



Bushfire Assessment Report

BIRRIWA SOLAR AND BATTERY PROJECT
State Significant Development SSD-29508870

Birriwa

Mid-Western Regional Local Government Area

Applicant: ACEN Australia Pty Ltd

June 2022



APPENDIX

P

Bushfire assessment

Prepared for:

ACEN Australia Pty Ltd

to support EMM preparation for the Environmental Impact Statement (EIS)

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Ref J084: Birriwa Solar Bushfire Assessment

Project Name:	J084: Birriwa Solar Bushfire Assessment
Client Details:	ACEN Australia Pty Ltd
Project Address	Birriwa, in the Mid-Western Regional Local Government Area
Lot/DP:	Five separate rural landholdings over approximately 17 land parcels
Local Government Area	Mid-Western Regional Council – Central Ranges Region (FDI 80)
Zoning (MCC LEP)	RU1 Primary production
Bushfire Prone Land	NOT BUSHFIRE PRONE VEGETATION: Grassland poses potential risk
Proposed Development	Solar Project - PBP 'Other Development'
Approval Path	Major Projects - State Significant Development SSD-29508870

Document Control:

Version	Description	Date	Author	Reviewer
1.0	Bushfire Assessment Report <u>Draft</u>	08 April 2022	D Pedersen	A Pedersen
1.1	Bushfire Assessment Report <u>Draft</u>	31 May 2022	D Pedersen	-
1.2	Bushfire Assessment Report <u>Draft</u>	10 June 2022	D Pedersen	S Hayes

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EXECUTIVE SUMMARY

UPC Renewables Australia Pty Ltd operating as ACEN Australia Pty Ltd (ACEN) proposes to develop the Birriwa Solar and Battery Project; a large scale solar photovoltaic (PV) generation facility along with a Battery Energy Storage System (BESS) and associated infrastructure (the project) in the locality of Birriwa, approximately 15 kilometres (km) south-west of the township of Dunedoo, in the Central West of New South Wales (NSW). The project is predominantly within the Mid-Western Regional Council local government area (LGA), with the access route partly within Warrumbungle Shire Council. The project is within the Central-West Orana (CWO) Renewable Energy Zone (REZ).

The project will be developed within a study area of 1,300 hectares (ha). Land within and surrounding the study area is characterised by flat to gently undulating cleared land used primarily for sheep and cattle grazing or dry land cropping, with scattered rural residences and agricultural buildings and infrastructure.

The project is State significant development (SSD-29508870). The Planning Secretary's Environmental Assessment Requirements (SEARs) requires the assessment of bushfire risk.

Although the project is not on designated 'bushfire prone land' (Mid-Western Shire Council and Warrumbungle Shire Council bushfire prone land mapping), the rural area could be affected by bushfire. A bushfire assessment in accordance with NSW Rural Fire Service (RFS) *Planning for Bushfire Protection 2019* (PBP) has been prepared to inform the Environmental Impact Statement (EIS).

This bushfire assessment report demonstrates the bushfire low risk and how the project design and operation can comply in full to the aims and objectives and specific performance criteria of PBP.

1. INTRODUCTION

EMM on behalf of the proponent (ACEN) have engaged Cool Burn Fire and Ecology to prepare a Bushfire Assessment Report to support the EIS for the Birriwa Solar and Battery Project (the project).

The project is State significant development (SSD-29508870) pursuant to *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Approval for the project is therefore required under Part 4 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act).

The project is proposed on lands that are not identified as 'bushfire prone land' as per the Mid-Western Regional Council bushfire prone land map, however, the area could be affected by bushfire. A bushfire assessment in accordance with NSW Rural Fire Service (RFS) *Planning for Bushfire Protection 2019* (PBP) has been prepared to inform the EIS. A bushfire safety authority (BFSA) under section 100B of the *Rural Fires Act 1997* is not required pursuant to Section 4.41 of the EP&A Act.

This bushfire assessment report aims to address the requirement of the Planning Secretary's Environmental Assessment Requirements (SEARs) to assess potential hazards and risks including bushfires. This report provides recommendations to demonstrate compliance with the aims and objectives of PBP.

This bushfire assessment report has been prepared in accordance with Chapter 8 and Appendix 2 of PBP. Development for the purpose of a solar array and infrastructure (including the BESS) is defined as 'other development' or 'non-residential development' (NCC Class 8 / Class 10 structures). Chapter 8.3.5 of PBP provides specific performance requirements for solar farms and associated infrastructure (BESS).

Cool Burn Pty Ltd is a recognised and suitably qualified bushfire consultant (BPAD Level 3), experienced in the preparation of bush assessments.

1.1 LOCATION

The project is planned in the locality of Birriwa and Motherie, approximately 15 kilometres (km) south-west of the township of Dunedoo, in the Central West of New South Wales (NSW). The project is within the Mid-Western Regional Council local government area (LGA) with the access route partly within Warrumbungle Shire Council.

The project is within the Central-West Orana (CWO) Renewable Energy Zone (REZ). The location and regional context of the project is shown in attached EMM Figures 1.1, 1.2 and 3.1 (Appendix A).

1.2 PROJECT OVERVIEW

ACEN proposes to develop the Birriwa Solar and Battery Project; a large scale solar photovoltaic (PV) generation facility along with a BESS and associated infrastructure (the project). The project will be developed within a study area of approximately 1,300 hectares (EMM Figure 2.2, Appendix A). The project will have an indicative capacity of up to 600 megawatts (MW) and include a BESS of up to 1000 MW for a duration of one hour.

The exact land area to be covered by the project components has been refined during the EIS and project design process and is defined as the 'development footprint'. A detailed description of the project is provided in Chapter 3 of EIS.

1.3 PURPOSE OF THIS REPORT

This assessment has been prepared to meet the requirements of the NSW Department of Planning and Environment (DPE) which were set out in the Planning Secretary's Environmental Assessment Requirements (SEARs) for the project, issued on 5 November 2021. The SEARs identify matters which must be addressed in the EIS and essentially form its terms of reference. The requirement of the SEARs relevant to this assessment is:

an assessment of potential hazards and risks including but not limited to bushfires...

This report will demonstrate how the project satisfies the aims and objectives of PBP.

The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.

The objectives are to:

- afford buildings and their occupants protection from exposure to a bush fire;
- provide for a defensible space to be located around buildings;
- provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;
- ensure that appropriate operational access and egress for emergency service personnel and occupants is available;
- provide for ongoing management and maintenance of bushfire protection measures; and
- ensure that utility services are adequate to meet the needs of firefighters.

With consideration of the rural nature of the project, the assessment aims to identify:

- What is the bushfire history and bushfire risk to the community landscape?
- Does the proposed solar farm change the bushfire risk of the study area?
- What is the potential bushfire risk toward the solar farm asset (life and safety, the infrastructure and the environment)?
- What are the applicable mitigation measures that can be implemented to reduce the bushfire risk of the study area to a level that is deemed acceptable?

Standard bushfire protection measures (Plate 1) include:

- Building and construction requirements, commensurate with the purpose/use and constructions of the structures and, where applicable, the quantified bushfire attack level (BAL) ratings.
- Asset Protection Zone (APZ) and easement landscape management actions (including, but not limited to slashing, mowing, landscaping & garden maintenance and fire breaks) required to protect assets and prevent the spread of fire.
- Access provisions (e.g. public access, property access and fire trails).
- Emergency management arrangements, consistent with the relevant emergency services requirements.
- Water supply and utilities (power) provisions.

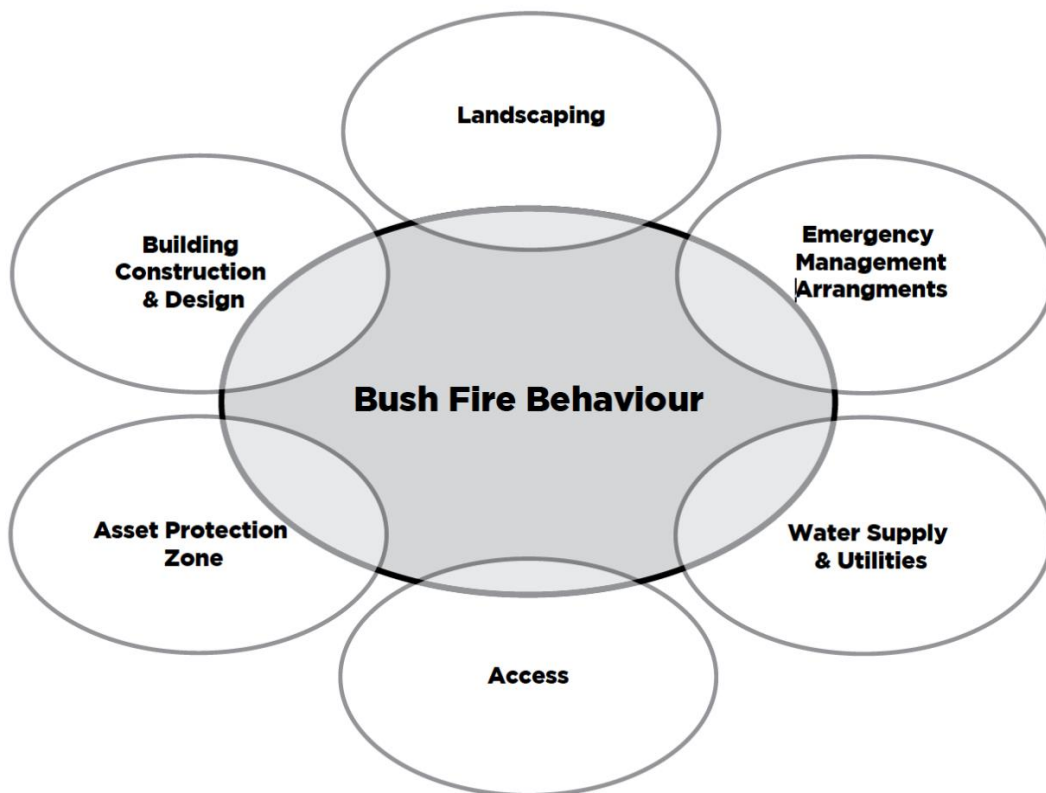


Plate 1: Bushfire Protection Measures (NSW RFS 2019)

2. BUSHFIRE ASSESSMENT

2.1 LANDSCAPE ASSESSMENT

Land surrounding the study area is characterised by flat to gently undulating cleared land used primarily for sheep and cattle grazing or dry land cropping with scattered rural residences and agricultural buildings and infrastructure (ie silos and livestock yards). Areas of native vegetation occur within and surrounding the study area in the form of scattered paddock trees, vegetation along local roads, creek lines and windbreaks.

The locality of Birriwa and a small cluster of residences and rural infrastructure on the Castlereagh Highway lay approximately 1.4 km west of the study area. There are approximately 37 non-project related residences within 5 km of the study area. The nearest non-project related residences are located within 50m of the study area and the development footprint will allow for at least a 300 m buffer around these residences.

The Gwabegar railway line crosses the Castlereagh Highway at Birriwa and travels in a south-south-easterly direction towards Gulgong. This railway no longer provides a passenger service, however, it is understood the Australian Rail Track Corporation uses the railway for freight services.

Several non-perennial tributaries of the Talbragar River flow through the study area in a generally northerly direction, including the named Huxley Creek, Browns Creek and White Creek. There are also multiple farm dams within the study area.

The study area may be currently accessed by either the Castlereagh Highway (via Birriwa Bus Route South or Barneys Reef Road) or the Golden Highway (via Merotherie Road and Birriwa Bus Route South).

2.2 BUSH FIRE PRONE LAND MAPPING & FIRE HISTORY

The site has not been identified as bushfire prone land on the Mid-Western Regional Council's bushfire prone land map, however, consideration should be given to the risk of bushfire due to the expansive rural grassland vegetation.

There are no recorded fires on or near the proposed project site (NPWS Fire History). In 2017 the Sir Ivan fires affected managed rural properties and forested crown lands, greater than 50km from the study area.

2.3 FIRE WEATHER

Mid-Western Regional Council being within the 'Greater Hunter Region' fire weather district (District 3) has a corresponding Forest Fire Danger Rating (FFDI) rating of 80 and Grassland Fire Danger Rating (GFDI) rating of 110.

2.4 VEGETATION ASSESSMENT

Review of the State Vegetation Type Mapping, Central West/Lachlan Region (OEH 2015) indicates that a large portion of the study area is mapped as non-native and considered cleared, with patches of native pasture vegetation such as derived native grasslands (as supported by EMM detailed site assessments and mapping), wind breaks and road side vegetation strips. The southern perimeter of the study area lays adjacent to Ironbark dominated forests on the Barneys Reef ranges.

In accordance with PBP, an on-site assessment and classification of bushfire prone vegetation on and surrounding the study area has been undertaken. The predominant vegetation is managed, rural grassland vegetation up to 6 tonne per hectare (t/ha).

2.5 EFFECTIVE SLOPE

In accordance with PBP, an assessment of the effective slope is undertaken. The location is characterised by flat to gently undulating cleared land. Effective slopes surrounding the project are generally flat (0 degrees) to low undulating (0-5 degrees).

3. BUSHFIRE PROTECTION RECOMMENDATIONS

The following proposed bushfire protection recommendations are considered for the project to achieve compliance with the aims and objectives of PBP. The bushfire protection measures are expected to form part of post approval documentation.

3.1 ASSET PROTECTION ZONES RECOMMENDATIONS

An Asset Protection Zone (APZ) provides a buffer zone to separate bushfire prone vegetation from an asset to prevent possible flame contact and/or excessive radiant heat, and that allows for firefighting access. An APZ allows emergency services access and provides a relatively safe area for firefighters to defend assets. The location and width of an APZ may lessen the radiant heat and flame contact from a bushfire toward an asset to an extent where damage to the asset is reduced to an acceptable level and fire control is more feasible. An APZ also provides an area to prevent any fire occurring within structures (e.g. electrical fire) to ignite and spread into the surrounding vegetation and subsequently be the cause for a bushfire.

It is recommended that an APZ be established around all solar array assets, BESS and substations, and supporting infrastructure, permanent operations and maintenance buildings. APZ specifications for solar farms must be as per Section 8.3.5 of PBP:

- A minimum 10m APZ around the perimeter for PV arrays and associated buildings/infrastructure. Note: 'Infrastructure' for the purposes of requiring APZ excludes road access to the site, power easements or other services to the site and any associated fencing.
- The APZ must be installed and maintained for the life of the development to the standard of an Inner Protection Areas as outline within Appendix 4 of PBP and the NSW RFS document Standard for asset protection zones e.g.:

A Fuel Free Area

- APZ to be maintained free from fuel (e.g. APZ to be comprised of sand, gravel etc.)

Grass

- Grass to be kept short and mown/ maintained to a height <10cm.

Trees

- Where possible, exclude any tree canopy from the APZ.

- If tree canopy cannot be excluded from the APZ, then ensure:
 - canopy cover within the APZ is less than 15% of the total canopy area
 - branches do not touch or overhang any infrastructure buildings
 - lower limbs are removed up to a height of 2 m above ground
 - canopies are separated by at least 2 m
 - preference should be given to smooth barked and evergreen trees.

More information on APZ's can be found in Standards for APZ (NSW RFS).
https://www.rfs.nsw.gov.au/_data/assets/pdf_file/0010/13321/Standards-for-Asset-Protection-Zones.pdf

It is expected that an Emergency Response Plan is required prior to commencement of operations. It is recommended it includes mitigation measures to prompt frequent APZ performance monitoring against fire risk.

3.2 LANDSCAPE MAINTENANCE RECOMMENDATIONS

Landscape maintenance involves management of vegetation around the infrastructure, in a way to reduce fire intensity and rate of spread as it may approach a structure or structures.

Bushfire fuel management in the rural area can be achieved through continued and ongoing agricultural practices such as grazing, cropping and hay making.

It is expected that a Bushfire Management Plan is required prior to commencement of operations. It is recommended that this plan would include a works plan to measure frequent APZ performance monitoring.

3.3 BUILDING DESIGN RECOMMENDATIONS

There are no specific bushfire protection requirements for solar farm infrastructure or the associated Class 10 (National Construction Code NCC) industrial buildings.

The solar farm and ancillary infrastructure should inherently be designed and constructed of fire resilient materials commensurate with the fire risk.

Essential equipment that can be designed and housed to both prevent risk from a bushfire and mitigate risk to cause a potential bushfire, and construction of these buildings should consider the objective of the AS3959-2018 (to reduce the risk of ignition from a bushfire). This is particularly relative to the BESS, substation buildings, demountable offices and amenities and equipment sheds.

It is recommended that all buildings at a minimum be constructed to meet the BAL12.5 construction standards detailed in AS3959-2018 Section 3 and Section 5.2 - 5.8 (i.e. preventing ember entry).

3.4 WATER SUPPLY RECOMMENDATIONS

The PBP states that construction and operation of a solar farm should include availability of fire suppression equipment and water supply.

A dedicated static water supply for bush firefighting purposes should be provided at strategic locations within the solar farm, having consideration for essential equipment and accessibility e.g. near a main entrance near a substation/BESS area.

It is recommended that a 50-80kilo Litre (kL) capacity steel tank supply for the solar farm would provide suitable emergency water supplies (example provided Plate 2).

Fast fill options and easily accessible fill points should be provided, such as 65mm Storz fittings for hydrant stands or direct link to tanks, with a hardstand access capable of supporting weight and turning capacity for a fully loaded fire truck (23 tonne).



Plate 2: Example of community water storage for bushfire protection

3.5 ACCESS MANAGEMENT RECOMMENDATIONS

Access is critical for bushfire emergency response, safe firefighting and evacuation.

The project will be accessed via the Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route into the study area. The access route may require upgrades to the local road network, potentially impacting on adjacent roadside vegetation.

A number of new internal roads to facilitate access within the study area will be designed to allow for construction and operation. In addition, public road crossings will be designed to allow for safe traffic between two clusters of the project where separated by a public road (i.e. Birriwa Bus Route South).

The project construction phase requires heavy vehicle access to support the transportation and storage of the solar farm infrastructure. It is assumed and recommended that this construction access is maintained for the life of the development. As such, the access (including internal access roads, infrastructure perimeter road and public road crossings) will

be inherently capable of supporting Cat-1 fire vehicle access consistent with the following NSW RFS Fire Trail Standards (NSW RFS 2019):

- The width and capacity of the access provides for safe, reliable and unobstructed passage by a Cat 1 firefighting vehicle within acceptable operational limits:
 - The trafficable surface has a minimum width of 4 m (planned double lane access).
 - The access has a minimum 4m height clearance overhead, free from any obstructions.
 - Curves inner radius 6m.
 - Crossfall less than 6 degrees.
 - Surfaces and crossing structures are capable of carrying vehicles with a gross vehicle mass of 15 tonnes and an axle load of 9 tonnes.
 - Turnaround provisions of 22m diameter or T junction at the termination of each access track and in position of the dedicated water supply tanks.
 - Drainage and wet areas crossing are trafficable (where possible) or avoided.

3.5.1 Emergency Access

The solar farm has options to provide alternate or emergency access, in the event that the main site access is obstructed. It is recommended that the project layout includes a designated emergency access (or multiple access options) to the project, consistent with the access standards detailed above.

It is also recommended that an Emergency Response Plan (to be prepared post approval) includes measures detailing access performance monitoring to identify the potential risk and mitigation actions.

3.6 EMERGENCY MANAGEMENT PLANNING

Emergency management planning is required post approval and prior to construction and will be relevant during construction, operations and decommissioning stages.

It is recommended that the proponent prepare and implement an Emergency Response Plan and detail the mitigation measures associated with the construction, operation and decommissioning phases of the project. The Emergency Response Plan should include:

- detailed measures to prevent or mitigate fires igniting e.g.:
 - hot works permits for works which may result in the ignition of fire.
 - hot works not to be carried on Total Fire Ban days, or when local authorities or the Site Manager deems weather conditions too dangerous.
- 24-hour emergency contact details including alternative telephone contact.
- inductions for construction personnel on bushfire risk management and other fire related risks that could present at the project site, the project bushfire contingency plan and emergency response procedures.
- availability of fire-suppression equipment, access, and water including site infrastructure plans and site access and internal road plans.
- identification of hazards (physical, chemical, electrical) that may impact on the firefighting operations and procedures to manage any identified hazards during firefighting.
- management of the storage and maintenance of flammable materials and other potential fuels.
- notification of the local NSW RFS Fire Control Centre for any works that have the potential to ignite surrounding vegetation, proposed to be carried out during a bush-fire fire danger period to ensure weather conditions are appropriate.
- appropriate bush fire emergency management planning.
- additional matters as agreed and required by the NSW RFS District Office.

4. SUMMARY OF RECOMMENDATIONS

Table 1 summarises the bushfire mitigation measures and recommendations made in this report. The project is not located on designated bushfire prone land. This assessment demonstrates that the project design and operation can comply in full to the aims and objectives and specific performance criteria of PBP 2019.

The NSW RFS may stipulate or recommend other mitigation measures or conditions after review of this report.

Table 1 Summary of recommendations for Birriwa Solar and Battery Project

Bushfire Protection Measure	Section	Summary of Recommendation
Asset Protection Zone (APZ)	3.1	Minimum APZ 10m wide to be provided around the perimeter project assets, including solar array and any operational buildings and storage/laydown areas. APZ to be managed as Inner Protection Area for the life of development.
Landscaping	3.2	APZ management to manage fuel loads. A Bushfire Management Plan to guide landscape management, monitor and reduce potential fuel loads surrounding the project and APZ areas via ongoing rural activities (e.g. slashing, grazing).
Building Design	3.3	All buildings (BESS, substation buildings, management and operational buildings) will provide for minimum ember protection consistent with BAL12.5 construction standards (AS3959-2018).
Water Supplies	4.4	50-80kL steel tank dedicated water storage to be strategically located in consultation with NSW RFS, to allow for permanent emergency supply and ease of access.
Access	3.5	Main access, internal roads and alternate egress to provide for safe, reliable, and unobstructed passage by a Cat 1 firefighting vehicle as per Section 3.5 of this document and maintained for the life of the development.
Emergency Management	3.6	Bushfire Management Plan to be developed for the project in consultation with the local NSW RFS District Office.

5. COMPLIANCE SUMMMARY

Table 2 details the compliance of the proposed Birriwa solar and battery project with PBP.

The project would comply in full to the aims and specific requirements of PBP if the recommended bushfire protection measures in Section 4 of this report are implemented in full.

Table 2 Compliance with Aim & Objectives of PBP

Aim	Meets Aim	Comment
<i>to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.</i>	Yes	The location of the proposed solar development has considered bushfire risk and applied relevant bushfire protection measures consistent with PBP to mitigate potential bushfire impact, commensurate with the risk.
General Objectives	Meets Objective	Comment
<i>afford buildings and their occupants protection from exposure to a bush fire;</i>	Yes	Development can achieve acceptable APZ protection and defensible space, commensurate to the identified risk.
<i>provide for a defensible space to be located around buildings;</i>	Yes	The development can achieve acceptable APZ protection and defensible space, commensurate to the identified risk. A minimum 10m APZ managed as inner protection area is proposed around all buildings and structures.
<i>provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;</i>	Yes	Minimum 10m asset protection zone and radiant heat levels no greater than 12.5kW/m ² , prevent flame contact and mitigate fire spread potential.
<i>ensure that appropriate operational access and egress for emergency service personnel and occupants is available;</i>	Yes	Property access can be provided to acceptable PBP standards.
<i>provide for ongoing management and maintenance of Bushfire protection measures; and</i>	Yes	Bushfire management and maintenance responsibility contained within the site.
<i>ensure that utility services are adequate to meet the needs of firefighters.</i>	Yes	Water, electricity and gas services can be provided to acceptable PBP standards.

6. REFERENCES

Department of Planning, Industry and Environment. NPWS Fire History - Wildfires and Prescribed Burns: <https://datasets.seed.nsw.gov.au/dataset/fire-history-wildfires-and-prescribed-burns-1e8b6>

Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis' and Multi-level Risk Assessment (DoP, 2011)

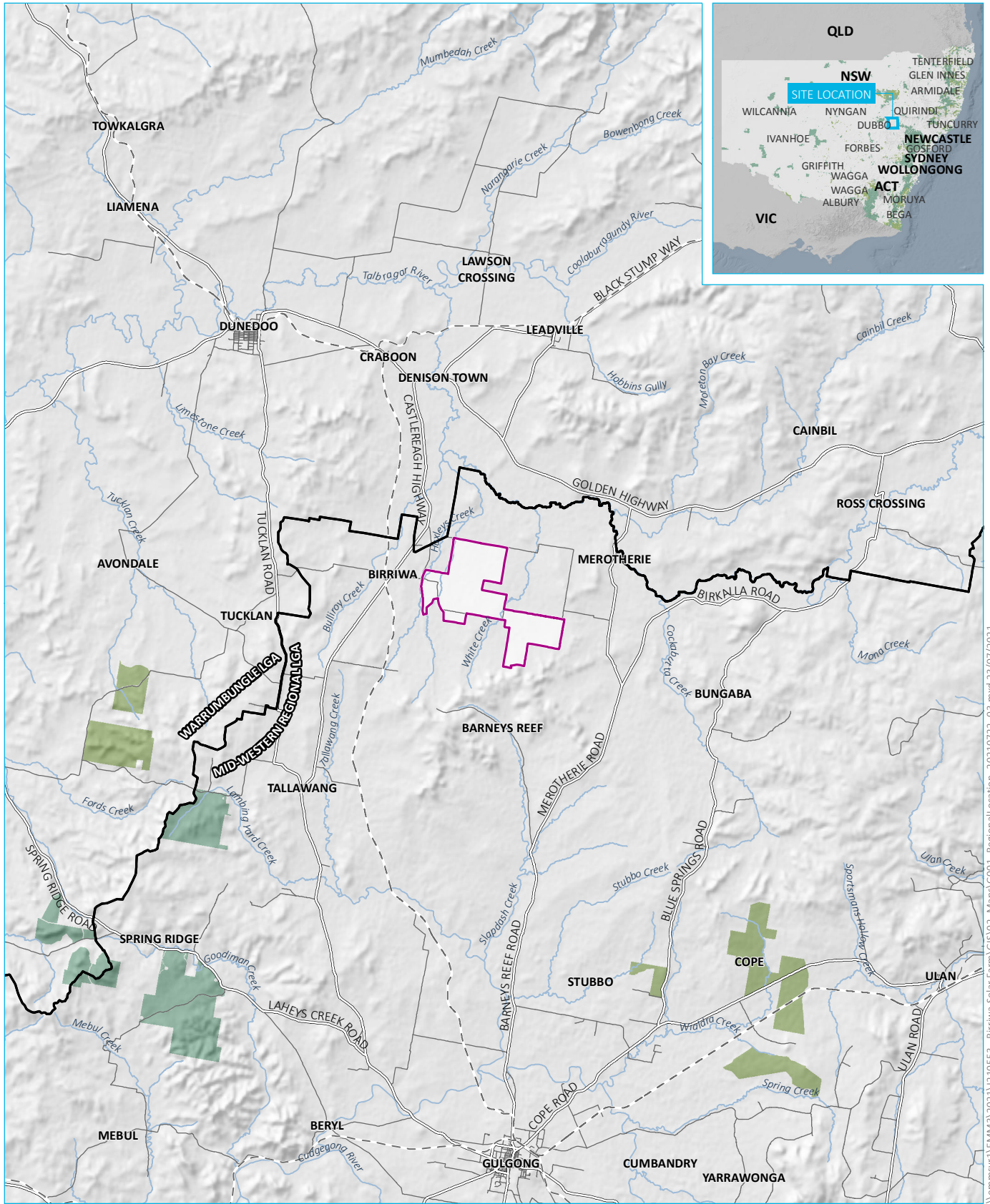
Hazardous Industry Advisory Paper No. 4, 'Risk Criteria for Land Use Safety Planning (DoP, 2011)

Planning Secretary's Environmental Assessment Requirements (SEARs). Birriwa Solar Farm, SSD-29508870. 5 November 2021

NSW RFS 2019. Planning for Bushfire Protection. November 2019.

OEH 2015, State Vegetation Type Map: Central West / Lachlan Region Version 1.4. VIS_ID 4468

APPENDIX A. FIGURES/MAPS



Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006); UPC (2021)



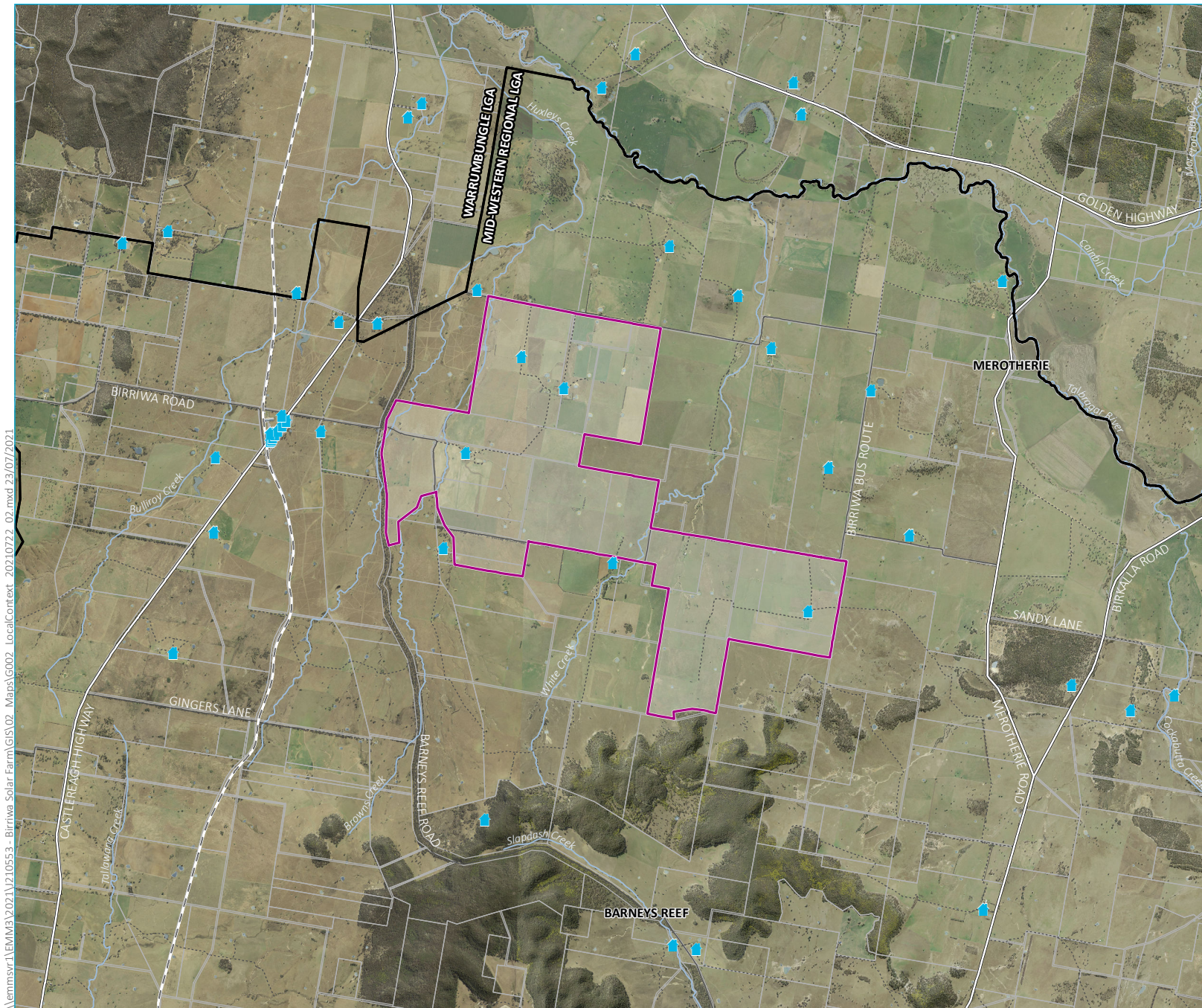
- KEY**
- Study area
 - State forest
 - Rail line
 - Major road
 - Minor road
 - Named watercourse
 - Named waterbody
 - Local government area
 - NPWS reserve

Regional context

Birriwa Solar Farm
Scoping Report
Figure 1.1



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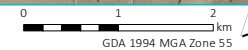
- KEY**
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 - Permanent residence
 - Rail line
 - Major road
 - Minor road
 - Vehicular track
 - Named watercourse
 - Cadastral boundary
 - Waterbody
 - Local government area

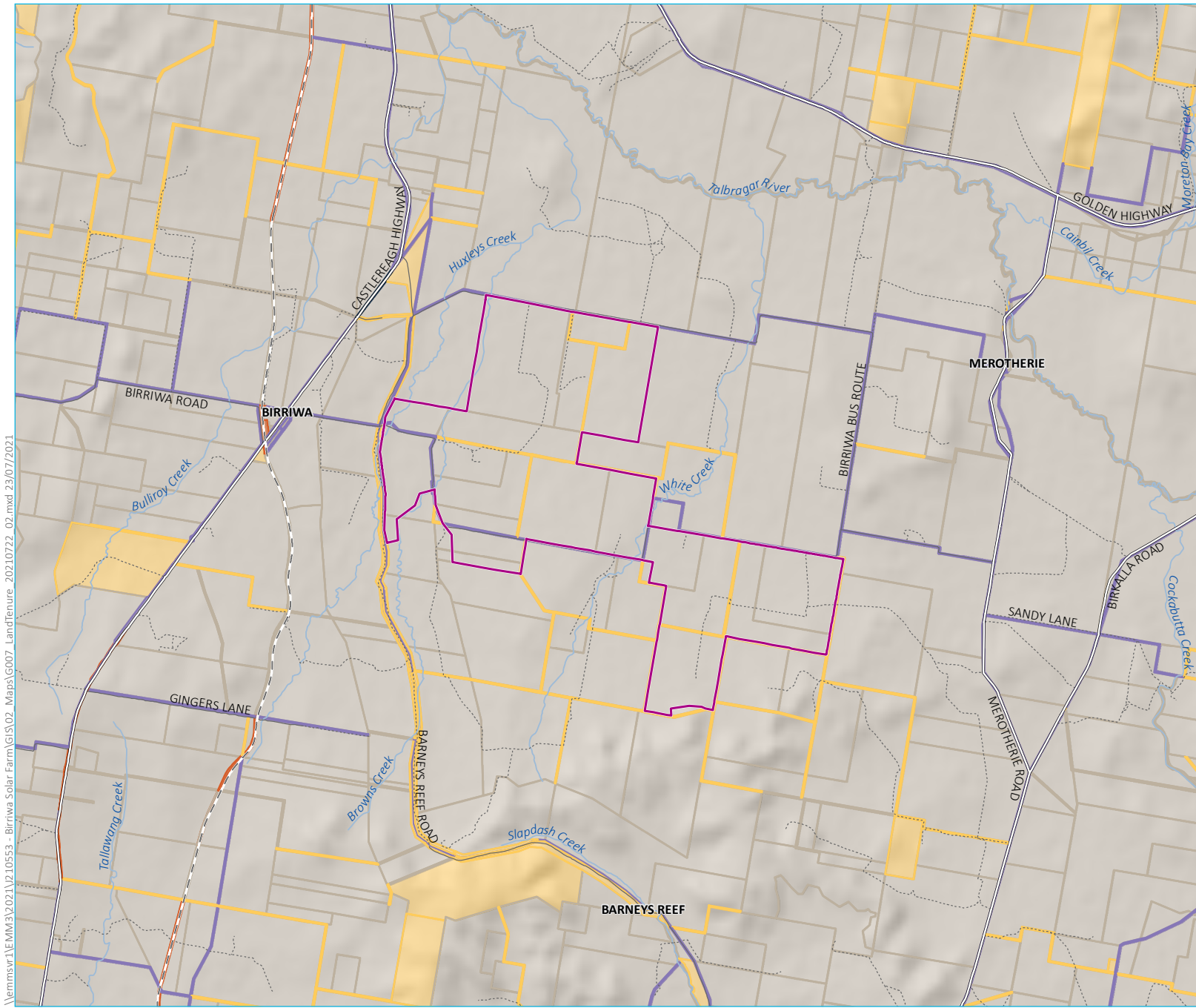
Local context

Birriwa Solar Farm
Scoping Report
Figure 1.2

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Source: EMM (2021); DFSI (2017); GA (2011); UPC (2021)





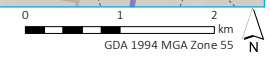
- KEY**
- Study area
 - Crown Land
 - Freehold
 - Local government authority
 - NSW government
 - Shared Crown/Council
 - Rail line
 - Major road
 - Minor road
 - Vehicular track
 - Named watercourse

Land tenure

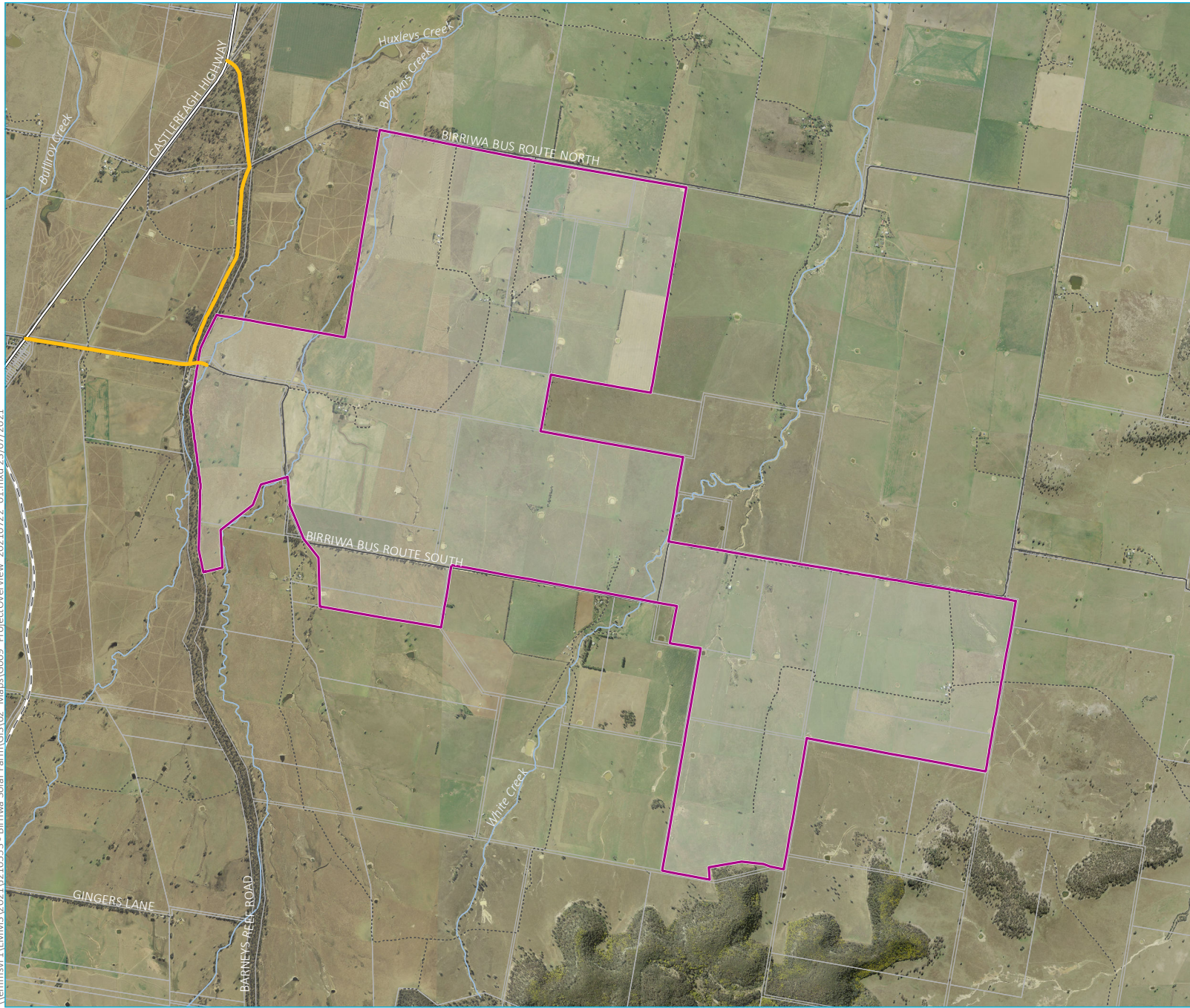
Birriwa Solar Farm
Scoping Report
Figure 2.2

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Source: EMM (2021); DFSI (2017); GA (2011); UPC (2021)



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- KEY**
- Study area
 - Study area access options
 - Rail line
 - Major road
 - Minor road
 - Vehicular track
 - Named watercourse
 - Cadastral boundary

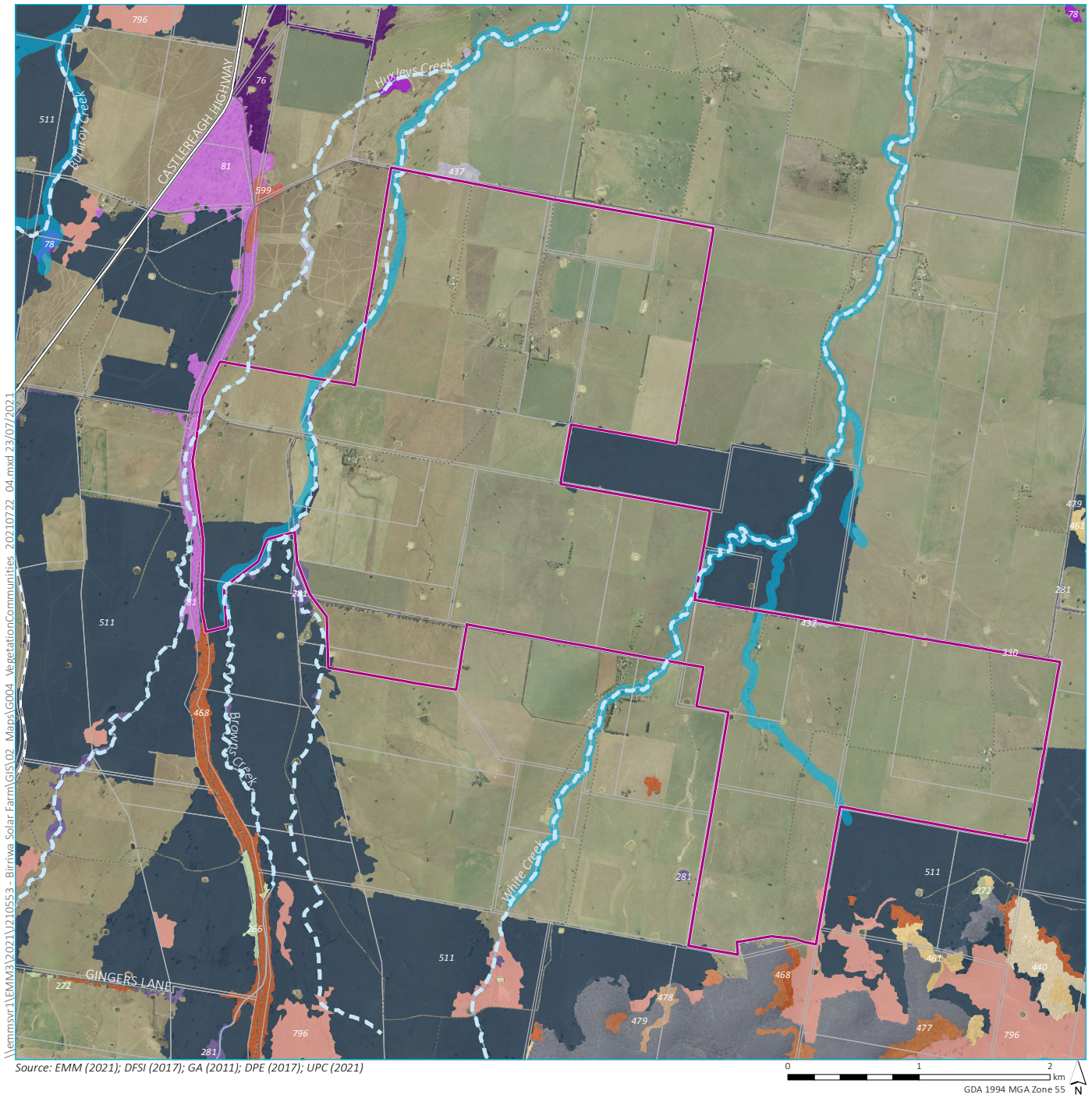
Source: EMM (2021); DFSI (2017); GA (2011); UPC (2021)



Project overview

Birriwa Solar Farm
Scoping Report
Figure 3.1





KEY

- Study area
 - Rail line
 - Major road
 - Minor road
 - Vehicular track
 - Named watercourse
 - Cadastral boundary
 - Purple-spotted Gudgeon suitable habitat
 - Key fish habitat
- Plant community type**
- 76 | Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
 - 78 | River Red Gum riparian tall woodland/open forest wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion
 - 81 | Western Grey Box - cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion
 - 266 | White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
 - 272 | White Box - Black Cypress Pine - red gum +/- Mugga Ironbark shrubby woodland in hills of the NSW central western slopes
 - 281 | Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion
 - 330 | Mugga Ironbark - Black Cypress Pine - Red Stringybark - Blakelys Red Gum - Red Ironbark woodland on hillslopes and in valleys on ranges in the NSW central western slopes
 - 437 | Yellow Box grassy woodland on lower hillslopes and valley flats in the southern NSW Brigalow Belt South Bioregion
 - 440 | Red Stringybark - Narrow-leaved Ironbark - Black Cypress Pine - hill red gum sandstone woodland of southern NSW Brigalow Belt South Bioregion
 - 461 | Tumbledown Gum woodland on hills in the northern NSW South Western Slopes Bioregion and southern Brigalow Belt South Bioregion
 - 468 | Narrow-leaved Ironbark - Black Cypress Pine +/- Blakelys Red Gum shrubby open forest on sandstone low hills in the southern Brigalow Belt South Bioregion (including Goonoo)
 - 477 | Inland Scribbly Gum - Red Stringybark - Black Cypress Pine - Red Ironbark open forest on sandstone hills in the southern Brigalow Belt South Western Slopes Bioregion
 - 478 | Red Ironbark - Black Cypress Pine - stringybark +/- Narrow-leaved Wattle shrubby open forest on sandstone in the Gulgong - Mendooran region, southern Brigalow Belt South Bioregion
 - 479 | Narrow-leaved Ironbark - Black Cypress Pine - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion
 - 511 | Queensland Bluegrass - Redleg Grass - Rats Tail Grass - spear grass - panic grass derived grassland of the Nandewar Bioregion and Brigalow Belt South Bioregion
 - 599 | Blakelys Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion
 - 796 | Derived grassland of the NSW South Western Slopes

Regional vegetation mapping

Birriwa Solar Farm
Scoping Report
Figure 6.1



APPENDIX B. SITE PHOTOGRAPHS

The study area is illustrated in the following photographs.



View of study area towards the south-west from Birriwa Bus Route North



View of study area towards the south from Birriwa Bus Route South



View of study area towards the north from Birriwa Bus Route South



View of study area towards the east from Birriwa Bus Route South



View of study area towards the south from Birriwa Bus Route North



View west towards the study area from Birriwa Bus Route South



View towards the south-eastern extent of the study area from Birriwa Bus Route South