

Appendix E Ecology assessments

Flora and fauna assessment

**344 Old Corop
Road, Corop VIC**

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|-------------------------|--|
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1.0 Introduction

Green Edge Environmental Pty Ltd has been engaged by Corop Solar Farm Pty Ltd, to undertake a review and assessment of the potential impacts of a proposed 440 MW (DC) solar farm near Rushworth, Victoria. The land proposed for the solar farm comprises approximately 1,000 hectares, and is made up of the following (refer Appendix A):

Lot and Plan Numbers Stage 1 (south)

- 35\PP3162
- 70\PP3162
- 70A\PP3162
- 70C\PP3162
- 70E\PP3162
- 70D\PP3162
- 70B\PP3162

Lot and Plan Numbers Stage 2 (north)

- 6B\PP3162
- 32\PP3162
- 70F\PP3162
- 70G\PP3162
- 70H\PP3162
- 70K\PP3162

The site is bordered by Old Corop Road to the south, private land to the east, and Geodetic Road North to the west and Carag Road to the north.

1.1 Aims

The aims of this due diligence assessment are to undertake an assessment of the:

- relevant database searches and document reviews to determine the potential for threatened species
- site assessment of the proposed solar farm development area to determine flora and fauna assets across the proposed footprint
- a summary of findings, including any mitigation measures to protect flora and fauna
- identification of requirements for flora and fauna offsetting and any vegetation clearing exemptions that exist
- Provide overall conclusions regarding the direct long-lasting impact on the flora, fauna and cultural heritage of the proposed construction of the Corop Solar Farm.



Photo 1: Typical landscape of the proposed development site

1.2 Site description

The study area falls within the Campaspe Shire Council Local Government Area (LGA) and the Goulburn Broken Catchment Management Authority (GB CMA).

A detailed planning map is contained in Appendix A outlining the following zoning and overlay locations.

2.0 Planning pathway

2.1 Planning and Environmental Act 1987

The *Planning and Environment Act 1987* provides the legal framework for the operation of Victoria's planning system. It sets the objectives, rules and principles for planning in Victoria. The main parts of the planning system established by the Act include:

- The system of planning schemes that sets out how land may be used and developed
- The Victoria Planning Provisions that sets out the template for the construction and layout of planning schemes
- The procedures for preparing and amending the Victoria Planning Provisions and planning schemes
- The procedures for settling disputes, enforcing compliance with planning schemes, and other administrative procedures.

2.1.1 Victorian Planning Provisions and Planning Scheme

The Victorian Planning Provisions (VPP) is a document containing a broad range of planning provisions for Victoria. Each local government area in Victoria is then covered by a Planning Scheme, which is developed using the VPP as a template. Planning Schemes set out policies and provisions for the use, development and protection of land. There are two components of a Planning Scheme that are of particular relevance to the approvals process, these are:

Zones: specify purposes for land and indicate which uses can be undertaken on land, as well as controls relating to subdivision and development.

Overlays: further provisions may apply to land through the application of an overlay. Overlays apply to a single issue or a set of related issues (such as heritage or flooding). Planning Schemes also have schedules which set out specific local requirements for overlays.

2.1.2 Native Vegetation Framework

The Permitted Clearing of Native Vegetation – Biodiversity Assessment Handbook (Department of Environment, Land, Water and Planning (DELWP, 2015)) and the Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017) are incorporated into the Victoria Planning Provisions in all planning schemes in Victoria. These Guidelines replace Victoria's Native Vegetation – A Framework for Action (Department of Natural Resources and Environment (DNRE 2002)).

The biodiversity impacts from the removal of native vegetation are considered primarily through the following provisions within all Victorian planning schemes:

- Clause 52.16 Native Vegetation Precinct Plan
- Clause 52.17 Native Vegetation

The objective for permitted clearing of native vegetation in Victoria is to establish a 'no net loss in the contribution made by native vegetation to Victoria's biodiversity' (DELWP 2017). Therefore, a site-based planning permit is required to remove, destroy or lop native vegetation.

The key strategies for ensuring the objective for permitted clearing of native vegetation is achieved at the permit level are (DELWP 2017):

1. Avoid the removal, destruction or lopping of native vegetation.
2. Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided
3. Provide an offset to compensate for the biodiversity impact from the removal, destruction or lopping of native vegetation.

A native vegetation offset is required when a planning permit is granted to remove native vegetation in accordance with these guidelines.

Mapped wetlands

The proposed development site contains three area of mapped wetlands (Appendix A). Under DEWLP definition, these areas are classed as native vegetation unless that can be proven otherwise.

2.2 Environmental Effects Act 1978

The *Environment Effects Act 1978* (EE Act) provides for assessment of proposed projects (works) that are capable of having a significant effect on the environment.

The Act does this by enabling the Minister administering the *Environment Effects Act* to decide that an Environment Effects Statement (EES) should be prepared. The Minister might typically require a proponent to prepare an EES when:

- there is a likelihood of regionally or State significant adverse effects on the environment
- there is a need for integrated assessment of potential environmental effects (including economic and social effects) of a project and relevant alternatives, and
- normal statutory processes would not provide a sufficiently comprehensive, integrated and transparent assessment.

The criteria for referral are focused on the potential for a significant effect on the environment: environmental effects of regional or State significance. The potential for a significant effect on the environment will reflect the following factors:

- significance of the environmental assets affected, in relation to:
 - character of the potentially affected environmental assets
 - geographic occurrence of the environmental assets
 - values or importance of the environmental assets, based on expert knowledge, relevant policy and evidence of social values
- potential magnitude, extent and duration of adverse effects on environmental assets in the short, medium and longer term, as a result of the development, operation and where relevant, decommissioning of a project
- potential for more extended adverse effects in space and time, as a result of interactions of different effects and environmental processes affecting environmental assets.

The identification of potential significant effects does not indicate that an EES will necessarily be required. Other factors, including the likelihood of such effects, will be taken into account in the Minister's decision in response to a referral.

Where a combination of two or more potential effects on the environment that might be of regional State significance and therefore warrant referral of a project could include:

- potential clearing of 10ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plan
- matters listed under the *Flora and Fauna Guarantee Act 1988*:
 - potential loss of a significant area of a listed ecological community; or
 - potential loss of a genetically important population of an endangered or threatened species (listed or nominated for listing), including as a result of loss or fragmentation of habitats; or
 - potential loss of critical habitat; or
 - potential significant effects on habitat values of a wetland supporting migratory bird species

This project has assessed that not more than 10ha of native vegetation will be cleared (none will be cleared) and matters listed under the *Flora and Fauna Guarantee Act* are unlikely to be impacted, therefore not triggering a referral.

2.3 Flora and Fauna Guarantee Act 1988

The *Flora and Fauna Guarantee Act 1988* (FFG Act) is the key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. The Act's objectives aim to conserve all of Victoria's native plants and animals. The Act establishes a range of mechanisms to achieve this objective, including:

- listing threatened species, communities and threats to native species
- requiring an overarching strategy for Victoria's biodiversity
- enabling the declaration of habitat critical to the survival of native plants and animals
- placing a duty on public authorities to have regard to the objectives of the Act in their operations
- requiring permits for activities that could harm threatened plants and fish and communities.

Over 700 species and communities and 42 threats are listed under the Act.

2.4 Catchment and Land Protection Act 1994

The main legislation covering noxious weed and pest animal management in Victoria is the *Catchment and Land Protection Act 1994* (CALP Act). Under this Act species of plants and animals can be declared as noxious weeds and pest animals.

One of the main objectives of the CaLP Act is to protect primary production, Crown land, the environment and community health from the effects of noxious weeds and pest animals. The CaLP Act defines roles and responsibilities and regulates the management of noxious weeds and pest animals. The Act prohibits the movement and sale of noxious weeds of all categories anywhere in the State, and covers weed seeds occurring as contaminants in seed lots, plant products or on vehicles, machinery or animals. The CaLP Act also regulates the importation, keeping, selling and releasing of declared pest animals.

Under the CaLP Act all land owners have legal obligations regarding the management of declared noxious weeds and pest animals on their land. Specifically, land owners must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of and as far as possible eradicate established pest animals on their land.

2.5 Wildlife Act 1975

All native wildlife is protected in Victoria. It is an offence to kill, take, control or harm wildlife under the *Wildlife Act 1975* (Wildlife Act). It is also an offence to use poisons to kill, destroy or take wildlife and severe penalties apply to those found guilty of an offence under the Wildlife Act. Anyone wishing to control wildlife must have authorisation from DELWP, most commonly an Authority to Control Wildlife (ATCW).

2.6 Environmental Protection and Biodiversity Conservation Act 1999

The *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government’s central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the EPBC Act as matters of national environmental significance.

Under the EPBC Act, actions that have, or are likely to have a significant impact on a matter of national environmental significance (MNES) require approval from the Australian Government Minister for the Environment (the Minister). The Minister will decide whether assessment and approval is required under the EPBC Act. The nine MNES protected under the EPBC Act are as follows with relevant triggers underlined

- world heritage properties
- national heritage places
- wetlands of international importance (listed under the Ramsar Convention)
- listed threatened species
- listed threatened ecological communities
- migratory species protected under international agreements
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mines)
- a water resource, in relation to coal seam gas development and large coal mining development.

2.7 Applicable legislation

Table 1 provides a summary of the relevant Commonwealth and Victorian legislation that may impact on the project.

Table 1: Summary of applicable legislation

| Legislation/policy | Relevant feature | Permit required | Notes |
|--|-------------------|---------------------------------------|--|
| <i>Planning and Environment Act 1987</i> | Native vegetation | Only if native vegetation is removed, | No native vegetation is proposed to be removed; all native |

| Legislation/policy | Relevant feature | Permit required | Notes |
|--|---|---|--|
| Native Vegetation Framework | | damaged or lopped. | vegetation has been designed around. |
| <i>Environmental Effects Act 1978</i> | State significant development | No, the project does not require a referral under the EES Act | No further assessment |
| <i>Flora and Fauna Guarantee Act 1988 (FFG Act)</i> | Threatened flora and fauna | No permit is required as no FFG Act species are proposed to be removed. | Nil, works proposed on private land and no listed FFG listed species are likely to be impacted. |
| <i>Catchment and Land Protection Act 1994</i> | Environmental weeds | No permits are required. | Boxthorn and Bathurst Burr (Regionally Controlled weeds) were located on site, requiring specific control measures. Weed hygiene measures should be implemented during construction so no new weeds are brought onto site. |
| <i>Wildlife Act 1975</i> | Native fauna (handling or relocation of). | No native fauna is proposed to be handled | No permit required. |
| <i>Environmental Protection and Biodiversity Conservation Act 1999</i> | Threatened species and ecological communities | n/a | No listed threatened species and ecological communities are proposed to be impacted. |

3.0 Flora and fauna

The aim of this assessment is to:

- Undertake desktop assessment to determine the potential for threatened species
- Undertake a site assessment to determine flora and fauna assets across the proposed footprint
- Provide a report summarising the findings, including any mitigation measures to protect flora and fauna
- Identify the requirements for flora and fauna offsetting and any vegetation clearing exemptions that exist.

3.1 Methodology

3.1.1 Desktop assessment

A search of threatened flora and fauna information was sourced from the Victorian Biodiversity Atlas (VBA) and NatureKit Victoria Interactive Map, hosted by the Department of Environment, Land, Water and Planning (DELWP, 2019) (Appendix B)

A Protected Matters database search was undertaken on the Department of the Environment and Energy Protected Matters Search Tool (DoEE, 2019) (Appendix B), which identifies threatened flora and fauna, matters of national environmental significance, and listed species under the EPBC Act.

The extent of potential native vegetation was reviewed in conjunction to the site assessment with reference to DELWP's Native Vegetation Information Management (NVIM) System.

3.1.2 Site assessment

A site assessment was conducted on 9 April 2019 and 13 May 2019. The assessment involved traversing the proposed solar footprint on foot and by vehicle. The assessment involved inspecting and confirming the Ecological Vegetation Class (EVC) and areas of native vegetation meeting the criteria for native vegetation classification.

The condition and abundance of vegetation was noted including Indigenous plants, dominant exotic flora, and pastoral plants. Data was captured in the following groupings:

- Remnant patch (native vegetation that meets the definition of native vegetation in the guidelines)
- Scattered trees
- State listed environmental weeds, weeds listed under (CaLP), and Weeds of National Significance (WoNS)
- Threatened species sightings/habitat
- Exclusion areas
- Farm dams and irrigation channels.

Photographic and physical records were taken for reference and where further identification was required.



Photo 2: Annual cropping program, with a recently cropped paddock

3.1.3 Native vegetation

Native vegetation is defined in the Victoria Planning Provisions as 'plants that are Indigenous to Victoria, including trees, shrubs, herbs and grasses'. A planning permit may be required to remove native vegetation under Clause 52.16 or 52.17. This includes the removal of dead native vegetation. A permit is not required if:

- the removal of native vegetation has been approved in a Native Vegetation Precinct Plan (NVPP) listed in the schedule to Clause 52.16
- the removal of native vegetation is exempt from requiring a permit under relevant clauses and the native vegetation to be removed is listed in the schedule to Clause 52.17

Exemptions

Under Clause 52.17 of the Campaspe Planning Scheme, the following exemptions apply:

- Dead native vegetation. This exemption does not apply to a standing dead tree with a trunk diameter of 40 centimetres or more at a height of 1.3 metres above ground level.
- Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to enable the construction of a building or works used for Agricultural production, including a dam, utility service, bore and accessway, in the Farming Zone or the Rural Activity Zone.

The maximum extent of native vegetation that may be removed, destroyed or lopped under this exemption on contiguous land in the same ownership in a five year period must not exceed any of the following:

- 1 hectare of native vegetation which does not include a tree.
 - 15 native trees with a trunk diameter of less than 40 centimetres at a height of 1.3 metres above ground level.
 - 5 native trees with a trunk diameter of 40 centimetres or more at a height of 1.3 metres above ground level
 - This exemption does not apply to the construction or operation of a pivot irrigation system or horticultural trellising.
- Native vegetation that is to be removed, destroyed or lopped that was either planted or grown as a result of direct seeding.

This exemption does not apply to native vegetation planted or managed with public funding for the purpose of land protection or enhancing biodiversity unless the removal, destruction or lopping of the native vegetation is in accordance with written permission of the agency (or its successor) that provided the funding.

- Native vegetation that is to be removed, destroyed or lopped that has naturally established or regenerated on land lawfully cleared of naturally established native vegetation, and is:
 - less than 10 years old; or
 - bracken (*Pteridium esculentum*); or
 - within the boundary of a timber production plantation, as indicated on a Plantation Development Notice or other documented record, and has established after the plantation; or
 - less than ten years old at the time of a property vegetation plan being signed by the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987), and is:
 - shown on that plan as being 'certified regrowth'; and
 - on land that is to be used or maintained for cultivation or pasture during the term of that plan.

This exemption does not apply to land where native vegetation has been destroyed or otherwise damaged as a result of flood, fire or other natural disaster.

- Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary:
 - to maintain the safe and efficient function a Minor utility installation; or
 - by or on behalf of a utility service provider to maintain or construct a utility installation in accordance with the written agreement of the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987).

- Native vegetation that is to be removed, destroyed, or lopped to the minimum extent necessary to enable the construction or maintenance of a vehicle access across a road reserve from a property boundary to a public road.

This exemption only applies to properties which share a common boundary with the road reserve, and the total width of clearing must not exceed 6 metres.

This exemption does not apply where there is a practical opportunity to site the accessway to avoid the removal, destruction or lopping of native vegetation.

In this exemption, roadside and public road have the same meanings as in section 3 of the *Road Management Act 2004*. *Note: Under the Road Management Act 2004 the written consent of the coordinating road authority is required to conduct any works, including removing a tree or other vegetation, in, on, under or over a road.*



Photo 3: Example of scattered native tree that would require offsetting if proposed to be removed.

3.2 Results

3.2.1 Desktop assessment

The desktop assessment revealed the potential presence of a number of flora and fauna species listed with DELWP as vulnerable, rare or threatened (VROT), or listed under the FFG Act or the EPBC Act. Table 2 provides a summary of the listed species located within a 5km buffer of the study area (area of assessment in Appendix A) and assesses these species potential to occur within the proposed development area based on habitat preference and vegetation associations (Appendix C).

The Protected Matters Report (Attachment B) indicated that there are no World Heritage Properties, National Heritage Places and Commonwealth Marine Areas located within the proposed development area. A number of listed threatened ecological communities (5), listed threatened species (27), listed migratory species (10), and wetlands of international importance (6) were identified in the Protected Matters Report within a 5km buffer, however due to the relatively small impacts of the proposed development, existing cleared area and short timeframe of the construction works it is unlikely that these species will be impacted through loss of habitat.

The assessment (Appendix C) has revealed the proposed project will cause no:

- potential loss of a genetically important population of an endangered or threatened species (listed or nominated for listing)
- including as a result of loss or fragmentation of habitats
- potential loss of critical habitat

- potential significant effects on habitat values of a wetland supporting migratory species.

National IBRA

The Interim Biogeographic Regionalisation for Australia (IBRA) is a biogeographic regionalisation planning tool developed by the Australian Government. The site occurs within the IBRA region, known as the Riverina. The Riverina bioregion is characterised by extensive riverine floodplains with low relief associated with the Murray, Murrumbidgee and Lachlan Rivers. Chenopod shrublands and associated grasslands are predominating, with other vegetation types including Box woodlands, Mallee woodlands, native grasslands and wetlands.

Victorian Bioregion

The site is also located within the Victorian Riverina Bioregion, located north of the Great Dividing Range in Victoria. The area is characterised by a flat to gently undulating landscape on recent unconsolidated sediments with evidence of former stream channels and wide floodplain areas associated with major river systems and prior steams. Alluvium deposits from the Cainozoic period gave rise to the red brown earths and texture contrast soils (Chromosols and Sodosols) which dominate the Riverine Plain.

Annual average rainfall for the region ranges from 360- 672mm per annum. The average annual minimum and maximum temperature range is from 3 to 9 °C and 15 to 21 °C respectively. The vegetation is dominated by Plains Grassy Woodland, Plains Grassland, Pine Box Woodland/Riverina Plains Grassy Woodland Mosaic, Riverine Grassy Woodland/Riverine Sedgy Forest/Wetland Mosaic, Plains Grassy Woodland/Gilgai Plains Woodland/Wetland Mosaic, Grassy Woodland and Wetland Formation ecosystems. The Victorian Riverina bioregion is associated with the eight river basin tributaries of the Murray River draining north, west and south west from the Great Dividing Range of eastern Australia. However, some rivers, such as the Avoca, drain internally into a series of terminal lakes and wetlands.

Ecological Vegetation Class

Historically the site would have been a mosaic of Plains Grassland/Plains Grassy Woodland/Gilgai Wetland Mosaic (EVC 267) and Wetland Formation (EVC 74). The remaining Ecological Vegetation Classes (EVC) are mapped as Plains Grassland/Plains Grassy Woodland/ Gilgai Wetland Mosaic (EVC 267) with a Bioregional Conservation Status of Endangered, Plains Woodland (EVC 803) with a Bioregional Conservation Status of Endangered and Wetland Formation (EVC 74) with a Bioregional Conservation Status of Endangered Lignum Swamp (EVC 104) with a Bioregional Conservation Status: Vulnerable.

The mapped wetland formation (EVC 74) is a generic wetland code that is applied where further wetland classification may be unknown. The aquatic system is defined as Palustrine with a salinity regime of Fresh. The dominant vegetation for Wetland formation (60108) is Sedge/Grass/Forb.

Plains Woodland (EVC 803) (syn. Riverina Plains Grassy Woodland) comprises an open eucalypt woodland to 15m tall found on a range of soil types including fertile clays and clay loam soils on flat or gently undulating plains at low elevations with less than 600mm of annual rain. Common characteristic eucalypt species include: *Eucalyptus microcarpa* (Grey Box), *Eucalyptus melliodora* (Yellow Box), *Eucalyptus camaldulensis* (River Red

Gum), *Eucalyptus largiflorens* (Black Box), *Eucalyptus leucoxydon* (Yellow Gum) *Allocasuarina luehmannii* (Buloke).

3.2.2 Site assessment

The site assessment revealed no functional EVC/s located within the footprint of the proposed development. The area has been highly disturbed through continual cropping, grazing and the development of water management infrastructure.

Threatened species

The impacts to potential threatened species that could utilise the proposal area have been assessed in Appendix C. While the assessed species are unlikely to have critical habitat impacted, there may be some minor disruption to potential habitat to facilitate construction, such as dams used by common species. This is insignificant in this area as there are many other surrounding dams. Ongoing farm management practices and the lack of woodland habitat further reduce the potential for the site to be used by threatened species.

Endangered Ecological Communities

The following endangered ecological communities were identified as potentially occurring within a 5km kilometre radius of the proposed project:

- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions (Endangered EPBC)
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Endangered EPBC)
- Natural Grasslands of the Murray Valley Plains (Critically endangered EPBC)
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (Critically endangered EPBC)
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically endangered EPBC).

None of these endangered ecological communities, meeting the description and condition thresholds were observed on site in the areas proposed for development.



Photo 4: Example of revegetation area that has been fenced and excluded from development

Fauna habitat

The proposed solar farm footprint is located in heavily modified, cropped grazing land. The change to vegetation through seasonal farming practices has created a landscape which does not support habitat required by many of the threatened species such as a requirement for heavily vegetated ground cover and understory vegetation, logs and habitat trees. The irrigation has been rationalised and irrigation water has been removed from the area. The proposed development works footprint is well defined and will occur in a highly modified area. Some native scattered trees occur, but through design, impacts to scattered trees can be minimised and avoided.

Common species of birds, reptiles and kangaroos are expected to occur in the area.

Potential impacts on native vegetation

The proposed solar farm footprint does contain remnant patches of native vegetation and regeneration and these areas have been fenced off. Scattered trees also occur throughout the study area (refer to Appendix A). The site has generally been cleared, cropped and grazed for many years. Through design the remnant patches and scattered trees can be avoided.

Scattered native trees, where they cannot be designed around will require assessment and biodiversity offsetting.

Planted vegetation

The site does contain areas of revegetation or shelterbelts, containing planted or direct seeded native species. These species are understood to be exempt from requiring offsetting under Clause 52.17 of the Campaspe Planning Scheme as follows:

- Native vegetation that is to be removed, destroyed or lopped that was either planted or grown as a result of direct seeding. This exemption does not apply to native vegetation planted or managed with public funding for the purpose of land protection or enhancing biodiversity unless the removal, destruction or lopping of the native vegetation is in accordance with written permission of the agency (or its successor) that provided the funding. None of these areas are proposed to be impacted.

Environmental weeds

Two environmental weeds or declared noxious weeds listed under the CaLP Act or WoNS were observed on site - Boxthorn and Bathurst Burr (Regionally Controlled weed)

Regionally controlled weeds

These invasive plants are usually widespread in a region. To prevent their spread, ongoing control measures are required. Land owners have the responsibility to take all reasonable steps to prevent the growth and spread of Regionally Controlled weeds on their land.

3.3 Conclusion

A Vegetation Quality Assessment (VQA) is not required to determine the extent of native vegetation and scattered trees to be impacted, as these can all be avoided through design. Should the design of the proposed solar farm not be able to avoid the mapped areas in Appendix A, a VQA and offsets will be required prior to submitting a planning permit application.

Under the Victorian Planning Scheme, native vegetation removal is managed by applying a three-step approach:

1. Avoid the removal, destruction or lopping of native vegetation. If no native vegetation is planned to be removed a planning permit under Clause 52.16 or 52.17 is not required
2. Minimise the impacts from the removal, destruction or lopping of native vegetation that cannot be avoided by designing and locating the proposed development to reduce the removal of native vegetation and reduce impacts to vegetation of greatest value
3. Provide an offset to ensure no net loss in biodiversity value from the removal of native vegetation. An offset is not required if native vegetation to be removed is not a patch or a scattered tree.

4.0 Conclusion and recommendations

4.1 Conclusion

The aim of this assessment was to:

- Provide overall conclusions regarding the direct long-lasting impact on the flora and fauna of the proposed construction of the Corop Solar Farm
- In undertaking this assessment, the following activities were undertaken:
 - Relevant database searches and document reviews to determine the potential for threatened species
 - A site assessment of the proposed solar farm development area to determine flora and fauna assets across the proposed footprint
 - A summary of findings, including any mitigation measures to protect flora and fauna
 - Identification of requirements for flora and fauna offsetting and any vegetation clearing exemptions that exist
- No permits under other planning or Environmental legislation is required.
- The assessment revealed that there would be no significant impacts from the proposed Corop Solar Farm development to threatened species and endangered ecological communities. As a result, there are no referrals required under the EPBC Act.
- A Vegetation Quality Assessment (VQA) is not required to determine the extent of native vegetation and scattered trees will not be impacted, as they have been avoided through design. Should the design of the proposed solar farm change and not be able to be designed around, a VQA and offsets will be required prior to submitting a planning permit application.

4.1.1 Recommendations

As an outcome of this due diligence assessment the following actions are recommended:

- the areas identified for development in Appendix A should be adhered to as they avoid native vegetation. If this changes and these areas are proposed for development, a vegetation quality assessment (VQA) will be required to determine the vegetation impacts so offsets can be quantified.

5.0 References

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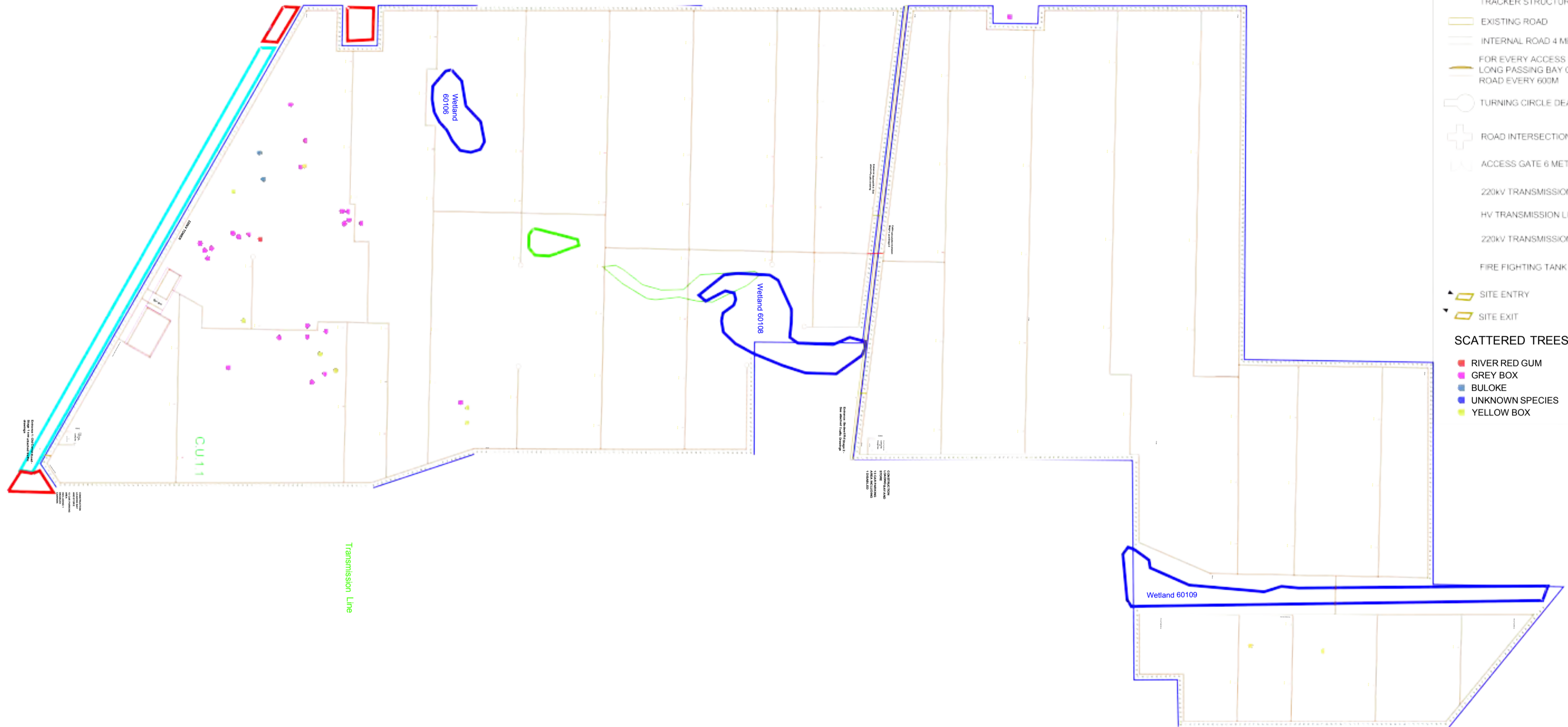
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Planning Schemes Victoria (2022). *Campaspe Planning Scheme*, State Government of Victoria.

Appendix A: Study area maps

STAGE 1

STAGE 2



- LEGEND**
- REGROWTH AREA
 - REVEGETATION AREA
 - CULTURAL HERITAGE SENSITIVITY
 - WETLAND
 - DRAINAGE EXISTING
 - NO GO AREA
 - PROPOSED BOUNDARIES AND FENCE
 - VEGETATION PLANTING BUFFER
 - CONVERSION UNIT
 - TRACKER STRUCTURE
 - EXISTING ROAD
 - INTERNAL ROAD 4 METRES WIDE
 - FOR EVERY ACCESS MUST BE 20M MIN LONG PASSING BAY ON PERIMETER ROAD EVERY 600M
 - TURNING CIRCLE DEAD-ENDS ROUTE
 - ROAD INTERSECTIONS
 - ACCESS GATE 6 METRE OPENING
 - 220KV TRANSMISSION TOWER
 - HV TRANSMISSION LINE
 - 220KV TRANSMISSION TOWER NEW
 - FIRE FIGHTING TANK
 - SITE ENTRY
 - SITE EXIT
 - SCATTERED TREES**
 - RIVER RED GUM
 - GREY BOX
 - BULOKE
 - UNKNOWN SPECIES
 - YELLOW BOX



| REV. | DATE | DESCRIPTION |
|------|------------|-----------------------------|
| E | 13/07/2022 | UPDATED LEGEND |
| D | 17/05/2022 | UPDATED BESS AND CFA |
| C | 22/09/2020 | REVISED STAGE 2 LAYOUT |
| B | 25/02/2020 | REVISED SETBACKS |
| A | 11/09/2019 | PLANNING PERMIT APPLICATION |

| DES. | DRW. | APR. |
|------|------|------|
| FP | FP | PL |
| PL | PL | DT |
| OK | OK | PL |
| OK | OK | PL |
| OK | OK | PL |

COROP SOLAR FARM
 344 OLD COROP ROAD RUSHWORTH 3612
SOLAR FARM LAYOUT OVERVIEW

COR-001 NTS
 CSF-001-004

Appendix B: Desktop assessment results

Victorian listed threatened Fauna

| Scientific name | Common name | FFG listed | VIC Advisory list | EPBC list |
|--|---------------------------|------------|-----------------------|------------|
| <i>Accipiter novaehollandiae novaehollandiae</i> | Grey Goshawk | Listed | Vulnerable | |
| <i>Anas rhynchotis</i> | Australasian Shoveler | | Vulnerable | |
| <i>Ardea modesta</i> | Eastern Great Egret | Listed | Vulnerable | |
| <i>Aythya australis</i> | Hardhead | | Vulnerable | |
| <i>Botaurus poiciloptilus</i> | Australasian Bittern | Listed | Endangered | Endangered |
| <i>Burhinus grallarius</i> | Bush Stone-curlew | Listed | Endangered | |
| <i>Chthonicola sagittatus</i> | Speckled Warbler | Listed | Vulnerable | |
| <i>Egretta garzetta nigripes</i> | Little Egret | Listed | Endangered | |
| <i>Falco subniger</i> | Black Falcon | | Vulnerable | |
| <i>Gallinago hardwickii</i> | Latham's Snipe | | Near threatened | |
| <i>Geopelia cuneata</i> | Diamond Dove | Listed | Near threatened | |
| <i>Grus rubicunda</i> | Brolga | Listed | Vulnerable | |
| <i>Hirundapus caudacutus</i> | White-throated Needletail | | Vulnerable | |
| <i>Ixobrychus minutus dubius</i> | Little Bittern | Listed | Endangered | |
| <i>Lichenostomus cratitius</i> | Purple-gaped Honeyeater | | Vulnerable | |
| <i>Oreoica gutturalis gutturalis</i> | Crested Bellbird | Listed | Near threatened | |
| <i>Oxyura australis</i> | Blue-billed Duck | Listed | Endangered | |
| <i>Pomatostomus temporalis temporalis</i> | Grey-crowned Babbler | Listed | Endangered | |
| <i>Porzana pusilla palustris</i> | Baillon's Crake | Listed | Vulnerable | |
| <i>Rostratula australis</i> | Australian Painted Snipe | Listed | Critically endangered | Vulnerable |
| <i>Stagonopleura guttata</i> | Diamond Firetail | Listed | Near threatened | |
| <i>Tringa nebularia</i> | Common Greenshank | | Vulnerable | |
| <i>Varanus varius</i> | Lace Monitor | | Endangered | |

Victorian listed flora

| Scientific name | Common name | FFG list | VIC advisory list | EPBC list |
|-------------------------|-----------------------|-----------------|--------------------------|------------------|
| Callitriche umbonata | Winged Water-starwort | Rejected | Rare | |
| Eryngium paludosum | Long Eryngium | | Vulnerable | |
| Leptorhynchus elongatus | Lanky Buttons | | Endangered | |
| Swainsona murrayana | Slender Darling-pea | Listed | Endangered | Vulnerable |



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.

Report created: 20/06/19 22:36:23

[Summary](#)

[Details](#)

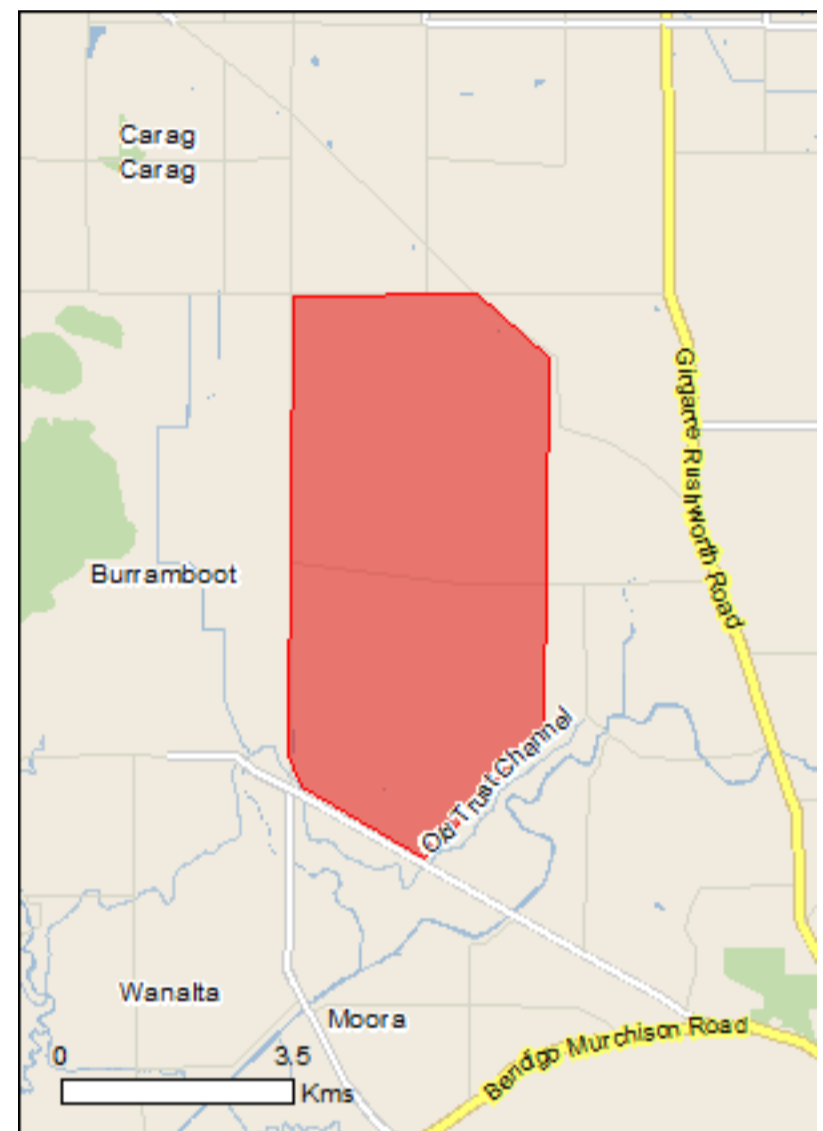
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

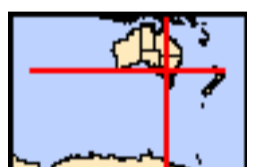
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 5.0Km



Summary

Matters of National Environmental 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](#).

| | |
|---|------|
| World Heritage Properties: | None |
| National Heritage Places: | None |
| Wetlands of International Importance: | 6 |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 5 |
| Listed Threatened Species: | 27 |
| Listed Migratory Species: | 13 |

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.

| | |
|--|------|
| Commonwealth Land: | None |
| Commonwealth Heritage Places: | None |
| Listed Marine Species: | 20 |
| Whales and Other Cetaceans: | None |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Australian Marine Parks: | None |

Extra Information

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

| | |
|--|------|
| State and Territory Reserves: | 3 |
| Regional Forest Agreements: | None |
| Invasive Species: | 34 |
| Nationally Important Wetlands: | 1 |
| Key Ecological Features (Marine) | None |

Details

Matters of National Environmental Significance

| Wetlands of International Importance (Ramsar) | [Resource Information] |
|---|--------------------------|
| Name | Proximity |
| Banrock station wetland complex | 400 - 500km upstream |
| Gunbower forest | 50 - 100km upstream |
| Hattah-kulkyne lakes | 200 - 300km upstream |
| Nsw central murray state forests | 40 - 50km upstream |
| Riverland | 400 - 500km upstream |
| The coorong, and lakes alexandrina and albert wetland | 400 - 500km upstream |

Listed 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 |
|--|-----------------------|---------------------------------------|
| Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions | Endangered | Community known to occur within area |
| Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia | Endangered | Community likely to occur within area |
| Natural Grasslands of the Murray Valley Plains | Critically Endangered | Community may occur within area |
| Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains | Critically Endangered | Community likely to occur within area |
| White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered | Community likely to occur within area |

Listed Threatened Species [Resource Information]

| Name | Status | Type of Presence |
|---|-----------------------|--|
| Birds | | |
| Anthochaera phrygia Regent Honeyeater [82338] | Critically Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Botaurus poiciloptilus Australasian Bittern [1001] | Endangered | Species or species habitat known to occur within area |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat likely to occur within area |
| Grantiella picta Painted Honeyeater [470] | Vulnerable | Species or species habitat known to occur within area |
| Lathamus discolor Swift Parrot [744] | Critically Endangered | Species or species habitat likely to occur within area |
| Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |
| Pedionomus torquatus Plains-wanderer [906] | Critically Endangered | Species or species |

| Name | Status | Type of Presence |
|--|-----------------------|---|
| Polytelis swainsonii Superb Parrot [738] | Vulnerable | habitat likely to occur within area Species or species habitat may occur within area |
| Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area |
| Fish | | |
| Galaxias rostratus Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745] | Critically Endangered | Species or species habitat likely to occur within area |
| Maccullochella peelii Murray Cod [66633] | Vulnerable | Species or species habitat may occur within area |
| Macquaria australasica Macquarie Perch [66632] | Endangered | Species or species habitat may occur within area |
| Frogs | | |
| Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828] | Vulnerable | Species or species habitat likely to occur within area |
| Insects | | |
| Synemon plana Golden Sun Moth [25234] | Critically Endangered | Species or species habitat may occur within area |
| Mammals | | |
| Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184] | Endangered | Species or species habitat may occur within area |
| Petauroides volans Greater Glider [254] | Vulnerable | Species or species habitat may occur within area |
| Pseudomys fumeus Smoky Mouse, Konoom [88] | Endangered | Species or species habitat may occur within area |
| Pteropus poliocephalus Grey-headed Flying-fox [186] | Vulnerable | Foraging, feeding or related behaviour may occur within area |
| Plants | | |
| Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215] | Vulnerable | Species or species habitat likely to occur within area |
| Glycine latrobeana Clover Glycine, Purple Clover [13910] | Vulnerable | Species or species habitat likely to occur within area |
| Pimelea spinescens subsp. spinescens Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea [21980] | Critically Endangered | Species or species habitat likely to occur within area |
| Sclerolaena napiformis Turnip Copperburr [11742] | Endangered | Species or species habitat likely to occur within area |
| Senecio behrianus Stiff Groundsel [14030] | Endangered | Species or species habitat known to occur within area |

| Name | Status | Type of Presence |
|--|------------|--|
| Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765] | Vulnerable | Species or species habitat likely to occur within area |
| Swainsona plagiotropis Red Darling-pea, Red Swainson-pea [10804] | Vulnerable | Species or species habitat likely to occur within area |

Reptiles

| | | |
|---|------------|--|
| Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665] | Vulnerable | Species or species habitat may occur within area |
| Delma impar Striped Legless Lizard [1649] | Vulnerable | Species or species habitat likely to occur within area |

Listed Migratory Species

[[Resource Information](#)]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

| Name | Threatened | Type of Presence |
|---|------------|--|
| Migratory Marine Birds | | |
| Apus pacificus Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |

Migratory Terrestrial Species

| | | |
|--|--|--|
| Hirundapus caudacutus White-throated Needletail [682] | | Species or species habitat likely to occur within area |
| Monarcha melanopsis Black-faced Monarch [609] | | Species or species habitat likely to occur within area |
| Motacilla flava Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca Satin Flycatcher [612] | | Species or species habitat known to occur within area |

Migratory Wetlands Species

| | | |
|---|-----------------------|--|
| Actitis hypoleucos Common Sandpiper [59309] | | Species or species habitat likely to occur within area |
| Calidris acuminata Sharp-tailed Sandpiper [874] | | Species or species habitat likely to occur within area |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat likely to occur within area |
| Calidris melanotos Pectoral Sandpiper [858] | | Species or species habitat may occur within area |
| Gallinago hardwickii Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area |
| Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |
| Pandion haliaetus Osprey [952] | | Species or species habitat may occur within area |

| Name | Threatened | Type of Presence |
|---|------------|--|
| Tringa nebularia Common Greenshank, Greenshank [832] | | Species or species habitat may occur within area |

Other Matters Protected by the EPBC Act

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

| Name | Threatened | Type of Presence |
|--|-----------------------|--|
| Birds | | |
| Actitis hypoleucos Common Sandpiper [59309] | | Species or species habitat likely to occur within area |
| Apus pacificus Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Ardea alba Great Egret, White Egret [59541] | | Species or species habitat known to occur within area |
| Ardea ibis Cattle Egret [59542] | | Species or species habitat may occur within area |
| Calidris acuminata Sharp-tailed Sandpiper [874] | | Species or species habitat likely to occur within area |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat likely to occur within area |
| Calidris melanotos Pectoral Sandpiper [858] | | Species or species habitat may occur within area |
| Chrysococcyx osculans Black-eared Cuckoo [705] | | Species or species habitat likely to occur within area |
| Gallinago hardwickii Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area |
| Haliaeetus leucogaster White-bellied Sea-Eagle [943] | | Species or species habitat known to occur within area |

| Name | Threatened | Type of Presence |
|---|-----------------------|--|
| Hirundapus caudacutus White-throated Needletail [682] | | Species or species habitat likely to occur within area |
| Lathamus discolor Swift Parrot [744] | Critically Endangered | Species or species habitat likely to occur within area |
| Merops ornatus Rainbow Bee-eater [670] | | Species or species habitat may occur within area |
| Monarcha melanopsis Black-faced Monarch [609] | | Species or species habitat likely to occur within area |
| Motacilla flava Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca Satin Flycatcher [612] | | Species or species habitat known to occur within area |
| Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |
| Pandion haliaetus Osprey [952] | | Species or species habitat may occur within area |
| Rostratula benghalensis (sensu lato) Painted Snipe [889] | Endangered* | Species or species habitat likely to occur within area |
| Tringa nebularia Common Greenshank, Greenshank [832] | | Species or species habitat may occur within area |

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

| Name | State |
|--|-------|
| One Tree Swamp and Two Tree Swamp N.C.R. | VIC |
| Rushworth - Colbinabbin rail line B.R. | VIC |
| Wallenjoe Swamp W.R | VIC |

Invasive Species [\[Resource Information \]](#)

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 Resources Audit, 2001.

| 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 |

| Name | Status | Type of Presence |
|--|--------|--|
| Carduelis carduelis European Goldfinch [403] | | Species or species habitat likely to occur within area |
| Carduelis chloris European Greenfinch [404] | | 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 |
| Streptopelia chinensis Spotted Turtle-Dove [780] | | 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 |
| Felis catus Cat, House Cat, Domestic Cat [19] | | 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 |
| Rattus rattus Black Rat, Ship Rat [84] | | 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 |

| Name | Status | Type of Presence |
|---|--------|--|
| Plants | | |
| Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473] | | Species or species habitat likely to occur within area |
| Austrocylindropuntia spp. Prickly Pears [85132] | | Species or species habitat likely to occur within area |
| Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171] | | Species or species habitat likely to occur within area |
| Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213] | | Species or species habitat may occur within area |
| Chrysanthemoides monilifera Bitou Bush, Boneseed [18983] | | Species or species habitat may occur within area |
| Lycium ferocissimum African Boxthorn, Boxthorn [19235] | | Species or species habitat likely to occur within area |
| Nassella neesiana Chilean Needle grass [67699] | | Species or species habitat likely to occur within area |
| Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884] | | Species or species habitat likely to occur within area |
| Opuntia spp. Prickly Pears [82753] | | 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 |
| Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497] | | 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 |
| Ulex europaeus Gorse, Furze [7693] | | Species or species habitat likely to occur within area |

Nationally Important Wetlands [\[Resource Information \]](#)

| Name | State |
|------------------------------------|-------|
| Wallenjoë Wetlands | VIC |

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 obligations 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.

Coordinates

-36.499238 144.932154,-36.499094 144.956944,-36.506119 144.966576,-36.547394 144.965862,-36.560289 144.949631,-36.552409 144.933224,-36.549114 144.93144,-36.499238 144.931976,-36.499238 144.931976,-36.499238 144.932154

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 Environmental 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](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-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.

Appendix C: Threatened species assessment

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|----------------------------------|------------------------------------|--------|--------------|-----------------------|---|
| Fauna | <i>Anthochaera phrygia</i> | Regent Honeyeater | Listed | Endangered | Critically endangered | The Regent Honeyeater is found in eucalypt forests and woodlands, particularly in blossoming trees and mistletoe. It is also seen in orchards and urban gardens. This species has the potential to be present in the area for foraging or feeding, but no habitat is proposed to be impacted. |
| Fauna | <i>Botaurus poiciloptilus</i> | Australasian Bittern | Listed | Endangered | Endangered | The species favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes and spikerushes. This habitat is not present on the site and therefore impact to the species is highly unlikely. |
| Fauna | <i>Calidris ferruginea</i> | Curlew Sandpiper | Listed | Endangered | Critically endangered | The Curlew Sandpiper is found on intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters. This habitat is not present on the site and therefore impact to the species is highly unlikely. |
| Fauna | <i>Grantiella picta</i> | Painted Honeyeater | Listed | Vulnerable | Vulnerable | This species inhabits Boree/ Weeping Myall (<i>Acacia pendula</i>), Brigalow (<i>A. harpophylla</i>) and Box-Gum Woodlands and Box-Ironbark Forests. Species or species habitat known to occur within the area. This species has the potential to be present in the area for foraging or feeding, but no habitat is proposed to be impacted. |
| Fauna | <i>Lathamus discolor</i> | Swift Parrot | Listed | Endangered | Critically Endangered | In Victoria, the over-wintering habitat of the Swift Parrot is eucalypt forests and woodlands consisting primarily of the winter-flowering Grey Box (<i>Eucalyptus microcarpa</i>), Red Ironbark (<i>Eucalyptus tricarpa</i>), Mugga Ironbark (<i>Eucalyptus sideroxylon</i>) (far north-east Victoria), Yellow Gum (<i>Eucalyptus leucoxylon</i>) and White Box (<i>Eucalyptus albens</i>). This species has the potential to be present in the area for foraging or feeding, but no habitat is proposed to be impacted. |
| Fauna | <i>Numenius madagascariensis</i> | Eastern Curlew/ Far Eastern Curlew | Listed | Vulnerable | Critically endangered | Within Australia, the eastern curlew has a primarily coastal distribution. The eastern curlew does not breed in Australia. During the non-breeding season in Australia, the eastern curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (<i>Zosteraceae</i>). Occasionally, the species occurs on ocean beaches (often |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|-----------------------------|--------------------------|--------|-----------------------|-----------------------|--|
| | | | | | | near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes within the mangroves. The preferred habitat does not occur on site. |
| Fauna | <i>Pedionomus torquatus</i> | Plains-wanderer | Listed | Critically endangered | Critically endangered | The Plains-wanderer is mostly sedentary and lives in semi-arid, lowland native grasslands. The preferred habitat of the Plains-wanderer typically comprises 50% bare ground, 10% fallen litter, and 40% herbs, forbs and grasses. The species may be present in pockets of the site, however heavy agricultural cultivation means grasses are frequently disturbed likely resulting in the species inhabiting suitable habitat elsewhere. No long-term impacts are expected. |
| Fauna | <i>Polytalis swainsonii</i> | Superb Parrot | | | Vulnerable | In Victoria, the Superb Parrot is confined to the north of the State, with records mainly around Barmah State Forest/State Park, with occasional records near Strathmerton, in the Killawarra State Forest and near Mooroopna. The species has recently been recorded in southern Queensland near Eulo and also between Warwick and Goondiwindi. The Superb Parrot mainly inhabits forests and woodlands dominated by eucalypts, especially River Red Gums (<i>Eucalyptus camaldulensis</i>) and box eucalypts such as Yellow Box (<i>Eucalyptus melliodora</i>) or Grey Box (<i>E. microcarpa</i>). The species also seasonally occurs in box-pine (<i>Callitris</i>) and Boree (<i>Acacia pendula</i>) woodlands (Webster 1998). This species has the potential to be present in the area for foraging or feeding, but no habitat is proposed to be impacted. |
| Fauna | <i>Rostratula australis</i> | Australian Painted-snipe | Listed | Critically Endangered | Endangered | The Australian Painted Snipe is usually found in shallow inland wetlands, either freshwater or brackish, that are either permanently or temporarily filled. It is a cryptic bird that is hard to see and often overlooked. Usually only single birds are seen, though larger groups of up to 30 have been recorded. It nests on the ground amongst tall reed-like vegetation near water, and feeds near the water's edge and on mudflats, taking invertebrates, such as insects and worms, and seeds. |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|-------------------------------|--|--------|--------------|------------|---|
| | | | | | | Although the Australian Painted Snipe can occur across Australia, the areas of most sensitivity to the species are those wetlands where the birds frequently occur and are known to breed. The preferred habitat does not occur on site, so no impacts are expected. |
| Fauna | <i>Galaxias rostratus</i> | Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow | | Vulnerable | Endangered | The Flathead Galaxias inhabits still or gently flowing water on the margins of lakes, billabongs and streams. It usually occurs in shoals in midwater over rocky or sandy bottoms near aquatic vegetation. This species is unlikely to be present within the site due to no habitat being present. |
| Fauna | <i>Maccullochella peelii</i> | Murray Cod | Listed | Vulnerable | Vulnerable | This species occurs in the waterways of the Murray-Darling Basin in a wide range of warm water habitats that range from clear, rocky streams to slow flowing turbid rivers and billabongs. This species is unlikely to occur within the subject area due to lack of required habitat. |
| Fauna | <i>Macquaria australasica</i> | Macquarie Perch | Listed | Endangered | Endangered | Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers. This species is unlikely to occur in the subject area due to lack of necessary habitat. |
| Fauna | <i>Litoria Raniformis</i> | Growling Grass Frog | Listed | Endangered | Vulnerable | This species is found mostly amongst emergent vegetation, including <i>Typha sp.</i> (bullrush), <i>Phragmites sp.</i> (reeds) and <i>Eleocharis sp.</i> (sedges), in or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds and farm dams. They are also found in open grasslands, steep-banked water edges (like ditches and drains), and agricultural land with water sites that have available dense emergent or fringing vegetation. They have also been sited within irrigation channels and crops. The species has the potential to be present on site, however, requires dense emergent or fringing vegetation, which does not occur due to continuous grazing. The |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|--|--|--------|--------------|-----------------------|--|
| | | | | | | study area is not within an irrigation district that contains open channel where potential habitat could occur. |
| Fauna | <i>Synemon plana</i> | Golden Sun Moth | Listed | | Critically Endangered | <p>This species is found in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses <i>Austrodanthonia</i> spp.</p> <p>The required habitat requirement does not occur at this site. The development would not change the current mix of farmed exotic vegetation found on site, so no impacts would be expected should the species occur.</p> |
| Fauna | <i>Dasyurus maculatus maculatus</i> (SE Mainland population) | Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) | Listed | Endangered | Endangered | <p>This species has a preference for mature wet forest habitat especially in areas with rainfall 600 mm/year Unlogged forest or forest that has been less disturbed by timber harvesting is also preferable.</p> <p>This species is unlikely to be present at this site due to absence of required habitat.</p> |
| Fauna | <i>Petauroides volans</i> | Greater Glider | | Vulnerable | Vulnerable | <p>This species shelters in tree hollows during the day, with a particular selection for large hollows in large, old trees.</p> <p>This species has the potential to be present in the area for foraging or feeding, but ho habitat is proposed to be impacted.</p> |
| Fauna | <i>Pseudomys fumeus</i> | Smoky Mouse, Konoom | Listed | Endangered | Endangered | <p>The Smoky Mouse occurs in a variety of vegetation communities, ranging from coastal heath to dry ridgeline forest, sub-alpine heath and, occasionally, wetter gullies. Except for the wetter sites, a consistent feature of Smoky Mouse habitats is the diversity of heath and bush-pea species present, combined with potential shelter sites in the form of woody debris or rocks.</p> <p>This species is unlikely to be present in the area and ho habitat is proposed to be impacted.</p> |
| Fauna | <i>Pteropus poliocephalus</i> | Grey-headed Flying fox | Listed | Vulnerable | Vulnerable | <p>This species requires foraging resources and roosting sites. It is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. It also feeds</p> |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|------------------------------|---------------------|--------|-----------------|------|---|
| | | | | | | <p>on commercial fruit crops and on introduced tree species in urban areas. The primary food source is blossom from Eucalyptus and related genera but in some areas it also utilises a wide range of rainforest fruits.</p> <p>The Grey-headed Flying-fox roosts in aggregations of various sizes on exposed branches. Roost sites are typically located near water, such as lakes, rivers or the coast.</p> <p>This species is unlikely to be present at the site due to lack of habitat and foraging resources.</p> |
| Fauna | <i>Ardea modesta</i> | Eastern Great Egret | Listed | Vulnerable | | <p>Great Egrets prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands. Fish make up the bulk of their diet; however, they also feed on molluscs, amphibians, aquatic insects and small reptiles.</p> <p>Impacts to this species are unlikely due to the presence of more suitable habitat elsewhere.</p> |
| Fauna | <i>Grus rubicunda</i> | Brolga | Listed | Vulnerable | | <p>The Brolga inhabits large open wetlands, grassy plains, coastal mudflats and irrigated croplands. It is less common in arid and semi-arid regions but will occur close to water.</p> <p>Impacts to this species are unlikely due to the presence of more suitable habitat elsewhere and the absence of large wetlands/waterbodies on site.</p> |
| Fauna | <i>Burhinus grallarius</i> | Bush Stone-curlew | Listed | Endangered | | <p>This species most commonly inhabits lightly timbered open forest and woodland. Key habitat components include fallen dead timber, leaf litter and an open ground layer. They nest directly on the ground, feeding mostly on ground dwelling invertebrates.</p> <p>As the key habitat components listed above are not available on site, no long-term impacts are expected relating to habitat for this species.</p> |
| Fauna | <i>Stagonopleura guttata</i> | Diamond Firetail | Listed | Near threatened | | <p>This species is found in open grassy woodland, heath and farmland or grassland with scattered trees including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands.</p> <p>Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities.</p> |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|---|----------------------|--------|-----------------|------|--|
| | | | | | | Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. This species has the potential to be present in the area for foraging or feeding, but no habitat is proposed to be impacted. |
| Fauna | <i>Oreoica gutturalis gutturalis</i> | Crested Bellbird | Listed | Near threatened | | This species is found in acacia shrublands, eucalypt woodlands, spinifex and chenopod (saltbush) plains or dunes. This species has the potential to be present in the area for foraging or feeding, but no habitat is proposed to be impacted. |
| Fauna | <i>Pomatostomus temporalis temporalis</i> | Grey-crowned Babbler | Listed | Endangered | | This species is found in open forests and woodlands, favouring inland plains with an open shrub layer, little ground cover and plenty of fallen timber and leaf litter. This species has the potential to be present in the area for foraging or feeding, but no habitat is proposed to be impacted. |
| Fauna | <i>Chthonicola sagittatus</i> | Speckled Warbler | Listed | Vulnerable | | The Speckled Warbler lives in dry sclerophyll forests and woodlands (woodlands have fewer trees than forests) dominated by eucalypts. It is mostly seen on the grassy ground layer, when it is foraging. This species has the potential to be present in the area for foraging or feeding, but no habitat is proposed to be impacted. |
| Fauna | <i>Oxyura australis</i> | Blue-billed Duck | Listed | Endangered | | The Blue-billed Duck is almost wholly aquatic, and is seldom seen on land. Non-breeding flocks, often with several hundred individuals, congregate on large, deep open freshwater dams and lakes in autumn. This species is unlikely to be present at this site due to absence of required habitat. |
| Fauna | <i>Ixobrychus minutus dubius</i> | Little Bittern | Listed | Endangered | | This species occurs in diverse freshwater swamp habitats, mainly where tall rushes, reeds, Typha (cumbungi), shrub thickets or other dense cover is inundated by at least 30 cm of water. |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|--|---|--------|-----------------|------------|--|
| | | | | | | This species is unlikely to be present at this site due to absence of required habitat. |
| Fauna | <i>Geopelia cuneata</i> | Diamond Dove | Listed | Near threatened | | <p>Diamond Doves gather in small parties or flocks in dry open savanna in mulga areas often among spinifex or grasses. They are also often in open riparian woodland (beside waterways).</p> <p>This species is unlikely to be present at this site due to absence of required habitat.</p> |
| Fauna | <i>Egretta garzetta nigripes</i> | Little Egret | Listed | Endangered | | <p>The Little Egret frequents tidal mudflats, saltwater and freshwater wetlands, and mangroves.</p> <p>This species is unlikely to be present at this site due to absence of required habitat.</p> |
| Fauna | <i>Porzana pusilla palustris</i> | Baillon's Crake | Listed | Vulnerable | | <p>This species inhabits vegetated wetlands, usually with fresh or brackish water, including swamps, billabongs, lakes and reservoirs and temporarily inundated areas. They often prefer wetlands with floating aquatic vegetation.</p> <p>This species is unlikely to be present at this site due to absence of required habitat.</p> |
| Fauna | <i>Accipiter novaehollandiae novaehollandiae</i> | Grey Goshawk | Listed | Vulnerable | | <p>The Grey Goshawk is found in most forest types, especially tall closed forests, including rainforests.</p> <p>Species or species habitat may occur within area</p> |
| Fauna | <i>Aprasia parapulchella</i> | Pink-tailed Worm-lizard, Pink-tailed Legless Lizard | Listed | Endangered | Vulnerable | <p>This species inhabits sloping, open woodland areas with predominantly native grassy ground layers, particularly those dominated by Kangaroo Grass (<i>Themeda australis</i>). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks.</p> <p>Commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites.</p> <p>This species is unlikely to be present at this site due to absence of required habitat.</p> |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|----------------------------|------------------------|--------|--------------|--------------------------------|--|
| Fauna | <i>Delma impar</i> | Striped Legless Lizard | Listed | Endangered | Vulnerable | <p>Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component.</p> <p>Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland.</p> <p>Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass <i>Themeda australis</i>, spear-grasses <i>Austrostipa</i> spp. and poa tussocks <i>Poa</i> spp., and occasionally wallaby grasses <i>Austrodanthonia</i> spp.</p> <p>Sometimes present in modified grasslands with a significant content of exotic grasses.</p> <p>The majority of the habitat requirements do not occur on site. The development would not change the current mix of farmed exotic vegetation found on site, so no impacts would be expected should the species occur.</p> |
| Fauna | <i>Calidris ferruginea</i> | Curlew Sandpiper | | | Critically endangered (Marine) | <p>This species generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts.</p> <p>It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland.</p> <p>It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.</p> <p>This species is unlikely to be present at this site due to absence of required habitat.</p> |
| Fauna | <i>Lathamus discolor</i> | Swift Parrot | | | Critically endangered (Marine) | <p>This species occurs in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations.</p> <p>Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i>, Spotted Gum <i>Corymbia maculata</i>, Red Bloodwood <i>C. gummifera</i>, Forest Red Gum <i>E. tereticornis</i>, Mugga Ironbark <i>E. sideroxylon</i>, and White Box <i>E. albens</i>.</p> <p>Commonly used lerp infested trees include Inland Grey Box <i>E. microcarpa</i>, Grey Box <i>E. moluccana</i>, Blackbutt <i>E. pilularis</i>, and Yellow Box <i>E. melliodora</i>.</p> |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|-----------------------------|--|--------|--------------|------------|--|
| | | | | | | This species has the potential to be present in the area for foraging or feeding, but no habitat is proposed to be impacted. |
| Flora | <i>Amphibromus fluitans</i> | River Swamp Wallaby-grass, Floating Swamp Wallaby-grass | | | Vulnerable | <p>In Victoria, this species occurs predominantly in the north-central area along the Murray River between Wodonga and Echuca including: Yarrawonga, Tocumwal, Cobram, Echuca, Broken River between Kerang and Tallangatta, west of Tallangatta East-Yabba Road near the Mitta Mitta River, Ovens River Flora Reserve, Barmah State Park (including Row's Swamp and Top Island Reference Area), Kanyapella Wildlife Reserve, south of Wangaratta, Tragowel Swamp near the Grampians, towards the Yarra at Kew and near Bright. In southern Victoria, it is known from several localities in south Gippsland, including a rail corridor southwest of Rosedale, Moe, Yarram, Meeniyah and Wonthaggi areas, Cresswick, Clunes, as well as in the Lysterfield Lake Park in Melbourne, Ballarat, and the Portland-Casterton areas.</p> <p>Not observed on site and unlikely to occur due to current and future land management practices.</p> |
| Flora | <i>Glycine latrobeana</i> | Clover Glycine, Purple Clover | Listed | Vulnerable | Vulnerable | <p>Clover Glycine is found across south-eastern Australia in native grasslands, dry sclerophyll forests, woodlands and low open woodlands with a grassy ground layer. Soils generally have a sandy component being either sand or loamy sand but Clover Glycine has also been found on clay soils.</p> <p>In Victoria this species widespread in the north-east, Gippsland, central Victoria and western Victoria regions but not the north-west quarter or the districts of Shepparton or Albury/Wodonga.</p> <p>Not observed on site and unlikely to occur due to current and future land management practices.</p> |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|---|--|--------|--------------|-----------------------|--|
| Flora | <i>Pimelea spinescens</i> <i>subsp. spinescens</i> | Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea | | Endangered | Critically Endangered | <p>This species is endemic to Victoria, where it occurs in the central west of the state. The species occurs in grassland or open shrubland, usually developed on clay soils.</p> <p>Vegetation is often dominated by <i>Themeda triandra</i> (kangaroo grass), with <i>Austrostipa</i> spp. (speargrass) or <i>Rytidosperma</i> spp. (wallaby grass) commonly associated.</p> <p>Co-occurring species often include <i>Acaena echinata</i> (sheep's burr), <i>Calocephalus citreus</i> (lemon beauty-heads), <i>Chrysocephalum apiculatum</i> (common everlasting), <i>Eryngium ovinum</i> (blue devil), <i>Plantago varia</i> (variable plantain), <i>Ptilotus erubescens</i> (hairy tails),</p> <p>This species is commonly associated with Natural Grasslands of the Murray Valley Plains – listed as Critically Endangered under the EPBC Act, and listed as 'Northern Plains Grasslands' under the FFG Act.</p> <p>Not observed on site and unlikely to occur due to current and future land management practices.</p> |
| Flora | <i>Sclerolaena napiformis</i> | Turnip Copperburr | Listed | Endangered | Endangered | <p>This species is generally confined to remnant grassland habitats on clay-loam soils. It grows on level plains in tussock grassland of <i>Austrostipa nodosa</i> and <i>Chloris truncata</i>, in grey cracking clay to red-brown loamy clay.</p> <p>This species is known to be associated with Riverine Plains Grasslands - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion and Riverine Plain Woodlands - Weeping Myall open woodland of the Riverina Bioregion.</p> <p>Not observed on site and unlikely to occur due to current and future land management practices.</p> |
| Flora | <i>Senecio behrianus</i> | Stiff Groundsel | Listed | Endangered | Endangered | <p>This species is endemic to Victoria and was presumed extinct until it was rediscovered in 1991 on a road reserve near Corop in northern Victoria.</p> <p>Populations at Corop tend to grow on slightly raised areas such as drainage channel banks and natural mounds, rather than in the bottom of depressions. Artificial</p> |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|-------------------------------|--|--------|--------------|------------|--|
| | | | | | | embankments in areas of red gum swamp/plains grassy wetland mosaic. Not observed on site and unlikely to occur due to current and future land management practices. |
| Flora | <i>Swainsona murryana</i> | Slender Darling-pea, Slender Swainson, Murray Swainson-pea | Listed | Endangered | Vulnerable | In the Riverina region, it has been recorded from many localities, mostly west and south of Echuca including Patho, south of Terrick Terrick township, Two Tree Swamp east of Lake Cooper, and O'Deas Road north-east of Echuca. Historically, it was recorded from Swan Hill, Charlton, Pyramid Hill and Murtoa. In Victoria there are 28 known subpopulations with a total of 94 000 individuals. In Victoria, the species is found in seasonally inundated flats around lakes Not observed on site and unlikely to occur due to current and future land management practices. |
| Flora | <i>Swainsona plagiotropis</i> | Red Darling-pea, Red Swainson-pea | Listed | Endangered | Vulnerable | This species grows on flat grassland and in heavy red soil, often on roadsides and especially in table drains. Soils are derived from quaternary sediments and are usually red-brown clay-loams. The species is absent from black low-lying soils. Not observed on site and unlikely to occur due to current and future land management practices. |
| Flora | <i>Cardamine moirensis</i> | Riverina Bitter-cress | | Rare | | Grows in low-lying areas adjacent to streams and swamps. Not observed on site and unlikely to occur due to current and future land management practices. |
| Flora | <i>Callitriche umbonata</i> | Winged Water-starwort | | Rare | | This species is found creeping or rooted in mud or floating in shallow fresh water. Not observed on site and unlikely to occur due to current and future land management practices. |
| Flora | <i>Eryngium paludosum</i> | Long Eryngium | | Vulnerable | | Grows in swampy, irrigated or flooded areas, depressions on sand, loam, clay and cracking clays. |

| Type | Scientific name | Common name | FFG | VIC Adv List | EPBC | Comment |
|-------|--------------------------------|---------------|-----|--------------|------|--|
| | | | | | | Not observed on site and unlikely to occur due to current and future land management practices. |
| Flora | <i>Leptorhynchos elongatus</i> | Lanky Buttons | | Endangered | | The species grows in grasslands or grassy shrublands. Not observed on site and unlikely to occur due to current and future land management practices. |



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Corop Solar Farm additional fauna information

Green Edge Environmental P/L was requested to supply additional fauna information in relation to the proposed Corop Solar Farm and potential impacts to fauna, namely the Wedge-tailed Eagle.

Following the advertising period for the proposed Corop Solar Farm, a number of objections were made. The Flora and Fauna Due Diligence (Green Edge Environmental P/L, 2019) undertook an impact assessment of the proposed development, this included identifying issues as required by the following Acts and guidelines:

- *Planning and Environment Act 1987*
- Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017)
- *Environment Effects Act 1978*
- *Flora and Fauna Guarantee Act 1988*
- *Catchment and Land Protection Act 1994 (CALP Act)*
- *Wildlife Act 1975*
- *Environmental Protection and Biodiversity Conservation Act 1999*

Outcome of the flora and fauna due diligence assessment

The outcome of the assessment was that the proposed project would not impact threatened native fauna or native vegetation, as determined by applicable State and Federal guidelines.

The objectors have noted that impacts to non-threatened fauna is not covered in the Due Diligence. All native fauna is protected under the *Wildlife Act 1975*, whereas threatened species impacts from development are required to be assessed under other State and Federal Legislation, which was undertaken.

Objectors issues

The objectors to the project identified the following issues:

- Impact of 1100ha of hunting ground being lost to the Wedge-tailed Eagle
- Ongoing monitoring of wellbeing
- Habitat for Brolgas and Bitterns

Discussion – Wedge-tailed Eagle

The Wedge-tailed Eagle diet reflects the available prey, but the most important live items are rabbits and hares. Rabbits usually comprise about 30-70% of the diet, but may comprise up to 92%. Between 80 and 90% of a Wedge-tailed Eagle's diet can be made up of ground-dwelling animals, including mammals and reptiles. Nests are usually 2.5km - 4km apart. If conditions are particularly good, the distances apart may be less than 1km because the birds require smaller areas to find sufficient food.

Attachment A provides a map of the geographic distribution of the Wedge-tailed Eagle from the Victorian Biodiversity Atlas (VBA), showing an extremely broad geographic distribution across Victoria.

In this situation even if the 1,100ha of potential hunting ground was removed (which we argue that it will not), the species is not at risk from a reduction of habitat on which it relies. It is noted that the land in question is not identified as key habitat for this species.

Impact on Wedge-tailed Eagles

No changes are expected to the availability of food sources for this species. Due to no expected changes to the availability of prey or to the availability of existing nesting sites and nesting sites surrounding the development, no impacts to the species are expected. The developer has ensured the existing trees with hollows and potential nest sites are retained in the development.

Based on the diet of the Wedge-tailed Eagle the potential biggest impact to the species is the requirement under the *Catchment and Land Protection Act 1994*, with the objectives of the CaLP Act is to protect primary production, Crown land, the environment and community health from the effects of noxious weeds and pest animals.

The CaLP Act defines roles and responsibilities and regulates the management of noxious weeds and pest animals (including rabbits and hares). Under the CaLP Act all land owners have legal obligations regarding the management of declared noxious weeds and pest animals on their land. Specifically, land owners must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of and as far as possible eradicate established pest animals on their land.

The proposed development site is required to plant significant landscaping areas, consisting of native vegetation surrounding the site (as well as ongoing maintenance). There will be huge benefits to the area for habitat for ground-dwelling animals, including mammals and reptiles – native food sources for Wedge-tailed Eagles.

Discussion – Brolga and Bitterns (*Australasian bittern (Botaurus poiciloptilus)* and *Australian little bittern (Ixobrychus dubius)*)

The Brolga is omnivorous and utilises a diverse range of food items on a seasonal basis. The main food items taken are vegetable materials, particularly the fleshy tubers of wetland plants, which it obtains by digging and foraging. The residues of grain and potato crops are also taken. Amphibians, sometimes small fish and a wide range of invertebrates are also taken including freshwater molluscs, crustaceans and insects (Marchant and Higgins 1993, White 1983). During summer and autumn, many birds flock to deep freshwater marshes and permanent open water and adjacent dryland areas.

Brolgas requires shallow (25-75 cm), temporary or seasonal wetlands with areas of low tree cover (i.e. less than five percent of the wetland basin covered by trees with a canopy cover of approximately ten percent). The preferred vegetation is less than one metre high and includes species such as common spike-sedge (*Eleocharis acuta*), common nardoo (*Marsilea drummondii*) and *Juncus spp.*. Brolga breed between July and December with a fledging

period of around 95 days. This leaves the species grounded for much longer than the average nesting waterbird and exposes the young brolga to predation by foxes and native predators. This is exacerbated when poor habitat quality (i.e. lack of water depth for a sufficient duration) results in starvation and malnutrition (Herring 2005).

Australasian bittern and Australian little bittern both camouflages themselves within dense vegetation foraging mainly at night on insects, snails, yabbies, frogs and other small birds and mammals. Tall Marsh provide essential foraging and nesting habitat for a range of cryptic waterbird species such as water hens, crakes and rails and threatened species such as Australasian bittern and Australian little bittern. Both *cumbungi* and common reed grow best in permanent to near-permanent conditions, with flowering occurring predominately between November and March.

Australasian bittern and Australian little bittern require a complex suite of habitat characteristics for foraging and breeding to occur in the one location. For Australasian bittern, the species generally require shallow (less than 30 cm depth) with medium to low density of reeds (i.e. *cumbungi*, common reed), rushes (i.e. giant rush) and sedges (i.e. variable flat-sedge, common-spike sedge) for foraging of reptiles, insects, frogs, small mammals, leaves and fruit.

Impact on the Brolga and Bitterns

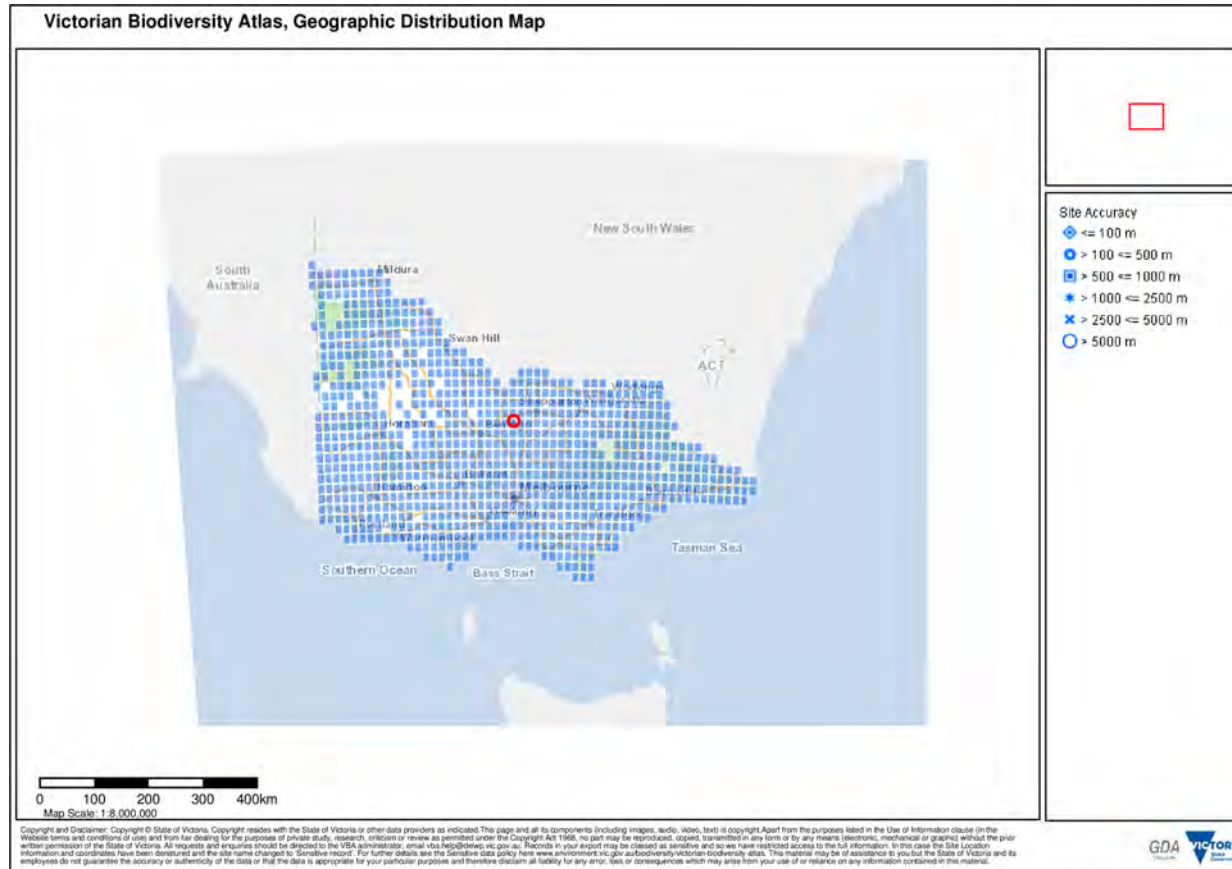
No impacts to potential habitat or availability of food is expected between current and future proposed management at this site and no offsite impacts are expected at wetlands by the proposed development.

These species are wetland dependent species requiring at least seasonal watering events and moderate to complex suites of habitat within the wetlands. The mapped wetlands on site contain none of the habitat requirements, nor do the farm dams, due to extensive grazing of wetland vegetation and management practice.

As identified within the hydrology report, the proposed development will not impact these vegetation characteristics of the mapped wetlands. Under the proposed development grazing will occur for vegetation maintenance. Areas on the property have been fenced off and revegetation within the overland flow areas. There may be opportunities (with approval) to develop artificial wetland habitat outside of the development footprint in these revegetation areas, potentially creating beneficial habitat for these species.

Victorian Biodiversity Atlas, Geographic Distribution Map

| Taxon Id | Scientific Name | Common Name | Discipline | Level |
|----------|-----------------|--------------------|-------------------|---------|
| 10224 | Aquila audax | Wedge-tailed Eagle | Terrestrial fauna | Species |



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6 April 2022

Peter Leeson
Director
Leeson Group
1/141 McEwan Rd, Heidelberg West
Victoria 3081



pleeson@leesongroup.com.au

Dear Peter

Re: 22-039 – Corop Solar Farm – roadside vegetation

Introduction

NGH was engaged to undertake a roadside vegetation assessment for Corop Solar Farm. Corop Solar Farm is located on Old Corop Road approximately 6 kms from Rushworth. The Solar Farm is located in the Campaspe Shire Council Local Government Area (LGA).

The Corop Solar Farm planning permit application (PLN249-2019) located at 344 Old Corop Road, Rushworth VIC 3612 has been submitted to the Department of Environment, Land, Water and Planning (DELWP) and a request for information (dated 30/12/2021) has been provided to the applicant.

Proposal

The Solar Farm Study Area was previously assessed in the Flora and Fauna Due Diligence Assessment by Green Edge Consulting (September 2019).

The purpose of this assessment is to determine any impacts on native vegetation associated with works for passing bays, intersection upgrades or entrances to the proposed Solar Farm on Bedwell Road and Old Corop Road.

This roadside vegetation assessment will form part of the Request for Further Information (RFI). This short report does not include any additional information for the native vegetation present in the Corop Solar Farm Study Area.

Survey Method

The proposal was surveyed by an NGH ecologist on the 22nd of March 2022 to assess the biodiversity values of the site. The survey was undertaken over a period of 4 hours to assess roadside vegetation including large trees, native and non-native vegetation. No fauna assessments were completed as part of this survey

Results

The site assessment results for the Corop Solar Farm are as follows:



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- Old Corop Road: four passing bays were assessed. Two passing bays were determined by the traffic management assessment and two new bays were determined based on minimising native vegetation impact
- Bedwell Road has two passing bays. The middle passing bays will need to be relocated further to the west to avoid large trees and native grasses.
- The intersections at the Bendigo-Murchison Road/Old Corop Road and Bedwell Road/Girgarre-Rushworth Road were assessed and both intersections will need additional bitumen on the road shoulder.
- The entrance to the Solar Farm on Old Corop Road may impact one large tree. Further mitigation will be required.
- A new entry point on Bedwell Road into the Corop Solar Farm for connection to stage one and stage two areas.

These locations are detailed in Table 1.

The assessment points are shown in Figure 1.

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Table 1. Results of site assessment

| Number | Location | Description of Works | Vegetation Description | Photograph |
|--------|--|---|---|--|
| 1 | Corner of Old Corop Road and Bendigo Murchison Rd, Rushworth | Intersection upgrade. Bitumen on the road shoulder to replace the gravel for left hand turning trucks | Wallaby Grass (<i>Rytidosperma</i> sp) on gravel |  |



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| Number | Location | Description of Works | Vegetation Description | Photograph |
|--------|------------------------|---|--|---|
| | | | |  |
| 2 | 2 (20489001 Sheet 2/3) | Site entrance Road will be sealed on the shoulder. No excavation or works beyond this area. | Road reserve edge: Wallaby Grass (<i>Rytidosperma</i> sp). <i>Phalaris aquatica</i> , Ribwort (<i>Plantago lanceolata</i>), Speargrass (<i>Austrostipa</i> sp) |  |



| Number | Location | Description of Works | Vegetation Description | Photograph |
|--------|----------------------------------|----------------------|--|---|
| | | | |  |
| 3 | Old Corop Road (near Heily Road) | Passing bay | Wallaby Grass (<i>Rytidosperma</i> sp), Speargrass (<i>Austrostipa</i> sp), Grey Box (<i>Eucalyptus microcarpa</i>), <i>Acacia pycnantha</i> , <i>Microlaena stipoides</i> |  |

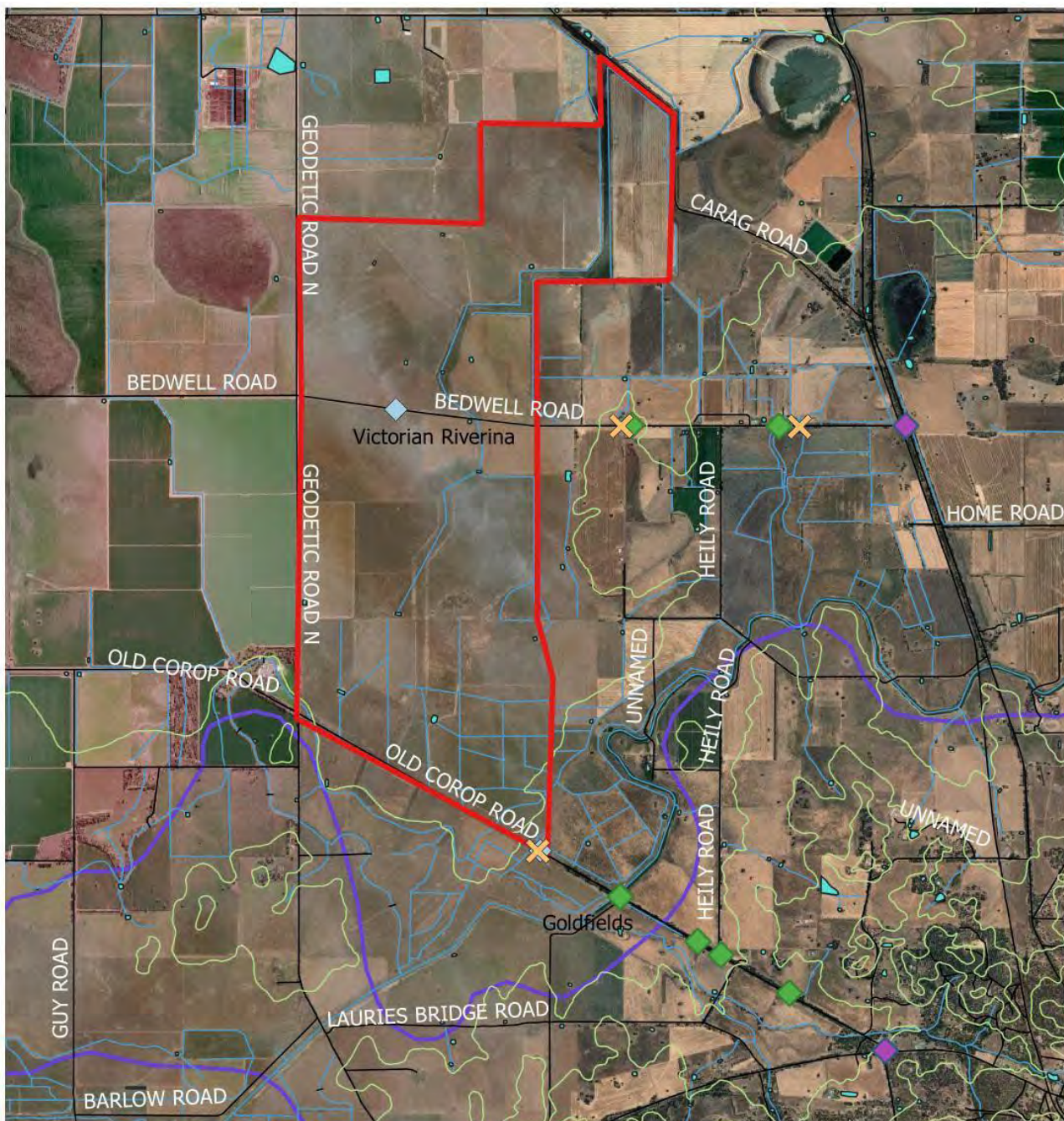
| Number | Location | Description of Works | Vegetation Description | Photograph |
|--------|---|----------------------|--|---|
| 4 | Old Corop Road at irrigation channel bridge | Passing bay | A scatter of Windmill Grass (<i>Chloris truncata</i>), Mainly exotic grasses. |  |
| 5 | Bedwell Road | Passing bay | Left hand side exotic, right hand side stay only 2 metres from road edge, otherwise native with Windmill Grass (<i>Chloris truncata</i>) and Speargrass (<i>Austrostipa</i> sp) |  |

| Number | Location | Description of Works | Vegetation Description | Photograph |
|--------|---|----------------------|--|---|
| | | | |  |
| 6 | Bedwell Road (relocated from mapped locations to avoid mature trees and native grasses) | Passing bay | Relocation has exotic grasses. Will not impact any native vegetation |  |

| Number | Location | Description of Works | Vegetation Description | Photograph |
|--------|--|----------------------|------------------------|---|
| 7 | Bedwell Road and Girgarre-Rushworth Road | intersection upgrade | Mainly exotic grasses |  |

| Number | Location | Description of Works | Vegetation Description | Photograph |
|--------|----------------|----------------------|---|---|
| 8 | Old Corop Road | New passing bay | Grey Box (<i>Eucalyptus microcarpa</i>) set back from road. Widen on gravel. No works in the road reserve required. |  |
| 9 | Old Corop Road | New passing bay | Grey Box (<i>Eucalyptus microcarpa</i>) set back from road. Widen on gravel. No works in the road reserve required. |  |

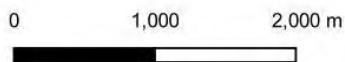
| Number | Location | Description of Works | Vegetation Description | Photograph |
|--------|--------------|--|--|---|
| | | | |  |
| 10 | Bedwell Road | Entrance between Stage One and Stage Two of Corop Solar Farm | Mix of native and exotic grasses and herbs. Ground layer <25% perennial cover. |  |



**Corop Solar Farm
Roadside Assessment**

Data Attribution
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- Legend**
- Solar Farm
 - ◆ Assessment Points
 - ◆ Intersection Upgrade
 - ◆ Passing Bay
 - ◆ Site Entrance
 - X Large Scattered Trees
 - Contours
 - Watercourse
 - Victorian Bioregions
 - Roads



Ref: 22-039 Corop SF \ Locations of passing bays and intersection upgrades
Author: C. Vincent
Date created: 07.04.2022
Datum: Vic Grid 94



Figure 1 Location map of Corop Solar Farm entry points, passing bays and intersection upgrades.



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Mitigation measures

The following mitigation measures are recommended prior to construction to reduce impacts to biodiversity on the road reserve.

The mitigation measures include:

- Fence off trees and shrubs on the road reserve during construction.
- Erect signage to say 'no-go zones' tree protection areas.
- Mitigation measures to minimise the biodiversity loss include:
 - Take steps to avoid unnecessary harm or injury to wildlife.
 - Fauna salvage prior to tree removal.
 - A suitably qualified Zoologist or wildlife handler on site during tree removal or removal of the vegetation in the drainage basin.
- Sediment Control measures implemented for the drainage basin prior to construction to prevent surface water runoff carrying sediment exiting the site.
- Sediment control can include sediment fencing using geotextile fabric which should remain in-situ until vegetation has re-established post construction.

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