on the existing amenity of the area, with minimal noise, visual impact, glint and glare, or ongoing traffic impacts.

The Project does not significantly alter the productive agricultural quality of the site as it is currently not used for high value agricultural purposes and will continue to provide for grazing beneath the panels. The Project will strengthen and diversify the local economy by creating direct and indirect jobs in both the construction and maintenance phase.

The Project has taken on feedback from the community and the regulators and made significant amendments to the plans to reduce impacts, further illustrating a commitment to avoiding and minimising impacts on the local environment.

Wirsol Energy and ARP firmly believe that the Project aligns with Victorian and local planning policy, the Solar Energy Facilities - Design and Development Guidelines (DELWP 2019), Design Guidelines and Model Requirements - Renewable Energy Facilities (CFA, 2022) and the needs of the community.

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1 Introduction

Aurecon has prepared this planning report for Barnawartha Solar Pty Ltd (Barnawartha Solar) to support the planning permit application for the use and development of the Barnawartha Solar Farm and Energy Storage ('the Project').

The Project will supply electricity generated from solar irradiation into the National Energy Market (NEM) and is expected to have an installed capacity of up to ~64 Megawatts (MWac), with ~64MW of battery storage located on the site. The facility will generate enough electricity on average to power ~20,000 Victorian homes per/annum Table 1-1 below.

Table 1-1 Application details

Application Details	
Local Government Area	Indigo Shire Council (Solar energy facility).
Application location	49 Hermitage Road Barnawartha (Crown Allotment 1 and 4 Section 24 Parish of Barnawartha North) Murray Valley Highway, Barnawartha 3688 (Crown Allotment 2 Section 22 and Crown Allotment 3 Section 22 Parish of Barnawartha North (Vol 7716 Folio 090)
Total Project Area	131.57 hectares
Proposal	~64MWac of solar capacity ~64MW of battery storage ~148,000 solar panels at ~600W each ~4m high panels / single axis tracking 40 year term Associated infrastructure and works (i.e. signage, fencing etc.)
Zone	Farming Zone (Clause 35.07) – solar energy facility and utility installation
Overlays	Environmental Significance Overlay – Schedule 3 - Black Dog Creek (Clause 42.01)
Definitions	The Project is defined as a renewable energy facility pursuant to Clause 73.03 (Land Use Terms). The 22kV transmission line is defined as a utility installation pursuant to Clause 73.03 (Land Use Terms). Further information on land use terms is in Section 2.1.4.
Planning Permit Triggers	Clause 35.07 (Farming Zone) A renewable energy facility and utility installation are defined as Section 2 uses. Approval is required for Section 2 uses in accordance with Clause 35.07-1. Planning approval is also required to construct a building or carry out works (Clause 35.07-4) for a Section 2 Use. Clause 42.01 (Environmental Significance Overlay) Clause 42.01-2 requires a permit to construct a building or carry out works and remove any vegetation, including dead vegetation within the

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Application Details

Environmental Significance Overlay – Schedule 3 Black Dog Creek (ESO3). ESO3 is located in the Indigo Planning Scheme.

Clause 52.05 (Signs)

Clause 35.07-7 refers to the advertising signage at Clause 52.05 and specifies that the Farming Zone is in *Category 4 – Sensitive Areas*. A 'Business Identification Sign' is a Section 2 (permit required) sign. Planning approval is therefore required to construct and to display a business identification sign in the Farming Zone (Clause 52.05-14).

Clause 52.06 (Car Parking)

The provision of car spaces must be made before a new use commences (Clause 52.06-2). Car parking must be provided to the satisfaction of the Responsible Authority.

Clause 52.17 (Native Vegetation)

Clause 52.17-2 requires planning approval to remove, destroy or lop native vegetation, including dead native vegetation.

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2 The Project

2.1.1 The applicant

The project entity is known as Barnawartha Solar Pty Ltd. Wirsol Energy are co-developing the Barnawartha Solar Farm and Energy Storage (the Project) with ARP Australia Solar (ARP).

Wirsol Energy is behind one of the largest solar and battery projects in Victoria so far, Gannawarra Solar Farm in north west Victoria which it co-developed with Edify Energy.

Wirsol Energy is a long-term owner and developer of a portfolio of more than 700MW projects across Australia. They currently have a 400MW portfolio of completed projects including Wemen, Clermont, Whitsunday, Hamilton, and Gannawarra Solar Farms and have recently delivered the 149MW Glenrowan West Solar Farm in Glenrowan, Victoria. Our vision is to continue to develop out a portfolio of inclusive Renewable Energy Power Stations to support the decarbonisation of Australia and the rest of the globe.

ARP has been developing utility scale renewable energy projects since 2013 and is passionate about driving a cleaner and more sustainable future. They work with communities to ensure projects are tailored to suit the local environment and deliver clean renewable energy.

Wirsol Energy and ARP hold the same core objectives for this project

- Energy security
- Local construction job opportunities
- Post construction job opportunities
- Local business tender opportunity
- Educational visits
- Maintaining the existing land use which is currently used for grazing
- Ecological enhancements

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2.1.2 The Project

The Project will supply electricity generated from solar irradiation into the NEM and is expected to have an installed capacity of up to ~64MWac, with ~64MW of battery storage located on the site. The facility will generate enough electricity on average to power ~20,000 Victorian homes per/annum (P/A) resulting in a saving of over ~135,500 tonnes of CO2 emissions.

The Project will involve the construction of associated buildings and works including:

- Internal roads and access tracks
- Construction compounds (site office and amenities buildings)
- Inverter's skid mounted
- Substation including transformer and switchgear
- Building for operations and maintenance personnel
- Warehouse for spare parts
- Olive green containers (approximately 40 foot) used for storage of spare solar panels
- A new transmission line with the Network Service Provider, Ausnet, to provide grid connection for the Project at the substation at Logic. The overhead line (OHL) within Indigo Shire will utilise existing poles and the component of the OHL within City of Wodonga is subject to a separate planning approval application.
- Associated business identification signage at the site entrances (1.9 x 1.29m) at a height of 1.29m above ground

- Security fencing surrounding the Project area in accordance with plan ref. BARNSF-GN-GAD-0227-V1 dated 30 March 2022

The construction phase is expected to last for 12-18 months and would create an estimated 200 new jobs during this phase of works. Where possible, it is the intention of Barnawartha Solar to source jobs locally to provide direct benefits to the community in addition to the indirect benefits arising from the construction phase of the Project (such as accommodation, meals etc. associated with workers being in the area). The ongoing operational of the solar energy facility would be for approximately 40 years. The operational phase would provide ongoing employment opportunities for two site staff and additional local technicians as needed. This creates ongoing employment for the community and new fields of employment that currently do not exist within the immediate area. The emergence of this industry in the area also has flow on effects to training services required to develop the necessary skills to fill the jobs that are created.

Grid connection

A transmission line with the Network Service Provider, Ausnet, will provide grid connection for the Project and extend approximately 2.5 kilometres east from the Project site along the southern side of Baxter-Whelans Road. The transmission line will be above ground and to the east of Lady Franklin Road will utilise existing overhead poles within the road reserve. The eastern portion of the transmission line route (east of Lady Franklin Road) will require new poles and lines on land immediately south of the road reserve, within an existing Wodonga City Council easement. The section of the transmission line in Wodonga Council area is subject to a separate planning permit application.

The point of connection for the Barnawartha solar and battery project will be into the substation at Logic. This will be an Ausnet provided connection onto the 66 KV network and all works within the substation will be completed by Ausnet. Ausnet will connect the Project via their equipment within the substation and utilise the existing infrastructure.

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Fire fighting water supply

A water tank with a 45,000 litre capacity is proposed at both site entrances on Hermitage Road (equalling 90,000 litres), with additional water supplies (1 x 45kL per 150ha as per 6.2.2 of the CFA Guideline) strategically located throughout the site.

Alternative access is included to both sides of the site from Hermitage Road and Coyle's Road.

2.1.3 Project evolution

Efforts have been made to avoid and minimise impacts to native vegetation where possible, without undermining the key objectives of the Project. The extent of native vegetation has been assessed during the planning and design phase and Aurecon's project ecologists have had several meetings and other correspondence with the proponent's design team to provide detailed recommendations for avoidance and minimisation of impacts on native vegetation and other ecological values. The proponent has adopted the avoid and minimise approach by refining the design of the Project footprint to incorporate all key recommendations. This process has led to the final design footprint for the proposal, which has allowed for the retention of native vegetation in the Project area as follows:

- Retention of high significance native vegetation in the north west of the study area – The north west of the study area supports a remnant stand of large, old Red Box trees, some that have been classified as patches and some as scattered trees as per the Guidelines. Given the lack of Red Box elsewhere in the study area, this stand of Red Box was considered to be of local significance. While previous designs for the solar panel layout would have required the removal of native vegetation in this area, the design has been significantly refined to re-locate the solar panels from this area to another paddock to the south west. This design change has resulted in the avoidance of three patches of native vegetation, 5 large trees in patches, and 17 scattered trees (six large and 11 small) in this area. This area of native vegetation is also mapped as Location Category 3 as per the Department of Environment, Land, Water and Planning's (DELWP) statewide location map based on having high modelled habitat importance for Wedge Tailed Shearwaters (*Puffinus pacificus*) and Pardalipini (*Pardalipini dendrobioides*). This particular area has since been avoided in the current plan.

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- Retention of all native vegetation around the perimeter of the solar farm – While early concept designs for the Project would have resulted in impacts to some vegetation along adjoining road reserves, the design has since been updated to ensure that impacts to native vegetation from the solar farm layout (as well as the area required for the implementation of an appropriate firebreak) is limited to private land. The design also includes the retention of native vegetation within private land around the perimeter of the Project site. This includes the retention of over 30 native trees on private land in the south east of the Project area.
- Retention of two of the largest and most significant trees recorded in the Project area – While the initial design proposed the removal of the trees, the proponent has adopted the recommendation to avoid and retain these two large scattered trees. These two trees were deemed to be particularly significant due to their tremendously large size (DBH of 161 and 162 cm respectively), healthy canopy and impressive spreading nature.
- Locating the powerline cable route so as to have no impacts to native vegetation - Most of the native vegetation along Baxter-Whelan Road exists on the northern side of the road, so the powerline will be located on the southern side of the road. While the western portion will be located in the road reserve using existing overhead lines, the eastern portion of the powerline will be located south of the road reserve (in the City of Wodonga easement) to avoid native vegetation in the eastern part of the road reserve. The route for the powerline cable avoids any impact to native vegetation.

It is considered that no feasible opportunities exist to further avoid or minimise impacts on native vegetation without undermining the key objectives of the Project.

The Project has also evolved to address the feedback received during community consultation. Neighbours to the south requested the works set back further away from their property. The substation and associated buildings were previously proposed to be located on the corner of Hermitage and Baxter-Whelans Road and have been moved 300m north away from the Project property boundary, it is now over 500m away from the neighbouring property boundary to the south. The panels and associated infrastructure have also been moved 30m north to limit visual amenity impacts to neighbours to the south. Landscaping is proposed within the setback to further soften any potential visual impacts.

2.1.4 Land use terms

The Project is defined as a ‘renewable energy facility’ pursuant to Clause 73.03 (Land Use Terms) of the Planning Scheme. The definition of a renewable energy facility includes “any building or other structure or thing used in or in connection with the generation of energy by a renewable resource”.

The transmission line required to connect the solar farm to the substation is defined under a utility installation as it will be used to ‘transmit, distribute or store power, including battery storage.’

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2.2 Supporting documents

This report should be read in conjunction with the following documents prepared and submitted as part of the application:

- Certificate of Title (Appendix A)
- Application Plans, Wirsol Energy 2022 (Appendix B)
 - Indicative overall site layout – Planning submission (BARNSF-GN-LAY-0226-V2)
 - Barnawartha Solar Farm Utility Electrical Switch Room General Arrangement (J0456-L-001)
 - Indicative Substation and Buildings facility layout (BARNSF-GN-GAD-0209-V3)
 - Barnawartha Solar Farm O&M Building Detailed Layout 3d Structure (T2Q01143-L-001)
 - Barnawartha Solar Farm O & M Building Elevations Architectural (T2P01143-L-003)
 - Barnawartha Solar Warehouse Building Detailed Layout Elevation Multiview (T2P01143-L-004)

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- Indicative signage and positioning (BARNSF-GN-GAD-0228-V2)
- Indicative security fence design (BARNSF-GN-GAD-0227-V1)
- Indicative grid connection pole elevation profile (BARNSF-GN-GAD-0242-V)
- Flora and Fauna Assessment, Aurecon 2022 (Appendix C)
- Heritage Due Diligence Assessment, Aurecon 2022 (Appendix D)
- Transport Assessment, Aurecon 2022 (Appendix E)
- Landscape and Visual Impact Assessment, Aurecon 2022 (Appendix F)
- Desktop Noise Impact Assessment, Aurecon 2022 (Appendix G)
- Surface Water Assessment, Aurecon 2022 (Appendix H)
- Environmental Management Plan, Aurecon 2022 (Appendix I)
- Glint and Glare Assessment, Aurecon 2022 (Appendix J)
- Agricultural Impact, Ag Challenge 2022 (Appendix K)
- Consultation flyer (Appendix L)

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3 Description of the site and surrounds

3.1 The site

The site is located within north-east Victoria approximately 300 km from Melbourne in the Indigo Shire and Wodonga City Council local government areas. The closest township to the site is Barnawartha which is a small community of circa 1,000 people. The site comprises two parcels of land described as follows:

- 49 Hermitage Road, Barnawartha (Crown Allotment 1 and 4 Section 24 Parish of Barnawartha North)
- Murray Valley Highway, Barnawartha 3688 (Crown Allotment 2 Section 22 and Crown Allotment 3 Section 22 Parish of Barnawartha North (Vol 7716 Folio 090)

Certificate of title (Vol 7716 Folio 090) includes a pipeline easement along the western boundary. This easement will be avoided by the Project. No instruments or restrictions affect 49 Hermitage Road, Barnawartha. The grid connection in Indigo Shire is located within the Baxter – Whelans road reserve.

The Project area is approximately 131.57ha (refer Figure 3-1). The site is generally flat and is currently used for cattle farming and wheat crops.

Primary access for the Project will be provided via Hermitage Road. Secondary access to the eastern parcel is provided via Coyles Road. The alternative access to the western parcel is provided at the southern end of Hermitage Road closer to Baxter-Whelans Road.

The site has been largely cleared of vegetation to support farming activities, with some remnant trees throughout the land. There is native vegetation remaining on site, generally in the form of scattered trees. There are six small farming dams throughout the site, but largely lacked any fringing, floating or emergent vegetation.

3.1.1 Current land use

The Project area and surroundings are currently used for agricultural uses, such as cattle farming, grazing and crops of cereals, oilseeds and lucerne. The Project area (eastern site) also comprises a residential dwelling which is set back approximately 350 metres from Murray Valley Highway and farm related infrastructure, including a number of out-buildings.

3.1.2 Landscape

The investigation identified that the site largely supported farmland dominated by introduced pasture grasses. Despite the heavily altered nature of the ground layer, the site contained several remnant native eucalypts, many of which classified as large trees. Native vegetation, distinguished by the presence of mature eucalypts, was also present within the adjoining road reserves, particularly along Murray Valley Highway, Coyles Road and Hermitage Road, as well as along the proposed grid connection route along Baxter-Whelans Road.

3.1.3 Access

Access to the eastern and western parcels of land is provided from Hermitage Road. No direct access is proposed from the Murray Valley Highway and no change to existing road conditions is proposed.

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3.2 Site surrounds

Land surrounding the site is a mixture of agricultural land with associated residential dwellings, as well as established industrial and commercial uses to the east of the site. The surrounding zoning is reflected in the following table and figure.

Table 3.3 Land uses

Planning Zones	Land Use Features
FZ: Farming	Project site and surrounds
IN1Z: Industrial 1	Logic Centre and Wodonga TAFE Logic campus
IN2Z: Industrial 2	Includes un-developed land within the Logic Centre precinct
PPRZ: Public Park and Recreation	Land zoned (currently undeveloped) for recreation between Wodonga TAFE and Logic Wodonga centre
TRZ2: Transport - Principal road network	Murray Valley Highway and Hume Freeway
TRZ1: Transport - State transport infrastructure	Railway corridor
LDRZ: Low Density Residential	Barnawartha (Indigo Drive)
GRZ1: General Residential	Barnawartha

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Legend

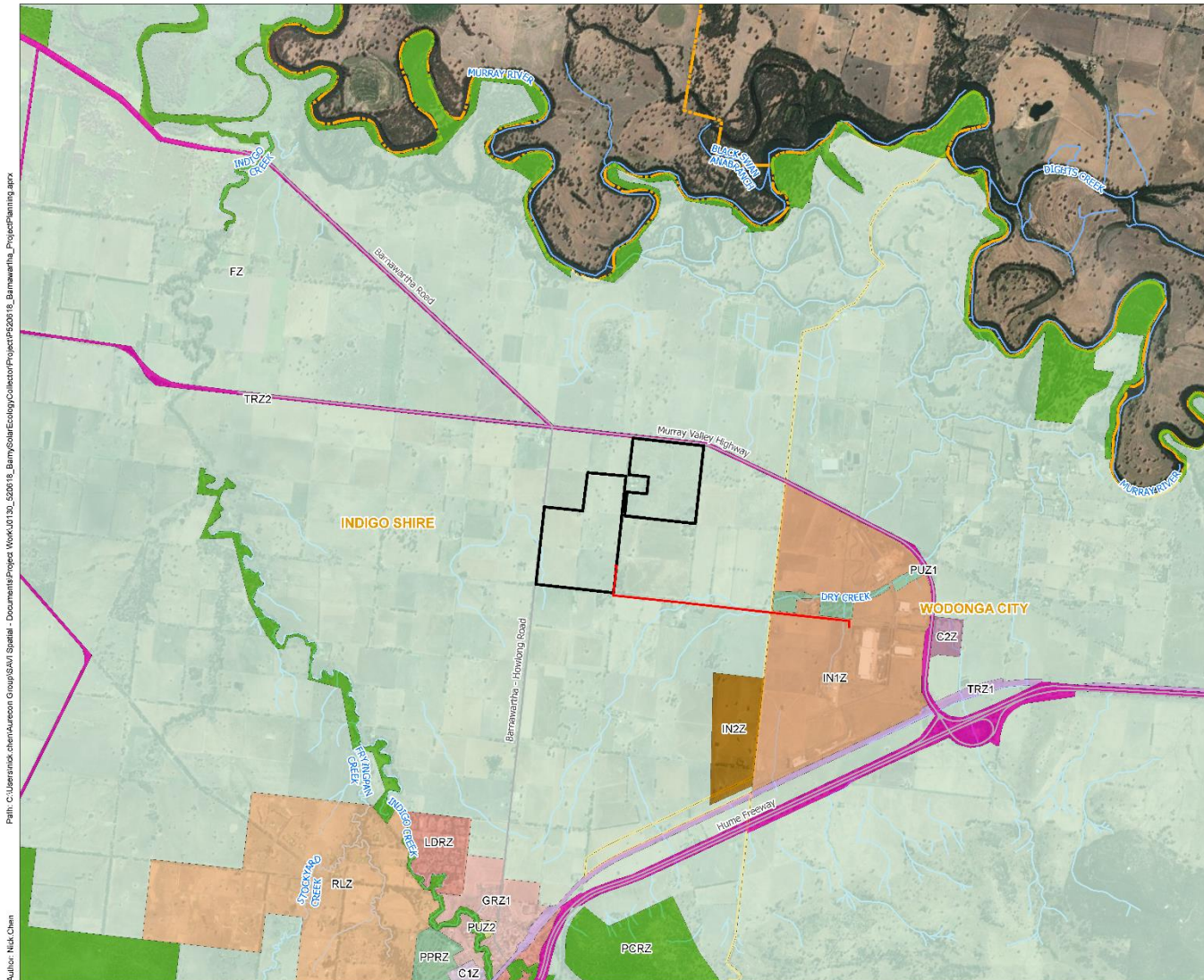
- Project Area
- Proposed Cable Route
- River
- Road
- LGA outline
- Planning zones**
- C1Z - Commercial 1 Zone
- C2Z - Commercial 2 Zone
- FZ - Farming Zone
- GRZ - General Residential Zone
- IN1Z - Industrial 1 Zone
- IN2Z - Industrial 2 Zone
- LDRZ - Low Density Residential Zone
- PCRZ - Public Conservation and Resource Zone
- PPRZ - Public Park and Recreation Zone
- PUZ1 - Public Use Zone Service and Utility
- PUZ2 - Public Use Zone Education
- RLZ - Rural Living Zone
- TRZ1 - Transport Zone 1
- TRZ2 - Transport Zone 2

Source: Esri, Aurecon(2022), Vicmap(2022)

Date: 31/03/2022

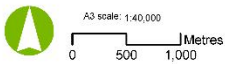
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Barnawartha Solar Farm Planning Zones



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Author: Nick Chen



Job No: 520618
Coordinate System: GDA 1984 MGA Zone 55

Figure 3-1 Surrounding zones

The immediate surrounds are described as follows (and is shown in Figure 3-1):

North: The Murray Valley Highway is immediately abutting the land to the north. The land across the Murray Valley Highway to the north is used for agricultural purposes and contains associated residential dwellings and farm related infrastructure. The Murray River, the Murray River Reserve and the border with New South Wales is located further north and north-east, approximately 2 kilometres from the site.

South: Baxter-Whelans Road is immediately abutting the land to the south. Further south is agricultural land that contains several dwellings with associated outbuildings and structures.

West: The land to the west of the site is generally used for agricultural purposes. Further west, the farming land is bounded by the Indigo Creek and the Indigo Creek Water Frontage Reserve.

East: The land to the east to the site is generally used for agricultural and industrial purposes. In particular, the Northern Victoria Livestock Exchange is located approximately 1.5 km north-east from the site. Further east, the land is used for industrial uses and occupied by the Wodonga TAFE and Logic Wodonga.

The closest sensitive uses to the site are identified as dwellings within the Farming Zone (as listed below). Areas of greater sensitivity, such as urban areas, are situated approximately 5 km south (Barnawartha) and 15 km east (Wodonga).

The sensitive uses located in proximity to the subject site include residential properties at:

- 375 Baxter-Whelans Road Barnawartha (200m south)
- 271 Baxter-Whelans Road, Barnawartha (620m south)
- 2132 Murray Valley Highway Barnawartha (630m west)
- 258 Eames Road, Barnawartha (1,050m south)
- 258 Eames Road, Barnawartha (1,220m south)
- 122 Bay Road Barnawartha (1,300m west)
- 16 Bay Road, Barnawartha (1,440m west)
- 320 Coyles Road, Barnawartha (1,500m north-east)
- 703 Barnawartha-Howlong Road, Barnawartha (1,900m north-west)
- 23 Stewarts Road, Barnawartha (1,920m south-west)

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The main road transport corridor in the region is the Hume Highway, which connects Sydney to Melbourne.

A summary of the local roads is provided in Table 3-1 below.

Table 3-1 Local roads summary

Road	Description
Murray Valley Highway	Sealed, two way lane carriageway
Hermitage Road	Unsealed, two way lane carriageway
Baxter - Whelans Road	Sealed, two way lane carriageway
Barnawartha – Howlong Road	Sealed, two way lane carriageway

3.3 Site selection

The site has been selected for the Project due to its favourable levels of solar exposure (estimated to be approximately 17.3 (MJ/m²) daily) as well as the following site conditions:

- The topography is relatively flat and clear of vegetation, ensuring a straightforward and efficient layout, construction and ongoing maintenance process.
- The site has direct access to the existing transmission line and the existing road network.
- The Project will not result in the loss of high-quality agricultural land as identified in the Agricultural Impact Assessment (Appendix K) and will provide for continued grazing on site.

- There are a limited number of sensitive receptors (such as residential dwellings) in proximity to the site.
- The limited amount of vegetation on the site means that the Project does not require major vegetation clearing.
- There is a mixture of land uses in the wider surrounding area, as well as non-agricultural built form.
- Generally, solar developments are compatible with farming regions and can co-exist with existing agricultural operations adjacent.

3.3.1 Solar Energy Facilities Design and Development Guidelines (DELWP, 2019)

The Victorian Government has developed the Solar Energy Facilities - Design and Development Guideline ('the Guidelines') to support the siting, design and assessment of large-scale solar energy facilities in Victoria. It is considered that the Project complies with the Guidelines for the following reasons:

- The Project is appropriately situated in an area that is highly accessible to the NEM and will make use of the existing electricity network (transmission lines) and infrastructure.
- The Project is able to co-exist with certain agricultural production. It will not cause disturbances to surrounding agricultural activity and the Project does not compromise any areas of irrigation infrastructure or water courses.
- The design of the solar farm avoids encroachment in areas which have Aboriginal Cultural Heritage Sensitivity. It is therefore considered that the solar farm will have no impact on heritage values.
- The design and layout of the proposed solar farm has sought to minimise impacts on native vegetation and has revised the design to retain native vegetation on the site where practicable. Furthermore, the proposed landscaping is considered to contribute to the overall biodiversity values of the area.
- A landscaping buffer is proposed along the Murray Valley Highway, the southern boundary to Baxter – Whelan Road and along the eastern property boundary which will conceal the majority of views to passing traffic. In areas where solar panels will be visible, we note that the wider surrounding area has a mixed character which includes industrial scale buildings within a rural setting. The Project sits comfortably in this context given the size and height of the solar panels.
- The site is also located a sufficient distance from the nearest urban area of Barnawartha and is not located in a designated growth area in the Indigo Planning Scheme.

3.3.2 Design Guidelines and Model Requirements - Renewable Energy Facilities (CFA, 2022)

The Design Guidelines and Model Requirements - Renewable Energy Facilities (CFA, 2022) was updated in March 2022 and provides standard considerations and measures in relation to fire safety, risk and emergency management to be considered when designing, constructing and operating new renewable energy facilities as well as upgrading existing facilities. The CFA expects that planning applications respond to certain requirements, as outlined in Table 3-2 along with our response.

Table 3-2 CFA's expectations for planning applications

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Expectation	Response
<p>Address bushfire risk according to the Victoria Planning Provisions, Clause 13.02-1S (Bushfire Planning), through bushfire hazard identification and assessment (including a bushfire hazard site and landscape assessment)</p> <p>Address risks to the proposed technologies from the landscape (bushfire/grassfire).</p> <p style="text-align: center; color: red; font-weight: bold; font-size: 1.2em;">ADVERTISED PLAN</p>	<p>While no part of the study area is in a Bushfire Management Overlay (BMO), like much of Victoria, the entire study area is designated as a Bushfire Prone Area (BPA).</p> <p>Clause 13.02-1S of the Indigo and Wodonga Planning Schemes lists types of applications for which bushfire risk should be considered in a BPA. As the proposed development is not specifically listed, the application requirements of Clause 13.02 are not considered to apply and have not been considered further here.</p> <p>While numerous scattered trees existing around the perimeter of the Project area, the broader surrounds are largely distinguished by open farmland. As such grassland presents the main bushfire hazard vegetation type in the region. The closest areas of bushland in the region are along Indigo Creek to the south west and along the Murray River to the north east. Dense forested habitats occur at Chiltern-Mt Pilot National Park which is located 6.5 km to the south west, beyond Indigo Creek.</p> <p>Further fire management measures that adequately minimise the risks associated with bushfires have been included in the EMF (Appendix I).</p>
<p>Clearly indicate where exact specifications of elements within the renewable energy facility will be determined during the detailed design phase, such as solar panel and wind turbine model/manufacturer, battery chemistry.</p>	<p>The number of inverters required will be confirmed during detailed design before the construction phase, however the current layout shows the indicative location of power conversion units and associated batteries.</p>
<p>Explicitly state that the following documentation will be prepared in accordance with this guideline, in conjunction with CFA, prior to commissioning of the facility:</p> <ul style="list-style-type: none"> ▪ Risk Management Plan (where applicable) ▪ Fire Management Plan ▪ Emergency Management Plan 	<p>A Fire Management Plan and Emergency Management Plan will be prepared to consider access for emergency services to the site. This will be prepared in consultation with the CFA.</p>

4 Consultation

ARP on behalf of Barnawartha Solar has undertaken preliminary consultation throughout the development of the concept design for the Project. Early consultation was undertaken with:

- Indigo Shire Council
- Department of Environment, Land, Water and Planning (DELWP)
- Country Fire Authority (CFA)
- The community

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4.1 Local council

A pre-application meeting was held with the Indigo Shire Council about the Project in early 2021. The meeting addressed the following considerations:

- Council recommended that planning applications for solar farms address the requirements of the relevant DELWP guidelines.

- Providing landscaping to the main road frontages (Murray Valley Highway).
- The proposal should demonstrate the benefits the development would bring to the local economy.
- Community consultation with adjoining landowners is recommended prior to lodgement.

4.2 Pre-application meeting with DELWP

A formal pre application meeting was held on 15 December 2021 as arranged by DELWP. A full list of attendees is included in Table 4-1.

Table 4-1 Pre application meeting attendees

Name	Organisation
Steele Bowen-Watson	DELWP (Energy)
Mitchell J Connolly	DELWP (Energy)
Tom Gallagher	DELWP (Energy)
Hannah Wright	DELWP (Energy)
Sam Mason	DELWP (Energy)
Anya Cardilini	DELWP (Enviro)
Stewart Dekker	DELWP(Enviro)
Richie Dean	Department of Transport (DoT)
Anthea Jennings	DoT (Hume Region)
Harry Simpson	ARP
George Hughes	ARP
Matthew Rose	Wirsol
Andrew Barson	Wirsol
Mark Simms	Energy Safe Victoria
Greta Thraves	Aurecon
Liam Riordan	Aurecon
Kim Heberling	Aurecon

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The following is a summary of the key discussions:

- DoT is generally happy with location and setting given proximity to Murray Valley Highway and the Hume Highway
- Barnawartha Solar will work with Indigo Shire Council for any proposed upgrades to Hermitage Road
- DoT accept the proposed access routes from the Hume Highway
- DoT will be looking for a full Traffic Impact Assessment including swept paths as part of the planning application
- The planning application will show how the Project avoided and minimised native vegetation on site as much as possible, including within buffers and along the site boundaries
- The Project outlined the preference to utilise existing overhead transmission lines and easements to access the grid

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- General advice is to consider the CFA Guidelines and ensure boundary landscaping complies with recommended setbacks
- Include the dwelling within the Project Area as a sensitive receptor for the purpose of the noise assessment
- Limit the location of the invertors on the edge of the Project Area to reduce noise impacts on sensitive receptors

4.3 Pre-application meeting with CFA

A pre-application meeting was held with the CFA about the Project on 20 October 2021. The CFA provided the following feedback:

- The CFA's minimum expectation for water at sites with battery storage is 300kL, or as per the requirements for Open Yard Storage in AS 2419.1, whichever is the greater.
- CFA's preference is for the water supply to be as close to the site entrance(s) as possible, to provide safe access and egress for firefighters and ensure that firefighters do not have to drive past hazards (such as the substation) to reach it.
- The battery water storage can be located at the site entrance, however the other water supplies (1 x 45kL per 150ha as per 6.2.2 of the CFA Guideline) will need to be strategically located throughout the site.
- If landscape planting is required, that the density of the planting is low to reduce fire risk. Suggested planting might include a single row of trees for screening (e.g. Australian native with less foliage) with some low-lying vegetation to reduce fire risk more than a dense planting schedule.

4.4 Community consultation

Consultation activities commenced in 2018, when the Project was first discussed with surrounding residents. The consultation reopened in February 2022 when the Project was progressed and the proposed plans were progressed. The consultation period will remain open until the construction of the Project has been completed.

The community consultation is held to ensure full engagement with the local community via multiple communication channels, including e-mails, phone calls, media (TV, radio and newspaper), social media, flyer distribution and in person meetings.

A comprehensive public consultation was held for the following primary reasons:

- To engage, explain and discuss with the local area and communities
- To distribute details of Project to the local community
- To improve the proposed project for the local community by implementing design suggestions where appropriate
- To register contacts for individuals and companies interested in working on the Project

The key discussion points of the comprehensive consultation period include:

- Direct benefits for the local area
- Site choice
- Construction period and associated disruption
- Availability of local jobs for contractors during the construction phase

Several measures have been adopted and incorporated as a result of this consultation period including:

- Fencing along Baxter Whelans Road has been moved further into the property

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- Inverters and batteries have been moved to locations further within the Project area
- Increased screening around the Project boundary of Baxter Whelans Road
- The substation location has been moved further north, away from Baxter-Whelans Road
- All cables from the solar farm will be run along the existing overhead line (OHL) network and then underground within the City of Wodonga road reserve.
- All vegetation has been retained where possible

Wirsol Energy and ARP predominantly received support for the Project from the local community, aside from some objections. There was limited interest shown during the consultation period, with minimal contact made to the Project team or attendance at the community consultation event.

4.4.1 Consultation Timing

The public consultation for the Project comprised of a number of stages, with the main event being a drop-in community session for the public held on 28 February 2022 from 5.30pm to 7.30pm at the Barnawartha Star Hotel on High Street, Barnawartha.

4.4.2 Community awareness

In order to make the local community aware of the event and the Project, the following actions were completed:

- Two newspaper adverts were placed in the Border Mail on 19 February 2022 and 24 February 2022.



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Photo 1 Newspaper advertisement 19 February 2022 Border Mail

- 'Invitation – BSF' were sent to the Renewable Energy Wodonga and the Chiltern Lions Club. Both were asked to post to their local communities and network.

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- 'Invitation – BSF' & 'Flyer – BSF' were posted to the Indigoshire Council in person. Approx. 10 copies of each were left to distribute as they saw fit. An email to Indigoshire was also sent notifying them of the event.
- 'Invitation – BSF' were posted at the following locations



Photo 2 Notice board outside the Barnawartha Petrol station and Café



Photo 3 On the notice board outside the Barnawartha Post Office

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Photo 4 On the notice board in Yackandanda

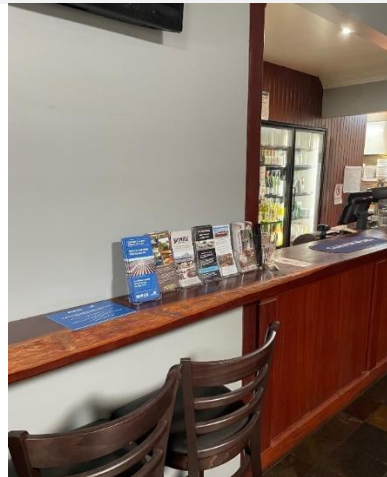


Photo 5 Barnawartha Star Hotel – Approx. 15 'Invitation – BSF' & 'Flyer – BSF' were left in the public view

The Project webpage is at www.barnawarthasolarfarm.com and includes details of the Project as well as the ability to contact the Project team. Figure 4-1 is an image of the front page of the Project website.



Figure 4-1 Project website

4.4.3 Letterbox drop

In addition to the above, a letterbox drop to surrounding properties (within 1km radius) was undertaken on 17 February 2022. The following materials were included in each letter:

- Invitation – BSF
- Flyer – BSF (see Appendix L)
- George Hughes Business Card

Properties notified through the letterbox drop are listed in Table 4-2.

Table 4-2 Response to letter box drop

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Address	Notes
271 Eames Rd, Barnawartha VIC 3688, Australia	Expressed support for the Project All three items left with the property owners and a conversation was held. The property owners were supportive and inquisitive and wanted to understand more about the Project
258 Eames Rd, Barnawartha VIC 3688, Australia	Property owned by the same family as 271 Eames Rd.
Wodonga Council - 87 Baxter-Whelans Rd, Barnawartha VIC 3688, Australia 100 Baxter-Whelans Rd, Barnawartha VIC 3688, Australia	City of Wodonga council office
122 Baxter-Whelans Rd, Barnawartha VIC 3688, Australia	Support for Project Consultation materials were distributed via email in place of a letterbox drop as the owner primarily resides in New South Wales.
Owner of: 271 Baxter-Whelans Rd, Barnawartha VIC 3688, Australia 230 Baxter-Whelans Rd, Barnawartha VIC 3688, Australia 255 Baxter-Whelans Rd, Barnawartha VIC 3688, Australia	All three items were emailed to the property owner and a conversation was held on 11 March 2022. The landowner had questions regards the Projects and wanted to understand how we were mitigating against impact. We explained the Project in detail and went through the items listed below. In addition, we agreed to plan screening along the southern boundary of the property at 49 Hermitage Road.
275 Baxter-Whelans Rd, Barnawartha VIC 3688, Australia	All three items were passed to the property owner in person and a there has been email correspondence since. The properties owners came to the drop in session on 28 February 2022.
185 Barnawartha-Howlong Rd, Barnawartha VIC 3688, Australia	All three items were left at the property owner
541 Barnawartha-Howlong Rd, Barnawartha VIC 3688, Australia	Expressed support for Project All three items were passed to the property owners son who farms the land and they have no issues with the Project. The property owner came to the event on 28 February 2022.
320 Coyles Rd, Barnawartha VIC 3688, Australia	Concern for the Project All three items were passed to the property owner in person and they came to the drop in session on 28 February 2022.

Address	Notes
APA Gas regarding Western Site	Email sent to APA notifying them of the Project. No comments on the Project but will require us to follow standard operating procedures when construction commences
Ausnet regarding the use of their OHL network	Email sent to Ausnet notifying them of the Project. No comments on the Project but will require us to follow standard operating procedures when construction commences
TPG Telecom (VIC) regarding Western Site	Email sent to TPG notifying them of the Project. No comments on the Project but will require us to follow standard operating procedures when construction commences

4.4.4 Public drop in event

During the public drop in session held on 28 February 2022, two Project layouts were presented the intention was to consult with the community to understand which layout would be more suitable.

ARP AUS BARN-004RevB_220209(Barnawartha Revised Site Layout & Cable Route)

ARP AUS BARN-014_220223_(Barnawartha Revised Site Layout 2022)

The following materials were also presented during the event:

- Example images of O&M building and water tank, warehouse and solar farm
- Example images of a solar farm on farmland
- Information factsheet
- Indicative substation and buildings facility layout (ref. BARNSF-GN-GAD-0209-V1)
- Indicative overall site layout – Linear (Western blocks) (ref. BARNSF-GN-LAY-0211-V1)
- Indicative overall site layout – Square (Western blocks) (ref. BARNSF-GN-LAY-0212-V1)
- Diagram showing elevation of each solar panel
- Detailed layout & 3D structure plan (ref. T2Q01143-L-001)
- Architectural elevations plan for Barnawartha Solar Farm O & M Building (ref. T2P01143-L-003)
- Warehouse building detailed layout elevation Multiview (ref. T2P01143-L-004)
- Contact information and project webpage

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Comments received during the public drop in session are summarised in Table 4-3.

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Table 4-3 Comments received during drop in session

Name	Comments Received
David and Nicola Coyle of: 275 Baxter-Whelans Rd, Barnawartha VIC 3688, Australia	Closest residents. Expressed concerns around: <ul style="list-style-type: none"> ▪ Visual impact of the Project ▪ Noise from the substation, inverters and battery ▪ Proximity to their property ▪ Heat islanding effect and EMF's – what are the impacts ▪ Why this property ▪ Why is this farming land to be used

Name	Comments Received
	<ul style="list-style-type: none"> Is fire risk increased Distraction from the road networks
Alan and Meg Coyle of: 320 Coyles Rd, Barnawartha VIC 3688, Australia	<p>Family members of David & Nicola and own land surrounding the property</p> <p>Expressed concerns around:</p> <ul style="list-style-type: none"> Visual impact of the Project Noise from the substation, inverters and battery Proximity to their property Heat islanding effect and EMF's – what are the impacts Why this property Why is this farming land to be used Is fire risk increased Distraction from the road networks
Ray Fisher of: 541 Barnawartha-Howlong Rd, Barnawartha VIC 3688, Australia	<p>Inquisitive regards the Project and wanted to find out more information on the details of how it will operate and look.</p> <p>Was pleased that his son, Dale, was going to be able to assist Kevin running sheep in the property.</p>
Mark Verbaken of: 254 Lades Rd	NA - No specific questions raised
Shane Helwig of: Indigo Drive	<p>Expressed concerns around</p> <p>Visual impact / implications when driving along the road network</p> <p>Increased fire risk</p>
Rogan of: 5 Bedford Road	Expressed interest around the timeframes for the Project
Martin (no surname & address given)	Martin visited the event to get a better understanding of the Project and was inquisitive. He is a family member of one of the interested landowners. His overall thoughts were positive and supportive.

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4.4.5 Email correspondence

In addition to the consultation activities outlined above, the following comments were also received and addressed via email/phone call.

Table 4-4 Email correspondence

Name	Comments Received
Phil (no surname and address given)	Expressed interest around power storage capacity and night-time power supply.
Brendan Baxter (no surname and address given)	<p>Expressed concerns around visual impacts.</p> <p>Satisfied with the response that more natural screening is provided along the southern boundary of 49 Hermitage Road.</p>

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<p>Nicola Coyle of: 275 Baxter-Whelans Road, Barnawartha VIC 3688, Australia</p>	<p>Expressed concerns around the scale of the development and proposed siting shown on the updated plans.</p> <p>ARP/Wirsol Energy have been working closely with the Coyle family to address their concerns and have amended the plans to relocate the substation further north away from their property and set all works back from the property boundary 30m and include a landscape buffer.</p>
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4.4.6 Summary of feedback

The table below provides a summary of the feedback raised during the consultation and the responses provided.

Table 4-5 Summary of concerns

Community Concern	Response
Visual impact	<p>The panels will be surrounded by natural vegetation already present. In addition, we will complete infilling along the Murray Valley Highway.</p> <p>Along Baxter Whelans Rd we will plant a 5m native vegetation screening buffer to reduce any perceived implications. We have agreed with 275 Baxter Whelans Rd to leave the existing fence in place along the road and then erect our fence 6m in, to allow for vegetation planting between the two.</p> <p>Along the southern boundary of the east property being used for the solar farm (49 Hermitage Rd), we have agreed to plant screening</p> <p>The panels will be on a single axis tracker meaning their visual impact will be limited and rotating throughout the day</p>
Noise from the substation, inverters and battery	<p>A main concern from 275 Baxter Whelans Rd was the proximity of the substation to their property, as shown in the plans used at the public consultation event. As a result, we have moved the substation further to the north as shown on the revised plan submitted to DELWP.</p> <p>Any noise generation from the substation will be minor and far below the allowed limits</p> <p>All inverters and batteries will be distributed throughout the site and thus ensuring there is no cumulative effect. All inverters and batteries will be a minimum of 200m from any property and thus the noise impacts will be far within allowed guidelines.</p>
Proximity to 275 Baxter-Whelan Rd	<p>In response to the comments from the property owner around visual impacts and proximity to 275 Baxter-Whelan Road, the proposed design has been updated to increase vegetation screening between the road and the solar farm. We have also agreed to move the fence for the solar farm further inside the property.</p> <p>In addition, we have moved the substation further to the north as per their request.</p>
Heat islanding effect and EMF's	<p>There will be no heat islanding impact from the solar farm. The panels are on a single axis tracker and thus allowing for huge amounts of air flow and air movement. Solar panels are designed to absorb energy and not give off any heat.</p> <p>No electromagnetic fields will be emitted.</p>
Why this property and why is this farming land to be used?	<p>This land has been identified as it is currently grazed and the land will continue to be grazed throughout the lifetime of the Project. Therefore we are not changing the existing land use.</p> <p>In addition, this land is within close proximity of the substation at Logic which is where our grid connection will be made. We are able to utilise the existing OHL network in Indigo Shire.</p> <p>The land is flat with limited vegetation.</p>

Community Concern	Response
Is fire risk increased?	We will follow the guidelines outlined by the CFA and ensure all regulations are met. This will include having a water tank on site, multiple access points (one reserved for emergency access), buffer zones between the solar panels and the boundary of the property, maintenance of the vegetation and grass by sheep and machinery, limited screening so we are not adding unnecessary fuel to a potential fire.
Distraction from the road networks	Solar farms are commonly installed along road networks as they are a good use of land. This is demonstrated by the Projects at Glenrowan and the huge number of projects worldwide where solar panels are used to line road networks. There is no glint and glare from the solar panels so this poses no risk.
Grid connection route	Instead of running a new OHL from the site to the substation by Logic, we have decided to utilise the existing 22 KV OHL in Indigo Shire and then run a new OHL in an existing easement through Wodonga Council. The new OHL will avoid the removal of native vegetation. Please refer to the grid connection plan for further details.

4.4.7 Employment

Throughout the public consultation process ARP and Wirsol Energy encouraged local companies to get in contact with us to register their interest in working on the Project. Their details have been logged and invitations will be offered for them to tender for the works when relevant.

During the construction phase, the Project is expected to create approximately 200 job opportunities that would support the local rural economy. During the ongoing operational phase, a further ten job opportunities for maintenance staff and technicians are expected to be created.

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5 Planning Policy Assessment

Section 5 of this report outlines the relevant legislation and also provides an assessment against the Planning Policy Framework (PPF) and Local Planning Policy Framework (LPPF) and supporting technical assessments.

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5.1 State legislation and policy

5.1.1 Planning and Environment Act 1987

The *Planning and Environment Act 1987* (P&E Act) establishes a framework for planning the use, development and protection of land in Victoria.

Planning schemes are subordinate legislation to the P&E Act and set out how land may be used and developed. The planning schemes set out the relevant planning controls which determine whether planning approval is required for the use and/or development of land, including vegetation removal. These controls include zones, overlays, particular and general provisions.

Under Clause 72.01-1 (Minister is responsible authority) the Minister for Planning is the responsible authority for the administration and enforcement of the Indigo Planning Scheme in relation to the use and development of land for:

- An energy generation facility with an installed capacity of one megawatt or greater.
- Utility installation used to transmit or distribute electricity

As such, any planning approval application must be lodged with the Minister for Planning for consideration.

5.1.2 Aboriginal Heritage Act 2006

The *Aboriginal Heritage Act 2006* (the Act) is administered by First Peoples-State Relations (FP-SR), Department of Premier and Cabinet. It is the principal piece of legislation dictating Aboriginal cultural heritage management requirements in Victoria.

A mandatory Cultural Heritage Management Plan (CHMP) is not required under the Act for the Project. The activity is defined as 'high impact', however the Project area does not intersect with an area of cultural heritage sensitivity (CHS) and therefore a mandatory CHMP is not triggered under the Act.

5.1.3 Renewable Energy Action Plan (2017)

The Renewable Energy Acton Plan 2017 established the Victorian Renewable Energy Targets (VRET), which required at least 25% generation of renewable energy by 2020 and 40% by 2025. The first goal was met, 26% of the energy generated in the state in 2020 came from renewable sources. In early 2021, the Victorian Government, released the increased target for renewable energy generation, which set a goal of 50% of renewable energy generation by 2030. The Project will support the achievement of the 2025 and 2030 targets, by providing an additional ~64MWac of energy supply once completed. Furthermore, the Project is located in regional Victoria, providing valuable investment that will generate jobs and facilitate the transition to a more sustainable economy.

5.1.4 Victoria's Climate Change Framework (2016)

In June 2016, Victoria set a target of net zero emissions by 2050. This target is considered best practice in addressing global warming and the negative effects of this process on the Victorian environment and economy.

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The Project will contribute to the Victoria's aim for net-zero emissions by 2050 while also boosting the economic sector with the creation of up to 200 direct and indirect jobs during the construction period and opportunities for 10 jobs during the operation and maintenance of the Project.

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5.1.5 Agricultural Victoria Strategy (2017)

The Project is not considered to result in a substantial loss of high agricultural land as the land is neither 'highly productive nor highly versatile' as determined in the Agricultural Impact Assessment prepared by Ag-Challenge (Appendix K). Further, the net loss of agricultural land is considered small in both a state and regional context, with only 0.02% of beef production and 0.06% of cropping production within the region, and the solar farm is expected to have a life span of approximately 40 years, whereby land can be returned to its pre-constructed state. Additionally, sheep grazing can be continued during the operation of the solar farm which provides an agricultural benefit.

5.1.6 Design Guidelines and Model Requirements for Renewable Energy Facilities (2022)

The Country Fire Authority (CFA) has produced the Design Guidelines and Model Requirements for Renewable Energy Facilities 2022 (CFA Guidelines) to facilitate standard consideration of bushfire risk and safety measures in the design, construction, commissioning and operation of renewable energy facilities.

The updated CFA Guidelines is relevant for all renewable energy facility projects regardless of their location in Victoria, including solar, wind and large-scale battery (>1MW) energy storage systems (BESS).

The table below outlines an assessment of the current Project against all relevant guidelines within the CFA guidelines and requirements to be addressed during the Project's detailed design.

Table 5-1 Project response to the CFA Guidelines

CFA Guideline	The Project Design
1. Location and siting within landscape (Section 5.3.1)	The Project site is a grassland used historically for agriculture. It is assumed that no peat is found in the Project Area or surrounding areas. However, the site is within a BPA and hence additional controls to prevent bush fire damage will be considered during detailed design.
2. Layout (Section 5.3.1)	The final design and layout will contain easily accessible fire service infrastructure and safe evaluation points in accordance with NFPA 855 as per Section 6.5. The fire safety study results and model requirements from Section 6.2.1 of the CFA guidelines will also be incorporated into the final design.
3. Fuel Load and vegetation on site (Section 5.3.1)	The majority of the site is within grazed paddocks. The vegetation screening will consider vegetation with fire-retardant properties. The grass on site will be maintained at or below 100 mm during Fire Danger Periods. All vehicles will be equipped with appropriate firefighting equipment.
4. Infrastructure (Section 5.3.1)	The battery infrastructure will comply with UL 9540 and NFPA855. The site will be appropriately signed for dangerous goods as per CFA and NFPA 855 guidelines.
5. Site activities and Operations (Section 5.3.1)	Site activities may pose a fire hazard during construction and commissioning phases. These hazards will be managed through design and installation of appropriate de-energising and isolation systems during the detailed design phase for compliance with NFPA 855 and subject to an Environmental Management Plan..

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<p>6. Site occupancy (Section 5.3.1)</p>	<p>Personnel will be considered vulnerable occupants. They will be trained fire mitigation personnel as per NFPA 855.</p> <p>The site administrative buildings and car parks will be built with adequate separation from the battery farm and adequate fire mitigation equipment and evacuation points will be in place as per NFPA 855.</p>
<p>7. Local weather conditions (Section 5.3.1)</p>	<p>Fire danger period for Indigo Shire is typically from October to April. This will be taken into consideration when tasks with high fire risk are to be performed.</p>
<p>8. Electrical hazards (Section 5.3.1)</p>	<p>The installation, use, maintenance, and disposal of Lithium-Ion batteries will be undertaken accordance with <i>IEC 62619 Safety Requirements for Secondary Lithium Cells and Batteries, for use In Industrial Applications</i></p>
<p>9. Chemical hazards (Section 5.3.1)</p>	
<p>10. Potential fire spread (Section 5.3.1)</p>	<p>The site will be designed to comply with NFPA 855 which outlines battery separation, containment, fire detection and suppression systems and explosion control system requirements. The facility will be equipped with a BMS. Fire safety study results will also be incorporated to the final design.</p>
<p>11. Mechanical damage (Section 5.3.1)</p>	<p>Fencing and battery containment barriers to be designed as per NFPA 855 to prevent mechanical damage to batteries.</p>
<p>12. Landscape hazards (Section 5.3.1)</p>	<p>Ember protection to be implemented in battery containment facilities and the vegetation screening to prevent embers creating internal fires on site.</p>
<p>13. Fire Safety Study and modelling (Section 5.3.1)</p>	<p>Fire safety study to be undertaken during detailed design stages to confirm the adequate fire mitigation system requirement and fire water requirement.</p>
<p>14. Facility Location (Section 6.1.1)</p>	<p>Please see item 1 in this table. An assessment against Clause 13.02-1S is not required for this Project as this Project does not fit the types of facilities listed in the clause.</p>
<p>15. Emergency Vehicle Access (Section 6.2.1)</p>	<p>Please see item 2 in this table.</p>
<p>16. Firefighting water supply (Section 6.2.2)</p>	<p>The fire water system is yet to be designed. Water supply volume required is to be determined during detailed design post a fire safety study. Potential to install a ring main fire water supply and locate fire hydrants as per NFPA 855 and CFA requirements. The final design will incorporate the model requirements from Section 6.2.2 of CFA including fire hydrant model requirements.</p>
<p>17. Landscape Screening and On-Site Vegetation (Section 6.2.3)</p>	<p>Please see items 3 and 12 in this table.</p>
<p>18. Fire Breaks (Section 6.2.4)</p>	<p>A perimeter fire break of 10m has been provided for. The fire break is to meet NFPA 855 compliance standard.</p>
<p>19. Design Specific to BESS (Section 6.2.5)</p>	<p>Non-combustible, floor to ceiling partition walls (thermal barriers between battery racks (stacked modules) within battery containers will be considered</p> <p>The facility will be designed to comply with FM Global Property Loss Prevention Data Sheet 5-33 (2020) Electrical Energy Storage Systems</p>

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20. Fire Detection and Suppression Systems (Section 7.1.1)	Please see items 5 and 10 in this table.
21. Fire Risk Management (Section 7.1.2)	In accordance with the CFA guidelines, fire risk management is to be implemented by adhering to any conditions during the Fire Danger Period. Conditions include remaining on designated tracks for driving and restricted smoking areas. Appropriate permits to be obtained if required.
22. Personnel Training (Section 7.1.3)	Site personnel to be equipped with first aid and fire mitigation training including CFA's training modules for bushfire safety.
23. Emergency Management (Section 7.1.4)	Emergency Management Plan to be prepared as per the CFA guidelines prior to commissioning. Reliable communication devices to be installed for use in the event of a power failure. CFA to be notified at least 7 days prior to commissioning.
24. Occupational Health and Safety (Section 7.1.5)	Safe work procedures and standard operating procedures to be developed for on-site personnel encompassing hazard management, security, ignition source control, maintenance and emergency procedures.
25. Vegetation and Fuel Management (Section 8.1)	Please see item 3 in this table.
26. Maintenance (Section 8.2)	Maintenance to be conducted to meet Australian standards and manufacturers requirements. Any work that may create an ignition source will be under 'hot work' permits.
27. Dangerous goods storage and handling (Section 8.3)	Appropriate signage to be used as per CFA and NFPA 855.
28. Facility and System Monitoring (Section 8.4)	Please see item 10 of this table.
29. Risk Management Review (Section 8.5)	Facility operators to develop or review the Risk, Fire and Emergency management plans.
30. Fire Management Plan (Section 9)	Will be developed per CFA guidelines during detailed design.
31. Emergency Management Plan (Section 10.1)	Will be developed per CFA guidelines during detailed design.
32. Emergency Information for Responders (Section 10.2)	Will be developed per CFA guidelines during detailed design.
33. Personnel Training (Section 10.3)	Will be done per CFA guidelines during onboarding of operators for commissioning and operation.
34. Emergency Exercises (Section 10.4)	Will be done per CFA guidelines during onboarding of operators for commissioning and operation.
35. Reviewing Emergency Management Plans (Section 10.5)	Will be performed per CFA guidelines during commissioning and site operation.
36. Bushfire Emergency Planning (Section 11)	Will be performed per CFA guidelines during commissioning and site operation.

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5.2 Regional Policy

5.2.1 Victoria's Regional Statement (2015)

Victoria's *Regional Statement* is the Victorian Government's acknowledgement of the enormous contribution regional Victoria makes to Victoria's economic strength and way of life. The statement encourages further development and investment in regional Victoria which the Project will contribute to by creating jobs and new industries within this area during both the construction and operation phases.

In addition, the Project also plays an important role to achieving Victoria's ability to reduce emissions and become a low-carbon economy.

5.2.2 Catchment and Land Protection Act 1994

The *Catchment and Land Protection Act 1994* (CaLP Act) identifies and classifies certain species as noxious weeds or pest animals and provides a system of controls to mitigate adverse effects. The CaLP Act also provides a legislative framework for the management of private and public land and sets out the responsibilities of land managers, stating that they must take all reasonable steps to:

- Avoid causing or contributing to land degradation which causes or may cause damage to land of another landowner.
- Protect water resources.
- Conserve soil.
- Eradicate regionally prohibited weeds.
- Prevent the growth and spread of regionally controlled weeds; and
- Prevent the spread of, and as far as possible eradicate, established pest animals.
- The site contains the following noxious weeds listed as regionally controlled within the North East Catchment Management Authority region:
 - St John's Wort (sparsely recorded in roadside vegetation); and
 - Variegated Thistle (recorded on private land, around a dam in the south east of the Project site)

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A Construction and Operation Environmental Management Plans will be prepared outlining appropriate weed control and hygiene measures. In particular, the Construction Environmental Management Plan (CEMP) will include measures aiming to prevent the spread of high threat weeds.

5.3 Council Policies

The Project is located in the Shire of Indigo and an assessment has been undertaken on the council policies and the Local Planning Policy Framework.

5.3.1 Indigo Shire Council Plan (2021 – 2025)

The Project aligns with the strategic themes and objectives of the Indigo Shire Council Plan 2021 – 2025 ('Council Plan') due to:

The Project will support the achievement of the Strategic Objective 3.1 which seeks to ensure that the '*... economy is strong and sustainable and local businesses and industry are supported in the post COVID-19 recovery phase and beyond*'. The Project will contribute to a stronger and more diverse economy by providing jobs in both construction and operation of the 'solar energy facility'.

The Project is strongly aligned with Strategic Objective 4.1 which seeks to '*Lead our community through advocacy, planning and action to address the Climate Emergency and mitigate its impact on the health of our community, environment and the planet*'. The Project will provide the Shire of Indigo with an additional supply of renewable energy, allowing the community to transition to a more sustainable source of electricity.

5.3.2 Economic Development Strategy (August 2018)

The Project is consistent with the strategic objectives of the *Economic Development Strategy 2018* as it will contribute to the growth of the renewable energy sector within the municipality and attract investment and expansion of an alternative employment sector for local residents.

The strategy states that the Indigo Shire seeks to position itself as an innovator in sustainable technology which in turn will enhance the municipalities attractiveness and liveability. One of the key regional ambitions for Indigo Shire is to adapt and diversify agriculture in an environment of change. The Project also presents opportunities for agri-solar through the grazing of livestock within the Project area which is an innovative outcome that allows for traditional and modern farming technologies to coexist.

We note specifically the following aspects of the Proposal which comply with the strategy:

- (Part B) Brings together community led initiatives such as investment opportunities in the renewable energy sector.
- Key Priority 2: Investment Attraction (growth of the renewable energy sector).
- Key Priority 5: Support for Agriculture and the Agrifood Sector (promote renewable energy opportunities and grants which can support the profitability of the agricultural sector).

5.4 Consistency with Planning Policy Framework

The following section provides an assessment of the Project against the policy requirements of the Planning Policy Framework (PPF) of the Indigo Shire Planning Scheme ('the Planning Scheme').

The Project is considered to be consistent with the PPF for the following reasons:

Clause 11 (Settlement) requires that planning is to recognise the need for, and as far as practicable contribute towards:

- Diversity of choice.
- Adaptation in response to changing technology.
- Economically viable.
- Energy efficient.
- Prevention of pollution to land, water and air.
- Protection of environmentally sensitive areas and natural resources.

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Clause 11 (Settlement) also requires that planning is to facilitate sustainable development that takes full advantage of existing settlement patterns and investment in transport, utility, social, community and commercial infrastructure and services. The Project is ideally located to access grid connections, established transport routes and is closely located to compatible uses.

The Project responds to the needs of existing and future communities (both within the municipality and more broadly in Victoria) by providing an additional source of energy which is sustainable. As such, the Project meets the requirement of **Clause 11.01-1S (Settlement)** which seeks to deliver choice and opportunity for all Victorians.

The Project also achieves **Clause 11.01-1R (Settlement – Hume)** as it will foster the sustainability of small rural settlements (Barnawartha).

Clause 11.02-1S (Supply of urban land) requires that a sufficient supply of land is available for all uses. This includes a specific strategy to maintain access to productive natural resources and an adequate supply of well-located land for energy generation. The Project is specifically encouraged under this policy given grid connections are available and other similar projects are co-located within the local area.

The Project is consistent with **Clause 11.03-6S (Regional and Local Places)** given that it meets the identified characteristics and needs of the Indigo Shire (as outlined in the council plan and economic plans for the municipality) which specifically encourages the renewables sector to establish within the municipality.

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The Project is consistent with **Clause 12 (Environmental and Landscape Values)** and **Clause 12.01-1S (Protection of Biodiversity)** given:

- The Project avoids the destruction and removal of vegetation by retaining the most valued sections on the site.
- Additional landscaping is proposed in the retained patches of vegetation which will contribute to the overall biodiversity values of the site and surrounding area.
- The proposed site layout has been designed to protect and avoid areas of ecological value where possible.
- The technical assessments submitted with the application note that there will be limited impact to the amenity in the surrounding area. Where possible, all technical reports have also provided mitigation measures in terms of design and operation that address any potential areas of conflict.

The Project is consistent with **Clause 12.01-2S (Protection of biodiversity)** given that the three-step approach of the *Guidelines for the removal, destruction or lopping off native vegetation* (Department of Environment, Land, Water and Planning) has been applied. More specifically:

- The Project retains the substantial patches of native vegetation and only removes more isolated vegetation to facilitate the development.
- The Project has minimised potential impacts by ensuring appropriate setbacks are included. This has included modification of the layout to avoid as much native vegetation removal as possible.
- The Project has provided an offset to compensate for the removal of the native trees and shrubs. This approach is preferred to ensure that stronger communities are established on appropriate land holdings.
- Further information is provided in the Section 6.1 and the Flora and Fauna Assessment .

The Project is consistent with **Clause 12.03-1S** (River Corridors, Waterways, Lakes and Wetlands) as per the Surface Water Assessment included with the application.

The Project is consistent with the objectives and strategies of **Clause 12.05-2S** (Landscapes) due to its separation to the identified landmarks further to the south around the Barnawartha township (see Clause 21.05-6 which includes a map). The Project is located in farming land which has no defining features which will be impacted by the proposal.

The Project is consistent with **Clause 13** (Environmental Risks and Amenity) given that an Environmental Management Plan ('EMP') has been prepared to ensure that environmental risks are mitigated. The EMP sets out the overarching environmental management processes to ensure that it avoids environmental degradation and hazards. Further information is provided in the EMP.

Clause 13.01-1S (Natural Hazards and climate change) requires the following strategies to be addressed in any application:

- Consider the risks associated with climate change in planning and management decision making processes.
- Identify at risk areas using the best available data and climate change science.
- Site and design development to minimise risk to life, property, the natural environment and community infrastructure from natural hazards.

With regard to these strategies, the Project will introduce a sustainable energy source which will assist Victoria's ambition to combat climate change and the associated affects. We also note that the CFA have been consulted about the proposed layout of the Project and provided their in-principle support for the design.

The Project is within a designated Bushfire Prone Area therefore **Clause 13.02-1S (Bushfire Planning)** applies. We note that the Project has been designed following advice from the CFA in relation to vegetation buffers, location of water sources, and amount of water required on the site. The feedback of the CFA allows for the Project to be defensible in the instance of a bushfire and does not increase bushfire risks to human life.

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Clause **13.05-1S (Noise abatement)** seeks to control the impacts of noise effects on sensitive land uses. The Project is located in proximity to sensitive land uses which are not included within the Project area. A detailed Noise Impact Assessment has been carried out and is included with the application for consideration.

Clause **13.07-1S (Land use compatibility)** seeks to protect community amenity, human health and safety while facilitating appropriate commercial, industrial, infrastructure or other uses with potential adverse off-site impacts. When reviewing the Project location the surrounding land uses have been taken into account to ensure their ongoing enjoyment of reasonable amenity. We note that the area already has industrial uses which the Project will not impact upon. Given this, the application achieves this policy requirement.

The Project design to be in accordance with **Clause 14** (Natural Resource Management) given:

- The impacts to agricultural productivity are minimal as the site does not comprise exceptional value soils. Further, the development of a 'solar energy facility' will not impact on the surrounding farming businesses.
- The land will be able to be used for grazing purposes to maintain vegetation growth between the solar panels.
- Following decommissioning of the Project, the land will be able to be recommissioned to its pre-works state and use, thereby representing a sustainable development which doesn't preclude future agricultural uses.

The site has been strategically chosen in a location not deemed to be of productive agricultural land. The Project is therefore considered consistent with the objectives and strategies of **Clause 14.01-1S** (Protection of Agricultural land). More specifically:

- The accompanied Agricultural Impact Assessment (Appendix K) concludes that the site is not of high agricultural value as the soils are not deemed to be of exceptional agricultural worth.
- The Project will not result in the permanent change in the existing land use as the life span of the Project is around 25-40 years. After this time, the land can be easily reverted to its original state for agricultural purposes.
- 'Solar energy facilities' do not cause amenity impacts which undermine the use of the adjoining land for agricultural purposes.
- The Project will not impose potential off-site effects such as degradation of soil and land sanitation.

The Project is in accordance with the objectives and strategies of **Clause 14.02-1S** (Catchment Planning and Management) and **Clause 14.02-2S** (Water Quality) given that the Project will not have a significant impact on the stormwater runoff flow as the solar panel array given the topography of the land and catchment area. Additionally, although the solar panel arrays will be built over the drainage lines within the site, the modules will be elevated from the ground and therefore will not impact on existing stormwater flows. Please see the Surface Water Assessment (Appendix H) submitted with the application for further details.

The Project is considered to be consistent with **Clause 15 (Built Environment and Heritage)** as:

- Vegetation screening will be provided along the Murray Valley Highway frontage of the site which is most frequented by the public. This also provides the dual purpose of retaining and strengthening the established character of the roadway.
- Screening is not required to the other boundaries as the site is separated from other public vistas
- The built form of the wider surrounding area is defined by a mixture of rural and industrial buildings. The Project will sit comfortably in this context which already has a character of large scale buildings.

The Project is appropriately designed to ensure that the appearance of the existing area is respected in accordance with the objective and strategies of **Clause 15.01-6S** (Design for Rural Areas). The Project is located within an area which consists of a character defined by established industrial and warehouse uses which result in the appearance of the Project being appropriate in a rural landscape which comprises both agricultural and non-agricultural development.

The Project is specifically encouraged by the objectives and strategies of **Clause 15.02-1S (Energy and Resource Efficiency)** given that the Project involves a renewable energy source.

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The Project is considered to be consistent with **Clause 15.03-2S (Aboriginal Cultural Heritage)** given development works are not located within the Aboriginal heritage sensitivity area and a mandatory CHMP under the *Aboriginal Heritage Act 2006* is not required as part of the planning permit application.

The Project will contribute to the strength and diversity of the local and state economy due to the contribution to the emerging renewable energy sector and the associated jobs in accordance with the requirements of **Clause 17** (Economic Development).

The Project is considered to be consistent with the diversified economy policies of **Clause 17.01-1S** and **Clause 17.01-1R** given:

- The Project will diversify the economy of the Indigo Shire which is consistent with the relevant economic strategies prepared by the Council.
- The Project will provide jobs in the construction and operation phases of the solar farm which provides a flow-on benefit to local retail, accommodation and hospitality.
- The Project facilitates direct access to natural resources in the form of solar power, whilst still allowing the land to be utilised for grazing purposes which allows an economic uplift in terms of productivity for the land parcel.

The Project is consistent with **Clause 18 (Transport)** as the site is well serviced by established transport links which will allow for the safe construction and operation of the Project as per the Traffic Assessment prepared by Aurecon (Appendix E).

The Project is specifically encouraged by the objectives and strategies of **Clause 19.01-1S (Energy Supply)** given that the Project involves a renewable energy source which assists with:

- Transition to a low-carbon economy with renewable energy.
- Facilitates local energy generation to help diversify the local economy and improve sustainability outcomes.

The Project responds to the requirements of **Clause 19.01-2S (Renewable energy)** regarding the facilitation and suitable design of facilities in appropriate locations. A detailed assessment against the Solar Energy Facilities Design and Development Guideline is included within this report.

The Project is specifically encouraged by the objectives and strategies of **Clause 19.01-2R (Renewable energy - Hume)** given that the Project involves a renewable energy source. The site has been selected given the presence of solar facilities within the area (both approved and proposed) which creates a hub which can service the local community.

Clause 19.03-3S (Integrated water management) seeks to sustainably manage water supply, water resources, wastewater, drainage and stormwater through an integrated water management approach. This policy requirement is addressed in detail in the Surface Water Assessment (Appendix H) submitted with the application.

5.5 Consistency with the Local Planning Policy Framework

The Project responds to the identified needs of the community in **Clause 21.02 (Key issues)** by providing for the diversification of the Shire's economy and by providing further employment opportunities surrounding the Hume transport corridor and the Logic hub.

The Project responds to the requirements of **Clause 21.03-1 (Vision and strategic framework)** through the retention of agriculture uses on the site which can coexist with the operation of the Project (agri-solar). The existing site is predominantly used for the purposes of grazing which will continue under the proposal.

The Project fulfils the objectives and strategies of **Clause 21.04-2 (Environment)** through the retention of vegetation within the Project area where possible, and minimisation of vegetation removal as well as ensuring there are no unreasonable impacts on the existing water catchment in the area.

The Project fulfils **Clause 21.04-3 (Economic development)** as it will retain agricultural land which can be used in conjunction with the Project. The application also does not propose any subdivision, therefore there

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will be no fragmentation of rural land, and if the use is to cease in the future it can easily be returned to more its former farming use.

The Project directly responds to the North East Catchment Management Strategy as required by **Clause 22.03-1 (Landcare and catchment management)** which is evidenced in the Surface Water Assessment report prepared by Aurecon (Appendix H).

The Project is consistent with **Clause 22.03-2 (Fire Hazard)** due to the consultation undertaken with the CFA who recommended a number of changes to the layout of the Project which have been made. Detailed design will be undertaken in line with the CFA guidelines.

Clause 22.03-7 (Aboriginal Cultural Heritage) There are no areas of Aboriginal Heritage Sensitivity identified within the site. Accordingly, the subject site does not require the preparation of a Cultural Heritage Management Plan.

5.6 Zones and Overlays

The relevant zones and overlays for the Project area are shown in Figure 5-1 and Figure 5-2 on the following pages. A planning assessment against the relevant provisions of the is provided in Sections 5.6.1 and 1.1.1

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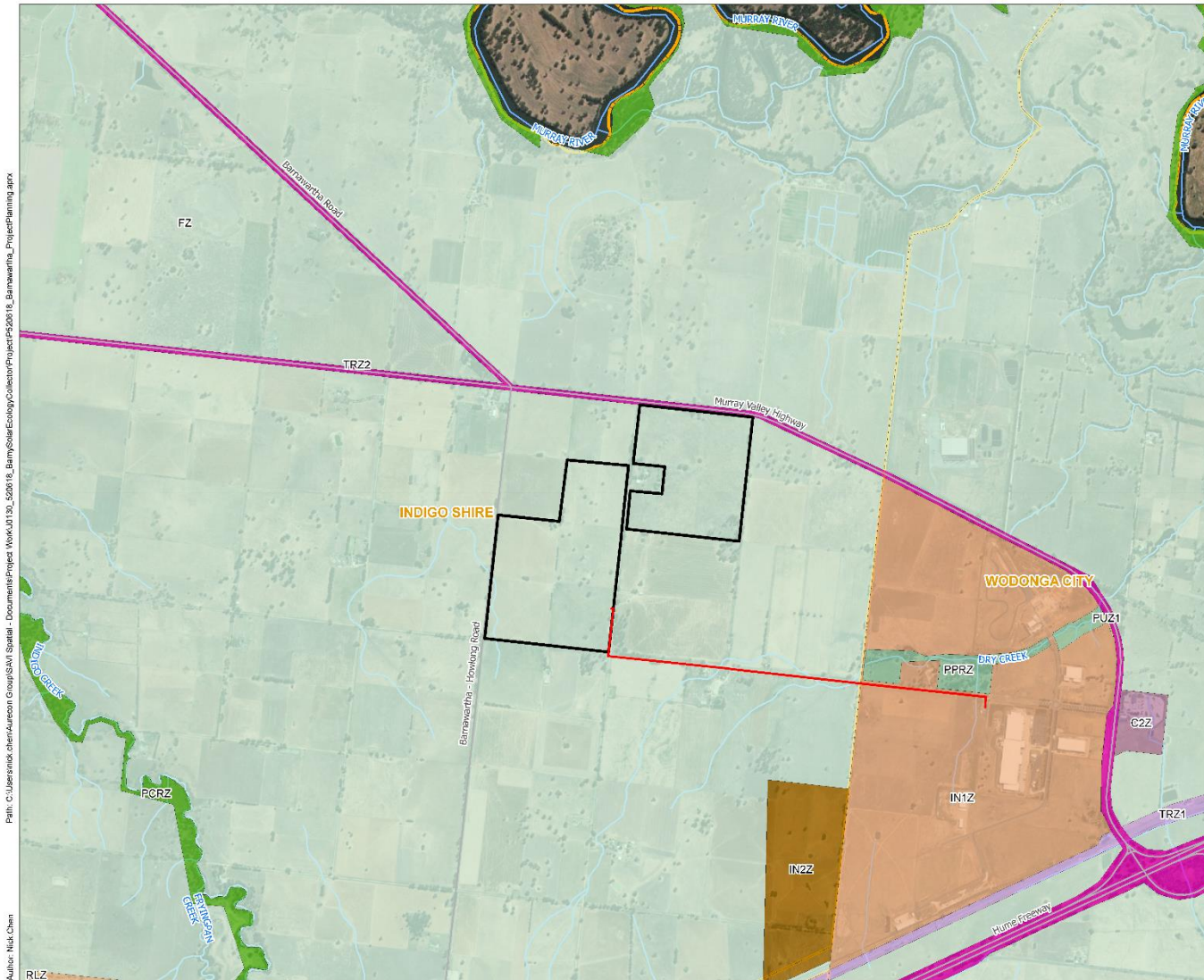
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Legend

- Project Area
- Proposed Cable Route
- River
- Road
- LGA outline
- Planning zones**
- CZ2 - Commercial 2 Zone
- FZ - Farming Zone
- IN1Z - Industrial 1 Zone
- IN2Z - Industrial 2 Zone
- PCRZ - Public Conservation and Resource Zone
- PPRZ - Public Park and Recreation Zone
- PUZ1 - Public Use Zone Service and Utility
- RLZ - Rural Living Zone
- TRZ1 - Transport Zone 1
- TRZ2 - Transport Zone 2



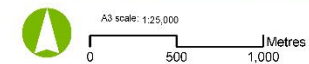
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Date: 31/03/2022

Version: 4

Barnawartha Solar Farm
Planning Zones



Job No: 520618
Coordinate System: GDA 1994 MGA Zone 55

Figure 5-1 Zones Map

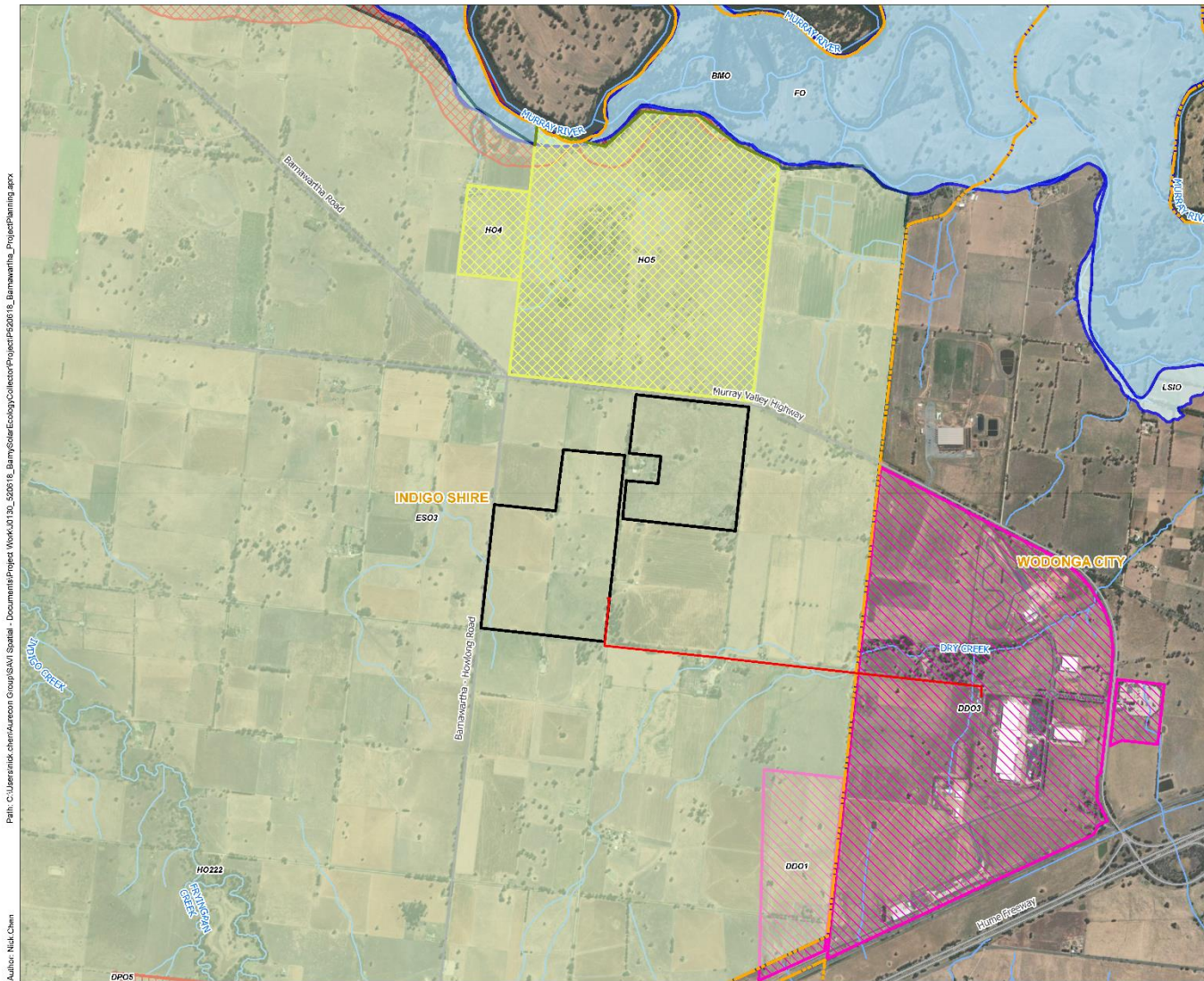
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Legend

- Project Area
- Proposed Cable Route
- River
- Road
- LGA outline
- Planning overlays**
- ESO - ENVIRONMENTAL SIGNIFICANCE
- DDO - DESIGN AND DEVELOPMENT
- DPO - DEVELOPMENT PLAN
- HO - HERITAGE
- BMO - BUSHFIRE MANAGEMENT
- FO - FLOODWAY
- LSIO - LAND SUBJECT TO INUNDATION



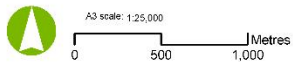
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Date: 31/03/2022

Version: 3

Barnawartha Solar Farm
Planning Overlays



Job No: 520618
Coordinate System: GDA 1994 MGA Zone 55

Figure 5-2 Overlays Map

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5.6.1 Farming Zone

The majority of the Project is situated in the Farming Zone and is considered to be consistent with Clause 35.07.

The Agricultural Impact Assessment provided in Appendix K, identified that the soil of the site is not highly productive. Furthermore, the site is also entirely dependent on natural rainfall, which is considered low in the area. Accordingly, the Project will not result in loss of high value agricultural land.

As noted in the Agricultural Impact Assessment the Project will not preclude the land being used for sheep grazing purposes concurrently with the 'solar energy facility' which allows for a dual use of the site.

The solar farm represents an opportunity to create new and ongoing employment opportunities. The Project is expected to create up to 200 construction jobs and opportunities for up to 10 jobs during operation and maintenance. This is expected in turn to have an indirect impact on retail, accommodation, hospitality and fuel services and stimulate local job creation in the region.

A range of specialist technical assessments regarding ecology, visual amenity, environmental management and historical heritage have been conducted for the Project. The assessments represent comprehensive and sustainable land management practices that have informed the site selection process as well as the future maintenance of the site. An Environmental Management Plan is provided with this application (Appendix I) which addresses ongoing management of the operation of the Project.

The Project is considered to be consistent with the Decision Guidelines of Clause 35.07 as follows:

- The Project has responded to the Municipal Planning Strategy and the PPF (refer Section 5.1 and 5.2.2).
- The site has excellent access to the existing infrastructure and services, being appropriately located to the existing 220kV transmission line.
- A EMP has been provided and sets out the environmental management framework for the Project. The EMP outlines key management strategies regarding environmental and amenity impacts during construction, operation and decommissioning of the facility.
- The site has been carefully selected taking into consideration matters relating to solar exposure, topography, direct access to infrastructure, agricultural impacts and visual amenity. Further, the operation of a solar farm won't unreasonably impact on the uses in adjoining lands that involve extensive farming.

5.6.2 Environmental Significance Overlay

The site is affected the Environmental Significance Overlay – Schedule 3 - Black Dog Creek (ESO3). A planning permit is required to construct a building or carry out works and to remove, destroy or lop any vegetation.

The purpose of the ESO3 is:

- *To maintain the quality of water within the catchment.*
- *To prevent buildings and works from impeding the flows of water within the Black Dog Creek catchment and maintain its ability to carry natural flows including floods.*
- *To provide a framework to assist in decisions regarding drainage works within the catchment.*

In addition to the decision guidelines provided in Clause 42.01 and Clause 65, the Responsible Authority must consider the decision guidelines provided in Clause 3.0 as follows:

- *All applications must comply with the North East Catchment Management Authority Guidelines for Drainage Approval Within the Black Dog Creek Improvement District.*

The following decision guidelines apply to an application for a permit to develop land:

- *Comments of the North East Catchment Management Authority.*

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- Specified flood level pursuant to the Australian Model Code for Building.
- The need to design and construct buildings in accordance with the "Permissible works and structures" section of the report "Flood plain Management in Victoria" prepared by the Australian water Resources Council.
- The existing drainage pattern of the land and its effectiveness and suitability to cope with any development.
- The need to retain natural vegetation in the vicinity of streams and watercourses.
- The need to minimise the effects of increased run-off, erosion or siltation.
- Comments from the Department of Natural Resources and Environment where any proposed development abuts Crown Land

The Project will be constructed in accordance with any relevant guidelines of the North East Catchment Management Authority. There is an unnamed waterway within the western parcel; however, as noted in the Ecological Assessment prepared by Aurecon (Appendix C), the Project will have a limited impact on the surrounding environs.

5.7 Bushfire prone area

As previously mentioned in Section 3.3.2, the Project is not required to be accessed under the Bushfire Management Overlay as it not located within this overlay and only in a Bushfire Prone Area. It is anticipated that the highest fire risk is likely to be due from grass fires. A 'solar energy facility' is not a listed land use at **Clause 13.02 (Bushfire)**, notwithstanding, it is anticipated that a Bushfire Management Plan will be prepared prior to the development of the site as a condition of planning permit. The Bushfire Management Plan will be prepared in consultation with the Country Fire Authority (CFA) to ensure that appropriate fire risk assessments are undertaken, and measures are implemented during development and operation to minimise the risk to life and property from fire.

5.8 Heritage Overlay

The site is not affected by the Heritage Overlay but it is noted that there is a Heritage Overlay affecting the property abutting to the north (2132 Murray Valley Highway). An assessment has prepared by Aurecon which concluded that the Heritage Overlay affecting the property abutting to the north will not be impacted by the Proposal. The assessment by Aurecon (Appendix D) also concluded that it was unlikely that any historic heritage elements or areas of historic potential were present within the site. Accordingly, it is considered that the Project is in accordance with the Heritage Overlay and with the relevant local policy.

5.9 Particular Provisions

5.9.1 Clause 52.17 - Native Vegetation

The Project is considered to be consistent with **Clause 52.17** and the decision guidelines specified in the *Guidelines for the removal, destruction or lopping of native vegetation (2017)* for the following reasons:

- The Ecological Assessment (Appendix C) has outlined areas of ecological value on the site, including native revegetation areas and several patches of native remnant vegetation throughout the subject site. The Project will be restricted where feasible to the degraded treeless vegetation areas of the site.
- Appropriate setbacks will be adopted around the areas of vegetation to be retained on site.
- In accordance with the Ecological Assessment prepared by Aurecon offsets will be provided that meet the requirements for the removal of vegetation to facilitate the Project.

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5.9.2 Clause 52.05 – Signs

Two business identification signs are proposed at the two access points of the site to identify the Project and provide contact details for the business. These signs will measure 1.5sqm each in size which equates to 3sqm for the site. This size complies with the maximum allowable under the provisions of the **Clause 52.05-14** of the Indigo Planning Scheme.

5.9.3 Clause 52.06 – Car Parking

A ‘solar energy facility’ is not a listed use in Table 1 of **Clause 52.06-5**; pursuant to Clause 52.06-6 car parking must be provided to the satisfaction of the responsible authority.

The Project is expected to require up to two staff and one local technician on site at one time during the operation phase. A total of three car parking spaces are proposed as part of the Project. The amount of car parking spaces provided is expected to be in excess of the likely car parking requirements for the normal operation of the solar energy facility. The provision of car parking spaces on site will ensure that there will be no demand generated for on-street parking as a result of the Project’s operation.

5.9.4 Clause 53.13 - Renewable Energy Facility (other than Wind Energy Facility and Geothermal Energy Extraction)

The Project is considered to be consistent with **Clause 53.13** for the following reasons:

During its day to day operation, the ‘solar energy facility’ is not expected to emit any unreasonable noise, smell or vibrations or interfere with the electromagnetic environment. Further, the Glint and Glare Assessment prepared to support this application (Appendix J) identified that the solar modules restrict glare and glint as they are designed to track the movement of the sun and rotate at an angle in which the light hits the panel at the same angle at which the light is refracted from the panel, to capture the maximum amount of sunlight available. Any emissions and discharge from construction, operation and decommission will be managed as noted in the EMP (Appendix I).

The Project will involve appropriate landscaping along the main road frontages visible from the public realm along the Murray Valley Highway.

The Project ensures that the areas designated as significant ecological areas (such as patches of native vegetation or revegetated areas) are avoided or appropriate setbacks are provided. Further, the Project minimises the removal of native vegetation (as far as practical).

The Project also allows for appropriate sediment control measures, weed management and native vegetation management which will be developed and implemented through the EMP.

The Project has provided a minimum setback of 30m from between the infrastructure and neighbouring property boundary. Where this minimum set back has not been allowed for it is because the adjoining land parcels are part of the continued Project land ownership and therefore not a neighbouring property boundary, see Section 6.6 on the heat island effect impacts of the Project.

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6 Impact Assessment

This section provides a summary of the various specialist assessments that were undertaken in support of the Project.

6.1 Ecology

The detailed Flora and Fauna Assessment prepared by Aurecon (Appendix C) evaluates the existing ecological conditions of the site and identifies species and vegetation communities of conservation significance within proximity to the Project. The assessment investigated the presence of Commonwealth and State listed flora and fauna species and ecological communities within the site and characterised the existing ecological condition of the site and surrounds.

The assessment found that the vegetation conditions on the site matched typical conditions of agricultural land which included pasture grasses. Despite the heavily altered nature of the ground layer, the site contained several remnant native eucalypts, many of which classified as large trees. Native vegetation, distinguished by the presence of mature eucalypts, was also present within the adjoining road reserves.

The Project has aimed to avoid and minimise impacts on native vegetation at both strategic and site planning levels. The extent of native vegetation has been assessed during the planning and design phase, and Aurecon's project ecologists have had several meetings and other correspondence with the proponent's design team to provide detailed recommendations for avoidance and minimisation of impacts on native vegetation and other ecological values. The proponent has adopted the avoid and minimise approach by incorporating recommendations into the design where possible. Residual impacts to native vegetation have been determined based on the final proposed site layout of the Barnawartha Solar Farm and cable route and are summarised as follows:

- Removal of 0.354 hectares of native patch vegetation (across five patches), including 11 large trees in patches; and
- Removal of 57 Scattered trees (including 35 large and 22 small trees) (of the 57 scattered trees, 29 are dead)

No threatened flora species were recorded within the study area. Due to the heavily modified nature of the site and almost exclusively introduced ground layer, it was determined that no threatened flora species are likely to occur.

Five threatened fauna species were considered to have a moderate likelihood of occurrence in the study area, namely Diamond Firetail, Grey-crowned Babbler, Hooded Robin, Swift Parrot and Turquoise Parrot. However, the treed habitat in the study area does not represent a key habitat corridor for these species, and individuals would continue to utilise more significant foraging habitat available in the region such as Chiltern Mt Pilot National Park and along the Murray River. It has been determined that while these species may occasionally visit the treed habitats in the study area, the extent of tree removal required for the Project would represent a minor impact on these species. Importantly, the Project is considered unlikely to result in a significant impact on Swift Parrot which is listed as critically endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

No EPBC Act or *Flora and Fauna Guarantee Act 1988* (FFG Act) listed threatened communities were identified in the study area.

The following is a summary of the relevant recommendations:

Such removal of native vegetation in the Project area would trigger a permit under Clause 52.17 of the Indigo Planning Scheme. The removal would be assessed under the Detailed Assessment Pathway, which requires that the Project be referred to DELWP. Offsets for the removal of native vegetation are required in accordance with the Guidelines and include the following:

- 0.504 general habitat units, with the following requirements:
- Offset must be located in North East Catchment Management Authority (CMA) or Indigo Local Government Area

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- Offset must have minimum strategic biodiversity value (SBV) of 0.188
- Offset must include the protection of 46 large trees

An online search of the Native Vegetation Credit Register (NVCR) on 16th March 2022 has shown that a sufficient amount of general habitat units are readily available in the North East CMA. Based on the proposed design for the solar farm and the Native Vegetation Removal Report which has been prepared by DELWP, no species offsets are required.

The Environment Management Plan (Appendix I) which has been submitted with the application will further minimise potential impacts from the Project to the existing ecology of the site and wider surrounding area.

6.2 Agriculture

The Agricultural Impact Assessment prepared by Ag Challenge (Appendix K) assesses the potential impacts of the Project on the adjacent properties and the site and determined that the Project is unlikely to have any adverse impacts on the wider surrounding area.

The site is not prime agricultural land (high-quality agricultural land) as it is limited to use for the grazing of sheep and some cropping. Additionally, the location of the property is within an area where there is less irrigation infrastructure for farming purposes and soil types are also not deemed to be of exceptional agricultural worth.

The Project will reduce the current potential for agricultural uses on the site (as the areas where solar panels are constructed will no longer be available for cropping) but will still allow for grazing by sheep. This is an outcome that is considered to meet the purpose of the Farming Zone and ensure the long term farming enterprises of the landowners.

In comparison with the region wide data, the estimated gross margin of the farm would account for 0.2% of the gross value of production in the region, which is considered a small component of the industry. The potential impact on agricultural infrastructure and amenity of the region is considered to not be at a level where any detectable impact can be measured.

The operational life of the Project is expected to be approximately 40 years and the solar farm can then be decommissioned and reverted back to agricultural land use if required. Therefore, the solar farm will not affect the long-term viability of the site to be used for agricultural purposes.

Given the above, the Project is suitably located and will not undermine the purpose of the Farming Zone and is an appropriate Section 2 use given the surrounding context and policy in the Indigo Planning Scheme encouraging renewable energy projects.

6.3 Landscape and Visual Impact Assessment

The application is supported by a detailed Landscape and Visual Impact Assessment (Appendix F) provides an appraisal of the impact of the Proposal on the character of the wider surrounding area. As noted in this report, the wider surrounding area has a mixed character that includes both agricultural and industrial style buildings; given this, the existing character of the area is one which is mixed and has a commercial feel.

The Project comprises landscaping buffers along the Murray Valley Highway, the southern boundary which will most conceal the views of the Project from the general public. A landscape mitigation plan has been prepared with screening located to mitigate impacts from sensitive receptors to the sites. A mix of suitable native and indigenous species have been selected to provide screening, the landscape mitigation plan has been provided in Appendix D of the Landscape and Visual Impact Assessment. In all other areas, further landscaping is not required given the character of the broader area and the requests of the CFA to minimise the extent of vegetation present on the boundaries of the site for fire fighting purposes.

Where possible, existing vegetation is retained, and further native plantings will be provided to enhance the presentation of the buffer to the public realm; this also has dual benefits to the ecology of the site and the surrounding area.

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From the southern boundary, the Project has been set back 30m from the property boundary, and is considered suitably separated from the adjoining dwellings to the south which will experience a level of change which is considered to be appropriate given the commercial character of the wider surrounding area.

At the time of this report, construction elements have not been designed, therefore the below is a high-level approach to reduce the landscape and visual impacts of the Project on surrounding viewpoints, as well as its landscape setting based on construction access and construction compounds.

- Built form
 - Ancillary facilities are to be developed to minimise visual impacts for adjacent receptors;
 - Storage areas and associated works are to be located in cleared or otherwise disturbed areas away from the road interface or near to residential receptors;
 - Where feasible and reasonable, the elements within construction sites would be located to minimise visual impact, for example materials and machinery would not be visible above temporary screens;
 - Site lighting is to be designed to minimise glare issues and light spillage into adjacent areas and generally consistent with the requirements of Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting; and
 - Fencing should be transparent security fencing with site signage concentrated to the site entry.
- Vegetation and landscape
 - Existing trees adjacent to the works will be retained and protected where possible to screen construction support sites, minimising clearing where possible;
 - Where possible, trees will be trimmed rather than removed. Works would be carried out by a qualified arborist; and
 - All areas disturbed by construction and not required for operation of the project are to be restored to existing condition.

The following mitigation measures are recommended operational elements for consideration to be integrated into the next phase of design to reduce the landscape and visual impacts of the Project on surrounding viewpoints, as well as its landscape setting.

- Site selection
 - The principle consideration in mitigating potential landscape and visual impacts by a project during operation is through careful site selection.
 - The proposed location for the Project is separated from highly sensitive receptors such as general residential zones, is within a rural setting and is in close proximity to the existing Barnawartha substation.
- Built form
 - Architectural materials - cladding, materials and colour used to mitigate appearance of bulky structures. 'Environmental Green' adopted for structures visible beneath the horizon, to blend with existing vegetation;
 - Earthworks – use of landform to integrate the facility components into the surrounding landscape, including planted embankments for additional visual screening. This is subject to operational requirements and fire hazard offsets;
 - Inspection and maintenance of security lighting direction to ensure it is directed to the worksite and away from neighbouring land uses; and
 - Signage to place on existing or proposed fencing, located away from road interfaces to limit visual distraction of drivers. Where possible, group signage with existing signage to limit visual clutter.

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Given the existing character of the area and limited sensitive uses within the vicinity of the site, the landscape treatments proposed are considered to adequately mitigate any visual impact of the solar farm.

6.4 Glint and Glare

The Glint and Glare Assessment (Appendix J) provides an analysis of the potential impacts which could arise from the Project in relation to the amenity of the wider surrounding area at likely observation points.

No significant glint effects are expected due to slow movement of the PV panels, and nearby aviation infrastructure is at too great a distance from the Project to be affected by glare effects. For assessment of glare effects on nearby observers, the GlareGauge software was considered but not used since significant limitations in the modelling of backtracking means that the results of the simulation are invalid.

Aurecon has performed an assessment considering the angles of incident sunlight and reflected light from the solar farm. For very low sun angles, the reflected light will appear to be coming from the same position as the sun, so glare effects are disregarded. The sun elevation needs to be over about 3° for noticeable glare to be experienced. However, the reflected light is higher than typical potential observers. Therefore, no material glare is expected to occur as a result of the Project.

In general, if mitigation is required after the construction of the solar farm, it can be achieved by:

- Altering the solar farm resting angle and/or the tracking algorithm slightly during the relevant dates/times so that the sun reflection is directed away from the receiver location.
- Providing screening such as a fence or hedge
- Use of signage and sunglasses (particularly for drivers entering the solar farm).

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6.5 Traffic

The Traffic Assessment prepared by Aurecon (Appendix E) assesses the operational capability of the local road network to cope with the additional traffic movement associated with the construction and ongoing operation of the Project.

The TIA outlines the traffic conditions for significant sections of road network surrounding the Project such as Hume Highway and the access point to the site via Baxter-Whelans Road. It was concluded that given the low traffic volumes any potential traffic impact from the Project will be negligible with sufficient capacity existing in the road network to account for this increase.

The Traffic Assessment identifies that:

- The main site access to the solar farm for construction from Baxter-Whelans Road will require some upgrades to the entrance point to allow for heavy vehicles to access the site.
- The provision of six (6) permanent car park spaces is considered appropriate against the requirements of Clause 52.06 of the Indigo Planning Scheme.
- Construction phase vehicles are expected to be able to appropriately access the site via Baxter-Whelans Road and Hermitage Road subject to minor road widening at the intersection.
- During construction of the Project, traffic management measures would be recommended to ensure that vehicle arrival and departures are staged to manage the movement of large vehicles at the Hermitage

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Road / Baxter-Whelans Road intersection so that there are no concurrent turning movements of large trucks. This would be carried out via a Construction Traffic Management Plan ('CTMP') or Traffic Management Plan (TMP) for the life cycle of the Project.

The proposed site layout is expected to comply with access requirements of the CFA. A BMP and/or EMP are recommended to be completed in consultation with the CFA during the Project's detailed design.

- Subject to the above recommendations, there are no unreasonable traffic impacts anticipated in connection with the Project.

6.6 No direct access is proposed from the Murray Valley Highway and no change to existing road conditions is proposed. Heat island effect

We note that the Solar Energy Facilities Design and Development Guidelines require:

- *Careful siting of the facility's components and its associated infrastructure will help avoid or minimise their impacts. Siting inverters and other large buildings and structures away from the boundaries of adjoining property and establishing boundary setbacks which includes landscape screening will avoid the heat island effect, reduce visual and noise impacts and support emergency management.*

One of the key design requirements is to provide a minimum setback of 30m from any part of a component that makes up a solar pod or zone, or other building or structure, measured from the neighbouring property boundary.

We note that this is incorporated into the design along the eastern and southern boundaries of the site (which have multiple faces given the axe shaped area of the Project).

We note when calculating the 30m setback to a neighbouring property, it is appropriate to allow roads to be included in the buffers between properties. This is consistent with the findings in the Panel report for the approval of several solar farms in the municipality of Greater Shepparton which concluded:

- *To minimise the land impacted by the 30-metre setback, the Panel considers existing road reservations, irrigation channels and existing vegetation can be included within the 30-metre setback. Later chapters consider how and where this should apply for each solar energy facility.¹*

Given the above, there are no anticipated heat island effects expected to arise from the Project.

6.7 Historic Heritage

There are no historic heritage places located within the Project area. A search of the relevant historic heritage registers and the local Heritage Overlay was conducted and identified The Hermitage VHR HO279 to the north of the Project area. A brief review of the land use history indicated that the Project area has remained relatively undeveloped, with land use practices largely limited to pastoralism. It is highly unlikely that historic heritage elements will be impacted or unearthed during Project construction works. No historic heritage approval triggers have been identified and no further historic heritage assessments are required prior to the commencement of works.

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6.8 Cultural Heritage

The Cultural Heritage Assessment (Appendix D) found the Project area does not intersect with a designated area of cultural heritage sensitivity. A search of the VAHR revealed that there are no known Aboriginal places within the Project area. The closest Aboriginal place to the Project site is 1.5 km north. A cluster of five Aboriginal places are located within one kilometre of the terminal end of the cabling route. All five

¹ See Page 39 of the Panel Report "Greater Shepparton Solar Energy Facility Planning Permit Applications 2017-162, 2017-274, 2017-301 and 2017-344".

Aboriginal places are associated with a waterway (Dry Creek) which also intersects the cable route. There was potential for unidentified Aboriginal cultural heritage material to exist where the cable route intersects the waterway.

The site inspection concluded that the areas where Dry Creek and other unnamed watercourses crossed the Project area and proposed cable route had been subject to significant ground disturbance and are therefore not areas of archaeological potential.

Despite there being remnant mature native trees within the Project area, the site inspection did not locate any trees containing cultural scarring.

6.9 Noise

Noise Impact Assessment (Appendix G) regarding potential operation conditions of the Project concluded that there will be negligible impact arising from the operation. The substation and battery storage area may produce some low-level noise (likely to only be heard when in close proximity to these areas) however this infrastructure is manufactured to operate within specific operating noise specifications (including EPA regulations and guidelines). The nearest dwelling to the proposed solar farm is located approximately 250 metres south-west of the equipment and is not expected to be impacted in any unreasonable manner from the operation of the facility.

It is expected that there will be an increase in noise and vibrations during the construction phase of the Project due to operation of machinery, truck movements etc. Construction activities would be undertaken during standard hours for construction works and impacts can be controlled through a Construction Management Plan.

As the noise impact assessment was only preliminary assessment, the site layout and operational equipment may change during design development which could affect noise emissions from the site. It is recommended that additional detailed noise studies are undertaken for the site when equipment suppliers are confirmed. These studies may involve computational noise modelling to accurately predict the noise emissions from the site.

6.10 Surface Water

A surface water baseline and impact assessment (Appendix H) was developed in consultation with the North East Catchment Management Authority (CMA). The CMA were consulted regarding flood-risk obtained from Murray River declaration maps (2004) to the Project area, they advised that in the 1% AEP flood event the Project area would not be subject to inundation from the Murray River.

It is understood that due to the Project's location within the ESO3 the application must comply with the North East Catchment Management Authority Guidelines for Drainage Approval Within the Black Dog Creek Improvement District and as such referral to the North East CMA may occur. This report has not identified any preliminary issues.

There are no Ramsar nor Nationally Protected Wetlands within or immediately down-gradient of the Project area. The closest down-gradient land declared a Ramsar wetland, as defined under section 17 of the EPBC Act, was Barmah Forest approximately 178 km west of the Project area.

All seven (7) drainage risks and all seven (7) sensitive environment risks received a 'low' classification and can be mitigated easily by implementation of typical good practice mitigation measures.

Three (3) flood risks and three (3) water supply risks received a 'low' classification and can be mitigated easily by implementation of typical good practice mitigation measures.

One (1) flood risk was classified as 'medium' associated with the flood waters present on transportation network. This was because the consequence of impeded supply networks during construction, restricted personnel access to the site during construction or operation and risk of injury / life of crossing floodwaters was deemed to be 'high' despite likelihood being 'low'. In addition, management of this risk would be beyond the control of the proponents.

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Four (4) water supply risks were classified as 'medium' including insufficient water for construction demands insufficient water for vegetation irrigation during construction and insufficient water available in the event of either a structural or bushfire for suppression purposes Mitigation measures are available.

There were no 'high' risks for the Project regarding surface water issues.

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7 Conclusion

This planning report and other supporting reports demonstrate that the Project is consistent with the PPF and LPPF of the Planning Schemes. Key regulators including DELWP, DoT and the CFA have been consulted during the design process and feedback provided has been incorporated into the proposed layout. Specifically, the Project is suitable at this location for the following reasons:

- The Project is consistent with relevant State legislation regarding the use of renewable energy over fossil fuel energy. Furthermore, the Project will support the achievement of renewable energy generation targets set out by the Victorian Government.
- The proposed land use for the purposes of a 'solar energy facility' is consistent with the Farming Zone as the Project aligns with the relevant purposes and decision guidelines of the zone.
- The Project is consistent with relevant local policies of the Indigo Planning Scheme by strengthening and diversifying the local economy. Direct and indirect jobs will be created as a result of the Project in both the construction and maintenance phase. There will be opportunities for local businesses to be engaged during the development, construction, delivery and operation of the Project, diversifying and strengthening the economy and increasing the skilled workforce and economic output of the overall region.
- The Project does not significantly alter the productive agricultural quality of the site which is currently not used for high value agricultural purposes. Considering that the Project allows for an opportunity for sheep to continue to graze on the site and that the site can be easily returned to farming purposes at the termination of the 'solar energy facility' there will be no unreasonable agricultural impacts arising from the Project.
- The Project includes appropriate landscape treatments to provide natural screening to visually sensitive areas and glares. Any planting used for screening will be designed in consultation with the CFA.
- The Project will have no unreasonable impact on the existing amenity of the area given that 'solar energy facilities' are a very low emitter of noise and do not emit odour etc.
- The design and layout of the Project seeks to protect biodiversity and native vegetation where practicable, thereby protecting the landscape character of the area.

The Project has taken on feedback from the community and the regulators and made significant amendments to the plans to reduce impacts, illustrating a commitment to avoiding and minimising impacts on the local environment. The Project will introduce solar power generation to power ~20,000 Victorian homes per/annum (P/A) resulting in a saving of over ~135,500 tonnes of CO₂ emissions. The Project includes 64MW of battery storage to provide much needed stability to the local grid. The design evolution for the Project illustrates how the Project has been tailored to suit the local environment and deliver clean renewable energy and include:

- The proposed substation has been moved further north along Hermitage Road
- The inverters and batteries have been moved further inside the Project areas and further away from nearby dwellings
- The Project has increased the proposed vegetation planting along Baxter Whelans Road
- The grid connection route will be utilising the existing infrastructure owned by AusNet

Wirsol Energy and ARP firmly believe that the Project aligns with Victorian and local planning policy, the Solar Energy Facilities - Design and Development Guidelines (DELWP 2019), Design Guidelines and Model Requirements - Renewable Energy Facilities (CFA, 2022) and the needs of the community.

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Appendix A – Certificates of Title

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Appendix B – Application Plans

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Appendix C – Flora and Fauna Assessment

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Appendix D – Heritage Due Diligence Assessment

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Appendix E – Transport Assessment

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Appendix F – Landscape and Visual Impact Assessment

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Appendix G – Desktop Noise Impact Assessment

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Appendix H – Surface Water Assessment

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Appendix I – Environmental Management Plan

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Appendix J – Glint and Glare Assessment

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Appendix K – Agricultural Impacts

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Appendix L – Consultation Flyer

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