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Flora and Fauna Assessment Report

KDC Pty LTD

Finley Solar Farm

231 Broockmanns Road, Finley, NSW, 2713
(Lot 61 DP 1053533)

24 April 2020

Flora and Fauna Assessment Report

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Prepared for:

KDC PTY LTD

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1. INTRODUCTION

1.1 PROJECT BACKGROUND

Kleinfelder was engaged by KDC Pty Ltd (KDC) on behalf of Providence Asset Group (PAG) to prepare a Flora and Fauna Assessment Report for the Finley Solar Farm Project. The project will be assessed under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) with Berrigan Shire Council as the determining authority.

The following terms are used throughout this report to describe the areas that pertain to the current assessment:

- Study area – defined as Lot 61 DP 1053533.
- Subject site (proposed development site) – areas of the study area proposed for development.
- Locality – land within a 5-kilometre radius of the study area.

This report identifies the flora, fauna and threatened species and ecological communities present, or likely to occur within the study area based on species and/or habitats detected during field surveys. Threatened flora and fauna records from the locality have been considered to determine the "likelihood of occurrence" of these species. An assessment of the likely impacts on threatened species, habitat features, wildlife corridors and vegetation communities as a result of the proposed development is undertaken.

1.2 SITE DESCRIPTION

The study area is located approximately 1 km west of the township of Finley within the Berrigan Shire Council Local Government Area (LGA) (**Figure 1**). The subject site is zoned 'RU1 – Rural Production' under the Berrigan Local Environmental Plan (Berrigan LEP, 2013).

The northern boundary of the study area is bordered by Broockmanns Road. The western, eastern, and southern boundaries adjoin agricultural lands. The southern boundary is bordered by the Mulwala No 17B Channel (hereafter referred to as an "irrigation channel"). The predominant land use within the locality is agricultural development.

The subject site consists of a 74.46-hectare (ha) land parcel. The proposed study area solar panel array (array area) occupies part of the south eastern corner of Lot 61 DP 1053533 and a proposed access road along the eastern boundary of the site links the array area to Broockmanns Road to the north (16.08 ha) (**Figure 2**). The site topography is consistent with a broad alluvial flat which represents very little variation from the surrounding landscape. The study area contains a small constructed dam and irrigation channel (Mulwala No 17B). The irrigation channel flows into the Mulwala No 17 Channel to the east. This Channel flows into Lake Mulwala (i.e. connected to the Murray River) approximately 50km to the south-east of the subject site. No natural waterways or streams flow through the subject site.

The majority of the subject site has previously been cleared of native vegetation for agricultural development. Observations during the site-based assessment indicate that the subject site had been tilled and cropped within the last year. Additionally, the subject site appeared to have been grazed by livestock (i.e. the subject site was accessible to grazing cattle located in adjoining paddock to the west).

1.3 PROPOSED DEVELOPMENT

The Finley Solar Farm Project will include a grid-connected solar PV installation of approximately 14,196 solar panels producing 425W. It is proposed that a new transmission line be installed to connect the site to the grid on either Hamilton Street or Dales Road.

A proposed 4m wide access road will connect the solar farm to Broockmanns Road. The solar farm will be fenced with 2.2 metre fencing with barbed wire at the top. Motion activated lighting may also be installed.

Other proposed infrastructure onsite will include a skid-mounted MV Power Station consisting of inverters, transformer, and switchgear. Most infrastructure would be prefabricated offsite assembled onsite. The PV arrangement will include 182 ground mounted single axis trackers. The PV arrays will reach a maximum height of 2.5 metres. The mounting structure will consist of steel post driven 1.5 metres into the ground using a small pile driver. A proposed car park, off load and laydown area is indicatively located in the north-east corner of the proposed array area on **Figure 3**.

A stormwater management system is proposed which will include an onsite detention basin and low flow outlet. Earth works on the access road include drainage swale and batters as required.

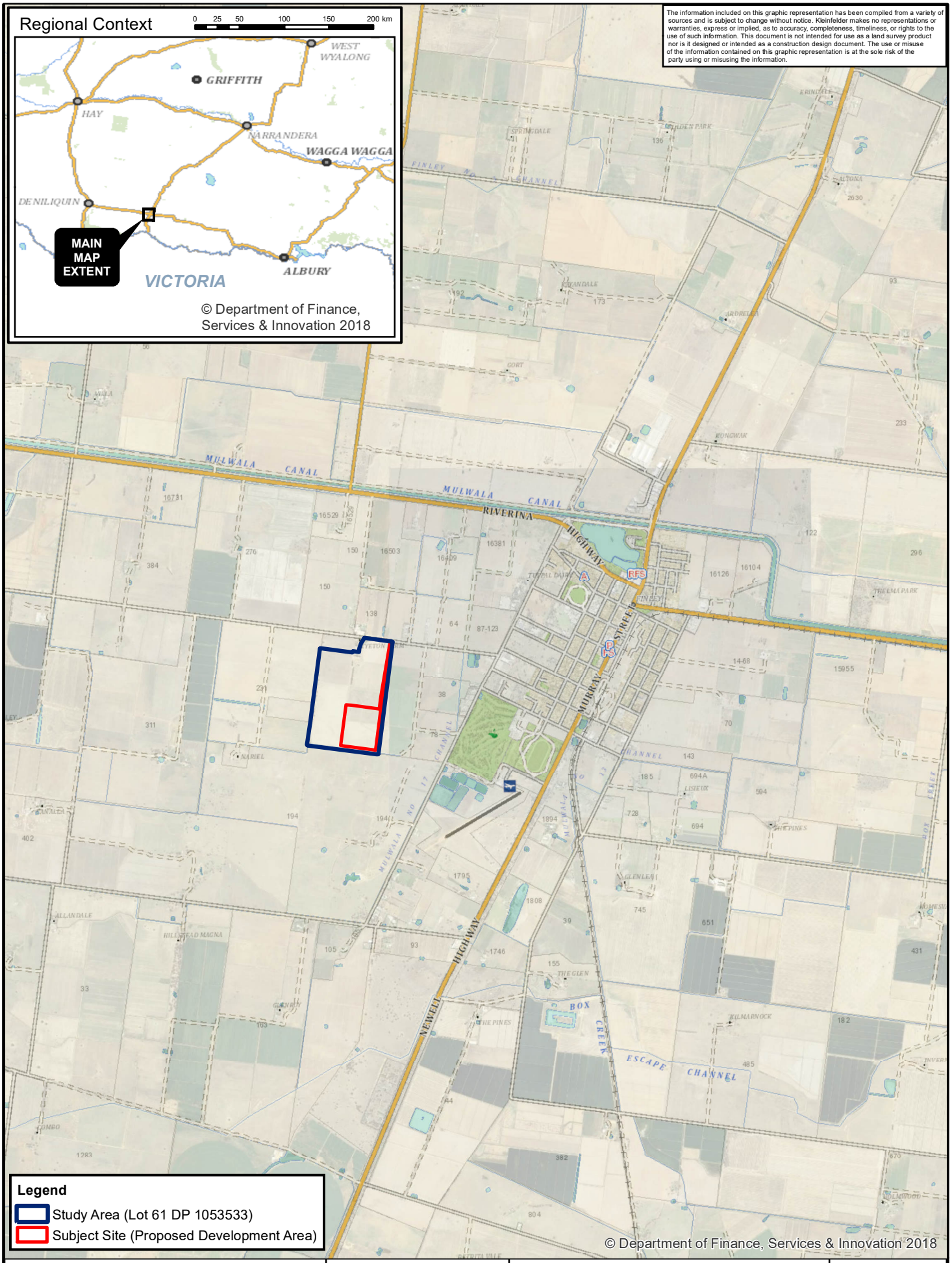
During construction there will be an estimated 30 personnel on site for up to 6 months. On completion, the Solar farm will operate 24 hours a day, 7 days a week with no staff on site. Maintenance and inspections will be undertaken as needed.

The project layout will only affect grassland areas and has been designed to avoid impacting existing trees within the subject site and the irrigation channel to the south.

1.4 REPORT OBJECTIVES

The objectives of the Flora and Fauna Assessment Report are as follows:

- Describe the flora and fauna (and their habitats) present on, or likely to occur on the subject site.
- Assess the relevance and value of the subject site for threatened species and ecological communities (and their habitats) listed under the NSW *Biodiversity Conservation Act 2016* (BC Act).
- Assess the potential impacts of the proposed development on threatened species and ecological communities, pursuant to Section 7.3 of the BC Act (5-part test).
- Comment on the likely occurrence and relevance of matters of national environmental significance listed under the Commonwealth *Environment Planning and Biodiversity Conservation Act 1999* (EPBC Act).
- Describe steps taken to avoid and mitigate any identified impacts on flora and fauna and to protect the natural environment of the subject site.



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DATA SOURCE:
NSW DFSI - 2018

Locality

KDC Pty Ltd
Flora & Fauna Assessment
Finley Solar Farm

FIGURE:

1

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Metres
0 50 100 150 200 250
N

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NSW DFSI - 2018

Study Area and Subject Site

KDC Pty Ltd
Flora & Fauna Assessment
Finley Solar Farm

FIGURE:
2

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Legend

- Study Area (Lot 61 DP 1053533)
- Subject Site (Proposed Development Area)
- Project Layout
- Local Road
- Named Watercourse

Metres
0 50 100 150 200 250
N

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DATA SOURCE:
NSW DFSI - 2018
KDC - 2020

Proposed Site Layout

KDC Pty Ltd
Flora & Fauna Assessment
Finley Solar Farm

FIGURE:
3

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2. LEGISLATIVE CONTEXT

2.1 FEDERAL LEGISLATION

2.1.1 Environment Protection & Biodiversity Conservation Act 1999

The purpose of the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) is to ensure that actions likely to cause a significant impact on 'matters of national environmental significance' undergo an assessment and approval process. Under the EPBC Act, an action includes a proposal, a development, an undertaking, an activity or a series of activities, or an alteration of any of these things. An action that 'has, will have or is likely to have a significant impact on a Matter of National Environmental Significance (MNES) is deemed to be a 'controlled action' and may not be undertaken without prior approval from the Australian Minister for the Environment.

The EPBC Act identifies nine MNES:

- World heritage properties.
- National heritage places.
- Wetlands of international importance (Ramsar Wetlands).
- Threatened species and ecological communities.
- Migratory species.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Nuclear actions (including uranium mining).
- A water resource, in relation to coal seam gas development and large coal mining development.

As part of the current assessment, MNES that are predicted to occur within the locality (applying a 10 kilometre buffer) were obtained from the on-line Protected Matters Search Tool (DAWE, 2020a). These records are discussed in **Section 4**. The EPBC Act has been further addressed in this assessment through:

- Field surveys for EPBC Act listed threatened biota and migratory species.
- Assessment of potential impacts on EPBC Act listed threatened species and migratory biota.

- Identification of suitable impact mitigation and environmental management measures for EPBC Act listed threatened species and migratory biota.

2.2 STATE LEGISLATION

2.2.1 Environmental Planning and Assessment Act 1979

The EP&A Act forms the legal and policy platform for proposal assessment and approval in NSW and aims to '*encourage the proper management, development and conservation of natural and artificial resources*'. All development in NSW is assessed in accordance with the provisions of the EP&A Act and the *Environmental Planning Regulation 2000*.

Development activities that require consent are assessed and determined in accordance with Part 4 of the EP&A Act. The determining authority for the project is Berrigan Shire Council.

2.2.2 Biodiversity Conservation Act 2016

The NSW BC Act, the NSW *Biodiversity Conservation Regulation 2017* (BC Regulation) and amendments to the NSW *Local Land Services Act 2013* (LLS Act) commenced on 25 August 2017. The legislation aims to deliver "a strategic approach to conservation in NSW whilst supporting improved farm productivity and sustainable development". The NSW BC Act repeals several pre-existing Acts, most notably the NSW *Threatened Species Conservation Act 1995,* the NSW *Nature Conservation Trust Act 2001* and the *NSW Native Vegetation Act 2003*.

In accordance with the NSW BC Act, entry into the Biodiversity Offsets Scheme (BOS) is not required for the proposed development due to the following:

- The proposed development is not deemed to be 'State Significant' under the NSW EP&A Act.
- The proposed development will not impact an Area of Outstanding Biodiversity Value (AOBV) as listed under Part 3 of the BC Act.
- The proposed development is unlikely to cause a significant impact on a threatened species, population or ecological community, as listed under Schedules 1 and 2 of the BC Act, as determined by application of an *assessment of significance* pursuant to Section 7.3 of the BC Act.

- The proposed development will not impact areas mapped as having 'high biodiversity value' as indicated by the NSW Biodiversity Values Map (BV Map).
- The proposed development will not involve clearing of native vegetation that exceeds the Biodiversity Offset Scheme (BOS) clearing threshold for the site (1 ha threshold for a minimum lot size of 120 ha) as determined by the BC regulation.

In consideration of the criteria listed above, a Biodiversity Development Assessment Report (BDAR) is not required for the proposed development. As part of the current assessment, threatened species and ecological communities as listed under the BC Act that have previously been recorded within the locality (applying a 10 kilometre buffer) were obtained from the on-line Bionet Atlas of NSW Wildlife (Department of Planning, Industry and Environment) (DPIE, 2020b). These records are discussed in **Section 4**. The BC Act has been further addressed in this assessment through:

- Field surveys to assess the presence of threatened species, populations and ecological communities, as listed under Schedules 1 and 2 of the BC Act, within the subject site.
- Assessment of potential impacts threatened species, populations and ecological communities, as listed under Schedules 1 and 2 of the BC Act, as determined by application of an *assessment of significance* pursuant to Section 7.3 of the BC Act.
- Identification of suitable impact mitigation and environmental management measures.

2.2.3 Biosecurity Act 2015

The *NSW Biosecurity Act 2015* provides a streamlined statutory framework to protect the NSW economy, environment and community from the negative impact of pests, diseases and weeds. The primary object of the Act is to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers.

In NSW, all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

The Department of Primary Industries (DPI) provides guidance for the control and management of Priority Weed species. Lists of Priority Weeds are provided for each region of

NSW. Priority Weed species recorded within the study area during the current investigation are discussed in **Section 4**.

2.2.4 National Parks and Wildlife Act 1974

The NSW *National Parks and Wildlife Act 1979* (NPWS Act) aims to conserve nature, objects, places or features (including biological diversity) of cultural value within the landscape. The Act also aims to foster public appreciation, understanding and enjoyment of nature and cultural heritage, and provides for the preservation and management of national parks, historic sites and certain other areas identified under the Act.

No areas of National Park estate occur within or adjacent to the subject site.

2.2.5 Water Management Act

Controlled activities carried out in, on or under waterfront land are regulated by the NSW Water Management Act 2000 (WM Act). The NSW Natural Resource Asset Regulator (NRAR) administers the WM Act and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to 'waterfront land' as a consequence of carrying out the controlled activity. Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary (NRAR, 2018).

A river is defined by the WM Act as:

- any watercourse, whether perennial or intermittent and whether comprising a natural channel or a natural channel artificially improved, and
- any tributary, branch or other watercourse into or from which a watercourse flows, and
- anything declared by the regulations to be a river, whether or not it also forms part of a lake or estuary, but does not include anything declared by the regulations not to be a river.

Channel Mulwala No 17B, located within the study area on the southern boundary (**Figure 2**), is situated within 40 metres of the subject site.

A Controlled Activity Approval will therefore be required to undertake works on waterfront land. Council will refer this Development Application to the NSW Natural Resources Access Regulator for further consideration.

An assessment of indirect impacts of the proposed development on aquatic habitat within the subject site and downstream aquatic habitats is provided in **Section 5**.

2.2.6 State Environmental Planning Policy (Koala Habitat Protection) 2019

The *State Environmental Planning Policy (Koala Habitat Protection) 2019* (Koala Habitat Protection SEPP) aims to encourage the conservation and management of areas of natural vegetation that provide habitat for Koalas to support a permanent free-living population over their present range and reverse the current trend of Koala population decline.

The proposed development will not directly impact an area identified by the Koala Development Application Map (Spatial Viewer) and will not involve the removal of preferred Koala feed tree species, as identified by the SEPP. The proposed development is therefore considered to represent “Tier 1 Development” as per the Koala Habitat Protection SEPP Guideline (2019); therefore surveys for Koalas and preparation of a Koala Habitat Assessment Report by a suitably qualified person is not required for the project.

2.3 LOCAL PLANNING INSTRUMENTS

2.3.1 Berrigan Local Environmental Plan 2013

The study area is located within the Berrigan Shire Council LGA. The Berrigan Local Environmental Plan 2013 (Berrigan LEP, 2013) controls development within the study area through zoning and development controls. Clause 6.3, Terrestrial Diversity, in the LEP is the principal clause for protecting biodiversity within the LGA.

Part 6, Clause 6.3 of the LEP applies to land identified as “Biodiversity” on the Terrestrial Biodiversity Map and requires the consent authority determining a development application for development on land to which this clause applies to consider whether the development is likely to have:

- any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and

- any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and

- any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and

- any adverse impact on the habitat elements providing connectivity on the land, and

- any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

The subject site does not contain area mapped as “Biodiversity” on the Terrestrial Biodiversity Map Sheet BIO_003 (Berrigan LEP, 2013) therefore this clause is not applicable to the proposed development.

Clause 6.1, Earthworks, ensures that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land.

Development consent is required for earthworks unless:

- the earthworks are exempt development under this Plan or another applicable environmental planning instrument, or

- the earthworks are ancillary to development that is permitted without consent under this Plan or to development for which development consent has been given.

Before granting development consent for earthworks (or for development involving ancillary earthworks), the consent authority must consider the following matters:

- the likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development,

- the effect of the development on the likely future use or redevelopment of the land,

- the quality of the fill or the soil to be excavated, or both,
- the effect of the development on the existing and likely amenity of adjoining properties,
- the source of any fill material and the destination of any excavated material,
- the likelihood of disturbing relics,
- the proximity to, and potential for adverse impacts on, any waterway, drinking water catchment or environmentally sensitive area,
- any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

Potential impacts associated with the access road earthworks are addressed in **Section 5.**

Other potentially relevant clauses to the development include: 6.2 Flood planning, 6.4 Riparian Land and Watercourses and 6.5 Wetlands. However, as the study area was not included in any of the LEP mapping associated with these clauses the stipulated conditions no not apply to this development.

3. MATERIALS AND METHODS

3.1 DESKTOP ASSESSMENT

Existing information on the flora and fauna of the subject site and the locality, including relevant threatened biota was obtained from:

- Regional vegetation mapping obtained from The Central Resource for Sharing and Enabling Environmental Data in NSW (SEED, 2020).
- The BioNet Atlas of NSW Wildlife (DPIE, 2020b) for previous records of threatened species, populations and ecological communities (as listed under the BC Act) within a 10-kilometre radius of the site (data retrieved 12/03/2020).
- The Department of Agriculture Water and Environment (DAWE, 2020a) Protected Matters Search Tool, which involved a search for matters of national environmental significance within a 10-kilometre radius of the site (conducted on 12/03/2020).

The results of the database searches were used to compile a list of threatened species, populations and communities, as listed under the BC Act and EPBC Act that could potentially occur on the site, and their likelihood of occurrence.

3.2 FIELD SURVEY

3.2.1 Vegetation Assessment

A diurnal inspection of the site and surrounds was undertaken on 11/03/2020 to provide specific observations for this report. The determination of native or exotic vegetation types was based on dominant flora species present within each structural layer (i.e. canopy, shrub and ground layers). Boundaries of vegetation types and communities were marked with a hand-held GPS and mapped using geographical information system (GIS) software.

Vegetation types within the subject site were assessed against identification criteria for State and Commonwealth listed threatened ecological communities (DAWE, 2020b; DPIE, 2020d). Vegetation and habitats were compared with descriptions provided in the Bionet Vegetation Classification to identify Plant Community Types (PCTs).

Although the proposed development does not trigger the BOS, elements of the Biodiversity Assessment Method or 'BAM' are considered to be best practise for the assessment of vegetation composition, structure and function (OEH, 2017). Therefore, three 400 m² floristic plot/transects (BAM Plots) were sampled in accordance with Section 5.3.4 of the BAM. Percentage cover and relative abundance was recorded for all plant species within each BAM Plot. Plots were positioned to sample areas that were most representative of the floristic characteristics of each PCT. The locations of all floristic plot/ transects are presented in **Figure 4**.

Plant identification and nomenclature were based on species descriptions presented within The Flora of New South Wales Volumes 1 to 4 (Harden, 1993) and with reference to taxonomic updates in PlantNET – The Plant Information Network System of Botanic Gardens Trust, Sydney, Australia (Botanic Gardens Trust, 2020).

3.2.2 Fauna Habitat Assessment

The locations of any important habitat features, such as microbat roosting habitat, hollow-bearing trees, terrestrial refugia and nests/burrows were captured with a handheld Trimble device and photographed where appropriate.

Searches for potential habitat for threatened fauna species included but were not limited to:

- Koala feed trees.
- Foraging trees for threatened birds.
- Hollow-bearing trees.
- Potential roosts for microbats.
- Vegetated ponds, riparian vegetation and drainage lines for frogs and waterbirds.
- Woody debris, leaf litter and bush rock.

Diurnal opportunistic and incidental observations of fauna species were recorded at all times during field surveys. These included opportunistic observation of fauna activity such as scats, tracks, burrows or other traces.

3.3 SURVEY LIMITATIONS

The survey techniques and survey effort applied for this study were appropriate to the nature and condition of the site. Due to these limitations, priority was given to habitat identification and assessment for relevant threatened biota. Favourable habitat features and characteristics for relevant species were noted and used to further define the likelihood of occurrence of these species on the site.

The field survey was undertaken during a four-hour survey period. A longer survey duration would likely result in detection of a greater diversity of species. The subject site is considered to be largely unsuitable for threatened plant species due to the extent of vegetation clearing for agricultural development. Due a lack of habitat for native plant species within the subject site, *the NSW Guide to Surveying Threatened Plants* (OEH, 2016) was not considered to be applicable.

No nocturnal surveys or fauna trapping was conducted and therefore targeted surveys for cryptic fauna species was not conducted. For example, no 'call playback' for arboreal fauna, large forest owl species or Koalas was conducted or considered to be applicable to the assessment. Given the limited availability of woody vegetation within the study area, the survey effort was considered adequate to detect the majority of the species likely to be present.

Legend

- Study Area (Lot 61 DP 1053533)
- Subject Site (Proposed Development Area)
- Meander Survey Track
- Plot Transect
- Local Road
- Named Watercourse

Metres
0 50 100 150 200 250
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DATA SOURCE:
NSW DFSI - 2018
KDC - 2020

Survey Effort

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FIGURE:
4

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4. RESULTS

4.1 VEGETATION ASSESSMENT

4.1.1 Plant Diversity and Vegetation Structure

A total of 35 plant species were identified during the assessment. These were comprised of 20 exotic species and 15 native species. A complete list of flora species is presented in **Appendix 2**.

An examination of vegetation structure determined that trees and shrubs were generally absent throughout the study area. The ground layer was found to be consistently dominated by a low diversity of exotic species comprised mainly of forbs and grasses. These species are common in agricultural grasslands within the region. A low diversity of native plant species were detected. These were also predominantly comprised of forb and grass species.

4.1.2 Priority Weeds

The NSW Department of Primary Industries (DPI, 2020) lists Priority Weed species within the region that are to be prioritised for control due to their potential threat to both agriculture and the natural environment. Review of this list determined that of the 20 exotic plant species identified within the study area, the following species are Priority Weeds:

- *Ranunculus repens* (Creeping buttercup)
- *Solanum elaeagnifolium* (Silver-leaved nightshade).

In accordance with the NSW *Biosecurity Act 2015*, the above listed species are to be managed to eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant of these species, who knows or ought to know of any biosecurity risk, has a duty to ensure that infestations are managed so far as is reasonably practicable.

The Priority Weed species previously discussed are also determined to be High Threat Exotic (HTE) species by the NSW Department of Planning Industry and Environment (DPIE, 2020c). These species are therefore recognised as having the potential to cause habitat degradation of native ecosystems. *Solanum elaeagnifolium* (Silver-leaved nightshade) is also recognised as a Weed of National Significance (WONS) (DAWE, 2020c). Declared WONS are species

identified by the Commonwealth a having the potential to cause major economic, environmental and social impacts in Australia.

No major infestations of weeds were identified within the subject site. As such, control of onsite weeds is not required. Mitigation measures are presented in **Section 5** to prevent the further spread of weeds and to reduce the risk of introducing new weed species to the study area during the construction phase of the project.

4.1.3 Plant Community Types

One native vegetation community was identified within the study area (**Appendix 1, Plate 2**): *PCT80 Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion* (**Figure 5**). This community occupied an area of 0.78 ha which will not be impacted by the proposed development.

This vegetation community is restricted to an area near the western boundary of the study area. Characteristic species in the canopy of the community include: *Eucalyptus microcarpa* (Grey Box), *Eucalyptus melliodora* (Yellow Box) *and Allocasuarina luehmannii,* (Buloke). No shrub species or other key diagnostic midstorey species were identified. The ground layer was dominated by exotic forbs and grasses.

4.1.4 Exotic vegetation

Exotic Grassland

The majority of the study area was dominated by exotic grassland (**Appendix 1, Plate 1**). This community occupies a total area of 71.93 ha over the study area. Approximately 16.08 ha occurs within the impacted area (subject site). This is the only vegetation type identified within the subject site.

The three plots undertaken within the subject site identified the dominant species as: *Heliotropium europaeum, Chloris virgata, Hordeum sp., Cynodon incompletus.* and *Polygonum aviculare.* Common native species included*: Dysphania pumilio, Acaena novae-zelandiae, Chloris truncata* and occasional *Echinochloa colona, Rytidosperma sp., Euphorbia drummondii* and *Geranium solanderi.* No trees or shrub species were present.

The species composition and dominant species identified in the quadrats was similar across the study area. Scattered *Allocasuarina luehmannii* occurred in the north of the study area and the following additional native species occurred occasionally occurred across the site: *Atriplex sp., Oxalis perennans* and *Vittadinia gracilis.*

Planted vegetation

This vegetation type occupied an area of 0.66ha within the study area (**Appendix 1, Plate 3**). This area will not be impacted by the development.

Planted *Eucalyptus cladocalyx (Sugar Gum*) occurred in the north of the study area near the residence and a patch of planted *Pinus sp.* occurred adjacent to the road. The Sugar gum was experiencing dieback in the eastern row and may not recover.

Irrigation Channel Vegetation

The irrigation channel is manmade and occupies 1.02ha of the study area (**Appendix 1, Plate 4**). This area will not be directly impacted by the development. This area was dominated by *Cynodon incompletus* on the bank and contained no aquatic vegetation with the exception of scattered *Potamogeton tricarinatus.*

The constructed dams within the study area did not contain water or aquatic vegetation at the time of assessment.

4.2 THREATENED ECOLOGICAL COMMUNITIES

One Threatened Ecological Community (TEC) was identified within the study area. The PCT described previously as *PCT80 Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion* is also commensurate with *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions*. This TEC is listed as an Endangered Ecological Community (EEC) under the BC Act (hereafter referred to as “Inland Grey Box Woodland EEC”)

Inland Grey Box Woodland EEC is found on relatively fertile soils of the western slopes and plains of NSW in which Eucalyptus microcarpa (Inland Grey Box) is the most characteristic

species. The community generally occurs where average rainfall is 375-800 mm pa and the mean maximum annual temperature is 22-26°C (Beadle, 1981; Moore, 1953). In NSW the community principally occurs within the Riverina and South West Slopes Bioregions and is also found in portions of the Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions.

Key diagnostic canopy species were recorded in the vegetation, including *Eucalyptus microcarpa* (Grey Box), *Eucalyptus melliodora* (Yellow Box) *and Allocasuarina luehmannii,* (Buloke) (NSW Scientific Committee, 2011)

The Inland Grey Box Woodland EEC was identified outside the subject site; therefore, no direct impacts of the proposed development are anticipated. Potential indirect impacts of the proposed development have been assessed via an *assessment of significance* pursuant to Section 7.3 of the BC Act in **Appendix 5**. This assessment is summarised in **Section 5**.

4.3 THREATENED FLORA SPECIES

No threatened flora species were identified within the subject site during the assessment. A search of the Bionet Atlas of NSW Wildlife (DPIE, 2020b) returned a list of one threatened flora species which has been previously been recorded within a 10km radius of the study area: A Spear-grass (*Austrostipa wakoolica*), which is listed as 'endangered' under the BC Act and the EPBC Act. This species prefers open woodland habitats with grey, silty clay or sandy loam soils on floodplains of the Murray River tributaries (DPIE, 2020a). The field assessment determined that this habitat does not occur within the subject site and the species is therefore unlikely to occur.

A likelihood of occurrence assessment has been prepared for relevant threatened flora species in **Appendix 3**.This assessment determined that the habitat present within the subject site are not suitable for any threatened flora species.

4.4 TERRESTRIAL FAUNA HABITAT

The assessment revealed that the subject site is comprised of exotic grassland. At the time of the assessment, the grasslands were short and sparse due to the disturbance from agricultural development (tillage). Habitat trees, rock outcrops and woody debris were absent throughout

the subject site. Leaf-litter was limited to sparse grass clippings which predominantly gathered in the low relief areas created by the tillage.

The subject site was found to lack vegetation with a complex structure (canopy, shrubs and midstorey species were absent). The habitat is likely to support a low diversity of native fauna, including birds and mammal species common within agricultural landscapes.

Opportunistic fauna observations included sightings of common bird species such as the Australian Magpie *(Gymnorhina tibicen),* the Galah *(Eolophus roseicapilla)* and the Australian Raven *(Corvus coronoides).* It should be noted that the observed species were not observed within the development footprint. No mammal, reptile or amphibian species were detected.

In summary, the fauna habitat assessment determined the following:

- No nesting habitat is present within the subject site.
- The exotic grasslands may provide marginal foraging habitat for a range of native birds and terrestrial mammals such as macropods (Kangaroos and Wallabies).
- The exotic grasslands may provide hunting habitat for native predatory birds, such as Falcons, Kestrels and Large Forest Owls.

Legend

- Local Road
- Track
- Named Watercourse
- Study Area (Lot 61 DP 1053533)
- Subject Site (Proposed Development Area)

Vegetation Communities

- PCT80: Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (Degraded)
- Planted Vegetation
- Exotic Grassland
- Channel/Dams
- Infrastructure

Metres
0 50 100 150 200 250

N

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DRAWN BY: GJoyce
DATA SOURCE: NSW DFSI - 2018

Vegetation Communities

KDC Pty Ltd
Flora & Fauna Assessment
Finley Solar Farm

FIGURE: 5

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4.5 THREATENED FAUNA SPECIES

No threatened fauna species were detected within the subject site. A search of the Bionet Atlas of NSW Wildlife on the 12/03/2020 (DPIE, 2020b) returned a list of four threatened fauna species (bird species) that have previously been recorded within 10km of the subject site:

- Brown Treecreeper (eastern subspecies)
- Glossy Ibis
- Magpie Goose
- Rainbow Bee-eater

A "likelihood of occurrence" assessment determined that the habitat is too degraded or unsuitable to support populations of any of these species (**Appendix 3**).

4.6 EPBC ACT PROTECTED MATTERS

4.6.1 Relevant Matters

An EPBC Protected Matters Search (searched 12/03/2020) returned a list of MNES predicted to occur within a 10km radius of the study area (**Appendix 4**). This list included five threatened ecological communities, 23 threatened species and 11 migratory species. Five Wetlands of International importance were identified; however, the closest was located 20-30 km upstream and the others were between 200-600 km away, therefore this wetland is not considered to be relevant to the subject site.

A 'likelihood of occurrence' assessment was conducted for all threatened species and migratory species returned by the EPBC Protected Matters Search (**Appendix 4**). A discussion of the findings of this assessment is presented below.

4.6.2 Threatened Species

The subject site contains no key habitat features for threatened species. No hollow-bearing trees or native vegetation with a complex structure occurs within the subject site; therefore, the habitat is considered too degraded to support EPBC listed threatened species.

4.6.3 Threatened Ecological Communities

One Threatened Ecological Community (TEC) was identified within the study area. The PCT described previously as *PCT80 Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion* is also commensurate with *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia*. This TEC is listed as 'endangered' under the EPBC Act.

Given that the proposed development will not directly impact this community, the *Significant Impact Guidelines 1.1 - Matters of National Environmental Significance* (DEWHA, 2013) have not been applied. However, impacts to the community have been addressed via an *assessment of significance*, pursuant to Section 7.3 of the BC Act in **Appendix 5.** The findings of this assessment are discussed in **Section 5**.

4.6.4 Migratory Species

The Fork-tailed Swift (*Apus pacificus)* and the White-throated Needletail (*Hirundapus caudacutus)* were considered to have a moderate likelihood of occurrence. These bird species may forage aerially over a very wide range of habitats. The proposed development will remove highly disturbed exotic vegetation which is unlikely to impact on the foraging range of these species.

5. DISCUSSION

5.1 IMPACT ASSESSMENT

5.1.1 Removal of Native Vegetation

The subject site is comprised of exotic grasslands; therefore, the proposed development will not require the removal of native vegetation.

5.1.2 Impacts to Threatened Biota

In accordance with Section 7.3 of the BC Act, an *assessment of significance* have been prepared for all threatened species and ecological communities for which habitat was identified within the study area (**Appendix 5**). The assessments determined that the proposed development is unlikely to have a significant impact on any threatened biota.

5.1.3 Impacts to Threatened Ecological Communities

The proposed development will not remove any areas of Inland Grey Box Woodland EEC and is unlikely to affect the extent of the EEC such that its local occurrence would be placed at risk of extinction. Potential indirect impacts of the project include the following:

- The excavation of soil within the subject site has the potential to facilitate erosion and sediment movement in the locality. Runoff from the subject site has the potential to introduce toxicants or soil pathogens that could adversely affect Inland Grey Box Woodland EEC adjacent to the subject site.
- Machinery and vehicles may create dust that could adversely affect the vegetation within the Inland Grey Box Woodland EEC.
- The introduction of weeds (associated with machinery and equipment) has the potential to cause habitat degradation within the Inland Grey Box Woodland EEC.
- The introduction of chemicals has the potential to cause pollution that could adversely affect the Inland Grey Box Woodland EEC.

Recommendations are presented in **Section 5.2** to reduce the potential for adverse environmental impacts during the construction phase of the project.

5.1.4 Impacts to Threatened Flora

The proposed development will require ground disturbance that would result in the removal of some groundcover vegetation; however, the majority of the grasslands within the study area will be retained in their current state. An *assessment of significance* determined that: given that no areas of the subject site were found to contain threatened flora or suitable habitat for such species, potential impacts are negligible.

5.1.5 Impacts to Threatened Fauna

No important habitat features for threatened fauna species will be removed by the proposed development. The following potential indirect impacts of the proposed development to threatened fauna have been identified:

- Noise and lighting during the construction phase may cause minor disturbance to resident threatened fauna within the locality and disrupt their natural behaviour.
- Ground disturbance by machinery during the construction phase may create dust and facilitate the movement of sediment. Sedimentation could adversely affect the water quality within the adjacent irrigation channel and downstream aquatic habitat.

Protection measures are presented in **Section 5.2** to reduce the potential for these impacts.

5.1.6 Impacts to Aquatic Habitat

Due to the position of the subject site within waterfront land there is potential for silt and chemicals, such as fuel, entering the irrigation channel during construction. This channel flows via a network of channels into Lake Mulwala (i.e. connected to the Murray River) approximately 50km to the south-east of the subject site. Without controls in place runoff during construction has the potential to adversely impact on the water quality and biota within the adjacent irrigation channel and downstream aquatic habitat.

Protection measures are presented in **Section 5.2** to reduce the potential for these impacts. Council will refer this Development Application to the NSW Natural Resources Access Regulator for further consideration.

5.1.7 Cumulative Impacts

Cumulative impacts arise from the interaction of individual elements associated with the proposed development and the additive effects of other external projects. No other known projects within the locality are known to have relevance to this project that could exacerbate cumulative impacts.

5.2 IMPACT AMELIORATION

5.2.1 Avoidance Measures

Impacts on biodiversity values have been addressed through an iterative design process to avoid areas of higher biodiversity value within the subject site. The design of the solar panel array will ensure that all native vegetation within the study area will be retained following the development. Additionally, no key habitat features for threatened species will be directly impacted.

5.2.2 Mitigation Measures

Weed Control

Priority weed species were identified within the study area. Measures to prevent the spread of these weeds should include the following weed hygiene procedures:

- All vehicles, equipment, footwear and clothing should be clean and free of weed propagules prior to entering the subject site.
- Any weeds that are removed during the proposed works should be disposed of appropriately.

Erosion Control

Earth works will mainly be limited to the construction of the access road. Mitigation measures to reduce soil erosion and pollutant run-off during construction activities should include:

- The installation of a stormwater management system including an onsite detention basin supported with a low flow outlet.

- Regular inspection of erosion and sediment control measures, particularly following rainfall events to ensure their ongoing functionality.
- The immediate removal offsite of any excavated materials.
- Avoiding stockpiling of materials adjacent to native vegetation, but instead use areas that are already cleared/ disturbed.
- Undertake maintenance of silt fences and other mitigation measures to isolate runoff.

Dust Control

Specific measures to minimise the generation of dust and associated impacts on adjacent natural environments should include:

- Setting maximum speed limits for all traffic within the subject site to limit dust generation.
- Use of a water tanker or similar to spray unpaved access tracks during the construction phase where required.
- Application of dust suppressants or covers on soil stockpiles where required.

Chemical Spill Control

Specific measures to minimise the potential for chemical spills and associated impacts on adjacent natural environments should include the following:

- All chemicals must be kept in clearly marked bunded areas.
- Regularly inspect vehicles and mechanical plant for leakage of fuel or oil.
- No re-fuelling of vehicles, washing of vehicles or maintenance of vehicles and plant to be undertaken within 20 m of natural drainage lines.

Noise and lighting Control

During the construction phase an increase of traffic to the site and the use of power tools and earth moving equipment will result in a temporary increase in noise. The noise associated with the solar farm post construction will be required to comply with the NSW *Noise Policy for Industry* (EPA, 2017).

Motion activated security lighting may also be installed. Due to the lack of native vegetation within the subject site it is unlikely that an increase in noise and lighting will have a significant impact on fauna.

Fauna Movement and Dispersal

The installation of fencing may create a novel barrier for the movement of terrestrial fauna species in the locality; however, given the lack of key habitat features and resources within the study area, these impacts are likely to be negligible.

5.2.3 Offset Provisions

As described previously in **Section 2.2.2**, entry into the Biodiversity Offsets Scheme (BOS) is not required for the proposed development. As such, a Biodiversity Development Assessment Report (BDAR) is not required to support the DA.

5.3 CONCLUSION

Impacts of the proposed development will be limited to areas of the subject site dominated by exotic grassland (agricultural land). In accordance with the BC Regulation, entry into the NSW BOS is not triggered by the proposed development due to the following:

- No native vegetation will be cleared; therefore, the BOS clearing threshold for the site will not be exceeded.
- An assessment of impacts, including *Assessments of Significance* prepared pursuant to Section 7.3 of the BC Act, determined that the proposed development is unlikely to cause a significant impact to any threatened species, populations or ecological communities listed under the BC Act.

No EPBC listed species, ecological communities, migratory species or important habitat for such biota was identified within the subject site. The assessment determined that impacts to MNES are therefore unlikely. An EPBC referral to the Commonwealth Minister for the Environment is not recommended.

Avoidance and mitigation measures have been presented to reduce potential impacts to biodiversity values within the subject site and the environment.

REFERENCES

Beadle, N. C. W. (1981). *The vegetation of Australia*: Cambridge University Press.

Berrigan DCP. (2014). *Berrigan Development Control Plan*. Retrieved from https://www.berriganshire.nsw.gov.au/files/Development%20Control%20Plan%202014.pdf

Berrigan LEP. (2013). *Berrigan Local Environmental Plan*. Retrieved from http://www.berriganshire.nsw.gov.au/index.php/planning-environment/zoning-policies/lep

Botanic Gardens Trust. (2020). New South Wales Flora online - PlantNET. Retrieved from http://plantnet.rbgsyd.nsw.gov.au/.

DAWE. (2020a). *EPBC Protected Matters Search Tool*. Commonwealth of Australia

DAWE. (2020b). *Species Profile and Threats Database (SPRAT)*. Commonwealth of Australia

DAWE. (2020c). *Weeds of National Significance*. Retrieved from http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html

DEWHA. (2013). *Significant Impact Guidelines 1.1 - Matters of National Environmental Significance*. Canberra: Commonwealth of Australia

DPI. (2020). *NSW WeedWise*. Retrieved from http://weeds.dpi.nsw.gov.au/

DPIE. (2020a). *Austrostipa wakoolica (A Spear Grass) - Species Profile*. Retrieved from https://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10082

DPIE. (2020b). *Bionet Atlas of NSW Wildlife*. Retrieved from https://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx

DPIE. (2020c). *High Threat Exotic Species List*. Retrieved from https://www.lmbc.nsw.gov.au/bamcalc

DPIE. (2020d). *Threatened Species Profile Database*. Retrieved from https://www.environment.nsw.gov.au/threatenedSpeciesApp/

EPA. (2017). *Noise Policy for Industry* Retrieved from https://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-(2017)

Harden, G. (1993). *Flora of New South Wales Volumes 1–4*.

Moore, C. (1953). The vegetation of the south-eastern Riverina, New South Wales. II. The disclimax communities. *Australian journal of botany, 1*(3), 548-567.

NRAR. (2018). *Guidelines for controlled activities on waterfront land. Riparian corridors.* Sydney

NSW Scientific Committee. (2011). *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions - endangered ecological community listing*. Retrieved from https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2004-2007/inland-grey-box-woodland-endangered-ecological-community-listing

OEH. (2016). *NSW Guide to Surveying Threatened Plants*. 59 Goulbourn Street Sydney NSW 2000

OEH. (2017). *Biodiversity Assessment Method*. NSW Office of Environment and Heritage Retrieved from https://www.environment.nsw.gov.au/biodiversity/assessmentmethod.htm

SEED. (2020). *SEED Map Viewer - Share and Enabling Environmental Data*. Retrieved from https://geo.seed.nsw.gov.au/Public_Viewer/index.html?viewer=Public_Viewer&locale=en-AU

APPENDIX 1: SITE PHOTOGRAPHS

Plate 1: **Exotic Grassland (Agricultural Land) within the subject site.**

Plate 2: **Inland Grey Box Woodland EEC (located outside the subject site).**

Plate 3: Planted *Eucalyptus cladocalyx* (Sugar Gum) within the study area.

Plate 4: Irrigation Channel Vegetation within the study area.

APPENDIX 2: FLORA SPECIES LIST

Table 1: Flora species recorded during the assessment

Growth Form (see notes)	Plant Species	Plot 1		Plot 2		Plot 3	
		Cov.	Ab.	Cov.	Ab.	Cov.	Ab.
Forb	*Acaena novae-zelandiae*	0.5	50	0.1	20	0.5	50
Tree	*Allocasuarina luehmannii,*						
Exotic	*Alternanthera pungens*						
Exotic	*Arctotheca calendula*					0.1	10
Shrub	*Atriplex sp.*						
Other	*Boerhavia dominii*						
Grass	*Chloris truncata*	0.1	5			0.1	5
Exotic	*Chloris virgata*	40	2000	0.5	20	3	500
Exotic	*Chondrilla juncea*			0.1	1		
Exotic	*Citrullus amarus*			0.1	1		
Exotic	*Cynodon incompletus*			5	100	5	100
Forb	*Dysphania pumilio*	3	500	1	100	1	50
Grass	*Echinochloa colona*	0.1	5	0.1	1		
Exotic	*Eragrostis cilianensis*			0.2	10		
Forb	*Erodium cicutarium*						
Exotic	*Eucalyptus cladocalyx*						
Tree	*Eucalyptus melliodora*						
Tree	*Eucalyptus microcarpa*						
Exotic	*Echium plantagineum*						
Forb	*Euphorbia drummondii*	0.1	5				
Forb	*Geranium solanderi*			0.1	5		
Exotic	*Heliotropium europaeum*	5	500	20	1000	30	1500
Exotic	*Hordeum sp*	2	500	5	1000	2	500
Exotic	*Lepidium africanum*	0.1	2				
Exotic	*Malva parviflora*					1	50
Forb	*Oxalis perennans*						
Exotic	*Pinus sp.*						
Exotic	*Polygonum aviculare*	0.5	50	0.1	5	0.1	5
Forb	*Potamogeton tricarinatus*						
Priority Weed and HTE	*Ranunculus repens*						
Grass	*Rytidosperma sp.*			0.1	1	0.1	2

Growth Form (see notes)	Plant Species	Plot 1		Plot 2		Plot 3	
		Cov.	Ab.	Cov.	Ab.	Cov.	Ab.
Priority Weed and HTE	*Solanum elaeagnifolium*					0.1	2
Exotic	*Tribulus terrestris*					4	50
Forb	*Vittadinia gracilis*						
Exotic	*Xanthium spinosum*	0.2	20			0.1	2

Notes:

- *Priority Weeds: Exotic Plant Species listed within the Berrigan LGA that are prioritised for management (DPI).*
- *High Threat exotics (HTE) are classified in accordance with the DPIE HTE List.*
- *Growth forms were classified in accordance with the DPIE growth forms data.*

APPENDIX 3: THREATENED SPECIES 'LIKELIHOOD OF OCCURRENCE'

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
Flora							
1.	*Amphibromus fluitans* River Swamp Wallaby-grass	V	V	-	PMST	*Amphibromus fluitans* grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile and which have some bare ground, conditions which are produced by seasonally-fluctuating water levels. Habitats in south-western NSW include swamp margins in mud, dam and tank beds in hard clay and in semi-dry mud of lagoons with *Potamogeton* and *Chamaeraphis* species. **No suitable habitat present within the subject site. Species not detected during field survey.**	Nil
2.	*Austrostipa wakoolica* -	E	E	4	PMST, Bionet Atlas	Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of a lignum swamp with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine forest on low sandy range; and a low, rocky rise. **No suitable habitat present within the subject site. Species not detected during field survey.**	Low
3.	*Brachyscome muelleroides* Mueller Daisy	V	V	-	PMST	Grows in damp areas on the margins of claypans in moist grassland with *Pycnosorus globosus, Agrostis avenacea* and *Austrodanthonia duttoniana.*	Low

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
						Also recorded from the margins of lagoons in mud or water, and in association with *Calotis anthemoides.* **No suitable habitat present within the subject site. Species not detected during field survey.**	
4.	*Sclerolaena napiformis* Turnip Copperburr	E	E	-	PMST	Confined to remnant grassland habitats on clay-loam soils. Grows on level plains in tussock grassland of *Austrostipa nodosa* and *Chloris truncata*, in grey cracking clay to red-brown loamy clay. Sites are roadside travelling stock routes and reserves subject to sheep grazing. **The subject site is exotic grassland which has been systematically cropped and grazed by cattle, this is not considered to be suitable habitat for this species. Species not detected during field survey.**	Low
5.	*Swainsona murrayana* Slender Darling-pea	V	V	-	PMST	The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. Grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with *Maireana* species. Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated. **The subject site is exotic grassland which has been systematically cropped and grazed by cattle, this is not considered to be suitable habitat for this species. Species not detected during field survey.**	Low
Listed Threatened Ecological Communities							
6.	*Buloke (Allocasuarina luehmannii) Woodlands of the Riverina and Murray-*	EEC	E	-	PMST	*Allocasuarina luehmannii* Woodland typically occupies patches of red-brown loamy sands with alkaline sub-soils on the alluvial plain of the Murray River and its tributaries in south-western NSW.	Nil

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
	Darling Depression Bioregions					This community is dominated by Buloke *(Allocasuarina luehmannii)*, sometimes with co-occurring tree species. The community typically comprises an open tree canopy with a sparse and highly variable ground layer dominated by grasses and herbs, sometimes with scattered shrubs and/or small trees. The structure and species composition of a site will be influenced by the size of the site, recent rainfall or drought conditions and by its disturbance (including grazing, land clearing and fire) history. **The subject site is an exotic grassland which lacks the structure and assemblage of species to link it to this EEC.**	
7.	*Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia*	E	E	-	PMST	most characteristic tree species, *Eucalyptus microcarpa* (Inland Grey Box), is often found in association with *E. populnea* subsp. bimbil (Bimble or Poplar Box), *Callitris glaucophylla* (White Cypress Pine), *Brachychiton populneus* (Kurrajong), *Allocasuarina luehmannii* (Bulloak) or *E. melliodora* (Yellow Box), and sometimes with *E. albens* (White Box). Shrubs are typically sparse or absent A variable ground layer of grass and herbaceous species is present at most sites. Grey Box Woodland occurs on fertile soils of the western slopes and plains of NSW. The community generally occurs where average rainfall is 375- 800 mm pa and the mean maximum annual temperature is 22- 26°C. There is a correlation between the distribution of Eucalyptus microcarpa communities and soils of Tertiary and Quaternary alluvial origin, largely corresponding with the Red Brown Earths. **Identified on the western boundary of the study area . This area is outside the subject site; hence no direct impact will occur.**	**Present in study area** **Not present within the subject site**

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
8.	*Natural Grasslands of the Murray Valley Plains*	-	CE	-	PMST	The ecological community occurs predominately across the southern parts of the Riverina bioregion and extends into parts of the Murray Darling Depression and NSW South-Western Slopes bioregions. The ecological community ranges from open to closed tussock grassland dominated by one or more of *Rytidosperma spp., Austrostipa spp.* and *Enteropogon ramosus.* In areas where grasses are sparse it may be a herbland/forbland. At other sites, the grassland may grade into an open grassy shrubland where low chenopod shrubs become co-dominant with the grass component **During the field survey, no vegetation within the study area was found to be dominated by the species listed above. The grassland present is exotic.**	Nil
9.	*Weeping Myall Woodlands*	EEC	E	-	PMST	Typically, the ecological community occurs on red-brown earths and heavy textured grey and brown alluvial soils. The structure of the community varies from low woodland and low open woodland to low sparse woodland or open shrubland, depending on site quality and disturbance history. The tree layer grows up to a height of about 10 metres and invariably includes Acacia pendula (Weeping Myall or Boree) as one of the dominant species or the only tree species present. The understorey includes an open layer of chenopod shrubs and other woody plant species and an open to continuous groundcover of grasses and herbs. **During the field survey, no vegetation within the study area was found to be dominated by the species listed above. The grassland present is exotic.**	Nil
10.	*White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*	E	CE	-	PMST	Characterised by the presence or prior occurrence of White Box (*Eucalyptus albens*), Yellow Box (*Eucalyptus melliodora)* and/or Blakely's Red Gum *(Eucalyptus blakelyi)*. The trees may occur as pure stands, mixtures of the three species or in mixtures with other trees, including wattles.	Nil

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
						Shrubs are generally sparse or absent, though they may be locally common. The understorey in intact sites is characterised by native grasses and a high diversity of herbs; the most commonly encountered include Kangaroo Grass *(Themeda australis),* Poa Tussock (*Poa sieberiana*), wallaby grasses (*Austrodanthonia spp.),* spear-grasses *(Austrostipa spp.),* Common Everlasting *(Chrysocephalum apiculatum),* Scrambled Eggs *(Goodenia pinnatifida),* Small St John's Wort *(Hypericum gramineum),* Narrow-leafed New Holland Daisy *(Vittadinia muelleri)* and blue-bells (*Wahlenbergia spp.).* Remnants generally occur on fertile lower parts of the landscape where resources such as water and nutrients are abundant. **During the field survey, no vegetation within the study area was found to be dominated by the species listed above. The grassland present is exotic.**	
Amphibians							
1.	*Crinia sloanei* Sloane's Froglet	V	E	-	PMST	Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It has not been recorded recently in the northern part of its range and has only been recorded infrequently in the southern part of its range in NSW. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats. **No suitable habitat present within the subject site.**	Low
2.	*Litoria raniformis* Growling Grass Frog	E	V	-	PMST	Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha	Nil

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
						swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat. Outside the breeding season animals disperse away from the water and take shelter beneath ground debris such as fallen timber and bark, rocks, grass clumps and in deep soil cracks. **No suitable habitat present within the subject site.**	
Birds							
1.	*Anseranas semipalmata* Magpie Goose	V	-	1	Bionet Atlas	Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. Often seen in trios or flocks on shallow wetlands, dry ephemeral swamps, wet grasslands and floodplains; roosts in tall vegetation. Often seen walking and grazing on land; feeds on grasses, bulbs and rhizomes. **No suitable habitat present within the subject site.**	Low
2.	*Anthochaera phrygia* Regent Honeyeater	CE	CE	-	PMST	Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. **No suitable habitat present within the subject site.**	Low
3.	*Botaurus poiciloptilus* Australasian Bittern	E	E	-	PMST	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha spp*.) and spikerushes (*Eleocharis spp*.). **No suitable habitat present within the subject site.**	Nil
4.	*Calidris ferruginea* Curlew Sandpiper	E	CE	-	PMST	It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of	Nil

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
						sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. **No suitable habitat present within the subject site.**	
5.	*Climacteris picumnus victoriae* Brown Treecreeper (eastern subspecies)	V	-	2	Bionet Atlas	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum *(Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. **No suitable habitat present within the subject site.**	Low
6.	*Grantiella picta* Painted Honeyeater	V	V	-	PMST	Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. This species is a specialist feeder on the fruits of mistletoes growing on woodland Eucalypts and Acacias. Prefers mistletoes of the genus *Amyema.* **No suitable habitat present within the subject site.**	Low
7.	*Lathamus discolor* Swift Parrot	E	CE	-	PMST	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. In the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations.	Low

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
						Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Forest Red Gum *E. tereticornis*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens.* **No suitable habitat present within the subject site.**	
8.	*Numenius madagascariensis* Eastern Curlew	-	CE	-	PMST	Within Australia, the Eastern Curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. Eastern Curlews are rarely recorded inland. It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. **No suitable habitat present within the subject site.**	Nil
9.	*Pedionomus torquatus* Plains-wanderer	E	CE	-	PMST	Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. Habitat structure appears to play a more important role than plant species composition. Preferred habitat of the Plains-wanderer typically comprises 50% bare ground, 10% fallen litter, and 40% herbs, forbs and grasses. **No suitable habitat present within the subject site.**	Low
10.	*Pezoporus occidentalis* Night Parrot	PEx	E	-	PMST	The Night Parrot is known to occur within Spinifex grasslands in stony or sandy areas and samphire and chenopod associations on floodplains, salt lakes and clay pans. Suitable habitat is characterized by the presence of large and dense clumps of Spinifex, and it may prefer mature spinifex that is long and unburnt. **Extinct in area. No suitable habitat is present within the subject site.**	Nil
11.	*Polytelis swainsonii*	V	V	-	PMST	Inhabits Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	Low

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
	Superb Parrot					In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. **No suitable habitat present within the subject site.**	
12.	*Rostratula australis* Australian Painted Snipe	E	E	-	PMST	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. **No suitable habitat present within the subject site.**	Nil
Mammals							
1.	*Nyctophilus corbeni* Corben's Long-eared Bat	V	V	-	PMST	Inhabits a variety of vegetation types, including Mallee, Bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. **No suitable habitat is present within the subject site.**	Low
2.	*Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)* Koala	V	V	-	PMST	In NSW, Koalas occur along the coast, extending west to the Darling Riverine Plains and Mulga Lands bioregions in the north of the state; to the Cobar Peneplain bioregion in the centre of the state; and to the Riverina and eastern most parts of the Murray-Darling Depression bioregions in the south. The koala is found in a variety of forest types with suitable feed tree species. **No suitable habitat is present within the subject site.**	Low

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
3.	*Pteropus poliocephalus* Grey-headed Flying-fox	V	V	-	PMST	Occurs across a wide range of habitat types along the eastern seaboard of Australia, depending on food availability. Fruit from myrtaceous trees and rainforest trees form the major components of their diet. **No suitable habitat is present within the subject site.**	Low
Migratory Species							
1.	*Apus pacificus* Fork-tailed Swift	-	M	-	PMST	Forages aerially over a very wide range of habitats includes both vegetated and non- vegetated areas. **Considering the size of the subject site and the disturbance from cropping it is likely that this area would only provide marginal foraging habitat.**	Moderate
2.	*Hirundapus caudacutus* White-throated Needletail	-	M	-	PMST	Forages in high open spaces over varied habitat types. **Considering the size of the subject site and the disturbance from cropping it is likely that this area would only provide marginal foraging habitat.**	Moderate
3.	*Motacilla flava* Yellow Wagtail	-	M	-	PMST	Typically inhabits inundated fields, saltmarsh and wetlands and occasionally coastal areas. **No suitable habitat within subject site.**	Nil
4.	*Myiagra cyanoleuca* Satin Flycatcher	-	M	-	PMST	Found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests. **No suitable habitat within subject site.**	Nil
5.	*Plegadis falcinellus* Glossy Ibis	-	M	1	Bionet Atlas	The Glossy Ibis' preferred habitat for foraging and breeding are fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation. The species is occasionally found in coastal locations such as estuaries, deltas, saltmarshes and coastal lagoons. **No suitable habitat within subject site.**	Nil

No.	Species	Legal Status*		No. of Records	Source#	Habitat Preferences	Likelihood of occurrence
		BC Act	EPBC Act				
Marine Species							
6.	*Merops ornatus* Rainbow Bee-eater	-	M	1	Bionet Atlas	The Rainbow Bee-eater occurs mainly in open forests and woodlands, shrublands, and in various cleared or semi-cleared habitats, including farmland and areas of human habitation. It usually occurs in open, cleared or lightly-timbered areas that are often, but not always, located in close proximity to permanent water. **Potential marginal habitat within subject site.**	Low

APPENDIX 4: EPBC ACT PROTECTED MATTERS SEARCH REPORT

Australian Government
Department of the Environment and Energy

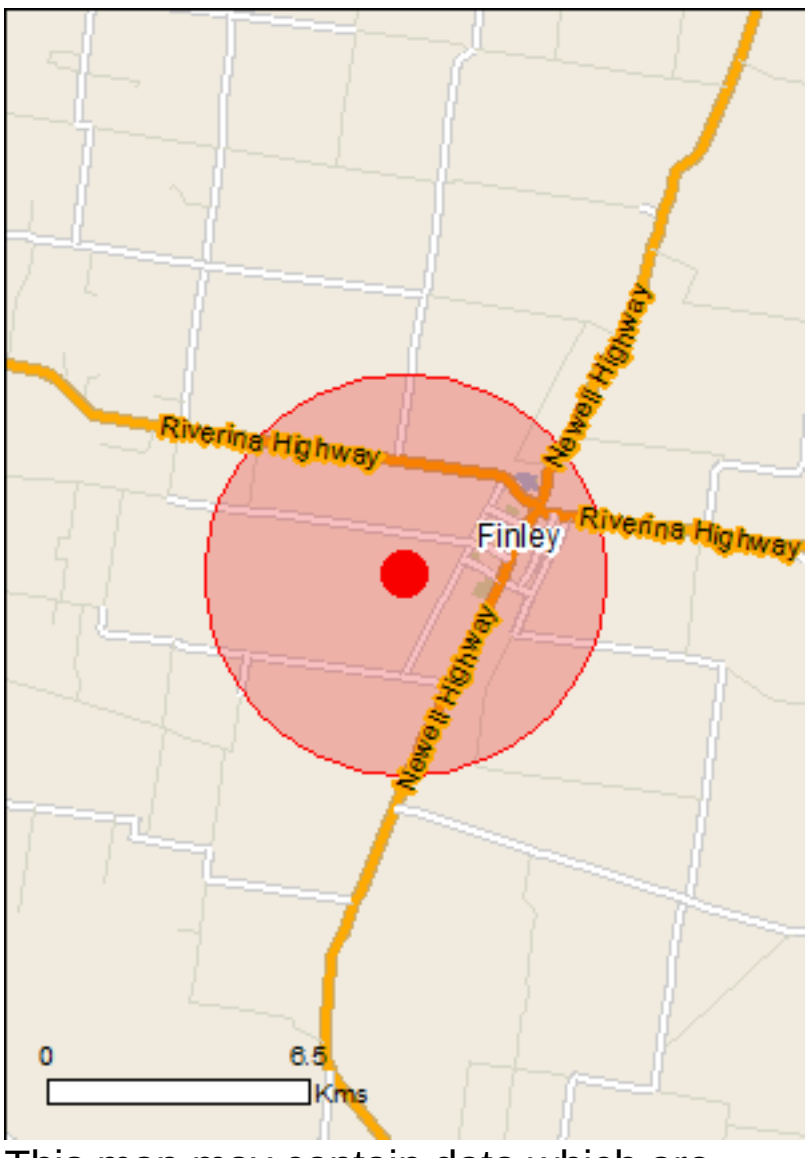
EPBC Act Protected Matters Report

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: 12/03/20 13:14:09



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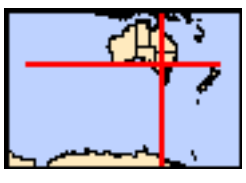

Summary

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:	5
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	23
Listed Migratory Species:	11

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:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	18
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:	None
Regional Forest Agreements:	None
Invasive Species:	31
Nationally Important Wetlands:	None
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
Hattah-kulkyne lakes	200 - 300km upstream
Nsw central murray state forests	20 - 30km upstream
Riverland	400 - 500km upstream
The coorong, and lakes alexandrina and albert wetland	500 - 600km 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 may 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
Weeping Myall Woodlands	Endangered	Community may 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	Species or species habitat may 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 likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat may 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

Name	Status	Type of Presence
		area
[Pedionomus torquatus](#) Plains-wanderer [906]	Critically Endangered	Species or species habitat likely to occur within area
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Fish		
[Craterocephalus fluviatilis](#) Murray Hardyhead [56791]	Endangered	Species or species habitat may occur within area
[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
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Frogs		
[Crinia sloanei](#) Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area
[Litoria raniformis](#) Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to 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
[Austrostipa wakoolica](#) [66623]	Endangered	Species or species habitat known to occur within area
[Brachyscome muelleroides](#) Mueller Daisy [15572]	Vulnerable	Species or species habitat may occur within area
[Sclerolaena napiformis](#) Turnip Copperburr [11742]	Endangered	Species or species habitat likely to occur within area
[Swainsona murrayana](#) Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	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]	Vulnerable	Species or species habitat may 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 may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		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
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

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

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

Name
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Commonwealth Trading Bank of Australia

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 may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species

Name	Threatened	Type of Presence
		habitat likely to occur within area
[Ardea alba](#) Great Egret, White Egret [59541]		Species or species habitat likely 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 likely to occur within area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat may 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
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		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
[Rostratula benghalensis (sensu lato)](#) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area

Extra Information

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 Resouces 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
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

Name	Status	Type of Presence
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
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
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to 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
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
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

Name	Status	Type of Presence within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		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
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

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

-35.65016 145.54902

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.

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APPENDIX 5: ASSESSMENT OF SIGNIFICANCE (PURSUANT TO SECTION 7.3 OF THE BC ACT)

Factors of Assessment - Biodiversity Conservation Act 2016

The five factors considered in an *assessment of significance,* pursuant to Section 7.3 of BC Act, are shown in **Table 2**. The *assessments of significance* for all threatened species, populations and ecological communities considered likely to occur within the study area are provided in the proceeding sub-sections.

Table 2: Factors addressed in the assessment of significance

Factor	Species	Population	Ecological Community
In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	X		
In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction			X
In relation to the habitat of a threatened species, population or ecological community: the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality	X		X
Whether the proposed development or activity is likely to have an adverse effect any declared area of outstanding biodiversity value (either directly or indirectly).	NA	NA	NA
Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of, a key threatening process.	X	X	X

Threatened Ecological Communities

Table 3: Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia

Factors	Assessment of Significance
(b) (i) Extent	The subject site contains no areas that represent this EEC. A degraded representation of the EEC occurs on the western boundary of the study area; however, this vegetation will not require removal as part of the proposed development. The proposed development will not remove any areas of the EEC and is unlikely to affect the extent of the EEC such that its local occurrence would be placed at risk of extinction.
(b) (ii) Composition	The EEC to be retained on the western boundary is unlikely to be directly impacted by the proposed development and will be retained in its current state. Therefore, its composition is unlikely to be altered as a result of the proposed development. It is unlikely that the EEC will be placed at risk of local extinction due to composition alteration.
(c) (i) Habitat Removal	The proposal will not remove any areas of the EEC.
(c) (ii) Habitat Fragmentation	The areas of vegetation to be retained on the western boundary of the study area are already fragmented due to the impacts of historical vegetation clearing for agricultural development. The proposed development will not increase habitat fragmentation as no vegetation from the EEC will be directly affected.
(c) (iii) Habitat importance	The EEC vegetation on the western boundary of the study area is considered to have marginal habitat importance due to its fragmentation from other areas in the locality.
(d) Effect on biodiversity value	The proposed development will not impact any declared Areas of Outstanding Biodiversity Value (AOBV) as listed under the BC Act.
(e) KTPs	The following KTPs are listed in order of their relevance to the proposed development: • Invasion of native plant communities by exotic perennial grasses • Alteration to the natural flow regimes of rivers, streams, floodplains & wetlands.
Conclusion	The proposed development is unlikely to have a significant impact on the EEC.

APPENDIX 6: LICENSES AND PERMITS

Kleinfelder employees involved in the current study are licensed or approved under the *National Parks and Wildlife Act 1974* (License Number: SL100730, Expiry: 31 March 2021) and the *Animal Research Act 1985* to harm/trap/release protected native fauna and to pick for identification purposes native flora and to undertake fauna surveys.