Tremain Ivey Advisory

Agricultural Consultants

Griffith BESS

Application number: SSD-85372970

Agricultural Impact Assessment

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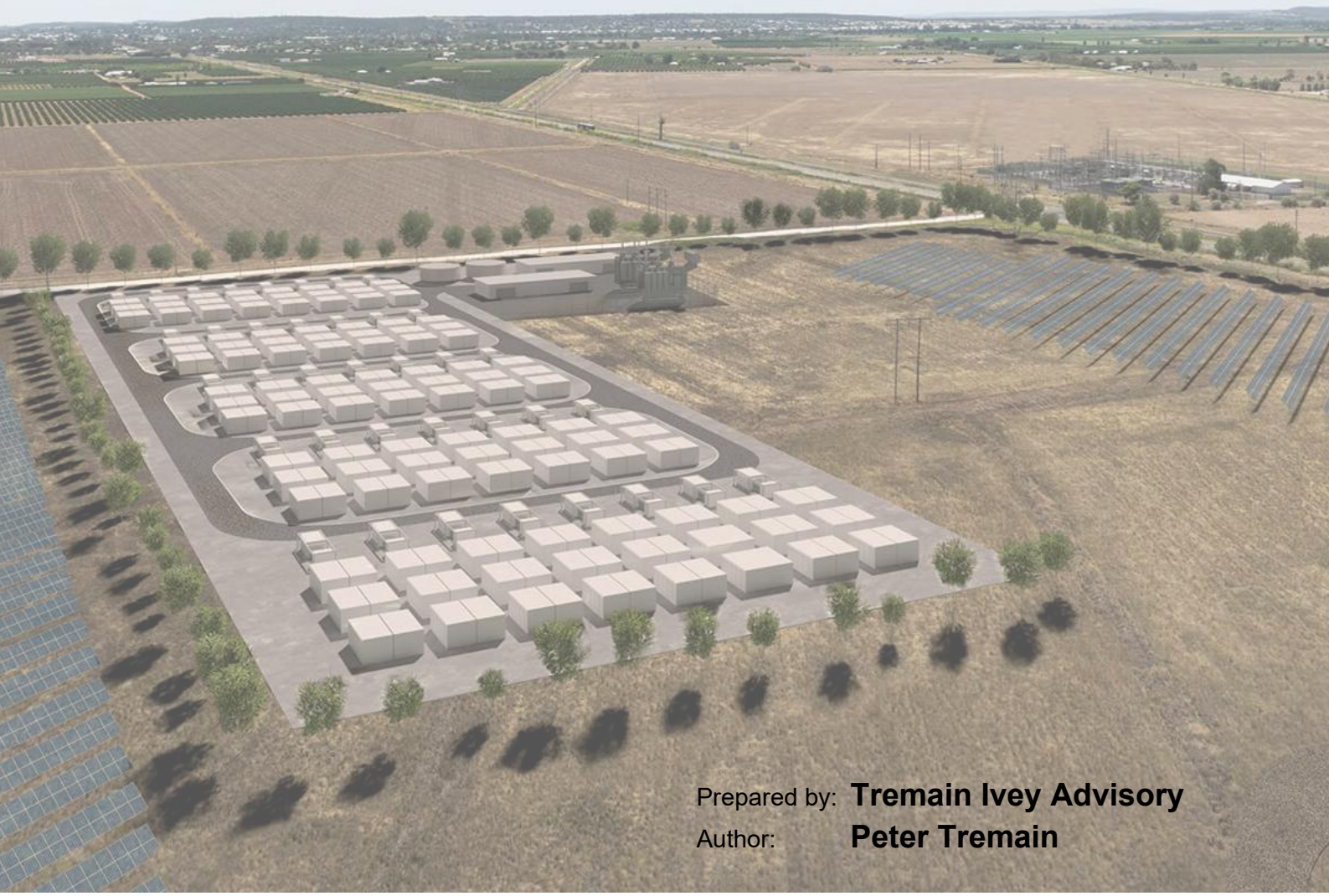

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1 Executive summary

Project description

The Project involves the development of a utility-scale battery energy storage system within the same landholding, but separate to, the approved Yoogali Solar Farm approximately 7 kilometres south-east of Griffith near the rural suburb of Yoogali.

Existing environment

The Project area is located within the Griffith City Council local government area and the Riverina Local Land Services region. It comprises flat land cleared of native vegetation formerly used for irrigated and dryland cropping including rice.

Rainfall at Griffith averages approximately 409 millimetres per annum with moderate variability. Summers are relatively hot with an average of 83 days per year with a maximum temperature over 30°C.

The soils in the Project area are moderate fertility vertosols with a land and soil capability class of 3 (high capability).

Impact assessment

Construction and operation of the Project would have similar types of agricultural impacts. However, in some cases the extent and intensity of potential impacts are greater during construction due to higher levels of activity.

Loss of agricultural land use

There would be no loss of agricultural production and income in relation to the Project area's current use as part of a single landholding to be used for an approved solar farm. The Project area is not currently used for agriculture and does not produce and agricultural outputs or income.

Irrespective of its inclusion in an approved solar farm, the Project area has negligible agricultural production potential because of its small size

Despite this, the potential loss of gross income on the Project area during construction and operation relative to its former use for irrigated cropping is assessed at $8,600 per annum. This is 0.006 per cent of the total gross value of agricultural production across Griffith LGA and is therefore negligible.

Biosecurity

The potential spread of weeds by vehicles, machinery, personnel and movement of soil and water is the main biosecurity risk. The introduction of plant disease or pest species is also a relevant biosecurity risk. The risks would be managed to low levels by implementing mitigation measures.

Other potential impacts

Other potential impacts include dust effects and disturbance of livestock by noise on neighbouring properties. However, these impacts are expected to be small and would have a minor effect on productivity. The impacts on agricultural land and production are limited by the lack of agriculture on the Project area.

Any fire risk would be reduced to low levels by mitigation measures.

Little or no impact would be expected on:

- movement of agricultural personnel, livestock or equipment,
- on ground operations or
- aerial agricultural activities.

2 Glossary, acronyms and abbreviations

ABS	Australian Bureau of Statistics
AIA	agricultural impact assessment for the Project – this report
ARC	ARC Environmental
DAFF	Department of Agriculture, Fisheries and Forestry (Federal)
BESS	battery energy storage system
BJD	bovine Johne's disease
BoM	Bureau of Meteorology
BSAL	biophysical strategic agricultural land
Commonwealth	Reference to the Commonwealth of Australia such as Commonwealth land or Commonwealth legislation
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DPE	Department of Planning and Environment (now DPHI)
DPHI	Department of Planning, Housing and Infrastructure
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment (now DPHI)
DPIRD	Department of Primary Industries and Regional Development
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
GIS	geographic information system
ha	hectare
km	kilometre
kV	kilovolt
LGA	local government area
LLS	Local Land Services
LSC	Land and Soil Capability Assessment Scheme (see OEH, 2012)
LUCRA	Land Use Conflict Risk Assessment

mAHD	metres above the Australian Height Datum
MW	megawatt
MWh	megawatt hour
NEM	National Electricity Market
NSW	New South Wales
OEH	former (NSW) Office of Environment and Heritage
OJD	Ovine Johne's disease
O&M facility	operations and maintenance facility
Primary Production SEPP	State Environmental Planning Policy (Primary Production) 2021
Project (the)	The Project Griffith BESS, which is the subject of this Environmental Impact Statement.
Project area	The area that has been assumed for the purpose of this EIS to be directly affected by the construction and operation of the Project. It includes the indicative location of Project infrastructure and the area that would be directly disturbed during construction and any easement required during operation.
Proponent (the)	Eku Energy on behalf of Griffith BESS Co Pty Ltd
REZ	Renewable Energy Zone
RD	Regional development
SEARs	Planning Secretary's environmental assessment requirements
SEPP	State environmental planning policy
SSAL	State significant agricultural land
SSD	State significant development
TSR	travelling stock reserve

3 Introduction

3.1 Project Overview

Eku Energy on behalf of Griffith BESS Co Pty Ltd (the Proponent) proposes to develop a utility-scale battery energy storage system (BESS) within the same landholding, but separate to, the approved Yoogali Solar Farm.

The proposed BESS will have a nominal capacity up to 100 MW and 10 hours capacity, with associated infrastructure including inverters, a transformer, and a substation. The final footprint and associated visual amenity, fire protection and other works are to be determined.

Griffith BESS (the Project) is located at 15 Bob Irvin Road, Yoogali approximately 7 kilometres (km) south-east of Griffith near the rural suburb of Yoogali. The site is approximately 3 km from the Yoogali town centre. It is surrounded by irrigation farming land and rural dwellings. To the north of the site is the Griffith Substation and Griffith Solar Farm.

The primary and secondary works components of the Project are as follows:

- BESS compounds (batteries, inverters and transformer units)
- On-site substation and transformer
- Transmission connection infrastructure consisting of a 132kV cable connecting to Griffith Substation.
- Operation & maintenance (O&M) building – inclusive of control room
- Construction laydown area (temporary)
- Retention basin
- Asset protection zone
- New crossover and site access.

Connection to the National Energy Market (NEM) will be via 132 kV cables from the on-site transformer to the Griffith Substation approximately 300 metres from the site's northwestern corner. A combination of aboveground and underground cables may be used, subject to further design development and approvals.

The Project area is entirely located on land zoned RU1 – Primary Production (DPHI, 2025) within Griffith City Council local government area (LGA). It is also located in the Riverina Local Land Services (LLS) region.

Construction duration is expected to 22 months.

3.2 Purpose of this technical report

This technical report is one of several technical reports that form part of the Environmental Impact Statement (EIS) for the Project.

The purpose of this technical report is to identify and assess the potential impacts of the Project in relation to agriculture. It responds directly to the Secretary's Environmental Assessment Requirements (SEARs) (refer to Section 3.3).

This report has the following objectives:

- Describe the current socio-economic and environmental situation relevant to agricultural enterprises in the Project area
- Assess the impacts of the Project on agriculture in the Project area and in the surrounding region
- Formulate mitigation and management measures to minimise the impacts on agriculture in the Project area and in the surrounding region.

Figure 3-1: Project locality

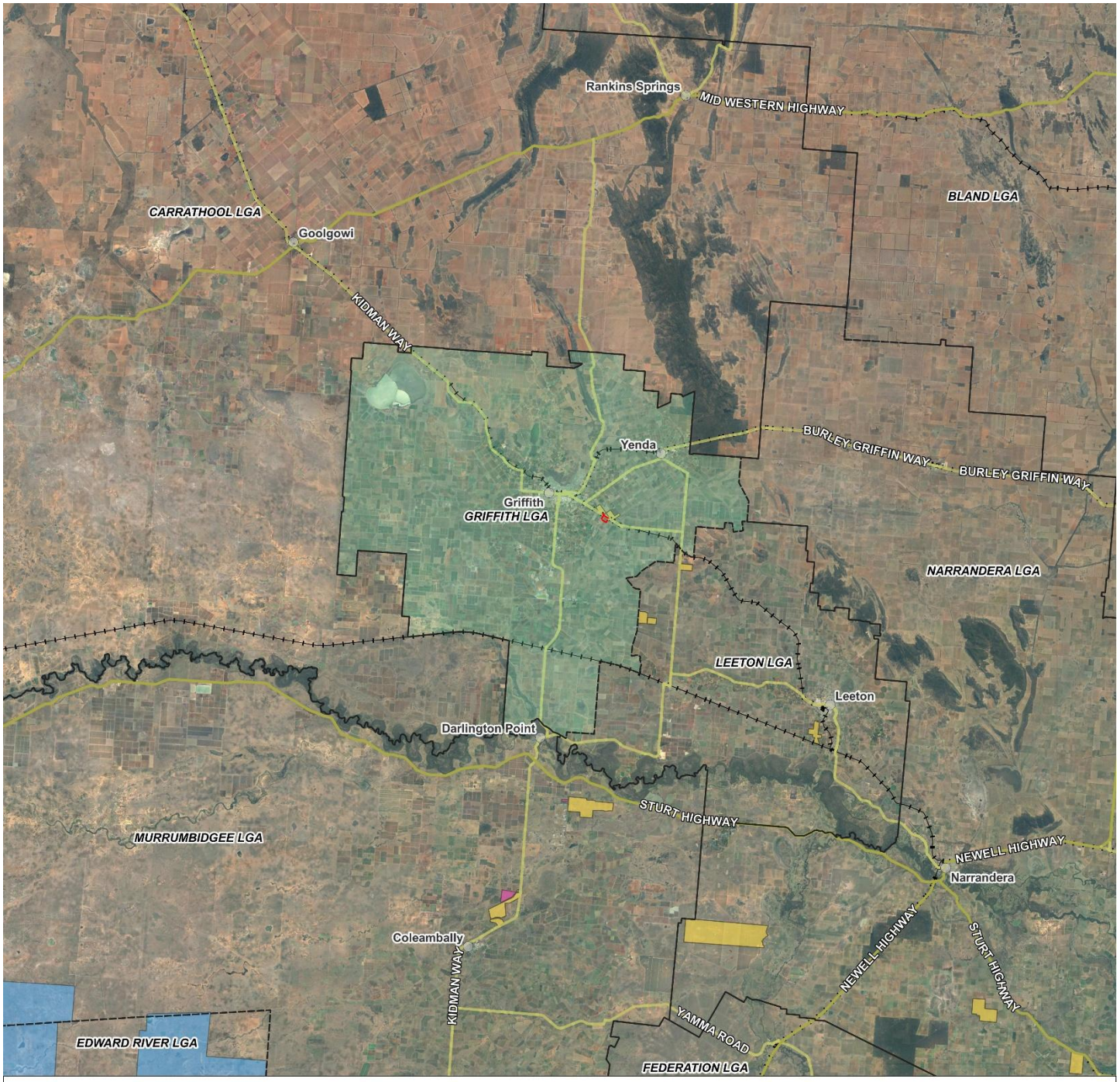
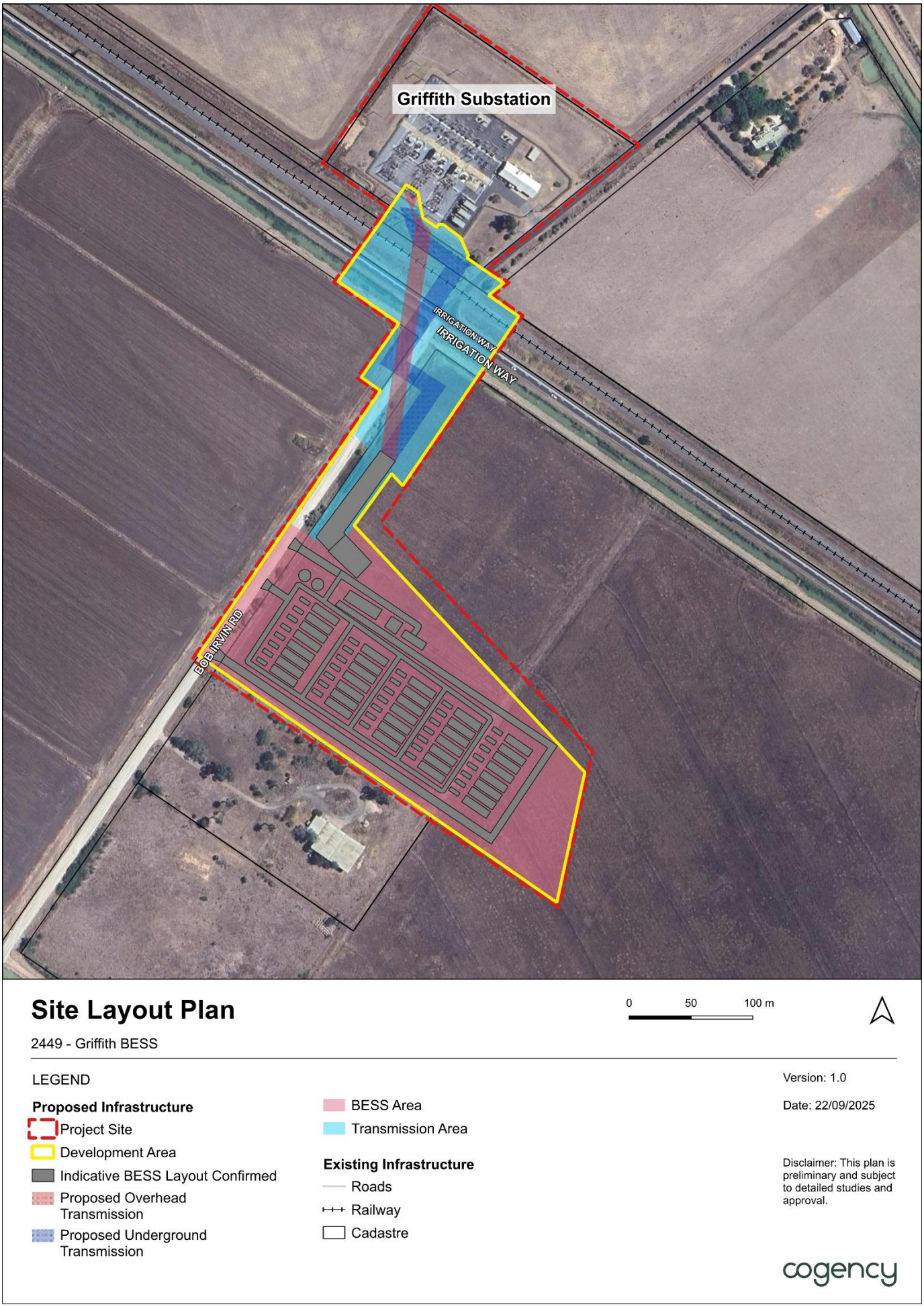


Figure 3-2: Project layout overview



3.3 Secretary's Environmental Assessment Requirements

The NSW Department of Department of Planning, Housing and Infrastructure (DPHI) issued the SEARs for the Project on 23 June 2025. The requirements specific to this assessment and where these aspects are addressed in this technical report are outlined in Table 3-1.

Table 3-1
Secretary's Environmental Assessment Requirements

Reference	Requirement	Where addressed in this document
Key Issue - Land:	An assessment of the potential impacts of the development on existing land uses on the site and adjacent land, including: ○ (amongst others) agricultural land, biosecurity, travelling stock routes… ○ a cumulative impact assessment of nearby developments.	Chapters 7, 8 and 10
	An assessment of the compatibility of the development with existing land uses, during construction, operation and after decommissioning, including: ○ (amongst others) completion of a Land Use Conflict Risk Assessment in accordance with the Department of Industries Land Use Conflict Risk Assessment Guide (if required) ○ assessment of impact on agricultural resources and agricultural production on the site and region.	Chapters 7, 8, 9 and 11

The agricultural impact assessment (AIA) addresses assessment requirements from the 'land' key issue in relation to agricultural impacts.

The AIA assesses the impacts of the Project on access; agricultural operations; livestock and machinery movements; crop production activities; irrigation and biosecurity risks. The impact on agricultural productivity is quantified and mitigation strategies to minimise resource loss, biosecurity risks and other impacts are addressed.

3.4 Structure of this report

The structure and content of this report is as follows.

- *Chapter 1 – Executive summary*
- *Chapter 2 – Glossary, acronyms and abbreviations*
- *Chapter 3 – Introduction:* Outlines the background and need for the Project, and the purpose of this report.
- *Chapter 4 – Legislation and policy context:* Provides an outline of the key legislative requirements and policy guidelines relating to the Project.

- *Chapter 5 – Methodology:* Provides an outline of the methodology used for the preparation of this AIA.
- *Chapter 6 – Existing environment:* Describes the existing agricultural environment.
- *Chapter 7 – Construction impacts:* Describes the potential construction impacts associated with the Project.
- *Chapter 8 – Operational impacts:* Describes the potential operational impacts associated with the Project.
- *Chapter 9 – Land Use Conflict Risk Assessment*
- *Chapter 10* – Cumulative *impacts:* Outlines the potential cumulative impacts with respect to other known developments within the vicinity of the Project.
- *Chapter 11 – Management of impacts:* Outlines the proposed mitigation measures for the Project.
- *Chapter 12 – Conclusion:* Provides a conclusion on the potential impacts of the Project on agriculture.
- *Chapter 13* – References*:* Identifies the reports and documents used to generate this report.

4 Legislation and policy context

4.1 Legislation

The Project is subject to environmental assessment under Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Other legislation specific to the agricultural impact assessment includes the *Biosecurity Act 2015* and State Environmental Planning Policy (Primary Production) 2021 (Primary Production SEPP). A summary of the relevance of each legislation is provided in the following sections.

4.1.1 Biosecurity Act 2015

The NSW *Biosecurity Act 2015* (the Act) came into effect on 1 July 2017 and complements the *Biosecurity Act 2015* of the Commonwealth. The primary objective of the Act is to provide a framework for the prevention, elimination and minimisation of biosecurity risks. The Act is tenure neutral, that is, it applies to all lands in NSW, both public and private tenure.

The Act defines key concepts such as biosecurity matter, carrier, biosecurity impact, biosecurity risks and pests, and specifies a wide range of prohibited matter including pests and diseases of plants and animals.

Under the Act, the responsibility for biosecurity risk is shared between the NSW Government, industry and the community. Specifically, the Act establishes a general biosecurity duty, as follows:

> *'Any person who deals with biosecurity matter or a carrier and who knows, or ought reasonably to know, the biosecurity risk posed or likely to be posed by the biosecurity matter, carrier or dealing has a biosecurity duty to ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated or minimised.'*

The NSW Department of Primary Industries (DPI) holds the primary responsibility for management of biosecurity under the Act, ensuring the legislative and policy settings support best practice management of biosecurity risks. In addition, DPI works with other jurisdictions to prevent, prepare for, respond to and recover from biosecurity incursions and incidents. DPI works with a range of partners in the management of biosecurity. Significant partners include Local Land Services (LLS), local government and industry groups (DPI, 2013a).

The Project is located mostly in the Riverina LLS region with the southern end situated adjacent to the Murray LLS region. Regional biosecurity strategies developed by DPI and LLS covering the Project area include:

- *NSW Invasive Species Plan 2023-2028* (DPI, 2023),
- *Riverina Regional Strategic Weed Management Plan 2023-2027* (Riverina LLS, 2022), and
- *Riverina Regional Strategic Pest Animal Management Plan 2024-2028* (Riverina LLS, 2024).

The above listed strategies are considered in sections 7.2 and 8.2 of this report.

4.1.2 Primary Production SEPP

The relevant part of the Primary Production SEPP is 'Chapter 2 – Primary production and rural development'. This chapter includes the following relevant aims:

> *(a) to facilitate the orderly economic use and development of lands for primary production,*
>
> *(b) to reduce land use conflict and sterilisation of rural land by balancing primary production, residential development and the protection of native vegetation, biodiversity and water resources,*

(c) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations, …

(e) to encourage sustainable agriculture, including sustainable aquaculture.

Part 2.2 deals with State significant agricultural land within which clause 10 states that *'the objects of this Part are as follows—*

(a) to identify State significant agricultural land and to provide for the carrying out of development on that land,

(b) to provide for the protection of agricultural land—

(i) that is of State or regional agricultural significance, and

(ii) that may be subject to demand for uses that are not compatible with agriculture, and

(iii) if the protection will result in a public benefit.'

Clause 1 of section 2.8 states that land is State significant agricultural land if it is listed in Schedule 1 of the Primary Production SEPP. Schedule 1 does not list any State significant agricultural land at present. However, a draft map of State significant agricultural land (SSAL) has been released (DPI, 2021a).

Non-agricultural developments would not be precluded on SSAL. Rather, DPI (2021d) indicates that the process of mapping SSAL is to identify *"the most capable, fertile and productive agricultural lands in the state which support a variety of successful agricultural industries"*. Further it is stated that *"knowing where SSAL is situated and understanding its location, value and contribution will assist in making decisions about current and future allocation of land"*.

It is understood that the NSW Government has not yet announced how SSAL mapping would support land use planning (DPI, 2021a; DPI, 2021e).

4.2 Guidelines

Policies and guidelines relevant to the AIA include:

- *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021),
- *The Land and Soil Capability Assessment Scheme* (OEH, 2012),
- *Infrastructure Proposals on Rural Land* (DPI, 2013b), and
- *Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land* (OEH, 2013).

Some other guidelines provide specific guidance in relation to the assessment of agricultural impacts (for example, use of the weed and pest animal management plans in the biosecurity assessment). Where appropriate, these guidelines have been referenced in the relevant sections of this technical report.

5 Methodology

The methodology for this agricultural impact assessment has been designed to meet the requirements of the SEARs (refer to Section 3.3).

5.1 Overview of approach

The key aspects of the methodology were as follows.

- Consultation to identify the main biosecurity risks associated with the Project and recommended mitigation measures was undertaken by telephone with various biosecurity officers from the Griffith City Council, and Riverina LLS.
- The existing environment was described primarily using a desktop study based on data from various sources referenced in Chapter 4.
- The assessment of the impacts on agriculture was based on the desktop study, consultations with stakeholders and professional knowledge.
- The identification of mitigation and management measures was based on information from the existing environment and impact assessments, consultations with stakeholders, professional knowledge, and various information sources as referenced in Chapter 4.

5.2 Relevant areas

The area of impacts on agriculture are mostly limited to the Project area. However, some impacts, such as noise disturbance on livestock and any restrictions on aerial agriculture, may occur beyond the Project area.

5.3 Agricultural impact assessment

5.3.1 Property information

Information on the host properties and surrounding properties (such as vegetation cover, soil type, land capability, land use, extent of cleared areas and type of cropping) was gained through examination of satellite imagery, reference material and public GIS datasets.

5.3.2 Stakeholder consultation

Discussions to identify the main biosecurity risks associated with the Project and recommended mitigation measures were undertaken by telephone with biosecurity officers from Griffith City Council, and Riverina LLS.

5.3.3 Agricultural impact assessment

The description of the existing environment was a desktop study based on data from various sources referenced in Chapter 6. The assessment of the existing environment concentrated on:

- Geographical factors (such as climate, topography and soils) that have the greatest influence on agriculture in the study area
- Measures which best appraise the nature and productivity of agricultural enterprises in the study area (such as land and soil capability, land use and value of production).

The assessment of the impacts on agriculture was based on information from the existing environment assessment, consultations with stakeholders and professional knowledge.

Mitigation measures are defined as actions, processes or structures which minimise or eliminate the impacts of the Project. The identification of mitigation and management measures was based

on information from the existing environment and impact assessments, consultations with landowners and other stakeholders, professional knowledge, and various information sources as referenced in Chapter 6.

5.4 Consideration of biosecurity issues

Relevant information on biosecurity issues for the Project were identified from the following sources:

1. Consultation with LLS and local government biosecurity officers (refer to Section 5.3.2)
2. Reference to the *NSW Biosecurity Act 2015*
3. Reference to the relevant regional strategic weed management plans
4. Review of other documents and data set out in Section 6.2.

The methodology for the biosecurity assessment was similar to the agricultural impact assessment set out in Section 5.3.3. Existing biosecurity issues and potential biosecurity risks were primarily based on a desktop study including pest, disease and weed distribution data, and various legislation, regional plans and surveys referenced in Section 6.2. The biosecurity assessment concentrated on the main risks associated with the Project.

The identification of mitigation and management measures was based on information from the existing environment and impact assessments of this report and consultations with stakeholders.

6 Existing environment

6.1 General description

6.1.1 Location

The Project area Griffith BESS (the Project) is located approximately 7 kilometres (km) south-east of Griffith within the Griffith City Council local government area (LGA) and the Riverina Local Land Services (LLS) region.

6.1.2 Topography

The Project area comprises irrigated paddocks, formerly used for cropping including rice. The land is flat and cleared of native vegetation. Some vegetation exists along road reserves.

The elevation across the Project area is approximately 128 metres above Australian Height Datum (mAHD).

6.1.3 Climate

Climate, especially rainfall and temperature, has a large impact on the productivity of dryland agricultural properties in the Riverina Region. However, rainfall has a lesser impact on irrigated agriculture.

The Griffith Airport Bureau of Meteorology (BoM) recording station is the closest to the Project area. The Airport station is approximately 6 kilometres north of the Project area and at an elevation of 134 mAHD. Griffith Airport station opened in 1960.

The mean maximum monthly temperatures reach a peak of approximately 31°C to 33°C in December, January and February. The mean maximum monthly temperature varies from 14.8°C to 16.7°C in the winter months.

The average number of days over 30°C is 83.3 per annum while the average over 40°C is 6.3 days per annum.

The mean minimum temperatures fall to a low of 3.4°C in July and between 3.4°C and 3.8°C in the other winter months. A minimum temperature under 2°C is generally regarded as the approximate temperature at which frost will occur. An average of 34.5 such days per annum have been recorded. The highest mean minimum temperatures occur in January and February at approximately 17.5°C.

The average rainfall at Griffith has been 409 millimetres over 78 rain days per annum. In the driest 10 per cent of years, the average falls to 225 millimetres per annum. The average in the wettest 10 per cent of years is 587 millimetres per annum. The rainfall has moderate variability according to rainfall records (BoM, 2021). Variability is generally much greater in summer, autumn and late spring, than at other times of the year.

Rainfall is relatively evenly spread throughout the year with a slight dominance in winter and spring.

Table 6-1
Summary of climate records

Statistic Element	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Maximum temperature (°C)													
Mean	33.4	32.4	29.0	24.1	19.2	15.5	14.8	16.7	20.3	24.3	28.2	31.2	24.1
Number of days >= 30°C	19.8	18.3	12.0	2.3	0.0	0.0	0.0	0.0	0.8	4.1	9.9	16.1	83.3
Number of days >= 40°C	3.0	1.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.3	6.3
Minimum temperature (°C)													
Mean	17.4	17.5	14.5	10.3	6.7	4.3	3.4	3.8	5.8	9.2	12.8	15.3	10.1
Number of days <= 2°C	0.0	0.0	0.0	0.3	3.3	7.4	10.2	8.8	4.0	0.5	0.0	0.0	34.5
Rainfall (millimetres)													
Mean	36.3	28.0	35.3	29.3	36.1	35.1	32.4	34.9	32.7	39.9	36.6	32.7	409.2
10th percentile	3.6	0.8	1.3	2.6	6.0	10.9	8.3	6.8	6.8	8.6	5.5	2.6	225.4
Median	20.8	19.8	17.4	20.8	29.0	29.6	28.9	30.2	25.5	27.0	28.7	24.2	382.6
90th percentile	83.8	68.7	62.4	57.1	80.6	66.7	65.8	62.1	62.1	91.7	83.2	75.7	587.4
Other Rainfall Records													
Variability (%)	386%	343%	351%	262%	257%	189%	199%	183%	217%	308%	271%	302%	95%
Number of days of rain	4.9	4.0	4.3	4.7	6.9	8.6	10.4	9.1	7.3	6.4	6.0	5.1	77.7

6.1.4 Soils

The Project area consists of moderate fertility vertosols (CSIRO, 2016; OEH, 2017).

Vertosols have clay texture throughout the profile, display strong cracking when dry, and shrink and swell considerably during wetting and drying phases (Agriculture Victoria, 2021). ARC (2025) report a dark brown silty clay topsoil 0.3 metres deep with high plasticity, and a brown-red silty, sandy clay subsoil with low plasticity to a depth of 1.3 metres.

Salinity varies within the Project area with eight sampled sites having very low to low salinity. Only sensitive crops (such as rice, almonds and grapes) would be affected at these levels. Seven sampled sites had moderate salinity which would also affect the production of moderately tolerant crops (such as oats and sunflower). One site recorded very high salinity which would affect the production of most crops (ARC, 2025).

Sodicity is minimal in the topsoil, but increases at depth. This is unlikely to have a major impact on agricultural productivity, but there is a potential risk of soil structural decline due to dispersion, poor infiltration, and subsurface erosion (ARC, 2025).

ARC (2025) conclude that the potential for contamination within the soils of the Project area is low and acceptable. Soil survey results show that there are no contamination concerns for the pesticides and metals tested.

6.1.5 Land use

The Project area was previously developed for flood irrigation. It has been approved for development as part of Yoogali Solar Farm.

The Project area is mapped as 'irrigated cropping' in NSW land use data (DPIE, 2020).

6.2 Biosecurity issues

6.2.1 Weeds

A wide range of weeds have been recorded within approximately 10 kilometres of the Project area by authorised officers under the *Biosecurity Act 2015* (DPI, 2021b). These are listed in Attachment 1.

The most common weed observed during property inspections was Boneseed (*Chrysanthemoides monilifera*), which comprised over 28 per cent of reports. Other common weeds are set out in Table 6-2.

Table 6-2
Weeds commonly reported near the Project area

Commonly reported weeds (more than ten reports)	
African boxthorn (*Lycium ferocissimum*)	Sagittaria (*Sagittaria platyphylla)*
Indian fig (*Opuntia ficus-indica)*	Silverleaf nightshade (*Solanum elaeagnifolium*)
Prickly pears (*Opuntia* species)	Sweet briar (*Rosa rubiginosa)*
Privet - broad-leaf *(Ligustrum lucidum)*	

The Riverina Regional Strategic Weed Management Plan (Riverina LLS, 2022) identifies State and regional priority weeds, some of which may be present in the vicinity of the Project area.

Other "weeds of concern" are listed in the Riverina Regional Strategic Weed Management Plan (Riverina LLS, 2022). These were identified by the Riverina Regional Weed Committee in consultation with the community. They are described as *"species for which a consistent and/or collaborative approach to management will provide the best outcome across the region"*. They *"may be a focus for local management plans and coordinated campaigns by the community and other stakeholders in the region"*. These weeds are listed in Attachment 2.

The Preliminary Ecological Values Assessment prepared for the scoping report of the Project included a list of 'observed flora species' (Attachment 3). There were some relevant agricultural weeds on this list. Some like silver-leaved nightshade, skeleton weed (*Chondrilla juncea*) and wild oats (*Avena fatua)* are important crop weeds. Others such as barley grass (*Hordeum leporinum*), Scotch thistle (*Onopordum acanthium*), spear thistle (*Cirsium vulgare*), flea bane (*Conyza bonariensis*) and Patterson's curse (*Echium plantagineum*) can be important weeds of pastures.

6.2.2 Pest animals

Foxes, feral cats and kangaroos have a widespread distribution in the proximity of the Project area. Wild rabbits are generally in low abundance (Riverina LLS 2024; DPI 2021c).

Feral pigs are in uncommon around the Project area. Feral goats, feral horses, wild dogs and deer are generally not found near the Project area (Riverina LLS, 2024).

Plague locusts and mice can also cause problems in favourable seasons. Some species (such as goats and pigs) pose important biosecurity, economic and social threats as they can harbour and transmit both endemic and exotic diseases.

6.2.3 Animal and plant diseases

Footrot

Footrot is a contagious bacterial disease of sheep and goats, caused by the organism *Dichelobacter nodosus (D. nodosus)* in association with several other bacteria. The bacterium *D. nodosus* may persist for many years in the feet of infected sheep and may pass from infected sheep into the soil. Footrot is introduced into a clean flock by the inclusion of infected sheep, or by exposure to contaminated land under favourable conditions.

The occurrence of sheep footrot in the vicinity of the Project area has been low in recent years. DPI reported a total of 19 flocks infected with virulent footrot as of December 2023 across the Riverina LLS region. The total number of all flocks across the Riverina LLS region was 3,097 (DPIRD, 2024). Therefore, the infection rate was around 0.6 per cent. However, incidence of footrot in the vicinity of the Project area is likely to be lower due to the predominance of irrigated cropping rather than grazing in the area.

Ovine Johne's disease

Ovine Johne's disease (OJD) is an incurable infectious disease caused by the bacterium *Mycobacterium paratuberculosis*.

Little recent data is available on the prevalence of OJD in NSW. However, the Project area was in a low prevalence area in 2010 which had less than 0.8 per cent of flocks estimated to be infected (DPI, 2011).

Plant Diseases and Pests

Horticultural enterprises are particularly susceptible to plant diseases and pests. The study area is within the Phylloxera Exclusion Zone to which movement of grapes and grape vine material is prohibited, and other movement restrictions apply. The Project area is close to an important wine region around Griffith.

The entire state of NSW is a potato biosecurity zone. The potato biosecurity zone restricts the movement of any restricted potato biosecurity matter (including Solanaceae plants and certain material that has been in contact with a Solanaceae plant) into the potato biosecurity zone.

6.3 Land and soil capability

There are several measures of land capability relevant to agriculture. This report describes the land and soil capability (LSC) based on the Land and Soil Capability Assessment Scheme (OEH, 2012). However, other measures are also examined in the following sections.

6.3.1 Background

The LSC assessment scheme was published in 2012 by the former Office of Environment & Heritage (OEH, 2012), representing a revision of an earlier scheme that was first published by the former Soil Conservation Service of NSW in 1986 (Emery, 1986). The LSC system builds on the earlier scheme, but with more emphasis on a broader range of soil and landscape properties.

LSC is based on an assessment of the biophysical characteristics of the land, the extent to which this would limit a particular type of land use, and the current technology that is available for the management of the land. It indicates the broad agricultural land uses most physically suited to an area. That is, it determines the best match between the physical requirements of the use and the physical qualities of the land, and the potential hazards and limitations associated with specific

uses over a site. The LSC system can provide guidance on the inputs and management requirements associated with different intensities of agricultural land use (Woodward, 1988).

The LSC assessment is based on the premise that using land beyond its capability may have serious consequences for the land and soil resources of the State as well as broader environmental impacts on water, air and biodiversity (Woodward, 1988).

The LSC assessment scheme comprises eight land capability classes (1 to 8) with values representing a decreasing capability of the land to sustain intensive agricultural land use. Class 1 represents land capable of sustaining most intensive land uses including those that are often associated with regular soil cultivation, whereas class 8 represents land that can only sustain very low intensity land uses.

The current LSC scheme was initially developed for the NSW property vegetation planning program under the former *Native Vegetation Act 2003* and further updated for the NSW Natural Resources Monitoring, Evaluation and Reporting program.

The LSC assessment scheme uses the biophysical features of the land and soil including landform position, slope gradient, drainage, climate, soil type and soil characteristics to derive detailed rating tables for a range of land and soil hazards. These hazards include water erosion, wind erosion, soil structure decline, soil acidification, salinity, waterlogging, shallow soils and mass movement. Each hazard is given a rating between 1 (best, highest capability land) and 8 (worst, lowest capability land). The final LSC class of the land is based on the most limiting hazard.

The LSC class gives an indication of the land management practices that can be applied to a parcel of land without causing degradation to the land and soil at the site and to the off-site environment. As land capability decreases, the management of hazards requires an increase in knowledge, expertise and investment. In lands with lower capability, the hazards cannot be managed effectively for some land uses.

The LSC assessment scheme is most suitable for broad-scale assessment of land capability, particularly for assessment of lower intensity, dryland agricultural land use. It is less applicable for high intensity land use, or for irrigation (Woodward, 1988).

6.3.2 LSC classes

Class 1 land is described as *"extremely high capability land: Land has no limitations. No special land management practices required. Land capable of all rural land uses and land management practices".*

Class 2 land is described as *"very high capability land: Land has slight limitations. These can be managed by readily available, easily implemented management practices. Land is capable of most land uses and land management practices, including intensive cropping with cultivation"*.

Class 3 land is described as "*high capability land: Land has moderate limitations and is capable of sustaining high-impact land uses, such as cropping with cultivation, using more intensive, readily available and widely accepted management practices. However, careful management of limitations is required for cropping and intensive grazing to avoid land and environmental degradation".*

Class 4 land is described as *"moderate capability land: Land has moderate to high limitations for high-impact land uses. Will restrict land management options for regular high-impact land uses such as cropping, high-intensity grazing and horticulture. These limitations can only be managed by specialised management practices with a high level of knowledge, expertise, inputs, investment and technology"*.

Class 5 land is described as *"moderate–low capability land: Land has high limitations for high-impact land uses. Will largely restrict land use to grazing, some horticulture (orchards), forestry and nature conservation. The limitations need to be carefully managed to prevent long-term degradation".*

Class 6 land is described as "*low capability land: Land has very high limitations for high-impact land uses. Land use restricted to low-impact land uses such as grazing, forestry and nature conservation. Careful management of limitations is required to prevent severe land and environmental degradation"*.

Class 7 land is described as *"very low capability land: Land has severe limitations that restrict most land uses and generally cannot be overcome. On-site and off-site impacts of land management practices can be extremely severe if limitations not managed. There should be minimal disturbance of native vegetation".*

Class 8 land is described as "*extremely low capability land: Limitations are so severe that the land is incapable of sustaining land use apart from nature conservation. There should be no disturbance of native vegetation".*

6.3.3 LSC in the Project area

The Project area consists of high capability (moderate limitations) class 3 land. Surrounding land is also class 3 (NSW Government, 2023).

Some areas of class 4 moderate capability land (moderate to severe limitations), class 6 low capability land (very severe limitations) and class 8 very low capability land (severe limitations) are further afield (refer Figure 3-1).

6.4 Other measures of land capability

6.4.1 Biophysical strategic agricultural land

Biophysical strategic agricultural land (BSAL) has high quality soil and water resources capable of sustaining elevated levels of productivity. The protocol for determining BSAL is set out by the former Office of Environment and Heritage (OEH, 2013). BSAL has the best quality intrinsic landforms, soil and water resources which are naturally capable of sustaining high levels of productivity and require minimal management to maintain the high quality (DPE, 2013).

Mapping of BSAL was undertaken by the then NSW Department of Planning and Environment. This mapping indicates that there is no BSAL in or near the Project area.

6.4.2 State significant agricultural land

A draft map of State significant agricultural land (SSAL) has been released (DPI, 2021a). The entire Project area and surrounding areas were classified as SSAL under the draft mapping.

Although the assessment of SSAL and BSAL is based on similar parameters, more land classified as draft SSAL than BSAL due to the inclusion of areas developed for irrigation.

Figure 6-1: Project locality

6.5 Regional agricultural productivity

6.5.1 Employment and businesses

Agriculture forestry and fishing is the second largest industry (by number of employees) in the Griffith LGA behind manufacturing. In 2021, employment in 'agriculture, forestry and fishing' was 12.4 per cent of all employed persons. Total employment in 'agriculture, forestry and fishing' is estimated at approximately 1,700 persons (ABS, 2025).

On 30 June 2024, there were 915 'agriculture, forestry and fishing' businesses in the Griffith LGA (ABS, 2025). This is approximately 26 per cent of all businesses.

6.5.2 Agricultural land use

The total area of agricultural holdings across the Griffith LGA in 2020-21 (ABS, 2022a)[1] was 160,271 hectares. The number of businesses was 128, which gives an average size of 1,252 hectares per business. The average size was much smaller than most neighbouring LGAs due to the high proportion of irrigation businesses.

The same ABS statistics show the following broad land uses on agricultural holdings in the Griffith LGA. Approximately 55 per cent of the agricultural holdings is used for grazing. This is much lower than for most surrounding LGAs, again due to the high proportion of irrigation businesses concentrating on cropping.

Cropping land, including fallow, hay and silage comprises 33 per cent of the agricultural holdings. Wheat growing accounts for more than one-third of the cropping area. The amount of horticultural land is relatively small at 2.6 per cent, but this area is highly productive. Most of the remainder is used for non-agricultural uses.

Table 6-3
Land use on farms 2020-21

Land use	Area (ha)	Proportion
Wheat for grain	21,042	13.1%
Other broadacre crops	17,278	10.8%
Unused cropping land (eg fallow)	13,489	8.4%
Hay and Silage	1,019	0.6%
Grapes	2,013	1.3%
Fruit and nuts	1,888	1.2%
Vegetables	229	0.1%
Other horticulture	19	0.0%
Grazing improved pastures	19,676	12.3%
Grazing other land	67,896	42.4%
Other agriculture	155	0.1%
Total agricultural area	144,704	90.3%

[1] Detailed agricultural statistics are only produced by the ABS to an LGA level every five years. The most recent LGA data are from 2020-21.

Forestry	260	0.2%
Other	15,307	9.6%
Total area of holdings	160,271	100.0%

Other land use data from the Department of Agriculture, Fisheries and Forestry (DAFF) for Griffith LGA shows that the area developed for irrigation is approximately 119,200 hectares (DAFF, 2025). This indicates that most irrigation land is not irrigated each year, mainly due to insufficient water availability. Most land developed for irrigation is used for grazing, dryland cropping or is fallow, rather than irrigation in any year.

6.5.3 Livestock carried

Table 6-4 sets out total livestock numbers across the Griffith LGA in 2020-21. The relatively low average stocking rate indicates that livestock are generally run on dryland areas rather irrigated pastures.

Table 6-4
Total livestock numbers

Sheep and lambs	49,877
Meat cattle	4,414
Dairy cattle	8
Goats & other livestock	916
Total number	**55,215**

Source: ABS, 2022a

6.5.4 Value of agricultural production

The total gross value of agricultural production across the Griffith LGA in 2020-21 (ABS, 2022b) is shown in Table 6-5 at $147.7 million.

Agricultural production is spread across several main broadacre and horticultural products with wheat, rice, cotton, grapes and 'fruit and nuts' each being between $10 million and $44 million in gross value. Barley, vegetables and other horticultural items were also substantial products.

Table 6-5
Total gross value of agricultural production

	Total
Broadacre crops	
Wheat	$21,042,334
Barley	$4,881,775
Maize	$1,756,744
Rice	$13,129,136
Canola	$1,874,204
Cotton	$10,941,703
Other	$2,295,823
Hay	$937,340
Total - Broadacre crops	$56,859,058
Horticulture	
Grapes	$17,070,627

Fruit and nuts	$44,030,320
Vegetables	$4,261,947
Nurseries, cut flowers & cultivated turf	$4,519,149
Total - Horticultural crops	$69,882,044
Livestock products	
Wool	$1,699,015
Sheep and lambs	$2,718,186
Cattle and calves	$2,744,742
Milk	$16,547
Pigs	$254,552
Poultry & eggs	$13,469,971
Goats & other livestock	$12,881
Total - Livestock products	$20,915,893
Total – Agriculture	**$147,656,995**

The total gross value of agricultural production in 2020-21 was equivalent to $1,020 per hectare over the total agricultural area of holdings (144,704 hectares, refer to Table 6-3).

There were also large differences between the average gross value of broadacre cropping production ($1,445 per hectare), horticulture production (approximately $17,800 per hectare) and broadacre grazing production[2] ($206 per hectare).

The value of broadacre crops mainly produced by irrigation were much higher than those mainly produced under dryland conditions. The average gross value of maize ($3,741 per hectare), rice ($4,439 per hectare) and cotton ($5,884 per hectare), were much higher than the average value of the main dryland crops; wheat, barley and canola ($950 per hectare).

The value of agricultural production is greatly influenced by seasonal and market conditions and can fluctuate widely from year to year.

6.6 Agricultural productivity of the Project area

6.6.1 Past and current enterprises

Historically, the Project area has mainly produced broadacre crops, both irrigated and dryland. The land in the Project area was approved for the Yoogali Solar Farm, which will continue to be built around this proposed BESS. It is currently fallowed, pending construction of both projects.

6.6.2 Typical agricultural productivity

The analysis in Section 6.5.4 shows that irrigated broadacre crops (maize, rice and cotton) produced gross values of approximately $3,700 to $5,900 per hectare in 2020-21. By comparison, dryland broadacre crops produced an average gross value of $950 per hectare.

As discussed in Section 6.5.2, most land developed for irrigation is not irrigated each year, mainly due to insufficient water availability. Consequently, the typical average agricultural productivity of the Project area before it became part of a solar farm was probably around $2,000 per hectare per year.

[2] Excluding the gross value of milk and pigs.

Irrespective of its inclusion in an approved solar farm, the Project area currently has negligible agricultural production potential because of its small size, as follows:

- Notwithstanding the continuing capacity to directly reconnect to the irrigation channel in the future, the Project area is not viable as an irrigated cropping area due to the high costs of reconstructing an irrigation system and the low expected returns from a small area.
- It would not be viable as a standalone dryland cropping area.
- It would be difficult to incorporate into a larger cropping enterprise due to its small size and isolation.
- It could be grazed, but the returns would be low, and management of livestock would be difficult and inefficient due to the small number of livestock that could be run.

7 Construction impacts

7.1 Loss of land use

7.1.1 Area affected

The Project area covers an area of approximately 5.8 hectares. Of this area, approximately 4.3 hectares was usable agricultural land. The remainder consists of roadways, a railway and an irrigation channel.

7.1.2 Impact on income

There would be no loss of agricultural production or income in relation to the Project area's current use as part of an approved solar farm. The Project area is not currently used for agriculture and does not produce and agricultural outputs or income.

Despite this, the potential loss of gross income on the Project area during construction relative to its former use for irrigated cropping is assessed in Table 7-1.

Table 7-1
Potential loss of gross income during construction

Project area productivity	
Project area (hectares)	4.3
Gross income ($ per ha per year)	$2,000
Period (months)	22
Annual loss of income	$8,600
Total loss of income (22 months)	**$15,767**

The expected gross income is assessed in Section 6.6.2. Construction is estimated to take about 22 months to complete.

The loss of net income (after production expenses are deducted) would be lower than the loss of gross income assessed in Table 7-1. In particular, irrigation water is transferable, and substantial costs would be saved. The use of the water elsewhere would maintain irrigation capacity and substantially reduce the loss of production.

The assessed annual loss of gross income is 0.006 per cent of the total gross value of agricultural production across Griffith LGA ($147.7 million - Table 6-5) and is therefore negligible.

There would be no loss of agricultural production relative to the Project area's current use as part of an approved solar farm.

7.2 Biosecurity

The following sections address the potential biosecurity impacts during construction of the Project.

7.2.1 General biosecurity risks

There is a risk that animal diseases, plant diseases, feral pests and weeds could be introduced or spread during construction of the Project. A biosecurity breach of this nature is likely to increase

costs and decrease income of surrounding properties. Depending on the biosecurity matter, impacts on both costs and income could be short to long term (more than five years).

Increased costs could include expenses associated with monitoring pests, weeds or diseases and implementing control measures; while lesser income could arise from reduced livestock, crop or pasture production, plus lower quality of produce.

Potential carriers of weed seeds, plant material and diseases include vehicles (especially tyres), machinery and personnel (clothing and footwear). These can transport biosecurity matter over relatively long distances (Animal Health Australia, 2018).

Biosecurity matter also has the potential to be spread by soil and water movements associated with construction works. These movements would generally occur over relatively short distances given the nature of the works and the characteristics of the Project area.

7.2.2 Weed biosecurity risks

Weeds which present a high biosecurity risk generally have the following characteristics:

- Spread readily by activities associated with the Project
- Adapted to the environmental conditions of the region
- Would have a substantial economic impact if they were to spread.

Weeds that are present in the region and present a potential biosecurity threat are discussed in Section 6.2.1.

Weeds such as some cactuses, spiny burrgrass, caltrops, horehound, khaki weed, Noogoora burr and Bathurst burr are readily spread by vehicle, machinery and human activity. Some also have a potential high impact on the income and costs of agricultural enterprises. For example, weeds such as blue heliotrope and silver-leaf nightshade are difficult to control, while spiny burrgrass containment presents a challenge in pastures and crops. Noogoora burr and Bathurst burr are important contaminants which decrease wool quality and prices.

There are numerous other weeds which could potentially have a large impact on the agricultural enterprises, however the risk is moderated by:

- most weeds not being readily spread by activities associated with the Project
- the small size of the Project area which will enable the construction area to be closely monitored
- limited adaptability of some weeds to the environmental conditions of the region.

The highest risk of weed spread associated with the Project would occur during construction due to earthworks, the frequency of vehicle and personnel movements, and increased weed growth due to disturbance of ground cover and soil.

Mitigation measures to limit and manage the weed biosecurity risk are provided Chapter 11.

7.2.3 Livestock pests and diseases biosecurity risks

Biosecurity issues relating to potential livestock pests and diseases would be very low because

1. livestock would not be run on the Project area or the adjacent solar farm during construction
2. few livestock are run on nearby properties.

The risks associated with animal pests and diseases would also be reduced due to the small probability of spread being caused by Project activities and the low prevalence of disease in the area (refer to Section 6.2.3).

Exotic diseases are an issue for international travel associated with the Project. Appropriate measures would be implemented if there is any heighted risk of the introduction of an exotic disease via the Project, such as the recent outbreaks of foot and mouth disease and lumpy skin disease in Indonesia.

7.2.4 Vertebrate pest biosecurity risks

The most important vertebrate pests in the vicinity of the Project area are pigs, foxes, rabbits and kangaroos. These pests have economic impacts on agricultural enterprises arising from lamb predation, fence damage and consumption of pasture and crops. Other pest species such as deer, goats, horses and wild dogs have a more restricted distribution, a lower overall economic impact and present lesser risks.

It is possible that disturbance by construction activities may change the distribution of pests, especially those that benefit from human activity such as birds and rodents. There is also a possibility that the Project site, or specific infrastructure, could provide favourable conditions or harbour for pests such as rabbits. However, the Project is unlikely to significantly change the number or movement patterns of important vertebrate pests and therefore the risks to agriculture are very low.

7.2.5 Plant disease and pest biosecurity risks

There are potential biosecurity risks associated with plant diseases and pests due to significant cropping, horticultural and irrigation activities near the Project area. Crop and horticultural plants are generally more susceptible to exotic plant diseases and pests, than rangeland pastures predominant through most neighbouring LGAs.

There is a ban on taking grapevines, cuttings, budwood, or soil that has been in contact with grapevine material from a Phylloxera Infested Zone into a Phylloxera Exclusion Zone. The Phylloxera Exclusion Zone covers most of NSW including the Project area.

The Project area is also in the Potato Biosecurity Zone which covers all of NSW. The movement of plants belonging to the family Solanaceae and associated matter is banned from entering the zone.

Exotic plant pests such as khapra beetle or brown marmorated stink bug) could be introduced into Australia via imported materials required for the project. These pests present a greater risk as they can be introduced in materials or packaging. Other exotic pests or diseases (such as Xylella) which a spread in food or plant materials should present a lower risk.

Biosecurity risks to beehives pollinating horticultural crops are also a concern. There are several exotic pests that have the potential to severely affect the honeybee and pollination-dependant industries if they were to become established. In addition, the spread of pests and diseases already established in Australia, such as the small hive beetle, varroa mite, nosemosis, chalkbrood, American foulbrood and European foulbrood pose a biosecurity risk (Plant Health Australia 2022). Almond orchards grown in the Riverina are heavily reliant on pollination by bees.

There are several important crop diseases in the region and pathogens such as rusts can be spread on vehicles, footwear and clothing (Plant Health Australia, 2017). Activity associated with the Project has the potential to result in the spread of crop or pasture diseases or pests. However, the risks are reduced by the lack of any horticultural activity on or adjacent to the Project area.

7.3 Restricted movement

It is unlikely that construction activities would materially restrict movements of landowners, agricultural workers, their livestock or equipment near the Project area.

In particular, there is a glasshouse tomato farm south of the Project on Bob Irvin Road. The facility has a near-constant year-round production requiring one to three heavy vehicle movements per day. However, they rarely use the portion of Bob Irvin Road where it passes the Project due to the frequent and severe corrugation of the gravel road. Construction periods which may reduce movement capacity along Bob Irvin Road will be communicated in advance allowing alternative routes to be used.

7.4 On-ground agricultural operations

No disruption to on-ground husbandry operations such as spraying, cultivation, sowing, slashing and harvesting on neighbouring properties would be expected.

Airborne dust from vehicle movements and construction activities can reduce the yield and quality of pastures. Dust can block stomata, hinder transpiration, reduce photosynthesis, foster pathogens and make pasture less palatable to livestock. The impact of dust generated by construction activities is likely to be minor due to the limited earthworks to be undertaken, with the higher risk of impact being restricted to pasture close to access tracks. The potential impact of dust can be mitigated by suppression measures (Chapter 11).

7.5 Impacts on aerial agriculture operations

The Project is unlikely to have any impacts on aerial agriculture operations on neighbouring properties (such as aerial spreading of fertilisers, monitoring and aerial spraying) by aircraft and drones.

Possible impacts of transmission line structures on aerial agriculture operations will be avoided by using underground cabling to connect the Project to the Griffith Substation. Alternatively, overhead transmission lines which would be at a lower height than any of the existing transmission line structures surrounding the Project, will also mitigate any potential impact.

7.6 Impacts on livestock enterprises

The main potential impact on livestock enterprises would be disturbance of sheep and cattle caused by noise and vehicle movements. Although livestock habituate to disturbances, the noise and movement of construction vehicles and other construction activities may have an impact on livestock in specific circumstances, especially during sensitive periods such as calving and lambing. There are also concerns that young livestock may be scared away from watering points by construction activities.

The impacts would be limited by the lack of livestock on the Project area and limited livestock in surrounding areas, which are dominated by cropping and horticultural enterprises. The potential for some disturbance in minimal, and the effect on productivity is expected to be minor.

7.7 Strategic agricultural land

No BSAL is located within the Project area, however the entire Project area is classified as SSAL due to its former use for irrigated cropping.

The loss of SSAL (approximately 4 hectares) is a small fraction of approximately 120,000 hectares of SSAL in the Griffith LGA. Irrigated agricultural production is generally limited by the availability of irrigation water, rather than the availability of developed irrigation land. Therefore, the loss of a small area of SSAL would have a negligible impact on regional agricultural production.

7.8 Fire risk

Fires have the potential to be started by human activities, equipment and vehicles during construction. Particular fire risks may involve hot work or the storage and use of dangerous materials. Fires can cause great harm to agricultural businesses through damage to livestock, agricultural infrastructure (such as dwellings, stock yards, sheds and fences), crops, pasture, shade and shelter trees, and agricultural equipment.

A Fire Safety Study and Emergency Plan developed in consultation with the Rural Fire Service and Fire and Rescue NSW will be prepared prior to the commencement of construction. This would include mitigation measures applicable to construction activities undertaken during the bushfire danger period. The implementation of this plan is expected to adequately manage the bushfire risk during construction.

Fire risk is limited by the irrigation of surrounding properties and the maintenance of relatively low fire loads in much of the nearby land.

Fire risk is addressed in greater detail in other parts of the EIS, including the Bushfire Assessment Report prepared by Cool Burn Fire and Ecology and the Preliminary Hazard Analysis prepared by Riskcon Engineering.

7.9 Travelling stock reserves and livestock routes

There are no travelling stock reserves or livestock highways adjacent to the Project area. The NSW Department of Industry (2017) defined livestock highways as a key network of livestock routes connecting key agricultural regions within NSW, and with Queensland and Victoria.

The closest TSRs to the Project area (LLS, 2025), are:

Along the Whitton Stock Route:

- Winbigal TSR approximately 10.3 kilometres east of the Project area
- Whitton Stock Route TSR approximately 11.3 kilometres south east
- Biny Forest TSR (16.92 ha) approximately 1.7 kilometres north east

On Kidman Way:

- Tharbogang to Griffith TSR approximately 13.5 kilometres north west

On Rifle Range Road:

- Unnamed TSR approximately 13.5 kilometres north

There are some other ‘category 3’ TSRs along the Whitton Stock Route, but these are rarely if ever used for travelling stock.

There would be no impact of the Project on travelling stock due to the substantial distances from the closest TSRs to the Project area and the relatively low usage of roadsides for moving livestock.

8 Operational impacts

8.1 Loss of land use

The loss of land use during operation would be the same as calculated for construction in Section 7.1.

There would be no loss of agricultural production relative to the Project area's current use as part of an approved solar farm.

Relative to the Project area's prior use for irrigated cropping, the loss of land use is estimated at $8,600 per annum, as calculated in Section 7.1.2.

The assessed annual loss of gross income is a negligible proportion of the total gross value of agricultural production across Griffith LGA.

8.2 Biosecurity

Any activity during operation (such as management, inspections, maintenance and repairs) that requires access of personnel, vehicles or machinery to the Project area poses a potential biosecurity risk to agricultural operations in the vicinity of the Project.

The biosecurity risks and potential impacts outlined in Section 7.2 in relation to construction are also applicable to the operational phase. The major difference is that vehicle, machinery and personnel activity would be less intense and frequent during operation, and therefore the risk of weed, pest or disease spread would be much lower.

8.3 Restricted movement

It is unlikely that the operation of the Project would significantly restrict the movements of neighbouring agricultural land owners, workers, livestock or equipment due to the negligible increase in local traffic, comprising only occasional light vehicle access.

8.4 Impacts - on-ground agricultural operations

No disruption to on-ground husbandry operations such as spraying, cultivation, sowing, slashing and harvesting on neighbouring properties would be expected.

Airborne dust is expected to be much lower during operation due to fewer vehicle movements and no construction activities.

8.5 Impacts on aerial agriculture operations

The Project is unlikely to have any impacts on aerial agriculture operations on neighbouring properties (such as aerial spreading of fertilisers, monitoring and aerial spraying) by aircraft and drones.

8.6 Impacts on livestock enterprises

The impacts of operation on livestock would be reduced during operation compared to construction due to fewer vehicle movements and no construction activities. The potential for disturbance would be negligible.

8.7 Strategic agricultural land

As discussed in Section 7.7:

1. No BSAL is located within the Project area
2. The loss of SSAL is a small fraction of the total SSAL in the Griffith LGA. Therefore, the loss of SSAL would have a negligible impact on regional agricultural production.

8.8 Fire risk

Fires have the potential to be started by human activities, equipment and vehicles during operation. This risk would be lower than during construction but are dependent on seasonal and weather conditions.

Fires also have the potential to arise from the operation of transmission lines and electrical facilities. However, these risks will be averted or reduced if underground cabling is used to connect the Project to the Griffith Substation.

Fire risk is addressed in greater detail in other parts of the EIS, including the Bushfire Assessment Report prepared by Cool Burn Fire and Ecology and the Preliminary Hazard Analysis prepared by Riskcon Engineering.

9 Land Use Conflict Risk Assessment

9.1 Background

Land use conflicts occur when one land use infringes, or is perceived to infringe, upon the rights, values or amenity of a neighbouring land use or user. The NSW Department of Primary Industries (DPI) developed a system known as Land Use Conflict Risk Assessment (LUCRA), as set out in DPI (2011b).

LUCRA is a system to identify and assess the potential for land use conflict to occur between neighbouring land uses. It helps land managers and consent authorities assess the possibility for and potential level of future land use conflict.

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
- 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.

9.2 Methodology

There are four key steps in undertaking a LUCRA. These are:

1. Gather information about proposed land use change and associated activities
2. Evaluate the risk level of each activity
3. Identify risk reduction management strategies
4. Record LUCRA results.

A risk ranking matrix (Table 9-1) is used to rank the identified potential land use conflicts.

Table 9-1
Risk ranking matrix

Probability	A	B	C	D	E
Consequence					
1	25	24	22	19	15
2	23	21	18	14	10
3	20	17	13	9	6
4	16	12	8	5	3
5	11	7	4	2	1

The risk ranking matrix assesses the environmental, public health and amenity impacts according to the probability of occurrence, and the consequence of the impact.

Probability of a consequence occurring is assessed according to the levels in Table 9-2.

Table 9-2
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

The consequence of an impact is assessed according to the measures outlined in Table 9-3, below.

Table 9-3
Measure of consequence

Level: 1	**Descriptor: Severe**
Description	Severe and/or permanent damage to the environment Irreversible Severe impact on the community Neighbours are in prolonged dispute and legal action involved
Example	Harm or death to animals, fish, birds or plants Long term damage to soil or water Odours so offensive some people are evacuated or leave voluntarily Many public complaints and serious damage to reputation
Level: 2	**Descriptor: Major**
Description	Serious and/or long-term impact to the environment Long-term management implications Serious impact on the community Neighbours are in serious dispute
Example	Water, soil or air impacted, possibly in the long term Harm to animals, fish or birds or plants Public complaints. Neighbour disputes occur. Impacts pass quickly

Level:3	Descriptor: Moderate
Description	Moderate and/or medium-term impact to the environment and community Some ongoing management implications Neighbour disputes occur
Example	Water, soil or air known to be affected, probably in the short term No serious harm to animals, fish, birds or plants Public largely unaware and few complaints
Level: 4	**Descriptor: Minor**
Description	Minor and/or short-term impact to the environment and community Can be effectively managed as part of normal operations Infrequent disputes between neighbours
Example	Theoretically could affect the environment or people but no impacts noticed No complaints
Level: 5	**Descriptor: Negligible**
Description	Very minor impact to the environment and community Can be effectively managed as part of normal operations Neighbour disputes unlikely
Example	No measurable or identifiable impact on the environment No measurable impact on the community or impact is generally acceptable

9.3 Assessment

The LUCRA is set out in the following pages.

High risk activities with a risk rating greater than 11 are highlighted in red. LUCRA defines a risk rating of greater than 10 as a 'high risk activity'. However, LUCRA does not allow for any activity with a probability score A ('almost certain') to be given a risk rating of less than 11, even if the impact is negligible. This can result in some activities being rated as 'high risk' when the risk is actually low.

Agricultural impacts are set out in detail in Chapters 7 and 8 of the AIA. Agricultural mitigation measures are set out in Chapter 11 of the AIA.

Category	Potential conflict	Risk rating	Mitigation measures	Revised risk rating
Agricultural land	Long term loss of agricultural land during operation.	A4 (16)	Effective decommissioning to a productive agricultural state.	A5 (11)
Biosecurity	Introduction or spread of agricultural weeds due to project activities.	C3 (13)	All project vehicles to be clean prior to entering or leaving the Project area. New or existing infestations of any priority weed or unidentified weed would be reported to the appropriate weeds authority. Weeds would be appropriately managed on the Project area during construction and operation. Disturbed areas will be stabilised and appropriately rehabilitated following the completion of construction.	D4 (5)
	Introduction or spread of plant and animal diseases due to project activities.	D3 (9)	All project vehicles to be clean prior to entering or leaving the Project area.	E4 (3)
	Encouragement of vertebrate pests due to project activities.	D3 (9)	Incidence of vertebrate pests is low. Project waste including food would be appropriately managed.	D5 (2)
Restricted movement	Impact of restricted movement	C4 (8)	Landowners would be consulted to minimise disruption.	D5 (2)
Dust	Impact of dust on crops and pastures.	B4 (12)	Dust suppression measures such as water carts and road polymers to keep dust levels down. Disturbed areas will be stabilised and appropriately rehabilitated in line following the completion of construction.	D5 (2)
	Impact of dust on neighbouring properties.	B4 (12)	Dust suppression measures such as water carts and road polymers to keep dust levels down.	D5 (2)

Category	Potential conflict	Risk rating	Mitigation measures	Revised risk rating
Noise	Impact of noise on livestock	C3 (13)	Procedures would be implemented so that potential impacts or conflicts between livestock and construction activities are appropriately managed. Procedures would be developed in consultation with any affected landowners.	D4 (5)
Fire	Risk of fire starting on the Project area and spreading to adjoining land and infrastructure.	D1 (19)	A Fire Safety Study and Emergency Plan, including mitigation measures, would be prepared and implemented for the Project (refer to Section 7.8).	E3 (6)

10 Cumulative impacts

The cumulative impact assessment considers other nearby developments along with the Project and assesses the scale and nature of the cumulative impacts the developments on key matters.

10.1 Developments

Proposed state significant developments (SSDs) and regional developments (RDs) which may be relevant to cumulative impacts have been identified as follows.

- Tharbogang Quarry and Landfill (SSD)
- Griffith Bio-hub (SSD)
- Riverina Solar Farm (SSD)
- Electricity Generating Works, Bilbul (RD)
- Electricity Generating Facility, Yoogali (RD)
- Private Solar Farm Yenda (RD)
- Warburn Quarry Expansion (RD)
- Yoogali Solar Farm (RD)
- Solar Farm, Tharbogang (RD)

These projects are all located in Griffith LGA.

Other projects such as Riverina Energy Storage System 1 at Darlington Point, Darlington Point Solar Farm, Coleambally Solar Farm and Griffith Solar Farm have not been addressed because they are operational.

There are also several large scale wind and solar farms proposed for the Riverina region, both within the South West Renewable Energy Zone (REZ) and outside. These are generally distant from the Project, and are located on rangeland grazing properties, differing from the irrigated and dryland cropping previously undertaken on the Project area. The closest appears to be the proposed Boags Creek Solar Farm, approximately 40 kilometres south of the Project. Therefore, these projects have not been considered.

Brief details and impacts of each of the relevant projects are set out in Table 10-1 on page 44. This information was obtained from the websites of various proponents, the Australia and New Zealand Infrastructure Pipeline website (infrastructurepipeline.org), the Regional Planning Register (planningportal.nsw.gov.au/planningpanels) and the NSW DPE's Major Projects website (planningportal.nsw.gov.au/major projects).

10.2 Total Cumulative Impact

The projects listed in Table 10-1 have relatively little impact on agricultural production. Most occupy small areas. The total area of the projects listed in Table 10-1 is approximately 255 hectares, most of it is currently or previously used for irrigated and dryland cropping. This represents only 0.2% of the estimated 119,200 hectares of developed irrigation land in the Griffith LGA (refer Section 6.5.2).

The impact of these projects on agriculture in the Griffith LGA is further moderated by:

1. The transferability of any irrigation water entitlements so that irrigated crop productivity can be maintained
2. The general intention for the continuation of grazing on the solar farm projects.

Cumulative biosecurity risks are expected to be low once mitigation measures of each project are implemented.

Consequently, the effect on regional agricultural production would be minimal and no impact on the number of persons employed in the agricultural sector would be expected.

10.3 Cumulative Impacts of the Project

Cumulative impacts on agriculture in the region arising from the Project being constructed and operated near other major projects would be small.

The agricultural impacts of the Project, in the context of its current use as part of an approved solar farm is very small. There would be no impacts on agriculture within the Project area, because no agricultural activities are being carried out. As discussed in Chapters 7 and 8, impacts on agriculture on surrounding properties would be minor.

From the perspective of the former use of the Project area for irrigated and dryland cropping, the impacts on agriculture would be minor, due to the small area affected occupied by the Project limiting its agricultural value. Impacts on agriculture across surrounding properties would be minor.

Therefore, the agricultural impacts of the Project would be very small to small, and its contribution to the cumulative impacts of projects in the region would also be very small to small.

Table 10-1
Summary of projects identified

Project	Details	Location	Impacts
Tharbogang Quarry and Landfill (SSD)	Tharbogang Quarry and Landfill was originally approved on 8 July 2020. However, a modification to increased production was approved on 14 May 2024.	Approximately 15 kilometres north west of the Project.	The quarry is relatively distant from the Project. The expansion was to occur within the existing quarry footprint with no additional direct impact on agriculture.
Griffith Bio-hub (SSD)	A development for the purpose of an anaerobic digestion to recover energy and fertiliser from organic waste and residue. EIS is being prepared.	Approximately 9 kilometres south west of the Project.	The Bio-hub site is 20 hectares currently used for irrigated and dryland cropping. This area would be removed from agricultural production.
Riverina Solar Farm (SSD)	A proposed solar farm with an initial capacity of 30 MW. Awaiting commencement of substantive construction.	Approximately 0.5 kilometres north of the Project.	The Project area is 110 hectares, currently used for irrigated and dryland cropping. Continued grazing is proposed.
Electricity Generating Works, Bilbul (RD)	A proposed small solar farm (4.95 MW) and battery storage (4 x 2,752 MWh). Approved 18 July 2024. Construction program not known.	Approximately 4.4 kilometres north west of the Project.	The works cover approximately 11.8 hectares of land currently used for irrigated and dryland cropping. Agricultural potential is limited by its small size. Continued grazing is proposed.
Electricity Generating Facility, Yoogali (RD)	A proposed small solar farm and BESS (less than 5 MW). Approved 11 April 2024. Construction program not known.	Approximately 1.7 kilometres south west of the Project.	The facility covers approximately 17 hectares of land currently used for irrigated and dryland cropping. Continued grazing is proposed.
Private Solar Farm Yenda (RD)	A proposed small solar farm (5.7 MW).	Approximately 16 kilometres north	The facility covers approximately 11.3 hectares of land formerly used for dryland cropping and

Project	Details	Location	Impacts
	Approved 25 May 2025. Construction program not known.	east of the Project.	grazing but is currently not used for agriculture. Agricultural potential is limited by its small size.
Warburn Quarry Expansion (RD)	Expansion of an existing quarry. Approved 29 January 2024. Construction program not known.	Approximately 20 kilometres north west of the Project	The expansion covers approximately 20.7 hectares currently used for dryland cropping and grazing.
Yoogali Solar Farm (RD)	A proposed solar farm with a capacity of 15 MW. Approved, construction not commenced.	Adjacent to the Project.	The Project area is 45 hectares, currently used for irrigated and dryland cropping.
Solar Farm, Tharbogang (RD)	A proposed small solar farm and BESS (less than 5 MW). Approved 11 August 2023. Construction program not known.	Approximately 14 kilometres west of the Project.	The solar farm covers approximately 20 hectares of land formerly used for irrigated and dryland cropping. Continued grazing is proposed.

11 Management of impacts

The mitigation measures that would be implemented to avoid or minimise potential agricultural impacts are listed in Table 11-1.

Table 11-1
Mitigation measures – agriculture

Impact	Mitigation measures	Timing
Biosecurity - construction	All project vehicles to be cleaned and free of biosecurity matter before entering or leaving the Project area. New or existing infestations of any priority weed or unidentified weed will be reported to the appropriate weeds authority. Where present within the Project area, weeds will be managed in accordance with the *Biosecurity Act 2015* and the relevant regional strategic weed management plans. Disturbed areas will be stabilised and appropriately rehabilitated in line following the completion of construction.	Construction
Disruption Impacts	Nearby landowners will be consulted regarding the proposed timing and location of construction works, especially where some restriction on vehicular or stock movements would be necessary. This will minimise disruption to agricultural activities on neighbouring properties.	Detailed design and construction
Dust	Dust suppression measures such as water carts and road polymers to keep dust levels down will be implemented. Vehicle speeds will be limited to reduce dust generation. Disturbed areas will be stabilised and appropriately rehabilitated following the completion of construction.	Construction
Livestock disturbance	Procedures will be implemented so that potential impacts or conflicts between neighbouring livestock and construction activities are appropriately managed. Procedures will be developed in consultation with affected landowners and will include management of: • Noise intensive activities during sensitive periods within the livestock production cycle (such as lambing and calving) • Vehicle movements and other activities within the vicinity of livestock • Movement of stock away from potential stressors created by construction activities.	Construction and operation
Fire	A Fire Safety Study and Emergency Plan will be prepared for the Project and will include mitigation measures applicable to construction and operation activities undertaken during the bushfire danger period. Fire loads will be minimised within the project area through control of vegetation.	Construction and operation
Rehabilitation	Disturbed areas will be stabilised and appropriately rehabilitated following the completion of construction.	Construction

Impact	Mitigation measures	Timing
Biosecurity - operation	All project vehicles to be cleaned and free of biosecurity matter before entering or leaving the Project area. Permanent security fencing will be installed around operational facilities including the BESS, operations and maintenance facility and substations.	Operation
Weed management	Where present within the Project area, weeds will be managed in accordance with the Biosecurity Act 2015 and the relevant regional strategic weed management plans. The land around project infrastructure will be monitored for the spread of weeds by birds. New infestations of any priority weed or unidentified weed will be reported to the appropriate weeds authority.	Operation
Decommissioning	A decommissioning plan will be prepared when required at the Project's end of life. The Project area will be returned a condition suitable for dryland cropping unless it is required for an alternative land use. Access tracks and other bare areas will be rehabilitated to native pasture which may include addition of topsoil, restored drainage, and restoration of vegetation. Above ground infrastructure will generally be removed, unless a future use is identified. Underground infrastructure (such as cables and footings) may be removed where practical to a depth of 0.5 metres below ground surface but may otherwise remain. Any contamination or waste will be removed or managed according to regulations. Weed infestations will be controlled during the decommissioning process, if possible.	Decommission

12 Conclusion

In the context the current use of the Project area as part of an approved solar farm, the impacts on agriculture would be very small. As no agricultural activities are being carried out, there would be no impacts on agriculture within the Project area.

From the perspective of the former use of the Project area for irrigated and dryland cropping, the impacts on agriculture would be minor, primarily due to its small area. There is a relatively small amount of agricultural land removed from production compared to total irrigated land across Griffith LGA.

From both perspectives, biosecurity risks are expected to be low and the impacts on agriculture across surrounding properties would be minor, if any. Effective mitigation measures would be implemented to reduce the impacts of the Project on the surrounding agricultural industry.

As the agricultural impacts of the Projects would be very small to small, its contribution to the cumulative impacts of projects in the region would also be very small to small.

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Attachment 1
Observed Weeds

Common name	Scientific name	Observations
African boxthorn	*Lycium ferocissimum*	22
African olive	*Olea europaea* subspecies *cuspidata*	2
Arrowhead	*Sagittaria calycina calycina*	7
Artichoke thistle	*Cynara cardunculus*	1
Arundinaria reed	*Arundinaria* species	1
Athel pine	*Tamarix aphylla*	1
Azolla	*Azolla* species	1
Bamboo	*Bambusa* species	1
Black roly-poly	*Sclerolaena muricata*	1
Blackberry	*Rubus fruticosus* species aggregate	3
Blind cactus	*Opuntia rufida*	2
Blue periwinkle	*Vinca major*	1
Boneseed	*Chrysanthemoides monilifera* subspecies *monilifera*	90
Bridal creeper	*Asparagus asparagoides*	2
Bunny ears cactus	*Opuntia microdasys*	3
Castor oil plant	*Ricinus communis*	3
Common pear	*Opuntia stricta*	4
Coolatai grass	*Hyparrhenia hirta*	4
Cotoneaster	*Cotoneaster glaucophyllus*	1
Fountain grass	*Cenchrus setaceus*	1
Green cestrum	*Cestrum parqui*	5
Ground asparagus	*Asparagus aethiopicus*	1
Honey locust	*Gleditsia triacanthos*	3
Indian fig	*Opuntia ficus-indica*	20
Johnson grass	*Sorghum halepense*	4
Lantana	*Lantana camara*	7
Lippia	*Phyla canescens*	1
Moth vine	*Araujia sericifera*	4
Mother-of-millions	*Bryophyllum* species	7
Pencil cactus	*Cylindropuntia leptocaulis*	2
Peppercorn	*Schinus* species	1
Prickly pears - Opuntias	*Opuntia* species	17
Privet - broad-leaf	*Ligustrum lucidum*	26
Privet - European	*Ligustrum vulgare*	2
Riverina pear	*Opuntia elata*	3
Sagittaria	*Sagittaria platyphylla*	18
Silverleaf nightshade	*Solanum elaeagnifolium*	12
Smooth tree pear	*Opuntia monacantha*	6
Snake cactus	*Cylindropuntia spinosior*	5
Spear thistle	*Cirsium vulgare*	1
Spiny burrgrass - spinifex	*Cenchrus spinifex*	6
St. John's wort	*Hypericum perforatum*	2
Sweet briar	*Rosa rubiginosa*	14
Tiger pear	*Opuntia aurantiaca*	2

Attachment 2
Local priority weed species of concern – Riverina LLS

Common name	Scientific name
Agapanthus	*Agapanthus praecox*
Anchored water hyacinth	*Eichhornia azurea*
Bathurst burr	*Xanthium* spp.
Bear-skin fescue	*Festuca gautieri*
Bitter stonecrop	*Sedum acre*
Blackberry nightshade	*Solanum nigrum*
Blue heliotrope	*Heliotropium amplexicaule*
Box elder	*Acer negundo*
Bridal creeper	*Asparagus asparagoides*
Broomrapes	*Orobanche* spp.
Buffalo burr	*Solanum rostratum*
Cabomba	*Cabomba caroliniana*
Caltrop	*Tribulus terrestris*
Camel thorn	*Alhagi pseudalhagi*
Cape tulips	*Moraea flaccida* and *M. miniata*
Capeweed	*Arctotheca calendula*
Cat's claw creeper	*Dolichandra unguis-cati*
Columbus grass	*Sorghum* x *almum*
Common heliotrope	*Heliotropium europeum*
Creeping knapweed	*Rhaponticum repens*
Devil's claw	*Ibicella lutea* or *Proboscidea louisianica*
English ivy	*Hedera helix*
Feathertop Rhodes grass	*Chloris virgata*
Flax-leaf broom	*Genista linifolia*
Flax-leaf fleabane	*Conyza bonariensis*
Fountain grass	*Cenchrus setaceus*
Galenia	*Galenia pubescens*
Galvanised burr	*Sclerolaena birchii*
Gamba grass	*Andropogon gayanus*
Gazania	*Gazania linearis*
Golden dodder	*Cuscuta campestris*
Harrisia cactus	*Harrisia martinii* and *H. tortuosa*
Himalaya honeysuckle	*Leycesteria formosa*
Honey locust	*Gleditsia triacanthos*
Horehound	*Marrubium vulgare*
Johnson grass	*Sorghum halepense*
Khaki weed	*Alternanthera pungens*
Lippia	*Phyla canescens*
Long leaf willow primrose	*Ludwigia longifolia*
Noogoora burr	*Xanthium occidentale*

Common name	Scientific name
Ox-eye daisy	*Leucanthemum vulgare*
Patterson's curse	*Echium plantagineum*
Privet (broad-leaf)	*Ligustrum lucidum*
Privet (narrow-leaf)	*Ligustrum sinense*
Red rice	*Oryza rufipogon*
Reed canary grass	*Phalaris arundinacea*
Reed sweetgrass	*Glyceria maxima*
Rhus tree	*Toxicodendron succedaneum*
Scotch & Illyrian thistles	*Onopordum* spp.
Silk forage sorghum	*Sorghum* spp. hybrid cv. "Silk"
Spanish heath	*Erica lusitanica*
Spiny burrgrass	*Cenchrus longispinus*
Spiny emex	*Emex australis*
St Barnaby's thistle	*Centaurea solstitialis*
St John's wort	*Hypericum perforatum*
Sweet briar rose	*Rosa rubiginosa*
Star thistle	*Centaurea calcitrapa*
Tangled hypericum	*Hypericum triquetrifolium*
Tree of heaven	*Ailanthus altissima*
Wards weed	*Carrichtera annua*

Attachment 3
Observed flora species

Table 2: Observed Flora Species – 8 November 2024 (* = exotic species)

Common name	Species		Common name	Species
Barley Grass*	*Hordeum leporinum*		Black Roly Poly	*Sclerolaena muricata*
Brome*	*Bromus* sp.		Perennial Rye Grass*	*Lolium perenne*
Buchan Weed*	*Hirschfeldia incana*		Scotch Thistle*	*Onopordum acanthium*
Creeping Saltbush	*Atriplex semibaccata*		Silver-leaved Nightshade*	*Solanum elaeagnifolium*
Curly Mitchell Grass	*Astrebla lappacea*		Skeleton Weed*	*Chondrilla juncea*
Curly Windmill Grass	*Enteropogon ramosus*		Spear Thistle*	*Cirsium vulgare*
New Holland Daisy*	*Vittadinia sp.*		Wallaby Grass	*Rytidosperma* sp.
Flatweed*	*Hypochaeris radicata*		Curled Dock*	*Rumex crispus*
Flea Bane*	*Conyza bonariensis*		Wild Oats*	*Avena fatua*
Goatsbeard*	*Trapopogon dubius*		Fennel *	*Foeniculum vulgare*
White Horehound*	*Marrubium vulgare*		Windmill Grass	*Chloris truncata*
Mallow*	*Malva* sp.		Hedge Mustard *	*Sisymbrium officinale*
Patterson's Curse*	*Echium plantagineum*		Native Millet	*Panicum decompositum*
Prickly Lettuce*	*Lactuca serriola*		Weeping Myall	*Acacia pendula*
Canary Island Date Palm	*Phoenix canariensis*			