RMCG

13 APRIL 2026

Mologa Solar Hybrid Farm

Agricultural Impact Assessment

URBIS

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Victoria — Tasmania — New South Wales — Queensland

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Preface

INSTRUCTIONS	
Client	URBIS
Our Reference	3891/2851
Prepared For	Clare Brown
Services	The services comprise an inception meeting, a desktop analysis, a site visit, preparation of an agricultural impact assessment report in draft and final form including mapping, and overall project management.
Instruction Date	12th August 2025
Report Date	26th March 2026

OVERVIEW	
Brief Description	Mologa Solar Hybrid project is located approximately 65km north of Bendigo and 51km west of Echuca. The site is located to the east of Bendigo-Pyramid Road and south of Mologa-Durham Ox Road, in Mologa. The site extends across approximately 591 hectares and is currently used predominantly for dryland cropping and some grazing. The subject site is described by the following Certificates of Title: ▪ Crown Allotment 6 Section A Parish of Mologa. – Volume: 9056 & Folio: 961 ▪ Crown Allotment 7 Section A Parish of Mologa – Volume: 2429 & Folio: 740 ▪ Crown Allotment 8 Section A Parish of Mologa – Volume: 7628 & Folio: 185 ▪ Crown Allotment 17 Section A Parish of Mologa – Volume: 9056 & Folio: 962 ▪ Crown Allotment 17A, 18A, & 18 Section A Parish of Mologa – Volume: 10991 & Folio: 175 ▪ Crown Allotment 17B Section A Parish of Mologa – Volume: 2667 & Folio: 397 ▪ Crown Allotment 17C Section A Parish of Mologa – Volume: 10407 & Folio: 536. The proposed solar hybrid project comprises: ▪ 250 MW solar farm ▪ 250 MW 4-hour Battery Energy Storage System (BESS) ▪ Substation ▪ Terminal station. A 220 kV transmission line easement runs north–south through the western side of the site. The proposed BESS and substation will connect directly to this existing line, enabling efficient integration with the grid. RMCG has been engaged to provide an Agricultural Impact Assessment.

ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Traditional Owners of the Country on which we work throughout Australia and recognise their enduring connection to the land, waters, and culture. We pay our respects to their Elders, both past and present, and acknowledge emerging leaders. Furthermore, we express our gratitude for the knowledge and insights that Traditional Owners and other Aboriginal and Torres Strait Islander peoples contribute to our collective work in Australia.

We extend our respects to all Aboriginal and Torres Strait Islander communities. We acknowledge that Australia was founded on the genocide and dispossession of First Nations peoples and affirm that sovereignty was never ceded in this country. We embrace the spirit of reconciliation, striving towards self-determination, equitable outcomes, and an equal voice for Australia's First Peoples.

1 Introduction

This report contains a high-level review of agricultural considerations that need to be taken under deliberation for the proposed development of the Mologa Solar Hybrid project. Its purpose is to demonstrate how the proposal can support renewable energy while protecting the sustainability of agricultural production.

In line with the Department of Environment, Land Water & Planning (DELWP) *Solar Energy Facilities, Design and Development Guideline*[1], clause 14.01-01S *Protection of Agricultural Land,* sets out policy objectives and strategies to manage and protect agricultural land. It requires proponents to consider:

- Protecting strategically important agricultural and primary production land from incompatible land use;
- Protecting productive agricultural land that is of strategic significance to a local area or in a regional context;
- Avoiding the loss of productive agricultural land without considering the impact of the loss on the agricultural sector and its consequential effect on other sectors.

In addition to these key policy measures we have also addressed the following other considerations as part of this impact statement:

1. The impact on the loss of the site if it has high-quality soils, particularly soils that are niche to a type of crop or other agricultural activity
2. The potential loss of reliable, accessible water (such as irrigated areas) and its impact at a local or regional scale
3. The impact of a change of land use on recent and/or current efforts to modernise and reform agricultural activity in the area
4. The impact of fragmentation and a change of land use to non-agriculture activity on local and regional productivity and output
5. Whether the proposed solar energy facility can co-locate with other agricultural activity, to help diversify farm income without reducing productivity.

[1] Department of Environment, Land, Water and Planning (2022) Solar Energy Facilities: Design and Development Guideline. Melbourne: State of Victoria (DELWP).

2 Site Identification

2.1 LOCATION

The property is positioned approximately 50 radial kilometres west of Echuca, which is its closest service centre. Echuca is approximately 80 kilometres northeast of Bendigo, its closest major service centre and 190 kilometres north of Melbourne city.

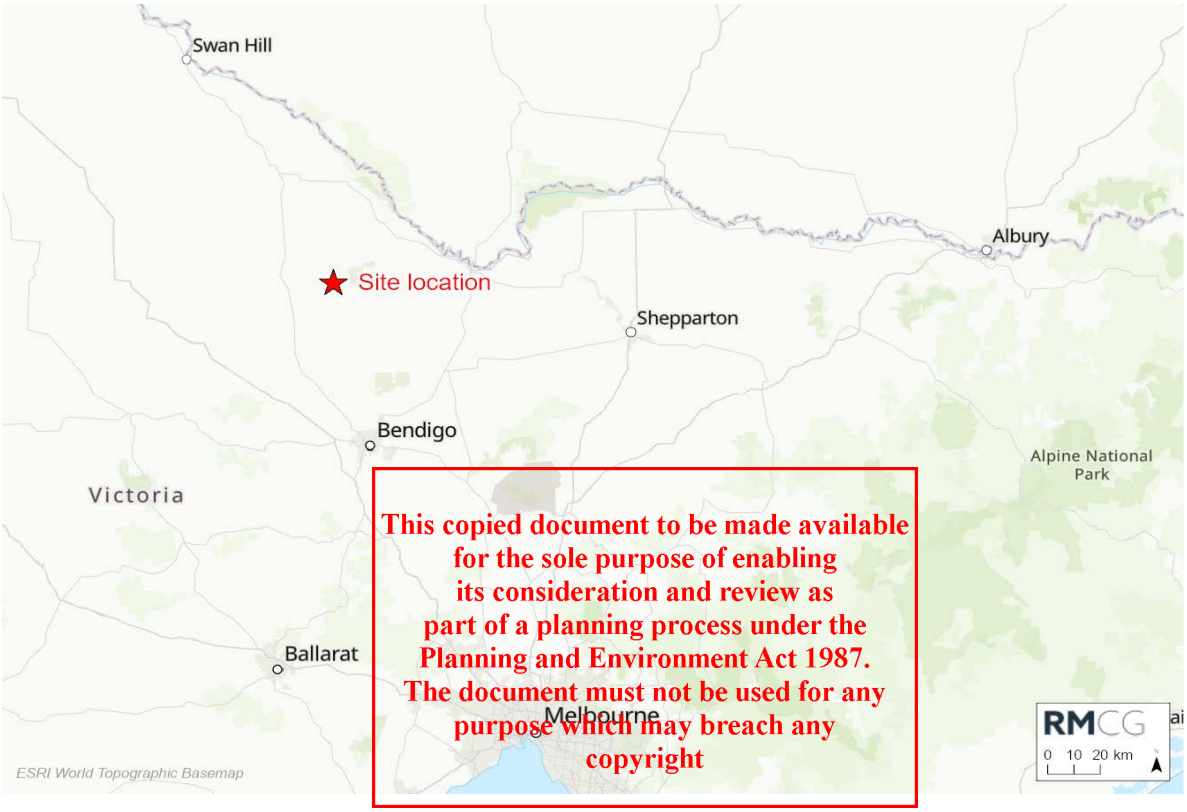

Figure 2-1: Regional map

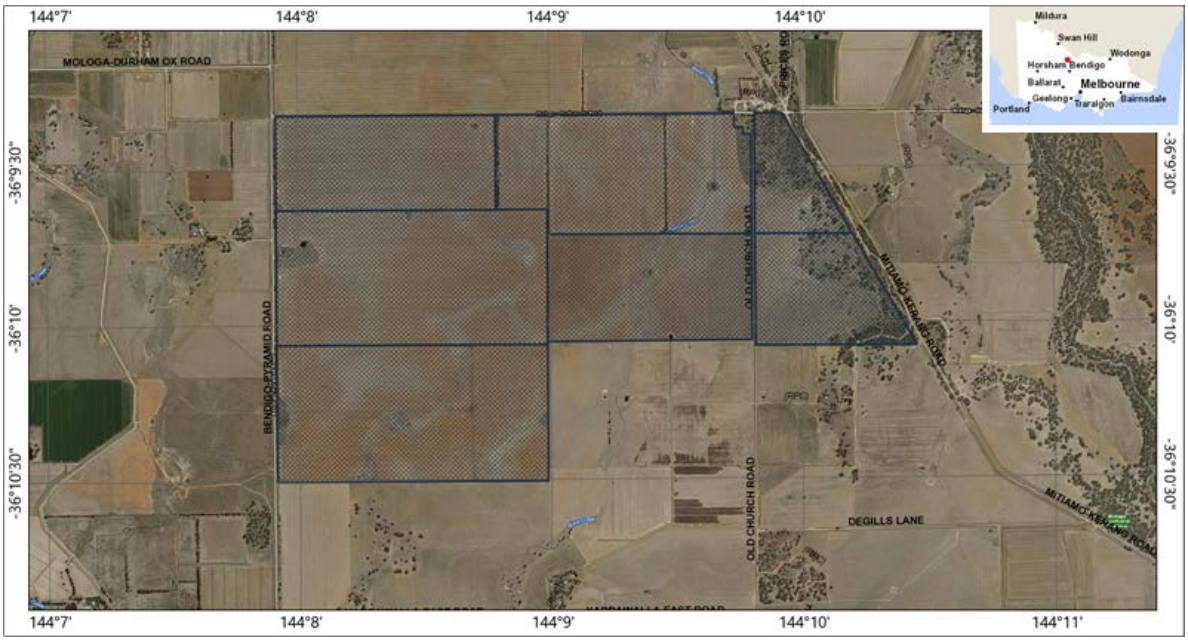

Figure 2-2: Aerial map

2.2 TITLE DETAILS

2.2.1 REAL PROPERTY DESCRIPTION

The following is a table of the lot/plan details plus the areas of the individual lots proposed to be developed.

Table 2-1: Title Reconciliation

CROWN DESCRIPTION	LOT DESCRIPTION	AREA (HA)
Allot. 17 Sec. A PARISH OF MOLOGA	17~A\PP3145	102.30
Allot. 17A, 18A & 18 Sec. A PARISH OF MOLOGA	17A, 18A & 18~A\PP3145	155.60
Allot. 17B Sec. A PARISH OF MOLOGA	17B~A\PP3145	0.20
Allot. 17C Sec. A PARISH OF MOLOGA	17C~A\PP3145	0.81
Allot. 8 Sec. A PARISH OF MOLOGA	8~A\PP3145	129.50
Allot. 7 Sec. A PARISH OF MOLOGA	7~A\PP3145	129.50
Allot. 6 Sec. A PARISH OF MOLOGA	6~A\PP3145	73.21
Total		**591.12**[2]

Source: RMCG

2.2.2 ENCUMBRANCES & REGISTERED INTERESTS

We have conducted a title and plan search to identify if there are any encumbrances or registered interests affecting the title. The purpose is to identify any legal or practical constraints on agricultural use.

From our searches two caveats are noted. The first relates to *Potentia Energy* which is the joint venture between *Enel Green Power* and reflects the name change from the former *Enel Green Power Australia* entity. The second caveat appears to be an option agreement for the proposed solar and BESS farm. While formal legal advice should confirm the terms and implications, neither caveat is expected to constrain day-to-day agricultural production.

There is also a 220kV transmission powerline running north–south along the western end of the property. This is expected to have only a minor effect on farm operations, principally by limiting manned aerial spraying and the use of large gun irrigators. However, given the scale of the holding, ground rigs would be used for spraying and there is no existing irrigation infrastructure.

[2] Lot areas calculated from title plans supplied by URBIS.

3 Site Description

3.1 CURRENT LAND USE

The property is currently developed for dryland cropping with a smaller less developed component utilised for livestock grazing.

3.2 SURROUNDING LAND USE

The surrounding area is predominantly used for dryland and irrigated cropping and grazing, with dairy and intensive-livestock enterprises interspersed throughout the region. Adjoining properties include dairy, livestock-grazing, irrigated-fodder and dryland-cropping enterprises.

Mitiamo and Pyramid Hill are two nearby townships. Mitiamo has a large grain-handling facility located along the Eaglehawk–Kerang railway line, which is still used as a grain depot. Other local services include a small general store, a rural fire brigade and recreation grounds. The local primary school at Mitiamo closed in 1993 but Pyramid Hill College now services the area.

Pyramid Hill is a larger service centre with healthcare services, a supermarket, a newsagency, a public swimming pool and a golf club. The district's main employers are agriculture, intensive livestock production, grain-handling facilities and the health and education sectors.

Potentially affected businesses, which could be impacted by any local land change use, could include a local independent rural merchant in Pyramid Hill that supplies dryland cropping inputs.

3.3 ACCESS

Primary access is via Bendigo Pyramid Road, which is dual lane bitumen sealed road that runs along the western boundary. Mologa–Durham Ox Road and Mitiamo–Kerang Road provide additional access to the northern and eastern boundaries, and Old Church Road bisects the eastern portion of the property, offering internal access.

3.4 LAND AREA & DIMENSIONS

The property is approximately 591 hectares in size with approximately 2.2 kilometres of road frontage to Bendigo Pyramid Road and 3.0 kilometres to Mologa–Durham Ox Road.

3.5 SERVICES

The property has bitumen road frontage, mains electricity and livestock water from a water service point on an irrigation channel that bisects the eastern corner of the property.

3.6 SHAPE & TOPOGRAPHY

The property occupies an irregular shaped footprint, formed by nine individual parcels, where topography is described as gently sloping with a slight fall toward the northeast.

3.7 SOIL TYPE

The site lies on the Riverine Plain in the Victorian Riverina with topography being relatively flat. The predominant soil types on the arable land on the property consists of moderate to heavy clay soils including Group 3 - Lyndger Loam and Mologa Loam (41%) and Group 4 - Fernihurst Clay and Kinypanial Clay Loam (36%). The next common soil types are Group 6 – Towangurr Clay (8%) and Group 5 – Towangurr Clay Loam (8%). There is a small area of Group 1 – Yarrowalla Fine Sandy Loam in the north- eastern part of the property but this area is considered non arable due to the density of trees located on this area (refer to Figure 3-1).

Group 3 soils have some limitations for their suitability for irrigation primarily due to low water infiltration with a hard-setting surface and moderate to high subsoil salinity. It can support cereals, fodder and perennial or annual pastures with careful management.

Group 4 soils tend to have shallow heavy cracking clay with a slow permeable subsoil. It is prone to salinity where drainage is inadequate. Under dryland use it provides poor grazing capabilities, but managed carefully, it can grow winter cereals, fodder and annual or perennial pastures.

Group 5 and Group 6 soils are generally of poorer nature and less suited to irrigation primarily due to their and heavy texture and poor permeability.

The predominate soil types (Group 3 and 4) are managed best by good surface drainage and require monitoring for salinity. Soil mapping indicates that Surface pH[3] is near neutral and surface salinity is low but increases slightly at 15 to 30 centimetres in depth, which can have negative impact on agricultural production.

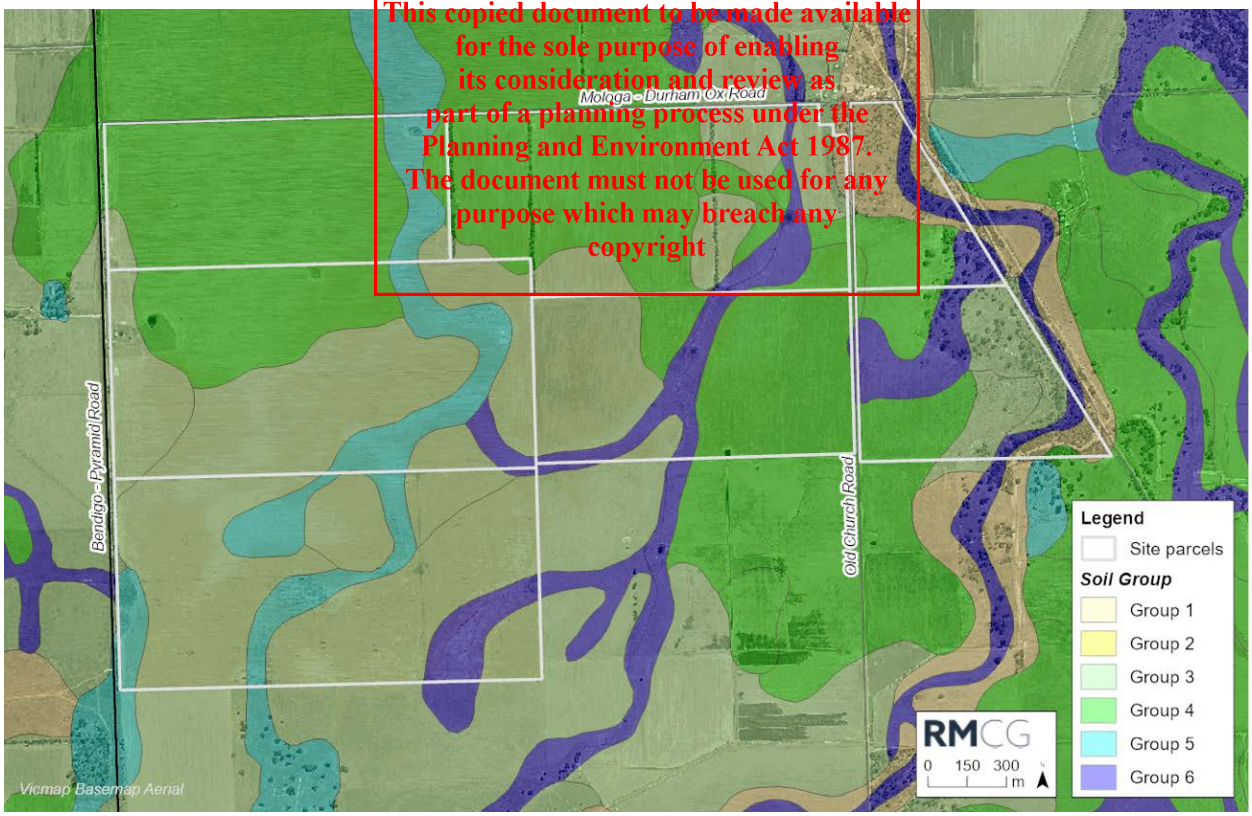

Figure 3-1: Soils Map[4]

[3] Soil Health Knowledge Base, 'Soils Maps', Soil Health Knowledge Base website, https://soilhealth.ccmaknowledgebase.vic.gov.au/soils_map.php (accessed 23 September 2025).

[4] Victorian Resources Online: https://vro.agriculture.vic.gov.au

3.8 VEGETATION

The land is largely cleared of remnant native vegetation for dryland cropping apart from several shade lines and some selectively cleared areas to the eastern portion. Remnant vegetation prior to clearing would have been primarily grasslands and Riverine Chenopod shrubland and woodland.[5]

3.9 PESTS, WEEDS & DISEASE

No pests, weeds or diseases were noted during inspection that would have an adverse effect on our assessment.

Annual ryegrass is a recognised weed issue in Victorian farming systems because it is highly competitive, produces large amounts of seed and can develop herbicide resistance, making it difficult to manage once established. Management is therefore generally directed at reducing seed set and the seedbank. In this case, the issue is not expected to be exacerbated, as the inter row areas would be sown to pasture and anticipated to be grazed by sheep, enabling the grazier to incorporate periods of heavier grazing pressure into the grazing plan at key times to suppress annual ryegrass and reduce seed production.

3.10 SURFACE WATER

Stock water is supplied by 15 small catchment dams, with capacity to be supplemented via surface drains connected to a service point (PH.333) on Channel No. 3/1, which bisects the property's eastern corner. PH.333 forms part of the Loddon Valley Irrigation Area infrastructure with a 0.32 delivery share (DS) associated with the service point.

3.11 GROUNDWATER

The are no active groundwater bores on the property, although there are two non-operational water monitoring stations[5].

Information regarding groundwater can be obtained via a neighbouring water monitoring bore which indicates the water table has historically been between 0.21m to 3.16 m below ground level, with a recent reading of -2.17m. High water tables makes the property susceptible to salinity impacts with high saline ground water entering the root zone of crops.

In addition to this, the bore was drilled in the late 1980s. Water tests[6] at the time show very high salinity levels (7,006 mg/L) especially for irrigation and stock water. Livestock water guidelines[7] indicate water this salty is not suitable for pigs and it can cause problems for cattle, especially dairy; but blending this water with other sources may make it suitable for beef cattle. As stock water is available from the irrigation channel, there is no material constraint if the property was to support livestock.

5 Victorian Department of Energy, Environment and Climate Action (DEECA), 'NatureKit Victoria' (interactive map viewer), NatureKit website, https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit (accessed 23 September 2025).

6 Visualising Victoria's Groundwater (VVG) n.d., Bore 109490 (WMIS), viewed 10 November 2025, https://www.vvg.org.au/view_bore.php?database=dse_gms&bore_id=109490

7 ANZG 2023, Livestock drinking water guidelines (Draft, November 2023), Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Governments, Canberra. Available at: waterquality.gov.au/anz-guidelines/guideline-values/default/primary-industries/stock-water-guidance.

3.12 FLOODING

As per the 1% AEP Flood Extent map for North Central CMA region Victoria[8], (See Figure 3-2) the land may be subject to inundation or overland flow during such events. Flood modelling has been carried out in separate hydrology report.

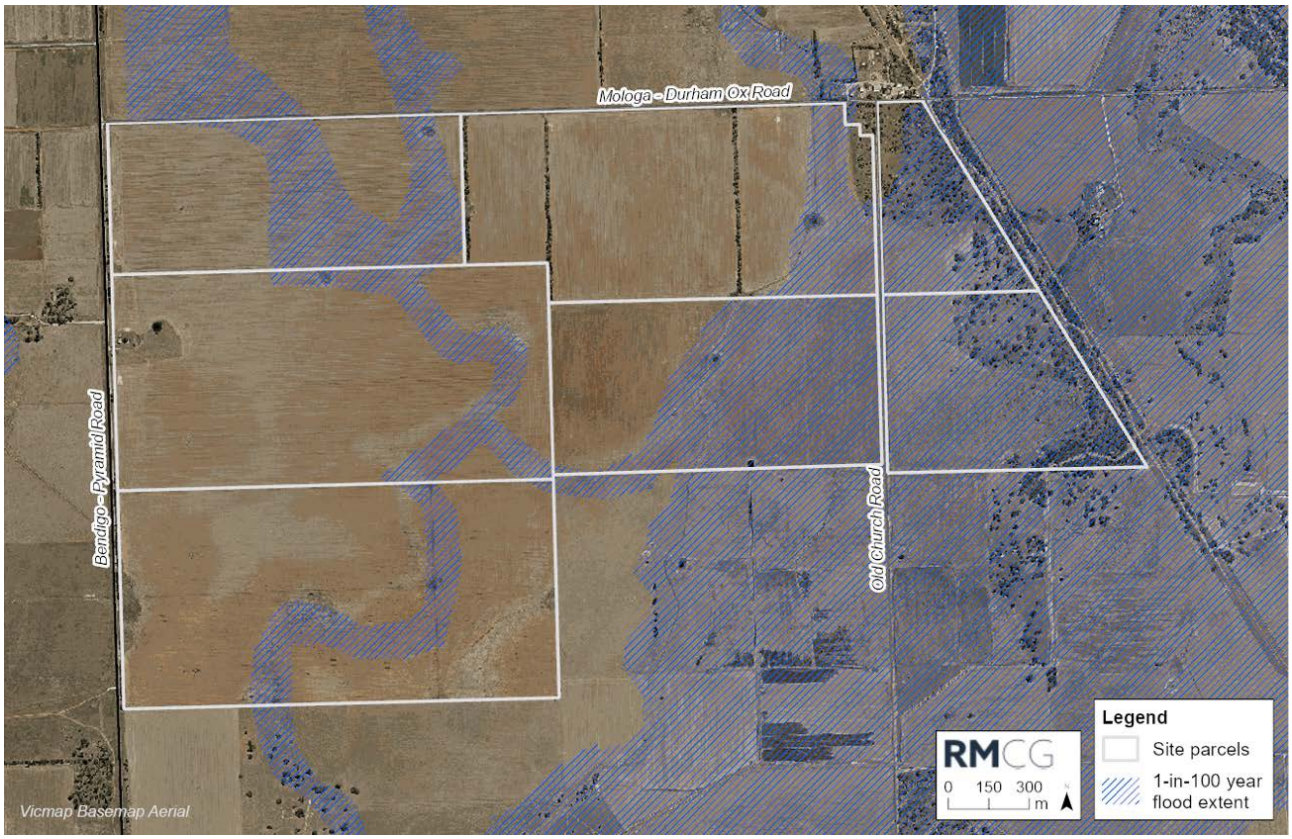

Figure 3-2: Flood Map

3.13 SITE CONTAMINATION

The site is not recorded to have any potential land and groundwater contamination.[9]

3.14 EROSION

Upon the site visit there was no noticeable signs of erosion. Erosion is driven by wind, water and gravity and the most common forms of erosion include wind erosion, sheet and rill erosion, tunnel or gully erosion, or mass movement.

[8] North Central Catchment Management Authority (2021; updated 2023). 1% AEP Flood Extent – North Central CMA region, Victoria. Data.gov.au. Available at: https://data.gov.au/data/dataset/1-aep-flood-extent-north-central-cma-region-victoria

[9] Victorian Department of Energy, Environment and Climate Action (DEECA), 'Victoria Unearthed' (interactive map viewer), MapShare Victoria website, https://mapshare.vic.gov.au/victoriaunearthed/ (accessed 10 November 2025).

3.15 SITE INSPECTION PHOTOS

Service point (PH333) located in south east corner of site

Easterly view taken from western boundary of site

Southward view taken along the western boundary of the site

Westerly view taken on northern boundary of the site

Stockwater surface delivery channel located in south east corner of site

Old Woolshed located on western boundary of site

Figure 3-3: Site Inspection photos

4 Planning

4.1 LOCAL AUTHORITY & ZONING

The property is zoned FZ – Farming within the Loddon Shire Council.

4.1.1 PURPOSE

The purpose[10] of the FZ – Farming zone is:

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

4.1.2 LODDON SHIRE ECONOMIC DEVELOPMENT STRATEGY[11]

In addition to the Farming zoning purpose, we reviewed the Loddon Shire Economic Development Strategy 2025–2029, which sets out several economic strategies for the LGA, including to:

- Support emerging agribusinesses including intensive animal industries
- Protect and maintain productive irrigation assets necessary to help grow the region
- Promote collaboration and innovation among producers, enhancing productivity, resilience, market responsiveness and the region's capacity to attract investment, new businesses and talent
- Plan for energy needs and grow renewables to support Net Zero and regional competitiveness
- Strengthen a diverse, innovative industry base that can adapt to change, leverage regional supply chains, add local value and support renewables growth.

These various strategies are addressed in Section 7 of this report.

4.2 CURRENT PLANNING CONTROLS

The property is impacted by the following overlays: *Land Subject to Inundation and Specific Controls Overlay.* In addition to these the property is also positioned in a *designated bushfire prone area.* Special bushfire construction and planning requirements may apply.

4.3 NATIVE TITLE

The site is not recorded to have any Native Title claims or interests.[12]

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[10] Department of Transport and Planning (Vic) 2024, Loddon Planning Scheme – Clause 35.07 Farming Zone, Planning Schemes Online, Available at: https://planning-schemes.app.planning.vic.gov.au/Loddon

[11] Loddon Shire Council 2024, Economic Development Strategy 2025–2029, Loddon Shire Council, Wedderburn, adopted 27 August 2024. Viewed 10 November 2025

[12] National Native Title Tribunal (NNTT). NNTT Map Portal (ArcGIS Online). Available at: https://nntt.maps.arcgis.com/home/index.html

5 Climatic Overview

5.1 RAINFALL AND TEMPERATURE SUMMARY

Under a modified Koeppen classification system the property has a warm (summer drought) climate class.

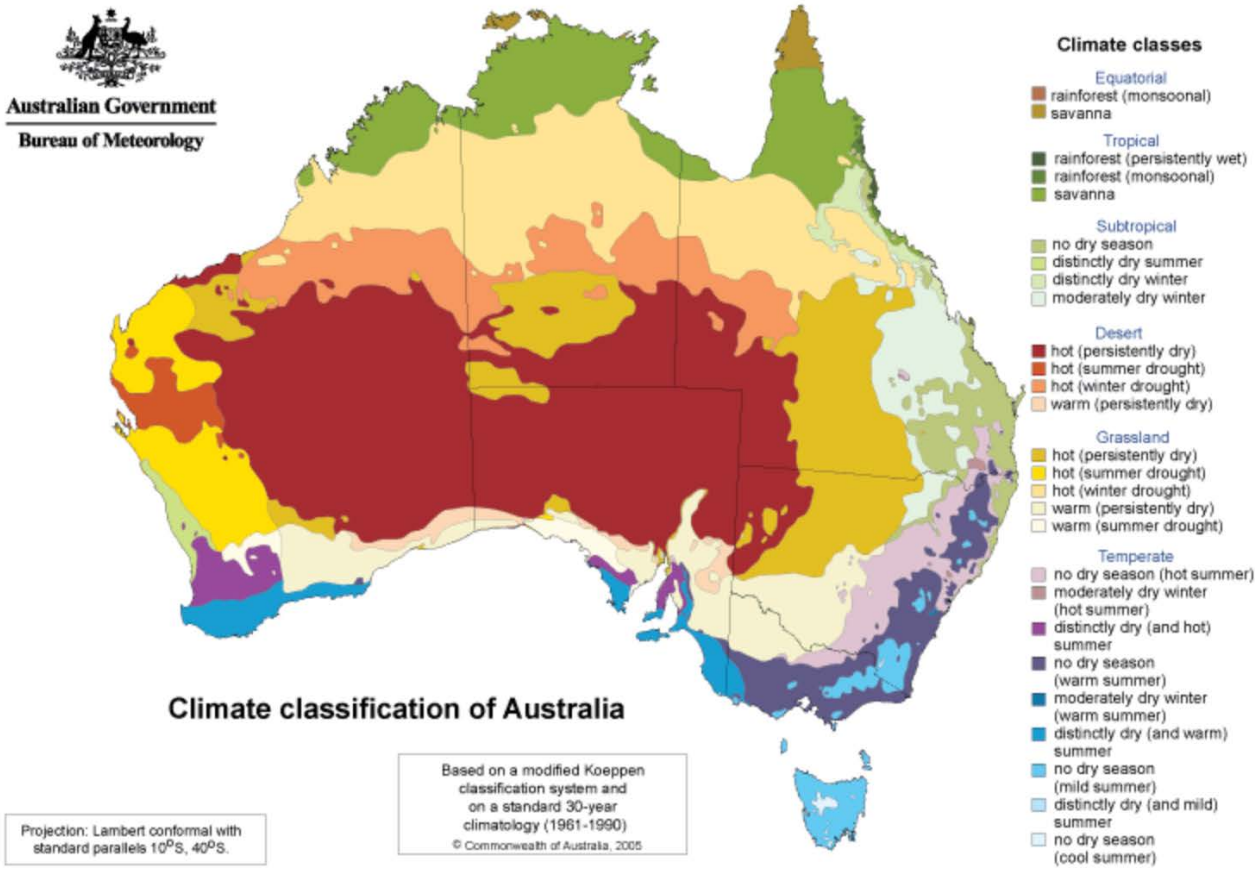

Figure 5-1: Climate Classifications

Long-term average rainfall for the region was sourced from the Bureau of Meteorology from the Boort station, approximately 38 km west of the site. The annual average rainfall is 399.4mm with about 53 rain days and maximum temperatures between 14 and 31 degrees.

Table 5-1: Monthly Climate and Rainfall Statistics for Boort Site number 08002[13]

STATISTICS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Mean max temp (ºC)	31.3	31.0	27.6	22.4	17.9	14.4	13.9	15.7	18.6	22.3	26.3	29.5	22.6
Mean min temp (ºC)	14.8	15.3	13.0	9.5	6.8	4.4	3.7	4.6	6.2	8.3	10.8	13.2	9.2
Mean Rainfall (mm)	25.3	25.8	25.6	28.1	37.6	38.7	38.0	40.9	37.9	39.7	33.7	27.3	399.4
Median Rainfall (mm)	17.3	14.2	18.8	18.8	34.1	34.6	37.4	39.6	30.2	28.8	27.3	18.6	28.0
Mean Rain Days	2.5	2.3	2.7	3.4	5.0	6.1	6.7	7.0	5.5	5.2	3.6	3.0	53.0

[13] BOM, Summary Statistics BOORT, http://www.bom.gov.au/climate/averages/tables/cw_080002.shtml, viewed 10 October 2025

The average rainfall is sufficient for dryland agriculture, such as winter season cereal crops, but is insufficient for high value enterprises like dairy, summer cropping or horticulture, without supplementary irrigation.

Over the past decade, rainfall was below average in at least three years, indicating marginal conditions when compared alongside the long-term rainfall.

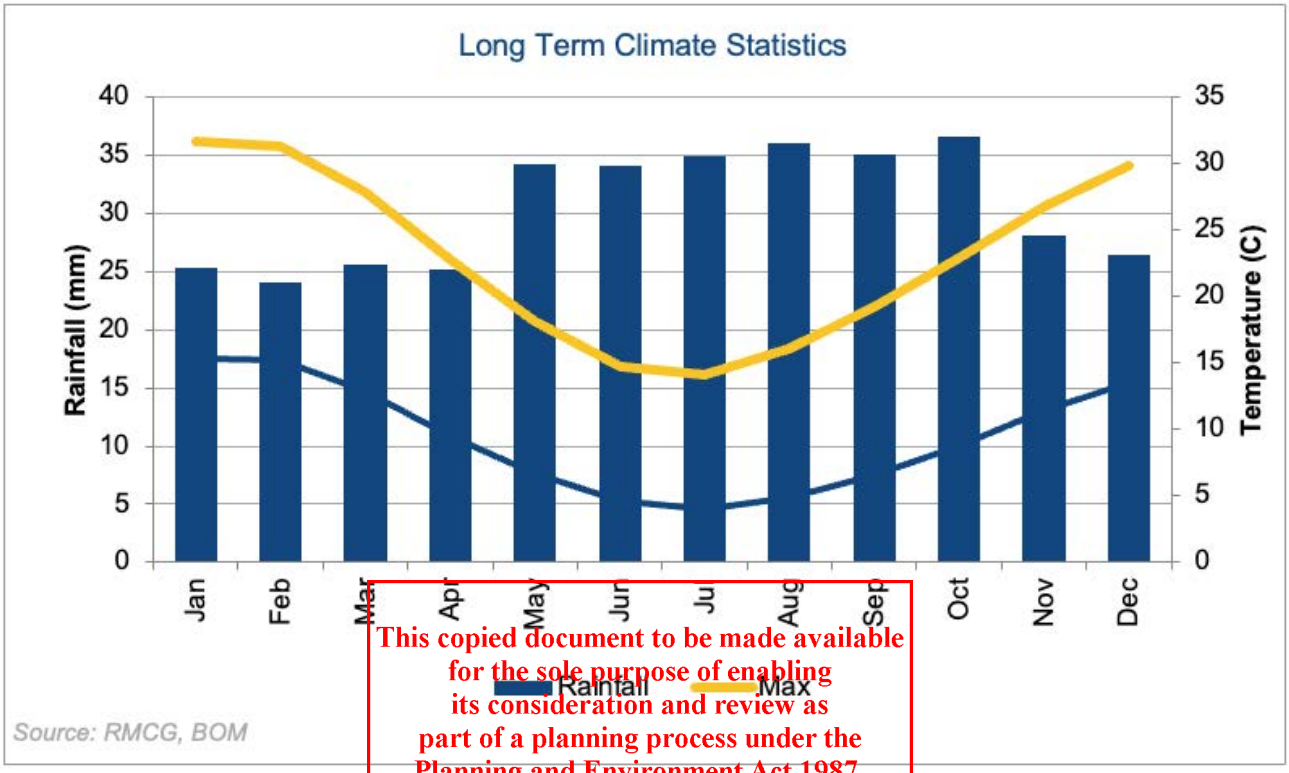

Figure 5-2: Long term Climate statistics

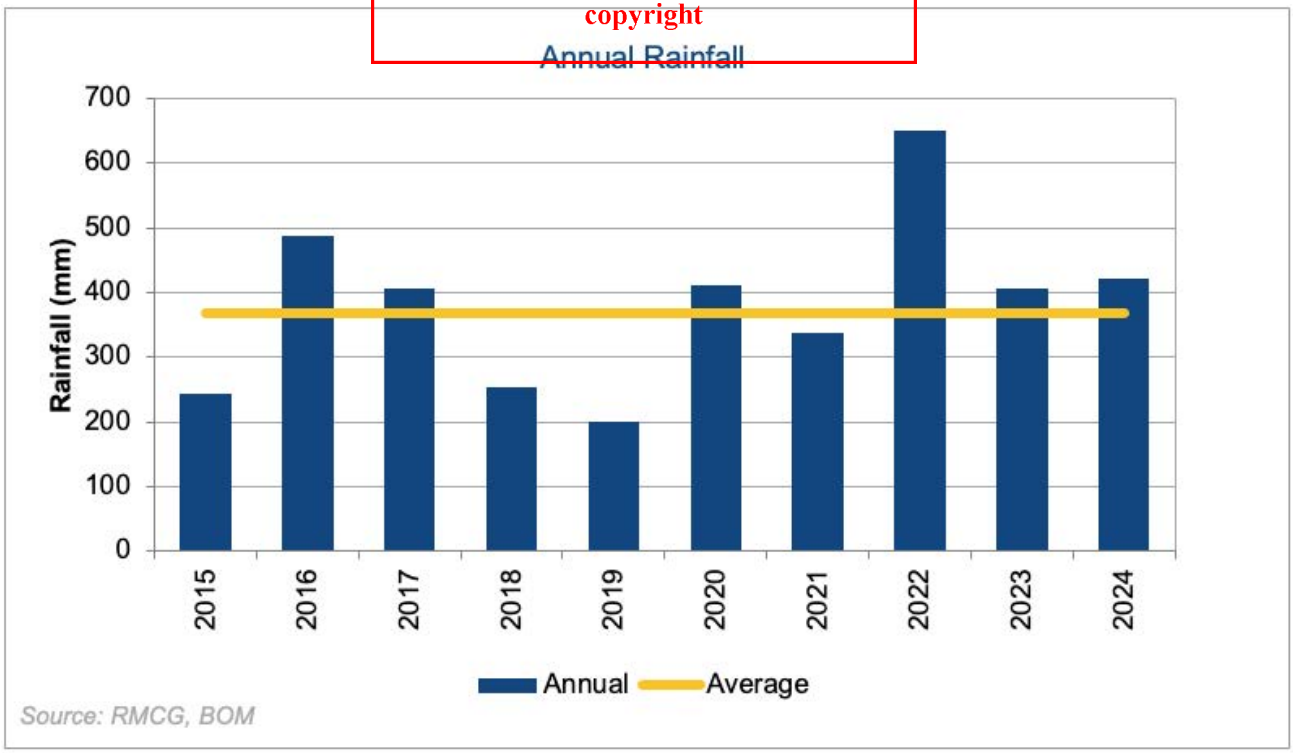

Figure 5-3: Ten year annual rainfall statistics

6 Agricultural Capability

6.1 CURRENT LAND USE

Approximately 525 hectares is arable with the balance area of 66 hectares utilised for grazing and support.

6.2 AGRICULTURAL SUITABILITY

The highest and best use of the land is dependent upon many factors, including but not limited to fencing, waters, yards, land development, soil type and land characteristics. The subject property would support both dryland cropping and/or livestock. The highest and best agricultural use is considered to be its current use as a dryland cropping enterprise in rotation with livestock grazing.

6.3 PRODUCTION METRICS

Cropping in the region typically follows rotations of wheat, barley, faba beans and canola, with indicative dryland yields of around 1.8 t/ha for wheat, 1.8 t/ha for barley, 1.5 t/ha for faba beans and 1.1 t/ha for canola.[14]

Grazing performance is commonly benchmarked at 8 DSE/ha (or 1.8 DSE per 100 mm of rainfall)[15], with supplementary feeding usually required during feed-deficit periods; on this basis, the property's capacity is approximately 4,250 DSE.

The above production metrics are moderate relative to other wheat-growing regions, for example, the Deniliquin region yields 2.2 t/ha and Swan Hill 1.5 t/ha, whereas higher-performing areas such as the Colac region record 3.3 t/ha.[13]

As a guide to returns, ABS Agricultural Census data (2020/21) for the Loddon region report average gross incomes of $590/ha for dryland cropping and $570/ha for grazing totalling a gross income ranging from $336,870 (grazing) to $348,690 (dryland cropping). On a stand-alone basis this property would not be considered to be of sufficient scale to support a commercial farm operation.

With over 30 years working with farming businesses RMCG has formed the view that a farm business with a single owner operator (that is, one full-time equivalent (FTE) labour unit) needs in the order of $500,000 gross income to be sustainable. This estimate assumes around 60% operating costs, 10% for equipment depreciation, 20% for owner's salary and 10% to fund borrowings or profit. The gross income from this property based on dryland cropping is in the order of $348,690 (591 ha x $590/ha =$348,690) which would only support 0.7 of an FTE.

[14] Yield Gap Australia, 'Map', Yield Gap Australia (interactive map tool), https://yieldgapaustralia.com.au/maps/ (accessed 10 November 2025).

[15] Victorian Government, Department of Energy, Environment and Climate Action (DEECA) (Agriculture Victoria), Livestock Farm Monitor Project: Victoria Annual Report 2024–25 (2025), https://agriculture.vic.gov.au/__data/assets/pdf_file/0019/1171414/Livestock-Farm-Monitor-Annual-Report-202425-website.pdf (accessed 10 November 2025)

7 Agricultural Impact Assessment

The following section assesses the impacts of a land-use change should the property cease agricultural use. Specifically this section address those key criteria as outlined in the Solar Energy Facilities: Design and Development Guideline (Oct 2022).

7.1 STRATEGIC LAND PROTECTION

The Solar Energy Facilities: Design and Development Guideline (Oct 2022) identifies as a key policy objective **protecting strategically important agricultural and primary production land from incompatible uses**.

In response to this we have cited *The Department of Jobs, Precincts and Regions (DJPR) 2020, Strategic agricultural land and development in Victoria, Final Report, which proposes a set of criteria that identifies strategic agricultural land in Victoria. This includes:*

i. *Access to reliable and affordable quality water is important to almost all agricultural land uses, and horticultural uses in particular*
ii. *Lot size: smaller land parcels constrain the productive capacity and limit expansion for most uses, though high value production can still be achieved by smaller farms for select uses (e.g. asparagus)*
iii. *Soil quality is important to many agricultural land uses*
iv. *Access to markets is vital for those agricultural products that must be delivered to destination markets quickly*
v. *Proximity to important industry clusters: many agricultural uses depend on access to important infrastructure such as transport hubs or clusters/networks*
vi. *Consideration of adjacent and nearby land uses and substitutability helps inform an understanding of the pressures that may already exist for a given parcel and the capacity for substitution for other land areas or other product sources*
vii. *Other considerations are included to enable consideration of a given decision's alignment with broader objectives that sit outside agriculture's productive value alone.*

On review of these criteria, the holding is not commercially viable as a stand-alone enterprise and the lower-quality soils, together with a shallow water table indicate suitability for broadacre cropping or grazing rather than higher-value uses like horticulture. The location is also exposed to seasonal variability and in our view shows low climate resilience. There is also no post-farm-gate processing nearby and there is no evidence of targeted public or private investment in local food production. For these reasons, the subject land is not assessed as strategically important.

7.2 PRODUCTIVE LAND PROTECTION

The Solar Energy Facilities: Design and Development Guideline (Oct 2022) identifies as a key policy objective **protecting productive agricultural land of strategic significance at the local or regional scale**.

In response to this we have cited, *The Department of Transport and Planning* which classifies Productive Agricultural Land to *generally have one or more of the following characteristics:*

i. *Suitable soil type*
ii. *Suitable climatic conditions*
iii. *Suitable agricultural infrastructure, in particular irrigation and drainage systems*
iv. *A present pattern of subdivision favourable for sustainable agricultural production.*

On review of these criteria, we consider that the farmland on this site is not considered productively significant, nor does it comprise niche soil types suited to specialised horticulture. They are best matched to broadacre cropping or grazing. Key constraints include:

- Low rainfall
- Moderate soil quality
- Potential sodicity
- Shallow water table
- The absence of established on farm irrigation infrastructure.

While measures such as raised beds, controlled-traffic systems, cover-cropping, gypsum to address sodicity, and investment in irrigation infrastructure could improve performance in theory, they would not overcome the fundamental limitations of soil quality and climatic conditions.

7.3 CONSEQUENTIAL EFFECT ON OTHER SECTORS

The Solar Energy Facilities: Design and Development Guideline (Oct 2022) sets a key policy requirement to assess the impact of agricultural land loss on the agricultural sector and the consequential effects on related sectors.

In response to this we have considered the impacts of upstream / downstream impacts and socio impacts as discussed as follows.

7.3.1 UPSTREAM / DOWNSTREAM IMPACT

The main inputs for this property centre on dryland cropping and livestock enterprises. These include seed, fertiliser and agrichemicals for crop production. Upstream effects would be mainly felt by rural resellers. A small independent merchant operates in Pyramid Hill and could be impacted to a small degree by the loss of sales, while larger merchants such as Elders and Nutrien in Boort, Kerang and Echuca, who service a much larger area, would see minimal impact.

The main production outputs are grain and livestock. The livestock enterprise is constrained by the small grazing area, so any effect would be minimal. While a larger share of the property is used for dryland cropping, it is relatively small at a regional scale and the output is insignificant. There are local dairies and piggeries that rely to a small degree on locally produced feed grain, but the loss of this property from agricultural use would be very minor.

These impacts can be partially mitigated through implementation of an Agri-Solar facility at the site in the form of sheep grazing. This activity will contribute to the agricultural economic activity in the region.

7.3.2 SOCIO IMPACTS

The property is not large enough to be financially viable as a stand-alone enterprise and would not support one full-time equivalent (FTE). On this basis, there would be no material loss to the community from a social-impacts perspective.

7.4 FINANCIAL IMPACT

To contextualise the project's agricultural impact, we benchmarked the site against shire-level totals. Based on the ABS 2020–21 Agricultural Census value for Loddon's grain-growing production ($41,599,543), the subject property's estimated grain income represents approximately 0.7% of shire output, indicating that any loss in agricultural production at the site would have a minor regional effect.

$591/ha (gross income) × 525 ha (arable land) = $310,275 (0.7% of $41,599,543)

If the property were instead operated as a grazing enterprise, its contribution would be lower again, at around 0.6% of Loddon's dryland grazing production (shire total $54,950,369).

$570/ha (gross income) × 591 ha = $336,870 (0.6% of $54,950,369)

7.5 FRAGMENTATION IMPACT

If the holding formed part of a larger farming enterprise, removing it from production could reduce scale and contiguity, lowering machinery and labour efficiency across the remaining land. However, the proposed development may also diversify farm income, which is likely to outweigh these impacts. Given the site's relative isolation, the broader regional impact appears minimal to fragmentation.

8 Protection of Irrigated Farmland

This section addresses the requirements of the Victorian Planning Provisions, specifically Clause 14.02-3S (Protection of Declared Irrigation Districts) and the DELWP guidelines. The Mologa site is within a declared irrigation district with a water use licence and adjoins an operating irrigation supply channel, factors that would ordinarily weigh against solar development.

8.1 GUIDELINES FOR SOLAR FACILITIES IN IRRIGATION DISTRICTS

The DELWP design and development guidelines give direction with respect to solar energy facilities in irrigated districts. The Victorian Planning Provisions (VPPs) Clause 14.02-3S Protection of Declared Irrigation Districts sets out objectives and strategies to manage and protect irrigated areas. Key policies include the need to:

- Identify and plan for the future needs of communities to adapt and adjust to land use change in a declared irrigation district
- Ensure the future viability of a declared irrigation district by preventing non-agricultural use of land in a declared irrigation district where the land is serviced, or was serviced as at 17 September 2019, by rural water corporation infrastructure, unless the rural water corporation infrastructure has been or is planned to be decommissioned
- Ensure non-agricultural land use does not undermine the integrity of the irrigation network and complements existing and future agricultural use and productivity
- Ensure land use change in a declared irrigation district does not negate the potential opportunities for a rural water corporation to make adjustments to the footprint of a declared irrigation district that are identified under an approved plan or strategy
- Ensure land use change does not limit the ability of future investment in irrigation infrastructure to realise the intended benefits of minimising water loss, improving irrigation service efficiency to the farm gate and increasing overall agricultural productivity.

In addition, the DELWP design and development guidelines indicate that the decision guidelines specifically state that "*if the site is a serviced property, has a water use licence in place, and the infrastructure is planned to be retained by the rural water corporation (not decommissioned), then these three factors, collectively, will mean that this site is unlikely to be a suitable location for development of a solar energy facility*."

The Mologa site is a serviced property, it does have a water use licence in place and the infrastructure is planned to be retained by the rural water corporation and therefore according to the guidelines it is unlikely to be a suitable location for the development of a solar energy facility.

However, we will present information that will demonstrate why this site would be a suitable location for the development of a solar energy facility related primarily due to:

- There is insufficient DS associated with the property to support a commercial irrigation property
- Ongoing contribution of annual charges on delivery shares that contributes to the upkeep of the Goulburn Murray Water (GMW) infrastructure
- That the solar facility would not negate the potential opportunities for adjustments to the footprint of a declared irrigation district
- Low quality soils (as previously outlined in Section 3.7)
- That the solar facility would not limit the ability of future investment in irrigation infrastructure to realise the intended benefits of minimising water loss, improving irrigation service efficiency to the farm gate and increasing overall agricultural productivity
- Demonstration that it is the available water that is the limiting factor in utilisation of the irrigation infrastructure not land.

8.2 IRRIGATION INFRASTRUCTURE

8.2.1 LOCATION PHYSICAL PROPERTY DETAILS

The solar and BESS facility is proposed to cover an area of approximately 591 ha. The full site has been owned by two separate entities identified in pink and blue in Figure 8-1.

Figure 8-1: Site map – Pink – Previous owner 1 and Blue – Previous owner 2

The area identified in pink is not connected to the irrigation system and has been a dryland cropping enterprise with some opportunistic grazing. It does have a stock and domestic (S&D) supply supplied via a neighbouring property (refer to Section 8.2.2)

The second property identified in blue has a water service point and according to the previous owner has not been used for irrigation for over 20 years. Reviewing satellite imagery it appears that there may have been some irrigation on property 2 over an area of approximately 60 ha pre 2005. Currently property 2 is being used for dryland cropping and opportunistic grazing.

8.2.2 ON FARM WATER INFRASTRUCTURE

There is a water service point (PH 333) on the site that has a farm channel entering the property that has been used to deliver stock and domestic water to a number of farm dams as illustrated in Figure 8-2.

A water service point can either be a simple structure for S&D supply or an irrigation structure that is used both for irrigation and S&D. In this case the structure is only currently used for S&D.

Figure 8-2: Service point on the property

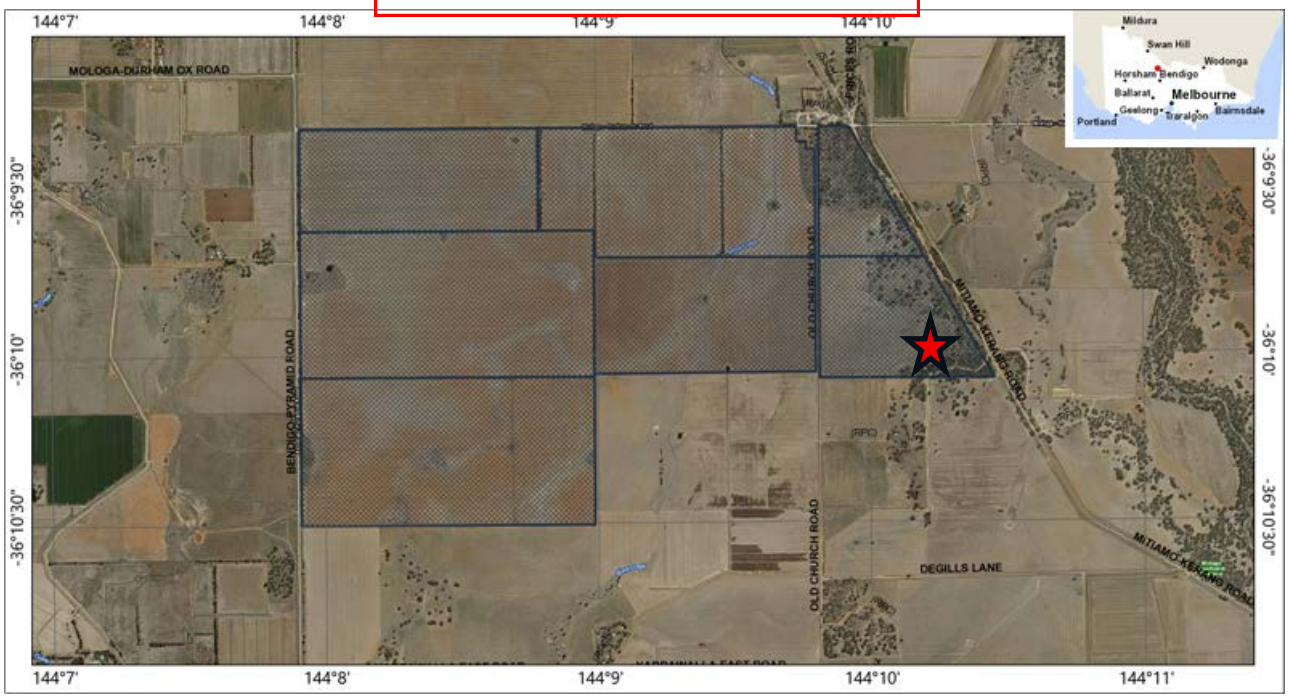

Figure 8-3: Red star shows location of the water service point PH 333.

Figure 8-4: Farm Delivery Channel in a state of disrepair and no longer used

Figure 8-4 shows the remnants of a farm water delivery channel that is in a state of disrepair and cannot be used in its current form for irrigation. Demonstration that the site has not been used for irrigation purposes is evident by observing the last ten years of water use data sourced from Goulburn Murray Water (GMW – refer to Appendix 1). The data shows a total water delivery through the service point has only totalled 6 ML over the 10 years, which has been used to support stock water needs. The data also showed that water use was only recorded in 3 of those ten years.

The northern part of the property has a S&D supply delivered via a 50 mm pipe from a service point (PH 714) that is located on a neighbouring property (Figure 8-5).

Figure 8-5: S&D supply to the northern section of the site

To achieve improved cropping efficiency the majority of the in-property stock and domestic water delivery channels have been filled in to allow for unimpeded use of cropping equipment. Other than the delivery channel illustrated in Figure 8-4 there is no irrigation infrastructure on the property.

Figure 8-6: Property view looking south and taken from the north western corner of the property

Figure 8-7: Stock water dam

Review of satellite imagery going back to 2009 shows that no observable irrigation infrastructure has existed on site for over 15 years. This is well before the Solar guidelines reference in relation to the property service, or was serviced on September 17th 2019.

8.2.3 WATER USE LICENCE AND DELIVERY SHARES

There is a water use licence associated with the property and 0.32 delivery shares (DS) associated with service point PH 333 on irrigation delivery channel No 3/1. This property has a very low amount of DS – so low it is effectively a non-irrigated property.

The DS provides three main purposes:

- Guarantees a level of irrigation service to the property
- Is the mechanism for charging the fixed costs for the irrigation delivery network
- Sets the level of water use on a property before a casual user fee will be applied.

Irrigation service

The DS is used to determine the share of access to the delivery system during periods when total customer orders exceed the available capacity of the delivery system. For example, if a channel system experiences rationing which can happen when the system capacity is insufficient to meet irrigator demands, a 10-day rationing cycle at 100% delivery share rate can be implemented[16]. That means that an irrigator will gain access to 10 times their DS over a ten-day period. For a property of only 0.32 DS this will mean that the property will get access to 3.2 ML over that 10-day period. That would be sufficient to only irrigate approximately 6.4 ha (assuming an irrigation use of 0.5 ML/ha/irrigation) and would not be considered a commercial irrigation property.

In a meeting between RMCG and GMW on the 8th of December, it was confirmed that the channel No.3/1 has experienced rationing in season 2024/25 that demonstrates that there no spare capacity in the system as this location. Rationing was implemented over a 3-month period due to the overcapacity demand.

This property cannot be used for irrigation unless a significant volume of Delivery Share (DS) is purchased from another property. Given the limited availability of DS, any property selling DS would then need to reduce its own irrigation area. Therefore, the proposed solar facility on this site will not affect the overall volume of irrigation water used within the local irrigation network.

Payment of fixed costs

GMW use the annual charges on delivery shares (DS) as the mechanism to pay for the upkeep of the infrastructure. This charge is levied regardless of whether it is used or not. Over the last at least 15 years the structure has only been used for S&D but has always paid the irrigation DS charge despite not using it for irrigation.

A DS can be forfeited at any time by paying a “termination fee” which provides sufficient funds to GMW to fund the infrastructure ongoing.

In this case it is proposed to maintain the DS and thus there will be an annual fee charged by GMW on those delivery shares which will be paid throughout the lifetime of the solar facility.

[16] Depending on the particular situation and season the rationing cycle could be greater than 100%. The rationing cycle in 2024/25 started at 100% and increased to 150% latter in the season. For this site that would mean the available water would be 15 times the DS over ten days totalling 4.8 ML sufficient to irrigate 9.6 ha which is still considered to be a very small area and non-commercial.

Casual infrastructure use fee

The DS sets the volume of water that can be used on a property before a casual user fee will be applied. This is set at 270 times the DS. A property with 0.32 DS will only be able to use 86.4 ML before a casual infrastructure use fee is applied for every ML used above the 86.4 ML. This amount of water is only sufficient to fully irrigate 8 to 12 ha of perennial pasture before the owner will be forced to pay causal infrastructure use fees. This scale of irrigation would not be considered commercial.

As the solar energy facility will not impact any of the GMW delivery channels servicing the property, nor other properties downstream from the site, the proposed development will have no impact on the integrity of the irrigation network.

After completion of the useful life of the solar facility, the property would be able to revert back to dryland farming relatively easily. Once the solar infrastructure is removed, the property would be in a similar position to where it is today.

In conclusion, while the property will not be irrigated, there will still be an annual fee paid directly to GMW via DS that will contribute to the ongoing viability of the irrigation district. It is noted that there will be access to the irrigation network through the life of the project, this water would be able to be used for stock water requirements of the proposed sheep grazing that is intended to be run on the site.

8.2.4 IMPLICATIONS TO FUTURE CHANGES TO THE IRRIGATION NETWORK

The presence of the solar farm and BESS will not prevent GMW from making any future changes to the irrigation network. There will be sufficient buffer between the solar farm and BESS infrastructure and the GMW irrigation structures to allow for any works on the channel to be implemented whether that be channel rationalisation to reduce the irrigation footprint or future investment in irrigation infrastructure to improve efficiencies.

GMW have confirmed that if the solar farm and BESS infrastructure is located outside the required buffer zones there would be no impact on their ability to do any modifications or rationalisation of the irrigation delivery system[17]. GMW have also confirmed that there are no current plans to rationalise the delivery system at this site.

8.3 UNDERUTILISATION OF HIGH QUALITY SOILS

As previously outlined in Section 3.7, the soils on the site are of low to moderate quality and pose some challenges in relation to irrigation. The very best soils from an irrigation point of view are the Group 1 and Group 2 soils. As outlined there is a very small proportion (3%) of the land area assessed as Group 1 soils and that area is considered non-arable due to the density of native trees in that part of the property.

Furthermore, in the Loddon Valley farms with water use licences (WUL) that have a significant area of Group 1 & 2 soils (excluding holdings of less than 20 ha) total 170 with a total area of 75,157 ha[18]. In 2020/21 season those farms used a total of 64,346 ML of water with an irrigation intensity of only 0.85 ML/ha/yr. To put this into context a fully irrigated perennial pasture would use 7 to 10 ML/ha/yr. This demonstrates that even the farms with a large area of prime irrigation agricultural irrigation land (Group 1 & 2 soils) that are connected to the irrigation network are underutilising their land area for irrigation.

[17] Meeting with RMCG and GMW on the 8th of December 2025
[18] Renewable Energy and Conflict with Prime Agricultural Land – Discussion Paper – RMCG June 2022

8.4 WATER NOT LAND IS THE LIMITING FACTOR IN IRRIGATION INFRASTRUCTURE UTILISATION

The DELWP design and development guideline outlines a range of considerations that need to be addressed when proposing a solar facility located within an irrigation district. In response there is a need to provide some context to the water situation in the Goulburn Murray Irrigation District (GMID) that will demonstrate that it is not a lack of land that will limit the agricultural potential for the region but a lack of water. The following information has been reproduced from work RMCG has done in the past and is relevant to this report to help explain why it is water and not land that is limiting production.

GMID PART OF THE SOUTHERN CATCHMENT OF THE MURRAY DARLING BASIN

The site is located within Loddon Valley irrigation district and is within the GMID.

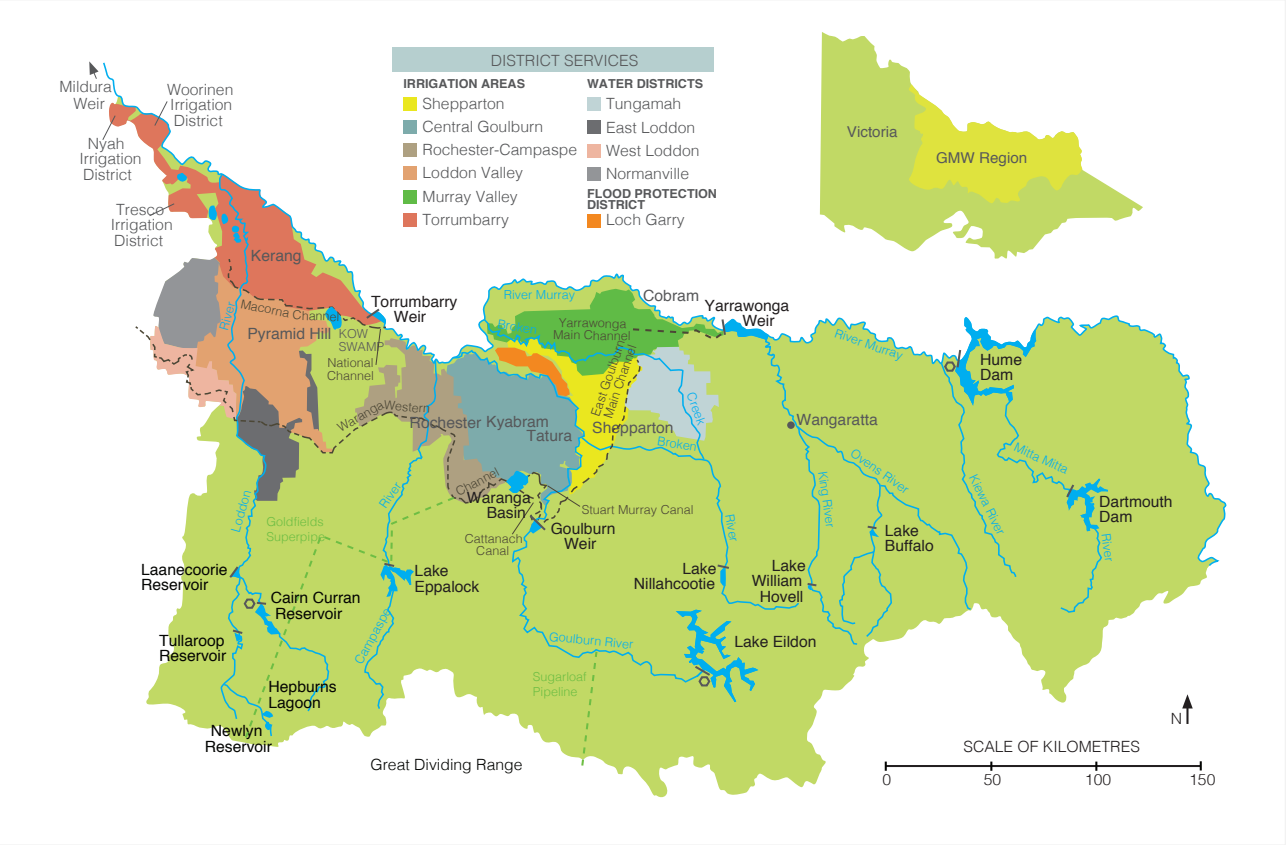

Figure 8-8: Irrigation areas within the GMID

The GMID is only one irrigation district within the Southern Catchment of the Murray Darling Basin (sMDB) as shown below.

Figure 8-9: Irrigation areas within the Southern Connected Basin

WATER TRADING – HAS REDUCED THE WATER USED IN THE GMID

Irrigation water supplied and distributed throughout the southern connected Murray Darling Basin (sMDB) is able to be transferred within and outside irrigation districts. Water is increasingly traded between farms, districts and states enabling irrigators from Shepparton (VIC), Griffith (NSW), Deniliquin (NSW), Mildura and Berri (SA) to trade water entitlements and allocations with each other to meet the long term, annual and immediate needs of their irrigated farms.

The viability and success of an irrigation farm at Mologa is no longer linked to the allocation to an individual property, or even the whole irrigation district - but rather to a competitive market from all water-users throughout the Connected Southern Murray Darling Basin. There are trade restrictions and limits but in essence it is a connected system and water will flow from one region to another based on the capacity to pay from an individual and industry perspective.

HISTORY – WATER USED TO BE TIED TO LAND

When irrigation was first developed in the GMID, water entitlements were granted to properties within the irrigation district. The water was allocated to specific parts of the land. This tied irrigated production to the land and continued up until the 1990s.

The advent of water trading in the 1990s and the unbundling of water entitlements from land has reduced the area of irrigated agricultural production in the GMID. This is because more and more farmers from outside the district and even irrigators interstate have developed irrigation enterprises and secured water entitlements and annual allocations from entitlement owners within the GMID. The wine industry boom around the turn of the century and the more recent cotton and almond industry expansions have driven much of the water trade.

THE BASIN PLAN AND WATER RECOVERY

Since 2000, State and Federal Governments have instigated a number of programs of 'water recovery' in order to increase water available to restore environmental flows. These programs have included the direct purchase of irrigation-water entitlements from irrigation-farmers and co-investment in water savings initiatives designed to return water to governments and to maintain on-farm irrigation performance (with less water). The largest of these programs has been the Murray Darling Basin Plan which has now recovered more than 2000 GL or approximately 20% of all water entitlements previously held by irrigators throughout the Murray Darling Basin (more than 80% from the sMDB). The proportion of water entitlement recovery from the GMID now exceeds 30% of the total number of water entitlements available previously held by irrigators in the GMID.

The government has committed to an additional 450 GL of water to be sourced for environmental needs that will further reduce the amount of water held by irrigators in the GMID.

WATER USE IN THE GMID HAS IRREVERSIBLY CHANGED – SIGNIFICANTLY LESS WATER BUT SIMILAR AREA ABLE TO ACCESS THE IRRIGATION NETWORK

Although the agricultural production of the GMID since its initial development more than one-hundred years ago has been based on irrigated agriculture, the factor limiting production has not been availability of farmland, but irrigation water availability. Even in the 1980s and 1990s when water use in the GMID was at its maximum, there was still insufficient water to fully irrigate all of the land available. In the 96/96 irrigation year there was 2500 GL of water delivered in the GMID with 563,000 ha irrigated with an irrigation intensity of approximately 4.5 ML/ha. A fully irrigated perennial pasture or fruit tree crop would typically use 6-10ML/ha per annum. Thus, within the so called irrigated region of the GMID there was, and still is considerable dryland agriculture.

A report by Tim Cummings and associates in 2016 highlighted the change in water ownership which reflects the changes that have been experienced in the region. This report highlighted the change in water ownership by irrigators within the GMID had fallen by 40% since June 2001. Although water entitlement ownership does not reflect water usage (as irrigators can purchase and trade-in allocation water), the statistic certainly confirms that the amount of water allocated to irrigation property-owners within the GMID has fallen dramatically.

Water owner	Location		High-reliability water share volume (GL)		% change
			30 June 2001	30 June 2015	
Irrigator	LMW diverters		203	216	6%
	LMW districts		189	125	-34%
	GMW diverters		246	164	-32%
	GMW districts	Torrumbarry	378	234	-38%
		Loddon Valley	230	124	-46%
		Rochester/Campaspe	208	113	-46%
		Central Goulburn	391	237	-39%
		Shepparton	181	117	-35%
		Murray Valley	259	167	-35%
		GMID Subtotal	**1,648**	**992**	**-40%**
	Not tied to land		0	175	N/A
Water corporation	Not tied to land		0	62	N/A
Environment	Not tied to land		0	605	N/A
TOTAL			**2,283**	**2,338**	**2%**

Figure 8-10: Change in water ownership (Tim Cummings and associates 2016)

It is also noted that the water ownership loss in the Loddon Valley along with the Rochester/Campaspe district was the highest of all the GMID irrigation districts at 46%.

This is further reflected when looking directly at water deliveries with the GMID over time. The amount of irrigation water used by irrigation in the GMID has effectively halved from around 2,000 GL in the 1990s to around 1,200 GL in recent years. This means there is a significant amount of land previously irrigated that is now dryland.

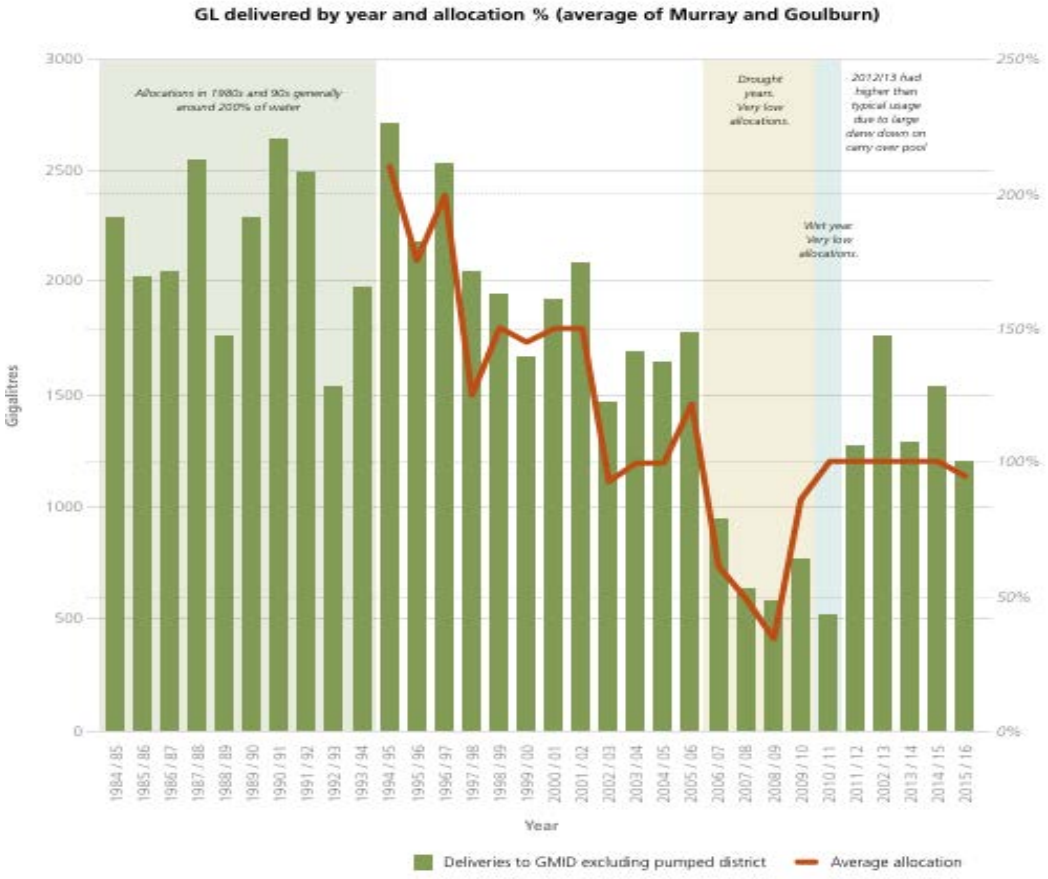

Figure 8-11: Water deliveries in the GMID[19]

In 2017 the Victorian Government published a report: Regional Irrigated Land and Water Use Mapping in the Goulburn Murray Irrigation District, Technical Report which provides a table of land-use within the total GMID including the Loddon valley region (described as Pyramid Hill/Boort in Figure 8-12).

[19] Goulburn Broken Catchment Management Authority, Water Availability in the GMID: Community Summary (Shepparton: GBCMA, 2023), PDF

Categories	Murray Valley		Shepparton		Central Goulburn		Rochester		Torrumbarry		Pyramid-Boort		Totals	
	Properties (Number)	Area (ha)	Properties (Number)	Area (ha)	Properties (Number)	Area (ha)	Properties (Number)	Area (ha)	Properties (Number)	Area (ha)	Properties (Number)	Area (ha)	Properties (Number)	Area (ha)
Properties with dairy	264	26,169	103	8,049	363	37,493	155	19,758	204	26,690	53	8,561	**1,142**	**126,720**
Associated with dairy	152	12,365	81	3,678	220	11,454	97	7,774	152	11,473	63	7,201	**765**	**53,945**
Dairy cattle agistment/fodder	153	11,137	44	3,250	238	14,243	199	13,637	115	11,448	10	1,138	**759**	**54,853**
Perennial horticulture	136	4,672	227	6,482	179	5,460	9	981	389	7,086	8	4,448	**948**	**29,129**
Annual horticulture	8	794	12	283	28	2,203	25	3,501	37	1,139	5	2,120	**115**	**10,040**
Cropping	198	21,607	271	19,792	508	45,845	397	38,118	412	39,154	540	97,258	**2,326**	**261,774**
Mixed	76	4,856	292	21,561	471	35,451	201	20,000	505	23,638	95	12,610	**1,640**	**118,116**
Grazing non-dairy	456	40,540	99	6,901	113	7,578	47	3,955	418	48,197	132	26,719	**1,265**	**133,890**
Intensive animal	2	52	1	74	21	978	6	160	17	2,110	9	1,936	**56**	**5,310**
Horses	14	761	31	1,855	42	1,821	8	245	1	8	6	647	**102**	**5,337**
Lifestyle	379	5,690	645	5,755	1,454	11,014	734	4,198	760	2,835	140	776	**4,112**	**30,268**
Totals	1,838	128,643	1,806	77,680	3,637	173,540	1,878	112,327	3,010	173,778	1,061	163,414	**13,230**	**829,382**

Figure 8-12: Land use across the water service areas in the GMID [20]

The table above shows the total area within the irrigation area but it does not show the actual area irrigated. Of the total area of 829,382 ha there will be tracks of land not suitable for irrigation or permanent dryland but the report also provides the area of actual irrigation in the 2015/16 year.

Irrigated land cover/usage	Total (ha)	Percent%
Winter grain or fodder crop (e.g. wheat, barley, canola, faba beans, oats)	131,029	50.8
Annual pasture (pasture irrigated in spring and/or autumn)	62,497	24.2
Perennial pasture (pasture irrigated through to summer)	20,267	7.9
Summer grain or fodder crop (e.g. maize, millet, sorghum, soybean)	18,717	7.3
Irrigated lucerne	6,108	2.4
Stone fruit (e.g. apricot, peach, nectarine)	4,309	1.7
Pome fruit (e.g. apples, pears)	3,843	1.5
Other permanent orchard species (e.g. kiwi fruit, berries, avocados, nuts)	3,447	1.3
Grapevines	2,380	0.9
Tomatoes	2,239	0.9
Poor block (weeds only)	825	0.3
Other vegetables and annual fruit crops (e.g. melon, lettuce)	742	0.3
Turned and rested paddock or orchard	630	0.2
Other irrigated plantings (please specify)	442	0.2
Any other irrigated crops or irrigated fallow	346	0.1
Citrus fruits of all types	226	0.1
Irrigated wood lots (not shelter belts)	71	0.0
Total	**258,117**	**100.0**

Figure 8-13: Irrigated land cover/usage in the GMID[20]

The area of 258,117 ha is approximately 1/3 of the land area meaning there is around 550,000 of dryland or an increase of approximately 300,000 ha since the 1990's. This represents the area that typically would be able to irrigate but is without irrigation water, leading to a large increase in the area of dry-land (rainfall-only) or non-irrigated agriculture throughout the region.

[20] Regional Irrigated Land and Water Use Mapping in the Goulburn Murray Irrigation District, Technical Report, GB CMA 2017.

This has created a swiss cheese effect affect with pockets of irrigation spread across the region with significant areas of dryland in between. The introduction of this solar farm and BESS will not make a material difference to the significant swiss cheese affect that already exists.

GMID's network costs are largely fixed, but they are now being shared across fewer active irrigators as irrigated area and water deliveries decline. Delivery Shares are based on historic use, properties that use little or no irrigation water can face high access costs per ML, while high-use farms can spread those costs over larger volumes. At the same time, a smaller and more volatile water market increases exposure to changes in allocation availability and price.

This softer delivery outlook creates a structural mismatch between the size of the network and today's use. The challenge is to fund operations, maintenance, and renewals without pushing charges to levels that deter productive irrigation. In practice that means staging renewals carefully, avoiding stranded assets, and revisiting how fixed costs are recovered so low-use properties are not over-burdened and growth users can still expand.

CONCLUSION

It is concluded that the area of land serviced with an irrigation supply and drainage network has remained largely unchanged and the area of land able to utilise irrigation-water is now far greater than the water availability in almost every season-type throughout the GMID, particularly within the Loddon Valley Irrigation area. This imbalance is central to the question of what land genuinely warrants strategic protection for irrigation.

The available water to irrigators in the GMID and in the Loddon Valley irrigation district has irreversibly declined and farm businesses are larger and more automated, and many smaller or less flexible operators are scaling back, leasing water, or exiting. [21]

Therefore, channel access is not, on its own, a reliable test of strategic irrigated land. Given current water availability, costs and policy settings, the external constraints often outweigh the case for initiating or reinstating irrigation. For many properties, a shift toward livestock or dryland (like the subject property) is not a retreat but a rational, land-use strategy and therefore the Mologa site should not be viewed as a loss to irrigation.

[21] Goulburn Broken Catchment Management Authority (2023) 2021–22 Farm Irrigation Survey: Summary. Shepparton: GBCMA.

9 Agri-Solar Opportunity

The proposal includes an opportunity for grazing sheep alongside the solar facility as part of the ongoing land use.

The coupling of solar farms and agriculture has been found to be highly compatible and mutually beneficial[22]. The benefits to farming can include:

- The provision of weather protection from sun, rain, hail and wind. This is becoming increasingly valuable with the advancement of climate change
- Protection from predators for sheep which comes from the high fencing located around solar farms
- Improved soil moisture retention, which can lead to improved pasture growth beneath the panels even during drought
- Higher wool quality on sheep, even during drought conditions due to the reduction of dust and higher quality and quantity of feed.

The benefit to solar proponents includes:

- Reduced maintenance costs by keeping vegetation under control
- Grazing also reduces damage to panels caused by grass-cutting machinery
- Reduced fire risk
- Improved solar PV efficiency due to cooler panels from surrounding vegetation
- Strengthened relationships with neighbouring farmers.

Applying the dual-use (solar plus grazing) assessment to the subject property indicates that sheep grazing is the only practical co-use at scale. The site is approximately 591 hectares with very gentle relief, is largely cleared and lies in a ~400 mm rainfall zone on predominantly heavy clay soils, conditions that favour low-growing pasture mixes. Access is easy and direct via Bendigo–Pyramid Road and connecting routes.

Dryland pasture maintained by sheep can meet vegetation and fire-management requirements for the solar operator while generating a modest agricultural return. The site's moderate land-capability and shallow water table reinforce the case for low-intensity grazing rather than higher-input systems.

Operationally, panel height, row spacing and exclusion areas would determine effective grazeable hectares and stocking rates. Given the flat topography and cleared condition, standard utility-scale layouts should accommodate sheep with only modest upgrades to fencing and reticulated water supply, further investment into stock yards and paddock layout for rotational grazing systems would be an attractive proposition for agistment or longer lease arrangements. By contrast, accommodating cattle would require higher clearances and stronger infrastructure, making that option commercially unlikely.

Financial benchmarking indicates the property is not viable as a stand-alone farm at typical dryland margins. In this context, structured solar grazing offers a defensible pathway to retain agricultural activity and preserve future optionality, where the land remains in a compatible rural use during the project life and can revert to agriculture at decommissioning subject to rehabilitation. This approach minimises fragmentation risks because titles are retained, water delivery infrastructure is not further encumbered, and the co-use does not preclude future aggregation or reinvestment if market conditions improve.

[22] Agrivoltaics Handbook A guide for solar developers and landholders, A. Bomm and K. Stark, 2025

10 Conclusion

The site is generally well suited to a utility-scale solar project. It comprises approximately 591 hectares across nine parcels, is largely cleared for dryland cropping, has very gentle relief and benefits from sealed-road access via Bendigo–Pyramid Road. Soils are predominantly group 3 and 4 soils comprising heavy clays in part, surface pH is neutral trending to alkaline at depth, salinity is low to moderate and the water table is shallow. Overall, these characteristics indicate the land is not strategically important for high-value agriculture and has several constraints that limit its productive potential.

To put the project's agricultural impact in context, we compared the site to shire-level production totals. Based on the ABS 2020–21 Agricultural Census estimate for Loddon's grain-growing production ($41,599,543), the subject property's estimated income is $310,275 (calculated as $591/ha × 525 ha of arable land). This represents approximately 0.7% of the shire's sector output, suggesting that any reduction in production at the site would have a minor regional effect. Our production metrics also indicate the property would not materially affect upstream or downstream impacts in the local area and given its scale, the holding is unlikely to be viable as a stand-alone enterprise and would not support one full-time equivalent role.

It was also noted that the area of land serviced with an irrigation supply and drainage network has remained largely unchanged and the area of land able to utilise irrigation water is now far greater than the water availability in almost every season-type throughout the GMID, particularly within the Loddon Valley Irrigation area. Therefore, if this property was not available for irrigation purposes, i.e. used as a solar farm and BESS then the total irrigated production in either the Loddon Valley irrigation district, the GMID or even the southern Connected Basin, would not change as any available water would readily find alternative land.

The site also has strong potential for dual use through sheep grazing. A farm operations plan should specify paddock layout, exclusion zones, fencing and gateways, water reticulation, livestock handling infrastructure, and pasture species suited to partial shade. In this context, a structured solar-grazing system provides a practical way to maintain agricultural activity while keeping future land-use options open. The land remains in a compatible rural use for the life of the project and can return to agriculture at decommissioning, subject to rehabilitation.

Appendix 1: Water Use

PH.333 yearly usage [SEC=OFFICIAL]

Mazzella, Wayne <Wayne.Mazzella@gmwater.com.au> Sat, Nov 22, 2025 at 9:51 AM
To: "josh@lightwoodgroup.com.au" <josh@lightwoodgroup.com.au>

OFFICIAL

Morning Josh,

Spoke with David was happy for us to pass on yearly usage last 10 seasons.

2025 - Currret - zero

2024/2025 – 1.9M/l

2023/2024 – 3.0 M/l

2022/2023 – zero

2021/2022 -1.1M/l

2020/2021 – zero

2019/2020 – zero

2018/2019 – zero

2017/2018 – zero

2016/2017 - zero

Goulburn-Murray WATER

Wayne Mazzella

Water Systems Operator

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