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# STATEMENT OF ENVIRONMENTAL EFFECTS

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Lot 110 DP 1187931 - Mid Western  
Hwy, Hay, NSW

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Proposed 5MW solar farm

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TOWN PLANNING

sustainable thinking

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### Document Details & History

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The report has been prepared using information supplied by the client and other stakeholders. All care is taken to ensure the accuracy and veracity of this information, however, no responsibility is accepted for the interpretation of that information by end users.



## 1. INTRODUCTION

### 1.1 Overview

The purpose of this Statement of Environmental Effects is to support an application to Hay Shire Council to develop a solar farm at Lot 110 DP 1187931 Mid Western Highway, Hay, referred to as the Hay 1A Solar Farm. The application is for regionally significant development that needs consent and is to be determined by the Western Regional Planning Panel.

The proposal is for integrated development due to the need to construct a new entry to the site off the Mid Western Highway. Under section 138 of the *Roads Act 1993* works in, on or over a public road cannot be carried out without the consent of the appropriate roads authority and in the case of a classified road without the concurrence of RMS.

There are no other separate approvals required to be obtained under section 4.46 of the *Environmental Planning and Assessment Act 1979*.

This Statement has been prepared having regard to pre-lodgement advice provided by Hay Shire Council at a meeting with Council's Director of Planning and Development held on 31 January 2019. Information has also been sourced from the Council's website, the NSW legislation website, SIX Maps, the website of the Office of Environment and Heritage, and the Department of Planning & Environment's Planning Portal.

All information referenced in this Statement has been sourced from publicly available documents or websites and from expert reports produced to support the application.

### 1.2 Scope of the report

The scope of this report is to describe the location and physical characteristics of the site on which the development is proposed, identify relevant provisions of plans and policies applying to the land, and to discuss any potential environmental impacts of the development and proposed servicing arrangements.

The purpose of this report is to assist Council's assessment of the proposal against the matters for consideration listed in section 4.15 of the *Environmental Planning and Assessment Act 1979*.

### 1.3 The proponent

The proponent for the proposed solar farm at Hay is IT Power (Australia) Pty Ltd. IT Power (Australia) is a private sector organization based in Canberra, which was established in 2003. It is part of the IT Power

Group which was formed in 1981 in the UK to bring together specialists in renewable energy, energy efficiency and carbon markets. IT Power offers expertise in renewable energy and energy efficiency, including research, development and implementation, managing and reviewing government incentive programs, high level policy analysis (including carbon markets), engineering design and project management. IT Power (Australia) has partnered with TEC-C Investments to develop the Hay 1A Solar Farm.

## 1.4 Justification

Solar energy is energy created by the heat and light of the sun. Solar power is produced when this energy is converted into electricity or used to heat air, water, or other substances. Australia has the highest average solar radiation per square metre of any continent in the world. Despite uncertainty regarding energy policy, the Commonwealth and NSW Governments have recognized the need to supplement energy derived from fossil fuels with energy generated from renewable sources. Alternative energy supply may be sourced from solar photovoltaic, geo-thermal, solar thermal, wave and tidal action, and wind.

The development of solar photovoltaic power is well underway in NSW and across Australia. This growth in the local solar PV sector continues to provide a significant boost for Australia's regional economy with renewable infrastructure development estimated to create upwards of 2,300 direct jobs plus indirect employment.

According to the Australian Renewable Energy Agency (ARENA), the deployment of household solar PV that generates about 5 kW is expected to continue and at the same time an increase in rooftop solar PV installations on commercial premises generating around (10-100 kW) is expected. Large scale solar PV is also rapidly expanding in Australia with several solar farms being constructed that will have the capacity to generate over 50MW. The proposed Hay 1A Solar Farm aims to fill the gap in the mid-sized plants. It will generate 5MW of power and contribute to renewable energy supply to supplement electricity generation from coal, oil and gas and assist to reduce reliance on these unsustainable means of supply.

The proposed development is in accordance with relevant objects of the *Environmental Planning and Assessment Act 1979* in that it will assist to generate power to be distributed to the residents of NSW thereby promoting the social and economic welfare of the community in a manner that manages and conserves natural resources.

The Hay 1A Solar Farm will further the goals of sustainability, and the orderly and economic use of land. The development will not detrimentally affect the environment, biodiversity or cultural heritage.

## 2. SITE DESCRIPTION AND CONTEXT

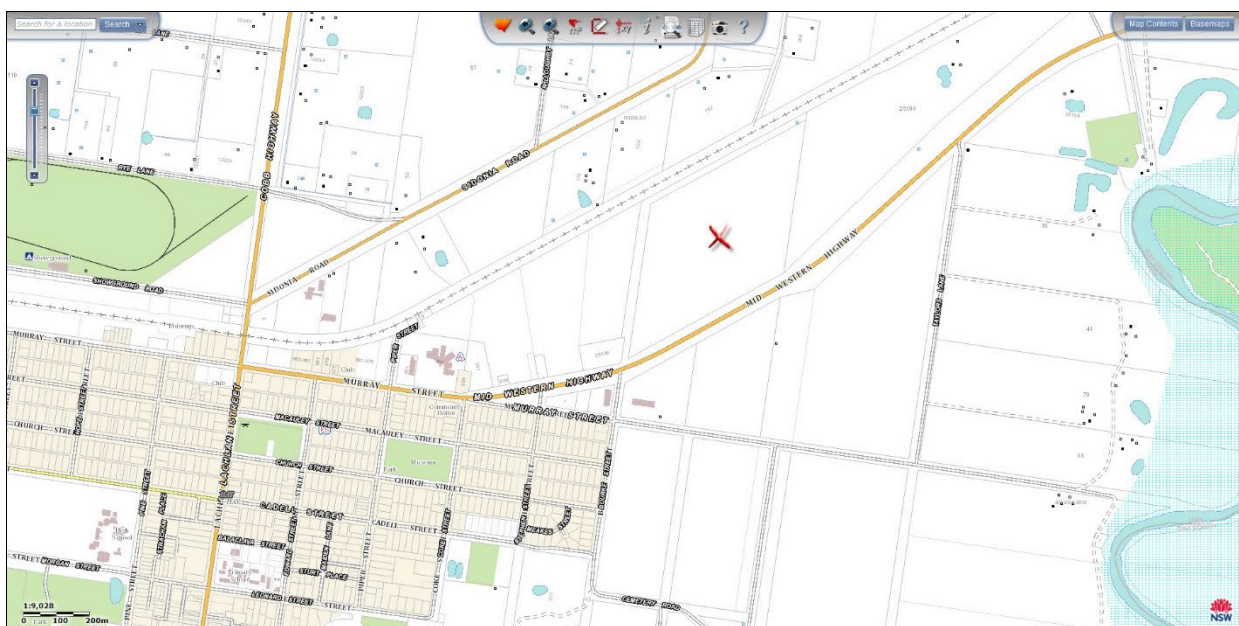
### 2.1 Description

The site of the proposed development is described as Lot 110 DP 1187931 Mid Western Highway, NSW. It is located approximately 1.6 kilometres north-east of the town centre of Hay and is a rhombus shape with an area of approximately 20.7 hectares.

The southern boundary fronts the Mid Western Highway and existing access to the site is located about 115 metres west of the south-east corner of the lot.

An unformed road separates the site from farmland and an Essential Energy sub-station to the west and a disused rail line to the north. Land adjoining the eastern boundary is vegetated.

The location of the site is shown in Figure 1 below. The site is indicated by a red cross.



**Figure 1: Locality map. Source: SIX Maps, 2018**

The site has been fully cleared in the past for agricultural use and is now disused. The topography is flat and there are no structures on the site. It is severely degraded due to past practices and current drought conditions.

## 2.2 Context

The site and surrounding countryside is flat and is partly mapped as being bushfire prone land. An abandoned rail line runs parallel to the northern boundary and Hay Shire Council have advised that Transport for NSW does not have plans to recommence rail operations.

Urban residential dwellings are located to the south-west of the site and a number of scattered rural residential dwellings are located north of the disused rail line. Land on the southern side of the Mid Western Highway comprises rural uses and industrial development. The Hay Hospital, a registered club and offices of the National Parks & Wildlife Service are located off the highway west of the site.

An aerial image of the site and surrounding land is shown in Figure 2 below. The site is edged red.



**Figure 2: Aerial image dated October 2013. Source: SIX Maps, 2018**

Below are photographs of the property that show land uses and existing development on the site and adjoining land. All photographs were taken in January 2019 by Zenith Town Planning Pty Ltd.





**Plate 1: Looking towards the site from the south-western corner**



**Plate 2: The existing entry to the site off the Mid Western Highway**





**Plate 3: Vegetation on land to the east**



**Plate 4: The sub-station on land to the west**





**Plate 5: Industrial and commercial development to the south**

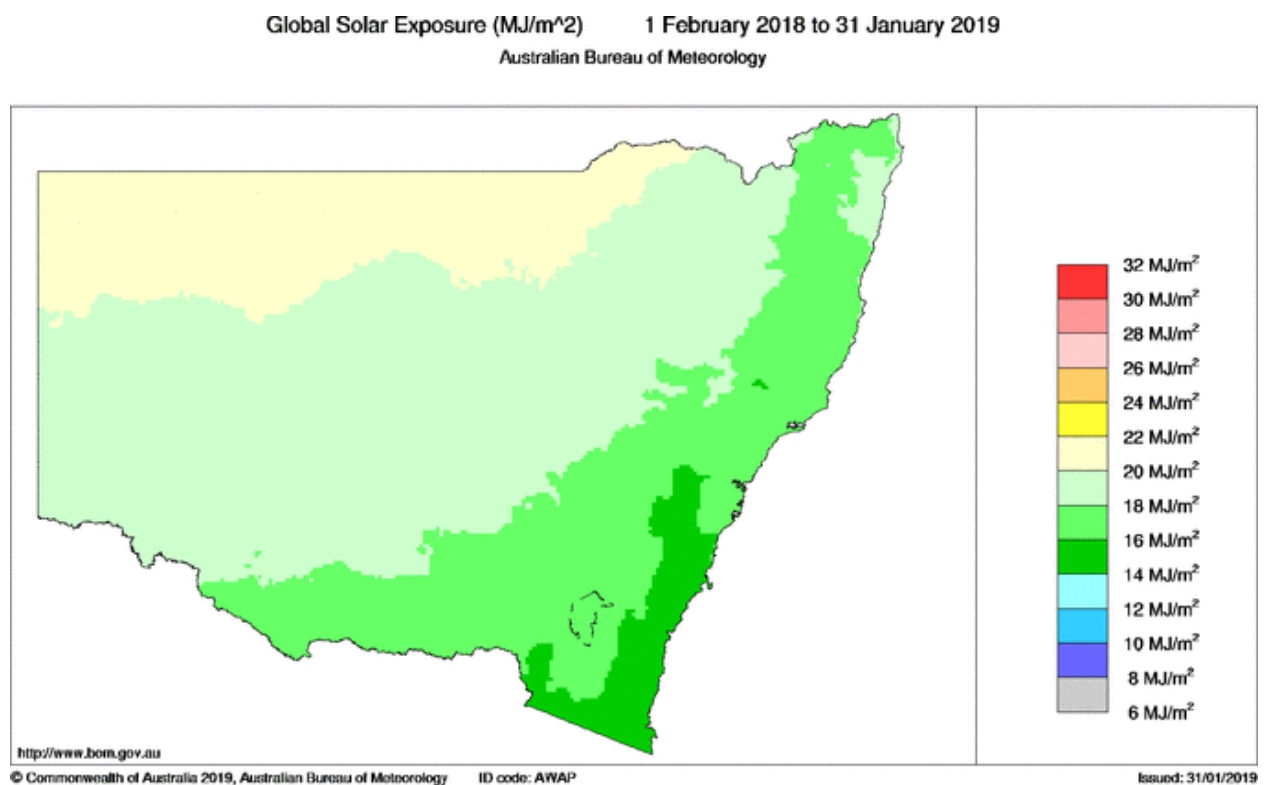


**Plate 6: Dwellings with the rail line in the foreground**

## 2.3 Climate

Global solar exposure is described on the Bureau of Meteorology website as being the total amount of solar energy falling on a horizontal surface. The daily global solar exposure is the total solar energy for a day. Typical values for daily global solar exposure range from 1 to 35 MJ/m<sup>2</sup> (megajoules per square metre). The values are usually highest in clear sun conditions during the summer, and lowest during winter or very cloudy days.

Figure 3 below shows average daily solar exposure based on 22 years from 1989 to 2011. The Hay area has received an average of between 18 and 20 MJ/m<sup>2</sup> each day, placing it within the second highest area receiving solar radiation in Australia.



**Figure 3: Average daily solar exposure. Source: Australian Bureau of Meteorology**

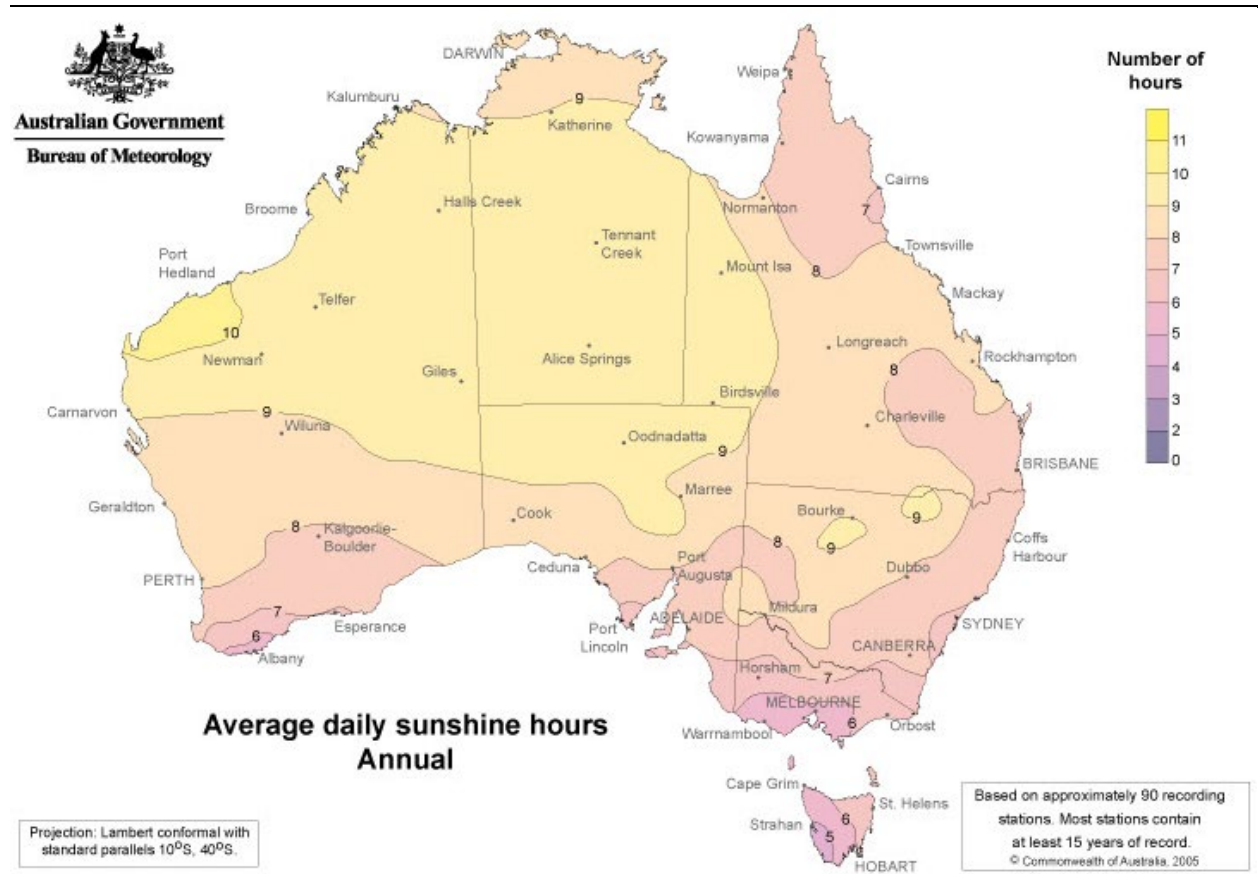
The mean monthly global solar exposure measured at Hay Airport, the closest measuring station to the Hay 1A solar farm site, is given in Table 1 below. The annual average for 2018 was 18.2MJ/m<sup>2</sup>.

**Table 1: Mean monthly global solar exposure at Hay Airport, 2018**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly mean	26.3	23.2	19.7	14.9	11.1	9.4	10.7	12.9	18.7	21.6	24.1	25.7



The map below (Figure 4) shows the average daily hours of sunshine across Australia. The Hay area receives an average of 7 to 8 hours of sunshine each day.



**Figure 4: Average daily sunshine hours. Source: Australian Bureau of Meteorology**

The global solar exposure coincides with seasons – the longer the daylight hours the greater the solar radiation due to the tilt of the earth during summer months. Rainfall is spread relatively evenly across the year and so does not appear to impact on the level of solar radiation.

Solar exposure estimates are important for a wide range of applications, including for agriculture, power generation and solar heating system design and use. This climatic information sourced from the Australian Bureau of Meteorology indicates that the global solar exposure, or solar radiation, is sufficient to support power generation in the proposed location which benefits from existing grid infrastructure such as the Essential Energy electrical sub-station on adjoining land.

### **3. DETAILS OF THE PROPOSED DEVELOPMENT**

#### **3.1 Overview**

The proposed Hay 1A Solar Farm is to be located on the Mid Western Highway, east of the town of Hay. The site is approximately 20.7 hectares that was previously used for agriculture. A lease agreement with terms of 45 years is being negotiated with the intention of constructing a solar farm with a DC array capacity of 5.0 MWp and an AC output of 6.1 MW.

The array is proposed to be placed at the western end of the allotment and would occupy about three-quarters (15 hectares) of the lot.

#### **3.2 Photovoltaic panels**

There are proposed to be 16,800 solar modules installed in 51 rows, each row being approximately 91 metres long and 2 metres wide and oriented north to south. There is approximately 6 metres spacing between each row.

Each row of PV modules will rotate to track the sun across the sky from east to west each day. The hub height of each tracker is 1.6 metres with the peak of the modules reaching an approximate height of 2.6 metres when the array is fully tilted to 60 degrees from horizontal, i.e. in the early morning and late evening.

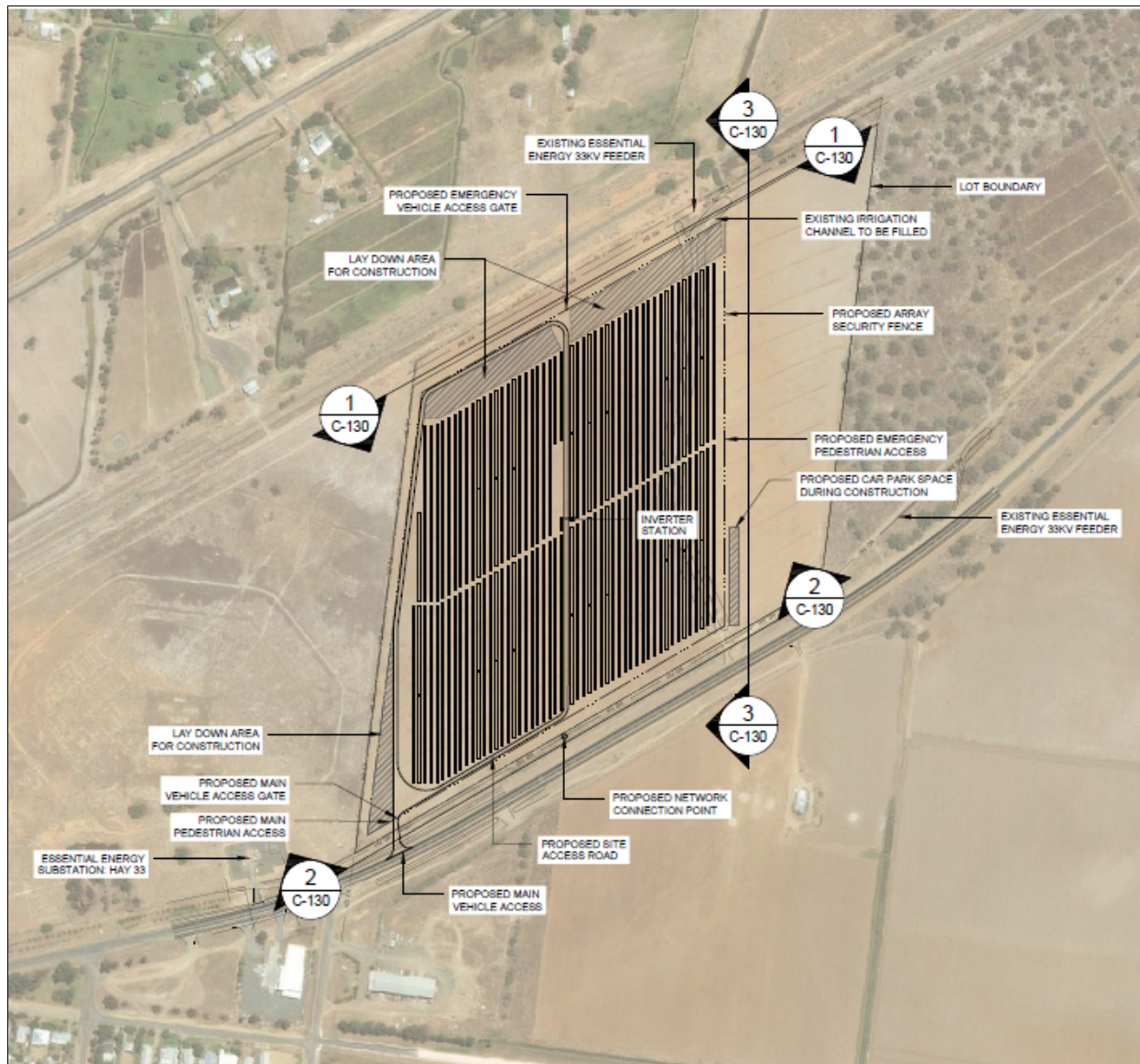
#### **3.3 Inverters and battery storage**

Two 2.5 MW inverter stations will be installed at the solar farm. These inverters are to be located within the array and are each mounted on a 6 metre long skid. Each of these inverter stations incorporate high and medium voltage switchgear and transformers. Each will connect by way of underground cables to connect to the Essential Energy 33kV feeder that runs parallel to the highway and then connects to the Hay 33 substation to inject power to the electricity grid.

Dial-before-you-dig investigations would be carried out prior to commencing all subsurface work.

#### **3.4 Services**

Reticulated water and sewer services are not required to be provided to the solar farm as there are no permanent offices or amenities proposed on site. Maintenance workers would not be required to remain on site. Cleaning of the PV panels would be carried out on an annual basis to maximise the performance of the system. This is done using water brought into the site and a sponge mop.



**Figure 5: General arrangement plan. Source: ITP Renewables**

Vehicle access to the site would be off a new driveway entrance located adjacent the existing fenced substation compound off the Mid Western Highway. It is not proposed to use the existing access located further to the east off the highway. During the construction stage there would be approximately 160 semi-articulated trucks, with an expected daily maximum of 4 vehicles, accessing the site to deliver PV panels, mounting frame equipment and inverters plus construction machinery to grade the accessways and erect the mounting system. A site access road would run around the perimeter and through the centre of the array.

In addition, it is expected that car parking for up to 40 small vehicles will be needed to cater to the 50 construction workers at the rate of 0.8 spaces per worker. A temporary car parking area is to be sited at

the eastern edge of the array of panels. Materials laydown areas are located adjacent the driveway entry and along the northern edge of the array.

It was noted at the meeting with Council's Director of Planning and Development that there are two parts of the site that are potentially affected by localised flooding. These are at the north-eastern and south-western corners of the site. There is no development proposed at the north-eastern corner as the array and all ancillary works are proposed on the western three-quarters of the site. The south-western corner will be used as a materials laydown area and possibly short-term car parking space during construction. These uses are temporary and will be used only during construction. Once operational the accessway will be used for maintenance on a quarterly basis.

### **3.5 Construction**

The mounting system for the PV panels is constructed on piles that are driven in to the ground using a vibrating pile driver. The piles will be driven approximately 1.2 to 2.5 metres into the ground, as to be confirmed by a geotechnical and structural engineer.

During construction there is expected to be 50 personnel on site working from 7 am – 4 pm Monday to Friday. The construction is expected to take approximately three to six months. Should it be necessary to carry out work outside these hours then activities would be limited to those generating low noise emissions. Once operational the site will be unmanned. Maintenance is expected to be carried out quarterly by a crew of 2 to 3 people.

### **3.6 Landscaping**

No landscaping is proposed. However, land that is disturbed during construction of the solar farm and not to be used for access or other maintenance purposes will be sown with native grasses endemic to the Hay area following completion of construction.

### **3.7 Security**

The solar farm is to be enclosed within a 1.8 metre high security fence set within the boundaries and surrounding the array. The proposed fence is to be chain mesh steel topped with three rows of barbed wire giving a total height of 2.1 metres similar to that shown in Plate 7 below.

### **3.8 Decommissioning**

The Hay 1A Solar Farm is intended to remain in operation indefinitely in order to contribute to sustainable electricity power supply to the state of NSW. If, however, circumstances change and it is necessary to decommission the farm in around 20 to 25 years then all infrastructure, panels, mounting frames including



footings and inverters would be disassembled and removed from the site. All gravel surfacing of accessways would be removed unless required for a future use. The site may then return to an agricultural use. If necessary, Council may impose a condition of consent that requires a decommissioning plan to be prepared and approved prior to the event.



**Plate 7: Example of security fencing**

## 4. STATUTORY FRAMEWORK

### 4.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment (EPA) Act 1979* is the principal piece of legislation governing the use and development of land in NSW. The objects of the Act are:

- (a) *to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*
- (b) *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
- (c) *to promote the orderly and economic use and development of land,*
- (d) *to promote the delivery and maintenance of affordable housing,*
- (e) *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*
- (f) *to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),*
- (g) *to promote good design and amenity of the built environment,*
- (h) *to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,*
- (i) *to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,*
- (j) *to provide increased opportunity for community participation in environmental planning and assessment.*

The objects of the EPA Act are intended to guide land planning and management. Section 4.15 of the Act lists matters for consideration when assessing and determining an application for development.

### 4.2 State Environmental Planning Policies

#### 4.2.1 State Environmental Planning Policy No 55 – Remediation of Land

SEPP 55 requires Council to consider whether land is contaminated and to determine whether the proposed use is suitable with or without contamination. Council can require an applicant for development to conduct a preliminary investigation and a subsequent more detailed investigation if warranted. Where contamination exists and remediation is necessary, Council must be satisfied that the remediation will take place before the land is used for the proposed purpose. It is noted that should the preliminary investigation identify contamination on the site then the NSW *Contaminated Land Planning Guidelines* apply to subsequent investigations.

The property has been cleared and farmed for many years and is not known to be listed on a Council register of potentially contaminated land. There has been no known historical usage that would cause the land to be contaminated. The use of farm chemicals such as pesticides and fertilisers is not considered to contaminate soils to the extent that mediation is required. It is considered that a preliminary investigation is not required for the development of a solar farm.

#### **4.2.2 State Environmental Planning Policy (Infrastructure) 2007**

The aims of *SEPP (Infrastructure) 2007* are to ensure a consistent and flexible planning system to facilitate the delivery of services. The policy identifies environmental assessment categories for types of infrastructure, matters to consider when assessing development adjacent to infrastructure and provides for consultation with relevant public authorities. The policy applies to the whole of NSW. *SEPP (Infrastructure)* contains provisions relating to approval processes and assessment requirements for infrastructure proposals according to the type or sector of infrastructure. It outlines land use zones where types of infrastructure are permissible with or without consent and identifies certain works as exempt and complying development.

Part 3 Division 4 of the policy relates to electricity generating works or solar energy systems. Section 34 enables Development for the purpose of electricity generating works to be carried out by any person with consent on any land in a prescribed rural, industrial or special use zone. Zone RU1 Primary Production is a prescribed rural zone. Similarly, development for the purpose of a solar energy system may be carried out by any person with consent on any land, although this is limited to no more than 100kW in a prescribed residential zone. The proposed development is located in zone RU1 Primary Production and is therefore permitted with consent by *SEPP (Infrastructure) 2007*.

#### **4.2.3 State Environmental Planning Policy (Rural Lands) 2008**

*SEPP (Rural Lands) 2008* applies to all rural LGAs including Hay Shire. This policy sets out *Rural Planning Principles* and *Rural Subdivision Principles* to implement measures that are intended to reduce land use conflicts and to identify State significant agricultural land.

The site at Hay is not listed in a schedule to the policy as being state significant agricultural land.

#### **4.2.4 State Environmental Planning Policy (State and Regional Development) 2011**

Development that is state and regionally significant is identified in *SEPP (State and Regional Development) 2011*. Electricity generating works including solar farms which have a capital investment value of more than \$30 million, or a capital investment value of more than \$10 million and are located in an environmentally sensitive area of State significance, are declared state significant development. Private infrastructure, including electricity generating stations, that have a capital investment value of over \$5 million are declared regionally significant.

In this case the proposed development has a CIV of \$7.5 million and is regionally significant. The application will be determined by the Western Regional Planning Panel.

## 4.3 Local Environmental Plan

### 4.3.1 Hay Local Environmental Plan 2011

The property is zoned RU1 primary Production under *Hay LEP 2011*. The objectives of zone RU1 are:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- *To permit a range of activities that support the agricultural industries being conducted on the land and limit development that may reduce the agricultural production potential of the land.*
- *To permit tourist facilities that promote an appreciation of the rural environment and associated agricultural and horticultural activities, while ensuring the continued economic viability of the land.*

The development is defined as **electricity generating works** which means a building or place used for the purpose of making or generating electricity. This use is prohibited in zone RU1. However, *SEPP (Infrastructure) 2007* prevails over *Hay LEP 2011* to the extent of an inconsistency meaning that the use is permitted with consent in zone RU1 by way of *SEPP (Infrastructure)*.

The site is not mapped as being environmentally sensitive on the *Groundwater Vulnerability Map*, the *Terrestrial Biodiversity Map*, the *Wetlands Map*, or the *Riparian Lands and Watercourses Map* that accompany *Hay LEP 2011*.

It is not a listed heritage item and is not in the vicinity of a heritage item or heritage conservation area listed in *Schedule 5 Environmental heritage* of *Hay LEP 2011*.

The site is not affected by land reservation acquisition or urban release area provisions of the LEP. Provisions relating to these matters in *Hay LEP 2011* therefore do not apply to the proposed solar farm.

The site is affected by a development standard restricting subdivision for a dwelling to a minimum lot size of 20 hectares, however, subdivision of Lot 110 is not part of the proposed development.

The following clauses of *Hay LEP 2011* apply to the proposed development:



### *Clause 7.1 Earthworks*

The objective of this clause is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land.

Development consent is required for earthworks unless the earthworks are ancillary to development for which development consent has been given. In deciding whether to grant development consent for development involving ancillary earthworks, the consent authority must consider:

- (a) the likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development,*
- (b) the effect of the development on the likely future use or redevelopment of the land,*
- (c) the quality of the fill or the soil to be excavated, or both,*
- (d) the effect of the development on the existing and likely amenity of adjoining properties,*
- (e) the source of any fill material and the destination of any excavated material,*
- (f) the likelihood of disturbing relics,*
- (g) the proximity to, and potential for adverse impacts on, any waterway, drinking water catchment or environmentally sensitive area,*
- (h) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.*

Earthworks associated with the development comprise minor excavation to 150mm to install road base for accessways, 750mm footings for the inverters and security fence strainer posts, 1,000mm footings for the access gate and 1,500mm footings for the panel mounting frames. All of these earthworks are ancillary to the development of a solar farm and are not expected to impact adversely on drainage, future use of the land if the facility is decommissioned, relics, the natural environment or adjoining developments.

### *Clause 7.10 Essential services*

This clause requires a consent authority to be satisfied that any of the following services that are essential for the development are available or that adequate arrangements have been made to make them available when required:

- (a) the supply of water,*
- (b) the supply of electricity,*
- (c) the disposal and management of sewage,*
- (d) stormwater drainage or on-site conservation,*
- (e) suitable vehicular access.*

The supply of water and sewerage services is not required for the proposed development. Electrical services are available to the site. Stormwater management is proposed to be addressed by controls recommended in this Statement with full details to be provided with the application for a construction certificate. Adequate vehicular access is proposed by way of a new entrance to the site off the Mid Western Highway adjacent the substation.

There are no draft environmental planning instruments that are on exhibition or have been exhibited but not yet published that apply to the site, or that relate to the proposed development of electricity generating works.

#### **4.4 Development Control Plan**

There is no development control plan that applies to Lot 110 DP 1187931.

#### **4.5 Land use strategies**

##### **4.5.1 Hay LGA Community and Settlement Sustainability Strategy**

The *Community and Settlement Sustainability Strategy* was adopted by Hay Shire Council in 2012. It is noted in the strategy that the town of Hay is surrounded by a grid of high voltage feeders and the capacity of the system is adequate to cater to growth.

The strategy contains mapping of sites across Hay LGA that may be contaminated due to chemical storage, buried putrescible waste, sewerage effluent, wool scouring waste, animal carcasses, or fuel and oil storage. Lot 110 is not mapped as being affected by potential contamination.

##### **4.5.2 Riverina Murray Regional Plan**

The *Riverina Murray Regional Plan 2036* was released in March 2017. It establishes a framework for growth over the next 20 years for the Riverina Murray Region which includes Hay LGA.

The plan supports the protection of high-value environmental assets and aims to develop a strong and diverse economy with supportive communities. The plan contains the following four goals:

1. A growing and diverse economy
2. A healthy environment with pristine waterways
3. Efficient transport and infrastructure networks
4. Strong, connected and healthy communities

A series of directions and actions are to guide land use planning priorities and decisions. Direction 21 is to align and protect utility infrastructure investment. It is noted that there are opportunities to provide cost-effective extended and upgraded services for stand-alone alternative energy generation and the use of renewable options such as solar generation.

## 5. ENVIRONMENTAL EFFECTS

### 5.1 Biodiversity

#### 5.1.1 Methodology

A desktop biodiversity assessment has been carried out to determine the impact on threatened species and endangered ecological communities. This is supported by a site inspection carried out on 31 January 2019.

The development site is located in the Riverina IBRA Region and is within a rural landscape that has been extensively cleared. It is devoid of any healthy native vegetation and is severely degraded. The site is located about 860 metres north of the Murrumbidgee River at the closest point. There are no watercourses or wetlands within the site. A photograph of the site that demonstrates its current poor condition is given below.



**Plate 8: The current condition of the site**

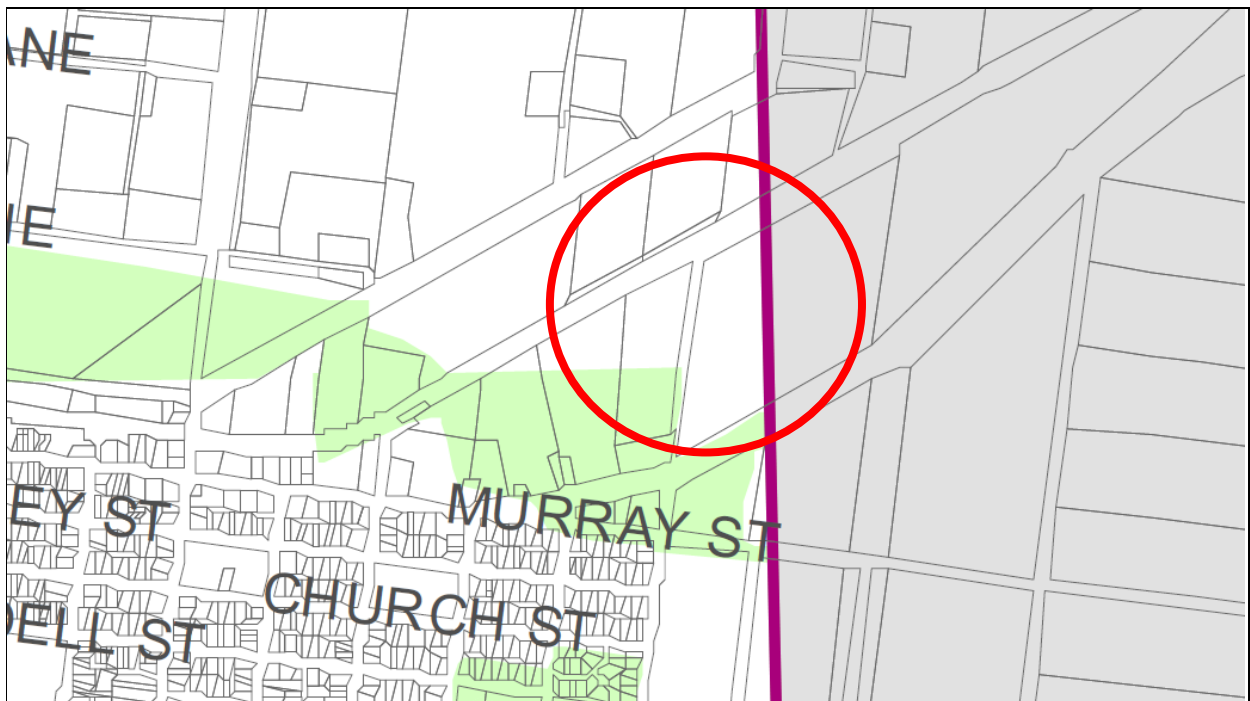
The following sources of information and data have been used to determine whether any threatened species or endangered ecological communities occur on or near the site:

- SIX Maps aerial imagery dated October 2013,
- Natural Resources – Biodiversity mapping of *Hay LEP 2011*,
- BioNet Atlas,
- Atlas of Living Australia,
- Mapping by the NSW Office of Environment and Heritage (IBRA regional vegetation mapping, Native Vegetation Regulatory Map, Biodiversity Values Map)
- Schedules to the *Biodiversity Conservation Act 2016*, and
- Protected Matters Report of the *Environment Protection and Biodiversity Act 1999*.

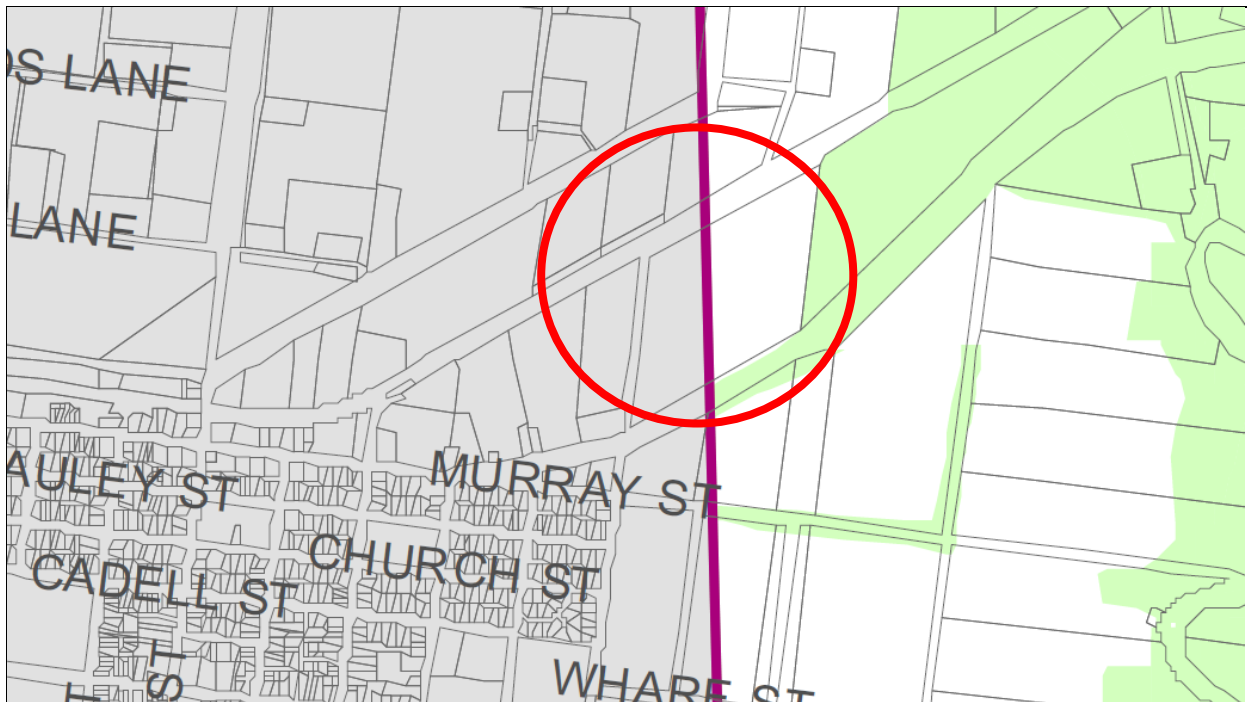
Information concerning the flora and fauna of the Riverina bioregion has been sourced directly from the Office of Environment and Heritage [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au). The Riverina bioregion includes Hay and surrounding rural land covering the site of the proposed solar farm. Information has also been sourced from the Bionet Atlas, the Biodiversity Values Map and the Native Vegetation Regulatory Map all maintained by OEH.

#### 5.1.2 Hay LEP 2011

Lot 110 DP 1187931 is not shown as being affected by biodiversity on the Natural Resource – Biodiversity Map of *Hay LEP 2011* as shown in Figures 6 and 7 below.



**Figure 6: Extract from Hay LEP 2011 Natural Resource – Biodiversity Map Sheet NRB\_005**



**Figure 7: Extract from Hay LEP 2011 Natural Resource – Biodiversity Map Sheet NRB\_009**

### 5.1.3 Significant flora

There are 28 threatened flora species listed in the schedules of the *Biodiversity Conservation Act 2016* in the Riverina Bioregion. Of these, 12 are endangered, 15 are listed as vulnerable and one species is considered extinct in the bioregion.

A search of the Bionet Atlas listed six endangered ecological communities found in Hay LGA. These are:

- Acacia loderi shrublands
- Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions
- Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions
- Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions

The full list of species within the area surrounding the site is appended as Attachment A.



A search of datasets maintained by OEH was then carried out to produce a map of vegetation communities on land north-east of Hay. These are shown in Figure 8 below. Lot 110 is fully cleared and is not mapped as vegetated. The communities found on adjoining properties to the east and south are:

- Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone of the Riverina Bioregion and Murray Darling Depression Bioregion (shaded brown)
- Cotton Bush open shrubland of the semi-arid (warm) zone (shaded purple)

Remnants of these communities are found on land adjoining the immediate area to be developed for the solar farm to the east and along the southern boundary the Mid Western Highway. The cotton bush community is also found along the road reserve of the Mid Western Highway. Neither of the vegetation communities located on adjoining and adjacent land are listed as an endangered ecological community in the *Biodiversity Conservation Act 2016*.

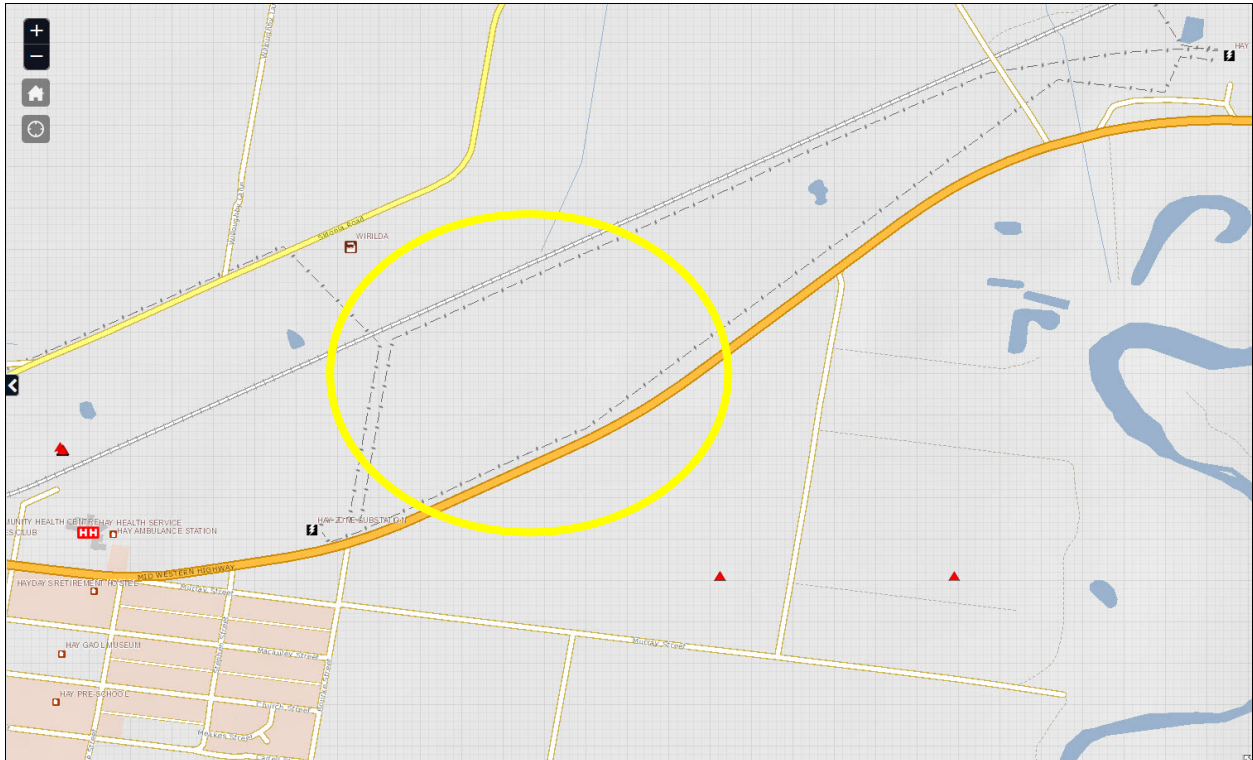
The mapping indicates that there are no remnant endangered ecological communities within the area to be developed for the solar farm which has been fully cleared and used for agriculture. This is supported by aerial imagery.



**Figure 8: Vegetation communities of the area north-east of Hay. Source: OEH 2018**

#### 5.1.4 Significant fauna

Figure 9 below shows the search results from the Bionet Atlas maintained by OEH. Records of species are provided within a 100 square kilometre area surrounding Lot 110. The map indicates that no species have been recorded on the site.



**Figure 9: Bionet Atlas map. Source: OEH, 2019**

There are 5 species listed as endangered and 11 listed as vulnerable that have been recorded in the 100 square kilometre area surrounding the site. This is due to the extensive clearing and cultivation of crops that has fragmented the landscape. These species are listed in Table 2 below.

**Table 2: Endangered and vulnerable species recorded near the site**

Common name	Status
Southern Bell Frog	Endangered
Australian bustard	Endangered
Bush stone-curlew	Endangered
Plains wanderer	Endangered
Bilby	Endangered
Magpie Goose	Vulnerable
Blue-billed duck	Vulnerable
Freckled duck	Vulnerable
Spotted harrier	Vulnerable
Little eagle	Vulnerable
Black falcon	Vulnerable
Superb Parrot	Vulnerable
Brown tree creeper	Vulnerable
White-fronted chat	Vulnerable
Grey-crowned Babbler	Vulnerable
Diamond firetail	Vulnerable



Given that the part of the site to be developed as a solar farm has been fully cleared and used for the cultivation of crops for many years it is not likely that any endangered, vulnerable or threatened species occur on the site. As shown in Figure 9 the map of the Bionet Atlas search indicates that no endangered, vulnerable or threatened species have been recorded on the site.

### 5.1.5 Biodiversity Values Map

The Biodiversity Values Map is given in Figure 10 below. This map identifies land with high biodiversity value as defined by clause 7.3(3) of the *Biodiversity Conservation Regulation 2017*. The Biodiversity Offsets Scheme applies to all clearing of native vegetation and other biodiversity impacts prescribed by the regulation on land identified on the map. The Biodiversity Offsets Scheme is used to determine whether the Biodiversity Assessment Method is to be used to assess the impacts of a development proposal and applies to local development.

The scheme is triggered based on threshold levels of clearing comprising the land area to be cleared and whether the area is mapped on the Biodiversity Values Map. In this case Lot 110 is not mapped as being of high biodiversity value. In this case a minimum lot size of 20 hectares applies to Lot 110. The threshold for clearing of native vegetation above which the Biodiversity Assessment Method applies is 0.5 hectares or more. It is not proposed to clear the land of any native vegetation other than is necessary to bore holes for the establishment of footings, therefore, it is not necessary to engage an accredited assessor to determine the offsets required to enable the project to proceed.



**Figure 10: Biodiversity Values Map. Source: OEH, 2018**

A test of significance under section 7.3 of the *Biodiversity Conservation Act 2016* is required to be carried out for local development proposals that do not exceed the Biodiversity Offsets Scheme threshold. This

test determines whether the potential impacts of development are likely to significant affect threatened species, ecological communities, and their habitats. Below are the results of the test of significance for the proposed solar farm.

- (a) *in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

The site has been cleared and farmed for many years and is not known to be inhabited by any threatened species. The Bionet Atlas does not contain any records of species on Lot 110. The development of a solar farm is not likely to adversely effect the lifecycle of any threatened species and pose a threat to the local population of any species.

- (b) *in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:*
- (i) *is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
  - (ii) *is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,*

Mapping of vegetation communities indicates that there are no endangered ecological communities located within the site. The area of land to be developed as a solar farm is fully cleared and was formerly farmed.

- (c) *in relation to the habitat of a threatened species or ecological community:*
- (i) *the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and*
  - (ii) *whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and*
  - (iii) *the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,*

It is considered that the site would not act as habitat for any threatened species or ecological community as it has been cleared and was continually farmed for many years.

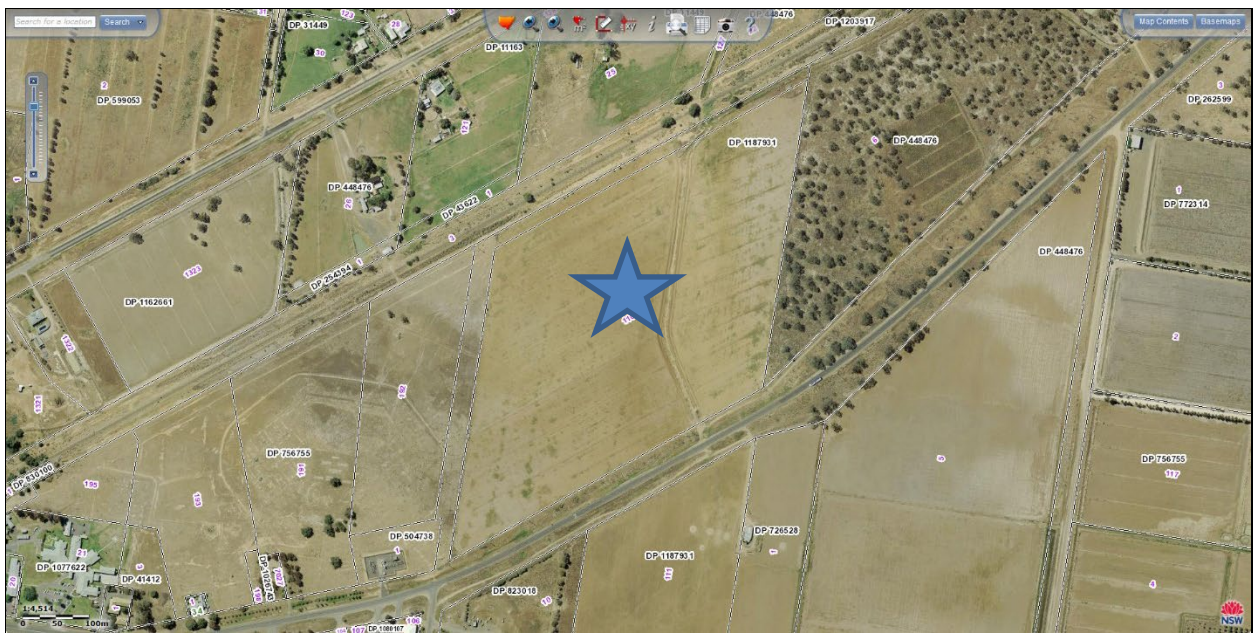
- (d) *whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),*

The site is not mapped as being of high biodiversity value on the Biodiversity Values Map. The development of a solar farm is not likely to have any adverse effect on areas of outstanding value.

- (e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The development of a solar farm, including the installation of solar PV panels and ancillary facilities, is not listed as a key threatening process in Schedule 4 of the *Biodiversity Conservation Act 2016*.

As can be seen from Figure 11 below, all native vegetation on Lot 110 DP 1187931 has been cleared including the area for the proposed arrays of panels. There are not likely to be any threatened species or endangered ecological communities present on the site.

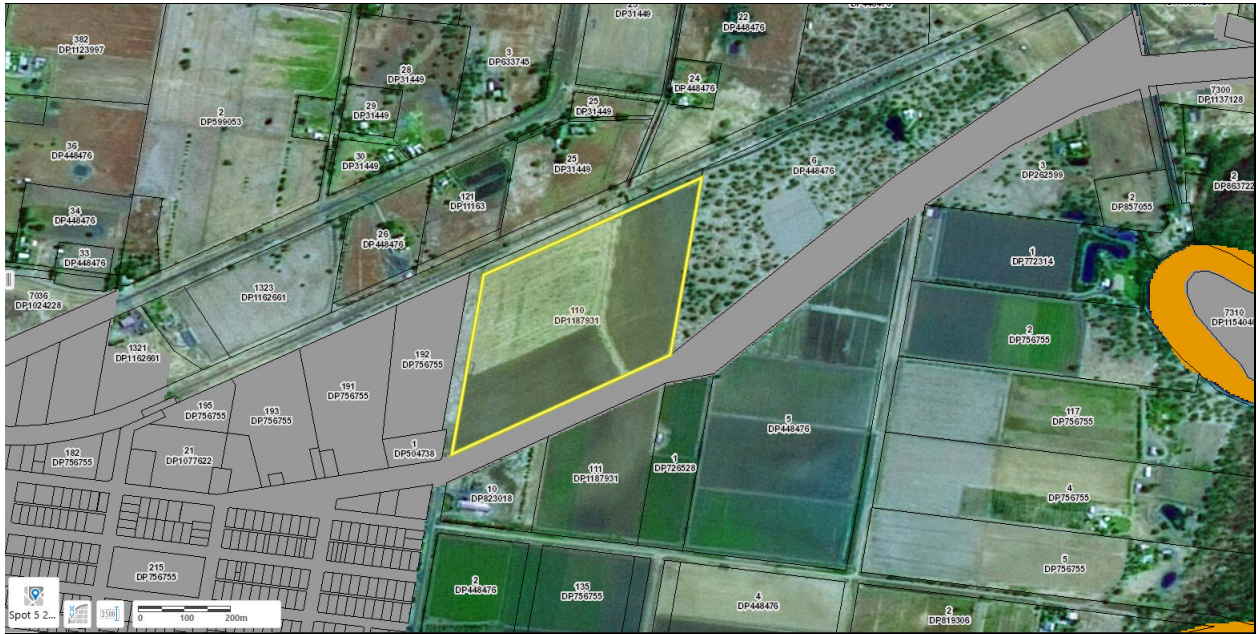


**Figure 11: Aerial image of Lot 110. Source: SIX Maps**

### 5.1.6 Native Vegetation Regulatory Map

The Native Vegetation Regulatory Map covers rural land in NSW and categorises land where management of native vegetation can occur without approval or where management of native vegetation may be carried out in accordance with Part 5A Land Management (native vegetation) of the Local Land Services Act 2013. The categories are Category 1 (unrestricted management where clearing is exempt from the LLS Act 2013), Category 2 is regulated land where the LLS Act applies to clearing as either code based, vulnerable or sensitive, and Excluded Land which is not regulated by the LLS Act 2013. The Native Vegetation Regulatory Map for Lot 110 is given as Figure 12 below. This land is not mapped as *sensitive regulated land* (shown in pink) or *vulnerable regulated land* (shown in yellow).





**Figure 12: Native Vegetation Regulatory Map. Source: OEH, 2018**

### 5.1.7 Environment Protection & Biodiversity Conservation Act

The *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* affords protection for seven matters of national environmental significance. These matters are world heritage properties, national heritage places, wetlands of national importance, listed threatened species and ecological communities, migratory species, commonwealth marine areas and nuclear actions including uranium mines. Actions that have, or are likely to have, a significant impact on a matter of national environmental significance require the approval of the Australian Government Minister for the Environment and Energy.

Actions include but are not limited to construction, expansion, alteration or demolition of buildings, structures, infrastructure or facilities; storage or transport of hazardous materials; waste disposal; earthworks; impoundment, extraction and diversion of water; research activities; vegetation clearance; military exercises and use of military equipment; and sale or lease of land.

It is the responsibility of the Minister to decide whether assessment and approval is required under the *EPBC Act*. Currently there are 4 wetlands of international importance, 3 listed threatened ecological communities, 25 listed threatened species of flora and fauna, and 10 listed migratory species of flora and fauna protected under the *EPBC Act* within Hay LGA. The provisions of the *Environment Protection and Biodiversity Conservation Act 1999* may apply to the development of a solar farm, however, the search of the Bionet Atlas indicates that there are no recorded threatened or migratory species, or threatened ecological communities on the site. The EPBC Protect Matters Report is appended as Attachment B.

The site to be developed as a solar farm is fully cleared and has been used for farming. There are no wetlands, threatened ecological communities or threatened species listed under the EPBC Act likely to occur on the site. There is no development proposed within 80 metres of the boundary to land occupied by a remnant vegetation community at the closest point and the development will not have a significant impact on a matter of national environmental significance. Referral to the Commonwealth Government is not necessary.

#### **5.1.8 Mitigation measures**

Land to the east and south of the subject site is mapped as Natural Resources – Biodiversity in *Hay LEP 2011*. A setback of the solar farm in excess of 80 metres to the boundary of adjoining land to the east is proposed at the closest point and the highway separates sensitive land to the south. To avoid interference with the vegetation community located on the adjoining land it is recommended that any vegetation planted to screen the development and any grasses planted to bind the soil following construction of the solar farm be native species endemic to the area. Access to the site is to be limited to that point shown on development plans and within the development area. Storage of materials is to be carried out wholly within the development area.

### **5.2 Natural hazards**

#### **5.2.1 Flooding**

The site is not mapped as being flood prone in *Hay LEP 2011*, however, aerial imagery indicates that there is the potential for limited localised flooding. Flood mitigation measures and stormwater management have been considered in section 4.3 *Water resources* of this Statement.

Two parts of the site are potentially affected by localised flooding. These are at the north-eastern and south-western corners of the site. There is no development proposed at the north-eastern corner as the array and all ancillary works are proposed on the western three-quarters of the site. The materials laydown areas are to be located at the south-western corner. These uses are temporary and will be used only during construction. Once operational the accessway will be used for maintenance on a quarterly basis.

#### **5.2.2 Bushfire**

The site is mapped as being bushfire prone. The south-eastern corner of the site is a buffer to land mapped as bushfire category 1 to the south of the Mid Western Highway. Infrastructure comprising electricity generating works is not a habitable building and is not listed as a *special fire protection purpose* under section 100B of the *Rural Fires Act 1997*. Therefore, a bushfire assessment is not required to be prepared and submitted with the development application.

The development of a solar farm would not affect the performance of the buffer to bushfire prone land to the south.

## 5.3 Water resources

### 5.3.1 Assessment of impacts

A desktop assessment of potential impacts on groundwater and surface water flows has been carried out. The assessment examines:

- Local hydrology and catchment and water quality data,
- Surface and groundwater quality data,
- Flood-risk potential of the site,
- Impacts of the development against NSW policies and industry standards, and
- Management procedures and mitigation measures for construction and operation.

It is noted that the site is located within the Hay Private Irrigation District and the Murrumbidgee Valley district of the Murrumbidgee regulated river system. Funding has been secured to upgrade the irrigation delivery system for an open channel to a low pressure pipeline. Data for rainfall and stream monitoring are included in the assessment.

Potential adverse impacts to the site may be due to surface water conditions including impediments to site accessibility and managing downstream nuisance.

The site is not shown as groundwater vulnerable under clause 6.9 of *Hay LEP 2011*. Although within the broader Murrumbidgee River catchment area which has a history of rising groundwater levels over the longer term in certain areas, this is not expected to be a concern at the site.

Flooding associated with the Murrumbidgee is not expected to inundate the site as it is located north of a 5.7 kilometre long levee that protects the Hay township from flooding. The levee consists of a combination of embankments, elevated roadways and naturally high ground. However, localised flooding may disrupt construction and material storage on the site even when the site is not inundated. Monitoring of rainfall and stream gauges is recommended during construction.

There is the potential for increased runoff on site due to the solar arrays. This may cause erosion at the base of solar panels due to soil type and lack of ground cover. Noting that the site has been used for agriculture and there is very little groundcover, there is the potential for runoff containing sediments which could increase the turbidity and water quality in downstream waterways.

### 5.3.2 Mitigation measures

It is recommended that:

- Consultation with local emergency management agencies be carried out as part of the project management plan to ensure notification of regional weather or climatic events that may affect site access
- Minimise erosion and sedimentation from construction activities by undertaking works in accordance with the NSW Government publication *Managing Urban Stormwater: Soils and Construction*
- Implement measures relating to site drainage and water quality controls for the design and construction phases, and stormwater point and source controls

## 5.4 Visual and scenic amenity

### 5.4.1 Methodology

Impacts on the visual and scenic amenity of the proposed Hay 1A Solar Farm have been assessed using the RMS guideline *Environmental Impact Assessment Practice Note – Guideline for Landscape Character and Visual Impact Assessment* (EIA-N04 Version 2-0 released on 28 March 2013). Details of methodology are given below.

A site inspection of the location of the proposed works and the surrounding area took place on Thursday 31 January 2019. The visual catchment, the context of the site of the proposed works and viewpoints were identified at this time.

Land uses and characteristics of the environment such as topography, vegetation, architecture of neighbouring buildings and any heritage values of any significant sites in the vicinity of the proposed solar farm were noted and the capacity of the area to absorb physical change is assessed. Development plans for the solar farm have been reviewed and the likely impacts on landscape character identified. This is determined by the sensitivity of the landscape to physical change and the magnitude, or relative size and scale, of the works.

The visual significance of the site to viewpoints and receivers within the visual catchment is described in terms of proximity to the site, landscape character, the composition of views and the sensitivity to change that will affect scenic values. The visual impacts that will be experienced by each receiver are identified and evaluated in terms of the sensitivity of each receiver to change and the magnitude of that change in terms of the proposed works. The impacts are calculated and ranked according to negligible, low, moderate or high impact based on the following matrix (sourced from the RMS *Guideline for Landscape Character and Visual Impact Assessment*).

**Table 3: Landscape character and visual impact grading matrix. Source: RMS Guideline for Landscape Character and Visual Impact Assessment, 2013**

Landscape character and visual impact grading matrix					
	Magnitude				
Sensitivity		High	Moderate	Low	Negligible
	High	High impact	High-moderate	Moderate	Negligible
	Moderate	High-moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

The findings of the landscape character and visual impact assessments are summarised in the conclusion. Recommendations as to refinements of the development plans to avoid or mitigate significant landscape and visual impacts are made if necessary.

#### 5.4.2 Description of the landscape

The character of the landscape near Hay is predominantly an open modified agricultural landscape that has been shaped by farming. It is generally flat land with little remnant vegetation. The site itself is peri-urban being on the eastern edge of the township of Hay. Structures within the vicinity of the site comprise an electrical sub-station, a disused rail line, urban and rural living dwellings, industrial and commercial uses, institutional facilities such as Hay Hospital, bushland and rural farmland. Photographs taken during the site visit and provided in section 2. *Site location, description and context* of this Statement illustrate the site and surrounding area. The landscape is assessed to have low sensitivity to change.

#### 5.4.3 Assessment of impacts on landscape character

The proposed Hay 1A Solar Farm will comprise 16,920 solar modules installed in 188 rows. These are to be placed within a confined area of 15 hectares within a 20.7 hectare property. The internal site access road that surrounds the perimeter of the solar farm on three sides is to be setback 23 metres from the northern boundary, 14.4 metres from the southern boundary, and is variable from the western boundary with a minimum of 10 metres. The nearest component of the solar farm to the eastern boundary is the security fence which would be approximately 180 metres at the northern end and in excess of 80 metres at the southern end of the fence from the eastern boundary.

The sensitivity of private property and public roads to landscape change would be low and decreasing over time given the mix of uses and spread of the urban area outwards along the Mid Western Highway. Private dwellings and occupants of Hay Hospital are likely to be impacted by a change in views on neighbouring land and would feel a low impact on character. The panels are likely to be of interest to occupants of the





The sensitivity of the neighbouring farmhouses to landscape change varies from low to moderate (dwellings 3 and 4) given the existing open landscape of the site though tempered by proximity to urban development and peri-urban location. The sensitivity would decrease with distance so that visibility of the solar farm to dwellings and other structures beyond 200 metres would be low and outside the visual catchment would be negligible. Dwelling 7 would be low sensitivity due to the slight incline towards the solar farm site and the highway on intervening land.

There are no structures that would screen the development from neighbouring residential properties to the north, however, the disused rail line is within a raised embankment which provides some screening to these properties. Vegetation within the private property boundaries would also serve to screen the solar farm. South of the site, a gentle incline of the land sloping towards the Murrumbidgee River and commercial and industrial development on intervening land reduces visibility of the site from residential properties to the south. (Commercial and industrial development are not considered sensitive receivers in terms of visual impact). Similarly, structures to the west including the Essential Energy substation and Hay Hospital interfere with views towards Lot 110. The rear of panels will be visible to motorists travelling along the Mid Western Highway, however, as they will be set within an increasingly industrial landscape on the edge of the urban area sensitivity is low.

#### 5.4.5 Assessment of visual impacts

Table 4 below indicates the magnitude of the proposed solar farm in terms of the visual change in the landscape and proximity to the viewpoint, and the degree of sensitivity based on the quality of the view, whether the site is clearly visible or obscured by landform or vegetation, the direction and composition of the view, and how sensitive the view is to changes in the landscape that will result from the proposed development.

A rating is then given based on magnitude and sensitivity using the landscape character and visual impact grading matrix.

**Table 4: Viewpoint impacts**

Viewpoint	Magnitude	Sensitivity	Rating
Mid Western Highway	Low	Low	Low
Dwelling 1	Low	Low	Low
Dwelling 2	Low	Low	Low
Dwelling 3	Low	Moderate	Low-moderate
Dwelling 4	Low	Moderate	Low-moderate
Dwelling 5	Low	Low	Low
Dwelling 6	Low	Low	Low
Dwelling 7	Low	Low	Low
Hay Hospital	Low	Low	Low

#### **5.4.6 Summary of impacts**

The landscape on the urban edge of Hay is one that has been modified by human activity associated with the agricultural industry. It is characterised by a mix of urban and rural uses and utilities including the 33kV substation.

The impact of the proposed Hay 1A Solar Farm on landscape character has been assessed to be low based on magnitude of works and the sensitivity to change of surrounding properties. The works would be visible to motorists travelling along the Mid Western Highway, however, given the character of the proximity to the urban area and the commercial and industrial uses visible on the approach to town it is expected that acceptance of and adaptation to change will occur within a relatively short space of time following completion of works.

The visual impact of the proposed works are assessed to be low to moderate for the viewpoints identified in this assessment. Uses on land located between residential dwellings such as the substation, the disused rail line and commercial/industrial buildings would serve to screen and distract visual interest in the array of panels. The impacts are considered acceptable given the nature of the proposed development and that it will contribute to renewable energy generation.

#### **5.4.7 Mitigation measures**

No mitigation measures are proposed. It is not recommended that a vegetated buffer be incorporated to screen the panels as this would alter the open agricultural landscape that characterises the Hay Plains.

### **5.5 Traffic and access**

#### **5.5.1 Existing access arrangements and proposed movements**

An assessment of the impacts on traffic and the adequacy of access arrangements has been carried out. The assessment includes a description of the existing road network and notes that the Mid Western Highway is a NSW State Highway servicing the Central West and Riverina regions and is part of the most direct route between Sydney and Adelaide. Lane widths near the western boundary of Lot 110 are approximately 3.5 metres wide with 0.8 metres of sealed shoulders and 0.6 metres of unsealed shoulder. The speed limit ranges from 50 km/hr at the western boundary to 110km/h approximately 165 metres from that point.

Existing access to the development site is via the Mid Western Highway at a point approximately 100 metres west of the eastern boundary. The speed limit is 110 km/hr at this point. The proposed access for the development has been located at the south-western corner of the site where the speed limit is 50 km/hr. The proposed access is located on the inside of a large radius bend but sight lines remain adequate.

The proposed access point would accommodate a 19 metre long vehicle and require minor alterations to the fence to allow a distance of 30 metres between the gate and the northern edge line of the highway. Proposed traffic generation is estimated based on 165 semi-articulated trucks accessing the site during the establishment and construction phases with up to a maximum of 4 construction vehicles accessing the site daily during peak construction periods. The assessment also allows for up to 50 personnel accessing the site each day during the construction period by small motor vehicles.

The findings of the assessment are that the proposed traffic generation resulting from up to 50 staff accessing the site and a maximum of 4 heavy vehicles delivering machinery and materials on any day can be accommodated at the proposed new access. There are no major geometry issues and sight lines and separation distances from existing neighbouring driveways are adequate.

### **5.5.2 Mitigation measures**

The following mitigation measures are recommended:

- An area is allocated to be used as a temporary laydown and car parking area within the property at the south-western corner,
- Heavy vehicles should arrive and depart from the site outside of the morning and afternoon peak traffic periods,
- A new culvert should be constructed beneath the proposed new entrance to divert stormwater flows, and
- Signage to be erected near the entrance to indicate that construction vehicles are accessing the site.

## **5.6 Noise**

### **5.6.1 Assessment of impacts**

An assessment of the impacts of noise emissions has been carried out. The purpose of the noise assessment is to quantify potential environmental noise emissions associated with the construction and operation of the project. Where impacts are identified, recommendations are made to mitigate and manage noise.

The assessment includes the following key tasks:

- review construction and operating activities to identify key noise generating plant, equipment, machinery or activities proposed to be undertaken as part of the project;
- identify the closest and/or potentially most affected receptors situated within the area of influence to the project;
- establish existing noise levels to determine project-specific construction Noise Management Levels (NMLs), and operational noise criteria;

- undertake 3D noise modelling to predict levels that may occur as a result of the construction and operation of the project at the closest and/or potentially most affected receptors;
- provide a comparison of predicted noise levels against relevant construction NMLs and operational criteria;
- assess the potential noise impacts associated with construction and operational aspects of the project; and
- provide feasible and reasonable noise mitigation and management measures, and monitoring options, where NMLs or operational criteria may be exceeded.

The assessment has been conducted in accordance with the following key policy and guidelines where relevant:

- NSW Department of Environment and Climate Change, NSW Interim Construction Noise Guideline (ICNG), 2009,
- Environment Protection Authority's (EPA's), Noise Policy for Industry (NPI), 2017,
- NSW Department of Environment, Climate Change and Water (DECCW), NSW Road Noise Policy (RNP), 2011.
- Australian Standard AS 2436–2010 (R2016) (AS 2436) – Guide to Noise and Vibration Control on Construction, Demolition and Maintenance sites,
- Australian Standard AS 1055:2018 – Description and Measurement of Environmental Noise,
- Australian Standard AS IEC 61672.1–2004 (AS 61672) – Electro Acoustics - Sound Level Meters Specifications Monitoring, and
- Australian Standard AS IEC 60942-2004 (AS 60942) – Electroacoustics – Sound Calibrators.

A number of potential noise sensitive receptors were identified as listed in Table 5 and shown in Figure 14 below. These receptors comprise residential and commercial properties.

**Table 5: Noise sensitive receptors**

ID	Description/address	Coordinates (MGA55)	
		Easting	Northing
R1	Rural Receiver Mid Western Highway	303796	6180333
R2	Suburban Receiver Murray Street & Bourke Street	303284	6180070
R3	Suburban Receiver Bourke St	303262	6179936
R4	Suburban Receiver Murray Street & Stephen Street	303065	6180094
R5	Suburban Receiver Mid Western Highway (House)	302984	6180214
R6	Rural Receiver Sidonia Road	303235	6180817
R7	Rural Receiver Sidonia Road	303324	6180982
R8	Rural Receiver Sidonia Road	303605	6181131
R9	Rural Receiver Piper Street	303833	6181210
R10	Rural Receiver Between Piper Street & Mid Western Highway	304319	6181165



ID	Description/address	Coordinates (MGA55)	
		Easting	Northing
C1	Commercial Receiver Bourke Street	303300	6180165
C2	Commercial Receiver Bourke Street	303380	6180147
H1	Hay Hospital	302814	6180249



**Figure 14: Location of noise sensitive receptors**

Construction and operational noise levels were predicted to each assessed receptor assuming receiver heights of 1.5m above ground level for typical construction activities and allowing for road traffic noise.

The findings of the assessment are that construction noise levels have the potential to exceed relevant construction NMLs at some receptor locations depending on their proximity to construction activities and that operational noise levels satisfy the criteria for assessed receptors.

The affected receptors are R1 Rural Receiver on the Mid Western Highway, R5 Suburban Receiver on the Mid Western Highway, and R6, R7, R8 and R9 which are rural receivers on Sidonia Road and Piper Street.

Recommendations have been provided to minimise the potential noise impacts from construction, albeit of a temporary nature during the daytime construction period.



### 5.6.2 Mitigation measures

The following mitigation measures are recommended to address noise emissions during the construction phase:

- a construction noise management protocol to minimise noise emissions, manage out of hours (minor) works to be inaudible, and to respond to potential concerns from the community,
- where possible use localised mobile screens or construction hoarding around plant to act as barriers between construction works and receivers, particularly where equipment is near the site boundary and/or a residential receiver including areas in constant or regular use (e.g. unloading and laydown areas),
- operating plant in a conservative manner (no over-revving), shutdown when not in use, and be parked/started at farthest point from relevant assessment locations,
- selection of the quietest suitable machinery available for each activity,
- avoidance of noisy plant/machinery working simultaneously where practicable,
- minimise impact noise wherever possible,
- utilise a broadband reverse alarm in lieu of the traditional high frequency type reverse alarm,
- provide toolbox meetings, training and education to drivers and contractors visiting the site during construction so they are aware of the location of noise sensitive receivers and to be cognisant of any noise generating activities,
- signage is to be placed at the front entrance advising truck drivers of their requirement to minimise noise both on and off-site, and
- utilise project related community consultation forums to notify residences within close proximity of the site with project progress, proposed/upcoming potentially noise generating works, its duration and nature and complaint procedure.

It is recommended that noise emissions from the solar farm be minimised when operational. To assist in noise management, it is recommended that a one-off noise validation monitoring assessment be completed to quantify emissions from the site and to confirm that relevant criteria are satisfied.

## 5.7 Air quality

### 5.7.1 Assessment of impacts

The Office of Environment and Heritage maintain an air quality monitoring station in Hay at the Bureau of Meteorology airport site. The instruments used at most rural network sites are low cost indicative particulate monitors that respond to all aerosols including smoke and fog.

Total Suspended Particles (TSP) are measured at this station. Data is collected in 15 minute intervals and reported hourly on the OEH website. Total suspended particulates are solid particles and liquid droplets

100 micrometres or less in diameter. They come from natural and human-made sources, such as pollen, bushfires and motor vehicle emissions. Dust emissions are also a source of air pollution in the hot, dry climate of Hay and can cause poor air quality.

Particles are measured as PM<sub>10</sub> and PM<sub>2.5</sub>. PM<sub>10</sub> are particles less than 10 micrometres in diameter. Sources include crushing or grinding operations and dust stirred up by vehicles on roads. Particles less than 10 micrometres in diameter are measured as an hourly average reading of 7 at Hay in the morning on Wednesday 6 February 2019. PM<sub>2.5</sub> are fine particles less than 2.5 micrometres in diameter. Sources include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes. Particles less than 2.5 micrometres in diameter are measured as an hourly average reading of 9 at Hay in the morning on Wednesday 6 February 2019. Total suspended particles have an average hourly reading of 10 on 6 February 2019. This is a comparatively moderate to high reading indicative of the hot, dry climate of Hay.

Activities that disturb the earth's surface and that is carried out with the use of machinery have the potential to generate dust emissions. This may be exacerbated by wind exposure to an exposed ground surface.

The previous use of the land for farming may have involved regular tilling, sowing and harvesting that may create dust and impact on air quality. The current condition of the land is poor due to the loss of vegetation leading to exposed soil surfaces. The construction of the solar farm will not involve extensive earthworks and only excavation for footings for the array framework and ancillary structures will be carried out. Along with the delivery of materials using heavy vehicles, these construction works may generate dust, however, once operational the change of use of the land from agricultural to solar photovoltaic electricity generation is expected to reduce particulate emissions and lead to an improvement in local air quality. Vehicle movements would be restricted to internal access roads and the majority of the site would be revegetated with pasture grasses.

### **5.7.2 Mitigation measures**

To minimize dust generation during the construction and operational phases the following mitigation measures are proposed:

During construction:

- Limit vehicle movements to areas necessary to deliver panels, ancillary structures and equipment
- Suppress dust emissions using watering and cease works during dry and windy conditions
- Ensure ground disturbance is limited to areas necessary to place footings or to be used for access
- Ensure minimal handling of excavated materials
- Ensure stockpiles of excavated material is banded and protected from wind and vehicle movements

During operation:

- Grade and add road base to internal accessways
- Revegetate the site with suitable endemic native groundcover immediately construction works are completed
- Ensure all plant and equipment operates in accordance with specifications

## 5.8 Waste management

### 5.8.1 Waste materials and management

A desktop assessment of the waste generated during construction and operation of the solar farm has been carried out to determine the appropriate means of waste disposal and recycling. The assessment takes into account the requirements of relevant legislation and policy including the Protection of the Environment Operations (POEO) Act 1997, POEO (Waste) Regulation 2014 and the Waste Avoidance and Resource Recovery Act 2001.

The largest amount of waste will be generated during the construction phase. Wastes would include wooden pallets, cardboard and plastics. Construction of a solar farm would not generate any putrescible waste products. Minimal waste would be generated when the farm is operational other than small amounts of replacement parts and packaging required for maintenance and repair works.

It is expected that the solar farm will be operational for at least 20 to 25 years. Upon decommissioning all infrastructure, panels and mounting frames including footings and inverters would be disassembled and removed from the site. There are currently limited opportunities to recycle the components of solar panels, however, it is anticipated that the waste recycling industry will expand and develop new technologies and uses for those components by the time decommissioning occurs.

Estimates of waste materials and proposed management arrangements for each phase of the development project are provided in Table 6 below.

The proposed waste management measures support Hay Shire Council initiatives to encourage all residents to consider how to minimise waste and reduce the impact on the environment by maintaining the philosophy to minimising waste as *'Reduce, Re-Use, Recycle'*.

Council's waste management facility comprises general landfill and green waste, a waste transfer station and a community recycling centre located in Thelangerin Road, Hay. The community recycling centre supports recycling of domestic paint, motor oils, batteries and fluorescent lights.

There is also a facility to drop off recycling waste at Dunera Way in northwest Hay. Firms based in neighbouring regional centres such as Deniliquin, Griffith and Echuca collect scrap metal for re-use.

**Table 6: Estimated waste materials and waste management arrangements**

Phase	Waste material	Proposed management
<b>Construction</b>	<ul style="list-style-type: none"> <li>• Packaging waste such as cardboard, wood pallets, plastic wrap, scrap metal, general waste including approximately 830 wooden pallets and cardboard packing boxes</li> <li>• Concrete waste during setting of footings and mounts</li> <li>• Electric cable waste and cable reels</li> <li>• Plastic pipe offcuts/scrap</li> <li>• Empty drums and containers (minimal quantities)</li> <li>• Lubricating oil and filters</li> <li>• Unused chemicals</li> </ul>	<p>Waste products will be sorted and stored separately in skip bins located in the materials laydown area in accordance with EPA Waste Classification Guidelines. This will facilitate disposal through appropriate waste streams as follows:</p> <p>Recycling:</p> <ul style="list-style-type: none"> <li>• Steel and scrap metal (recycled)</li> <li>• Timber/cardboard (recycled)</li> <li>• Recyclable plastics</li> <li>• Recyclable fluids</li> </ul> <p>Landfill:</p> <ul style="list-style-type: none"> <li>• General wastes, oils, chemicals and plastic (other than where recyclable)</li> </ul> <p>All recycling would be taken to the Waste Transfer Station and the Community Recycling Centre located on Thelangerin Road, Hay.</p> <p>All non-recyclable materials would be taken to the waste Depot at Thelangerin Road, Hay.</p>
<b>Operational</b>	<p>Maintenance and repair waste, e.g. Electric cable waste and cable reels, plastic pipe offcuts, lubricating oils and filters</p>	<p>These waste products would be sorted on site into recyclable and general waste streams and taken to the Waste Management Facility in Thelangerin Road, Hay.</p>
<b>Decommissioning</b>	<ul style="list-style-type: none"> <li>• PV panels (16,920 panels) and supporting poles and mounts</li> <li>• Glass for panels (260 tonnes)</li> <li>• Silicon for wafers (40 tonnes)</li> <li>• Inverters / transformers / batteries</li> <li>• PV boxes, skids, scrap metal (830 tonnes)</li> <li>• Electrical cables</li> <li>• Fencing</li> <li>• Storage containers (two 40-foot containers)</li> </ul>	<p>The solar farm infrastructure would be dismantled into separate waste products such as metals, glass, plastics and concrete.</p> <p>All products would be sorted on site into recyclable and general waste streams in accordance with the EPA Waste Classification Guidelines and taken to the Waste Management Facility in Thelangerin Road, Hay or to an alternative specialised recycling facility.</p>

It is recommended that a waste management plan be prepared following approval to specify precise volumes of each waste material, classify that waste material and identify appropriate management procedures including means of transport and the destination. Hay Shire Council is part of the RAMROC Riverina Waste Group which adheres to national and international hierarchy of waste management to avoid/reduce, reuse, recycle, recover, treat and dispose of waste products. Waste management of the Hay 1A Solar Farm should be predicated on these standards by seeking to avoid or reduce waste materials where possible, and to re-use, recycle and recover the majority of waste materials generated during each of the construction, operational and decommissioning phases.

### **5.8.2 Mitigation measures**

It is recommended that a waste management plan be developed to provide detailed procedures to manage the waste stream. The plan should contain:

- Strategies to reduce waste during all project phases,
- Recycling, re-use and recovery strategies and opportunities,
- Classification of all waste streams,
- Tracking register and details,
- On site recycling management,
- Allocation of responsibilities for recycling, re-use and disposal,
- Reporting and notification procedures if a waste incident occur.

If vegetation clearance is required during preparation of the site prior to and/or during the construction phase, that vegetation should be re-used for mulch and on-site soil erosion control where possible.

## **5.9 The community and economy**

### **5.9.1 Change of use of agricultural land**

The solar PV system is designed to generate in excess of 10 GWh of energy annually with the system offsetting almost 8.5 thousand tonnes of CO<sub>2</sub> equivalent emissions (Sources: *National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Schedule 1)* and Department of the Environment and Energy) and providing enough energy to power about 1,400 NSW homes.

Although power will be transmitted to the grid, the benefit to the community will be through an understanding of sustainable development and by gaining a commitment to greater reliance on renewable energy.

Similarly, the clustering of solar power generation would bring regional economic development benefits as the Riverina area gains a reputation as a suitable location for renewable energy and linked industries.

The loss of agricultural land, in this case land that is disused and has not been used for farming for many years, would be offset by the contribution that the solar farm will make to the local economy through direct and indirect employment and expenditure over the short term and through the benefits that renewable energy power supply will bring to the nation.

### **5.9.2 Employment**

It is anticipated that there will be 50 personnel directly involved in construction on site which is expected to take approximately three to six months. Varying levels of expertise will be required ranging from labourers to qualified electricians and project managers.

In addition, personnel would be involved in transport and delivery of materials to the site. Some of this employment is to be sourced locally. This will bring direct economic benefits to the local economy through wages and salaries and indirect benefits through the need for accommodation and sustenance in the area for non-local employees.

Once operational the site will be unmanned, however, two to three personnel will be necessary to carry out maintenance every quarter or as required.

The skills required to be involved in the construction and ongoing maintenance of Hay Solar Farm may require some personnel to undergo further training and education, leading to an upskilling of the local workforce and enhanced employment opportunities generally.

## **5.10 Heritage**

### **5.10.1 Indigenous heritage**

The following information concerning the history of Aboriginal community in the Riverina bioregion has been sourced directly from the Office of Environment and Heritage [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au).

Aboriginal people have been present in the Murray-Darling Basin for at least 40,000 years. The Riverina Bioregion was the original homeland for many large Aboriginal communities that lived on the Hay Plain and around the rivers. This included the Wiradjuri people that inhabited a vast area straddling the Murrumbidgee River including the Hay area. Relics of Aboriginal presence are common along the river systems, including scar trees used to cut bark for canoes, human burial sites, camping sites and middens.

The generic due diligence process outlined in the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* was implemented to ensure that an adequate due diligence process that addresses Aboriginal cultural heritage issues has been carried out. This process follows the following five steps:



1. *Will the activity disturb the ground surface?*

Minor excavation for footings for the panel frames and inverters will be carried out.

2a. *Search the AHIMS database*

In accordance with the code, an on-line search was carried out of the *Aboriginal Heritage Information Management Service (AHIMS)* that is maintained by the Office of Environment and Heritage. The search is part of the due diligence process and remains valid for 12 months. The search results are appended as Attachment C.

A search of Lot 110 DP 1187931 was performed on 6 February 2019. The search results are:

- There are no Aboriginal sites recorded in or near the selected location, and
- There are no Aboriginal places that have been declared in or near the selected location.

It is noted that surveys for Aboriginal objects have not been carried out in all parts of NSW and Aboriginal objects may exist on a parcel of land even though they have not been recorded in *AHIMS*.

Further, not all known Aboriginal sites are registered on the *AHIMS* database and not all sites consist of physical evidence or remains, e.g. dreaming and ceremonial sites.

2b. *Activities in areas where landscape features indicate the presence of Aboriginal objects*

The site does not possess landscape features that indicate the presence of Aboriginal objects.

3. *Can you avoid harm to the object or disturbance of the landscape features*

Not applicable as the site has been disturbed and farmed, does not possess significant landscape features and no known Aboriginal objects are listed in *AHIMS*.

4. *Desktop assessment and visual inspection*

Not applicable as the site has been disturbed and no known Aboriginal objects are listed in *AHIMS*.

5. *Further investigations and impact assessment*

An extensive search of *AHIMS* records, is not necessary given that there are no recorded sites or places at Lot 110 DP 1187931 Mid Western Highway, Hay. However, contact has been made with a representative of Hay Local Aboriginal Lands Council who advised that there may be relics such as artifacts in the area

and it would be appropriate for a representative of the LALC to be on site during works that require ground disturbance. Hay Shire Council may recommend a condition to this effect.

Council may also impose a condition of consent to comply with provisions of the *National Parks and Wildlife Act 1974* should any evidence of Aboriginal occupation be found during site works. An *Aboriginal Heritage Impact Permit* may be required to be obtained if indigenous heritage objects are found.

#### 5.10.2 Non-indigenous heritage

The following information about the European settlement of the Hay area has been sourced from the Hay Historical Society website <http://users.tpg.com.au/hayhist/>.

*Hay is located in the western Riverina region of New South Wales. The township began as a crossing-place on the Murrumbidgee River, for stock being driven south to markets in Victoria during the gold-rushes of the 1850s. The site was eventually surveyed in 1859 and Hay quickly developed as an important hub for the surrounding pastoral holdings, with their fat-stock and wool production.*

*During its earliest days Hay's economy was linked to the navigation by steam-boats of the Murrumbidgee, and it became an important port. The town and district was also extensively serviced by horse- and bullock-driven wagons. In 1882 the railway was extended to Hay, linking the town directly with regions to the east, including Sydney.*

There are 19 heritage properties in Hay that are listed in *Schedule 5 Environmental heritage of Hay LEP 2011*. These are given in Table 7 below.

All of these properties have been assessed to be of local heritage significance other than the former Hay gaol, the post office and the Hay railway station and yard group which are of state significance.

**Table 7: Extract from Schedule 5 Environmental heritage of Hay LEP 2011**

Property	Address
Lake Merrimajeel	As defined on the LEP Heritage Map
Murrumbidgee Swamp	As defined on the LEP Heritage Map
St Andrew's Presbyterian Church	Bank Street
Former Sewer Treatment Works	Brunker Street
Former Hay Gaol	355 Church Street
John Witcombe Memorial Drinking Fountain	Cnr Lachlan and Moppett Streets,
Westpac Bank	112 Lachlan Street
Post Office	120 Lachlan Street
Lands Board Office	126 Lachlan Street
Hay Shire Council Chambers	134 Lachlan Street
Commercial Hotel	195–199 Lachlan Street
Gatekeepers' Cottages	262–264 Lachlan Street

Property	Address
Sturt's Marked Tree	Mid Western Highway Road Reserve
Hay Courthouse	416–420 Moppett Street
St Fergal's Roman Catholic Presbytery	429 Moppett Street
Hay Railway Station and yard group including Hay Railway Station, Station Master's House, Water Tower and Railway Porters' Cottages	Narrandera– Hay Railway
Presentation Convent	Cnr Pine and Orson Streets
St Paul's Pro-Cathedral	185 Pine Street
Former Terminus Hotel	260 Pine Street

Lot 110 DP 1187931 is not listed as an item of environmental heritage in *Schedule 5 Environmental heritage of Hay LEP 2011* and there are no listed heritage items in the vicinity of the site. The closest item to the site, the former goal, is located within the urban area of Hay which is some 600 metres to the south-west at the nearest point to the site.

### 5.10.3 Mitigation measures

In relation to indigenous heritage, further consultation should be carried out with the Hay Local Aboriginal Lands Council prior to commencing site works and construction to determine whether it is necessary for members of the local indigenous community to be present on site during ground-disturbing works.

No mitigation measures are necessary in relation to non-indigenous heritage.

## 5.11 Electromagnetic radiation

### 5.11.1 Potential radiation sources

The information presented in this section has been sourced from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). It includes a description of the type of electromagnetic radiation that may be produced by the generation and distribution of electricity.

The generation, distribution and use of electricity can produce extremely low frequency (ELF) electric and magnetic fields (EMF) from electrically charged particles. The electric field is produced by the voltage whereas the magnetic field is produced by the current. The strength of the electric field is measured in units of volts per metre whilst the strength of the magnetic field is expressed in units of tesla (T), microtesla (μT), gauss (G) or milligauss (mG).

ELF EMF is produced by both natural and artificial sources. Naturally occurring ELF EMF is associated with atmospheric processes such as ionospheric currents, thunderstorms and lightning. Artificial sources are

the dominant sources of ELF EMF and are usually associated with the generation, distribution and use of electricity at the frequency of 50 or 60 Hz. The widespread use of electricity means that people are exposed to ELF electric and magnetic fields in the home, in the environment and in the workplace.

According to the Australian Radiation Protection and Nuclear Safety Agency, which maintains continual oversight of emerging research into the potential health effects of the EMF exposure, there is no established evidence of health effects from exposure to electric and magnetic fields from powerlines, substations, transformers or other electrical sources, regardless of the proximity, causes any health effects.

### **5.11.2 Mitigation measures**

The location of the solar farm and the distance separation between nearby dwellings and the site mean that any impacts on health are mitigated. No additional mitigation measures are proposed.

## **5.12 Glare and glint**

### **5.12.1 Potential glare and glint**

Glare is defined as a continuous source of excessive brightness relative to ambient lighting. Glint is defined as a momentary flash of bright light. Solar photovoltaic (PV) panels are constructed of dark, light-absorbing material and covered with anti-reflective coating. In order to maximise the efficiency, the panels are designed to limit reflection and to absorb around 98% of the light received. The glare generated from solar panels is significantly lower than many other surfaces, including water, however, the glass panels and metal frames have the potential to generate glare and glint. An assessment of the potential glare and glint generated by the proposed solar farm is necessary to ensure visual receptors such as road users, air traffic control towers and pilots are not impacted by the development of solar farms.

In a fixed PV solar array, the angle of incidence varies as the sun moves across the sky, that is, the angle of incidence is at its lowest around noon where the sun is directly overhead and increases in the early mornings and late evenings as the incidence angles increase. The variation of the angle is reduced where the PV array is mounted on a single axis tracking system whereby the panels rotate to remain perpendicular to the sun as proposed in the Hay 1A Solar Farm. Therefore, an array mounted on a tracking system has less potential to cause glare whilst it tracks the sun.

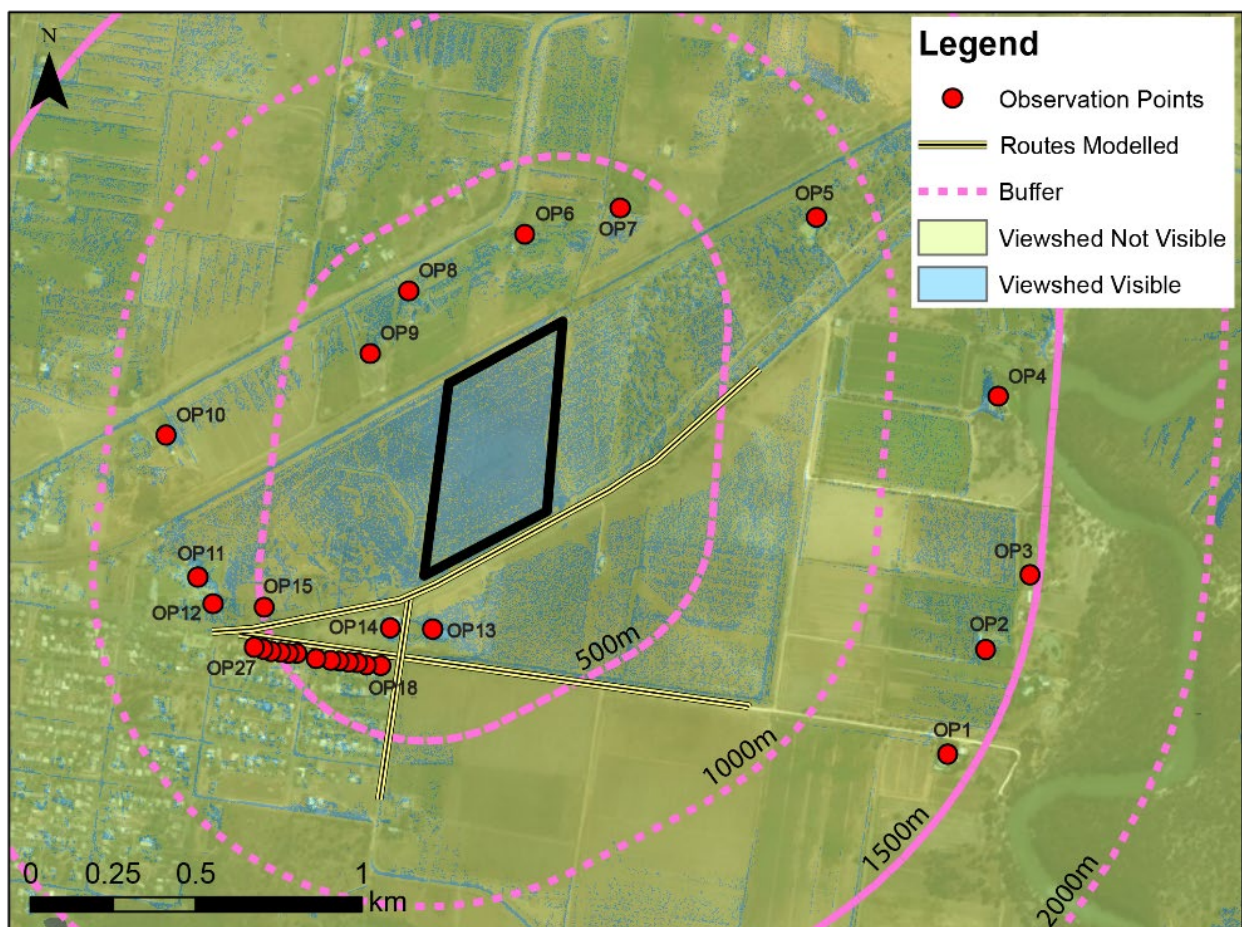
A desktop assessment has been carried out using the Solar Glare Hazard Analysis Tool. The results of the glare analysis are appended as Attachment D. The assessment is based on identifying the potential sensitive receptors and then assessing the potential glare and glint hazard and impacts on those receptors using the tool. Glare resulting from PV solar farms is analysed at different viewpoints based on the location, orientation and specifications of the solar panels. Mitigation measures are recommended to reduce potential impacts to an acceptable level. This tool is used by the United States Federal Aviation Administration for



glare hazard analysis near airports and is also recognised by the Australian Government Civil Aviation Safety Authority (CASA).

The analysis estimates green glare and yellow glare received at each identified potential receptor. Green glare is glare with low potential to cause an after-image when observed prior to typical blink response time, and yellow glare has a higher potential to cause an after-image when observed prior to a typical blink response time. The analysis is on a minute-by-minute basis because sun reflections from solar panels are likely to last at least one minute. Glint is a short-term flash which lasts for less than a minute is therefore unlikely to occur from the sun, due to the pace at which the sun and panels move. Glint is not considered to be a factor affecting motorists or pilots and is not considered further in this assessment.

The heights of the observation points were assumed to be 1.5 m for a motorist and 1.65 m for a standing person. Existing vegetation or structures can affect visual connectivity with solar panels. Similarly, atmospheric conditions such as cloud cover can influence light reflection and the resulting impact on visual receptors. Varying atmospheric conditions have not been accounted for in the analysis and there are no structures or vegetation either in the road reserve adjoining Lot 110 or on the site itself that would impede visual connectivity.



**Figure 15: Viewshed and observation points**

Potential sensitive receptors, called observation points, are shown in Figure 15 above. Three road observation routes and 28 residential/commercial observation points were identified as potential visual receptors. These were identified as follows:

- Considering the elevation of the site relative to surrounding land to determine land potentially affected. The blue shaded area in Figure 15 indicates areas of possible visual impact,
- Including residential and commercial properties and public roads within a 2 km radius of the site. Properties located at greater distances are unlikely to be affected, and
- Excluding properties where existing structures will act as visual barriers, for example, to the south-west of the site.

Hay Airport, which is located approximately 4 kilometres south-west of the site, is not considered a potential visual receptor of the site due to relative elevation and distance.

The results of the Solar Glare Hazard Analysis Tool for the Hay Solar Farm are detailed in Table 8.

**Table 8: Solar Glare Hazard Analysis Tool specification inputs**

Observation point (property)	Type or property	Location relative to solar farm	Green glare	Yellow glare	Results
Route 1	Mid Western Highway	Southern boundary	0	0	No glare
Route 2	Bourke Street	180m south	0	0	No glare
Route 3	Murray Street	Perpendicular Mid Western Hwy	0	0	No glare
OP1	Residence	1200m south-east	0	0	No glare
OP2	Residence	1310m south-east	0	0	No glare
OP3	Residence	1258m east	0	0	No glare
OP4	Residence	1172m east	0	0	No glare
OP5	Residence	720m north-east	0	0	No glare
OP6	Residence	952m east	0	0	No glare
OP7	Residence	671m north	0	0	No glare
OP8	Residence	775m north	0	0	No glare
OP9	Residence	609m north	0	0	No glare
OP10	Residence	550m north	0	0	No glare
OP11	Residence	931m west	0	0	No glare
OP12	Hay Hospital	580m west	0	0	No glare
OP13	Commercial	555m west	0	0	No glare
OP14	Commercial	250m south	0	0	No glare
OP15	Commercial	250m south	0	0	No glare

Observation point (property)	Type or property	Location relative to solar farm	Green glare	Yellow glare	Results
OP16	Residence	267m south-west	0	0	No glare
OP17	Residence	286m south-west	0	0	No glare
OP18	Residence	306m south	0	0	No glare
OP19	Residence	325m south-west	0	0	No glare
OP20	Residence	345m south-west	0	0	No glare
OP21	Residence	364m south-west	0	0	No glare
OP22	Residence	383m south-west	0	0	No glare
OP23	Residence	403m south-west	0	0	No glare
OP24	Residence	422m south-west	0	0	No glare
OP25	Residence	441m south-west	0	0	No glare
OP26	Residence	461m south-west	0	0	No glare
OP27	Residence	480m south-west	0	0	No glare
OP28	Residence	500m south-west	0	0	No glare

The results of the analysis indicate that persons occupying the selected properties are unlikely to be affected by either green or yellow glare as a result of the proposed solar farm. Motorists using the Mid Western Highway are unlikely to be affected by glare as the property is located to the north of the highway and the panels will track the sun over the day from east to west.

#### 5.12.2 Mitigation measures

No mitigation measures are considered necessary.

## 6. CONCLUSION

The site is considered suitable for the proposed development of the Hay 1A Solar Farm. It is located adjacent a 33kV sub-station enabling efficient connections to transfer power generated by the solar PV panels to the grid.

The site is flat, is free of constraints and, owing to its location on a classified road, is accessible to large delivery vehicles during the construction phase and utility vehicles for ongoing maintenance.

According to the Australian Radiation Protection and Nuclear Safety Agency, which maintains continual oversight of emerging research into the potential health effects of the EMF exposure, there is no established evidence of health effects from exposure to electric and magnetic fields from powerlines, substations, transformers or other electrical sources, regardless of the proximity, causes any health effects. The location of the solar farm and the distance separation between nearby dwellings and the site mean that any impacts on health are mitigated.

The likely impacts of the development have been considered in this Statement and supporting documents. Considerations include impacts on biodiversity, natural hazards, visual and scenic amenity, glare and glint, traffic, noise, air quality, waste management, water resources, indigenous and non-indigenous heritage, the community and the local economy. Any impacts on these interests have been found to be acceptable and mitigation measures have been recommended where necessary.

Below is a summary of mitigation measures. It is recommended that a environmental management plan be prepared to cover the construction and operational phases. Where necessary Table 9 includes a recommendation as to whether the mitigation measure should be included in the management plan.

**Table 9: Summary of mitigation measures**

Consideration	Mitigation measures	Environmental Management Plan
Biodiversity	Land to the east and south of the subject site mapped as Natural Resources – Biodiversity in <i>Hay LEP 2011</i> . A minimum setback of the solar farm in excess of 80 metres, ranging up to approximately 180 metres, to the boundary of adjoining land to the east is proposed. To avoid interference with the vegetation community located on the adjoining land it is recommended that any vegetation planted to screen the development and any grasses planted to bind the soil following construction of the solar farm be native species endemic to the area. Access to the site is to be limited to that point shown on development	Yes, with reference to ongoing site access during both construction and operational phases

	plans and within the development area. Storage of materials is to be carried out wholly within the development area.	
Natural hazards	None recommended	n/a
Water resources	<ul style="list-style-type: none"> <li>• Consultation with local emergency management agencies be carried out as part of the project management plan to ensure notification of regional weather or climatic events that may affect site access</li> <li>• Minimise erosion and sedimentation from construction activities by undertaking works in accordance with the NSW Government publication <i>Managing Urban Stormwater: Soils and Construction</i></li> <li>• Implement measures relating to site drainage and water quality controls for the design and construction phases, and stormwater point and source controls</li> </ul>	Yes, for construction and operational phases. Include an erosion & sediment control plan or soil and water management plan
Visual & scenic amenity	No mitigation measures are proposed.	n/a
Traffic	<ul style="list-style-type: none"> <li>• An area is allocated to be used as a temporary laydown and car parking area within the property at the south-western corner,</li> <li>• Heavy vehicles should arrive and depart from the site outside of the morning and afternoon peak traffic periods,</li> <li>• A new culvert should be constructed beneath the proposed new entrance to divert stormwater flows, and</li> <li>• Signage to be erected near the entrance to indicate that construction vehicles are accessing the site.</li> </ul>	Yes, with reference to site access during the establishment and construction phases
Noise	<p>The following mitigation measures are recommended to address noise emissions during the construction phase:</p> <ul style="list-style-type: none"> <li>• a construction noise management protocol to minimise noise emissions, manage out of hours (minor) works to be inaudible, and to respond to potential concerns from the community,</li> <li>• where possible use localised mobile screens or construction hoarding around plant to act as barriers between construction works and receivers, particularly where equipment is near the site boundary and/or a residential receiver including areas in constant or regular use (e.g. unloading and laydown areas),</li> <li>• operating plant in a conservative manner (no over-revving), shutdown when not in use, and be parked/started at farthest point from relevant assessment locations,</li> <li>• selection of the quietest suitable machinery available for each activity,</li> </ul>	Yes, for construction and operational phases



	<ul style="list-style-type: none"> <li>• avoidance of noisy plant/machinery working simultaneously where practicable,</li> <li>• minimise impact noise wherever possible,</li> <li>• utilise a broadband reverse alarm in lieu of the traditional high frequency type reverse alarm,</li> <li>• provide toolbox meetings, training and education to drivers and contractors visiting the site during construction so they are aware of the location of noise sensitive receivers and to be cognisant of any noise generating activities,</li> <li>• signage is to be placed at the front entrance advising truck drivers of their requirement to minimise noise both on and off-site, and</li> <li>• utilise project related community consultation forums to notify residences within close proximity of the site with project progress, proposed/upcoming potentially noise generating works, its duration and nature and complaint procedure.</li> </ul> <p>It is recommended that the noise emissions from the solar farm be minimised when operational. To assist in noise management, it is recommended that a one-off noise validation monitoring assessment be completed to quantify emissions from site and to confirm emissions relevant criteria are satisfied.</p>	
Air quality	<p>During construction:</p> <ul style="list-style-type: none"> <li>• Limit vehicle movements to areas necessary to deliver panels, ancillary structures and equipment</li> <li>• Suppress dust emissions using watering and cease works during dry and windy conditions</li> <li>• Ensure ground disturbance is limited to areas necessary to place footings or to be used for access</li> <li>• Ensure minimal handling of excavated materials</li> <li>• Ensure stockpiles of excavated material is bunded and protected from wind and vehicle movements</li> </ul> <p>During operation:</p> <ul style="list-style-type: none"> <li>• Grade and add road base to internal accessways</li> <li>• Revegetate the site with suitable groundcover immediately construction works are completed</li> <li>• Ensure all plant and equipment operates in accordance with specifications</li> </ul>	Yes, for construction and operational phases

Waste management	<p>It is recommended that a waste management plan be developed to provide detailed procedures to manage the waste stream. The plan should contain:</p> <ul style="list-style-type: none"> <li>• Strategies to reduce waste during all project phases,</li> <li>• Recycling, re-use and recovery strategies and opportunities,</li> <li>• Classification of all waste streams,</li> <li>• Tracking register and details,</li> <li>• On site recycling management,</li> <li>• Allocation of responsibilities for recycling, re-use and disposal,</li> <li>• Reporting and notification procedures if a waste incident occur.</li> </ul> <p>If vegetation clearance is required during preparation of the site prior to and/or during the construction phase, that vegetation should be re-used for mulch and on-site soil erosion control where possible.</p>	Yes, for construction phase
The community & local economy	No mitigation measures are proposed.	n/a
Heritage	Consult with the Hay Local Aboriginal Lands Council prior to commencing site works and construction to determine whether it is necessary for members of the local indigenous community to be present on site during ground-disturbing works.	Yes, for construction phase
Electromagnetic radiation	No mitigation measures are proposed.	n/a
Glare and glint	No mitigation measures are proposed.	n/a



The proposed development of the Hay 1A Solar Farm is permissible under provisions of *SEPP (Infrastructure) 2007* and would assist to generate electricity and at the same time contribute to reducing greenhouse gas emissions and achieving the national targets.

The system is designed to generate in excess of 10 GWh of energy annually with the system offsetting almost 8.5 thousand tonnes of CO<sup>2</sup> equivalent emissions (Sources: *National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Schedule 1)* and Department of the Environment and Energy) and providing enough energy to power about 1,400 NSW homes.














Any potential impacts of the development may be avoided, minimized or mitigated. The development is considered to be in the public interest.

# ATTACHMENT A - BIONET ATLAS SEARCH RESULTS












Data from the BioNet BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1Å; ^^ rounded to 0.01Å). Copyright the State of NSW through the Office of Environment and Heritage. Search criteria : Public Report of all Valid Records of Entities in HAY LGA returned a total of 44,032 records of 1,286 species.  
Report generated on 11/02/2019 4:05 PM














Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Actinopterygii	Cyprinidae	T1000	<i>Carassius auratus</i>	*	Goldfish			124	
Animalia	Actinopterygii	Cyprinidae	T044	<i>Cyprinus carpio</i>	*	Carp			111	
Animalia	Actinopterygii	Percichthyidae	T217	<i>Maccullochella peelii</i>		Murray Cod			1	
Animalia	Actinopterygii	Percichthyidae	T310	<i>Macquaria ambigua</i>		Golden Perch			3	
Animalia	Actinopterygii	Eleotridae	T1001	<i>Hypseleotris klunzingeri</i>	*	Western Carp Gudgeon			274	
Animalia	Malacostraca	Parastacidae	T904	<i>Cherax destructor</i>		Dam Yabby			22	
Animalia	Actinopterygii	Poeciliidae	T013	<i>Gambusia holbrooki</i>	*	Mosquito Fish			43	
Animalia	Actinopterygii	Retropinnidae	T051	<i>Retropinna semoni</i>		Australian Smelt			27	
Animalia	Amphibia	Myobatrachidae	3131	<i>Crinia parinsignifera</i>		Eastern Sign-bearing Froglet	P		59	
Animalia	Amphibia	Myobatrachidae	3135	<i>Crinia sloanei</i>		Sloane's Froglet	V,P		K	
Animalia	Amphibia	Myobatrachidae	3058	<i>Limnodynastes dumerilii</i>		Eastern Banjo Frog	P		3	
Animalia	Amphibia	Myobatrachidae	3059	<i>Limnodynastes fletcheri</i>		Long-thumbed Frog	P		63	
Animalia	Amphibia	Myobatrachidae	3060	<i>Limnodynastes interioris</i>		Giant Banjo Frog	P		26	
Animalia	Amphibia	Myobatrachidae	9048	<i>Limnodynastes sp.</i>		unidentified Limnodynastes	P		24	
Animalia	Amphibia	Myobatrachidae	3063	<i>Limnodynastes tasmaniensis</i>		Spotted Grass Frog	P		142	
Animalia	Amphibia	Myobatrachidae	3086	<i>Neobatrachus sudelli</i>		Sudell's Frog	P		2	
Animalia	Amphibia	Myobatrachidae	3098	<i>Notaden bennettii</i>		Crucifix Frog	P		1	
Animalia	Amphibia	Hylidae	3025	<i>Cyclorana platycephala</i>		Water-holding Frog	P		1	
Animalia	Amphibia	Hylidae	3204	<i>Litoria peronii</i>		Peron's Tree Frog	P		89	
Animalia	Amphibia	Hylidae	3207	<i>Litoria raniformis</i>		Southern Bell Frog	E1,P	V	289	
Animalia	Reptilia	Chelidae	5259	<i>Chelodina expansa</i>		Broad-shelled Turtle	P		1	
Animalia	Reptilia	Chelidae	2017	<i>Chelodina longicollis</i>		Eastern Snake-necked Turtle	P		3	
Animalia	Reptilia	Chelidae	2034	<i>Emydura macquarii</i>		Macquarie Turtle	P		1	
Animalia	Reptilia	Gekkonidae	2126	<i>Christinus marmoratus</i>		Marbled Gecko	P		2	
Animalia	Reptilia	Gekkonidae	2076	<i>Diplodactylus tessellatus</i>		Tessellated Gecko	P		57	
Animalia	Reptilia	Gekkonidae	2052	<i>Lucasium byrnei</i>		Gibber Gecko	P		14	
Animalia	Reptilia	Gekkonidae	2059	<i>Strophurus intermedius</i>		Southern Spiny-tailed Gecko	P		21	
Animalia	Reptilia	Gekkonidae	2138	<i>Underwoodisaurus milii</i>		Thick-tailed Gecko	P		8	
Animalia	Reptilia	Pygopodidae	2160	<i>Delma inornata</i>		Patternless Delma	P		1	
Animalia	Reptilia	Pygopodidae	2175	<i>Pygopus nigriceps</i>		Western Hooded Scaly-foot	P		3	
Animalia	Reptilia	Pygopodidae	2911	<i>Pygopus schraderi</i>		Eastern Hooded Scaly-foot	P		1	
Animalia	Reptilia	Scincidae	5156	<i>Cryptoblepharus australis</i>		Inland Snake-eyed Skink	P		12	
Animalia	Reptilia	Scincidae	T222	<i>Cryptoblepharus pannosus</i>		Ragged Snake-eyed Skink	P		41	
Animalia	Reptilia	Scincidae	2389	<i>Ctenotus uber</i>		Spotted Ctenotus	P		8	
Animalia	Reptilia	Scincidae	5154	<i>Lerista muelleri</i>		Wood Mulch-slider	P		2	
Animalia	Reptilia	Scincidae	2519	<i>Menetia greyii</i>		Common Dwarf Skink	P		10	
Animalia	Reptilia	Scincidae	2525	<i>Morethia adelaidensis</i>		Saltbush Morethia Skink	P		8	
Animalia	Reptilia	Scincidae	2526	<i>Morethia boulengeri</i>		South-eastern Morethia Skink	P		130	









Animalia	Reptilia	Scincidae	2579	<i>Tiliqua occipitalis</i>	Western Blue-tongued Lizard	V,P	P	
Animalia	Reptilia	Scincidae	2583	<i>Tiliqua rugosa</i>	Shingle-back	P	48	
Animalia	Reptilia	Scincidae	2580	<i>Tiliqua scincoides</i>	Eastern Blue-tongue	P	10	
Animalia	Reptilia	Agamidae	2177	<i>Pogona barbata</i>	Bearded Dragon	P	21	
Animalia	Reptilia	Agamidae	2204	<i>Pogona vitticeps</i>	Central Bearded Dragon	P	1	
Animalia	Reptilia	Agamidae	2257	<i>Tympanocryptis tetraporophora</i>	Eyrean Earless Dragon	P	1	
Animalia	Reptilia	Varanidae	2271	<i>Varanus gouldii</i>	Gould's Goanna	P	8	
Animalia	Reptilia	Varanidae	9056	<i>Varanus sp.</i>	Unidentified Goanna	P	1	
Animalia	Reptilia	Varanidae	2283	<i>Varanus varius</i>	Lace Monitor	P	10	
Animalia	Reptilia	Typhlopidae	2588	<i>Anilius bituberculatus</i>	Prong-snouted Blind Snake	P	3	
Animalia	Reptilia	Elapidae	2655	<i>Demansia psammophis</i>	Yellow-faced Whip Snake	P	1	
Animalia	Reptilia	Elapidae	2667	<i>Echiopsis curta</i>	Bardick	E1,P	P	
Animalia	Reptilia	Elapidae	2669	<i>Furina diadema</i>	Red-naped Snake	P	1	
Animalia	Reptilia	Elapidae	2681	<i>Notechis scutatus</i>	Tiger Snake	P	14	
Animalia	Reptilia	Elapidae	2693	<i>Pseudechis porphyriacus</i>	Red-bellied Black Snake	P	5	
Animalia	Reptilia	Elapidae	5229	<i>Pseudonaja aspidorhyncha</i>	Strap-snouted Brown Snake	P	1	
Animalia	Reptilia	Elapidae	2699	<i>Pseudonaja textilis</i>	Eastern Brown Snake	P	14	
Animalia	Reptilia	Elapidae	2722	<i>Suta suta</i>	Curl Snake	P	21	
Animalia	Aves	Casuariidae	0001	<i>Dromaius novaehollandiae</i>	Emu	P	84	
Animalia	Aves	Megapodiidae	0007	<i>Leipoa ocellata</i>	Malleefowl	E1,P V	P	
Animalia	Aves	Phasianidae	0009	<i>Coturnix pectoralis</i>	Stubble Quail	P	20	
Animalia	Aves	Phasianidae	0011	<i>Coturnix ypsilophora</i>	Brown Quail	P	1	
Animalia	Aves	Anseranatidae	0199	<i>Anseranas semipalmata</i>	Magpie Goose	V,P	2	
Animalia	Aves	Anatidae	0210	<i>Anas castanea</i>	Chestnut Teal	P	9	
Animalia	Aves	Anatidae	0211	<i>Anas gracilis</i>	Grey Teal	P	961	
Animalia	Aves	Anatidae	0212	<i>Anas rhynchotis</i>	Australasian Shoveler	P	117	
Animalia	Aves	Anatidae	0208	<i>Anas superciliosa</i>	Pacific Black Duck	P	768	
Animalia	Aves	Anatidae	0215	<i>Aythya australis</i>	Hardhead	P	248	
Animalia	Aves	Anatidae	0217	<i>Biziura lobata</i>	Musk Duck	P	80	
Animalia	Aves	Anatidae	0202	<i>Chenonetta jubata</i>	Australian Wood Duck	P	419	
Animalia	Aves	Anatidae	0203	<i>Cygnus atratus</i>	Black Swan	P	365	
Animalia	Aves	Anatidae	0205	<i>Dendrocygna eytoni</i>	Plumed Whistling-Duck	P	23	
Animalia	Aves	Anatidae	0213	<i>Malacorhynchus membranaceus</i>	Pink-eared Duck	P	356	
Animalia	Aves	Anatidae	0216	<i>Oxyura australis</i>	Blue-billed Duck	V,P	59	
Animalia	Aves	Anatidae	0214	<i>Stictonetta naevosa</i>	Freckled Duck	V,P	54	
Animalia	Aves	Anatidae	0207	<i>Tadorna tadornoides</i>	Australian Shelduck	P	212	
Animalia	Aves	Podicipedidae	0060	<i>Podiceps cristatus</i>	Great Crested Grebe	P	61	
Animalia	Aves	Podicipedidae	0062	<i>Poliiocephalus poliocephalus</i>	Hoary-headed Grebe	P	114	
Animalia	Aves	Podicipedidae	T180	<i>small grebe sp.</i>	Small grebe	P	8	
Animalia	Aves	Podicipedidae	0061	<i>Tachybaptus novaehollandiae</i>	Australasian Grebe	P	79	
Animalia	Aves	Columbidae	9931	<i>Geopelia striata</i>	Peaceful Dove	P	11	
Animalia	Aves	Columbidae	0043	<i>Ocyphaps lophotes</i>	Crested Pigeon	P	58	
Animalia	Aves	Columbidae	0034	<i>Phaps chalcoptera</i>	Common Bronzewing	P	16	
Animalia	Aves	Podargidae	0313	<i>Podargus strigoides</i>	Tawny Frogmouth	P	4	
Animalia	Aves	Aegothelidae	0317	<i>Aegotheles cristatus</i>	Australian Owlet-nightjar	P	8	
Animalia	Aves	Anhingidae	8731	<i>Anhinga novaehollandiae</i>	Australasian Darter	P	171	
Animalia	Aves	Phalacrocoracidae	0100	<i>Microcarbo melanoleucos</i>	Little Pied Cormorant	P	310	
Animalia	Aves	Phalacrocoracidae	0096	<i>Phalacrocorax carbo</i>	Great Cormorant	P	276	
Animalia	Aves	Phalacrocoracidae	0097	<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant	P	269	
Animalia	Aves	Phalacrocoracidae	0099	<i>Phalacrocorax varius</i>	Pied Cormorant	P	90	
Animalia	Aves	Pelecanidae	0106	<i>Pelecanus conspicillatus</i>	Australian Pelican	P	377	
Animalia	Aves	Ardeidae	0977	<i>Ardea ibis</i>	Cattle Egret	P C,J	5	
Animalia	Aves	Ardeidae	0186	<i>Ardea intermedia</i>	Intermediate Egret	P	106	
Animalia	Aves	Ardeidae	8712	<i>Ardea modesta</i>	Eastern Great Egret	P	240	






Animalia	Aves	Ardeidae	0189	<i>Ardea pacifica</i>	White-necked Heron	P		280	
Animalia	Aves	Ardeidae	T179	<i>Ardea/Egretta sp.</i>	Unidentified Egret	P		142	
Animalia	Aves	Ardeidae	0197	<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1,P	E	30	
Animalia	Aves	Ardeidae	0185	<i>Egretta garzetta</i>	Little Egret	P		18	
Animalia	Aves	Ardeidae	0188	<i>Egretta novaehollandiae</i>	White-faced Heron	P		343	
Animalia	Aves	Ardeidae	8703	<i>Ixobrychus dubius</i>	Australian Little Bittern	P		8	
Animalia	Aves	Ardeidae	0192	<i>Nycticorax caledonicus</i>	Nankeen Night Heron	P		124	
Animalia	Aves	Threskiornithid ae	0182	<i>Platalea flavipes</i>	Yellow-billed Spoonbill	P		323	
Animalia	Aves	Threskiornithid ae	0181	<i>Platalea regia</i>	Royal Spoonbill	P		200	
Animalia	Aves	Threskiornithid ae	0178	<i>Plegadis falcinellus</i>	Glossy Ibis	P	C	1010	
Animalia	Aves	Threskiornithid ae	0179	<i>Threskiornis molucca</i>	Australian White Ibis	P		343	
Animalia	Aves	Threskiornithid ae	0180	<i>Threskiornis spinicollis</i>	Straw-necked Ibis	P		1583	
Animalia	Aves	Accipitridae	0222	<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk	P		3	
Animalia	Aves	Accipitridae	0221	<i>Accipiter fasciatus</i>	Brown Goshawk	P		7	
Animalia	Aves	Accipitridae	0220	<i>Accipiter novaehollandiae</i>	Grey Goshawk	P		1	
Animalia	Aves	Accipitridae	0224	<i>Aquila audax</i>	Wedge-tailed Eagle	P		69	
Animalia	Aves	Accipitridae	0219	<i>Circus approximans</i>	Swamp Harrier	P		61	
Animalia	Aves	Accipitridae	0218	<i>Circus assimilis</i>	Spotted Harrier	V,P		22	
Animalia	Aves	Accipitridae	0232	<i>Elanus axillaris</i>	Black-shouldered Kite	P		18	
Animalia	Aves	Accipitridae	0233	<i>Elanus scriptus</i>	Letter-winged Kite	P		1	
Animalia	Aves	Accipitridae	0226	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P	C	47	
Animalia	Aves	Accipitridae	0228	<i>Haliastur spheurnus</i>	Whistling Kite	P		152	
Animalia	Aves	Accipitridae	0231	^^Hamirostra melanosternon	Black-breasted Buzzard	V,P,3		K	
Animalia	Aves	Accipitridae	0225	<i>Hieraaetus morphnoides</i>	Little Eagle	V,P		6	
Animalia	Aves	Accipitridae	0230	^^Lophoictinia isura	Square-tailed Kite	V,P,3		1	
Animalia	Aves	Accipitridae	0229	<i>Milvus migrans</i>	Black Kite	P		60	
Animalia	Aves	Falconidae	0239	<i>Falco berigora</i>	Brown Falcon	P		42	
Animalia	Aves	Falconidae	0240	<i>Falco cenchroides</i>	Nankeen Kestrel	P		106	
Animalia	Aves	Falconidae	0236	^Falco hypoleucos	Grey Falcon	E1,P,2		1	
Animalia	Aves	Falconidae	0235	<i>Falco longipennis</i>	Australian Hobby	P		17	
Animalia	Aves	Falconidae	0237	<i>Falco peregrinus</i>	Peregrine Falcon	P		5	
Animalia	Aves	Falconidae	0238	<i>Falco subniger</i>	Black Falcon	V,P		17	
Animalia	Aves	Gruidae	0177	<i>Grus rubicunda</i>	Brolga	V,P		5	
Animalia	Aves	Rallidae	0059	<i>Fulica atra</i>	Eurasian Coot	P		364	
Animalia	Aves	Rallidae	0056	<i>Gallinula tenebrosa</i>	Dusky Moorhen	P		41	
Animalia	Aves	Rallidae	0046	<i>Gallirallus philippensis</i>	Buff-banded Rail	P		7	
Animalia	Aves	Rallidae	0058	<i>Porphyrio porphyrio</i>	Purple Swamphen	P		69	
Animalia	Aves	Rallidae	0049	<i>Porzana fluminea</i>	Australian Spotted Crake	P		29	
Animalia	Aves	Rallidae	0050	<i>Porzana pusilla</i>	Baillon's Crake	P		8	
Animalia	Aves	Rallidae	0051	<i>Porzana tabuensis</i>	Spotless Crake	P		8	
Animalia	Aves	Rallidae	0055	<i>Tribonyx ventralis</i>	Black-tailed Native-hen	P		310	
Animalia	Aves	Otididae	0176	<i>Ardeotis australis</i>	Australian Bustard	E1,P		3	
Animalia	Aves	Burhinidae	0174	<i>Burhinus grallarius</i>	Bush Stone-curlew	E1,P		5	
Animalia	Aves	Recurvirostrida e	0147	<i>Cladorhynchus leucocephalus</i>	Banded Stilt	P		1	
Animalia	Aves	Recurvirostrida e	0146	<i>Himantopus himantopus</i>	Black-winged Stilt	P		206	
Animalia	Aves	Recurvirostrida e	0148	<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet	P		40	
Animalia	Aves	Charadriidae	0145	<i>Charadrius australis</i>	Inland Dotterel	P		8	
Animalia	Aves	Charadriidae	0143	<i>Charadrius ruficapillus</i>	Red-capped Plover	P		5	
Animalia	Aves	Charadriidae	0144	<i>Elseyornis melanops</i>	Black-fronted Dotterel	P		83	
Animalia	Aves	Charadriidae	0132	<i>Erythrogonyx cinctus</i>	Red-kneed Dotterel	P		280	
Animalia	Aves	Charadriidae	0133	<i>Vanellus miles</i>	Masked Lapwing	P		144	
Animalia	Aves	Charadriidae	0135	<i>Vanellus tricolor</i>	Banded Lapwing	P		34	
Animalia	Aves	Pedionomidae	0020	<i>Pedionomus torquatus</i>	Plains-wanderer	E1,P	CE	110	
Animalia	Aves	Rostratulidae	0170	<i>Rostratula australis</i>	Australian Painted Snipe	E1,P	E	4	
Animalia	Aves	Scolopacidae	0163	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	P	C,J,K	29	
Animalia	Aves	Scolopacidae	0161	<i>Calidris ferruginea</i>	Curlew Sandpiper	E1,P	CE,C,J,K	K	
Animalia	Aves	Scolopacidae	0978	<i>Calidris melanotos</i>	Pectoral Sandpiper	P	J,K	2	
Animalia	Aves	Scolopacidae	0168	<i>Gallinago hardwickii</i>	Latham's Snipe	P	C,J,K	4	



Animalia	Aves	Scolopacidae	T181	<i>large wader sp.</i>	Large Waders	P		1	
Animalia	Aves	Scolopacidae	0152	<i>Limosa limosa</i>	Black-tailed Godwit	V,P	C,J,K	K	
Animalia	Aves	Scolopacidae	0154	<i>Tringa glareola</i>	Wood Sandpiper	P	C,J,K	1	
Animalia	Aves	Scolopacidae	0158	<i>Tringa nebularia</i>	Common Greenshank	P	C,J,K	6	
Animalia	Aves	Scolopacidae	0159	<i>Tringa stagnatilis</i>	Marsh Sandpiper	P	C,J,K	3	
Animalia	Aves	Scolopacidae/C haradriidae	T182	<i>small wader sp.</i>	Small Waders	P		13	
Animalia	Aves	Turnicidae	0019	<i>Turnix pyrrhothorax</i>	Red-chested Button-quail	P		2	
Animalia	Aves	Turnicidae	0018	<i>Turnix velox</i>	Little Button-quail	P		3	
Animalia	Aves	Glareolidae	0173	<i>Stiltia isabella</i>	Australian Pratincole	P		19	
Animalia	Aves	Laridae	0110	<i>Chlidonias hybrida</i>	Whiskered Tern	P		201	
Animalia	Aves	Laridae	0125	<i>Chroicocephalus novaehollandiae</i>	Silver Gull	P		70	
Animalia	Aves	Laridae	0111	<i>Gelochelidon nilotica</i>	Gull-billed Tern	P	C	52	
Animalia	Aves	Laridae	0112	<i>Hydroprogne caspia</i>	Caspian Tern	P	C,J	22	
Animalia	Aves	Laridae	9022	<i>Sterna sp.</i>	Tern	P		4	
Animalia	Aves	Cacatuidae	0269	<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	P		4	
Animalia	Aves	Cacatuidae	0271	<i>Cacatua sanguinea</i>	Little Corella	P		10	
Animalia	Aves	Cacatuidae	0265	<i>^Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo, Riverina population	E2,V,P, 2		P	
Animalia	Aves	Cacatuidae	0273	<i>Eolophus roseicapillus</i>	Galah	P		119	
Animalia	Aves	Cacatuidae	0270	<i>^Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	V,P,2		2	
Animalia	Aves	Cacatuidae	0274	<i>Nymphicus hollandicus</i>	Cockatiel	P		9	
Animalia	Aves	Psittacidae	0294	<i>Barnardius zonarius</i>	Australian Ringneck	P		5	
Animalia	Aves	Psittacidae	0291	<i>Barnardius zonarius barnardi</i>	[Mallee Ringneck]	P		8	
Animalia	Aves	Psittacidae	0309	<i>^^Lathamus discolor</i>	Swift Parrot	E1,P,3	CE	K	
Animalia	Aves	Psittacidae	0310	<i>Melopsittacus undulatus</i>	Budgerigar	P		15	
Animalia	Aves	Psittacidae	0306	<i>Neophema chrysostoma</i>	Blue-winged Parrot	P		15	
Animalia	Aves	Psittacidae	0302	<i>^^Neophema pulchella</i>	Turquoise Parrot	V,P,3		2	
Animalia	Aves	Psittacidae	0297	<i>Northiella haematogaster</i>	Blue Bonnet	P		28	
Animalia	Aves	Psittacidae	0312	<i>Pezoporus occidentalis</i>	Night Parrot	E4,P	E	1	
Animalia	Aves	Psittacidae	0282	<i>Platycercus elegans</i>	Crimson Rosella	P		1	
Animalia	Aves	Psittacidae	0284	<i>Platycercus elegans flaveolus</i>	[Yellow Rosella]	P		59	
Animalia	Aves	Psittacidae	0709	<i>^^Polytelis anthopeplus monarchoides</i>	Regent Parrot (eastern subspecies)	E1,P,3	V	K	
Animalia	Aves	Psittacidae	0277	<i>^^Polytelis swainsonii</i>	Superb Parrot	V,P,3	V	2	
Animalia	Aves	Psittacidae	0295	<i>Psephotus haematonotus</i>	Red-rumped Parrot	P		40	
Animalia	Aves	Psittacidae	0296	<i>Psephotus varius</i>	Mulga Parrot	P		1	
Animalia	Aves	Cuculidae	0337	<i>Cacomantis pallidus</i>	Pallid Cuckoo	P		7	
Animalia	Aves	Cuculidae	0342	<i>Chalcites basalis</i>	Horsfield's Bronze-Cuckoo	P		36	
Animalia	Aves	Cuculidae	0343	<i>Chalcites lucidus</i>	Shining Bronze-Cuckoo	P		1	
Animalia	Aves	Cuculidae	0341	<i>Chalcites osculans</i>	Black-eared Cuckoo	P		1	
Animalia	Aves	Strigidae	0246	<i>^^Ninox connivens</i>	Barking Owl	V,P,3		K	
Animalia	Aves	Strigidae	9922	<i>Ninox novaeseelandiae</i>	Southern Boobook	P		13	
Animalia	Aves	Tytonidae	9923	<i>Tyto javanica</i>	Eastern Barn Owl	P		17	
Animalia	Aves	Tytonidae	0250	<i>^^Tyto novaehollandiae</i>	Masked Owl	V,P,3		K	
Animalia	Aves	Alcedinidae	0319	<i>Ceyx azureus</i>	Azure Kingfisher	P		1	
Animalia	Aves	Alcedinidae	0322	<i>Dacelo novaeguineae</i>	Laughing Kookaburra	P		23	
Animalia	Aves	Alcedinidae	0325	<i>Todiramphus pyrrhopygius</i>	Red-backed Kingfisher	P		9	
Animalia	Aves	Alcedinidae	0326	<i>Todiramphus sanctus</i>	Sacred Kingfisher	P		82	
Animalia	Aves	Meropidae	0329	<i>Merops ornatus</i>	Rainbow Bee-eater	P	J	31	
Animalia	Aves	Coraciidae	0318	<i>Eurystomus orientalis</i>	Dollarbird	P		1	
Animalia	Aves	Climacteridae	0561	<i>Climacteris affinis</i>	White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	E2,P		K	




Animalia	Aves	Climacteridae	8126	<i>Climacteris picumnus picumnus</i>		P		1	
Animalia	Aves	Climacteridae	8127	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V,P		18	
Animalia	Aves	Maluridae	9971	<i>Amytornis modestus inexpectatus</i>	Thick-billed Grasswren (central NSW subspecies)	E4A,P,2		P	
Animalia	Aves	Maluridae	0513	<i>Amytornis striatus</i>	Striated Grasswren	V,P		P	
Animalia	Aves	Maluridae	0529	<i>Malurus cyaneus</i>	Superb Fairy-wren	P		203	
Animalia	Aves	Maluridae	0536	<i>Malurus lamberti</i>	Variegated Fairy-wren	P		34	
Animalia	Aves	Maluridae	0535	<i>Malurus leucopterus</i>	White-winged Fairy-wren	P		65	
Animalia	Aves	Maluridae	0532	<i>Malurus splendens</i>	Splendid Fairy-wren	P		4	
Animalia	Aves	Acanthizidae	0476	<i>Acanthiza apicalis</i>	Inland Thornbill	P		2	
Animalia	Aves	Acanthizidae	0486	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	P		17	
Animalia	Aves	Acanthizidae	0471	<i>Acanthiza nana</i>	Yellow Thornbill	P		20	
Animalia	Aves	Acanthizidae	0484	<i>Acanthiza reguloides</i>	Buff-rumped Thornbill	P		2	
Animalia	Aves	Acanthizidae	0481	<i>Acanthiza uropygialis</i>	Chestnut-rumped Thornbill	P		198	
Animalia	Aves	Acanthizidae	0466	<i>Aphelocephala leucopsis</i>	Southern Whiteface	P		40	
Animalia	Aves	Acanthizidae	0504	<i>Chthonicola sagittata</i>	Speckled Warbler	V,P		1	
Animalia	Aves	Acanthizidae	0463	<i>Gerygone fusca</i>	Western Gerygone	P		24	
Animalia	Aves	Acanthizidae	0497	<i>Pyrrholaemus brunneus</i>	Redthroat	V,P		K	
Animalia	Aves	Acanthizidae	0465	<i>Smicronis brevirostris</i>	Weebill	P		22	
Animalia	Aves	Pardalotidae	0565	<i>Pardalotus punctatus</i>	Spotted Pardalote	P		3	
Animalia	Aves	Pardalotidae	0976	<i>Pardalotus striatus</i>	Striated Pardalote	P		51	
Animalia	Aves	Meliphagidae	0640	<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater	P		2	
Animalia	Aves	Meliphagidae	0603	<i>Anthochaera phrygia</i>	Regent Honeyeater	E4A,P	CE	K	
Animalia	Aves	Meliphagidae	0602	<i>Certhionyx variegatus</i>	Pied Honeyeater	V,P		20	
Animalia	Aves	Meliphagidae	0641	<i>Entomyzon cyanotis</i>	Blue-faced Honeyeater	P		13	
Animalia	Aves	Meliphagidae	0448	<i>Epthianura albifrons</i>	White-fronted Chat	V,P		94	
Animalia	Aves	Meliphagidae	0450	<i>Epthianura aurifrons</i>	Orange Chat	P		18	
Animalia	Aves	Meliphagidae	0449	<i>Epthianura tricolor</i>	Crimson Chat	P		18	
Animalia	Aves	Meliphagidae	0608	<i>Gavicalis virescens</i>	Singing Honeyeater	P		26	
Animalia	Aves	Meliphagidae	0598	<i>Grantiella picta</i>	Painted Honeyeater	V,P	V	K	
Animalia	Aves	Meliphagidae	0635	<i>Manorina flavigula</i>	Yellow-throated Miner	P		21	
Animalia	Aves	Meliphagidae	0634	<i>Manorina melanocephala</i>	Noisy Miner	P		29	
Animalia	Aves	Meliphagidae	0583	<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater	P		1	
Animalia	Aves	Meliphagidae	8303	<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V,P		K	
Animalia	Aves	Meliphagidae	0646	<i>Philemon citreogularis</i>	Little Friarbird	P		40	
Animalia	Aves	Meliphagidae	0645	<i>Philemon corniculatus</i>	Noisy Friarbird	P		1	
Animalia	Aves	Meliphagidae	0585	<i>Plectorhyncha lanceolata</i>	Striped Honeyeater	P		11	
Animalia	Aves	Meliphagidae	0625	<i>Ptilotula penicillatus</i>	White-plumed Honeyeater	P		39	
Animalia	Aves	Meliphagidae	0589	<i>Sugomel niger</i>	Black Honeyeater	P		4	
Animalia	Aves	Pomatostomidae	0446	<i>Pomatostomus ruficeps</i>	Chestnut-crowned Babbler	P		1	
Animalia	Aves	Pomatostomidae	8388	<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V,P		34	
Animalia	Aves	Psophodidae	0437	<i>Cinclosoma castanotum</i>	Chestnut Quail-thrush	V,P		P	
Animalia	Aves	Neosittidae	0549	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		K	
Animalia	Aves	Campephagidae	0423	<i>Coracina maxima</i>	Ground Cuckoo-shrike	P		2	
Animalia	Aves	Campephagidae	0424	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	P		40	
Animalia	Aves	Campephagidae	0425	<i>Coracina papuensis</i>	White-bellied Cuckoo-shrike	P		1	
Animalia	Aves	Campephagidae	0430	<i>Lalage sueurii</i>	White-winged Triller	P		22	
Animalia	Aves	Pachycephalidae	0408	<i>Colluricincla harmonica</i>	Grey Shrike-thrush	P		35	
Animalia	Aves	Pachycephalidae	0416	<i>Falcunculus frontatus frontatus</i>	Eastern Shrike-tit	P		1	
Animalia	Aves	Pachycephalidae	0403	<i>Pachycephala inornata</i>	Gilbert's Whistler	V,P		K	

Animalia	Aves	Pachycephalidae	0398	<i>Pachycephala pectoralis</i>	Golden Whistler	P		1	
Animalia	Aves	Pachycephalidae	0401	<i>Pachycephala rufiventris</i>	Rufous Whistler	P		33	
Animalia	Aves	Artamidae	0546	<i>Artamus cinereus</i>	Black-faced Woodswallow	P		3	
Animalia	Aves	Artamidae	8519	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,P		7	
Animalia	Aves	Artamidae	0543	<i>Artamus leucorhynchus</i>	White-breasted Woodswallow	P		12	
Animalia	Aves	Artamidae	0544	<i>Artamus personatus</i>	Masked Woodswallow	P		17	
Animalia	Aves	Artamidae	0545	<i>Artamus superciliosus</i>	White-browed Woodswallow	P		20	
Animalia	Aves	Artamidae	0700	<i>Cracticus nigrogularis</i>	Pied Butcherbird	P		45	
Animalia	Aves	Artamidae	0705	<i>Cracticus tibicen</i>	Australian Magpie	P		77	
Animalia	Aves	Artamidae	0702	<i>Cracticus torquatus</i>	Grey Butcherbird	P		26	
Animalia	Aves	Rhipiduridae	0361	<i>Rhipidura albiscapa</i>	Grey Fantail	P		21	
Animalia	Aves	Rhipiduridae	0364	<i>Rhipidura leucophrys</i>	Willie Wagtail	P		79	
Animalia	Aves	Corvidae	0691	<i>Corvus bennetti</i>	Little Crow	P		3	
Animalia	Aves	Corvidae	0930	<i>Corvus coronoides</i>	Australian Raven	P		61	
Animalia	Aves	Corvidae	0954	<i>Corvus mellori</i>	Little Raven	P		64	
Animalia	Aves	Corvidae	9067	<i>Corvus sp.</i>	Unidentified Corvid	P		1	
Animalia	Aves	Monarchidae	0415	<i>Grallina cyanoleuca</i>	Magpie-lark	P		81	
Animalia	Aves	Monarchidae	9955	<i>Myiagra inquieta</i>	Restless Flycatcher	P		17	
Animalia	Aves	Corcoracidae	0693	<i>Corcorax melanorhamphos</i>	White-winged Chough	P		14	
Animalia	Aves	Corcoracidae	0675	<i>Struthidea cinerea</i>	Apostlebird	P		4	
Animalia	Aves	Petroicidae	8367	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V,P		1	
Animalia	Aves	Petroicidae	0377	<i>Microeca fascians</i>	Jacky Winter	P		11	
Animalia	Aves	Petroicidae	0380	<i>Petroica boodang</i>	Scarlet Robin	V,P		K	
Animalia	Aves	Petroicidae	0381	<i>Petroica goodenovii</i>	Red-capped Robin	P		126	
Animalia	Aves	Petroicidae	0382	<i>Petroica phoenicea</i>	Flame Robin	V,P		K	
Animalia	Aves	Alaudidae	0648	<i>Mirafrja javanica</i>	Horsfield's Bushlark	P		23	
Animalia	Aves	Cisticolidae	0525	<i>Cisticola exilis</i>	Golden-headed Cisticola	P		10	
Animalia	Aves	Acrocephalidae	0524	<i>Acrocephalus australis</i>	Australian Reed-Warbler	P		71	
Animalia	Aves	Megaluridae	0508	<i>Cincloramphus cruralis</i>	Brown Songlark	P		28	
Animalia	Aves	Megaluridae	0509	<i>Cincloramphus mathewsi</i>	Rufous Songlark	P		30	
Animalia	Aves	Megaluridae	0522	<i>Megalurus gramineus</i>	Little Grassbird	P		44	
Animalia	Aves	Timaliidae	0574	<i>Zosterops lateralis</i>	Silvereye	P		4	
Animalia	Aves	Hirundinidae	0357	<i>Hirundo neoxena</i>	Welcome Swallow	P		34	
Animalia	Aves	Hirundinidae	0360	<i>Petrochelidon ariel</i>	Fairy Martin	P		33	
Animalia	Aves	Hirundinidae	0359	<i>Petrochelidon nigricans</i>	Tree Martin	P		49	
Animalia	Aves	Turdidae	0991	<i>Turdus merula</i> *	Eurasian Blackbird			3	
Animalia	Aves	Sturnidae	0999	<i>Sturnus vulgaris</i> *	Common Starling			38	
Animalia	Aves	Nectariniidae	0564	<i>Dicaeum hirundinaceum</i>	Mistletoebird	P		9	
Animalia	Aves	Estrildidae	0652	<i>Stagonopleura guttata</i>	Diamond Firetail	V,P		1	
Animalia	Aves	Estrildidae	0655	<i>Taeniopygia bichenovii</i>	Double-barred Finch	P		1	
Animalia	Aves	Estrildidae	0653	<i>Taeniopygia guttata</i>	Zebra Finch	P		36	
Animalia	Aves	Passeridae	0995	<i>Passer domesticus</i> *	House Sparrow			34	
Animalia	Aves	Motacillidae	0647	<i>Anthus novaeseelandiae</i>	Australian Pipit	P		55	
Animalia	Mammalia	Ornithorhynchidae	1001	<i>Ornithorhynchus anatinus</i>	Platypus	P		1	
Animalia	Mammalia	Tachyglossidae	1003	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	P		20	
Animalia	Mammalia	Dasyuridae	1008	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	1	
Animalia	Mammalia	Dasyuridae	1050	<i>Planigale gilesi</i>	Paucident Planigale	P		11	
Animalia	Mammalia	Dasyuridae	1048	<i>Planigale tenuirostris</i>	Narrow-nosed Planigale	P		18	
Animalia	Mammalia	Dasyuridae	1072	<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart	P		22	
Animalia	Mammalia	Dasyuridae	1061	<i>Sminthopsis murina</i>	Common Dunnart	P		1	
Animalia	Mammalia	Thylacomyidae	1106	<i>Macrotis lagotis</i>	Bilby	E4,P	V	1	
Animalia	Mammalia	Phascolarctidae	1162	<i>Phascolarctos cinereus</i>	Koala	V,P	V	K	
Animalia	Mammalia	Vombatidae	1165	<i>Vombatus ursinus</i>	Common Wombat	P		1	


Animalia	Mammalia	Phalangeridae	T082	<i>Trichosurus sp.</i>	brushtail possum	P	2	
Animalia	Mammalia	Phalangeridae	1113	<i>Trichosurus vulpecula</i>	Common Brushtail Possum	P	20	
Animalia	Mammalia	Macropodidae	1263	<i>Macropus fuliginosus</i>	Western Grey Kangaroo	P	50	
Animalia	Mammalia	Macropodidae	1265	<i>Macropus giganteus</i>	Eastern Grey Kangaroo	P	124	
Animalia	Mammalia	Macropodidae	1275	<i>Macropus rufus</i>	Red Kangaroo	P	72	
Animalia	Mammalia	Macropodidae	T085	<i>Macropus sp.</i>	kangaroo / wallaby	P	1	
Animalia	Mammalia	Macropodidae	1242	<i>Wallabia bicolor</i>	Swamp Wallaby	P	3	
Animalia	Mammalia	Pteropodidae	1281	<i>Pteropus scapulatus</i>	Little Red Flying-fox	P	1	
Animalia	Mammalia	Emballonuridae	1321	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	V,P	K	
Animalia	Mammalia	Molossidae	1324	<i>Austronomus australis</i>	White-striped Freetail-bat	P	33	
Animalia	Mammalia	Molossidae	9044	<i>Mormopterus "Species 4" (big penis)</i>		P	12	
Animalia	Mammalia	Molossidae	T299	<i>Mormopterus petersi</i>	Inland Free-tailed Bat	P	12	
Animalia	Mammalia	Molossidae	1326	<i>Mormopterus planiceps</i>	Little Mastiff-bat	P	1	
Animalia	Mammalia	Molossidae	1938	<i>Mormopterus ridei</i>	Eastern Free-tailed Bat	P	2	
Animalia	Mammalia	Molossidae	T091	<i>Mormopterus sp.</i>	mastiff-bat	P	10	
Animalia	Mammalia	Vespertilionidae	1349	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	P	41	
Animalia	Mammalia	Vespertilionidae	1351	<i>Chalinolobus morio</i>	Chocolate Wattled Bat	P	26	
Animalia	Mammalia	Vespertilionidae	1352	<i>Chalinolobus picatus</i>	Little Pied Bat	V,P	1	
Animalia	Mammalia	Vespertilionidae	1357	<i>Myotis macropus</i>	Southern Myotis	V,P	4	
Animalia	Mammalia	Vespertilionidae	T315	<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat	V,P	V	K 
Animalia	Mammalia	Vespertilionidae	1335	<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	P	13	
Animalia	Mammalia	Vespertilionidae	1334	<i>Nyctophilus gouldi</i>	Gould's Long-eared Bat	P	4	
Animalia	Mammalia	Vespertilionidae	T092	<i>Nyctophilus sp.</i>	long-eared bat	P	5	
Animalia	Mammalia	Vespertilionidae	1364	<i>Scotorepens balstoni</i>	Inland Broad-nosed Bat	P	14	
Animalia	Mammalia	Vespertilionidae	1362	<i>Scotorepens greyii</i>	Little Broad-nosed Bat	P	4	
Animalia	Mammalia	Vespertilionidae	T089	<i>Scotorepens sp.</i>	Unidentified broad-nosed bat	P	3	
Animalia	Mammalia	Vespertilionidae	1382	<i>Vespadelus baverstocki</i>	Inland Forest Bat	V,P	K	
Animalia	Mammalia	Vespertilionidae	1378	<i>Vespadelus regulus</i>	Southern Forest Bat	P	20	
Animalia	Mammalia	Vespertilionidae	T088	<i>Vespadelus sp.</i>	Unidentified Eptesicus	P	3	
Animalia	Mammalia	Vespertilionidae	1379	<i>Vespadelus vulturinus</i>	Little Forest Bat	P	100	
Animalia	Mammalia	Muridae	1415	<i>Hydromys chrysogaster</i>	Water-rat	P	3	
Animalia	Mammalia	Muridae	1412	<i>Mus musculus</i>	*		House Mouse	31
Animalia	Mammalia	Canidae	1905	<i>Canis lupus familiaris</i>	*		Dog	11
Animalia	Mammalia	Canidae	1532	<i>Vulpes vulpes</i>	*		Fox	93
Animalia	Mammalia	Felidae	1536	<i>Felis catus</i>	*		Cat	12
Animalia	Mammalia	Leporidae	1511	<i>Lepus capensis</i>	*		Brown Hare	17
Animalia	Mammalia	Leporidae	1510	<i>Oryctolagus cuniculus</i>	*		Rabbit	68
Animalia	Mammalia	Suidae	1514	<i>Sus scrofa</i>	*		Pig	32
Animalia	Mammalia	Bovidae	1518	<i>Bos taurus</i>	*		European cattle	7
Animalia	Mammalia	Bovidae	1521	<i>Capra hircus</i>	*		Goat	1
Animalia	Mammalia	Bovidae	1522	<i>Ovis aries</i>	*		Sheep (feral)	1
Animalia	Mammalia	Cervidae	9112	<i>Cervus sp.</i>	*		Unidentified Deer	1
Animalia	Arachnida	Urodacidae	I074	<i>Urodacus manicatus</i>	black rock scorpion		1	
Animalia	Actinopterygii	Clupeidae	T361	<i>Nematalosa erebi</i>	Bony Bream		2	
Animalia	Actinopterygii	Melanotaeniidae	T360	<i>Melanotaenia fluviatilis</i>	Murray River Rainbowfish		5	


Plantae	Flora	Aizoaceae	7082	<i>Disphyma crassifolium</i> <i>subsp. clavellatum</i>			65
Plantae	Flora	Aizoaceae	6381	<i>Glinus lotoides</i>		Hairy Carpet-weed	16
Plantae	Flora	Aizoaceae	1034	<i>Mesembryanthemum</i> <i>crystallinum</i>	*	Common Ice Plant	8
Plantae	Flora	Aizoaceae	1035	<i>Mesembryanthemum</i> <i>nodiflorum</i>	*	Small Ice Plant	6
Plantae	Flora	Aizoaceae	1036	<i>Psilocaulon tenue</i>	*	Wiry Noon-flower	1
Plantae	Flora	Aizoaceae	1037	<i>Sarcozona praecox</i>		Sarcozona	7
Plantae	Flora	Aizoaceae	10540	<i>Tetragonia moorei</i>			12
Plantae	Flora	Aizoaceae	11185	<i>Tetragonia</i> <i>tetragonioides</i>		New Zealand Spinach	142
Plantae	Flora	Aizoaceae	6504	<i>Zaleya galericulata</i>		Hogweed	3
Plantae	Flora	Aizoaceae	7094	<i>Zaleya galericulata</i> <i>subsp. australis</i>			2
Plantae	Flora	Aizoaceae	8525	<i>Zaleya galericulata</i> <i>subsp. galericulata</i>			2
Plantae	Flora	Alismataceae	1044	<i>Damasonium minus</i>		Starfruit	8
Plantae	Flora	Alliaceae	8963	<i>Nothoscordum</i> <i>borbonicum</i>	*	Onion Weed	1
Plantae	Flora	Amaranthaceae	7113	<i>Alternanthera</i> <i>angustifolia</i>			5
Plantae	Flora	Amaranthaceae	6478	<i>Alternanthera</i> <i>denticulata</i>		Lesser Joyweed	149
Plantae	Flora	Amaranthaceae	7079	<i>Alternanthera nana</i>		Hairy Joyweed	8
Plantae	Flora	Amaranthaceae	1049	<i>Alternanthera nodiflora</i>		Common Joyweed	5
Plantae	Flora	Amaranthaceae	7191	<i>Alternanthera pungens</i>	*	Khaki Weed	1
Plantae	Flora	Amaranthaceae	8485	<i>Alternanthera sp. A</i>			1
Plantae	Flora	Amaranthaceae	ALTE	<i>Alternanthera spp.</i>		Joyweed	6
Plantae	Flora	Amaranthaceae	1057	<i>Amaranthus</i> <i>macrocarpus</i>		Dwarf Amaranth	2
Plantae	Flora	Amaranthaceae	9092	<i>Amaranthus</i> <i>macrocarpus</i> var. <i>macrocarpus</i>			8
Plantae	Flora	Amaranthaceae	1059	<i>Amaranthus muricatus</i>	*	Roughfruit Amaranth	2
Plantae	Flora	Amaranthaceae	1064	<i>Amaranthus viridis</i>	*	Green Amaranth	5
Plantae	Flora	Amaranthaceae	6599	<i>Ptilotus exaltatus</i> var. <i>exaltatus</i>		Tall Mulla Mulla	P 4
Plantae	Flora	Amaranthaceae	1078	<i>Ptilotus nobilis</i>		Yellowtails	2
Plantae	Flora	Amaranthaceae	8523	<i>Ptilotus semilanatus</i>		Lambs tails	5
Plantae	Flora	Amaranthaceae	7822	<i>Ptilotus spathulatus</i> f. <i>spathulatus</i>		Pussy-tails	8
Plantae	Flora	Amaranthaceae	PTIL	<i>Ptilotus spp.</i>			1
Plantae	Flora	Amaryllidaceae	3537	<i>Calostemma purpureum</i>		Garland Lily	16
Plantae	Flora	Amygdalaceae	5625	<i>Prunus persica</i>	*		1
Plantae	Flora	Amygdalaceae	PRUN	<i>Prunus spp.</i>	*		1
Plantae	Flora	Anacardiaceae	1086	<i>Schinus areira</i>	*	Pepper Tree	5
Plantae	Flora	Anthericaceae	3518	<i>Arthropodium minus</i>		Small Vanilla Lily	23
Plantae	Flora	Anthericaceae	DICO	<i>Dichopogon spp.</i>		Chocolate Lily	2
Plantae	Flora	Anthericaceae	3571	<i>Thysanotus baueri</i>		Fringe-lily	2
Plantae	Flora	Anthericaceae	3573	<i>Thysanotus patersonii</i>		Twining Fringe-Lily	1
Plantae	Flora	Anthericaceae	3574	<i>Thysanotus tuberosus</i>		Common Fringe-lily	4
Plantae	Flora	Anthericaceae	6427	<i>Thysanotus tuberosus</i> <i>subsp. tuberosus</i>			2
Plantae	Flora	Apiaceae	1098	<i>Ammi majus</i>	*	Bishop's Weed	1



Plantae	Flora	Apiaceae	1109	<i>Daucus glochidiatus</i>	Native Carrot				110
Plantae	Flora	Apiaceae	10108	<i>Daucus glochidiatus f. G</i>	Native Carrot				1
Plantae	Flora	Apiaceae	10681	<i>Eryngium ovinum</i>	Blue Devil				1
Plantae	Flora	Apiaceae	10871	<i>Eryngium paludosum</i>	Long Eryngium				1
Plantae	Flora	Apiaceae	ERYN	<i>Eryngium spp.</i>					2
Plantae	Flora	Apocynaceae	MARS	<i>Marsdenia spp.</i>					3
Plantae	Flora	Apocynaceae	10204	<i>Nerium oleander</i> *	Oleander				1
Plantae	Flora	Arecaceae	11354	<i>Phoenix canariensis</i> *	Canary Island Date Palm				1
Plantae	Flora	Asparagaceae	3521	<i>Asparagus officinalis</i> *	Asparagus				1
Plantae	Flora	Asphodelaceae	3530	<i>Bulbine alata</i>	Native Onion				2
Plantae	Flora	Asphodelaceae	3531	<i>Bulbine bulbosa</i>	Bulbine Lily				31
Plantae	Flora	Asphodelaceae	3532	<i>Bulbine semibarbata</i>	Wild Onion				144
Plantae	Flora	Asphodelaceae	BULI	<i>Bulbine spp.</i>					2
Plantae	Flora	Asteraceae	1253	<i>Actinobole uliginosum</i>	Flannel Cudweed				14
Plantae	Flora	Asteraceae	1265	<i>Angianthus brachypappus</i>	Spreading Cup-flower				4
Plantae	Flora	Asteraceae	1273	<i>Arctotheca calendula</i> *	Capeweed				112
Plantae	Flora	Asteraceae	ARCT	<i>Arctotheca spp.</i> *					1
Plantae	Flora	Asteraceae	1280	<i>Aster subulatus</i> *	Wild Aster				24
Plantae	Flora	Asteraceae	ASTRC	<i>Asteraceae</i> *	Daisies				10
Plantae	Flora	Asteraceae	10401	<i>Brachyscome basaltica</i> var. <i>gracilis</i>	Swamp Daisy				40
Plantae	Flora	Asteraceae	7902	<i>Brachyscome ciliaris</i>	Variable Daisy				10
Plantae	Flora	Asteraceae	6887	<i>Brachyscome ciliaris</i> var. <i>ciliaris</i>	Variable Daisy				3
Plantae	Flora	Asteraceae	6714	<i>Brachyscome ciliaris</i> var. <i>lanuginosa</i>	Variable Daisy				1
Plantae	Flora	Asteraceae	11056	<i>Brachyscome dentata</i>					2
Plantae	Flora	Asteraceae	7562	<i>Brachyscome goniocarpa</i>	Dwarf Daisy				2
Plantae	Flora	Asteraceae	6861	<i>Brachyscome lineariloba</i>	Hard-headed Daisy				114
Plantae	Flora	Asteraceae	6558	<i>Brachyscome muelleroides</i>	Claypan Daisy	V	V	K	
Plantae	Flora	Asteraceae	6893	<i>Brachyscome papillosa</i>	Mossgiel Daisy	V	V	36	
Plantae	Flora	Asteraceae	10409	<i>Brachyscome perpusilla</i> var. <i>tenella</i>	Tiny Daisy				1
Plantae	Flora	Asteraceae	11012	<i>Brachyscome smithwhitei</i>					53
Plantae	Flora	Asteraceae	BRAC	<i>Brachyscome spp.</i>					10
Plantae	Flora	Asteraceae	1332	<i>Calocephalus sonderi</i>	Pale Beauty-heads				191
Plantae	Flora	Asteraceae	1335	<i>Calotis anthemoides</i>	Cut-leaved Burr-daisy				1
Plantae	Flora	Asteraceae	1337	<i>Calotis cuneifolia</i>	Purple Burr-Daisy				2
Plantae	Flora	Asteraceae	1340	<i>Calotis erinacea</i>	Tangled Burr-daisy				6
Plantae	Flora	Asteraceae	1342	<i>Calotis hispidula</i>	Bogan Flea				110
Plantae	Flora	Asteraceae	9457	<i>Calotis moorei</i>	A burr-daisy	E1	E	1	
Plantae	Flora	Asteraceae	1347	<i>Calotis scabiosifolia</i>	Rough Burr-daisy				189
Plantae	Flora	Asteraceae	7929	<i>Calotis scabiosifolia</i> var. <i>scabiosifolia</i>					15
Plantae	Flora	Asteraceae	1348	<i>Calotis scapigera</i>	Tufted Burr-daisy				17
Plantae	Flora	Asteraceae	1354	<i>Carduus pycnocephalus</i> *	Slender Thistle				6
Plantae	Flora	Asteraceae	CARD	<i>Carduus spp.</i> *					3
Plantae	Flora	Asteraceae	1355	<i>Carduus tenuiflorus</i> *	Winged Slender Thistle				11
Plantae	Flora	Asteraceae	1358	<i>Carthamus lanatus</i> *	Saffron Thistle				36
Plantae	Flora	Asteraceae	1378	<i>Centaurea calcitrapa</i> *	Star Thistle				2
Plantae	Flora	Asteraceae	1382	<i>Centaurea melitensis</i> *	Maltese Cockspur				46
Plantae	Flora	Asteraceae	1383	<i>Centaurea solstitialis</i> *	St Barnabys Thistle				2
Plantae	Flora	Asteraceae	12715	<i>Centipeda crateriformis</i> subsp. <i>compacta</i>					2
Plantae	Flora	Asteraceae	1384	<i>Centipeda cunninghamii</i>	Common Sneezeweed				46
Plantae	Flora	Asteraceae	14360	<i>Centipeda minima</i> subsp. <i>minima</i>	spreading sneezeweed				48
Plantae	Flora	Asteraceae	CENT	<i>Centipeda spp.</i>					1

Plantae	Flora	Asteraceae	1386	<i>Centipeda thespidioides</i>	Desert Sneezeweed	12
Plantae	Flora	Asteraceae	1391	<i>Chondrilla juncea</i> *	Skeleton Weed	4
Plantae	Flora	Asteraceae	8559	<i>Chrysocephalum apiculatum</i>	Common Everlasting	40
Plantae	Flora	Asteraceae	8562	<i>Chrysocephalum semipapposum</i>	Clustered Everlasting	2
Plantae	Flora	Asteraceae	1395	<i>Chthonocephalus pseudevax</i>	Ground-heads	3
Plantae	Flora	Asteraceae	1397	<i>Cichorium intybus</i> *	Chicory	1
Plantae	Flora	Asteraceae	1400	<i>Cirsium vulgare</i> *	Spear Thistle	147
Plantae	Flora	Asteraceae	1404	<i>Conyza bonariensis</i> *	Flaxleaf Fleabane	22
Plantae	Flora	Asteraceae	CONY	<i>Conyza spp.</i> *	A Fleabane	13
Plantae	Flora	Asteraceae	10442	<i>Conyza sumatrensis</i> *	Tall fleabane	5
Plantae	Flora	Asteraceae	1412	<i>Cotula australis</i>	Common Cotula	9
Plantae	Flora	Asteraceae	1413	<i>Cotula bipinnata</i> *	Ferny Cotula	48
Plantae	Flora	Asteraceae	1414	<i>Cotula coronopifolia</i> *	Water Buttons	3
Plantae	Flora	Asteraceae	10154	<i>Craspedia haptorrhiza</i>	Billy Buttons	P 5
Plantae	Flora	Asteraceae	CRAP	<i>Craspedia spp.</i>	Billy Buttons	P 3
Plantae	Flora	Asteraceae	8634	<i>Craspedia variabilis</i>	Common Billy-buttons	P 1
Plantae	Flora	Asteraceae	1433	<i>Dittrichia graveolens</i> *	Stinkwort	1
Plantae	Flora	Asteraceae	7903	<i>Eclipta platyglossa</i>	Yellow Twin-heads	68
Plantae	Flora	Asteraceae	7425	<i>Epaltes australis</i>	Spreading Nut-heads	1
Plantae	Flora	Asteraceae	1438	<i>Epaltes cunninghamii</i>	Tall Nut-heads	3
Plantae	Flora	Asteraceae	1445	<i>Eriochlamys behrii</i>	Woolly Mantle	1
Plantae	Flora	Asteraceae	12744	<i>Eriochlamys squamata</i>		5
Plantae	Flora	Asteraceae	9904	<i>Euchiton involucratus</i>	Star Cudweed	5
Plantae	Flora	Asteraceae	11439	<i>Euchiton japonicus</i>		1
Plantae	Flora	Asteraceae	9690	<i>Euchiton sphaericus</i>	Star Cudweed	26
Plantae	Flora	Asteraceae	EUCH	<i>Euchiton spp.</i>	A Cudweed	2
Plantae	Flora	Asteraceae	7236	<i>Flaveria australasica</i>	Speedy Weed	2
Plantae	Flora	Asteraceae	9111	<i>Gazania rigens</i> *		1
Plantae	Flora	Asteraceae	7316	<i>Gnaphalium polycaulon</i> *	Many-stemmed Cudweed, Indian Cudweed	1
Plantae	Flora	Asteraceae	7714	<i>Gnephosis arachnoidea</i>	Erect Yellow-heads	3
Plantae	Flora	Asteraceae	7468	<i>Hedypnois rhagadioloides</i> *	Cretan Weed	79
Plantae	Flora	Asteraceae	8913	<i>Hedypnois rhagadioloides subsp. cretica</i> *	Cretan Weed	103
Plantae	Flora	Asteraceae	HEDY	<i>Hedypnois spp.</i> *		10
Plantae	Flora	Asteraceae	1474	<i>Helianthus tuberosus</i> *	Jerusalem Artichoke	1
Plantae	Flora	Asteraceae	1494	<i>Helichrysum leucopsidium</i>	Satin Everlasting	3
Plantae	Flora	Asteraceae	HELI	<i>Helichrysum spp.</i>		3
Plantae	Flora	Asteraceae	9778	<i>Helminthotheca echioides</i> *	Ox-tongue	2
Plantae	Flora	Asteraceae	9083	<i>Hyalosperma glutinosum subsp. glutinosum</i>		4
Plantae	Flora	Asteraceae	9413	<i>Hyalosperma praecox</i>		2
Plantae	Flora	Asteraceae	8515	<i>Hyalosperma semisterile</i>		11
Plantae	Flora	Asteraceae	1540	<i>Hypochaeris glabra</i> *	Smooth Catsear	113
Plantae	Flora	Asteraceae	8788	<i>Hypochaeris radicata</i> *	Catsear	13
Plantae	Flora	Asteraceae	HYPH	<i>Hypochaeris spp.</i> *	A Catsear	2
Plantae	Flora	Asteraceae	1542	<i>Isoetopsis graminifolia</i>	Grass Cushion	36
Plantae	Flora	Asteraceae	IXIL	<i>Ixiolaena spp.</i>		4
Plantae	Flora	Asteraceae	1548	<i>Kippistia suaedifolia</i>	Fleshy Minuria	E1 K
Plantae	Flora	Asteraceae	1549	<i>Lactuca saligna</i> *	Willow-leaved Lettuce	3
Plantae	Flora	Asteraceae	1550	<i>Lactuca serriola</i> *	Prickly Lettuce	38
Plantae	Flora	Asteraceae	LACT	<i>Lactuca spp.</i> *		1
Plantae	Flora	Asteraceae	12766	<i>Leiocarpa brevicompta</i>	Flat Billy-buttons	21
Plantae	Flora	Asteraceae	12767	<i>Leiocarpa leptolepis</i>	Pale Plover-daisy	62
Plantae	Flora	Asteraceae	12049	<i>Leiocarpa panaetioides</i>	Wooly Buttons	24
Plantae	Flora	Asteraceae	LEIO	<i>Leiocarpa spp.</i>		1
Plantae	Flora	Asteraceae	12105	<i>Leiocarpa tomentosa</i>	Woolly Plover-daisy	5
Plantae	Flora	Asteraceae	12769	<i>Leiocarpa websteri</i>		4


Plantae	Flora	Asteraceae	11295	<i>Leptorhynchos orientalis</i>	Lanky Buttons	E1	K	
Plantae	Flora	Asteraceae	8924	<i>Leucochrysum molle</i>	Hoary Sunray		12	
Plantae	Flora	Asteraceae	1566	<i>Microseris lanceolata</i>	Yam Daisy		15	
Plantae	Flora	Asteraceae	9416	<i>Millotia perpusilla</i>	Tiny Bow-flower		1	
Plantae	Flora	Asteraceae	1571	<i>Minuria cunninghamii</i>	Bush Minuria		75	
Plantae	Flora	Asteraceae	1572	<i>Minuria denticulata</i>			8	
Plantae	Flora	Asteraceae	1573	<i>Minuria integerrima</i>	Smooth Minuria		13	
Plantae	Flora	Asteraceae	1574	<i>Minuria leptophylla</i>			6	
Plantae	Flora	Asteraceae	MINU	<i>Minuria spp.</i>			4	
Plantae	Flora	Asteraceae	1576	<i>Myriocephalus rhizocephalus</i>	Woolly-heads		15	
Plantae	Flora	Asteraceae	8884	<i>Onopordum acanthium</i> *	Scotch Thistle		2	
				<i>subsp. acanthium</i>				
Plantae	Flora	Asteraceae	1620	<i>Onopordum acaulon</i> *	Stemless Thistle		9	
Plantae	Flora	Asteraceae	1635	<i>Podolepis muelleri</i>	Small Copper-wire Daisy		103	
Plantae	Flora	Asteraceae	PODO	<i>Podolepis spp.</i>			1	
Plantae	Flora	Asteraceae	7634	<i>Pogonolepis muelleriana</i>			9	
Plantae	Flora	Asteraceae	11144	<i>Polycalymma stuartii</i>	Poached Eggs		1	
Plantae	Flora	Asteraceae	7780	<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed		17	
Plantae	Flora	Asteraceae	10155	<i>Pycnosorus chrysanthus</i>	Golden Billy-buttons	P	5	
Plantae	Flora	Asteraceae	8911	<i>Pycnosorus globosus</i>	Drumsticks	P	9	
Plantae	Flora	Asteraceae	8912	<i>Pycnosorus pleiocephalus</i>		P	8	
Plantae	Flora	Asteraceae	PYCN	<i>Pycnosorus spp.</i>		P	2	
Plantae	Flora	Asteraceae	10163	<i>Pycnosorus thompsonianus</i>		P	3	
Plantae	Flora	Asteraceae	1641	<i>Reichardia tingitana</i> *	False Sowthistle		10	
Plantae	Flora	Asteraceae	8919	<i>Rhodanthe corymbiflora</i>	Small White Sunray		373	
Plantae	Flora	Asteraceae	8513	<i>Rhodanthe diffusa</i>	Ascending Sunray		3	
Plantae	Flora	Asteraceae	8920	<i>Rhodanthe floribunda</i>	Common White Sunray		36	
Plantae	Flora	Asteraceae	8921	<i>Rhodanthe moschata</i>			11	
Plantae	Flora	Asteraceae	9084	<i>Rhodanthe polygalifolia</i>	Brilliant Sunray		2	
Plantae	Flora	Asteraceae	9384	<i>Rhodanthe pygmaea</i>	Pigmy Sunray		45	
Plantae	Flora	Asteraceae	RHOA	<i>Rhodanthe spp.</i>			5	
Plantae	Flora	Asteraceae	11159	<i>Scorzonera laciniata</i> *			116	
Plantae	Flora	Asteraceae	8627	<i>Senecio cunninghamii</i> var. <i>cunninghamii</i>			62	
Plantae	Flora	Asteraceae	1661	<i>Senecio glossanthus</i>	Streaked Poverty Bush		169	
Plantae	Flora	Asteraceae	1666	<i>Senecio lautus</i>	Variable Groundsel		1	
Plantae	Flora	Asteraceae	7753	<i>Senecio murrayanus</i>			2	
Plantae	Flora	Asteraceae	12811	<i>Senecio pinnatifolius</i> var. <i>pinnatifolius</i>			2	
Plantae	Flora	Asteraceae	1674	<i>Senecio platylepis</i>			2	
Plantae	Flora	Asteraceae	12813	<i>Senecio productus</i> subsp. <i>productus</i>			2	
Plantae	Flora	Asteraceae	1675	<i>Senecio quadridentatus</i>	Cotton Fireweed		52	
Plantae	Flora	Asteraceae	1676	<i>Senecio runcinifolius</i>	Tall Groundsel		136	
Plantae	Flora	Asteraceae	SENE	<i>Senecio spp.</i>	Groundsel, Fireweed		8	
Plantae	Flora	Asteraceae	1684	<i>Silybum marianum</i> *	Variegated Thistle		2	
Plantae	Flora	Asteraceae	7851	<i>Soliva sessilis</i> *	Bindyi		1	
Plantae	Flora	Asteraceae	1688	<i>Soliva stolonifera</i> *	Jo-jo		1	
Plantae	Flora	Asteraceae	1689	<i>Sonchus asper</i> *	Prickly Sowthistle		26	
Plantae	Flora	Asteraceae	1690	<i>Sonchus oleraceus</i> *	Common Sowthistle		313	
Plantae	Flora	Asteraceae	SONC	<i>Sonchus spp.</i>	Sowthistle		1	
Plantae	Flora	Asteraceae	1693	<i>Stuartina hamata</i>	Hooked Cudweed		4	
Plantae	Flora	Asteraceae	1694	<i>Stuartina muelleri</i>	Spoon Cudweed		2	
Plantae	Flora	Asteraceae	STUA	<i>Stuartina spp.</i>			1	
Plantae	Flora	Asteraceae	1698	<i>Taraxacum officinale</i> *	Dandelion		2	
Plantae	Flora	Asteraceae	14051	<i>Tragopogon porrifolius</i> subsp. <i>porrifolius</i> *	Salsify		3	
Plantae	Flora	Asteraceae	8925	<i>Triptilodiscus pygmaeus</i>	Common Sunray		19	
Plantae	Flora	Asteraceae	1705	<i>Urospermum picroides</i> *	False Hawkbit		13	



Plantae	Flora	Asteraceae	10164	<i>Verbesina encelioides</i> subsp. <i>encelioides</i>	*	Crownbeard				1
Plantae	Flora	Asteraceae	1711	<i>Vittadinia cuneata</i>		A Fuzzweed				107
Plantae	Flora	Asteraceae	6737	<i>Vittadinia cuneata</i> var. <i>cuneata</i>		A Fuzzweed				27
Plantae	Flora	Asteraceae	1712	<i>Vittadinia dissecta</i>						1
Plantae	Flora	Asteraceae	1714	<i>Vittadinia gracilis</i>		Woolly New Holland Daisy				15
Plantae	Flora	Asteraceae	1717	<i>Vittadinia pterochaeta</i>		Rough Fuzzweed				8
Plantae	Flora	Asteraceae	VITT	<i>Vittadinia</i> spp.		Fuzzweed				6
Plantae	Flora	Asteraceae	7130	<i>Xanthium occidentale</i>	*	Noogoora Burr				24
Plantae	Flora	Asteraceae	1729	<i>Xanthium spinosum</i>	*	Bathurst Burr				53
Plantae	Flora	Asteraceae	XANH	<i>Xanthium</i> spp.	*					3
Plantae	Flora	Asteraceae	11377	<i>Xerochrysum bracteatum</i>		Golden Everlasting				1
Plantae	Flora	Azollaceae	9260	<i>Azolla filiculoides</i>		Pacific Azolla				7
Plantae	Flora	Azollaceae	8049	<i>Azolla pinnata</i>						2
Plantae	Flora	Bignoniaceae	8688	<i>Jacaranda mimosifolia</i>	*	Jacaranda				1
Plantae	Flora	Boraginaceae	1742	<i>Amsinckia calycina</i>	*	hairy Fiddleneck				1
Plantae	Flora	Boraginaceae	1743	<i>Amsinckia intermedia</i>	*	Common Fiddleneck				5
Plantae	Flora	Boraginaceae	1744	<i>Amsinckia lycopsoides</i>	*					2
Plantae	Flora	Boraginaceae	1751	<i>Echium plantagineum</i>	*	Patterson's Curse				224
Plantae	Flora	Boraginaceae	ECHU	<i>Echium</i> spp.	*					2
Plantae	Flora	Boraginaceae	1761	<i>Heliotropium europaeum</i>	*	Potato Weed				69
Plantae	Flora	Boraginaceae	1762	<i>Heliotropium supinum</i>	*	Prostrate Heliotrope				11
Plantae	Flora	Boraginaceae	1771	<i>Omphalolappula concava</i>		Burr Stickseed				1
Plantae	Flora	Boraginaceae	11141	<i>Plagiobothrys plurisepalus</i>						10
Plantae	Flora	Boraginaceae	PLAG	<i>Plagiobothrys</i> spp.						2
Plantae	Flora	Brassicaceae	1775	<i>Alyssum linifolium</i>	*	Flax-leaf Alyssum				16
Plantae	Flora	Brassicaceae	1778	<i>Arabidella nasturtium</i>						9
Plantae	Flora	Brassicaceae	1787	<i>Brassica juncea</i>	*	Indian Mustard				1
Plantae	Flora	Brassicaceae	14753	<i>Brassica rapa</i> subsp. <i>campestris</i>	*	Turnip				1
Plantae	Flora	Brassicaceae	BRAS	<i>Brassica</i> spp.	*	Brassica				2
Plantae	Flora	Brassicaceae	1790	<i>Brassica tournefortii</i>	*	Mediterranean Turnip				5
Plantae	Flora	Brassicaceae	1794	<i>Capsella bursa-pastoris</i>	*	Shepherd's Purse				31
Plantae	Flora	Brassicaceae	10569	<i>Cardamine moirensis</i>						8
Plantae	Flora	Brassicaceae	1798	<i>Carrichtera annua</i>	*	Ward's Weed				9
Plantae	Flora	Brassicaceae	1802	<i>Cuphonotus humistratus</i>		Mother-of-misery				1
Plantae	Flora	Brassicaceae	1810	<i>Geococcus pusillus</i>						25
Plantae	Flora	Brassicaceae	1811	<i>Harmsiodoxa blennodioides</i>						8
Plantae	Flora	Brassicaceae	1812	<i>Harmsiodoxa brevipes</i>						1
Plantae	Flora	Brassicaceae	7102	<i>Harmsiodoxa brevipes</i> var. <i>brevipes</i>						1
Plantae	Flora	Brassicaceae	HARM	<i>Harmsiodoxa</i> spp.						1
Plantae	Flora	Brassicaceae	1814	<i>Hirschfeldia incana</i>	*	Buchan Weed				1
Plantae	Flora	Brassicaceae	1815	<i>Lepidium africanum</i>	*	Common Peppergrass				8
Plantae	Flora	Brassicaceae	1820	<i>Lepidium fasciculatum</i>		Bundled Peppergrass				18
Plantae	Flora	Brassicaceae	1824	<i>Lepidium monoplacoides</i>		Winged Peppergrass	E1	E		4
Plantae	Flora	Brassicaceae	1827	<i>Lepidium papillosum</i>		Warty Peppergrass				4
Plantae	Flora	Brassicaceae	6643	<i>Lepidium pseudohyssopifolium</i>		Peppergrass				30
Plantae	Flora	Brassicaceae	1831	<i>Lepidium sagittulatum</i>						2
Plantae	Flora	Brassicaceae	LEPI	<i>Lepidium</i> spp.		A Peppergrass				6
Plantae	Flora	Brassicaceae	1835	<i>Menkea australis</i>		Fairy Spectacles				1
Plantae	Flora	Brassicaceae	1839	<i>Raphanus raphanistrum</i>	*	Wild Radish				2
Plantae	Flora	Brassicaceae	1841	<i>Rapistrum rugosum</i>	*	Turnip Weed				80
Plantae	Flora	Brassicaceae	1843	<i>Rorippa eustylis</i>						1
Plantae	Flora	Brassicaceae	1846	<i>Rorippa laciniata</i>						36
Plantae	Flora	Brassicaceae	7382	<i>Rorippa palustris</i>	*	Yellow Cress				5
Plantae	Flora	Brassicaceae	SINA	<i>Sinapis</i> spp.	*					1
Plantae	Flora	Brassicaceae	1851	<i>Sisymbrium altissimum</i>	*					3
Plantae	Flora	Brassicaceae	1852	<i>Sisymbrium erysimoides</i>	*	Smooth Mustard				113

Plantae	Flora	Brassicaceae	1853	<i>Sisymbrium irio</i>	*	London Rocket	116
Plantae	Flora	Brassicaceae	1854	<i>Sisymbrium officinale</i>	*	Hedge Mustard	1
Plantae	Flora	Brassicaceae	1855	<i>Sisymbrium orientale</i>	*	Indian Hedge Mustard	8
Plantae	Flora	Brassicaceae	SISY	<i>Sisymbrium spp.</i>	*		20
Plantae	Flora	Brassicaceae	1857	<i>Stenopetalum lineare</i>		Threadcross	1
Plantae	Flora	Cactaceae	OPUN	<i>Opuntia spp.</i>	*		1
Plantae	Flora	Callitrichaceae	1908	<i>Callitriche sonderi</i>			1
Plantae	Flora	Callitrichaceae	CALH	<i>Callitriche spp.</i>		Starwort	1
Plantae	Flora	Callitrichaceae	1909	<i>Callitriche stagnalis</i>	*	Common Starwort	5
Plantae	Flora	Callitrichaceae	1910	<i>Callitriche umbonata</i>		Winged Water-starwort	2
Plantae	Flora	Campanulaceae	1929	<i>Wahlenbergia communis</i>		Tufted Bluebell	6
Plantae	Flora	Campanulaceae	1931	<i>Wahlenbergia fluminalis</i>		River Bluebell	28
Plantae	Flora	Campanulaceae	1933	<i>Wahlenbergia gracilenta</i>		Annual Bluebell	15
Plantae	Flora	Campanulaceae	1934	<i>Wahlenbergia gracilis</i>		Sprawling Bluebell	12
Plantae	Flora	Campanulaceae	WAHL	<i>Wahlenbergia spp.</i>		Bluebell	7
Plantae	Flora	Campanulaceae	1938	<i>Wahlenbergia stricta</i>		Tall Bluebell	1
Plantae	Flora	Campanulaceae	7883	<i>Wahlenbergia tumidifructa</i>			5
Plantae	Flora	Campanulaceae	9975	<i>Wahlenbergia victoriensis</i>			2
Plantae	Flora	Caryophyllaceae	AREN	<i>Arenaria spp.</i>	*		1
Plantae	Flora	Caryophyllaceae	1960	<i>Cerastium glomeratum</i>	*	Mouse-ear Chickweed	2
Plantae	Flora	Caryophyllaceae	1974	<i>Paronychia brasiliana</i>	*	Chilean Whitlow Wort, Brazilian Whitlow	1
Plantae	Flora	Caryophyllaceae	13845	<i>Petrorhagia dubia</i>	*		1
Plantae	Flora	Caryophyllaceae	1979	<i>Polycarpon tetraphyllum</i>	*	Four-leaved Allseed	1
Plantae	Flora	Caryophyllaceae	1980	<i>Sagina apetala</i>	*	Annual Pearlwort	4
Plantae	Flora	Caryophyllaceae	1987	<i>Scleranthus minusculus</i>			1
Plantae	Flora	Caryophyllaceae	SCLT	<i>Scleranthus spp.</i>			1
Plantae	Flora	Caryophyllaceae	1990	<i>Silene apetala</i>	*		1
Plantae	Flora	Caryophyllaceae	1991	<i>Silene gallica</i>	*	French Catchfly	1
Plantae	Flora	Caryophyllaceae	13841	<i>Spergularia brevifolia</i>			3
Plantae	Flora	Caryophyllaceae	1998	<i>Spergularia diandra</i>	*	Lesser Sand-spurry	6
Plantae	Flora	Caryophyllaceae	2000	<i>Spergularia marina</i>		Lesser Sea-spurrey	3
Plantae	Flora	Caryophyllaceae	2001	<i>Spergularia rubra</i>	*	Sandspurry	127
Plantae	Flora	Caryophyllaceae	SPEG	<i>Spergularia spp.</i>			7
Plantae	Flora	Caryophyllaceae	2002	<i>Stellaria angustifolia</i>		Swamp Starwort	12
Plantae	Flora	Caryophyllaceae	2006	<i>Stellaria media</i>	*	Common Chickweed	7
Plantae	Flora	Caryophyllaceae	9804	<i>Stellaria sp. B</i>			1
Plantae	Flora	Casuarinaceae	2013	<i>Allocasuarina luehmannii</i>		Bulloak	1
Plantae	Flora	Casuarinaceae	9006	<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>		River Oak	1
Plantae	Flora	Chenopodiaceae	2045	<i>Atriplex angulata</i>		Fan Saltbush	4






Plantae	Flora	Chenopodiaceae	2047	<i>Atriplex conduplicata</i>		6
Plantae	Flora	Chenopodiaceae	2049	<i>Atriplex eardleyae</i>	Small Saltbush	8
Plantae	Flora	Chenopodiaceae	2053	<i>Atriplex holocarpa</i>	Pop Saltbush	24
Plantae	Flora	Chenopodiaceae	6368	<i>Atriplex leptocarpa</i>	Slender-fruit Saltbush	331
Plantae	Flora	Chenopodiaceae	2055	<i>Atriplex limbata</i>		2
Plantae	Flora	Chenopodiaceae	2056	<i>Atriplex lindleyi</i>	Eastern Flat-top Saltbush	164
Plantae	Flora	Chenopodiaceae	2063	<i>Atriplex nummularia</i>	Old Man Saltbush	92
Plantae	Flora	Chenopodiaceae	9614	<i>Atriplex prostrata</i>	*	1
Plantae	Flora	Chenopodiaceae	2066	<i>Atriplex pseudocampanulata</i>		100
Plantae	Flora	Chenopodiaceae	2070	<i>Atriplex semibaccata</i>	Creeping Saltbush	351
Plantae	Flora	Chenopodiaceae	2071	<i>Atriplex spinibractea</i>	Spiny-fruit Saltbush	7
Plantae	Flora	Chenopodiaceae	ATRI	<i>Atriplex spp.</i>	A Saltbush	17
Plantae	Flora	Chenopodiaceae	2075	<i>Atriplex suberecta</i>		6
Plantae	Flora	Chenopodiaceae	2078	<i>Atriplex vesicaria</i>	Bladder Saltbush	194
Plantae	Flora	Chenopodiaceae	7620	<i>Atriplex vesicaria subsp. macrocystidia</i>	Bladder Saltbush	3
Plantae	Flora	Chenopodiaceae	8532	<i>Atriplex vesicaria subsp. sphaerocarpa</i>		1
Plantae	Flora	Chenopodiaceae	8533	<i>Atriplex vesicaria subsp. variabilis</i>		3
Plantae	Flora	Chenopodiaceae	CHENC	<i>Chenopodiaceae indeterminate</i>	*	4
Plantae	Flora	Chenopodiaceae	2084	<i>Chenopodium album</i>	*	1
Plantae	Flora	Chenopodiaceae	2085	<i>Chenopodium ambrosioides</i>	*	1
Plantae	Flora	Chenopodiaceae	2087	<i>Chenopodium auricomum</i>	Queensland Bluebush	2
Plantae	Flora	Chenopodiaceae	2089	<i>Chenopodium cristatum</i>	Crested Goosefoot	10
Plantae	Flora	Chenopodiaceae	2090	<i>Chenopodium curvispicatum</i>		1
Plantae	Flora	Chenopodiaceae	2091	<i>Chenopodium desertorum</i>	Desert Goosefoot	2
Plantae	Flora	Chenopodiaceae	6779	<i>Chenopodium desertorum subsp. microphyllum</i>		3
Plantae	Flora	Chenopodiaceae	2095	<i>Chenopodium melanocarpum</i>	Black Crumbweed	2
Plantae	Flora	Chenopodiaceae	2096	<i>Chenopodium multifidum</i>	*	1
Plantae	Flora	Chenopodiaceae	2097	<i>Chenopodium murale</i>	*	8
Plantae	Flora	Chenopodiaceae	2098	<i>Chenopodium nitrariaceum</i>	Nitre Goosefoot	275
Plantae	Flora	Chenopodiaceae	CHEN	<i>Chenopodium spp.</i>	Goosefoot, Crumbweed	4
Plantae	Flora	Chenopodiaceae	2102	<i>Dissocarpus biflorus</i>	Twin-horned Cpperburr	13
Plantae	Flora	Chenopodiaceae	6819	<i>Dissocarpus biflorus var. biflorus</i>		7
Plantae	Flora	Chenopodiaceae	2103	<i>Dissocarpus paradoxus</i>	Cannonball Burr	24
Plantae	Flora	Chenopodiaceae	14529	<i>Dysphania pumilio</i>	Small Crumbweed	47
Plantae	Flora	Chenopodiaceae	2110	<i>Einadia hastata</i>	Berry Saltbush	2
Plantae	Flora	Chenopodiaceae	2111	<i>Einadia nutans</i>	Climbing Saltbush	293

Plantae	Flora	Chenopodiaceae	6481	<i>Einadia nutans subsp. linifolia</i>	Climbing Saltbush				2
Plantae	Flora	Chenopodiaceae	6482	<i>Einadia nutans subsp. nutans</i>	Climbing Saltbush				87
Plantae	Flora	Chenopodiaceae	2112	<i>Einadia polygonoides</i>	Knotweed Goosefoot				5
Plantae	Flora	Chenopodiaceae	EINA	<i>Einadia spp.</i>					1
Plantae	Flora	Chenopodiaceae	2113	<i>Einadia trigonos</i>	Fishweed				1
Plantae	Flora	Chenopodiaceae	2114	<i>Enchylaena tomentosa</i>	Ruby Saltbush				150
Plantae	Flora	Chenopodiaceae	2119	<i>Maireana aphylla</i>	Cotton Bush				225
Plantae	Flora	Chenopodiaceae	2120	<i>Maireana appressa</i>					9
Plantae	Flora	Chenopodiaceae	2122	<i>Maireana brevifolia</i>					19
Plantae	Flora	Chenopodiaceae	2124	<i>Maireana cheelii</i>	Chariot Wheels	V	V		6 
Plantae	Flora	Chenopodiaceae	2125	<i>Maireana ciliata</i>	Fissure Weed				3
Plantae	Flora	Chenopodiaceae	2126	<i>Maireana coronata</i>	Crown Fissure-weed				3
Plantae	Flora	Chenopodiaceae	2127	<i>Maireana decalvans</i>	Black Cotton Bush				55
Plantae	Flora	Chenopodiaceae	2128	<i>Maireana enchylaenoides</i>	Wingless Fissure-weed				4
Plantae	Flora	Chenopodiaceae	2131	<i>Maireana excavata</i>					18
Plantae	Flora	Chenopodiaceae	2132	<i>Maireana georgei</i>	Slit-wing Bluebush				10
Plantae	Flora	Chenopodiaceae	2137	<i>Maireana microcarpa</i>					16
Plantae	Flora	Chenopodiaceae	2138	<i>Maireana microphylla</i>	Small-leaf Bluebush				3
Plantae	Flora	Chenopodiaceae	2140	<i>Maireana pentagona</i>	Hairy Bluebush, Slender Fissure-weed				264
Plantae	Flora	Chenopodiaceae	2142	<i>Maireana pyramidata</i>	Black Bluebush				77
Plantae	Flora	Chenopodiaceae	8607	<i>Maireana sclerolaenoides</i>					2
Plantae	Flora	Chenopodiaceae	2147	<i>Maireana sedifolia</i>	Pearl Bluebush				14
Plantae	Flora	Chenopodiaceae	MAIR	<i>Maireana spp.</i>	Cotton Bush, Bluebush, Fissure-weed				10
Plantae	Flora	Chenopodiaceae	7610	<i>Maireana tomentosa subsp. urceolata</i>					1
Plantae	Flora	Chenopodiaceae	2150	<i>Maireana trichoptera</i>					1
Plantae	Flora	Chenopodiaceae	2152	<i>Maireana turbinata</i>					2
Plantae	Flora	Chenopodiaceae	2155	<i>Malacocera tricornis</i>	Soft Horns				109
Plantae	Flora	Chenopodiaceae	6919	<i>Osteocarpum acropterum</i>	Water Weed				45
Plantae	Flora	Chenopodiaceae	6683	<i>Osteocarpum acropterum var. acropterum</i>					1
Plantae	Flora	Chenopodiaceae	9665	<i>Osteocarpum acropterum var. deminuta</i>	Bonefruit				9
Plantae	Flora	Chenopodiaceae	2160	<i>Rhagodia parabolica</i>					1
Plantae	Flora	Chenopodiaceae	2161	<i>Rhagodia spinescens</i>	Thorny Saltbush				211
Plantae	Flora	Chenopodiaceae	RHAG	<i>Rhagodia spp.</i>					1
Plantae	Flora	Chenopodiaceae	14594	<i>Salsola australis</i>					2
Plantae	Flora	Chenopodiaceae	7923	<i>Salsola kali var. kali</i>	Buckbush				49
Plantae	Flora	Chenopodiaceae	11152	<i>Salsola tragus</i>	Buckbush, Soft Rolpoly, Saltwort				161

Plantae	Flora	Chenopodiaceae	11153	<i>Salsola tragus subsp. tragus</i>	Buckbush,Soft Rolpoly, Saltwort				1
Plantae	Flora	Chenopodiaceae	2165	<i>Scleroblitum atriplicinum</i>	Purple Goosefoot				78
Plantae	Flora	Chenopodiaceae	2169	<i>Sclerolaena bicornis</i>	Goathead Burr				29
Plantae	Flora	Chenopodiaceae	7243	<i>Sclerolaena bicornis var. bicornis</i>					5
Plantae	Flora	Chenopodiaceae	2170	<i>Sclerolaena birchii</i>	Galvanized Burr				20
Plantae	Flora	Chenopodiaceae	7676	<i>Sclerolaena brachyptera</i>	Short-winged Copperburr				172
Plantae	Flora	Chenopodiaceae	2172	<i>Sclerolaena calcarata</i>	Redburr				1
Plantae	Flora	Chenopodiaceae	2177	<i>Sclerolaena diacantha</i>	Grey Copperburr				104
Plantae	Flora	Chenopodiaceae	2178	<i>Sclerolaena divaricata</i>	Tangled Copperburr				126
Plantae	Flora	Chenopodiaceae	2180	<i>Sclerolaena intricata</i>	Poverty Bush				57
Plantae	Flora	Chenopodiaceae	2182	<i>Sclerolaena lanicuspis</i>	Woolly Copperburr				3
Plantae	Flora	Chenopodiaceae	2185	<i>Sclerolaena muricata</i>	Black Rolypoly				366
Plantae	Flora	Chenopodiaceae	7570	<i>Sclerolaena muricata var. muricata</i>	Black Rolypoly				160
Plantae	Flora	Chenopodiaceae	7656	<i>Sclerolaena muricata var. semiglabra</i>	Black Rolypoly				187
Plantae	Flora	Chenopodiaceae	7799	<i>Sclerolaena muricata var. villosa</i>	Black Rolypoly				77
Plantae	Flora	Chenopodiaceae	6371	<i>Sclerolaena napiformis</i>	Turnip Copperburr	E1	E	K	
Plantae	Flora	Chenopodiaceae	2186	<i>Sclerolaena obliquicuspis</i>					7
Plantae	Flora	Chenopodiaceae	2189	<i>Sclerolaena parviflora</i>					1
Plantae	Flora	Chenopodiaceae	12873	<i>Sclerolaena sp. A</i>					6
Plantae	Flora	Chenopodiaceae	12874	<i>Sclerolaena sp. B</i>					4
Plantae	Flora	Chenopodiaceae	SCLR	<i>Sclerolaena spp.</i>	Copperburr, Poverty-bush				3
Plantae	Flora	Chenopodiaceae	6750	<i>Sclerolaena stelligera</i>	Star Copperburr				198
Plantae	Flora	Chenopodiaceae	2192	<i>Sclerolaena tricuspis</i>	Giant Redburr				317
Plantae	Flora	Chenopodiaceae	SCLE	<i>Sclerostegia spp.</i>					2
Plantae	Flora	Chenopodiaceae	14465	<i>Tecticornia tenuis</i>					43
Plantae	Flora	Clusiaceae	7240	<i>Hypericum gramineum</i>	Small St John's Wort				1
Plantae	Flora	Colchicaceae	7699	<i>Wurmbea dioica subsp. dioica</i>	Early Nancy				42
Plantae	Flora	Convolvulaceae	2219	<i>Convolvulus arvensis</i> *	Field Bindweed				4
Plantae	Flora	Convolvulaceae	2220	<i>Convolvulus erubescens</i>	Pink Bindweed				158
Plantae	Flora	Convolvulaceae	11311	<i>Convolvulus tedmoorei</i>	Bindweed	E1		P	
Plantae	Flora	Convolvulaceae	11066	<i>Cressa australis</i>					6
Plantae	Flora	Convolvulaceae	2287	<i>Cuscuta campestris</i> *	Golden Dodder				2
Plantae	Flora	Convolvulaceae	2290	<i>Cuscuta suaveolens</i> *	Fringed Dodder				2
Plantae	Flora	Convolvulaceae	2222	<i>Dichondra repens</i>	Kidney Weed				6
Plantae	Flora	Convolvulaceae	8727	<i>Dichondra sp. A</i>	Kidney Weed				2
Plantae	Flora	Convolvulaceae	2223	<i>Evolvulus alsinoides</i>	Bindweed				1
Plantae	Flora	Crassulaceae	2237	<i>Crassula colorata</i>	Dense Stonecrop				183






Plantae	Flora	Crassulaceae	9395	<i>Crassula colorata</i> var. <i>acuminata</i>					16
Plantae	Flora	Crassulaceae	7745	<i>Crassula decumbens</i> var. <i>decumbens</i>	Spreading Stonecrop				3
Plantae	Flora	Crassulaceae	2238	<i>Crassula helmsii</i>	Swamp Stonecrop				2
Plantae	Flora	Crassulaceae	6820	<i>Crassula peduncularis</i>	Purple Stonecrop				3
Plantae	Flora	Crassulaceae	2242	<i>Crassula sieberiana</i>	Australian Stonecrop				72
Plantae	Flora	Crassulaceae	CRAS	<i>Crassula</i> spp.	Stonecrop				17
Plantae	Flora	Crassulaceae	12424	<i>Crassula tetramera</i>					1
Plantae	Flora	Cucurbitaceae	9436	<i>Citrullus lanatus</i> var. <i>lanatus</i>	* Wild Melon, Camel Melon,Bitter				8
Plantae	Flora	Cucurbitaceae	11072	<i>Cucumis myriocarpus</i> subsp. <i>leptodermis</i>	* Paddy Melon				33
Plantae	Flora	Cucurbitaceae	CUCU	<i>Cucumis</i> spp.					1
Plantae	Flora	Cupressaceae	6379	<i>Callitris glaucophylla</i>	White Cypress Pine				10
Plantae	Flora	Cupressaceae	7594	<i>Callitris gracilis</i>					3
Plantae	Flora	Cupressaceae	CALR	<i>Callitris</i> spp.					2
Plantae	Flora	Cyperaceae	2311	<i>Carex bichenoviana</i>					1
Plantae	Flora	Cyperaceae	2327	<i>Carex inversa</i>	Knob Sedge				16
Plantae	Flora	Cyperaceae	CARE	<i>Carex</i> spp.					1
Plantae	Flora	Cyperaceae	2351	<i>Cyperus bifax</i>	Downs Nutgrass				9
Plantae	Flora	Cyperaceae	2357	<i>Cyperus concinnus</i>	Trim Flat-sedge				3
Plantae	Flora	Cyperaceae	2364	<i>Cyperus eragrostis</i>	* Umbrella Sedge				6
Plantae	Flora	Cyperaceae	2366	<i>Cyperus exaltatus</i>					1
Plantae	Flora	Cyperaceae	2376	<i>Cyperus gymnocaulos</i>					1
Plantae	Flora	Cyperaceae	6716	<i>Cyperus iria</i>					1
Plantae	Flora	Cyperaceae	2390	<i>Cyperus pygmaeus</i>	Dwarf Flat-sedge				1
Plantae	Flora	Cyperaceae	2393	<i>Cyperus rotundus</i>	* Nutgrass				1
Plantae	Flora	Cyperaceae	CYPE	<i>Cyperus</i> spp.					1
Plantae	Flora	Cyperaceae	2408	<i>Eleocharis acuta</i>					87
Plantae	Flora	Cyperaceae	2416	<i>Eleocharis obicis</i>	Spike-Rush	V	V		456
Plantae	Flora	Cyperaceae	2418	<i>Eleocharis pallens</i>	Pale Spike Sedge				60
Plantae	Flora	Cyperaceae	2421	<i>Eleocharis plana</i>	Flat Spike-sedge				16
Plantae	Flora	Cyperaceae	2422	<i>Eleocharis pusilla</i>					36
Plantae	Flora	Cyperaceae	6988	<i>Eleocharis sphacelata</i>	Tall Spike Rush				2
Plantae	Flora	Cyperaceae	ELEO	<i>Eleocharis</i> spp.	Spike-rush, Spike-sedge				1
Plantae	Flora	Cyperaceae	2455	<i>Isolepis marginata</i>	*				1
Plantae	Flora	Cyperaceae	14624	<i>Isolepis multicaulis</i>					1
Plantae	Flora	Cyperaceae	ISOL	<i>Isolepis</i> spp.	Club-rush				2
Plantae	Flora	Cyperaceae	2464	<i>Isolepis victoriensis</i>					1
Plantae	Flora	Elatinaceae	2579	<i>Elatine gratioloides</i>	Waterwort				5
Plantae	Flora	Euphorbiaceae	9193	<i>Chamaesyce dallachyana</i>					2
Plantae	Flora	Euphorbiaceae	8560	<i>Chamaesyce drummondii</i>	Caustic Weed				236
Plantae	Flora	Euphorbiaceae	2715	<i>Euphorbia helioscopia</i>	* Sun Spurge				1
Plantae	Flora	Euphorbiaceae	2721	<i>Euphorbia peplus</i>	* Petty Spurge				2
Plantae	Flora	Euphorbiaceae	2722	<i>Euphorbia planiticola</i>	Plains Spurge				6
Plantae	Flora	Euphorbiaceae	6900	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>					2
Plantae	Flora	Fabaceae (Caesalpinioideae)	6644	<i>Senna barclayana</i>	Smooth Senna				1
Plantae	Flora	Fabaceae (Caesalpinioideae)	12016	<i>Senna form taxon 'petiolaris'</i>	Woody Cassia				1
Plantae	Flora	Fabaceae (Caesalpinioideae)	SENN	<i>Senna</i> spp.					1
Plantae	Flora	Fabaceae (Faboideae)	10668	<i>Cullen cinereum</i>	Annual Verbine				2
Plantae	Flora	Fabaceae (Faboideae)	9987	<i>Cullen parvum</i>	Small Scurf-pea	E1			K
Plantae	Flora	Fabaceae (Faboideae)	10674	<i>Cullen tenax</i>	Emu-foot				3
Plantae	Flora	Fabaceae (Faboideae)	2862	<i>Glycyrrhiza acanthocarpa</i>	Native Liquorice				2
Plantae	Flora	Fabaceae (Faboideae)	2908	<i>Lotus cruentus</i>	Red-flowered Lotus				5


Plantae	Flora	Fabaceae (Faboideae)	2916	<i>Medicago arabica</i>	*	Spotted Burr Medic				1	
Plantae	Flora	Fabaceae (Faboideae)	2918	<i>Medicago laciniata</i>	*	Cut-leaved Medic				22	
Plantae	Flora	Fabaceae (Faboideae)	2920	<i>Medicago minima</i>	*	Woolly Burr Medic				126	
Plantae	Flora	Fabaceae (Faboideae)	2922	<i>Medicago polymorpha</i>	*	Burr Medic				477	
Plantae	Flora	Fabaceae (Faboideae)	2923	<i>Medicago praecox</i>	*	Small-leaved Burr Medic				215	
Plantae	Flora	Fabaceae (Faboideae)	MEDI	<i>Medicago spp.</i>	*	A Medic				24	
Plantae	Flora	Fabaceae (Faboideae)	2926	<i>Medicago truncatula</i>	*	Barrel Medic				250	
Plantae	Flora	Fabaceae (Faboideae)	2928	<i>Melilotus indicus</i>	*	Hexham Scent				5	
Plantae	Flora	Fabaceae (Faboideae)	9998	<i>Swainsona affinis</i>						2	
Plantae	Flora	Fabaceae (Faboideae)	3036	<i>Swainsona burkittii</i>						3	
Plantae	Flora	Fabaceae (Faboideae)	3046	<i>Swainsona microphylla</i>						3	
Plantae	Flora	Fabaceae (Faboideae)	3048	<i>Swainsona murrayana</i>		Slender Darling Pea	V	V		28	
Plantae	Flora	Fabaceae (Faboideae)	3051	<i>Swainsona oroboides</i>						4	
Plantae	Flora	Fabaceae (Faboideae)	3054	<i>Swainsona plagiotropis</i>		Red Darling Pea	V	V	K		
Plantae	Flora	Fabaceae (Faboideae)	3055	<i>Swainsona procumbens</i>		Broughton Pea				20	
Plantae	Flora	Fabaceae (Faboideae)	8538	<i>Swainsona sericea</i>		Silky Swainson-pea	V		K		
Plantae	Flora	Fabaceae (Faboideae)	SWAI	<i>Swainsona spp.</i>						4	
Plantae	Flora	Fabaceae (Faboideae)	3059	<i>Swainsona swainsonioides</i>		Downy Swainson-pea				3	
Plantae	Flora	Fabaceae (Faboideae)	3072	<i>Trifolium angustifolium</i>	*	Narrow-leaved Clover				1	
Plantae	Flora	Fabaceae (Faboideae)	3073	<i>Trifolium arvense</i>	*	Haresfoot Clover				10	
Plantae	Flora	Fabaceae (Faboideae)	3079	<i>Trifolium glomeratum</i>	*	Clustered Clover				8	
Plantae	Flora	Fabaceae (Faboideae)	3080	<i>Trifolium hirtum</i>	*	Rose Clover				1	
Plantae	Flora	Fabaceae (Faboideae)	3085	<i>Trifolium repens</i>	*	White Clover				7	
Plantae	Flora	Fabaceae (Faboideae)	3086	<i>Trifolium resupinatum</i>	*	Shaftal Clover				1	
Plantae	Flora	Fabaceae (Faboideae)	TRIF	<i>Trifolium spp.</i>	*	A Clover				5	
Plantae	Flora	Fabaceae (Faboideae)	3089	<i>Trifolium subterraneum</i>	*	Subterranean Clover				3	
Plantae	Flora	Fabaceae (Faboideae)	3091	<i>Trifolium tomentosum</i>	*	Woolly Clover				10	
Plantae	Flora	Fabaceae (Mimosoideae)	3705	<i>Acacia aneura</i>		Mulga				2	
Plantae	Flora	Fabaceae (Mimosoideae)	3710	<i>Acacia baileyana</i>		Cootamundra Wattle				1	
Plantae	Flora	Fabaceae (Mimosoideae)	3722	<i>Acacia brachystachya</i>		Umbrella Mulga				1	
Plantae	Flora	Fabaceae (Mimosoideae)	3743	<i>Acacia colletioides</i>		Wait-a-while				1	
Plantae	Flora	Fabaceae (Mimosoideae)	3761	<i>Acacia decora</i>		Western Silver Wattle				1	
Plantae	Flora	Fabaceae (Mimosoideae)	3786	<i>Acacia hakeoides</i>		Hakea Wattle				3	



Plantae	Flora	Fabaceae (Mimosoideae)	3791	<i>Acacia homalophylla</i>	Yarran	1
Plantae	Flora	Fabaceae (Mimosoideae)	3825	<i>Acacia melvillei</i>	Yarran	5
Plantae	Flora	Fabaceae (Mimosoideae)	3843	<i>Acacia oswaldii</i>	Miljee	19
Plantae	Flora	Fabaceae (Mimosoideae)	3848	<i>Acacia pendula</i>	Weeping Myall, Boree	9
Plantae	Flora	Fabaceae (Mimosoideae)	3872	<i>Acacia salicina</i>	Cooba	20
Plantae	Flora	Fabaceae (Mimosoideae)	ACAC	<i>Acacia spp.</i>	Wattle	2
Plantae	Flora	Fabaceae (Mimosoideae)	3879	<i>Acacia stenophylla</i>	River Cooba	79
Plantae	Flora	Fabaceae (Mimosoideae)	9701	<i>Acacia victoriae subsp. arida</i>	Prickly Wattle	1
Plantae	Flora	Frankeniaceae	3115	<i>Frankenia angustipetala</i>		1
Plantae	Flora	Frankeniaceae	3116	<i>Frankenia connata</i>		6
Plantae	Flora	Frankeniaceae	7040	<i>Frankenia latior</i>		1
Plantae	Flora	Frankeniaceae	3121	<i>Frankenia serpyllifolia</i>		19
Plantae	Flora	Fumariaceae	7396	<i>Fumaria capreolata subsp. capreolata</i>	* Climbing Fumitory	1
Plantae	Flora	Fumariaceae	3126	<i>Fumaria densiflora</i>	* Narrow-leaved Fumitory	2
Plantae	Flora	Fumariaceae	9367	<i>Fumaria muralis subsp. muralis</i>	* Wall Fumitory	2
Plantae	Flora	Gentianaceae	3133	<i>Centaurium tenuiflorum</i>	* Branched Centaury, Slender centaury	4
Plantae	Flora	Gentianaceae	13834	<i>Schenkia spicata</i>	Spike Centaury	6
Plantae	Flora	Geraniaceae	3139	<i>Erodium botrys</i>	* Long Storksbill	2
Plantae	Flora	Geraniaceae	3141	<i>Erodium cicutarium</i>	* Common Crowfoot	141
Plantae	Flora	Geraniaceae	3142	<i>Erodium crinitum</i>	Blue Crowfoot	174
Plantae	Flora	Geraniaceae	3144	<i>Erodium malacoides</i>	* 5	
Plantae	Flora	Geraniaceae	3145	<i>Erodium moschatum</i>	* Musky Crowfoot	10
Plantae	Flora	Geraniaceae	EROI	<i>Erodium spp.</i>	Crowfoot	11
Plantae	Flora	Geraniaceae	3156	<i>Geranium solanderi</i>	Native Geranium	28
Plantae	Flora	Geraniaceae	8226	<i>Geranium solanderi var. solanderi</i>		6
Plantae	Flora	Geraniaceae	GERA	<i>Geranium spp.</i>		1
Plantae	Flora	Goodeniaceae	3181	<i>Goodenia fascicularis</i>	Mallee Goodenia	139
Plantae	Flora	Goodeniaceae	3183	<i>Goodenia glauca</i>	Pale Goodenia	36
Plantae	Flora	Goodeniaceae	3185	<i>Goodenia gracilis</i>		1
Plantae	Flora	Goodeniaceae	3189	<i>Goodenia heteromera</i>		20
Plantae	Flora	Goodeniaceae	3193	<i>Goodenia pinnatifida</i>	Scrambles Eggs	16
Plantae	Flora	Goodeniaceae	3194	<i>Goodenia pusilliflora</i>		90
Plantae	Flora	Goodeniaceae	GOOD	<i>Goodenia spp.</i>		29
Plantae	Flora	Goodeniaceae	8489	<i>Goodenia willisiana</i>		1
Plantae	Flora	Haloragaceae	3249	<i>Haloragis aspera</i>	Rough Raspwort	21
Plantae	Flora	Haloragaceae	7455	<i>Haloragis glauca f. glauca</i>		47
Plantae	Flora	Haloragaceae	3252	<i>Haloragis heterophylla</i>	Variable Raspwort	1
Plantae	Flora	Haloragaceae	7123	<i>Myriophyllum caput-medusae</i>	Cat-tail	1
Plantae	Flora	Haloragaceae	6724	<i>Myriophyllum crispatum</i>		1

Plantae	Flora	Haloragaceae	7738	<i>Myriophyllum papillosum</i>		13	
Plantae	Flora	Haloragaceae	3265	<i>Myriophyllum propinquum</i>		3	
Plantae	Flora	Haloragaceae	MYRI	<i>Myriophyllum spp.</i>		4	
Plantae	Flora	Haloragaceae	6546	<i>Myriophyllum verrucosum</i>	Red Water-milfoil	14	
Plantae	Flora	Hypoxidaceae	7493	<i>Hypoxis glabella</i> var. <i>glabella</i>	Tiny Star	28	
Plantae	Flora	Hypoxidaceae	HYPO	<i>Hypoxis spp.</i>		1	
Plantae	Flora	Iridaceae	10862	<i>Moraea setifolia</i>	*	Thread Iris	2
Plantae	Flora	Iridaceae	3304	<i>Romulea minutiflora</i>	*	Small-flowered Onion Grass	1
Plantae	Flora	Iridaceae	7477	<i>Romulea rosea</i> var. <i>australis</i>	*	Onion Grass	1
Plantae	Flora	Juncaceae	3313	<i>Juncus amabilis</i>		1	
Plantae	Flora	Juncaceae	3315	<i>Juncus aridicola</i>		Tussock Rush	63
Plantae	Flora	Juncaceae	3318	<i>Juncus bufonius</i>	*	Toad Rush	6
Plantae	Flora	Juncaceae	3330	<i>Juncus flavidus</i>		47	
Plantae	Flora	Juncaceae	3332	<i>Juncus holoschoenus</i>		1	
Plantae	Flora	Juncaceae	3344	<i>Juncus radula</i>		22	
Plantae	Flora	Juncaceae	8521	<i>Juncus remotiflorus</i>		1	
Plantae	Flora	Juncaceae	10310	<i>Juncus semisolidus</i>		2	
Plantae	Flora	Juncaceae	JUNC	<i>Juncus spp.</i>		A Rush	52
Plantae	Flora	Juncaceae	3348	<i>Juncus subsecundus</i>		Finger Rush	3
Plantae	Flora	Juncaceae	3350	<i>Juncus usitatus</i>		5	
Plantae	Flora	Juncaginaceae	3364	<i>Triglochin calcitrapa</i>		Spurred Arrowgrass	1
Plantae	Flora	Juncaginaceae	3366	<i>Triglochin dubia</i>		1	
Plantae	Flora	Juncaginaceae	3368	<i>Triglochin procera</i>		Water Ribbons	1
Plantae	Flora	Juncaginaceae	13144	<i>Triglochin sp. B</i>		1	
Plantae	Flora	Lamiaceae	3371	<i>Ajuga australis</i>		Austral Bugle	3
Plantae	Flora	Lamiaceae	3377	<i>Lamium amplexicaule</i>	*	Dead Nettle	1
Plantae	Flora	Lamiaceae	3381	<i>Marrubium vulgare</i>	*	White Horehound	35
Plantae	Flora	Lamiaceae	3383	<i>Mentha australis</i>		River Mint	8
Plantae	Flora	Lamiaceae	3386	<i>Mentha pulegium</i>	*	Pennyroyal	1
Plantae	Flora	Lamiaceae	3387	<i>Mentha satureioides</i>		Native Pennyroyal	1
Plantae	Flora	Lamiaceae	3427	<i>Prostanthera rotundifolia</i>		Round-leaved Mint-bush	1
Plantae	Flora	Lamiaceae	3440	<i>Prunella vulgaris</i>	*	Self-heal	1
Plantae	Flora	Lamiaceae	3446	<i>Salvia verbenaca</i>	*	Vervain	1
Plantae	Flora	Lamiaceae	3450	<i>Stachys arvensis</i>	*	Stagger Weed	2
Plantae	Flora	Lamiaceae	6895	<i>Teucrium albicaule</i>		1	
Plantae	Flora	Lamiaceae	3452	<i>Teucrium corymbosum</i>		Forest Germander	8
Plantae	Flora	Lamiaceae	3453	<i>Teucrium racemosum</i>		Grey Germander	55
Plantae	Flora	Linaceae	3583	<i>Linum marginale</i>		Native Flax	28
Plantae	Flora	Lobeliaceae	1922	<i>Pratia concolor</i>		Poison Pratia	101
Plantae	Flora	Loranthaceae	6394	<i>Amyema miquelii</i>		Box Mistletoe	12
Plantae	Flora	Loranthaceae	3607	<i>Amyema pendula</i>		3	
Plantae	Flora	Loranthaceae	3608	<i>Amyema preissii</i>		5	
Plantae	Flora	Loranthaceae	7630	<i>Amyema quandang</i> var. <i>quandang</i>	Grey Mistletoe	1	
Plantae	Flora	Loranthaceae	AMYE	<i>Amyema spp.</i>		Mistletoe	1
Plantae	Flora	Loranthaceae	3615	<i>Lysiana exocarpi</i>		2	
Plantae	Flora	Loranthaceae	8227	<i>Lysiana exocarpi</i> subsp. <i>exocarpi</i>		1	
Plantae	Flora	Lythraceae	7877	<i>Ammannia multiflora</i>		Jerry-jerry	1
Plantae	Flora	Lythraceae	3623	<i>Lythrum hyssopifolia</i>		Hyssop Loosestrife	29
Plantae	Flora	Malvaceae	3628	<i>Abutilon grandifolium</i>	*	1	
Plantae	Flora	Malvaceae	3629	<i>Abutilon halophilum</i>		21	
Plantae	Flora	Malvaceae	ABUT	<i>Abutilon spp.</i>		Lantern-bush	2
Plantae	Flora	Malvaceae	3633	<i>Abutilon theophrasti</i>	*	2	
Plantae	Flora	Malvaceae	6128	<i>Brachychiton populneus</i>		Kurrajong	2
Plantae	Flora	Malvaceae	9445	<i>Brachychiton populneus</i> subsp. <i>trilobus</i>		1	
Plantae	Flora	Malvaceae	HIBI	<i>Hibiscus spp.</i>		1	
Plantae	Flora	Malvaceae	3648	<i>Hibiscus trionum</i>		Flower-of-an-hour	10


Plantae	Flora	Malvaceae	3657	<i>Malva parviflora</i>	*	Small-flowered Mallow		58	
Plantae	Flora	Malvaceae	13837	<i>Malva preissiana</i>		Native Hollyhock		69	
Plantae	Flora	Malvaceae	MALV	<i>Malva spp.</i>		Mallow		3	
Plantae	Flora	Malvaceae	3660	<i>Modiola caroliniana</i>	*	Red-flowered Mallow		2	
Plantae	Flora	Malvaceae	3663	<i>Sida ammophila</i>		Sand Sida		3	
Plantae	Flora	Malvaceae	3664	<i>Sida corrugata</i>		Corrugated Sida		215	
Plantae	Flora	Malvaceae	3666	<i>Sida cunninghamii</i>		Ridge Sida		4	
Plantae	Flora	Malvaceae	6711	<i>Sida fibulifera</i>		Pin Sida		9	
Plantae	Flora	Malvaceae	3667	<i>Sida filiformis</i>				1	
Plantae	Flora	Malvaceae	3669	<i>Sida intricata</i>				55	
Plantae	Flora	Malvaceae	SIDA	<i>Sida spp.</i>				7	
Plantae	Flora	Malvaceae	3674	<i>Sida trichopoda</i>		High Sida		370	
Plantae	Flora	Marsileaceae	9632	<i>Marsilea costulifera</i>				9	
Plantae	Flora	Marsileaceae	8803	<i>Marsilea drummondii</i>		Common Nardoo		192	
Plantae	Flora	Marsileaceae	8138	<i>Marsilea hirsuta</i>		Short-fruited Nardoo		1	
Plantae	Flora	Marsileaceae	8140	<i>^^Pilularia novae-hollandiae</i>		Austral Pillwort	E1,3	K	
Plantae	Flora	Martyniaceae	4654	<i>Proboscidea louisianica</i>	*	Purple-flowered Devil's Claw		1	
Plantae	Flora	Menyanthaceae	7725	<i>Nymphoides crenata</i>		Wavy Marshwort		1	
Plantae	Flora	Myoporaceae	3942	<i>Eremophila longifolia</i>		Emubush		4	
Plantae	Flora	Myoporaceae	3955	<i>Myoporum montanum</i>		Western Boobialla		1	
Plantae	Flora	Myoporaceae	3957	<i>Myoporum platycarpum</i>		Sugarwood		1	
Plantae	Flora	Myrtaceae	4003	<i>Callistemon brachyandrus</i>		Prickly Bottlebrush		2	
Plantae	Flora	Myrtaceae	CALL	<i>Callistemon spp.</i>				1	
Plantae	Flora	Myrtaceae	6360	<i>Eucalyptus camaldulensis</i>		River Red Gum		199	
Plantae	Flora	Myrtaceae	4083	<i>Eucalyptus dumosa</i>		White Mallee		1	
Plantae	Flora	Myrtaceae	4109	<i>Eucalyptus intertexta</i>		Gum Coolibah		1	
Plantae	Flora	Myrtaceae	4114	<i>Eucalyptus largiflorens</i>		Black Box		192	
Plantae	Flora	Myrtaceae	6961	<i>Eucalyptus leucoxylon subsp. pruinosa</i>		Yellow Gum	V	1	
Plantae	Flora	Myrtaceae	4125	<i>Eucalyptus melliodora</i>		Yellow Box		1	
Plantae	Flora	Myrtaceae	4181	<i>Eucalyptus sideroxylon</i>		Mugga Ironbark		2	
Plantae	Flora	Myrtaceae	EUCA	<i>Eucalyptus spp.</i>				1	
Plantae	Flora	Nitrariaceae	6345	<i>Nitraria billardierei</i>		Dillon Bush		90	
Plantae	Flora	Nyctaginaceae	6753	<i>Boerhavia coccinea</i>		Tarvine		2	
Plantae	Flora	Nyctaginaceae	6841	<i>Boerhavia dominii</i>		Tarvine		93	
Plantae	Flora	Nyctaginaceae	BOER	<i>Boerhavia spp.</i>				4	
Plantae	Flora	Oleaceae	11424	<i>Fraxinus spp.</i>	*			1	
Plantae	Flora	Oleaceae	4324	<i>Olea europaea</i>	*	Common Olive		2	
Plantae	Flora	Onagraceae	7952	<i>Epilobium billardierianum subsp. cinereum</i>				1	
Plantae	Flora	Onagraceae	4330	<i>Epilobium hirtigerum</i>				3	
Plantae	Flora	Onagraceae	4336	<i>Ludwigia palustris</i>	*			1	
Plantae	Flora	Onagraceae	7375	<i>Ludwigia peploides subsp. montevidensis</i>		Water Primrose		15	
Plantae	Flora	Orchidaceae	6800	<i>^Caladenia arenaria</i>		Sand-hill Spider Orchid	E1,P,2 E	K	
Plantae	Flora	Orchidaceae	4447	<i>Diuris maculata</i>		Spotted Doubletail	P	1	
Plantae	Flora	Orchidaceae	11197	<i>^Diuris sp. (Oaklands, D.L. Jones 5380)</i>		Oaklands Diuris	E1,P,2	K	
Plantae	Flora	Orchidaceae	4457	<i>^Diuris tricolor</i>		Pine Donkey Orchid	V,P,2	K	
Plantae	Flora	Orchidaceae	4540	<i>Pterostylis biseta</i>		Rustyhood	P	3	
Plantae	Flora	Orchidaceae	PTER	<i>Pterostylis spp.</i>		Greenhood	P	1	
Plantae	Flora	Oxalidaceae	4613	<i>Oxalis corniculata</i>	*	Creeping Oxalis		12	
Plantae	Flora	Oxalidaceae	4615	<i>Oxalis exilis</i>				2	
Plantae	Flora	Oxalidaceae	4621	<i>Oxalis perennans</i>				277	
Plantae	Flora	Oxalidaceae	OXAL	<i>Oxalis spp.</i>				11	
Plantae	Flora	Papaveraceae	4638	<i>Papaver hybridum</i>	*	Rough Poppy		1	
Plantae	Flora	Phormiaceae	8725	<i>Dianella longifolia var. longifolia</i>		A Blue Flax Lily		1	
Plantae	Flora	Phormiaceae	10901	<i>Dianella porracea</i>				1	
Plantae	Flora	Phormiaceae	3542	<i>Dianella revoluta</i>		Blueberry Lily		1	




Plantae	Flora	Phyllanthaceae	2748	<i>Phyllanthus lacunarius</i>					1
Plantae	Flora	Pittosporaceae	11202	<i>Pittosporum angustifolium</i>				Butterbush	5
Plantae	Flora	Plantaginaceae	4689	<i>Plantago coronopus</i>	*			Buck's-horn Plantain	1
Plantae	Flora	Plantaginaceae	6996	<i>Plantago coronopus subsp. commutata</i>	*				1
Plantae	Flora	Plantaginaceae	4690	<i>Plantago cunninghamii</i>				Sago-weed	235
Plantae	Flora	Plantaginaceae	4692	<i>Plantago drummondii</i>				Dark Sago-weed	37
Plantae	Flora	Plantaginaceae	4694	<i>Plantago gaudichaudii</i>				Narrow Plantain	1
Plantae	Flora	Plantaginaceae	4699	<i>Plantago lanceolata</i>	*			Lamb's Tongues	1
Plantae	Flora	Plantaginaceae	PLAA	<i>Plantago spp.</i>				Plantain	4
Plantae	Flora	Plantaginaceae	4704	<i>Plantago turrifera</i>				Small Sago-weed	90
Plantae	Flora	Plantaginaceae	4705	<i>Plantago varia</i>					1
Plantae	Flora	Plantaginaceae	6000	<i>Veronica anagallis-aquatica</i>	*			Blue Water-speedwell	1
Plantae	Flora	Plantaginaceae	10221	<i>Veronica catenata</i>	*			Pink Water-speedwell	1
Plantae	Flora	Plantaginaceae	6007	<i>Veronica peregrina</i>	*			Wandering Speedwell	25
Plantae	Flora	Plantaginaceae	13400	<i>Veronica peregrina subsp. xalapensis</i>	*				1
Plantae	Flora	Plumbaginaceae	9890	<i>Limonium lobatum</i>	*			Winged Sea Lavender	1
Plantae	Flora	Poaceae	6547	<i>Aira elegantissima</i>	*			Delicate Hairgrass	2
Plantae	Flora	Poaceae	4735	<i>Alopecurus geniculatus</i>	*			Marsh Foxtail	23
Plantae	Flora	Poaceae	4740	<i>Amphibromus macrorhinus</i>				Long-nosed Swamp Wallaby-grass	6
Plantae	Flora	Poaceae	6842	<i>Amphibromus nervosus</i>				Swamp Wallaby Grass	38
Plantae	Flora	Poaceae	AMPH	<i>Amphibromus spp.</i>					2
Plantae	Flora	Poaceae	14896	<i>Anthosachne scabra</i>				Wheatgrass, Common Wheatgrass	7
Plantae	Flora	Poaceae	4754	<i>Aristida behriana</i>				Bunch Wiregrass	5
Plantae	Flora	Poaceae	7611	<i>Aristida contorta</i>				Bunched Kerosene Grass	1
Plantae	Flora	Poaceae	6933	<i>Aristida jerichoensis var. subsp. nulifera</i>				Jericho Wiregrass	1
Plantae	Flora	Poaceae	10384	<i>Austrostipa aristiglumis</i>				Plains Grass	16
Plantae	Flora	Poaceae	10373	<i>Austrostipa drummondii</i>					1
Plantae	Flora	Poaceae	10367	<i>Austrostipa elegantissima</i>				Feather Speargrass	7
Plantae	Flora	Poaceae	10375	<i>Austrostipa nitida</i>					14
Plantae	Flora	Poaceae	10376	<i>Austrostipa nodosa</i>				A Speargrass	12
Plantae	Flora	Poaceae	10369	<i>Austrostipa platychaeta</i>				Flat-awn Speargrass	2
Plantae	Flora	Poaceae	10377	<i>Austrostipa scabra</i>				Speargrass	195
Plantae	Flora	Poaceae	10379	<i>Austrostipa scabra subsp. falcata</i>				Rough Speargrass	282
Plantae	Flora	Poaceae	10378	<i>Austrostipa scabra subsp. scabra</i>				Rough Speargrass	14
Plantae	Flora	Poaceae	AUSO	<i>Austrostipa spp.</i>				A Speargrass	21
Plantae	Flora	Poaceae	10368	<i>Austrostipa tuckeri</i>				Tucker's Spear-grass	1
Plantae	Flora	Poaceae	10388	<i>Austrostipa wakoolica</i>			E1	E	P 
Plantae	Flora	Poaceae	4779	<i>Avena barbata</i>	*			Bearded Oats	3
Plantae	Flora	Poaceae	4780	<i>Avena fatua</i>	*			Wild Oats	256
Plantae	Flora	Poaceae	4782	<i>Avena sativa</i>	*			Oats	1
Plantae	Flora	Poaceae	AVEN	<i>Avena spp.</i>	*			Oats	4
Plantae	Flora	Poaceae	10328	<i>Bromus alopecuroides</i>	*				2
Plantae	Flora	Poaceae	4804	<i>Bromus arenarius</i>				Sand Brome	15
Plantae	Flora	Poaceae	7813	<i>Bromus catharticus</i>	*			Prairie Grass	7
Plantae	Flora	Poaceae	4806	<i>Bromus diandrus</i>	*			Great Brome	25
Plantae	Flora	Poaceae	4807	<i>Bromus hordeaceus</i>	*			Soft Brome	2
Plantae	Flora	Poaceae	4810	<i>Bromus madritensis</i>	*			Madrid Brome	4

Plantae	Flora	Poaceae	4811	<i>Bromus molliformis</i>	*	Soft Brome	10
Plantae	Flora	Poaceae	4813	<i>Bromus rubens</i>	*	Red Brome	28
Plantae	Flora	Poaceae	BROM	<i>Bromus spp.</i>		A Brome	2
Plantae	Flora	Poaceae	4817	<i>Bromus sterilis</i>	*	Sterile Brome	1
Plantae	Flora	Poaceae	14903	<i>Cenchrus clandestinus</i>	*	Kikuyu Grass	1
Plantae	Flora	Poaceae	14862	<i>Cenchrus longisetus</i>	*	Feathertop, White Foxtail	1
Plantae	Flora	Poaceae	CHLO	<i>Chloris spp.</i>			4
Plantae	Flora	Poaceae	4833	<i>Chloris truncata</i>		Windmill Grass	281
Plantae	Flora	Poaceae	4834	<i>Chloris ventricosa</i>		Tall Chloris	1
Plantae	Flora	Poaceae	6540	<i>Cynodon dactylon</i>		Common Couch	22
Plantae	Flora	Poaceae	7178	<i>Dactyloctenium radulans</i>		Button Grass	8
Plantae	Flora	Poaceae	7485	<i>Dichanthium sericeum</i>		Queensland Bluegrass	1
Plantae	Flora	Poaceae	6857	<i>Digitaria brownii</i>		Cotton Panic Grass	2
Plantae	Flora	Poaceae	4920	<i>Diplachne fusca</i>		Brown Beetle Grass	7
Plantae	Flora	Poaceae	7897	<i>Diplachne parviflora</i>		Small-flowered Beetle Grass	1
Plantae	Flora	Poaceae	7607	<i>Echinochloa colona</i>		Awnless Barnyard Grass	1
Plantae	Flora	Poaceae	4923	<i>Echinochloa crus-galli</i>	*	Barnyard Grass	2
Plantae	Flora	Poaceae	ECHI	<i>Echinochloa spp.</i>			3
Plantae	Flora	Poaceae	4937	<i>Ehrharta erecta</i>	*	Panic Veldtgrass	1
Plantae	Flora	Poaceae	4938	<i>Ehrharta longiflora</i>	*	Annual Veldtgrass	4
Plantae	Flora	Poaceae	7196	<i>Eleusine indica</i>	*	Crowsfoot Grass	1
Plantae	Flora	Poaceae	13430	<i>Elymus rectisetus</i>			1
Plantae	Flora	Poaceae	6720	<i>Enneapogon avenaceus</i>		Bottle Washers	3
Plantae	Flora	Poaceae	4941	<i>Enneapogon cylindricus</i>		Jointed Nineawn	1
Plantae	Flora	Poaceae	4945	<i>Enneapogon nigricans</i>		Niggerheads	2
Plantae	Flora	Poaceae	ENNE	<i>Enneapogon spp.</i>		Nineawn Grass, Bottlewashers	3
Plantae	Flora	Poaceae	6721	<i>Enteropogon acicularis</i>		Curly Windmill Grass	199
Plantae	Flora	Poaceae	6722	<i>Enteropogon ramosus</i>		Curly Windmill Grass	9
Plantae	Flora	Poaceae	ENTE	<i>Enteropogon spp.</i>		Windmill Grass	1
Plantae	Flora	Poaceae	4949	<i>Eragrostis australasica</i>		Canegrass	126
Plantae	Flora	Poaceae	6387	<i>Eragrostis cilianensis</i>	*	Stinkgrass	4
Plantae	Flora	Poaceae	4952	<i>Eragrostis curvula</i>	*	African Lovegrass	1
Plantae	Flora	Poaceae	4954	<i>Eragrostis dielsii</i>		Mallee Lovegrass	2
Plantae	Flora	Poaceae	4955	<i>Eragrostis elongata</i>		Clustered Lovegrass	1
Plantae	Flora	Poaceae	4958	<i>Eragrostis lacunaria</i>		Purple Lovegrass	15
Plantae	Flora	Poaceae	4967	<i>Eragrostis parviflora</i>		Weeping Lovegrass	12
Plantae	Flora	Poaceae	6378	<i>Eragrostis setifolia</i>		Neverfail	6
Plantae	Flora	Poaceae	ERAG	<i>Eragrostis spp.</i>		A Lovegrass	2
Plantae	Flora	Poaceae	4983	<i>Eriochloa crebra</i>		Cup Grass, Tall Cupgrass	4
Plantae	Flora	Poaceae	7335	<i>Eriochloa pseudoacrotricha</i>		Early Spring Grass	17
Plantae	Flora	Poaceae	4996	<i>Glyceria australis</i>		Australian Sweetgrass	1
Plantae	Flora	Poaceae	5000	<i>Hainardia cylindrica</i>	*	Common Barbgrass	3
Plantae	Flora	Poaceae	5010	<i>Hordeum glaucum</i>	*	Northern Barley Grass	8
Plantae	Flora	Poaceae	5011	<i>Hordeum hystrix</i>	*	Mediterranean Barley Grass	3
Plantae	Flora	Poaceae	5012	<i>Hordeum leporinum</i>	*	Barley Grass	457
Plantae	Flora	Poaceae	5013	<i>Hordeum marinum</i>	*	Sea Barley Grass	18
Plantae	Flora	Poaceae	HORD	<i>Hordeum spp.</i>	*	A Barley Grass	57
Plantae	Flora	Poaceae	5019	<i>Iseilema membranaceum</i>		Small Flinders Grass	1
Plantae	Flora	Poaceae	11388	<i>Lachnagrostis filiformis</i>			117
Plantae	Flora	Poaceae	LACH	<i>Lachnagrostis spp.</i>			2
Plantae	Flora	Poaceae	5023	<i>Lamarckia aurea</i>	*	Goldentop	33
Plantae	Flora	Poaceae	7726	<i>Leptochloa digitata</i>		Umbrella Canegrass	1
Plantae	Flora	Poaceae	5030	<i>Lolium loliaceum</i>	*	Stiff Ryegrass	4
Plantae	Flora	Poaceae	5032	<i>Lolium perenne</i>	*	Perennial Ryegrass	432
Plantae	Flora	Poaceae	5033	<i>Lolium rigidum</i>	*	Wimmera Ryegrass	277
Plantae	Flora	Poaceae	LOLI	<i>Lolium spp.</i>	*	A Ryegrass	3
Plantae	Flora	Poaceae	5037	<i>Microlaena stipoides</i>		Weeping Grass	1
Plantae	Flora	Poaceae	5054	<i>Panicum coloratum</i>	*	Coolah Grass	2
Plantae	Flora	Poaceae	6395	<i>Panicum decompositum</i>		Native Millet	20
Plantae	Flora	Poaceae	5055	<i>Panicum effusum</i>		Hairy Panic	3
Plantae	Flora	Poaceae	7773	<i>Panicum laevinode</i>		Pepper Grass	6









Plantae	Flora	Poaceae	5064	<i>Panicum queenslandicum</i>	Yadbila Grass	10
Plantae	Flora	Poaceae	9331	<i>Panicum queenslandicum</i> var. <i>queenslandicum</i>	Yabila Grass	1
Plantae	Flora	Poaceae	5066	<i>Panicum simile</i>	Two-colour Panic	1
Plantae	Flora	Poaceae	PANI	<i>Panicum spp.</i>	Panicum	6
Plantae	Flora	Poaceae	5070	<i>Parapholis incurva</i> *	Coast Barb Grass	19
Plantae	Flora	Poaceae	5077	<i>Paspalidium constrictum</i>	Knottybutt Grass	2
Plantae	Flora	Poaceae	5082	<i>Paspalidium jubiflorum</i>	Warrego Grass	99
Plantae	Flora	Poaceae	5086	<i>Paspalum dilatatum</i> *	Paspalum	2
Plantae	Flora	Poaceae	5087	<i>Paspalum distichum</i>	Water Couch	6
Plantae	Flora	Poaceae	PASP	<i>Paspalum spp.</i>		1
Plantae	Flora	Poaceae	5102	<i>Pentaschistis airoides</i> *	False Hairgrass	7
Plantae	Flora	Poaceae	5106	<i>Phalaris aquatica</i> *	Phalaris	6
Plantae	Flora	Poaceae	5108	<i>Phalaris canariensis</i> *	Canary Grass	2
Plantae	Flora	Poaceae	5110	<i>Phalaris minor</i> *	Lesser Canary Grass	16
Plantae	Flora	Poaceae	5111	<i>Phalaris paradoxa</i> *	Paradoxa Grass	73
Plantae	Flora	Poaceae	PHAA	<i>Phalaris spp.</i> *		3
Plantae	Flora	Poaceae	5112	<i>Phleum pratense</i> *	Timothy	2
Plantae	Flora	Poaceae	5113	<i>Phragmites australis</i>	Common Reed	6
Plantae	Flora	Poaceae	5129	<i>Poa fordeana</i>	Sweet Swamp-grass	71
Plantae	Flora	Poaceae	11196	<i>Poa labillardierei</i> var. <i>labillardierei</i>	Tussock	12
Plantae	Flora	Poaceae	POAC	<i>Poaceae indeterminate</i> *	Grasses, reeds and bamboos	3
Plantae	Flora	Poaceae	5145	<i>Polypogon monspeliensis</i> *	Annual Beardgrass	5
Plantae	Flora	Poaceae	POLP	<i>Polypogon spp.</i> *		1
Plantae	Flora	Poaceae	5148	<i>Pseudoraphis spinescens</i>	Spiny Mudgrass	3
Plantae	Flora	Poaceae	5151	<i>Puccinellia stricta</i>	Australian Saltmarsh Grass	1
Plantae	Flora	Poaceae	7878	<i>Rostraria cristata</i> *	Annual Cat's Tail	1
Plantae	Flora	Poaceae	7857	<i>Rostraria pumila</i> *	Roughtail	2
Plantae	Flora	Poaceae	14303	<i>Rytidosperma auriculatum</i>	Lobed Wallaby Grass	1
Plantae	Flora	Poaceae	14304	<i>Rytidosperma bipartitum</i>	Wallaby Grass	1
Plantae	Flora	Poaceae	14305	<i>Rytidosperma caespitosum</i>	Ringed Wallaby Grass	418
Plantae	Flora	Poaceae	14307	<i>Rytidosperma duttonianum</i>	Brown-back Wallaby Grass	1
Plantae	Flora	Poaceae	14308	<i>Rytidosperma erianthum</i>	Wallaby Grass	11
Plantae	Flora	Poaceae	14309	<i>Rytidosperma fulvum</i>	Wallaby Grass	6
Plantae	Flora	Poaceae	14322	<i>Rytidosperma setaceum</i>	Small-flowered Wallaby-grass	302
Plantae	Flora	Poaceae	RYTI	<i>Rytidosperma spp.</i>		16
Plantae	Flora	Poaceae	5156	<i>Schismus barbatus</i> *	Arabian Grass	40
Plantae	Flora	Poaceae	13468	<i>Setaria parviflora</i> *		2
Plantae	Flora	Poaceae	5169	<i>Setaria verticillata</i> *	Whorled Pigeon Grass	1
Plantae	Flora	Poaceae	5177	<i>Sporobolus caroli</i>	Fairy Grass	311
Plantae	Flora	Poaceae	5182	<i>Sporobolus mitchellii</i>	Rat's Tail Couch	6
Plantae	Flora	Poaceae	SPOR	<i>Sporobolus spp.</i>	Rat's Tail Couch	1
Plantae	Flora	Poaceae	14048	<i>Thinopyrum ponticum</i> *	Tall Wheat Grass	1
Plantae	Flora	Poaceae	5224	<i>Tragus australianus</i>	Small Burrgrass	4
Plantae	Flora	Poaceae	5229	<i>Tripogon loliiformis</i>	Fiveminute Grass	2
Plantae	Flora	Poaceae	5234	<i>Triticum aestivum</i> *	Wheat	1
Plantae	Flora	Poaceae	TRIM	<i>Triticum spp.</i> *		1
Plantae	Flora	Poaceae	5239	<i>Vulpia bromoides</i> *	Squirrel Tail Fesque	12
Plantae	Flora	Poaceae	8516	<i>Vulpia muralis</i> *	Wall Fescue	93
Plantae	Flora	Poaceae	5242	<i>Vulpia myuros</i> *	Rat's Tail Fescue	88
Plantae	Flora	Poaceae	VULP	<i>Vulpia spp.</i> *	Rat's-tail Fescue	29
Plantae	Flora	Poaceae	13475	<i>Walwhalleya proluta</i>		246
Plantae	Flora	Polygonaceae	5264	<i>Acetosa vesicaria</i> *	Bladder Dock	1
Plantae	Flora	Polygonaceae	14542	<i>Duma florulenta</i>	Lignum	283
Plantae	Flora	Polygonaceae	14544	<i>Duma horrida</i> subsp. <i>horrida</i>		1
Plantae	Flora	Polygonaceae	5266	<i>Emex australis</i> *	Spiny Emex	2
Plantae	Flora	Polygonaceae	MUEH	<i>Muehlenbeckia spp.</i>		1

Plantae	Flora	Polygonaceae	7568	<i>Persicaria decipiens</i>	Slender Knotweed		8
Plantae	Flora	Polygonaceae	5281	<i>Persicaria hydropiper</i>	Water Pepper		4
Plantae	Flora	Polygonaceae	5282	<i>Persicaria lapathifolia</i>	Pale Knotweed		2
Plantae	Flora	Polygonaceae	5284	<i>Persicaria orientalis</i>	Princes Feathers		1
Plantae	Flora	Polygonaceae	5285	<i>Persicaria prostrata</i>	Creeping Knotweed		8
Plantae	Flora	Polygonaceae	PERC	<i>Persicaria</i> spp.	Knotweed		1
Plantae	Flora	Polygonaceae	5287	<i>Polygonum arenastrum</i> *	Wireweed		4
Plantae	Flora	Polygonaceae	5288	<i>Polygonum aviculare</i> *	Wireweed		37
Plantae	Flora	Polygonaceae	5291	<i>Polygonum plebeium</i>	Small Knotweed		4
Plantae	Flora	Polygonaceae	POLG	<i>Polygonum</i> spp.			2
Plantae	Flora	Polygonaceae	5296	<i>Rumex brownii</i>	Swamp Dock		14
Plantae	Flora	Polygonaceae	5298	<i>Rumex crispus</i> *	Curled Dock		16
Plantae	Flora	Polygonaceae	5299	<i>Rumex crystallinus</i>	Shiny Dock		18
Plantae	Flora	Polygonaceae	5300	<i>Rumex dumosus</i>	Wiry Dock		4
Plantae	Flora	Polygonaceae	RUME	<i>Rumex</i> spp.	Dock		14
Plantae	Flora	Polygonaceae	7277	<i>Rumex stenoglottis</i>			1
Plantae	Flora	Polygonaceae	5304	<i>Rumex tenax</i>	Shiny Dock		108
Plantae	Flora	Portulacaceae	5311	<i>Calandrinia eremaea</i>	Small Purslane		55
Plantae	Flora	Portulacaceae	CALN	<i>Calandrinia</i> spp.	A Purslane		1
Plantae	Flora	Portulacaceae	5317	<i>Calandrinia volubilis</i>			13
Plantae	Flora	Portulacaceae	5324	<i>Portulaca oleracea</i>	Pigweed		11
Plantae	Flora	Potamogetonaceae	7023	<i>Potamogeton tricarlinatus</i>	Floating Pondweed		4
Plantae	Flora	Proteaceae	13501	<i>Grevillea ilicifolia</i> subsp. <i>ilicifolia</i>	Holly-leaf Grevillea	E4A	P 
Plantae	Flora	Proteaceae	5404	<i>Grevillea striata</i>	Beefwood		1
Plantae	Flora	Proteaceae	5417	<i>Hakea leucoptera</i>	Needlewood		1
Plantae	Flora	Proteaceae	9758	<i>Hakea leucoptera</i> subsp. <i>leucoptera</i>			1
Plantae	Flora	Proteaceae	HAKE	<i>Hakea</i> spp.			1
Plantae	Flora	Proteaceae	5426	<i>Hakea tephrosperma</i>	Hooked Needlewood		5
Plantae	Flora	Ranunculaceae	13523	<i>Myosurus australis</i>	Mousetail		12
Plantae	Flora	Ranunculaceae	5507	<i>Ranunculus inundatus</i>	River Buttercup		4
Plantae	Flora	Ranunculaceae	5508	<i>Ranunculus lappaceus</i>	Common Buttercup		14
Plantae	Flora	Ranunculaceae	5511	<i>Ranunculus muricatus</i> *	Sharp Buttercup		1
Plantae	Flora	Ranunculaceae	5516	<i>Ranunculus pentandrus</i>			6
Plantae	Flora	Ranunculaceae	12097	<i>Ranunculus pentandrus</i> var. <i>platycarpus</i>			23
Plantae	Flora	Ranunculaceae	8810	<i>Ranunculus pumilio</i> var. <i>pumilio</i>			2
Plantae	Flora	Ranunculaceae	5525	<i>Ranunculus sessiliflorus</i>	Small-flowered Buttercup		9
Plantae	Flora	Ranunculaceae	9640	<i>Ranunculus sessiliflorus</i> var. <i>pilulifer</i>	Common Buttercup		18
Plantae	Flora	Ranunculaceae	RANU	<i>Ranunculus</i> spp.			8
Plantae	Flora	Ranunculaceae	5527	<i>Ranunculus trilobus</i> *			1
Plantae	Flora	Ranunculaceae	5528	<i>Ranunculus undosus</i>	Swamp Buttercup		26
Plantae	Flora	Rosaceae	5635	<i>Rosa rubiginosa</i> *	Sweet Briar		1
Plantae	Flora	Rosaceae	ROSA	<i>Rosa</i> spp. *			1
Plantae	Flora	Rubiaceae	5653	<i>Asperula conferta</i>	Common Woodruff		38
Plantae	Flora	Rubiaceae	10203	<i>Asperula gemella</i>	Twin-leaved Bedstraw		82
Plantae	Flora	Rubiaceae	5679	<i>Galium aparine</i> *	Goosegrass		11
Plantae	Flora	Rubiaceae	5684	<i>Galium gaudichaudii</i>	Rough Bedstraw		6
Plantae	Flora	Rubiaceae	5687	<i>Galium murale</i> *	Small Bedstraw		4
Plantae	Flora	Rubiaceae	GALI	<i>Galium</i> spp.			13
Plantae	Flora	Rubiaceae	14630	<i>Galium spurium</i> *			1
Plantae	Flora	Rubiaceae	5711	<i>Richardia brasiliensis</i> *	Mexican Clover		1
Plantae	Flora	Rubiaceae	RUBIC	<i>Rubiaceae indeterminate</i> *	Woodruffs, currants, bedstraws and coffee		1
Plantae	Flora	Rutaceae	5800	<i>Geijera parviflora</i>	Wilga		2
Plantae	Flora	Salicaceae	5851	<i>Salix babylonica</i> *	Weeping Willow		5

Plantae	Flora	Santalaceae	5868	<i>Santalum acuminatum</i>	Sweet Quandong			3	
Plantae	Flora	Santalaceae	6384	<i>Santalum lanceolatum</i>	Northern Sandalwood			2	
Plantae	Flora	Sapindaceae	7015	<i>Alectryon oleifolius</i>	Western Rosewood			17	
Plantae	Flora	Sapindaceae	7067	<i>Dodonaea sinuolata</i> <i>subsp. acrodentata</i>	A Hopbush	E1		P	
Plantae	Flora	Sapindaceae	7830	<i>Dodonaea viscosa subsp. angustissima</i>	Narrow-leaf Hop-bush			5	
Plantae	Flora	Scrophulariaceae	5966	<i>Gratiola pedunculata</i>				3	
Plantae	Flora	Scrophulariaceae	7558	<i>Kickxia elatine subsp. crinita</i>	* Twining Toadflax			1	
Plantae	Flora	Scrophulariaceae	5972	<i>Limosella australis</i>	Australian Mudwort			3	
Plantae	Flora	Scrophulariaceae	5973	<i>Limosella curdieana</i>	Large Mudwort			7	
Plantae	Flora	Scrophulariaceae	5974	<i>Linaria arvensis</i>	*			1	
Plantae	Flora	Scrophulariaceae	5978	<i>Linaria pelisseriana</i>	*			1	
Plantae	Flora	Scrophulariaceae	5982	<i>Mimulus gracilis</i>	Slender Monkey-flower			20	
Plantae	Flora	Scrophulariaceae	5985	<i>Mimulus prostratus</i>	Small Monkey-flower			1	
Plantae	Flora	Scrophulariaceae	9288	<i>Stemodia florulenta</i>	Bluerod			4	
Plantae	Flora	Scrophulariaceae	VERB	<i>Verbascum spp.</i>	*			3	
Plantae	Flora	Scrophulariaceae	5999	<i>Verbascum virgatum</i>	*			1	
Plantae	Flora	Solanaceae	6038	<i>Lycium australe</i>	Australian Boxthorn			3	
Plantae	Flora	Solanaceae	6040	<i>Lycium ferocissimum</i>	*			117	
Plantae	Flora	Solanaceae	LYCI	<i>Lycium spp.</i>				1	
Plantae	Flora	Solanaceae	6050	<i>Nicotiana suaveolens</i>	Native Tobacco			2	
Plantae	Flora	Solanaceae	PHYS	<i>Physalis spp.</i>				1	
Plantae	Flora	Solanaceae	7043	<i>Solanum americanum</i>	Glossy Nightshade			2	
Plantae	Flora	Solanaceae	6081	<i>Solanum esuriale</i>	Quena			168	
Plantae	Flora	Solanaceae	6086	<i>Solanum karsense</i>	Menindee Nightshade	V	V	1	
Plantae	Flora	Solanaceae	6091	<i>Solanum nigrum</i>	*			28	
Plantae	Flora	Solanaceae	6103	<i>Solanum rostratum</i>	*			3	
Plantae	Flora	Typhaceae	7224	<i>Typha domingensis</i>	Narrow-leaved Cumbungi			6	
Plantae	Flora	Typhaceae	6217	<i>Typha orientalis</i>	Broad-leaved Cumbungi			12	
Plantae	Flora	Typhaceae	TYPH	<i>Typha spp.</i>				3	
Plantae	Flora	Urticaceae	6231	<i>Parietaria debilis</i>	Native Pellitory			9	
Plantae	Flora	Urticaceae	6237	<i>Urtica incisa</i>	Stinging Nettle			1	
Plantae	Flora	Urticaceae	6238	<i>Urtica urens</i>	*			6	
Plantae	Flora	Verbenaceae	11134	<i>Phyla canescens</i>	*			8	
Plantae	Flora	Verbenaceae	6252	<i>Phyla nodiflora</i>	*			27	
Plantae	Flora	Verbenaceae	11187	<i>Verbena africana</i>	*			1	
Plantae	Flora	Verbenaceae	10717	<i>Verbena gaudichaudii</i>	Verbena			2	
Plantae	Flora	Verbenaceae	6259	<i>Verbena officinalis</i>	*			14	
Plantae	Flora	Verbenaceae	VERE	<i>Verbena spp.</i>				1	
Plantae	Flora	Verbenaceae	6261	<i>Verbena supina</i>	*			6	
Plantae	Flora	Zygophyllaceae	TRIB	<i>Tribulus spp.</i>	Cat-head, Caltrop			2	
Plantae	Flora	Zygophyllaceae	7655	<i>Tribulus terrestris</i>	*			31	
Plantae	Flora	Zygophyllaceae	6349	<i>Zygophyllum ammophilum</i>	Sand Twinleaf			22	
Plantae	Flora	Zygophyllaceae	6350	<i>Zygophyllum apiculatum</i>	Common Twinleaf			1	
Plantae	Flora	Zygophyllaceae	6352	<i>Zygophyllum crenatum</i>	Lobed Twinleaf			1	
Plantae	Flora	Zygophyllaceae	6354	<i>Zygophyllum glaucum</i>	Pale Twinleaf			14	
Plantae	Flora	Zygophyllaceae	6357	<i>Zygophyllum iodocarpum</i>	Violet Twinleaf			28	
Plantae	Flora	Zygophyllaceae	ZYGO	<i>Zygophyllum spp.</i>				29	
Community				<i>Acacia loderi shrublands</i>	Acacia loderi shrublands	E3		P	

Community	<i>Acacia melvillei</i> Shrubland in the Riverina and Murray-Darling Depression bioregions	Acacia melvillei Shrubland in the Riverina and Murray- Darling Depression bioregions	E3		K	
Community	<i>Allocasuarina luehmannii</i> Woodland in the Riverina and Murray-Darling Depression Bioregions	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	E3	E	K	
Community	<i>Inland Grey Box</i> Woodland in the Riverina, NSW South Western Slopes, Cobar Penepplain, Nandewar and Brigalow Belt South Bioregions	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Penepplain, Nandewar and Brigalow Belt South Bioregions	E3	E	K	
Community	<i>Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain, Murray- Darling Depression, Riverina and NSW South Western Slopes bioregions</i>	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	E3	E	K	
Community	<i>Sandhill Pine Woodland in the Riverina, Murray- Darling Depression and NSW South Western Slopes bioregions</i>	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	E3		K	
Threat	<i>Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands</i>	Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		P	
Threat	<i>Anthropogenic Climate Change</i>	Anthropogenic Climate Change	KTP	KTP	P	
Threat	<i>Bushrock removal</i>	Bushrock removal	KTP		P	
Threat	<i>Clearing of native vegetation</i>	Clearing of native vegetation	KTP	KTP	P	
Threat	<i>Competition and grazing by the feral European Rabbit, Oryctolagus cuniculus (L.)</i>	Competition and grazing by the feral European Rabbit, Oryctolagus cuniculus (L.)	KTP	KTP	P	
Threat	<i>Competition and habitat degradation by Feral Goats, Capra hircus Linnaeus 1758</i>	Competition and habitat degradation by Feral Goats, Capra hircus Linnaeus 1758	KTP	KTP	P	
Threat	<i>Competition from feral honey bees, Apis mellifera L.</i>	Competition from feral honey bees, Apis mellifera L.	KTP		P	
Threat	<i>Forest eucalypt dieback associated with over- abundant psyllids and Bell Miners</i>	Forest eucalypt dieback associated with over- abundant psyllids and Bell Miners	KTP		P	
Threat	<i>Herbivory and environmental degradation caused by feral deer</i>	Herbivory and environmental degradation caused by feral deer	KTP		P	
Threat	<i>High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition</i>	High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		P	

Threat	<i>Importation of Red Imported Fire Ants Solenopsis invicta Buren 1972</i>	Importation of Red Imported Fire Ants Solenopsis invicta Buren 1972	KTP	KTP	P	
Threat	<i>Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations</i>	Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	P	
Threat	<i>Infection of frogs by amphibian chytrid causing the disease chytridiomycosis</i>	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	P	
Threat	<i>Infection of native plants by Phytophthora cinnamomi</i>	Infection of native plants by Phytophthora cinnamomi	KTP	KTP	P	
Threat	<i>Introduction of the Large Earth Bumblebee Bombus terrestris (L.)</i>	Introduction of the Large Earth Bumblebee Bombus terrestris (L.)	KTP		P	
Threat	<i>Invasion and establishment of exotic vines and scramblers</i>	Invasion and establishment of exotic vines and scramblers	KTP		P	
Threat	<i>Invasion and establishment of Scotch Broom (Cytisus scoparius)</i>	Invasion and establishment of Scotch Broom (Cytisus scoparius)	KTP		P	
Threat	<i>Invasion and establishment of the Cane Toad (Bufo marinus)</i>	Invasion and establishment of the Cane Toad (Bufo marinus)	KTP	KTP	P	
Threat	<i>Invasion of native plant communities by African Olive Olea europaea subsp. cuspidata (Wall. ex G. Don) Cif.</i>	Invasion of native plant communities by African Olive Olea europaea subsp. cuspidata (Wall. ex G. Don) Cif.	KTP		P	
Threat	<i>Invasion of native plant communities by Chrysanthemoides monilifera</i>	Invasion of native plant communities by Chrysanthemoides monilifera	KTP		P	
Threat	<i>Invasion of native plant communities by exotic perennial grasses</i>	Invasion of native plant communities by exotic perennial grasses	KTP		P	
Threat	<i>Invasion of the Yellow Crazy Ant, Anoplolepis gracilipes (Fr. Smith) into NSW</i>	Invasion of the Yellow Crazy Ant, Anoplolepis gracilipes (Fr. Smith) into NSW	KTP		P	
Threat	<i>Invasion, establishment and spread of Lantana (Lantana camara L. sens. Lat)</i>	Invasion, establishment and spread of Lantana (Lantana camara L. sens. Lat)	KTP		P	
Threat	<i>Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants</i>	Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	P	
Threat	<i>Loss of Hollow-bearing Trees</i>	Loss of Hollow-bearing Trees	KTP		P	
Threat	<i>Loss or degradation (or both) of sites used for hill-topping by butterflies</i>	Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		P	
Threat	<i>Predation and hybridisation by Feral Dogs, Canis lupus familiaris</i>	Predation and hybridisation by Feral Dogs, Canis lupus familiaris	KTP		P	



Threat	<i>Predation by Gambusia holbrooki Girard, 1859 (Plague Minnow or Mosquito Fish)</i>	Predation by Gambusia holbrooki Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP		P	
Threat	<i>Predation by the European Red Fox Vulpes Vulpes (Linnaeus, 1758)</i>	Predation by the European Red Fox Vulpes Vulpes (Linnaeus, 1758)	KTP	KTP	P	
Threat	<i>Predation by the Feral Cat Felis catus (Linnaeus, 1758)</i>	Predation by the Feral Cat Felis catus (Linnaeus, 1758)	KTP	KTP	P	
Threat	<i>Predation, habitat degradation, competition and disease transmission by Feral Pigs, Sus scrofa Linnaeus 1758</i>	Predation, habitat degradation, competition and disease transmission by Feral Pigs, Sus scrofa Linnaeus 1758	KTP	KTP	P	
Threat	<i>Removal of dead wood and dead trees</i>	Removal of dead wood and dead trees	KTP		P	



# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

LGA HAY SHIRE COUNCIL, NSW

Report created: 08/02/19 13:02:07

[Summary](#)

[Details](#)

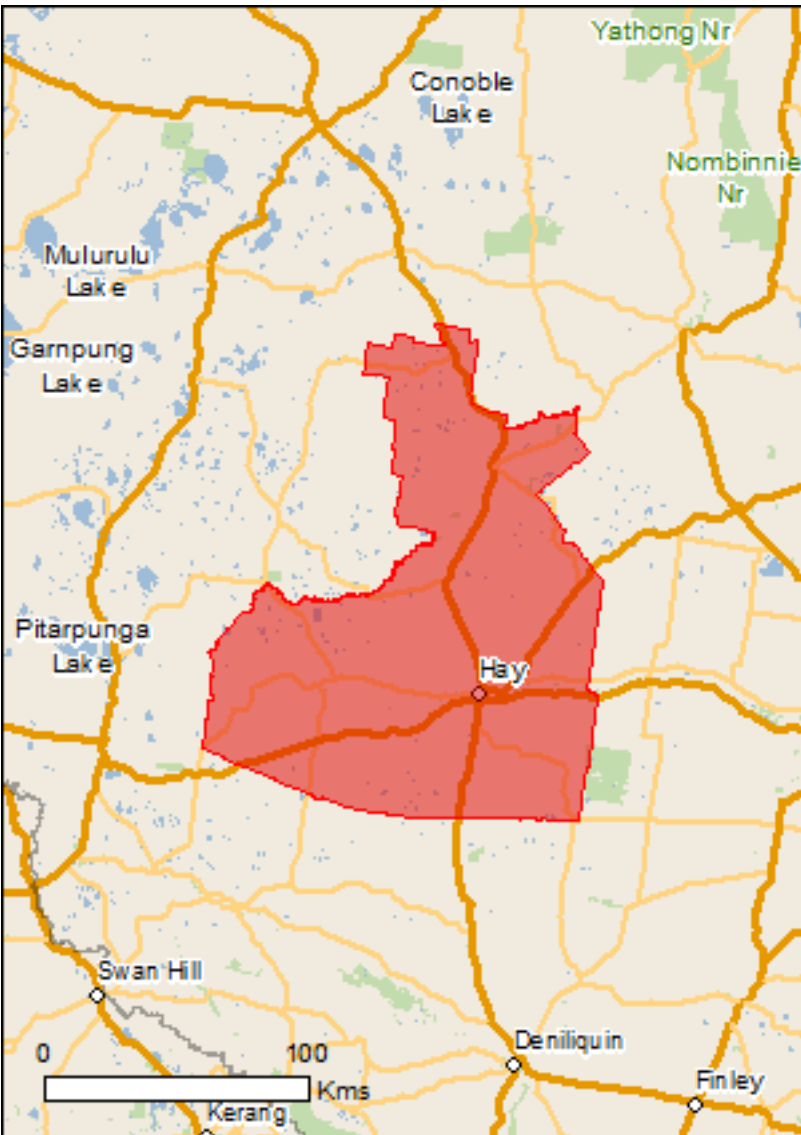
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

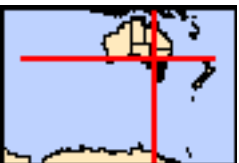
[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



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# Summary

## Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see <http://environment.gov.au/protection/environment-assessments>

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Significance:</a>	4
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Threatened Ecological Communities:</a>	3
<a href="#">Threatened Species:</a>	25
<a href="#">Migratory Species:</a>	10

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov.au/epbc/permits-and-application-forms>

<a href="#">Commonwealth Lands:</a>	7
<a href="#">Commonwealth Heritage Places:</a>	1
<a href="#">Listed Marine Species:</a>	16
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None

## Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

<a href="#">State and Territory Reserves:</a>	9
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Invasive Species:</a>	26
<a href="#">Nationally Important Wetlands:</a>	5

# Details

## Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)		[ Resource Information ]
Name	Proximity	
<a href="#">Banrock station wetland complex</a>	300 - 400km upstream	
<a href="#">Hattah-kulkyne lakes</a>	100 - 150km upstream	
<a href="#">Riverland</a>	200 - 300km upstream	
<a href="#">The coorong, and lakes alexandrina and albert wetland</a>	400 - 500km upstream	

Threatened Ecological Communities		[ Resource Information ]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.		

Name	Status	Type of Presence
<a href="#">Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions</a>	Endangered	Community may occur within area
<a href="#">Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia</a>	Endangered	Community likely to occur within area
<a href="#">Weeping Myall Woodlands</a>	Endangered	Community likely to occur within area

Threatened Species		[ Resource Information ]
Name	Status	Type of Presence
BIRDS		
<a href="#">Botaurus poiciloptilus</a> Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Grantiella picta</a> Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Pedionomus torquatus</a> Plains-wanderer [906]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Pezoporus occidentalis</a> Night Parrot [59350]	Endangered	Extinct within area
<a href="#">Polytelis swainsonii</a> Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rostratula australis</a> Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
FISH		

Name	Status	Type of Presence
<a href="#">Galaxias rostratus</a> Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Maccullochella macquariensis</a> Trout Cod [26171]	Endangered	Species or species habitat may occur within area
<a href="#">Maccullochella peelii</a> Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Macquaria australasica</a> Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area

FROGS				
<a href="#">Litoria raniformis</a>				
Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]		Vulnerable		Species or species habitat known to occur within area

MAMMALS		
<a href="#">Dasyurus maculatus maculatus (SE mainland population)</a>		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
<a href="#">Nyctophilus corbeni</a>		
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)</a>		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat may occur within area

PLANTS		
<a href="#">Austrostipa metatoris</a> [66704]	Vulnerable	Species or species habitat may occur within area
<a href="#">Austrostipa wakoolica</a> [66623]	Endangered	Species or species habitat may occur within area
<a href="#">Brachyscome papillosa</a> Mossgiel Daisy [6625]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Eleocharis obicis</a> a spike rush [15320]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Lepidium monoplacoides</a> Winged Pepper-cress [9190]	Endangered	Species or species habitat likely to occur within area
<a href="#">Maireana cheelii</a> Chariot Wheels [8008]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Solanum karsense</a> Menindee Nightshade [7776]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Swainsona murrayana</a> Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area

Migratory Species		[ <u>Resource Information</u> ]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
<a href="#">Apus pacificus</a>		
Fork-tailed Swift [678]		Species or species



Name	Threatened	Type of Presence
habitat likely to occur within area		
Migratory Terrestrial Species		
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat may occur within area
Migratory Wetlands Species		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

## Other Matters Protected by the EPBC Act

Commonwealth Lands

[ Resource Information ]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Australian Postal Commission
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Australian Telecommunications Corporation
Commonwealth Land - Commonwealth Bank of Australia
Commonwealth Land - Commonwealth Trading Bank of Australia
Commonwealth Land - Defence Service Homes Corporation
Commonwealth Land - Telstra Corporation Limited

Commonwealth Heritage Places	<a href="#">[ Resource Information ]</a>	
Name	State	Status
Historic		
<a href="#">Hay Post Office</a>	NSW	Listed place

Listed Marine Species		[ <u>Resource Information</u> ]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species

Name	Threatened	Type of Presence
<a href="#">Ardea alba</a> Great Egret, White Egret [59541]	Critically Endangered	habitat likely to occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Breeding known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]		Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
<a href="#">Chrysococcyx osculans</a> Black-eared Cuckoo [705]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]		Species or species habitat may occur within area
<a href="#">Rostratula benghalensis (sensu lato)</a> Painted Snipe [889]		Species or species habitat likely to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]	Endangered*	Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves		[ Resource Information ]
Name		State
Kalyarr		NSW
Lachlan Valley		NSW
Lachlan Valley		NSW
Lachlan Valley		NSW
Murrumbidgee Valley		NSW
Murrumbidgee Valley		NSW
Oolambeyan		NSW
Thelangerin		NSW
Toogimbie		NSW

Invasive Species	[ Resource Information ]
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Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit,

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area

Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Prosopis spp. Mesquite, Algaroba [68407]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area

Nationally Important Wetlands		[ Resource Information ]
Name		State
<a href="#">Booligal Wetlands</a>		NSW
<a href="#">Great Cumbungi Swamp</a>		NSW
<a href="#">Lachlan Swamp (Part of mid Lachlan Wetlands)</a>		NSW
<a href="#">Lake Merrimajeel/Murrumbidgee Swamp</a>		NSW
<a href="#">Lowbidgee Floodplain</a>		NSW

# Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining oigations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.



# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environment and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [-Forestry Corporation, NSW](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.



Zenith Town Planning  
P O Box 591  
Moruya New South Wales 2537  
Attention: Allen Grimwood  
Email: zenithplan@bigpond.com

Date: 06 February 2019

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lot : 110, DP:DP1187931 with a Buffer of 0 meters,  
conducted by Allen Grimwood on 06 February 2019.**

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



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

<b>0</b>	<b>Aboriginal sites are recorded in or near the above location.</b>
<b>0</b>	<b>Aboriginal places have been declared in or near the above location. *</b>

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

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

**Important information about your AHIMS search**

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

# ATTACHMENT D



## FORGESOLAR GLARE ANALYSIS

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Project: **Hay 1A**

Proposed 5MW solar facility

Site configuration: **Hay 1A**

Analysis conducted by at 03:49 on 23 Dec, 2018.

## U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
Flight path(s)	N/A	No flight paths analyzed
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at <https://www.federalregister.gov/d/2013-24729>

# SITE CONFIGURATION

## Analysis Parameters

DNI: peaks at 1,000.0 W/m<sup>2</sup>  
Time interval: 1 min  
Ocular transmission coefficient: 0.5  
Pupil diameter: 0.002 m  
Eye focal length: 0.017 m  
Sun subtended angle: 9.3 mrad  
Site Config ID: 23841.4187



## PV Array(s)

**Name:** Main PV Array  
**Axis tracking:** Single-axis rotation  
**Tracking axis orientation:** 0.0°  
**Tracking axis tilt:** 0.0°  
**Tracking axis panel offset:** 0.0°  
**Max tracking angle:** 60.0°  
**Resting angle:** 60.0°  
**Rated power:** 0.36 kW  
**Panel material:** Light textured glass with AR coating  
**Reflectivity:** Vary with sun  
**Slope error:** correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.495748	144.858781	92.81	2.90	95.71
2	-34.500275	144.858116	90.75	2.90	93.65
3	-34.498861	144.861163	90.78	2.90	93.68
4	-34.494546	144.861613	91.68	2.90	94.58



## Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (m)	Height (m)
OP 1	1	-34.504166	144.872442	92.73	1.50
OP 2	2	-34.501831	144.873472	91.30	1.50
OP 3	3	-34.500155	144.874674	91.98	1.50
OP 4	4	-34.496176	144.873816	91.73	1.50
OP 5	5	-34.492176	144.868880	92.93	1.50
OP 6	6	-34.492547	144.860984	93.19	1.50
OP 7	7	-34.491964	144.863559	93.00	1.50
OP 8	8	-34.493820	144.857830	91.36	1.50
OP 9	9	-34.495218	144.856778	91.98	1.50
OP 10	10	-34.497039	144.851242	91.04	1.50
OP 11	11	-34.500205	144.852100	93.96	1.50
OP 12	12	-34.500806	144.852508	94.58	1.50
OP 13	13	-34.501372	144.858473	90.18	1.50
OP 14	14	-34.501336	144.857336	90.44	1.50
OP 15	15	-34.500881	144.853914	92.39	1.50
OP 16	16	-34.502190	144.857063	89.97	1.50
OP 17	17	-34.502176	144.856682	91.15	1.50
OP 18	18	-34.502128	144.856424	91.63	1.50
OP 19	19	-34.502110	144.856199	92.12	1.50
OP 20	20	-34.502092	144.855936	92.48	1.50
OP 21	21	-34.502070	144.855716	92.69	1.50
OP 22	22	-34.502039	144.855324	93.11	1.50
OP 23	23	-34.501911	144.854783	93.89	1.50
OP 24	24	-34.501911	144.854552	93.68	1.50
OP 25	25	-34.501893	144.854343	93.40	1.50
OP 26	26	-34.501858	144.854101	93.07	1.50
OP 27	27	-34.501809	144.853871	93.03	1.50
OP 28	28	-34.501774	144.853645	93.09	1.50

## Route Receptor(s)

**Name:** Bourke Street

**Path type:** Two-way

**Observer view angle:** 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.504700	144.857057	91.93	1.65	93.58
2	-34.500579	144.857722	91.54	1.65	93.19

**Name:** Mid Western Highway

**Path type:** Two-way

**Observer view angle:** 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.501358	144.853109	94.12	1.65	95.77
2	-34.501304	144.853989	93.07	1.65	94.72
3	-34.500827	144.856918	91.09	1.65	92.74
4	-34.500588	144.857937	91.21	1.65	92.86
5	-34.498015	144.863816	91.62	1.65	93.27
6	-34.497449	144.864782	92.17	1.65	93.82
7	-34.495964	144.866756	91.00	1.65	92.65

**Name:** Murray Street

**Path type:** Two-way

**Observer view angle:** 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.501446	144.852744	94.53	1.65	96.18
2	-34.503126	144.866842	91.24	1.65	92.89



# GLARE ANALYSIS RESULTS

## Summary of Glare

PV Array Name	Tilt	Orient	"Green" Glare	"Yellow" Glare	Energy
	(°)	(°)	min	min	kWh
Main PV Array	SA tracking	SA tracking	0	0	1,137.0

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
OP 22	0	0
OP 23	0	0
OP 24	0	0
OP 25	0	0
OP 26	0	0
OP 27	0	0

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
OP 28	0	0
Bourke Street	0	0
Mid Western Highway	0	0
Murray Street	0	0

## Results for: Main PV Array

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
OP 22	0	0
OP 23	0	0
OP 24	0	0
OP 25	0	0
OP 26	0	0
OP 27	0	0
OP 28	0	0
Bourke Street	0	0
Mid Western Highway	0	0
Murray Street	0	0

### **Point Receptor: OP 1**

0 minutes of yellow glare  
0 minutes of green glare

### **Point Receptor: OP 2**

0 minutes of yellow glare  
0 minutes of green glare

### **Point Receptor: OP 3**

0 minutes of yellow glare  
0 minutes of green glare

### **Point Receptor: OP 4**

0 minutes of yellow glare  
0 minutes of green glare

### **Point Receptor: OP 5**

0 minutes of yellow glare  
0 minutes of green glare

### **Point Receptor: OP 6**

0 minutes of yellow glare  
0 minutes of green glare

### **Point Receptor: OP 7**

0 minutes of yellow glare  
0 minutes of green glare

### **Point Receptor: OP 8**

0 minutes of yellow glare  
0 minutes of green glare

### **Point Receptor: OP 9**

0 minutes of yellow glare  
0 minutes of green glare

### **Point Receptor: OP 10**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 11**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 12**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 13**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 14**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 15**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 16**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 17**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 18**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 19**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 20**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 21**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 22**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 23**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 24**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 25**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 26**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 27**

0 minutes of yellow glare

0 minutes of green glare

**Point Receptor: OP 28**

0 minutes of yellow glare

0 minutes of green glare

**Route: Bourke Street**

0 minutes of yellow glare

0 minutes of green glare

## **Route: Mid Western Highway**

0 minutes of yellow glare

0 minutes of green glare

## **Route: Murray Street**

0 minutes of yellow glare

0 minutes of green glare

# **Assumptions**

---

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.

Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.

Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.

The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)

Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.

Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.

The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.

Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.