Premise

TERRAIN SOLAR

Land Use Conflict Risk Assessment (LUCRA)

IN SUPPORT OF A STATE SIGNIFICANT DEVELOPMENT APPLICATION

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Prepared By		**Reviewed By**		**Authorised By**	
Hugh Shackcloth-Bertinetti		Chloe Bigg		David Walker	

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1. INTRODUCTION

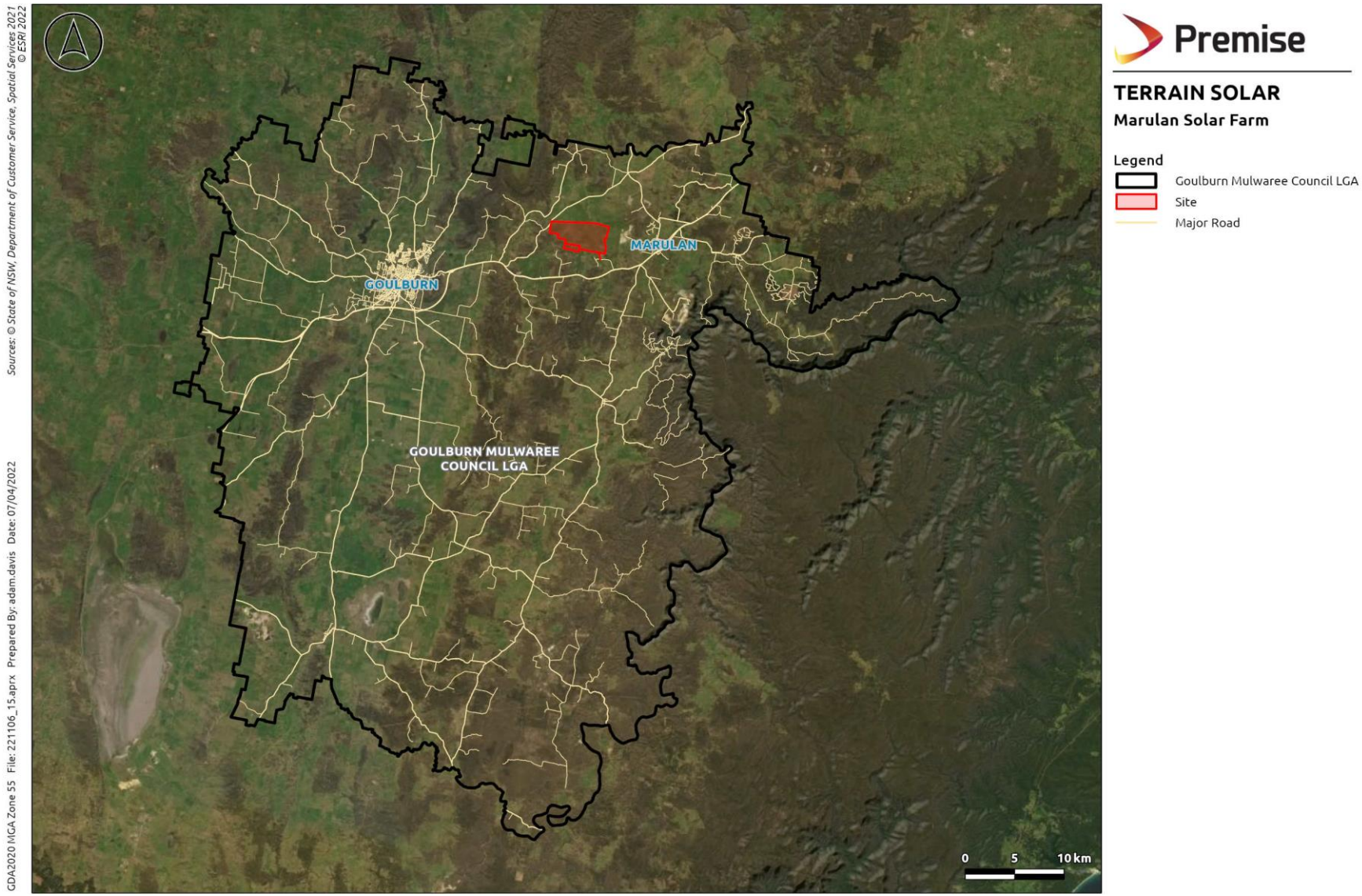
1.1 Background

Premise has been commissioned by the Proponent (Terrain Solar) to prepare this Land Use Conflict Risk Assessment (LUCRA) to support a State Significant Development Application (SSD 13137914) for a proposed solar farm, battery energy storage system (BESS) and associated works at 740 Carrick Road, Carrick NSW 2580 within the Goulburn Mulwaree Council (GMC) Local Government Area (LGA).

The development is known as the Marulan Solar Farm (MSF) and is proposed to be located on Lot 55 DP1141136, which connects to Munro Road.

The site is depicted in its regional context in **Figure 1**.

Figure 1 – Regional context



1.2 Scope

This LUCRA has been prepared to address relevant requirements of the Secretary's Environmental Assessment Requirements (SEARs) issued for the project by the (then) NSW Department of Planning Industry and Environment (DPIE) and to support the project Environmental Impact Statement (EIS).

SEARs relevant to this LUCRA are provided in **Table 1.**

Table 1 – Relevant SEARs

Source	Requirement	Addressed
SEARS- Key Issues (Land)	An assessment of the compatibility of the development with existing land uses, during construction, operation and after decommissioning including of the development on existing land uses on the site and adjacent land, including:	This LUCRA
	• Consideration of the zoning provisions applying to the land, including subdivision.	**Section 2.1.2 - Land use zone** **Section 2.2.1 - Land use zones**
	• Completion of a Land Use Conflict Risk Assessment in accordance with the Department of Industry's Land Use Conflict Risk Assessment Guide; and	**Section 3 - Land Use Conflict Risk Assessment**
	• Assessment of impact on agricultural resources and agricultural production on the site and region	**Section 2.2.3.2 – Agriculture** **Appendix A- Risk Assessment** Note: This LUCRA addresses the requirement to prepare a LUCRA but does not include detailed consideration of zoning provisions or assessment of impacts on agriculture; those matters are addressed in the EIS
NSW Department of Primary Industries (DPI) Environmental Assessment Requirements Attachment 1 - Issues (Site Suitability)	• Include a Land Use Conflict Risk Assessment (LUCRA) to identify potential land use conflict with sensitive receptors including surrounding agricultural land uses. The LUCRA is to address separation distances and management practices to minimise odour, dust and noise impacts. A LUCRA is described in the DPI Land Use Conflict Risk Assessment Guide.	**Section 3 - Land Use Conflict Risk Assessment** **Appendix A- Risk Assessment**
	• Include a map to scale showing the above operational and infrastructure details including separation distances from sensitive receptors including agricultural land uses.	**Figure 2 – Development footprint**

1.3 Methodology

This LUCRA has been prepared in accordance with the *Land Use Conflict Risk Assessment Guide* (DPIE, 2011) (LUCRA Guide).

The LUCRA is a system to identify and assess the potential for land conflict to occur between neighbouring land uses. Land use conflicts occur when one land user is perceived to infringe upon the rights, values or amenity of another. The LUCRA enables a systematic, consistent, and site-specific conflict assessment approach. Through evaluating land use compatibility and potential land use conflicts appropriate risk reduction management strategies can be identified.

As stated in the LUCRA Guide, a LUCRA aims to:

- *accurately identify and address potential land use conflict issues and risk of occurrence before a new land use proceeds or a dispute arises*
- *objectively assess the effect of a proposed land use on neighbouring land uses*
- *increase the understanding of potential land use conflict to inform and complement development control and buffer requirements, and*
- *highlight or recommend strategies to help minimise the potential for land use conflicts to occur and contribute to the negotiation, proposal, implementation and evaluation of separation strategies.*

The assessment process in the LUCRA Guide has been applied to achieve the above aims. These steps are provided in **Table 2**, including a reference column to the section where each step is addressed in this report.

Table 2 – LUCRA steps

Steps	Requirements	Reference
Step 1: Gather information	• Describe the nature of the proposed land use change and the proposed development. • Describe and record the major activities associated with the land use change and their frequency. Include periodic and seasonal activities that have the potential to be a source of a complaint or conflict • Appraise the topography, climate and natural features of the site and broader locality • Undertake a site history search, review the previous environmental assessments and approvals for the site • Inspect the site and interview relevant owners/operators of adjacent properties • Describe and record the main activities of the adjacent properties and their frequency. Include water-based activities that may be adversely impacted, such as oyster farming; and, • Compare and contrast the proposed and adjoining/surrounding land uses and activities for incompatibility and conflict issues	**Section 2**
Step 2: Evaluate the risk level for each activity	Each proposed activity is recorded, and potential land use conflict is evaluated with in consideration of the: • Probability of occurrence and • Consequence of the impact The risk ranking matrix is utilised to determine a risk ranking for each activity and results are recorded into an initial risk evaluation table.	**Section 3.2**

Steps	Requirements	Reference
Step 3: Risk reduction management strategies	Management strategies and mitigation measures that affect the probability and consequence of activities are identified. Revised risk rankings are calculated, and performance targets are set, detailing how the effectiveness of the strategy will be monitored The objective of this step is to identify and define controls that lower the risk ranking score to 10 or below.	**Section 3.3** **Section 3.4**
Step 4: Record LUCRA results	Key issues, risk level and recommended management measures are recorded and summarised. This record provides a valuable planning document for managers and planners and should be included in any relevant management plan.	**Section 3.3** **Section 3.4**

1.4 Study areas

The study areas for this LUCRA includes the development footprint, the site and the locality. These terms are defined in **Table 3**.

The study areas were determined by considering surrounding land uses and the likely spatial extent of potential impacts of the MSF that may cause land use conflict.

Table 3 – Study areas terminology

Term	Meaning
Site	Lot 55 DP1141136 – the site of the solar farm and BESS. The Lot contains an access corridor connected to Munro Road. The proposed access arrangement transects areas mapped as containing crown land, adjoining the northern boundary of the access corridor.
Development footprint	The area occupied by the MSF and associated infrastructure including the: • The solar array development area of approximately 375 hectares (including ancillary elements such as a bushfire asset protection zone, external fencing, landscaping as required, and internal access roads); • The grid connection infrastructure area of approximately 4-8 hectares; • A switching station area of up to 2 hectares; • A BESS, which may be distributed amongst the solar array development area (if DC coupled), or grouped into an area proximate to the substation (if AC coupled); and • A connecting overhead transmission line
Locality	Land within 1 km of the site boundary.

2. STEP 1 – GATHER INFORMATION

2.1 Nature of the land use change and development proposed

2.1.1 THE SITE

The site is located in the GMC Local Government Area (LGA) and has an area of approximately 1,400 hectares, of which 375.5 hectares is to be occupied by the proposed approximately 150 megawatt (MW) solar farm.

The site is located approximately 5 kilometres (km) west of the town of Marulan in a rural locality.

The site features undulating topography with low peaks, shallow gullies and creeks scattered throughout, generally coinciding with mapped watercourses. The site is currently used for agriculture, including grazing and cropping.

The northern boundary of the site is adjoined by the Main Southern Railway rail corridor. Various overhead transmission lines and underground infrastructure for gas and telecommunications are present within the site.

The site was selected after the proponent's extensive review of information relating to land availability and access, land ownership, land use, topography, geological formation, transmission grid access and capacity, solar irradiation and environmental constraints.

The site and development footprint is depicted in **Figure 2**.

2.1.2 LAND USE ZONE

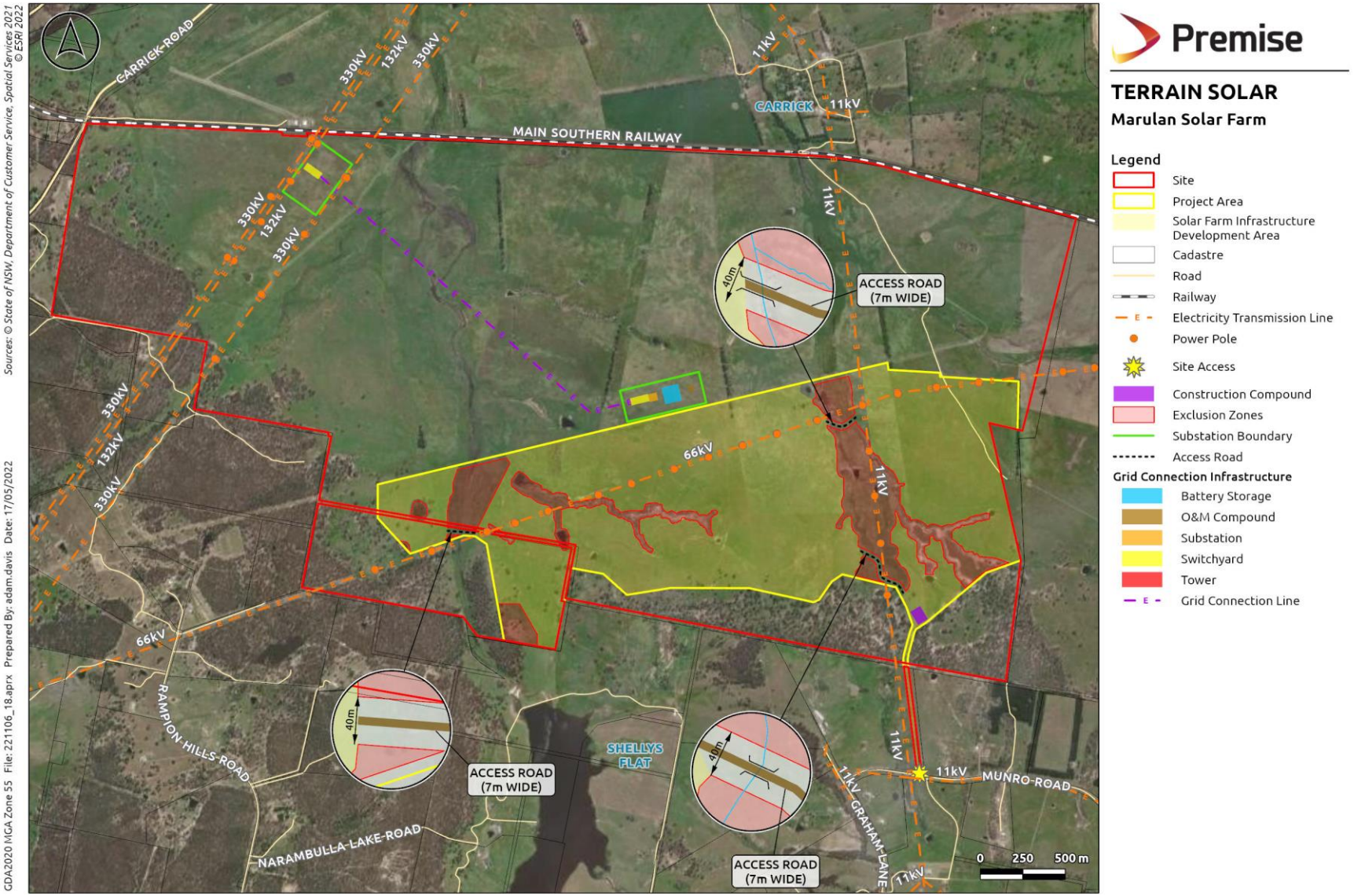
The site is located on land zoned RU1 – Primary Production pursuant to the *Goulburn-Mulwaree Local Environmental Plan 2009* (GM LEP).

The objectives of the RU1 – Primary Production land use zone are:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and with adjoining zones.*
- *To promote the use of agricultural land for efficient and effective agricultural production.*
- *To avoid or minimise impacts on the natural environment and protect environmentally sensitive land.*
- *To allow the development of non-agricultural land uses which are compatible with the character of the zone.*
- *To allow the development of processing, service and value-adding industries related to agriculture and primary industry production.*
- *To protect and enhance the water quality of receiving watercourses and groundwater systems to reduce land degradation.*
- *To minimise the visual impact of development on the rural landscape.*

Permissibility and alignment with the above objectives are addressed in the EIS.

Figure 2 – Development footprint



2.1.3 DEVELOPMENT PROPOSED

The proposed development includes:

- The solar array development area of approximately 375 hectares (including ancillary elements such as a bushfire asset protection zone, external fencing, landscaping as required, and internal access roads);
- The grid connection infrastructure area of approximately 4-8 hectares;
- A switching station area of up to 2 hectares;
- A BESS, which may be distributed amongst the solar array development area (if DC coupled), or grouped into an area proximate to the substation (if AC coupled); and
- A connecting overhead transmission line.

The proposed development layout is depicted in **Figure 2**. The final layout is subject to detailed design.

Construction of the solar farm is estimated to take up to 18 months and will include site clearing and earthworks. The proposed development is expected to have a life span of approximately 30 years.

2.1.4 NATURE OF LAND USE CHANGE

The construction and operation of the MSF would change the primary land use of the development footprint from agriculture to electricity generating works. However, during operation of the MSF, there may be potential for sheep grazing to occur. Areas outside the development footprint within the site will continue to support agricultural activities where practicable.

Land use is likely to return to agricultural land use following decommissioning although infrastructure that is considered of benefit to the landowner would remain subject to specific agreement with the landowner. Confirmation would also be required from the electricity supply authority regarding the long term use of the substation and switching station and/or whether these would be removed as a component of the decommissioning phase.

2.2 Nature of the locality

2.2.1 LAND USE ZONES

Land use zones within the locality are detailed in **Table 4** and depicted in **Figure 3**.

The following is noted with respect to land use zoning in the locality:

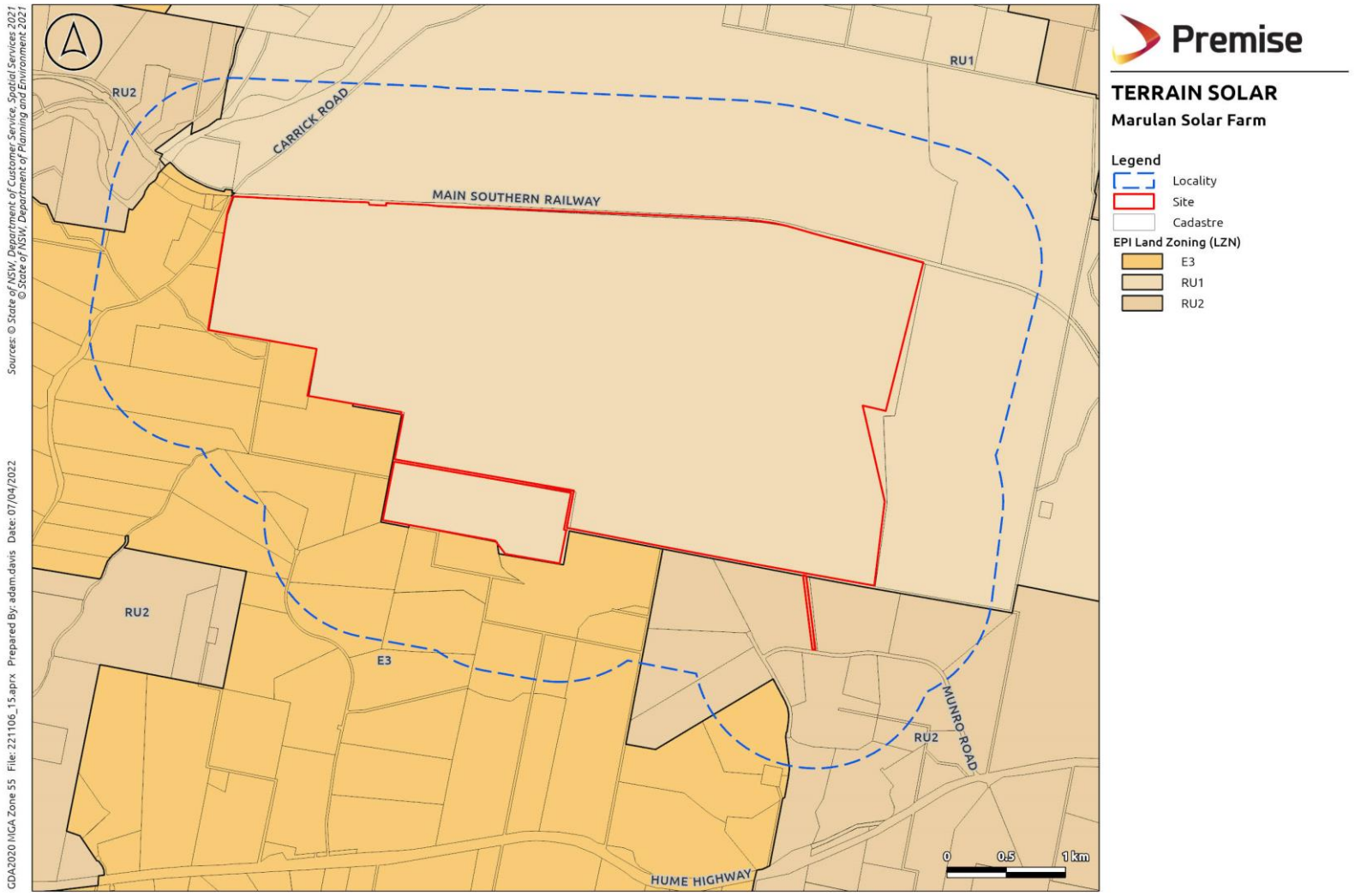
- The majority of the site is zoned RU1 – Primary production except for the access road from Munro Road that is zoned RU2 – Rural Landscape.
- Land zoned RU1 – Primary Production extends north and east of the site.
- The south-eastern boundary of the site borders land zoned RU2 – Rural Landscape.
- The south-western and western boundary of the site borders land zoned C3 – Environmental Management.

Table 4 – LEP land use zones and objectives

Zone	Objectives
RU1 - Primary Production	• *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.* • *To encourage diversity in primary industry enterprises and systems appropriate for the area.*

Zone	Objectives
	• *To minimise the fragmentation and alienation of resource lands.* • *To minimise conflict between land uses within this zone and with adjoining zones.* • *To promote the use of agricultural land for efficient and effective agricultural production.* • *To avoid or minimise impacts on the natural environment and protect environmentally sensitive land.* • *To allow the development of non-agricultural land uses which are compatible with the character of the zone.* • *To allow the development of processing, service and value-adding industries related to agriculture and primary industry production.* • *To protect and enhance the water quality of receiving watercourses and groundwater systems to reduce land degradation.* • *To minimise the visual impact of development on the rural landscape.*
RU2 - Rural Landscape	• *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.* • *To maintain the rural landscape character of the land.* • *To provide for a range of compatible land uses, including extensive agriculture.* • *To protect, manage and restore areas with high conservation, scientific, cultural or aesthetic values.* • *To protect and enhance the water quality of receiving watercourses and groundwater systems and reduce their degradation.* • *To preserve environmentally sensitive land, including catchment areas, and prevent development likely to result in environmental harm.* • *To minimise the potential for conflict between adjoining land uses.*
C3 - Environmental Management	• *To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.* • *To provide for a limited range of development that does not have an adverse effect on those values.* • *To facilitate the management of water catchment areas, environmentally sensitive land and areas of high conservation value.*

Figure 3 – Land use zoning in the locality

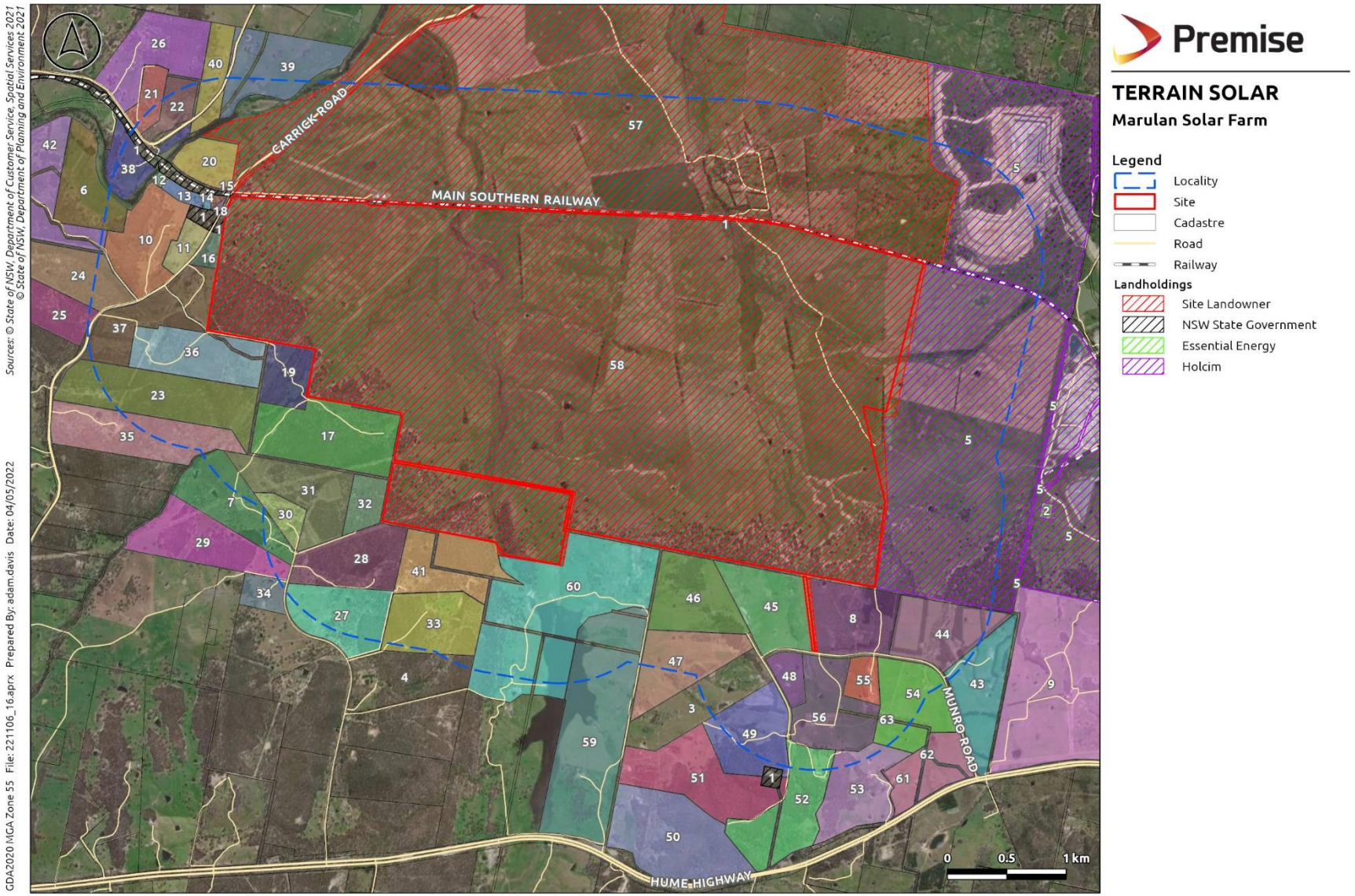


2.2.2 LAND OWNERSHIP

Land holdings within the locality (within 1 km of the site) are depicted in **Figure 4** overleaf. In summary:

- Land to the north and west is in the same ownership as the subject site and is expected to remain as this.
- Land ownership to the south and west is divided into smaller residential and agricultural holdings.
- Land to the west is owned by Holcim (Australia) Pty Ltd. The adjacent lot to the west of the subject site is owned by Holcim but remains in use for agricultural purposes. Land parcels situated to the north-east and further west are associated with Holcim's operation of Lynwood Quarry (refer to **Section 2.2.3.3**).
- The NSW Government own land associated with the Main Southern Railway and land parcels to the west and south.
- Essential Energy own land outside of the locality, to the south of Lynwood Quarry.

Figure 4 – Land ownership in the locality



2.2.3 EXISTING LAND USES

A review of the NSW Landuse 2017 v1.2 mapping from the DPIE SEED Portal identified a range of land uses in the locality. Land uses within the site and locality (1km radius of the site) are outlined in **Table 5** and **Figure 6.**

Review of land uses within the locality indicate land use is predominantly grazing, mostly on modified pastures and to a lesser extent, native vegetation.

Table 5 – Land Uses within the Locality

Land use	Area (ha)	%
Managed resource protection	33.13	1.0%
Other minimal use	449.06	12.9%
Grazing native vegetation	746.83	21.4%
Plantation forests	1408.06	40.4%
Grazing modified pastures	629.65	18.1%
Cropping	7.90	0.2%
Perennial horticulture	136.25	3.9%
Residential and farm infrastructure	3.15	0.1%
Mining	26.16	0.8%
Lake	3.08	0.1%
Reservoir/dam	5.8	0.2%
TOTAL	**3484.2 hectares**	

2.2.3.1 Residential and farm infrastructure

The site contains farm infrastructure such as including dams and fences. There are two groundwater bores within the site (refer to **Section 2.2.6.6**). A 100,000 litre tank is located in the centre of the site, approximately 1.1 km from the southern boundary of the site.

There are no residential dwellings located within the site however there are four associated receivers located on land to the owned by the same landowner.

As shown in **Figure 5** there are 15 non-associated residential dwellings within 1.25 km of the site and a further 23 within 3.25 km of the site. As noted above, there are also four associated receivers located on the land holding, located approximately 1.5 – 1.75 km to the north. All of the non-associated receivers are located to the south and west of the site.

Figure 5 – Receivers

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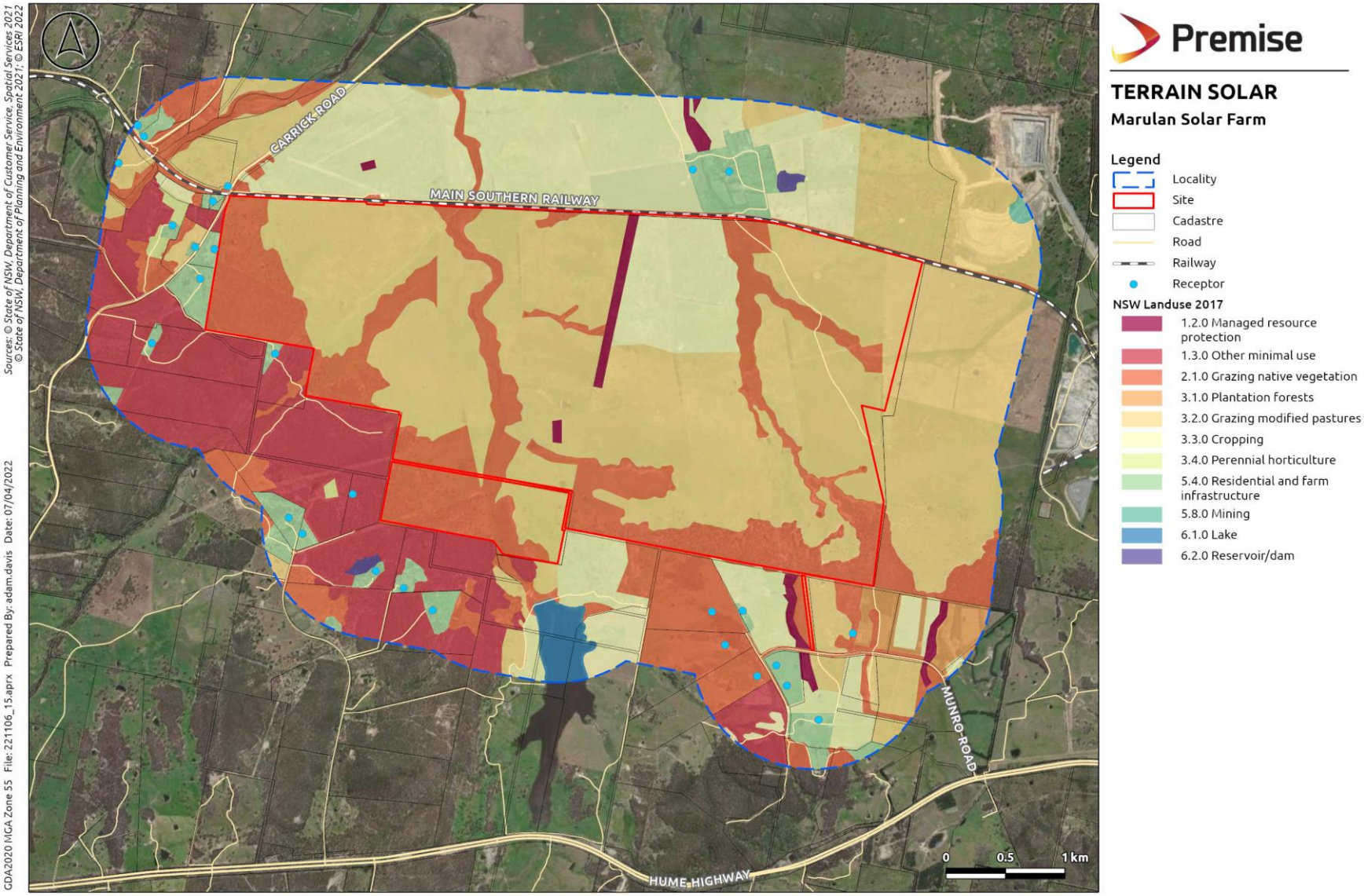
Marulan Solar Farm
Terrain Solar

Figure 4-1: **Location plan**

Figure 6 – Land use and receptors within the locality



2.2.3.2 Agriculture

The site is currently used for grazing of modified pastures and native vegetation, with cropping in parts of the site. Current livestock (sheep) numbers within the development footprint are estimated to be 2.5 dry sheep equivalent (DSE) per ha. There is estimated to be 500 breeding ewes and 750 lambs within the development footprint

Agriculture is the dominant land use in the locality, with grazing and cropping land uses predominant north and east of the site, with the exception of Holcim's Lynwood Quarry.

The project is situated within the South-East and Tablelands (SET) Region of NSW. DPI's *Agricultural Industry Snapshot for Planning – South-East and Tablelands,* identifies the gross value of agricultural production of the SET region at over $906 million for the year between 2015 and 2016 (DPI 2020). The GM LGA Gross Value Production (GVP) is $48.7 million and comprises 5.4% of the SET region's agricultural GVP. The top three commodities, beef, wool and sheep/lamb, contribute $16.84 million, $11.78 million and $9.27 million to the GVP of the GM LGA, respectively (DPI, 2020).

2.2.3.3 Extractive industry

The Holcim Lynwood Quarry is a hard rock quarry located in Lot 2 DP1107232, approximately 300 m north-east of the site boundary, and at its closest point approximately 1.6 km from the development footprint.

The quarry is classified as state significant development and was granted development consent on 21 December 2005 via DA 128-5-2005. Consent was originally granted to Readymix Holdings Pty Ltd which was acquired by CEMEX Australia Pty Ltd (NSW Department of Planning, 2009). Holcim (Australia) Pty Ltd acquired Cemex Australia on October 1, 2009 (Holcim Australia, 2009).

Readymix Holdings Pty Ltd initially lodged an application to establish Lynwood quarry to provide a long-term supply of construction materials for the Sydney market and to replace supplies lost with the expected closure of the Penrith Lakes Scheme in 2010. Quarrying activities at the Penrith Lakes Scheme finished in September 2015 with the Penrith Lakes Development Corporation Limited undertaking rehabilitation (NSW Government, Department of Planning and Environment, 2018).

Lynwood Quarry was developed on land predominantly used for grazing purposes with some industrial land-use to the south-west of the quarry project area (NSW Government Department of Planning, 2005). Construction of the quarry commenced in 2010 and it became operational in late 2015. The quarry has been operational for over 6 years and the development consent lapses on 1 January 2038.

The quarry is approved to transport a maximum of five (5) million tonnes per annum (Mtpa) from the site via road (1.5 Mtpa) and rail. The quarry is connected via a grade separated interchange with the Hume Highway, Marulan South Road and Jerrara Road. The approved quarry transport route is via an access road that connects to the Hume Highway and a rail loop that connects to the Main Southern Railway (Kleinfelder Australia, 2020). The original development consent has been subject to five (5) modifications including:

- MOD 1 (07/05/2009): Reduction of the western extent of the approved quarry footprint and modification to infrastructure layout.
- MOD 2 (22/03/2011): Site infrastructure and construction route modification including reconfiguration of proposed rail loop, layout of site infrastructure, use of fixed in-pit primary crusher, increased movement of heavy vehicles during construction and alternate construction access.
- MOD 3 (19/08/2011): Administrative modification including changes to vary date of submission for annual reports and audits.

- MOD 4 (18/05/2016): Construction of a new 76 ha quarry pit (granite) in Lot 2 DP1107232, located north-west of the original quarry.
- MOD 5 (29/05/2017): Administrative modification including variation to condition for timing of Biodiversity Offsets.

Terrain have completed ongoing consultation with Holcim quarry over the last 12 months. No information to suggest proposed expansion has been provided.

The expansion of Lynwood Quarry (approved via MOD 4) resulted in a granite pit being constructed approximately 550 m north-east of the site's boundary. Most blasting at the quarry occurs within the newly constructed granite pit. In 2020 there was a total of 90 blasts at the quarry with 85 blasts recorded in the granite pit.

A Blasting Impact Assessment was prepared by Umwelt Australia (2015) to accompany the original environmental assessment for MOD 4 of the Lynwood Quarry. The assessment concluded the following for the final stage of the granite pit:

- Estimated maximum ground vibrations and calculations of peak particle velocity) of:
    - 12.9 millimetres per second (mm/s) near the Main Southern Railway 550 m from the granite pit
    - 13.3 mm/s for the natural gas pipeline 540 m from the granite pit.
- Airblast exposure levels required to inflict damage were considered non applicable and/or not reached with airblast exposures for heritage buildings all below 113 decibels (dBL).
- The granite pit implements a standard 500 m exclusion zone for fly rock with potential risks considered negligible.

A Quarry Blast Management Plan (Holcim Australia, 2020) is also in place to minimise blast impacts.

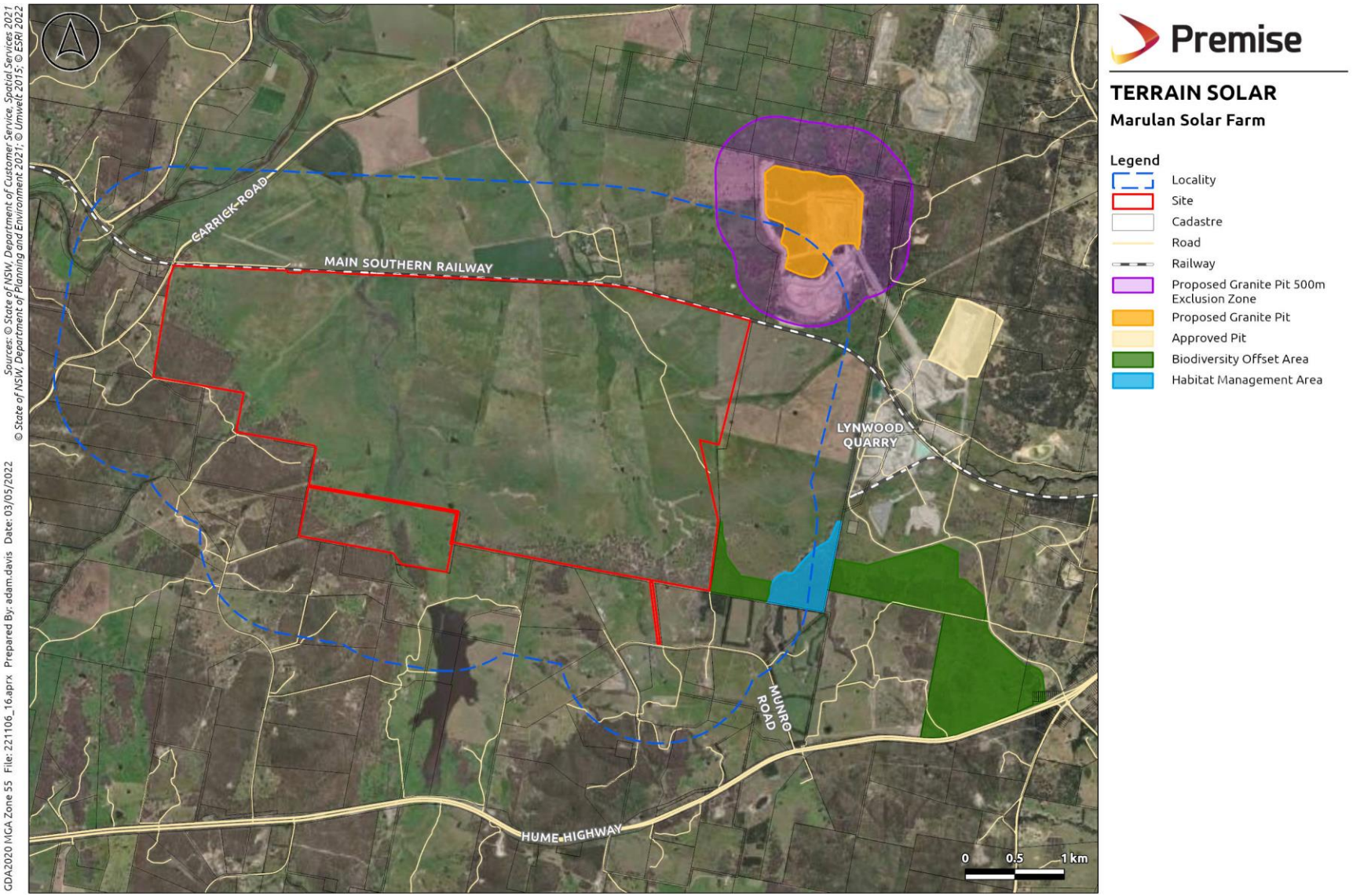
While the site boundary is approximately 550 m from the granite pit, the development footprint is approximately 1.6 km south of the granite pit and therefore well outside the 500 m exclusion zone specified to minimise potential fly rock risks from the quarry blasts.

Biodiversity offset areas and habitat management areas used for Lynwood Quarry are located in the southern extent of Lot 3 DP1107232, an adjacent lot that borders the western boundary of the site. The offset area contains critically endangered ecological communities (CEEC) protected as matters of national environmental significance under the *Environment Protection and Biodiversity Conservation Act,* including Box Gum Woodland and Box Gum Woodland Derived Native Grassland (Umwelt Australia, 2013).

The south-eastern corner of the development footprint is located approximately 30 m north of the quarry's biodiversity offset area and approximately 850 m from the quarry's habitat management area. The MSF is not expected to affect use of that surrounding land for biodiversity offset and habitat management areas.

Lynwood Quarry is mapped as 'mining' via the NSW Landuse 2017 v1.2 mapping dataset (refer to **Figure 6**). Lynwood Quarry, however. is not considered to be a mine under the definition of the *Mining Act 1992.*

Figure 7 – Lynwood Quarry biodiversity and blast exclusion zone



2.2.3.4 Infrastructure

An overview of infrastructure within the site and locality is outlined below. These features are depicted in **Figure 8**.

2.2.3.4.1 Roadways

Key roads that would be utilised during the construction and operation of the MSF include:

- Munro Road, which connects to the Hume Highway, approximately 1.8 km south-east of the site.
- The Hume Highway which runs in a general east to west alignment, approximately 1.6 km south-west of the site at its closest point.

The expected transportation route for construction materials is via the Hume Highway and Munro Road.

A review of NSW Road Network Classification map provided by Transport for NSW (TfNSW, 2022) and Schedule of classified roads and State and Regional roads (TfNSW 2022b) identifies the Hume Highway as a State Classified Road (HW2). Munro Road is a local road not classified under the *Roads Act 1993*.

2.2.3.4.2 Rail corridors

The Main Southern Railway Line, which connects Sydney to Melbourne, runs in an east-west alignment adjacent to the sites' northern boundary. The rail corridor is managed on behalf of Transport for NSW by the Australian Rail Track Corporation (ARTC).

A railway crossing along Carrick Road is located approximately 20 m north-west of the site. No interaction with this railway crossing or the railway corridor for the Main Southern Railway is proposed

2.2.3.4.3 Electrical infrastructure

There are several transmission lines that transect the site including:

- Two TransGrid overhead 330 kV transmission lines.
- Essential Energy overhead 11 kV, 66 kV and 132 kV transmission lines.
- Underground wires and/or earthing cables associated with Essential Energy transmission lines.

2.2.3.4.4 Gas infrastructure

An APA Group high-pressure gas pipeline transects the site in a south-west to north-east alignment.

2.2.3.4.5 Telecommunications infrastructure

Several telecommunication lines are located within the site including:

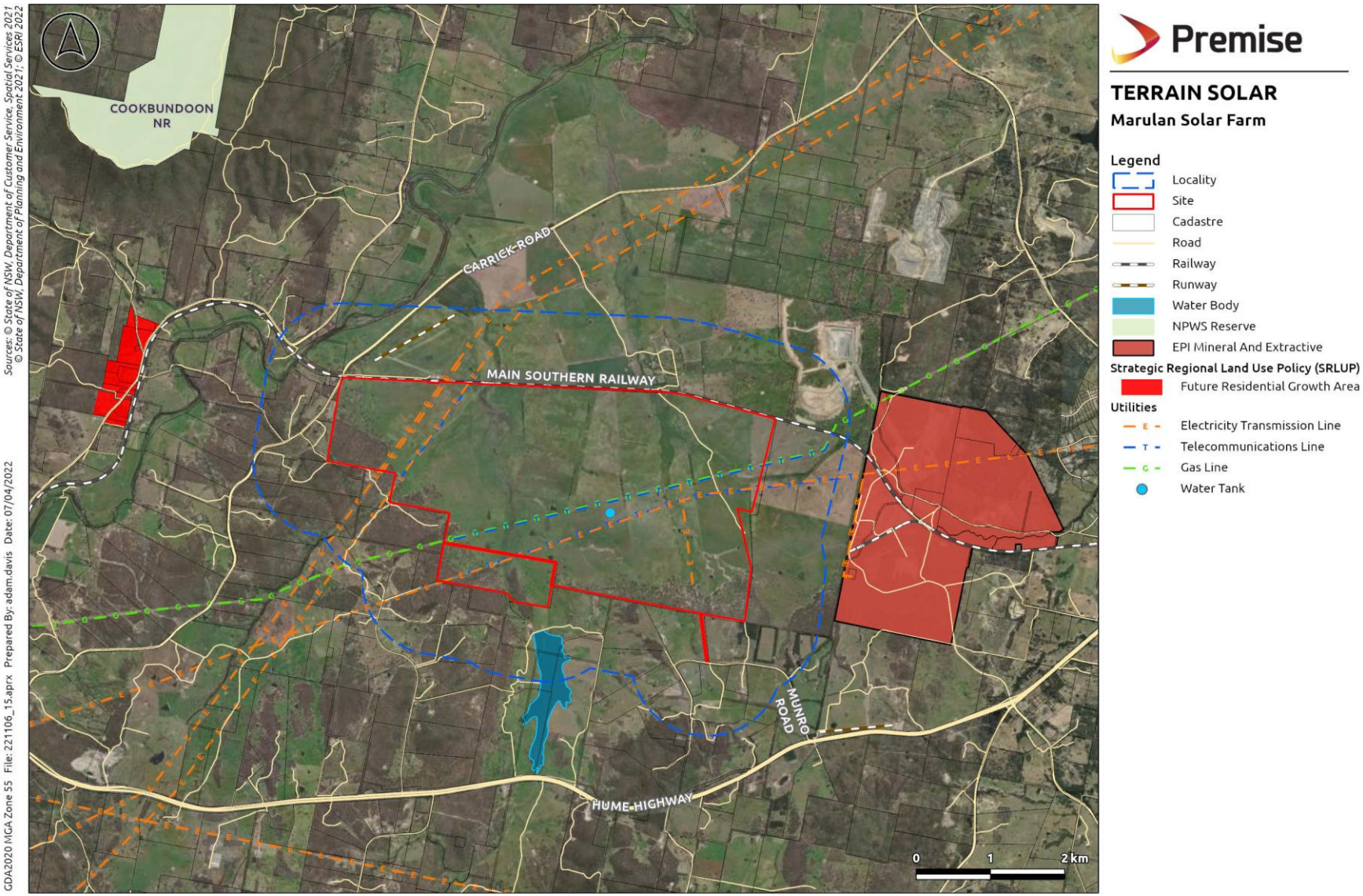
- Two (2) Nextgen telecommunication lines.
- Three (3) Telstra telecommunication lines.

2.2.3.4.6 Water Pipeline

A water pipeline, owned by GMC, transects the site in a south-west to north-east alignment, following the alignment of the APA Group gas pipeline.

The pipeline forms part of the Highland Source Project (HSP) which included the design and construction of an 80 km pipeline and pump station between the Wingecarribee Reservoir and Goulburn. The pipeline secures the water supply of Goulburn (GHD & GMC, 2010).

Figure 8 – Surrounding development



2.2.3.5 Aviation

The Southern Tablelands Gliding Club airstrip is located approximately 250 m north of the site, adjacent to Carrick Road. The club includes a grass airstrip and has been operational since 1971. A review of the club's website identified that flights are scheduled every Saturday with occasional flights on Sunday and Wednesdays, weather permitting.

The Marulan (Tangryang) Airport is not within the locality the subject of this LUCRA but has been considered given the potential for flights across the site. The airport is located approximately 1.8 km south of the site, adjacent to the Hume Highway. A review of publicly available information via the CASA website identified that the airport has two fully registered aircrafts owned by a landowner at "Kalganyi" 16038 Hume Highway, Marulan.

CASA's Airspace Protection team has been consulted as a requirement of the project and have identified that risk levels associated with the project are considered to be low on the basis that neither of the nearby strips have control towers – refer **Appendix D**.

2.2.3.6 Reservoirs/Dams

NSW Land Use 2017 mapping identifies two areas with a primary land use as reservoirs/dams in the locality, including:

- One reservoir/dam occupying an area of 2.72 ha, located approximately 350 m south-west of the site. The NSW Land Use 2017 mapping identifies the tertiary land use of this reservoir/dam as water storage – intensive use/farm dams.
- One reservoir/dam occupying an area of 3.07 ha, located approximately 260 m north of the site. No tertiary land use is identified for this reservoir/dam in the NSW Land Use 2017 mapping. The dam is located east of a farm residence/infrastructure area with a large embankment (approximately 180 m long), which appears to minimise the drainage of water through the farm residence area.

2.2.3.7 Lakes

Lake Narambulla is located within the locality along Narambulla Creek, approximately 300 m south of the site.

The lake area is used by the local community for water-based recreational activities (i.e. boating, swimming, fishing) and other land based recreational activities such as motor cross and horse-riding.

2.2.3.8 Plantation forests

There are plantation forests in the locality located along Munro Road, including:

- One plantation forest that borders a small section (100 m) of the south-eastern corner of the site, approximately 520 m from the development footprint.
- One plantation forest located approximately 1 km south-west of the development footprint.

NSW Land Use 2017 mapping identifies the tertiary land use of both plantations as softwood plantation forestry. It is not known who operates this plantation.

2.2.3.9 Parks and Reserves

There are no parks or reserves are located within the locality. The closest parks and reserves include:

- Bungonia National Park and State Conservation Area located approximately 9 km south-east of the site, along the Shoalhaven River.

- Cookbundoon Nature Reserve located approximately 4 km north-west of the site, across the Wollondilly River and north of the village of Towrang.

2.2.4 FUTURE LAND USES

Consultation with surrounding stakeholders, as identified in **Section 2.5,** did not identify any potential expansion of surrounding land uses onto the site or any future developments proposed near the site. Existing surrounding land uses are expected to continue into the future. The site would be able to support a variety of future land uses after decommissioning such as agriculture, or other developments subject to consent.

The majority of infrastructure associated with the solar farm would be removed at the end of the project life, with only infrastructure agreed with the landowner remaining (such as internal roads, fencing) and the project substation (where agreed with the electrical authority). The impact footprint of these is very small and would not be expected to prejudice future land uses.

2.2.5 LAND TENURE

2.2.5.1 Crown land

Although no portions of Crown Land are contained within the Lot 55 DP1141136 the development footprint would impact unconstructed Crown roads within the site. The affected locations would be subject to a Crown Land road closure.

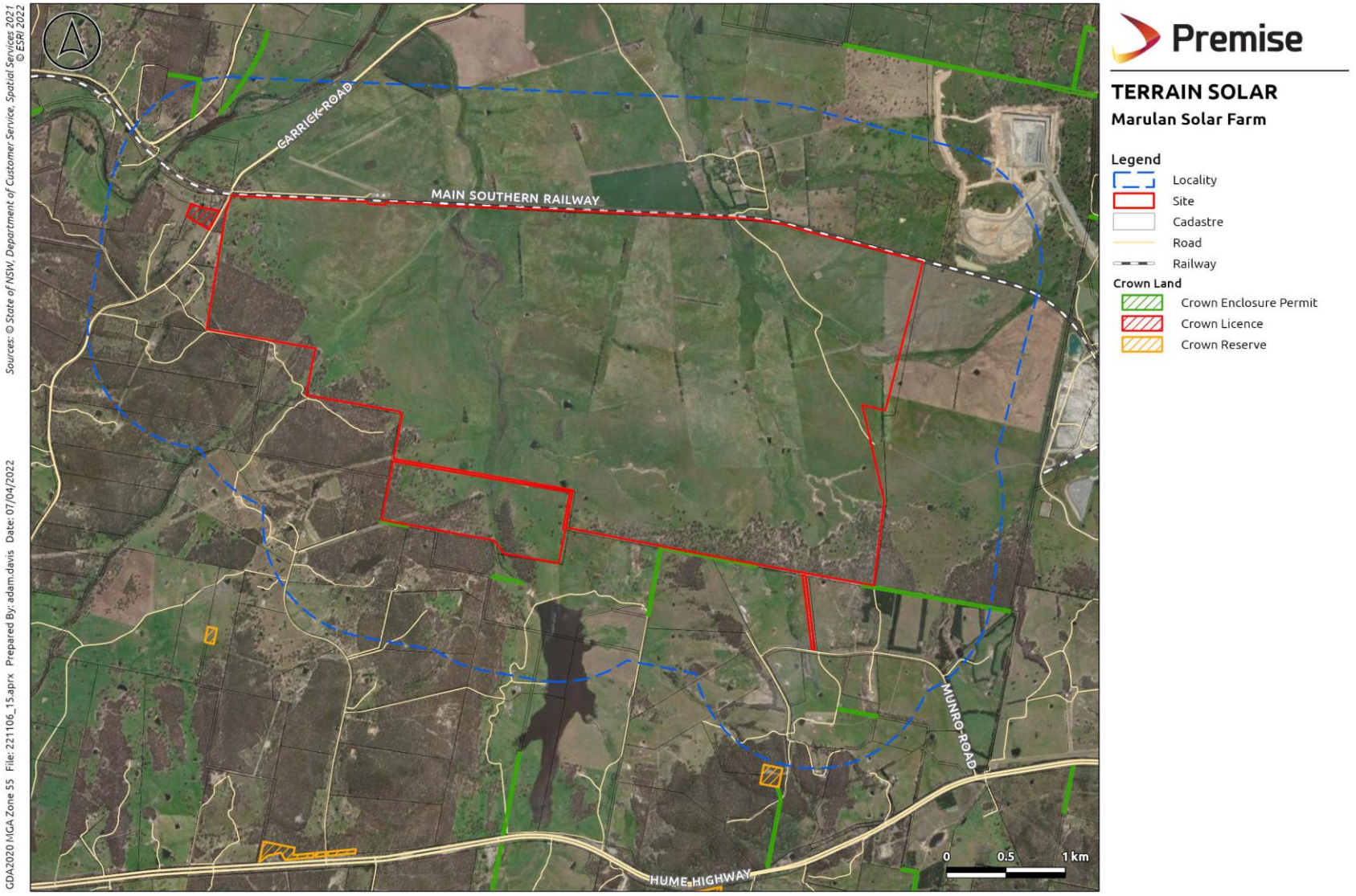
Crown enclosure permits, licences, leases and reserves in the locality are summarised in **Table 6** and depicted in **Figure 10**.

Table 6 – Crown Land in the locality

Type	Crown Land ID	Location description
Crown Enclosure Permit	430604	220 m east of the site
	393778	Adjoining the southern boundary of the site and 450 m west of Munro Road access corridor
	393777	510 m south-west of the Munro Road access corridor
	430603	Adjoining the southern boundary of the site and 430m west of Munro Road access corridor
	430602	Adjoining the southern boundary of the site and 800 m west of Munro Road access corridor
	32721	190 m south of the site
	38371	700 m north-west of the site
	368020	Adjoining the southern boundary of the site
	61818	720 m north-west of the site
	165238	730 m north-west of the site
	162633	1 km north-west of the site

Type	Crown Land ID	Location description
Crown Reserves	R750038	Adjoining the western boundary of the site
	R1013268	60 m west of the site
	R18708	1 km south of the Munro Road access corridor
Crown Licence	397395	60 m west of the site

Figure 9 – Crown Land



2.2.5.2 Mining and exploration titles

The site is not located within or near a mine subsidence district.

There are no current exploration or mining titles/applications over or near the site.

Exploration licence EL8673, held by ACGH II Pty Ltd, previously covered a small part of the western extent of the site but was cancelled prior to expiry (17 November 2023) on 8 February 2021. Review of the *Combined Final Report and Third Annual Report for the Period 17th November 2019 to 17th November 2020* (Inflection Resources, 2020) identified two exploration targets located north-west of Towrang and south-east of Goulburn, with no exploration undertaken on EL8673 at or near the site of the proposed MSF.

Exploration Licence EL9127, held by Sentinel Resources (Australia) Pty Ltd, is located within the locality, approximately 750 m south of the site boundary, near the Munro Road access corridor. EL9127 was granted on 1 April 2021 and expires on 1 April 2023 and is for exploration of Group 1 metallic minerals.

2.2.5.3 Native title

The site does not contain land subject to Native Title. The closest Native Title claim is located approximately 12.5 km south-east of the site (Tribunal File No. NC2017/003).

2.2.6 ENVIRONMENTAL FEATURES

2.2.6.1 Topography

The site has undulating topography with low peaks, shallow gullies and creeks scattered throughout, generally coinciding with mapped waterways.

A review of elevation within the site via Google Earth Mapping identifies a high point of 680 m Average Height Datum (AHD) in the south-west and low point of 617 m AHD along Narambulla Creek.

2.2.6.2 Vegetation

The approximately 375.5 ha development footprint contains native vegetation including cleared modified pastures, low-lying wetland areas with native grasses and sedges, patches of semi-cleared and remnant native woodland, and one native planting. By reference to the Premise Biodiversity Development Assessment Report (BDAR):

> *Sampling by Premise has identified three PCTs on the Subject Land:*
>
> - *PCT 351 - Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion*
> - *PCT 1110 - River Tussock - Tall Sedge - Kangaroo Grass moist grasslands of the South Eastern Highlands Bioregion*
> - *PCT 1330 - Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion*
>
> *Native vegetation to be removed has been classified into nine vegetation zones. A description of each is included in Table 6 and includes the following vegetation condition zones on the Subject Land:*

- *Brittle Gum – Broad-leaved Peppermint – Red Stringybark Open Forest in dense condition (PCT 351) – one patch (0.19 ha)*
- *Brittle Gum – Broad-leaved Peppermint – Red Stringybark Open Forest in derived condition (PCT 351) – one patch (1.14 ha)*
- *Blakely's Red Gum – Yellow Box Woodland in moderate condition (PCT 1330) – three patches (2.45 ha)*
- *Blakely's Red Gum – Yellow Box Woodland in mod-poor condition (PCT 1330) – three patches (1.2 ha)*
- *Derived Native Grassland in poor condition (PCT 1330) – two patches (20.43 ha)*
- *Regeneration (PCT 1330) – one patch (0.45 ha)*
- *Plantings (PCT 1330) – one patch (1.52 ha)*
- *Exotic Grassland (PCT 1330) – one patch (309.33 ha)*
- *River Tussock – Tall Sedge – Kangaroo Grass Moist Grasslands in moderate condition – two patches (5.07 ha)*

A total of 16 scattered trees were recorded on the Subject Land. Tree species, Diameter at Breast Height (DBH) and hollow size are listed in Table 7. Scattered Trees were classified under Category B of the BAM (2020) that is: have a DBH of greater than or equal to 5 cm and are located more than 50 m away from any living tree that is greater than or equal to 5 cm DBH, and the land between the scattered trees is comprised of vegetation that are all ground cover species on the widely cultivated native species list, or exotic species or human-made surfaces or bare ground.

Two additional lone trees were mapped but these contain hollows which BMS (2022) considers potential habitat for the Glossy Black Cockatoo and threatened owls. To account for threatened species habitat the canopy of these two trees was mapped and included in the area of PCT 1330 Mod-Poor in the BAM calculator.

Scattered Trees on the Subject Land are located greater than 50 metres from one another, in a matrix of exotic-dominated pasture with a VI score of less than the minimum threshold for offsetting (<15).

It is noted that approximately 50% of the site (western extent) is located within areas mapped as Terrestrial Biodiversity in the GM LEP.

2.2.6.3 Biophysical Strategic Agricultural Land (BSAL)

The site is not located on or near any Biophysical Strategical Agricultural Land (BSAL). The closest BSAL is located approximately 8 km north of the site along the Tarlo River.

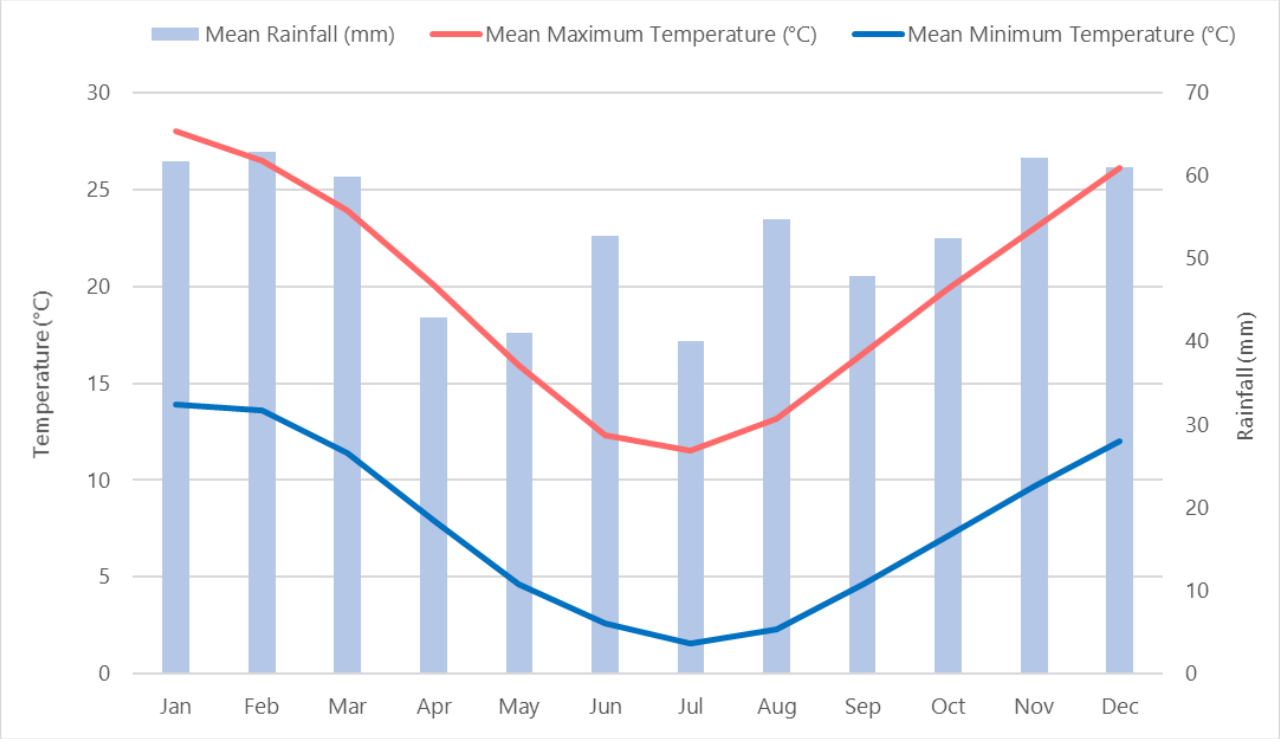
2.2.6.4 Climate

The closest Australian Bureau of Meteorology (BoM) weather station with daily weather observations is Goulburn TAFE (Station 070263), located approximately 16 km west of the site. Other BoM weather stations are closer to the site but do not provide daily data.

Summary climate statistics are provided below and depicted in **Figure 10**:

- The mean annual maximum temperature is 19.7°C and the mean annual minimum temperature is 7.6°C (BoM, 2021).
- Mean annual rainfall is 622.7 mm and records indicate monthly mean rainfall received at the site is highest in the months of November through to March (BoM, 2021).

Figure 10 – Climate statistics for the locality



2.2.6.5 Surface water

The site is traversed by three (3) named ephemeral creeks and their tributaries. Mapped watercourses at the site are all 4th order Strahler streams and include:

- Lockyersleigh Creek
- Osborns Creek
- Narambulla Creek

Watercourses and tributaries within the site generally drain towards the north-west and eventually flow into the Wollondilly River. The Wollondilly River is located approximately 600 m north-west of the site at its closest point.

The Wollondilly River starts west of Crookwell (approximately 39 km north-east of the site) and flows south-east towards Goulburn and then north-east towards Towrang. The river eventually drains into Lake Burragorang, located approximately 67 km (straight line distance) north-west of the site.

The Wollondilly River and Lake Burragorang form part of the Sydney Drinking Water Catchment and are protected under the provisions of Chapter 8 of the *State Environmental Planning Policy (Biodiversity and Conservation) 2021.* The site is within the Sydney Drinking Water Catchment and Wollondilly River Sub-catchment.

A review of the NSW Base Map and Satellite Imagery available via the ePlanning Spatial Viewer (DPIE) identifies 30 small farm/stock dams within the site. An additional 85 dams are found within the locality (ie, with 1 km).

A review of NSW ePlanning Spatial Viewer did not identify any mapped riparian land within the site or locality. The closest mapped riparian land is located approximately 7 km north of the site, along the Wollondilly River.

2.2.6.6 Groundwater

There is no mapped groundwater vulnerable land mapped via the NSW ePlanning Spatial Viewer within the site or locality.

A review of the Australian Groundwater Explorer (BoM) on 14/02/2022 identified three (3) registered bores located within the site, as outlined in **Table 7**.

There are no registered groundwater bores located within the development footprint. The closest registered groundwater bore (GW111928) to the development footprint is located approximately 250 m west of the development footprint.

The average depth of the bores within the site is 102 m but no standing water levels are available.

Table 7 – Groundwater bores within the site

Bore ID	Bore Depth (m)	Drill Date	Purpose	Status
GW111928	108	15/10/2012	Water Supply	Functioning
GW111929	96	15/11/2012	Water Supply	Functioning

A review of the locality identified 3 additional bores within the locality (1 km of the site), outlined in **Table 8.**

The average depth of the bores within the locality is 69.3 m but no standing water levels are available.

Table 8 – Groundwater bores within the locality

Bore ID	Bore Depth (m)	Drill Date	Purpose	Status	Direction from site	Distance from site (m)
GW110239	100	01/01/2007	Water Supply	Unknown	South-West	140
GW055436	76.2	01/09/1981	Water Supply	Unknown	North	280
GW102582	51.6	28/08/1999	Water Supply	Unknown	North-West	820
GW048543	41.5	01/10/1978	Water Supply	Unknown	North-West	830

Groundwater bores within the site and locality are depicted in **Figure 11.**

2.2.6.7 Flooding

The site is not identified as being within a flood planning area via the GM LEP, 2009.

The closest Flood Planning Area mapped via the NSW ePlanning Spatial Viewer, is located approximately 9.4 km west of the site along the Wollondilly River.

A hydraulic study of the site has been completed by Premise which depicts current flood occurrences in a 1% event pre and post development, and confirms that off site impacts associated with the project are acceptable.

2.2.6.8 Bushfire

The site and locality contain bushfire prone land (non-EPI) mapped via the NSW ePlanning Spatial viewer, depicted in **Figure 11**.

2.2.6.9 Geology and soil

A Land and Soil Capability (LSC) assessment has been prepared in accordance with the NSW Office of Environment and Heritage (OEH, 2012) *Land and Soil Capability Assessment Scheme: Second Approximation* (LSC Scheme) and accompanies the EIS.

The site geology is predominantly Lockyersleigh Granite in the Lockyersleigh suite and Oberon supersuite.

Overall land and soil capability for the development footprint ranges from Class 5 (moderate – low capability land) to Class 7 (very low capability land).

A review the NSW ePlanning Spatial Viewer and SEED Portal mapping did not identify any known geological hazards within the site or locality, including:

- Acid sulfate soils are not mapped within the site or locality (SEED Portal).
- No mine subsidence districts, or underground coal mining is mapped within the site or locality. The closest mapped mine subsidence is located approximately 60 km north-east of the site, north of Colo Vale (NSW ePlanning Spatial Viewer).
- No landslide risk land is mapped within the site or locality (NSW ePlanning Spatial Viewer).
- The closest mapped Naturally Occurring Asbestos (NOA), identified as Late Silurian Gabbro within the Lockhart Basic Igneous Complex group, has low asbestos potential and is located approximately 60 km south-west of the site, adjacent to Lake George (SEED Portal).

2.2.6.10 Contaminated land

A review of the NSW EPA Contaminated Land Record and List of NSW contaminated sites notified to the EPA on the 09/03/2022 confirms there are no known contaminated sites at or near the site.

An assessment of contamination risk has been undertaken and is provided as part of the EIS. The site is unlikely to be contaminated due to significant distances from known contaminated sites listed under the NSW EPA contaminated land record and list of notified sites.

2.2.6.11 Heritage

Items of heritage significance at the site and locality include (refer **Figure 12**):

- The 'Ruins of Kyle (I034 of the GM LEP) is a locally significant item located in the south-western corner of the site.
- The "Lockyersleigh" homestead and gardens (I035 of the GM LEP) is a locally significant item in the locality, approximately 600 m north of the site.
- A timber bridge with historical significance associated with the earliest pastoral phase of the Lockyersleigh Estate (Premise, 2022a), is located within the central portion of the site, crossing Narambulla Creek.

Basic searches of the Aboriginal Heritage Information Management System (AHIMS) conducted on 9 March 2022 identified:

- 36 Aboriginal sites or places at or near the site with a buffer of 1km (**Appendix B)**
- 24 Aboriginal sites or places at or near the site with a buffer of 50m (**Appendix C**)

Accordingly, 24 Aboriginal sites or places are located within the site and 12 Aboriginal sites or places are located within the broader locality (1km radius of the site).

An Aboriginal Cultural Heritage Assessment Report (ACHAR) accompanies the EIS and has been prepared in accordance with the C*ode of Practice for Archaeological Investigations of Aboriginal Objects in NSW* (Code of Practice; DECCW 2010), and the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011) (Premise, 2022b).

The ACHAR identifies aboriginal heritage items with the potential to be impacted by the development. All potentially impacted sites are located within the development footprint and include the following:

- AHIMS ID #51-9-0374 is located south of Lockyersleigh Creek.
- AHIMS ID #51-9-0375 is located on the south eastern portion of Lockyersleigh Creek
- AHIMS ID # 51-6-0736 is located on the northern boundary of the proposed solar farm impact area.
- AHIMS ID # 51-6-0373 is located in the south western portion of the proposed solar farm impact area.
- AHIMS ID # 51-6-0364 is located on the western extent of the proposed solar farm impact area.
- AHIMS ID # 51-6-0908 is located in the northern portion of the proposed solar farm impact area, close to Narambulla Creek.

The ACHAR provides a number of recommendations for the management of aboriginal heritage, including but not limited to, the preparation of an Aboriginal Cultural Heritage Management Plan, an Aboriginal Cultural Heritage Induction for all site workers provided by the Aboriginal Community and conditions that will require further consultation and/or assessment.

Figure 11 – Environmental features

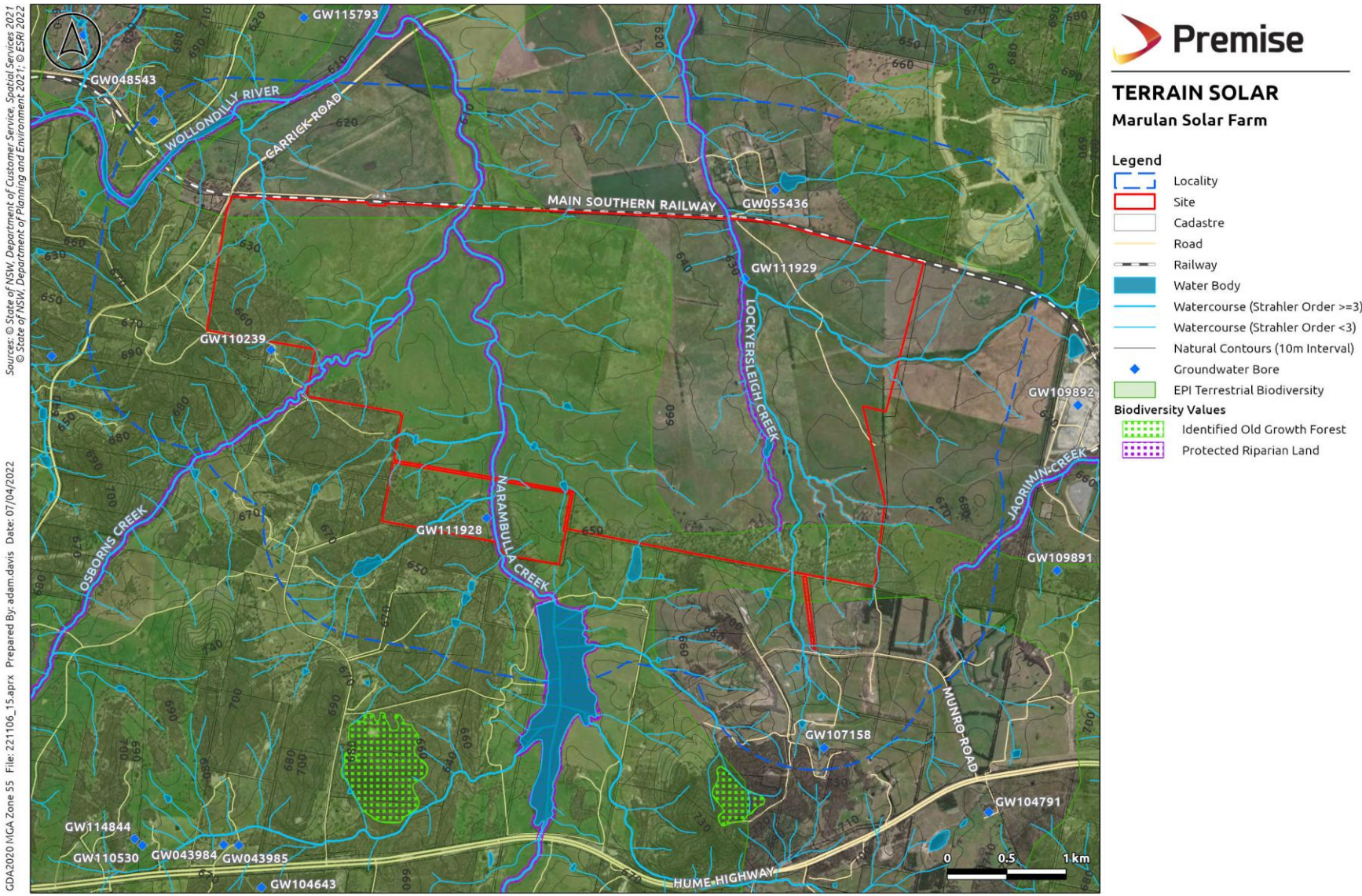
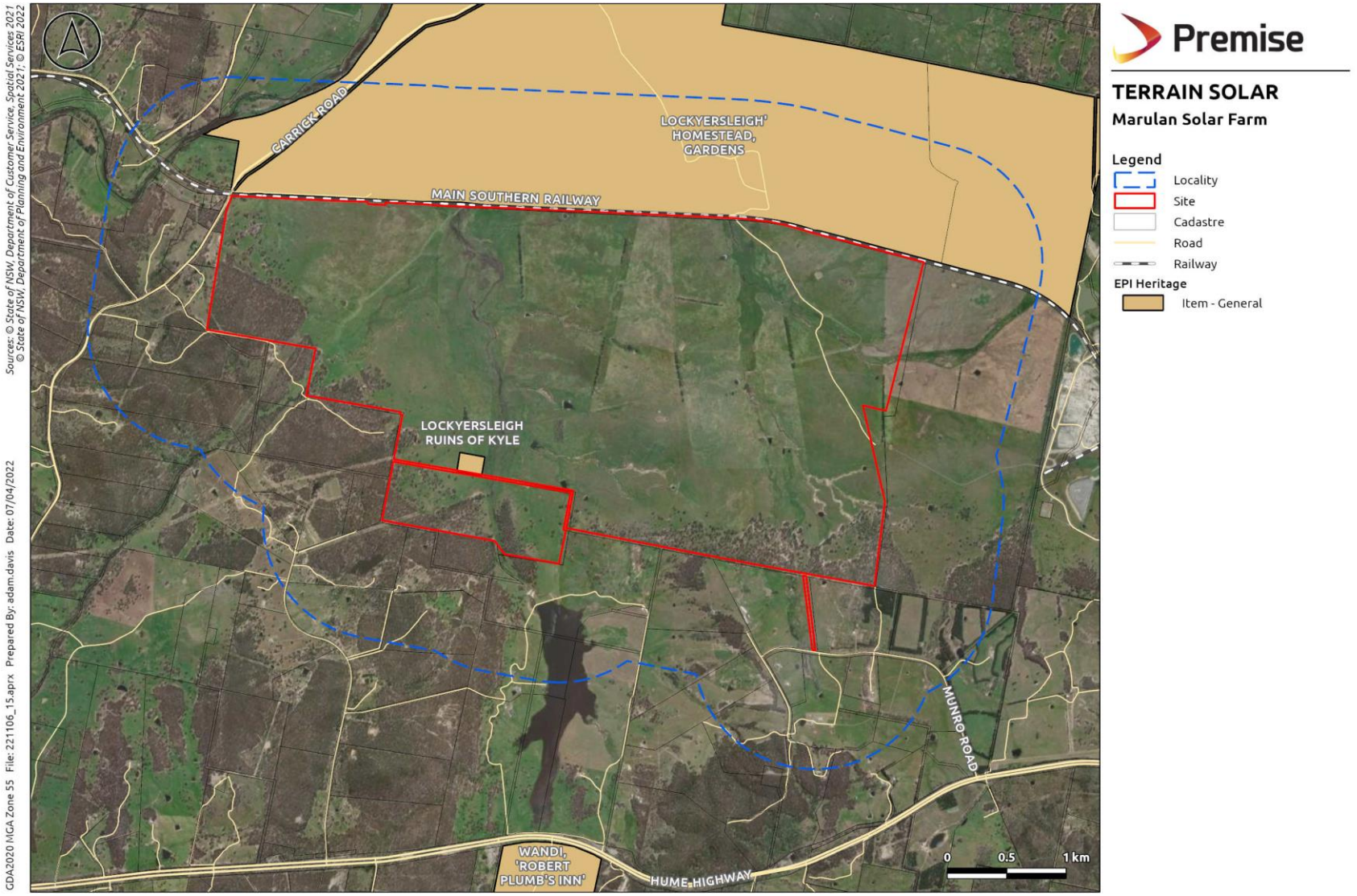


Figure 12 – Heritage items



2.2.7 LOCAL COMMUNITY

The following sections outline the demographic and economic profiles of major population centres within the GM LGA.

Information was gathered from the following sources:

- *The Tablelands Regional Community Strategic Plan* (Goulburn Mulwaree Council, Upper Lachlan Shire Council and Yass Valley Council, 2016).
- *Local Strategic Planning Statement* (GMC, 2020).
- *Agriculture Industry Snapshot for Planning South-East and Tablelands Region* (DPI, 2020).
- Australian Bureau of Statistics (ABS) 2016 Census. It is noted that 2021 Census data is not available until June 2022.
- NSW Government Department of Planning, Industry and Environment (DPIE, 2019) *Population, Household and Implied Dwelling Projections by LGA.*
- .id Community, Demographic Resources website (2021), which incorporates statistics from the National Institute of Economic and Industry Research and the ABS.

The statistics gathered demonstrate that agriculture is a significant part of the region's economy. The population of the GM LGA is centralised within Goulburn which accounts for 75.72% of the LGA's total population. The population of the GM LGA is growing and expected to reach 33,475 by 2041.

The following sections provide an insight into the demographics and economic character of statistical regions relevant to the proposed development and form a baseline for identifying and assessing potential land use conflicts.

2.2.7.1 Population

Region summaries for the GM LGA (ABS, 2020a), Goulburn (ABS, 2020b) and Goulburn Region (ABS, 2020c) record the following population statistics:

- The estimated resident population (ERP) for the GM LGA in 2020 is 37, 912 people (ABS, 2020a)
- The majority of the LGAs population is centralised within the urban centre of Goulburn, which is recorded with an ERP of 24, 382 people (64.3%) for 2020 (ABS, 2020b)
- The remaining area of the LGA has an ERP of 13,530 (35.7%) (ABS, 2020c)

Table 9 details the population of state suburbs (SSC) relevant to the development site gathered from the 2016 Census (ABS, 2016). Populations for urban centres/localities (UCL) population have been recorded where statistics are available. Travel distance and time reflect the proximity of each statistical region and were calculated with google maps by entering directions from the site to surrounding population centres.

Table 9 – Population within the GM LGA (ABS, 2016)

Statistical Region	NSW State Suburb Population (SSC)	Proportion of LGA's Population (%)	Urban Centre/Locality Population (UCL)	Approximate travel distance from study area (km)	Approximate travel time from study area (min)
Goulburn	22419	75.72	22419	25.7	23
Marulan	1178	3.98	685	13.6	14
Tarago	426	1.44	-	66.1	47
Towrang	171	0.58	-	9.8	12

Statistical Region	NSW State Suburb Population (SSC)	Proportion of LGA's Population (%)	Urban Centre/Locality Population (UCL)	Approximate travel distance from study area (km)	Approximate travel time from study area (min)
Carrick	136	0.46	-	-	-
Brayton	173	0.58	-	3.3	4
GM LGA	**29609**	**100**	**-**	**-**	**-**

2.2.7.1.1 Population projections

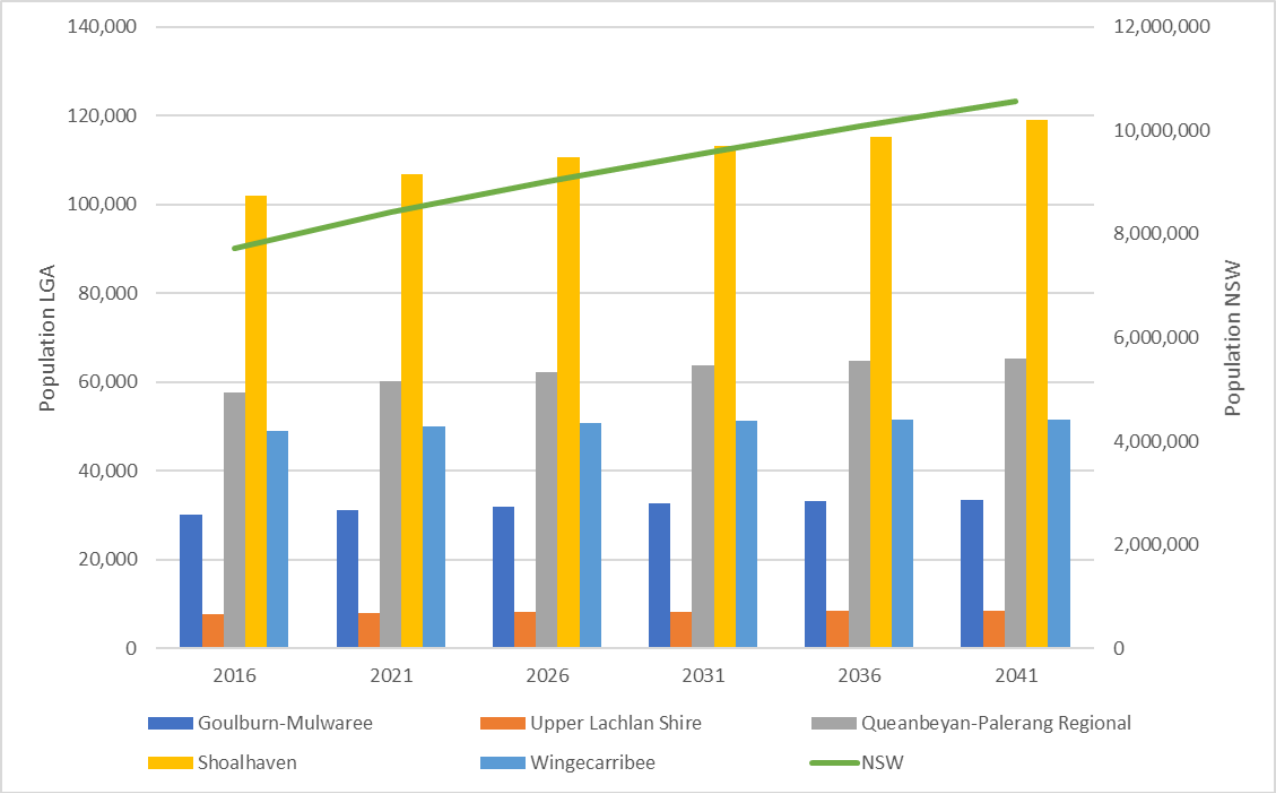
A comparison of population projects for the GM LGA, surrounding LGAs and NSW is provided in **Table 10**.The average rate of change represents the difference of population between 2016 and 2041 divided by the 25-year period of the dataset. Population projections for the GM LGA are depicted in **Figure 13** .

The population of the GM LGA is projected to increase from 30261 to 33475 people between 2016 and 2041. This represents an annual average population increase of 128.56 people per year and a rate of change of 0.42 %.

Table 10 – Summary of population projections (DPIE, 2019)

LGA	2016	2021	2026	2031	2036	2041	Total Increase	Average change per year	Average rate of change (%)
Goulburn-Mulwaree	30,261	31,148	31,958	32,613	33,112	33,475	3,214	128.56	0.42
Upper Lachlan Shire	7,853	8,027	8,194	8,329	8,430	8,508	655	26.2	0.33
Queanbeyan-Palerang Regional	57,790	60,183	62,222	63,713	64,731	65,329	7,539	301.56	0.52
Shoalhaven	101,942	106,713	110,650	113,284	115,138	119,072	17,130	685.2	0.67
Wingecarribee	48,998	50,048	50,837	51,345	51,555	51,496	2,498	99.92	0.20
NSW	7,732,858	8,414,978	9,011,010	9,560,567	10,077,964	10,572,696	2,839,838	113593.5	1.47

Figure 13 – Population Projections (DPIE, 2019)



2.2.7.1.2 Household projections

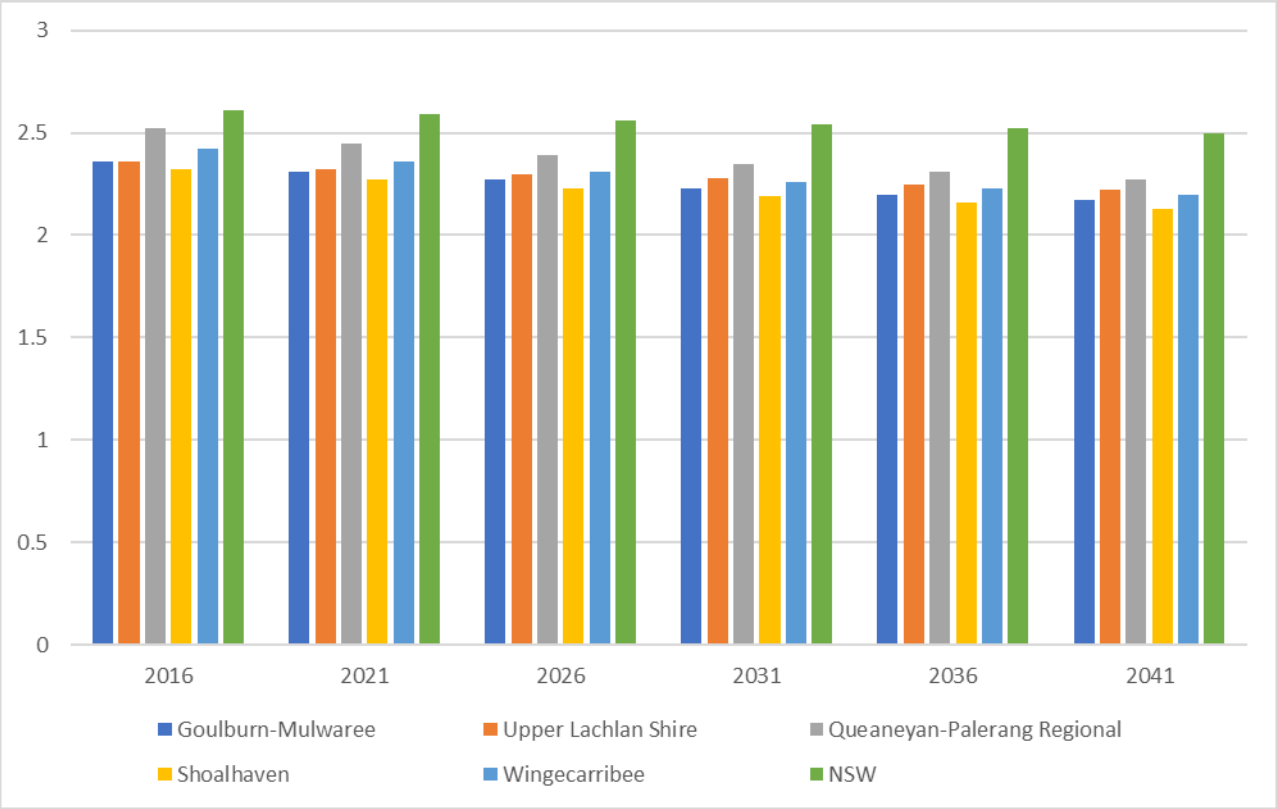
A comparison of household projections for the GM LGA, surrounding LGAs and NSW is provided in **Table 11.** The total change in average household size represents the change in the average number of household occupants over the 25-year period of the dataset. Household projections for the GM LGA are depicted in **Figure 14**.

The total number of households in the GM LGA is projected to increase by 2357 between 2016 and 2041. Household sizes (persons per household), however, are projected to decrease by 0.19 for the same period.

Table 11 – Summary of household projections (DPIE, 2019)

LGA	2016	2021	2026	2031	2036	2041	Total Change in Average Household Size	Total Increase in Households
Goulburn-Mulwaree	2.36	2.31	2.27	2.23	2.20	2.17	-0.19	2,357
Upper Lachlan Shire	2.36	2.32	2.30	2.28	2.25	2.22	-0.14	470
Queaneyan-Palerang Regional	2.52	2.45	2.39	2.35	2.31	2.27	-0.25	5,437
Shoalhaven	2.32	2.27	2.23	2.19	2.16	2.13	-0.19	10,954
Wingecarribee	2.42	2.36	2.31	2.26	2.23	2.20	-0.22	2,698
NSW	2.61	2.59	2.56	2.54	2.52	2.50	-0.11	1,226,735

Figure 14 – Household Projections (DPIE, 2019)



2.2.7.1.3 Demographics

A comparison of demographics for population centres, the LGA and NSW is provided in **Table 12.**

Table 12 –Comparison of demographics characteristics (ABS, 2016)

Statistical area	Aboriginal and/or Torres Strait Islander people (% of total population)	Median Age	Unemployment (%)	Median total household income ($/w)	Median mortgage repayments ($/m)	Median rent ($/w)
Population centres						
Goulburn (SSC)	4.3	40	6.8	1164	1517	260
Marulan (SSC)	3.9	41	5.7	1143	1517	280
Towrang	0.0	44	5.3	1274	1560	231
Carrick	0.0	47	6.0	1542	2051	200
Brayton	0.0	48	6.9	1125	2123	70
Local Government Areas						
Goulburn Mulwaree	4.0	42	6.3	1196	1517	260
Upper Lachlan Shire	2.3	48	3.9	1161	1400	190
Queanbeyan-Palerang Regional	3.1	38	4.0	1882	2100	300

Statistical area	Aboriginal and/or Torres Strait Islander people (% of total population)	Median Age	Unemployment (%)	Median total household income ($/w)	Median mortgage repayments ($/m)	Median rent ($/w)
Shoalhaven	5.5	48	6.7	992	1517	280
Wingecarribee	2.0	47	3.8	1335	1842	350
State						
NSW	2.9	38	6.3	1486	1986	380

2.2.7.2 Labour market

Community profiles from the 2016 Census (ABS, 2016) were collected to determine the distribution of the total workforce by industry of employment.

2.2.7.2.1 Industry of employment

A comparison of the total workforce by industry of employment for Goulburn, Marulan, the GM LGA and NSW is provided in **Table 13**. The largest industry of employment:

- In the GM LGA, is the health care and social assistance industry which accounts for 15.0% of the total workforce
- In Goulburn, is the health care and social assistance industry which accounts for 16.4% of the total workforce.
- In Marulan, is the construction industry which accounted for 13.4% of the total workforce/

Figure 15 - Figure 17 depict the distribution of industry employment within Goulburn, Marulan and GM LGA.

Table 13 – Industry of employment (ABS, 2016)

Industry of Employment	Goulburn (SSC) (%)	Marulan (SSC) (%)	Goulburn-Mulwaree LGA (%)	NSW
Agriculture, Forestry and Fishing	1.8	4.7	3.8	2.1
Mining	1.2	7.1	1.6	0.9
Manufacturing	5.8	5.7	5.5	5.8
Electricity, Gas, Water and Waste Services	1.2	0.8	1.2	0.9
Construction	8.8	13.4	9.2	8.4
Wholesale Trade	1.7	1.8	1.8	3.1
Retail Trade	11.7	7.3	10.7	9.7
Accommodation and Food Services	8.4	10.4	7.8	7.1
Transport, Postal and Warehousing	4.9	8.7	5.0	4.7
Information Media and telecommunications	0.9	0.6	0.9	2.2
Financial and Insurance Services	1.3	1.8	1.4	4.9
Rental, Hiring and Real Estate Services	1.4	1.6	1.4	1.8

Professional, Scientific and Technical Services	3.6	4.1	3.9	8.1
Administrative and Support Services	3.3	3.5	3.1	3.5
Public Administration and Safety	11.2	3.9	10.9	6.0
Education and Training	7.3	4.9	7.4	8.4
Health Care and Social Assistance	16.4	9.3	15.0	12.5
Arts and Recreation Services	1.2	0.6	1.2	1.5
Other Services	4.1	4.7	4.2	3.7
Inadequately described/Not stated	3.7	5.7	3.9	4.7

Figure 15 – Industry of Employment, Goulburn (ABS, 2016)

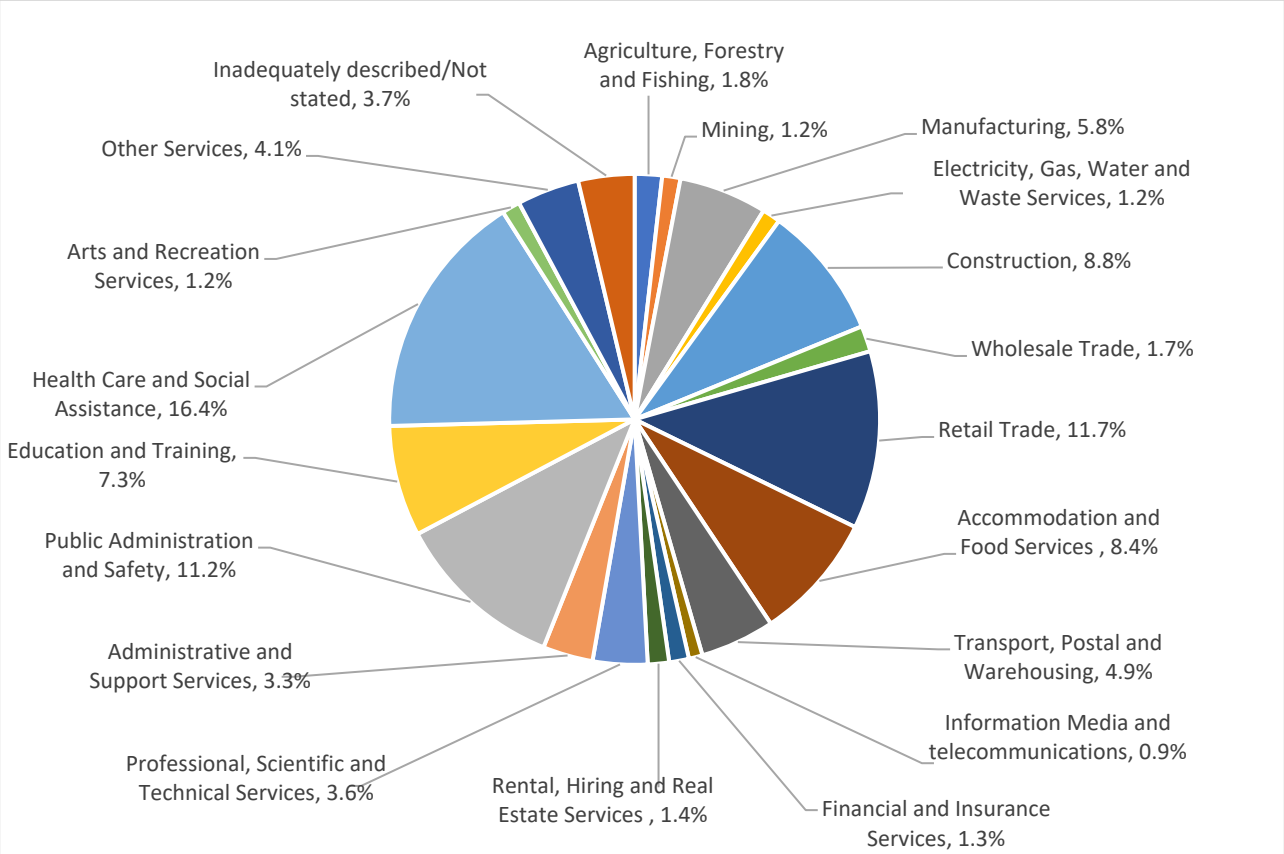


Figure 16 – Industry of Employment, Marulan (ABS, 2016)

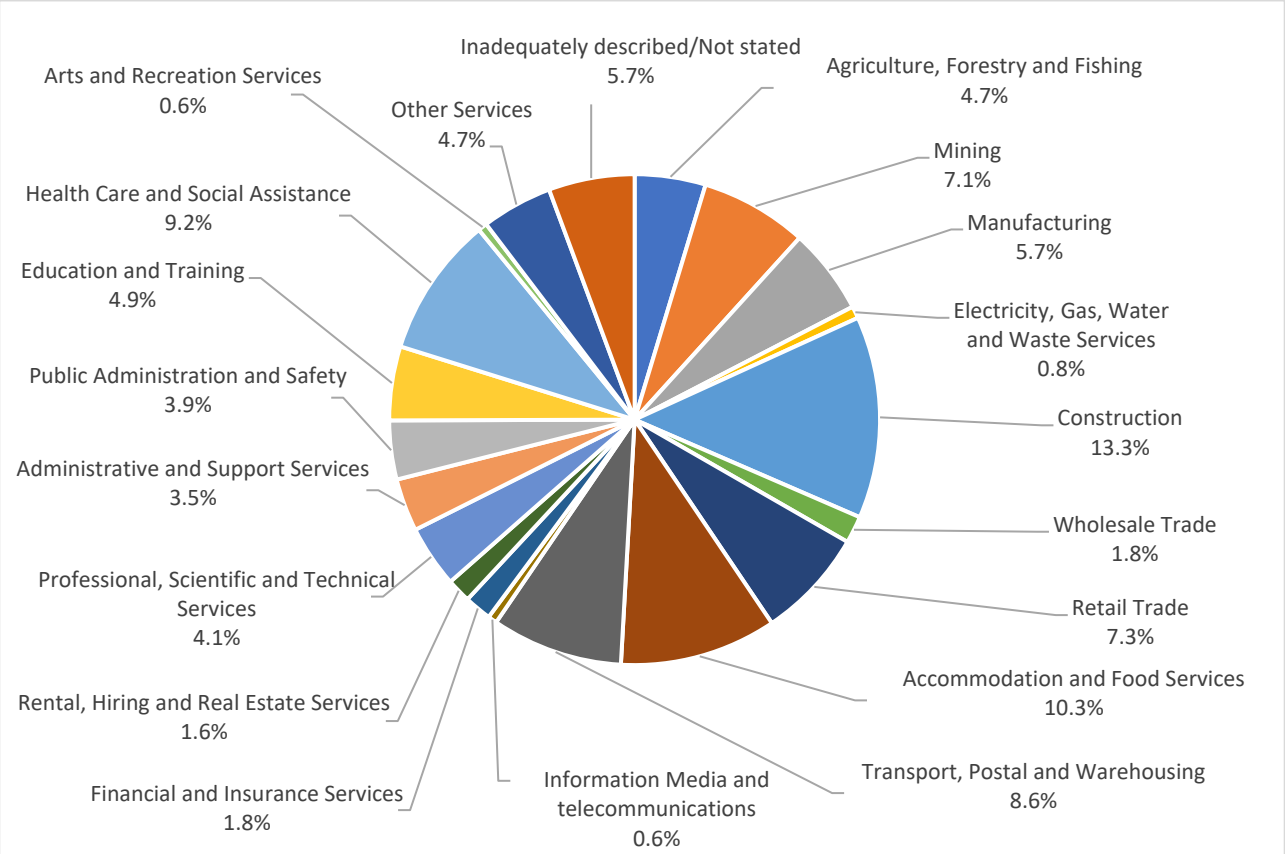
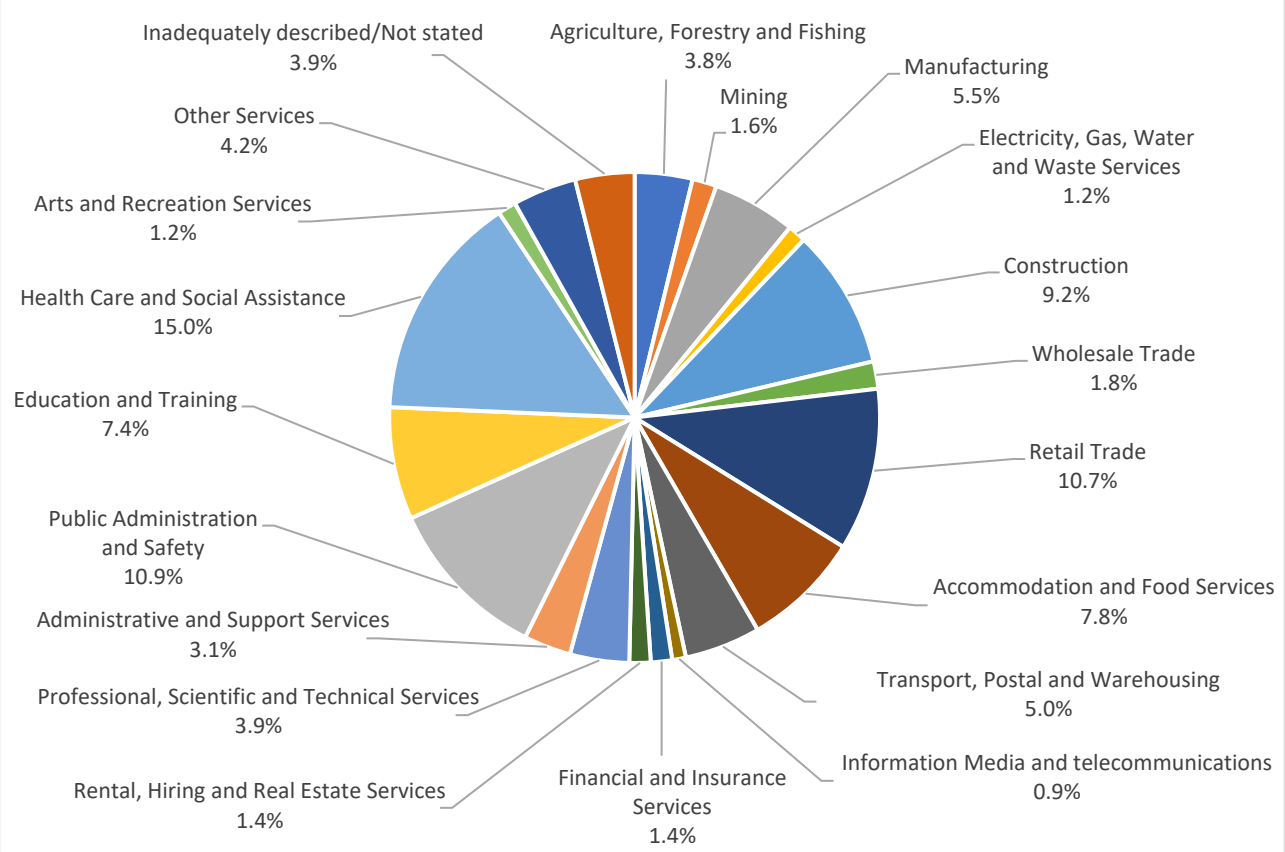


Figure 17 – Industry of Employment, GM LGA (ABS, 2016)



2.2.7.3 Economic Profile

The overall Gross Regional Product (GRP) of the GM LGA was recorded as $1.71 billion in the year ending June 2021, growing 2.4% since the previous year (.id community, 2022).

A summary of total value added by industry sector for the GM LGA is provided in **Table 14** and depicted in **Figure 18.** Total value represents how productive each industry sector is at increasing the value of its inputs and is considered a more refined measure of productivity than total output as some industries may have higher levels of output but require more expensive inputs.

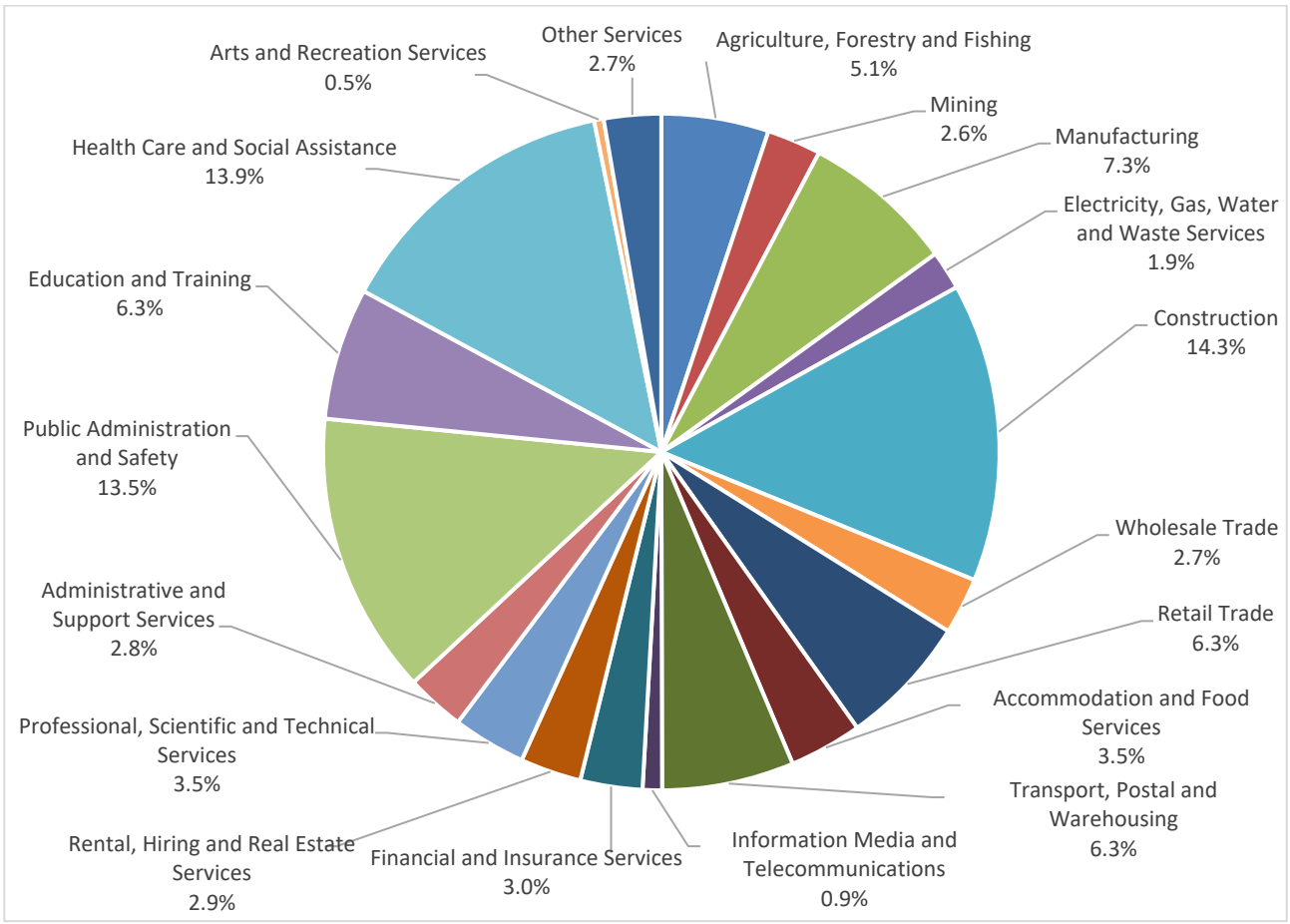
The largest industry by total value added in the GM LGA was the construction industry which accounted for $194.7 million and 14.3% of the GM LGA's total value added during 2020/2021. Agriculture contributed $54.9 million to the Agriculture, Forestry and Fishing industry accounting for 4.0% of the GM LGA's total value added in 2020/2021.

Table 14 – Total value added by Industry sector within the GM LGA (.id Community, 2022)

Goulburn Mulwaree LGA	2020/21			2015/16			Change
Industry	**$m**	**%.**	**NSW**	**$m**	**%.**	**NSW**	**2015/16 - 2020/21**
Agriculture, Forestry and Fishing	70	5.1	2.1	64.8	5.1	2.3	5.2
Mining	35.3	2.6	2.6	30.6	2.4	3.1	4.8
Manufacturing	99.8	7.3	6.5	79	6.3	6.9	20.8

Goulburn Mulwaree LGA	2020/21			2015/16			Change
Industry	$m	%.	NSW	$m	%.	NSW	2015/16 - 2020/21
Electricity, Gas, Water and Waste Services	25.4	1.9	2.4	31.4	2.5	2.6	-6
Construction	194.7	14.3	8.7	121.8	9.7	8.8	72.9
Wholesale Trade	36.9	2.7	5.3	31.7	2.5	5.2	5.2
Retail Trade	85.7	6.3	5.4	95.4	7.6	5.2	-9.7
Accommodation and Food Services	47.5	3.5	2.6	53.1	4.2	3	-5.5
Transport, Postal and Warehousing	86.1	6.3	5.3	108.4	8.6	6.4	-22.3
Information Media and Telecommunications	12.6	0.9	3.7	8.4	0.7	3.4	4.2
Financial and Insurance Services	40.5	3	12.7	41.4	3.3	13.3	-0.9
Rental, Hiring and Real Estate Services	39.8	2.9	4.6	52	4.1	4.4	-12.2
Professional, Scientific and Technical Services	47.7	3.5	10.7	41.2	3.3	8.9	6.5
Administrative and Support Services	38.3	2.8	4.4	42.1	3.3	4.7	-3.8
Public Administration and Safety	184	13.5	5.7	175	13.9	5.4	9
Education and Training	86.1	6.3	5.9	93.6	7.4	6	-7.5
Health Care and Social Assistance	189.9	13.9	8.5	149.2	11.8	7.1	40.6
Arts and Recreation Services	6.2	0.5	0.9	8.8	0.7	0.9	-2.7
Other Services	37.3	2.7	1.9	32.9	2.6	2.1	4.4
Total industries	1363.7	100	100	1260.8	100	100	102.9

Figure 18 – Value added by Industry sector within the GM LGA (.id Community, 2022)



The NSW Government's *Agriculture Industry Snapshot for Planning: Southeast and Tablelands Region* (NSW Government DPI 2020) identifies the top three agricultural commodities of the GM LGA were beef, wool and sheep/lamb which respectively accounted for $16.84 million, $11.78 million and $9.27 million of the total $48.7 million produced by agricultural commodities.

2.2.7.4 Indigenous community

The GM LGA was originally inhabited by two indigenous groups as early as 21,000 years ago (GMC, 2021a). The Gandangara people were located within the north portion of the GM LGA and the Ngunnawal people were located within the southern portion of the GM LGA (GMC, 2021a).

The ACHAR prepared for this project outlines that *"previous investigations undertaken in the vicinity of the MSF site indicate that the majority of excavated Aboriginal sites in the Goulburn Mulwaree region date to within the last 3,000 to 5,000 years, when the local climate and environment approached modern conditions"* (Premise, 2022b).

The site is located within the boundaries of the Pejar Local Aboriginal Land Council. The distribution Aboriginal sites within the GM LGA is concentrated along watercourses, in elevated areas and areas with suitable geology or mature vegetation. Historical records indicate that large gatherings of Aboriginal people took place in the locality, with corroborees held at Rocky Hill, the old railway quarry on the Wollondilly River, Mulwaree Flats near Lansdowne Bridge at the brewery and the current location of Goulburn rail station (GMC, 2021a).

2.2.7.5 Community groups and interests

Special interest groups (including the Towrang and Marulan Progress Association) were identified and informed during the scoping stage of the project. An overview of consultation conducted for the project is summarised in **Section 2.5**.

Concerns raised during consultation are considered to reflect community values on agricultural productivity, land value, rural amenity and the natural landscape.

A review of the summary findings of the GMC (2021b) *Community Engagement Report October 2021* was undertaken to identify other potential community concerns and interests that may be relevant to the project. The following values and interests were identified in that report, with percentages stated reflecting the percentage of participants with each particular response:

- *The beautiful natural environment (12.2 percent), location and convenience (11.7 percent) and lifestyle (11.6) were the main aspects that participants thought made their community a great place to live.*
- *The main challenges that participants prioritised were jobs and employment (11.9 percent), retaining and supporting young people (11.4 percent) and the economy (9.5 percent).*
- *Participants identified economic growth (19.8 percent), improved infrastructure (16.8 percent) and more activities and events (12.9 percent) as projects, places or things that would enhance the GMC area.*
- *Infrastructure (15.2 percent), economic growth (14.5 percent) and environmental impact (9.7 percent) were ranked highest when participants were asked what the one thing they would like to see achieved over the next 10 years.*
- *Participants would like to see Council prioritise roads and parking (5.1 percent), employment (4.7 percent) and aged and disability services (4.6 percent).*

Concerns and interests identified in this section have been considered in **Section 3** of this report.

2.3 Site history

2.3.1 HISTORICAL CONTEXT

Discussions conducted with the property manager as part of this assessment identified the site as being within the Lockyersleigh property, established in 1827 as a land grant to Major Lockyer. Lockyersleigh is one of the oldest privately owned properties in the Goulburn area has been in the same family since the 1850s. The property was initially cleared of timber for grazing sheep for wool production but has since also generated income from selling lambs.

2.3.2 HISTORICAL IMAGERY

A review of the NSW Governments Historical Imagery Viewer (NSW Government, 2021) confirms the site has been used for agricultural purposes since 1975. No historical imagery was available prior to 1975.

It is considered likely that agricultural land use has been consistent at the site prior to 1975, particularly given European settlement in the SET region during the early 19th Century (GMC, 2021a) and the presence of one family farming the land since the 1850s.

Imagery highlighting historic land use from 1987, 1991 and 1997 is provided in **Figure 19 – Figure 21** and demonstrates the following:

- The site and locality have historically been comprised of rural agricultural land holdings with residential dwellings and associated farm infrastructure, including sheds, farm dams and paddock fencing.

- The extent of vegetation within the site and locality has remained relatively consistent between 1975 and 1995.

2.3.3 PREVIOUS APPROVALS

Review of GMC's DA tracker identified a single approval pertaining to the site, being a Subdivision Construction Certificate (CC/0192/1011) issued on 17 February 2011. No other approvals are known to apply to the site.

Figure 19 – Historical Imagery 1997

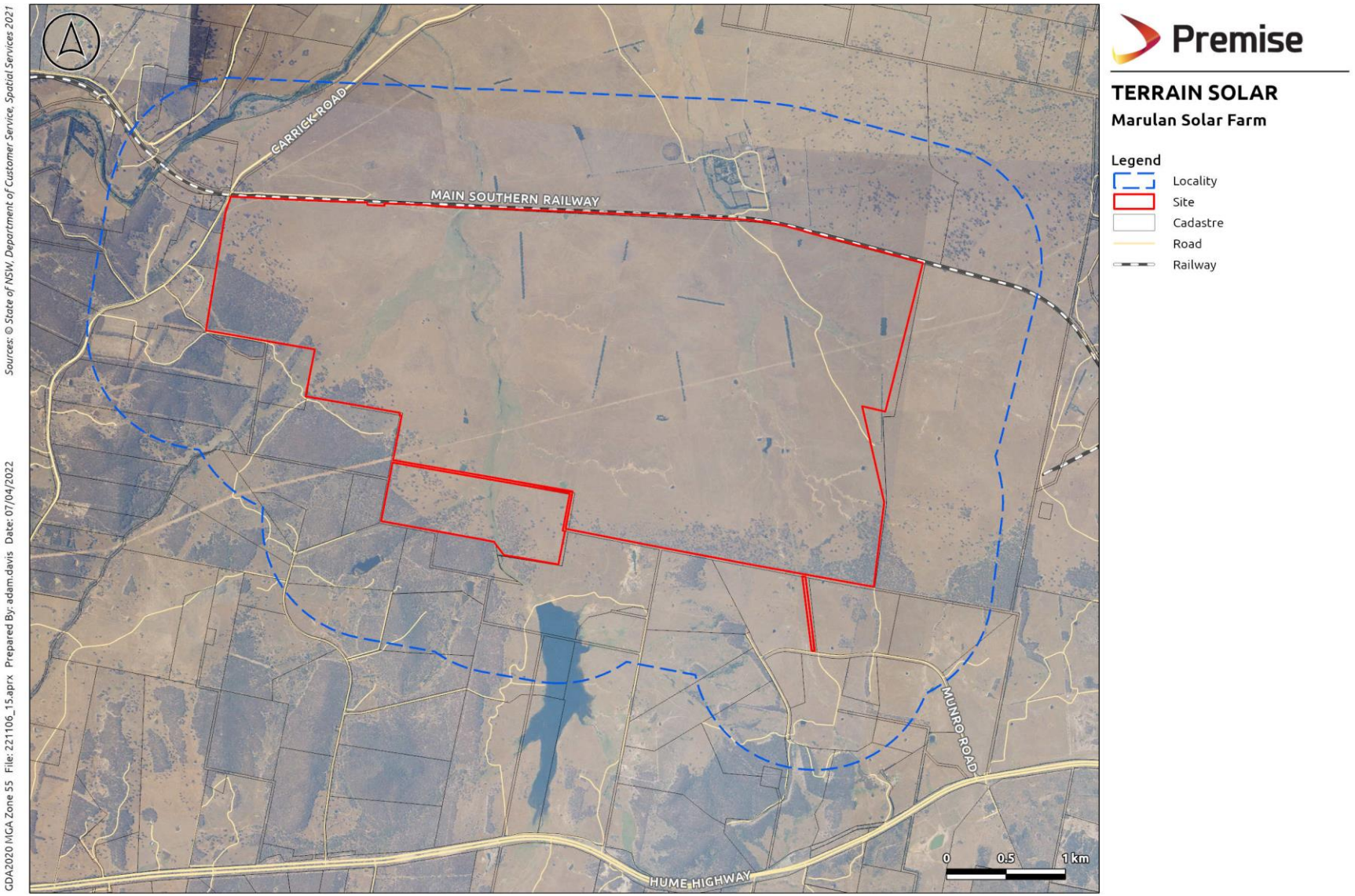


Figure 20 – Historical Imagery 1991

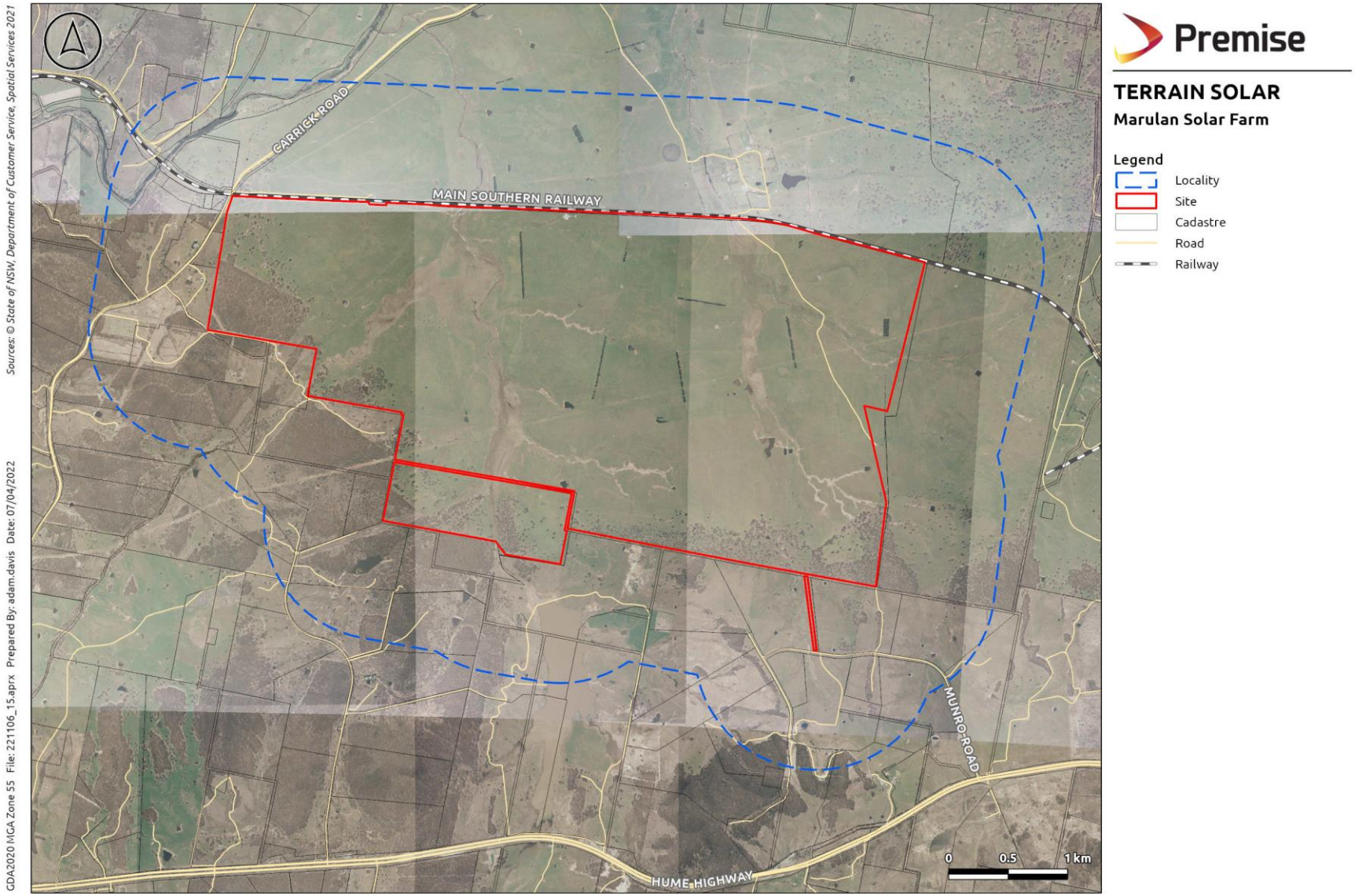
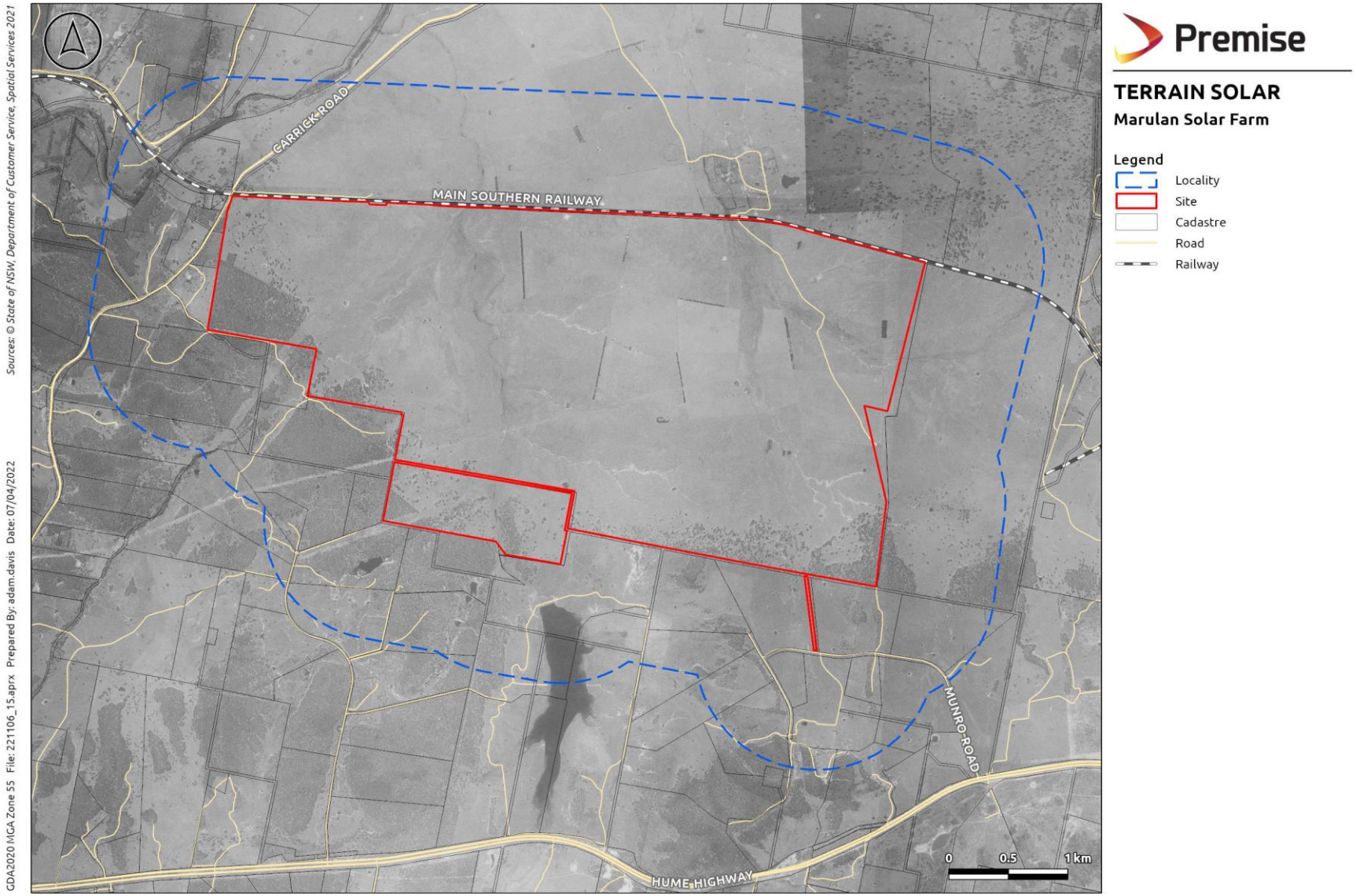


Figure 21 – Historical Imagery 1987



2.4 Site inspection outcomes

A site inspection was completed by Premise's Environmental Planner on 18 February 2022. The inspection provided insight into the current nature, use and operation of land within the site and locality. The positions and locations of environmental features and land uses were noted.

Photographs are provided in the following sections for built and environmental features, and representative photographs for land uses in the locality.

2.4.1 AGRICULTURE

Representative photos of agricultural land uses (grazing and cropping) within the site are provided in **Figure 22 – Figure 24.**

Figure 22 – Grazing land use north of Munro Road, looking north along access corridor

Figure 23 – Agricultural land within the site, looking north-east across southern tributary of Lockyersleigh Creek

Figure 24 – Agricultural land within the site, looking north-east

2.4.2 RESIDENTIAL AND FARM INFRASTRUCTURE

Representative photos of residential land use and farm infrastructure within the locality, including the heritage listed Lockyersleigh Homestead, are depicted in **Figure 25 and Figure 26.**

Figure 25 – Heritage Item Lockyersleigh Homestead, located north of the site

Figure 26 – Farm infrastructure north of the site near Lockyersleigh Homestead

2.4.3 RAIL INFRASTRUCTURE

A representative photo of railway infrastructure in the locality, associated with the Main Southern Railway, is depicted in **Figure 27**

Figure 27 –Main Southern Railway north of the site, looking east

2.4.4 QUARRY

A representative photo of extractive industry land use within the locality, associated with Lynwood Quarry, is depicted in **Figure 28.**

Figure 28 – Looking north-east from the site towards Lynwood Quarry (outlined)

2.4.5 FORESTRY

A representative photo of forestry land use within the locality is depicted in **Figure 29**.

Figure 29 – Forestry land use, looking north-west along Munro Road

2.4.6 CROWN LAND

A representative photo of crown land within the locality is depicted in **Figure 30** and areas of Crown land are mapped in **Figure 9.**

Figure 30 – Carrick Road south of railway, looking north-east - Crown Land

2.5 Consultation

Terrain Solar engaged WSP (Elton Consulting) to prepare an engagement strategy to guide consultation for the proposed MSF. The engagement strategy included commitments and approaches to ongoing forms of consultation.

Consultation during the scoping stage for the project consisted of:

- A community notification letter issued to 50 non-associated landowners located in proximity to the site during the scoping stage of the project. The notification introduced the project, outlined the planning process and provided contact details for the community infoline, mailbox and website (https://www.marulansolarfarm.com.au/)
- A virtual pre-application discussion with GMC completed by Zoom on the 17 November 2020.
- Submission of an initial preliminary connection enquiry to Essential Energy.
- Correspondence with Inflection Resources who previously held exploration licence EL8673

Consultation continued during the preparation of the EIS with an online community information session held in December 2021, direct consultation with indigenous communities as part of the ACHAR, continued discussions with government authorities and responses to the project email and infoline.

Feedback and concerns raised during consultation include:

- The community wants to be informed of project updates
- There is local media interest in the project
- Concerns about visual impacts to adjacent properties
- Placement of the Development Footprint
- Concerns about construction impacts
- Concerns about site access arrangements
- Concerns about property value
- Interest in financial benefits, specifically a neighbourhood agreement

The above feedback and concerns have been considered in the risk assessment in **Section 3** of this report.

2.6 Potential incompatibility and conflict issues

Potential conflict can arise from incompatibility of land uses or conflicting interests over the use of land by the land occupier, surrounding landowners or users, or other stakeholders with an interest in the site and locality.

With respect to potential incompatibility of the proposed MSF with current land use, the following is noted:

- The landowner currently uses the land for agricultural purposes, predominantly grazing. Opportunities to undertake some grazing within the MSF would be actively investigated as both a means of controlling ground cover and to ensure a continued agriculture use of the land.
- The landowner is supportive of the proposed MSF.
- The proposed MSF is permissible on the RU1 – Primary Production land.
- There are no other known stakeholders with an interest in the MSF site.

On the above basis, it is considered unlikely that the proposed MSF would result in a land use conflict for the current landowner.

To consider potential land use conflicts associated with surrounding land users and other potential stakeholders, the risk assessment in **Section 3** of this report addresses the following:

- **Surrounding land uses** determined via desktop and site information identified during the preparation of the LUCRA, including:
    - Agriculture – grazing, cropping and horticulture
    - Residential
    - Plantation forests
    - Resource protection – in the locality this includes areas of vegetation and riparian corridors
    - Water storage
    - Extractive industry – this includes Lynwood Quarry
    - Infrastructure
    - Aviation
- **Stakeholders** – this includes those who may own, occupy, use the land (where known) or have an interest in the land. The following categories of stakeholders have been adopted for the risk assessment:
    - Private property owner
    - Business operator
    - Service provider i.e. energy and telecommunications
    - Public authorities
    - Associations
    - Indigenous community
    - Individuals
- **Conflict of interest** – this describes the potential conflict of interest each stakeholder has in relation to the proposed MSF. The following categories of potential conflicts have been adopted for the risk assessment:
    - Competing industries
    - Land ownership
    - Economic interest
    - Access and traffic
    - Environmental concern
    - Nuisance
    - Risk to property
    - Health and safety
    - Quality of life
    - Security and privacy
    - Amenity

The potential land use conflicts are described in detail in the full risk assessment table provided in **Appendix A.**

3. LAND USE CONFLICT RISK ASSESSMENT

3.1 Introduction

The LUCRA process evaluates the probability and consequence of potential land use conflicts and uses a matrix to estimate risk, provided in **Table 15.** Associated tables for determining probability and consequence are provided in **Table 16** and **Table 17**, respectively.

A risk ranking of 25 is the highest magnitude of risk; a highly likely, very serious event. A rank of 1 represents the lowest magnitude or risk an almost impossible, very low consequence event.

Risk Rankings have been categorised in terms of their probability and consequence as:

- Low Risk, risk ranking between 1 and 10
- Moderate Risk, risk ranking between 11 and 19
- High Risk, risk ranking between 20 and 25

Table 15 – Risk ranking matrix

	PROBABILITY				
CONSEQUENCE	**A Almost certain**	**B Likely**	**C Possible**	**D Unlikely**	**E Rare**
1 – Severe	25	24	22	19	15
2 – Major	23	21	18	14	10
3 – Moderate	20	17	13	9	6
4 – Minor	16	12	8	5	3
5 - Negligible	11	7	4	2	1

Table 16 – Probability table

Level	Descriptor	Description
A	Almost Certain	Common or repeating occurrence
B	Likely	Known to occur, or 'it has happened
C	Possible	Could occur, or 'I've heard of it happening'
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

Table 17 – Measure of consequence

Level	Descriptor	Description
1	Severe	• Severe and/or permanent damage to the environment and community • Irreversible • Neighbours are in prolonged dispute and legal action involved
2	Major	• Serious and/or long-term impact to the environment and community

Level	Descriptor	Description
		• Long-term management implications • Neighbours are in serious dispute
3	Moderate	• Moderate and/or medium-term impact to the environment and community • Some ongoing management implications • Neighbour disputes occur
4	Minor	• Minor and/or short-term impact to the environment and community • Can be effectively managed as part of normal operations • Infrequent disputes between neighbours
5	Negligible	• Very minor impact to the environment and community • Can be effectively managed as part of normal operations • Neighbour disputes unlikely

3.2 Risk assessment

The risk assessment identifies and evaluates potential land use conflicts associated with the proposed MSF.

A risk ranking is determined based on probability and consequence, and a revised risk ranking is determined based on implementation of identified management strategies.

A detailed risk assessment is provided in **Appendix A** and a summary of the risk assessment is provided in **Table 18**.

Table 18 – Summary of risk assessment

Land Use	Stakeholders	Category	Initial Risk	Revised Risk
All Land Uses	All Stakeholders	Health and safety-EMF	14	10
		Risk to property-bushfire	18	14
		Risk to property-flooding	18	14
Agriculture – Grazing, Cropping and Horticulture	• Private property owners • Individual • Business operators	Competing industries-expanding operations	13	9
		Competing industries-soil impacts	13	9
		Economic interest-insurance	17	13
		Access and traffic-agricultural transport activities	8	5
		Nuisance-disturbance of livestock	8	5
		Nuisance-dust impacts to solar farm	8	2
		Nuisance-dust impacts to agricultural land	8	5

Land Use	Stakeholders	Category	Initial Risk	Revised Risk
		Environmental concern-weed distribution	8	5
		Amenity-waste, pest animals and vermin	8	5
		Health and Safety-glare and reflectivity	13	9
Residential	• Private property owners • Individuals (i.e. occupants of residential dwellings) • Public authorities • Service providers	Economic interest-increased demand for services and infrastructure	8	5
		Access and traffic-commutes of residents	8	5
		Access and traffic- access arrangements	8	5
		Nuisance-construction noise	17	9
		Nuisance-waste generated	5	3
		Quality of life-residents	13	8
		Security and privacy-visitors	13	8
		Security and privacy-privacy of residents	13	9
		Health and safety-dust impacts to health	8	5
		Nuisance-dust and cleanliness	8	5
		Amenity-visual, agricultural landscape	13	8
		Amenity-glare and reflectivity	13	9
		Land ownership-applicant ownership	8	2
		Land ownership-use of land owned/ managed by public authorities	17	8
Plantation forests	• Business operators • Public authorities	Competing industries-expanding operations	13	9
		Nuisance-dust impacts to solar farm	8	2
		Nuisance-dust impacts to plantation forests	8	5

Land Use	Stakeholders	Category	Initial Risk	Revised Risk
		Access and traffic- plantation forest transport activities	8	5
		Economic interests- insurance	8	5
Resource protection Note: In the locality this includes areas of vegetation and riparian corridors in the NSW 2017 Land Use Mapping	• Public authorities • Associations • Individuals • Indigenous community	Environmental concerns- heritage items and values	13	9
		Environmental concerns- water quality and quantity	13	9
		Environmental concerns- biodiversity	13	9
Water storage	• Public authorities • Private property owners • Indigenous community	Health and safety- sedimentation and contamination	13	9
Extractive industry	• Public authorities • Business operators	Competing industries- expanding operations	13	9
		Access and traffic- extractive industry transport activities	8	5
		Nuisance-dust impacts to solar farm	8	2
		Nuisance- dust impacts to extractive industry	13	9
		Environmental concerns- cumulative impact	17	13
		Health and safety- proximity of solar farm	17	13
		Economic interests- insurance	17	13
Infrastructure	• Public authorities • Service providers	Risk to property-damage to existing infrastructure (i.e transmission lines)	13	9
		Access and traffic- access arrangements	8	5
Aviation	• Business operators • Private property owners • Public authorities • Associations • Individuals	Health and safety-glare and reflectivity	13	9
		Amenity- visual, agricultural landscape	13	8
Average risk ranking			**11.6**	**7.5**

3.3 Risk reduction management strategies

Consistent with the LUCRA Guide, an objective of the LUCRA is to identify and define management strategies that lower the risk ranking score to low risk (10 or below).

Management strategies and performance targets are defined below and detailed in **Appendix A**.

Management strategies are developed to minimise the effects or potential for land use conflict to occur.

Performance targets are identified for each management strategy, detailing how the effectiveness of the strategy will be monitored.

3.4 Performance monitoring

Performance monitoring is required to ensure management strategies minimise the risk of potential land use conflicts during all stages of the project.

Various management plans will be prepared and implemented during the construction, operational and decommissioning phases of the project, including:

- Construction Environmental Management Plan (CEMP)
- Operational Environmental Management Plan (OEMP)
- Decommissioning Management Plan (DMP)
- Any other management plan specified in the EIS or conditions of consent (if approved)

The management plans will address all requirements specified in the EIS and supporting documents, as well as any consent conditions (if approved). These plans will provide documented requirements for performance measures and monitoring during each stage of the project.

Performance will also be monitored through the outcomes of consultation during all phases of the project. Monitoring community feedback and concerns are key to assessing the performance of management strategies.

4. LIMITATIONS AND ASSUMPTIONS

This LUCRA has relied on the following information to evaluate potential land use conflicts:

- Observations made via a site inspection
- Consultation undertaken by WSP (Elton Consulting)
- Desktop research and mapping of the site and locality.
- Information provided by Terrain Solar.

The following limitations apply to this LUCRA:

- Mitigation measures from the EIS and supporting impact assessments, where implemented effectively, are likely to reduce the risk of potential land use conflicts. However, the implementation of mitigation measures may not reduce the risk of all potential land use conflicts.
- The identification of land uses and conflicts within this LUCRA is restricted by the detail and number of responses received during consultation. There is potential for other land uses and conflicts, not previously identified, to occur within the locality.

5. KEY DOCUMENTS

All documents reviewed as part of this LUCRA are provided in the references in **Section 7.**

6. CONCLUSIONS

This LUCRA has identified potential land use conflicts and evaluated their risk. The overall risk ranking (revised, to account for management strategies) for potential land use conflict ranges from low to moderate.

The were a total of 47 potential land use conflicts identified.

The initial risk ranking identified 20 low risk and 27 moderate risk conflicts.

The revised risk ranking identified 31 low risk and 6 moderate risk conflicts

The average risk ranking of all identified conflicts was reduced from an initial risk ranking of 11.6 (moderate risk) to a revised risk ranking of 7.5 (low risk),

The average revised risk ranking for all identified land use was below 10 which is consistent with the LUCRA objective to lower the risk ranking to 10 or below.

Revised risk rankings identified low risk conflicts mostly related to access and traffic, nuisance and competing industries.

Revised risk rankings identified moderate risk conflicts for the following:

- All land uses
    - Risk to property, including bushfire and flooding risks.
- Agricultural land use
    - Economic Interest, including impacts to insurance premiums and land values.
- Extractive industry land use
    - Environmental concerns, including the potential for cumulative impacts.
    - Health and safety, including concerns regarding the proximity of the solar farm to quarry operations
    - Economic Interests, including impacts to insurance premiums

The effective implementation of management strategies is likely to minimise the risk of potential land use conflicts.

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APPENDIX A

RISK ASSESSMENT

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
All Land Uses	All Stakeholders	Health and safety	Land users in the locality may be concerned about electro-magnetic fields (EMF) resulting from electrical infrastructure associated with the development.	D	2	14	• Consideration of EMF impacts resulting from the development has been undertaken as part of the Preliminary Hazard Analysis and summarised in the EIS. The report concludes that EMF exposure levels will not exceed the International Commission on Non-Ionizing Radiation Protection reference level for the general public. No adverse impacts to human health at the site or in the locality are therefore anticipated. On this basis, specific mitigation measures are not required. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	E	2	10	Performance targets will be determined via management plans specified by the EIS (and specialist impact assessments) and development consent conditions (if approved). Monitoring will be undertaken in accordance with those management plans.
		Risk to property	Land users in the locality may be concerned about the risk of fires occurring at the site and their potential to spread to surrounding land.	C	2	18	• Consideration of potential bushfire impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the bushfire assessment within the EIS to minimise the risk of bushfire incidents including their risk to people and potential to damage surrounding land. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	2	14	As above
		Risk to property	Land users in the locality may be concerned about the risk of flooding resulting from the development and their potential to spread and impact surrounding land.	C	2	18	• Consideration of potential flooding and hydraulic impacts has been undertaken as part of the EIS. The assessment concludes that the proposal is not likely to lead to off site impacts. As such, no specific flood mitigation measures are required. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	2	14	As above
Agriculture – Grazing, Cropping and Horticulture	• Private property owners • Individuals • Business operators • Associations	Competing industries	The placement of the solar farm on agriculturally viable land may cause conflict with surrounding agricultural operators interested in expanding their operations onto the site.	C	3	13	• The reversibility of the project would allow the site to be returned to its existing agricultural land use, therefore minimising potential for long term conflict. • Existing consultation and engagement for the project has not identified any intent for surrounding agricultural industries to expand operations onto the site. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
		Competing industries	Stakeholders may have concerns that the construction and	C	3	13	• Consideration of potential soil and land capability has been undertaken via the LSC assessment. Appropriate mitigation	D	3	9	As above

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
			operation of the solar farm may alter and disturb existing soil properties, undermining the suitability of the land for future agricultural production.				measures are specified in the LSC assessment to minimise impacts to soils. • Compliance with mitigation measures specified in the LSC is anticipated to reduce the risk of potential conflicts related to future land capability for agriculture. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).				
		Economic interest	The placement of the solar farm in proximity to agricultural business operators may affect insurance premiums and land values for surrounding private property owners.	B	3	17	• Consultation with The Insurance Council of Australia has occurred (refer **Appendix D**) to address potential concerns related to increased insurance premiums, however at the time of writing no response has been received. The results of this consultation will be shared with other relevant stakeholders, including surrounding landowners and business operators as available. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	C	3	13	
		Access and traffic	Use of surrounding roadways during construction of the solar farm may cause conflict by interacting with agricultural transport activities.	C	4	8	• Consideration of potential traffic impacts has been undertaken via a Traffic Impact Assessment (TIA). Appropriate mitigation measures are specified within the TIA to minimise impacts to the traffic environment. • Compliance with mitigation measures specified within the TIA is anticipated to reduce the risk of conflict related to traffic for agricultural land users. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved)	D	4	5	As above
		Nuisance	Construction activity disturbances may affect livestock behaviour and/or breeding.	C	4	8	• Consideration of potential noise and vibration impacts has been undertaken via a Noise and Vibration Impact Assessment (NVIA). Appropriate mitigation measures are specified within the NVIA to minimise noise and vibration impacts. • Based on the preliminary separation distances and the mitigation proposed, adverse impacts from noise and vibration during construction and operation are not predicted. • Compliance with mitigation measures from the NVIA is anticipated to reduce the risk of conflict related to noise and vibration impacts on agricultural land users. • Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	4	5	As above

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
							• Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).				
		Nuisance	Dispersion of dust and/or agricultural products from surrounding agricultural land uses may impact the productivity of the solar farm panels, potentially causing conflict between agricultural land users and the solar farm land use.	C	4	8	• Consideration of potential dust impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk of dust impacting the operation of the solar farm. • Compliance with mitigation measures specified within the EIS together within the ongoing maintenance of solar panels and site infrastructure, is anticipated to reduce the risk of conflict related to air quality impacts • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	5	2	As above
		Nuisance	Excess dust generated by construction activities may cause conflict by impacting the operations and productivity of surrounding agricultural land	C	4	8	• Consideration of potential dust impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk for dust to spread throughout the site and onto neighbouring land. • Compliance with mitigation measures specified within the EIS is anticipated to reduce the risk of conflict related to air quality impacts. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	4	5	As above
		Environmental concern	Pedestrian and vehicle movements during construction may affect the distribution of weeds which could impact agricultural productivity at the site and locality.	C	3	13	• Consideration of impacts to biodiversity has been undertaken via a BDAR. Appropriate mitigation measures are specified within the BDAR to minimise the risk for weeds to spread throughout the site and onto neighbouring land. • Compliance with mitigation measures specified with the BDAR is anticipated to reduce the risk of conflict relating to the spread of weeds • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
		Amenity	Waste generated by the development may increase the presence of pest animals and/or vermin which could impact agricultural productivity.	C	4	8	• Consideration of waste related impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk of attracting pest animals and/or vermin. • Compliance with mitigation measures specified in the EIS is anticipated to reduce the risk of conflict related to pest animals and/or vermin	D	4	5	As above

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
							• Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).				
		Health and Safety	The solar farm location and potential for glare and reflectivity has the potential to impact the operation and location of aerial spraying for agricultural activities	C	3	13	• Consideration of visual impacts to surrounding amenity has been undertaken via a Landscape and Visual Impact Assessment (LVIA). Appropriate mitigation measures are specified within the LVIA to minimise the risk for glare and reflectivity to impact surrounding agricultural activities. • Compliance with mitigation measures specified within the LVIA is anticipated to reduce the risk of conflict related to glare and reflectivity of solar panels. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
Residential	• Private property owners • Individuals (i.e. occupants of residential dwellings) • Public authorities • Service providers	Economic interest	Public authorities may be concern about the increased demand for services and infrastructure that may result from the development, including increased accommodation for workers, availability of medical facilities and capacity of surrounding waste facilities.	C	4	8	• Consideration of impacts related to the increased demand for surrounding services and infrastructure has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk for logistical issues associated with the increased demand for existing infrastructure and services. • Compliance with management measures specified within the EIS is anticipated to reduce the risk of conflict related to the availability of existing services and infrastructure. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	4	5	As above
		Access and traffic	Use of surrounding roadways for the proposed MSF may affect the commute of residents in the locality.	C	4	8	• Consideration of potential traffic impacts has been undertaken via a Traffic Impact Assessment (TIA). Appropriate mitigation measures are specified within the TIA to minimise impacts to the traffic environment. • Compliance with mitigation measures specified within the TIA is anticipated to reduce the risk of conflict related to the traffic environment. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	4	5	As above
		Access and traffic	Altered traffic conditions during construction may impact on access arrangements for surrounding private	C	4	8	• Consideration of potential traffic impacts has been undertaken via a TIA. Appropriate mitigation measures are specified within the TIA to minimise impacts to the traffic environment.	D	4	5	As above

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
			properties and service providers.				• Compliance with mitigation measures specified within the TIA is anticipated to reduce the risk of conflict related to the traffic environment. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).				
		Nuisance	Increased noise generated by construction activities and vehicle movements may be perceived as nuisance to surrounding residential properties.	B	3	17	• Consideration of potential noise and vibration impacts has been undertaken via a Noise and Vibration Impact Assessment (NVA). Appropriate mitigation measures are specified within the NVA to minimise noise and vibration impacts. • Compliance with mitigation measures from the NVA is anticipated to reduce the risk of conflict related to noise and vibration impacts to residential land users. • Separation distances from NVA (if applicable) will be included as a management strategy in this table. NVA currently not available for review. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
		Nuisance	Waste generated by the development has the potential to enter surrounding residential land.	D	4	5	• Consideration of waste related impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to ensure that waste is appropriately stored and disposed of. • Compliance with waste management measures specified within the EIS is anticipated to reduce the risk of conflict related to waste entering surrounding residential land. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	E	4	3	As above
		Quality of life	The presence of the solar farm may affect the quality of life of a resident if they are, or perceived to be, impacted by the MSF.	C	3	13	• Consideration of potential impacts to surrounding residents including noise and visual impacts, has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the potential impact of the development on quality of life. • Compliance with visual and noise management measures specified within the EIS LVIA and NVA is anticipated to reduce the risk of conflicts related to impacts on quality of life. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	C	4	8	As above

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
		Security and privacy	The change in land use may attract people to the area who may not otherwise visit the area. This may be perceived to adversely affect a resident's security.	C	3	13	• Consideration of potential crime related impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified in the EIS to minimise the potential for crime to occur at or near the site. • Compliance with crime management measures specified within the EIS is anticipated to reduce the risk of conflict related to the increased risk of vandalism and theft for surrounding residents. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	C	4	8	As above
		Security and privacy	The change in land use may be perceived to affect the privacy of a residential land user.	C	3	13	• Consideration of potential privacy related impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified in the EIS to minimise the potential for privacy issues to occur at or near the site. • Compliance with privacy management measures specified within the EIS is anticipated to reduce the risk of conflicts related to privacy issues for surrounding residential land users. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
		Health and Safety	Dust generated by construction activities and by vehicle movements along access roads has the potential to impact air quality and may have adverse health implications for residential land users within the locality.	C	4	8	• ·Consideration of potential dust impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk for dust to spread throughout the site and onto neighbouring land. • Compliance with mitigation measures specified within the EIS is anticipated to reduce the risk of conflict related to air quality impacts. • Separation distances for dust originating from the development (if applicable) will be included as a management strategy. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	4	5	As above
		Nuisance	Excess dust generated by construction activities and by vehicle movements along access roads has the potential to impact the cleanliness	C	4	8	• Consideration of potential dust impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk for dust to spread throughout the site and onto neighbouring land. • Compliance with mitigation measures specified within the EIS is anticipated to reduce the risk of conflict related to air quality impacts.	D	4	5	As above

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
			of residential land within the locality.				• Separation distances for dust originating from the development (if applicable) will be included as a management strategy. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).				
		Amenity	The change in visual amenity resulting from the solar farm, including the visibility of cleared vegetation, may conflict with the interests of stakeholders who wish to maintain views of the existing agricultural landscape.	C	3	13	• Consideration of visual impacts to surrounding amenity has been undertaken via a LVIA. Appropriate mitigation measures are specified within the LVIA to minimise the risk of altered amenity for surrounding residents within the locality. • Compliance with mitigation measures specified within the LVIA is anticipated to reduce the risk of conflict related to visual amenity. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	C	4	8	As above
		Amenity	The solar farm location and potential for glare and reflectivity has the potential to impact the amenity of surrounding residential properties	C	3	13	• Consideration of visual impacts to surrounding amenity has been undertaken via a LVIA. Appropriate mitigation measures are specified within the LVIA to minimise the risk for glare and reflectivity to impact surrounding residential properties. • Compliance with visual management measures specified within the LVIA is anticipated to reduce the risk of conflict related to visual amenity. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
		Land ownership	Stakeholders may have concerns regarding the ownership of the site i.e., whether it is a foreign-owned company.	C	4	8	• Engagement for the project has introduced the applicant (Terrain Solar) and the solar farm project to surrounding stakeholders. Notification to stakeholders outlined the applicant's ownership and consultation has provided an opportunity for stakeholders to provide feedback. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	5	2	As above
		Land ownership	Public authorities may have concerns about the use of land they own or manage.	B	3	17	• Access to the site and the development footprint will transect portions of Crown Land. Consideration of impacts related to land ownership and tenure has been undertaken as part of the EIS. • An application to Crown Land to close affected portions of Crown Land is to be submitted. In the short term,	C	4	8	

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
							engagement with DPI Crown Lands has confirmed no objections to the making of the application. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).				
Plantation forests	• Business operators • Public authorities	Competing industries	The placement of the solar farm on land that may be viable for plantation forests may cause conflict with surrounding business operators interested in expanding production onto the site.	C	3	13	• The reversibility of the project and rehabilitation during project decommissioning is expected to allow the site to be converted back to its original land use (agriculture) which would is not likely to prevent the future use of the site for plantation forests. • Existing consultation and engagement for the project has not identified any intent for surrounding business operators to expand operations onto the site. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
		Nuisance	Dispersion of dust and/or forestry products from surrounding plantation forest land uses may impact the productivity of the solar farm panels, potentially causing conflict between agricultural land users and the solar farm land use.	C	4	8	• Consideration of potential dust impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk of dust impacting the operation of the solar farm • Compliance with mitigation measures specified within the EIS together within the ongoing maintenance of solar panels and site infrastructure, is anticipated to reduce the risk of conflict related to air quality impacts • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	5	2	As above
		Nuisance	Dust generated by construction activities and by vehicle movements along access roads has the potential to impact air quality and may affect surrounding plantation forest land use.	C	4	8	• Consideration of potential dust impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk for dust to spread throughout the site and onto neighbouring land. • Compliance with mitigation measures specified within the EIS is anticipated to reduce the risk of conflict related to air quality impacts. • Separation distances for dust originating from the development (if applicable) will be included as a management strategy. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	4	5	

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
		Access and Traffic	Use of surrounding roadways during construction of the solar farm may cause conflict by interacting with plantation forest transport activities.	C	4	8	• Consideration of potential traffic impacts has been undertaken via a Traffic Impact Assessment (TIA). Appropriate mitigation measures are specified within the TIA to minimise impacts to the traffic environment. • Compliance with mitigation measures specified within the TIA is anticipated to reduce the risk of conflict related to traffic for plantation forest land users. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved)	D	4	5	
		Economic Interests	The placement of the solar farm in proximity to plantation forest land use may affect insurance premiums for business operators	C	4	8	• Consultation with The Insurance Council of Australia has occurred to address potential concerns related to increased insurance premiums (refer **Appendix D**). At the time of writing, no response has been received. The results of this consultation will be shared with other relevant stakeholders, including surrounding landowners and business operators. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	4	5	As above
Resource protection Note: In the locality this includes areas of vegetation and riparian corridors in the NSW 2017 Land Use Mapping	• Public authorities • Associations • Individuals • Indigenous community	Environmental concerns	Stakeholders may be concerned about impacts to heritage items or values at the site and locality.	C	3	13	• Consideration of impacts to heritage has been undertaken with the preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR) and Statement of Heritage Impact (SOHI). Appropriate mitigation measures are specified within the ACHAR and SOHI to minimise impacts to heritage. • Compliance with mitigation measures specified within the ACHAR and SOHI is anticipated to reduce the risk of conflict related to environmental features, culturally sensitive land and heritage • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
		Environmental concerns	Stakeholders may be concerned about potential changes to water quality, quantity and surface water flows that may affect the site and locality.	C	3	13	• Consideration of impacts to surrounding water courses and water quality has been undertaken with the via a Water Cycle Management Study (WCMS). Appropriate mitigation measures are specified within the WCMS to minimise impacts to watercourse health and quality. • Compliance with mitigation measures specified within the WCMS is anticipated to reduce the risk of conflict related to watercourse health and quality. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
		Environmental concerns	Stakeholders may be concern about potential impacts to biodiversity within the site and locality	C	3	13	• Consideration of impacts to biodiversity has been undertaken via a BDAR. Appropriate mitigation measures are specified within the BDAR to minimise risks to surrounding biodiversity. • Compliance with mitigation measures specified with the BDAR is anticipated to reduce the risk of conflict related to biodiversity. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
Water storage	• Public authorities • Private property owners • Indigenous Community	Health and Safety	Stakeholders may be concerned about activities, associated with the solar farm that may result in the sedimentation and contamination of surrounding watercourses, in particular the Sydney Water Drinking Catchment.	C	3	13	• Consideration of impacts to surrounding water courses and water quality has been undertaken via a WCMS. Appropriate mitigation measures are specified within the WCMS to minimise impacts associated with the sedimentation and contamination of surrounding water courses. • Compliance with mitigation measures specified within the WCMS is anticipated to reduce the risk of conflict related to the sedimentation and contamination of surrounding watercourses. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
Extractive industry	• Public authorities • Business operators	Competing industries	The construction of the solar farm on land which may contain viable extractive material, may cause conflict with surrounding business operators (e.g. Holcim's Lynwood Quarry) who may be interested in expanding their operations onto the site in the future.	C	3	13	• A review of documentation for surrounding quarry activities has not identified any intent for surrounding industries to expand operations onto the site. • Existing consultation and engagement for the project has not identified any intent for surrounding business operators to expand operations onto the site. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
		Access and traffic	Use of surrounding roadways during construction of the solar farm may cause conflict by interacting with extractive industry transport activities.	C	4	8	• Consideration of potential traffic impacts has been undertaken via a Traffic Impact Assessment (TIA). Appropriate mitigation measures are specified within the TIA to minimise impacts to the traffic environment. • Compliance with mitigation measures specified within the TIA is anticipated to reduce the risk of conflict related to traffic for agricultural land users. • Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	4	5	As above

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
							• Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved)				
		Nuisance	Dispersion of dust resulting from quarrying activities on surrounding land, including blasting at Holcim Lynwood Quarry, may impact the productivity of the solar farm panels.	C	4	8	• Consideration of potential dust impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk of dust impacting the operation of the solar farm • Compliance with mitigation measures specified within the EIS together within the ongoing maintenance of solar panels and site infrastructure, is anticipated to reduce the risk of conflict related to air quality impacts • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	5	2	As above
		Nuisance	Excess dust generated by construction activities may cause conflict by impacting the environmental monitoring and operations of surrounding extractive industry land use.	C	3	13	• Consideration of potential dust impacts has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk of dust impacting the operation of the solar farm • Compliance with mitigation measures specified within the EIS together within the ongoing maintenance of solar panels and site infrastructure, is anticipated to reduce the risk of conflict related to air quality impacts. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	
		Environmental Concerns	Public Authorities may have concerns regarding the potential for cumulative impacts arising from the proximity of state significant developments.	B	3	17	• Consideration of potential cumulative impacts has been undertaken as part of the EIS. Appropriate mitigation measures (where required) are specified in the EIS to minimise the potential for cumulative impacts to occur at or near the site. • Compliance with management measures specified within the EIS is anticipated to reduce the risk of conflict related to cumulative impact. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	C	3	13	
		Health and safety	Business operators wishing to expand operations may have concerns regarding the proximity of the solar farm to quarry operations.	B	3	17	• A review of documentation for surrounding quarry activities has not identified any intent for surrounding industries to expand operations onto, or closer to, the site. • Existing consultation and engagement for the project has not identified any intent for surrounding business operators to expand operations onto the site.	C	3	13	As above

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
							• Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).				
		Economic Interests	The placement of the solar farm in proximity to extractive industry may affect insurance premiums for business operators	B	3	17	• Consultation with The Insurance Council of Australia has occurred to address potential concerns related to increased insurance premiums (refer **Appendix D**). At the time of writing no response has been received. The results of this consultation will be shared with other relevant stakeholders, including surrounding landowners and business operators. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	C	3	13	As above
Infrastructure	• Public Authorities • Service Providers	Risk to property	Stakeholders may have concerns that construction activities associated with the solar farm may damage existing infrastructure including telecom connections, transmission lines and gas pipelines.	C	3	13	• A consideration of potential impacts to surrounding service provider infrastructure has been undertaken as part of the EIS. Appropriate mitigation measures are specified within the EIS to minimise the risk of construction activities damaging existing infrastructure. • Compliance with construction management measures specified within the EIS is anticipated to reduce the risk of conflict related to damaging existing infrastructure. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	3	9	As above
		Access and traffic	Altered traffic conditions during construction may impact on access arrangements for surrounding private properties and service providers.	C	4	8	• Consideration of potential traffic impacts has been undertaken via a TIA. Appropriate mitigation measures are specified within the TIA to minimise impacts to the traffic environment. • Compliance with mitigation measures specified within the TIA is anticipated to reduce the risk of conflict related to the traffic environment. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	D	4	5	As above
Aviation	• Business operators • Private property owners • Public authorities • Associations	Health and Safety	The solar farm location and potential for glare and reflectivity has the potential to impact aviation activities within the locality (e.g. Southern Tablelands Gliding Club)	C	3	13	• Consideration of visual impacts to surrounding amenity has been undertaken via a LVIA. Appropriate mitigation measures are specified within the LVIA to minimise the risk for glare and reflectivity to impact surrounding aviation activities. • Compliance with mitigation measures specified within the LVIA is anticipated to reduce the risk of conflict related to glare and reflectivity of solar panels.	D	3	9	As above

Land use	Stakeholders	Category	Potential Land Use Conflict	Initial risk ranking			Risk reduction management strategy	Revised risk ranking			Performance target and monitoring
				P*	C*	R*		P*	C*	R*	
	• Individuals						• Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).				
		Amenity	The change in visual amenity resulting from the solar farm, including the visibility of cleared vegetation, may conflict with the interests of stakeholders who wish to maintain views of the existing agricultural landscape.	C	3	13	• Consideration of visual impacts to surrounding amenity has been undertaken via a LVIA. Appropriate mitigation measures are specified within the LVIA to minimise the risk of altered amenity for surrounding residents within the locality. • Compliance with mitigation measures specified within the LVIA is anticipated to reduce the risk of conflict related to visual amenity. • Ongoing consultation with stakeholders will identify and address concerns if they arise. • Implement all measures specified in management plans identified in the EIS and/or consent conditions (if approved).	C	4	8	As above
*The table has used abbreviations for formatting purposes, P=Probability, C=Consequence and R=Risk.											

APPENDIX B

AHIMS BASIC SEARCH, BUFFER 1KM

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 221106

Client Service ID : 683592

Premise Australia Pty Ltd

Date: 17 May 2022

154 Peisley Street
Orange New South Wales 2800

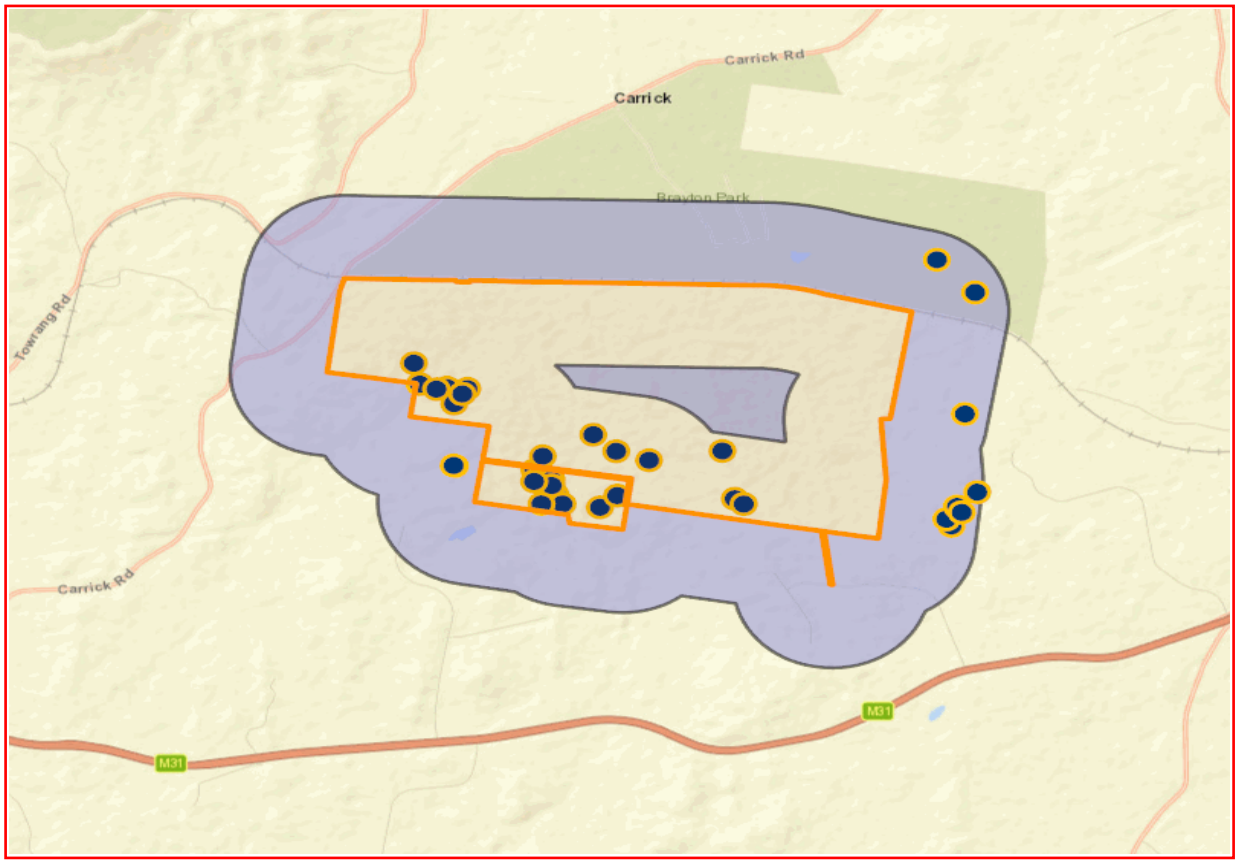
Attention: David Walker

Email: david.walker@premise.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 55, DP:DP1141136, Section : - with a Buffer of 1000 meters, conducted by David Walker on 17 May 2022.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

36	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

APPENDIX C

AHIMS BASIC SEARCH, BUFFER 50M

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 221106

Client Service ID : 683591

Premise Australia Pty Ltd

Date: 17 May 2022

154 Peisley Street
Orange New South Wales 2800

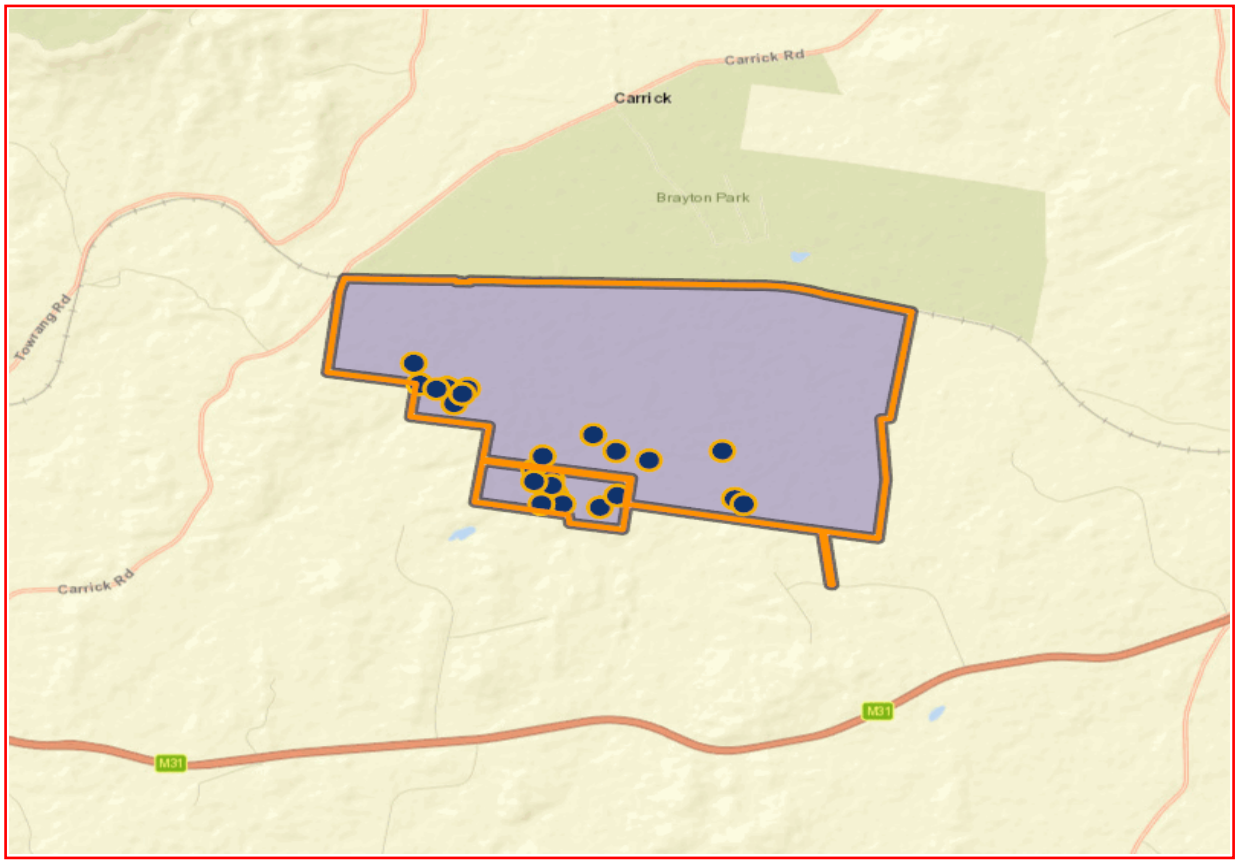
Attention: David Walker

Email: david.walker@premise.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 55, DP:DP1141136, Section : - with a Buffer of 50 meters, conducted by David Walker on 17 May 2022.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

24	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

APPENDIX D

CONSULTATION

David Walker

From: Airspace Protection <Airspace.Protection@casa.gov.au>
Sent: Tuesday, 26 April 2022 3:29 PM
To: David Walker
Subject: [#221106] David Walker - Premise Town Planning - Proposed Marulan Solar Farm [SEC=OFFICIAL]
Attachments: 221106_site locality.pdf; faa solar 2021.pdf

OFFICIAL

Good afternoon David,

There are no CASA regulations specific to solar installations near airports in Australia. We do have regulations that permit us to require a hazard to aircraft operations caused by lighting or glare to be modified or removed if necessary.

With regards to solar panels, we have been applying the United States Federal Aviation Administration (US FAA) advisory (current version attached) which recently changed. Previous to this current version, approach paths to airports needed to be assessed to check for glint or glare being aimed at pilots on approach and also to Air Traffic Control Towers.

The new US FAA advisory no longer requires impact to aircraft to be assessed, only concentrating on impact to air traffic control towers. With this in mind, the two airstrips mentioned do not have control towers and therefore CASA considers the potential risk to aviation safety from this proposal to be low.

Our regulations do not cover uncertified airstrips which these sites are, so the above is advice only.

Regards

Matthew Windebank
Aerodrome Engineer | Aerodrome Developments and Airspace Protection
Air Navigation, Airspace & Aerodromes Branch
CASA\ Aviation Group
p: (02) 6217 1183
e: matthew.windebank@casa.gov.au

Australian Government
Civil Aviation SafetyAuthority

From: David Walker <David.Walker@premise.com.au>
Sent: Friday, 8 April 2022 11:27 AM
To: Applications <applications@casa.gov.au>
Subject: [#221106] Proposed Marulan Solar Farm

Good morning

Premise has been engaged by Terrain Solar to prepare an Environmental Impact Statement in relation to the proposed state significant Marulan Solar Farm.

The proposed 150 megawatt solar farm, including battery storage, is proposed to be installed on land at 740 Carrick Road, Carrick (Lot 55 DP1141136) – see attached site locality plan showing the solar farm location outlined in red.

As a component of the EIS, a Land Use Conflict Risk Assessment is being prepared, to consider the potential for conflict between the proposed solar farm and surrounding land uses. The predominate land use around the site is rural land holdings to the north and north-west, small rural holdings to the south and east, and the Holcim Marulan Quarry to the west. We also note the existence of two private airstrips near to the project, the Southern Tablelands Gliding Club and Marulan (Tangryang) Airport (shown in blue on the attached plan).

We consider there is the potential for impact associated with the introduction of the solar farm in the context of these airstrips, with the potential for reflection and glint from the panels. A detailed visual impact assessment, including glare assessment, is being completed for the project to ensure that any impacts are clearly understood. We would like to discuss this matter with a representative of the CASA or receive comment from CASA on this matter.

We would value your input on this issue.

Please contact the undersigned to discuss or respond by return email.

Kind regards

Premise

DAVID WALKER
Town Planning Discipline Lead

T 02 6393 5000 **| M** 0437 621 057
E David.Walker@premise.com.au
A 154 Peisley St, Orange NSW 2800

David Walker

From: David Walker
Sent: Friday, 8 April 2022 11:48 AM
To: administration@insurancecouncil.com.au
Subject: [#221106] Proposed Marulan Solar Farm
Attachments: 221106_site locality.pdf

12d Synergy: -1
12d Synergy Job: DATA/Projects/Orange/221106 Marulan Solar Farm
12d Synergy Project DATA/Projects/Orange/221106 Marulan Solar Farm
12dSynergySendGU d084baee-196e-4650-83c5-4c015cdc0ae8

Good morning

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As a component of the EIS, a Land Use Conflict Risk Assessment is being prepared, to consider the potential for conflict between the proposed solar farm and surrounding land uses. The predominate land use around the site is rural land holdings to the north and north-west, small rural holdings to the south and east, and the Holcim Marulan Quarry to the west.

We consider there is the potential for impact associated with the introduction of the solar farm in the context of insurance premiums. We would like to discuss this matter with a representative of the insurance council or receive comment from the insurance council on this matter.

We would value your input on this issue.

Please contact the undersigned to discuss or respond by return email.

Kind regards

Premise

DAVID WALKER
Town Planning Discipline Lead

T 02 6393 5000 **| M** 0437 621 057
E David.Walker@premise.com.au
A 154 Peisley St, Orange NSW 2800


Premise
POSITION VACANT
TOWN PLANNER
Premise is seeking a Town Planner based in Orange
HR@premise.com.au
APPLY NOW

Premise