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Flora and Fauna Assessment Report

Oberon Sporting Complex, 31 O'Connell Road Oberon, NSW 2787

Report prepared by Narla Environmental Pty Ltd

for Oberon Council

November 2021



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Glossary

Acronym/ Term	Definition
BAM	Biodiversity Assessment Method
BC Act	New South Wales Biodiversity Conservation Act 2016
Biodiversity values	The composition, structure and function of ecosystems, including threatened species, populations and ecological communities, and their habitats
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
DA	Development Application
Development	The use of land, and the subdivision of land, and the carrying out of a work, and the demolition of a building or work, and the erection of a building, and any other act, matter or thing referred to in section 26 that is controlled by an environmental planning instrument but does not include any development of a class or description prescribed by the regulations for the purposes of this definition (Environmental Planning and Assessment Act 1979).
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment
EP&A Act	Environmental Planning & Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ha	Hectares
km	Kilometre
LEP	Oberon Local Environmental Plan 2012
LGA	Local Government Area
Locality	A 10km x 10km cell centred on the Subject Property
m	metres
Native Vegetation	Any of the following types of plants native to New South Wales: (a) trees (including any sapling or shrub), (b) understorey plants, (c) groundcover (being any type of herbaceous vegetation) and (d) plants occurring in a wetland.
ODCP	Oberon Development Control Plan 2001
OEH	Office of Environment and Heritage (now known as the DPIE)
OLEP	Oberon Local Environmental Plan 2013
SEPP	State Environmental Planning Policy
Subject Property	31 O'Connell Road Oberon 2787 (Lot 2/-/DP1073827 and Lot 5/-/DP2364)
Subject Site	The area of the proposed development including; 2 full sized rugby fields, 1 hockey field, 3 netball courts, Licensed Club including change rooms, amenities and tiered spectator seating, Walking/cycling perimeter pathway and fitness stations, Amenities and maintenance facilities, Car and bus parking facilities, Children's playground and Earthworks, storm water drainage, landscaping and lighting.
Threatened species, populations and	Species, populations and ecological communities specified in Schedules 1 and 2 of the BC Act 2016.

Acronym/ Term	Definition
ecological communities	
TPZ	Tree Protection Zone: A specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development

1. Introduction

1.1 Project Background

Narla Environmental Pty Ltd (Narla) was commissioned by Oberon Council (the Proponent) to undertake a Flora and Fauna Assessment (FFA) for the proposed Oberon Sporting Complex located at 31 O’Connell Road Oberon, NSW 2787 (Lot 2/-/DP1073827 and Lot 5/-/DP2364; the ‘Subject Property’; **Figure 1**). The proposed development is to include (together referred to as the ‘Subject Site’, **Figure 1, Appendix C**):

- 2 full sized rugby fields;
- 1 hockey field;
- 3 netball courts;
- Licensed Club including change rooms, amenities and tiered spectator seating;
- Walking/cycling perimeter pathway and fitness stations;
- Amenities and maintenance facilities;
- Car and bus parking facilities;
- Children’s playground; and
- Earthworks, storm water drainage, landscaping and lighting.

Narla have produced this report in order to assess any potential impacts associated with the proposed activity on terrestrial ecology (biodiversity), particularly threatened species, populations and ecological communities listed under the Biodiversity Conservation Act 2016 (BC Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) . The report will also recommend appropriate measures to mitigate any potential impacts in line with all relevant State Environmental Planning Policies (SEPP) and local government plans, namely the Oberon Local Environmental Plan 2013 (OLEP) and Oberon Development Control Plan 2001 (ODCP).

1.2 Site Description and Location

The Subject Property is located with the town of Oberon on the interface of residential and rural settings covering an area of approximately 12.93ha within the Oberon Local Government Area (LGA). The Subject Property is dominated by exotic grassland with a number of farm dams and occurrences scattered exotic shrub species.

1.2.1 Topography, Geology and Soil

The Subject Property is relatively flat in topography ranging from approximately 1019m ASL in the west to 1009m ASL in the east (Google Earth 2021). The Subject Property is situated on two soil landscapes (Kovac et. al 2010):

- Oberon
 - This landscape covers an extensive area of undulating to rolling low hills in the Oberon–Shooters Hill–Black Springs area. Red Earths dominate on mid to upper slopes. Yellow Podzolic Soils and Yellow Earths appear on mid to lower slopes. Yellow Soloths occur in drainage lines. Krasnozems are found on some crests.
- Porters Retreat
 - This soil landscape covers an area south of Oberon, including Mount David and Truscotts Flat. The dominant soils are Krasnozems on mid to upper slopes, with Chocolate Soils midslope. Red Podzolic Soils and Yellow Solodic Soils occur on lower slopes.

1.2.2 Hydrology

No Hydrolines are mapped as occurring within the Subject Property. One (1) mapped and four (4) unmapped Hydroareas (farm dams) are located within the Subject Property (**Figure 1**).

1.3 Scope of Assessment

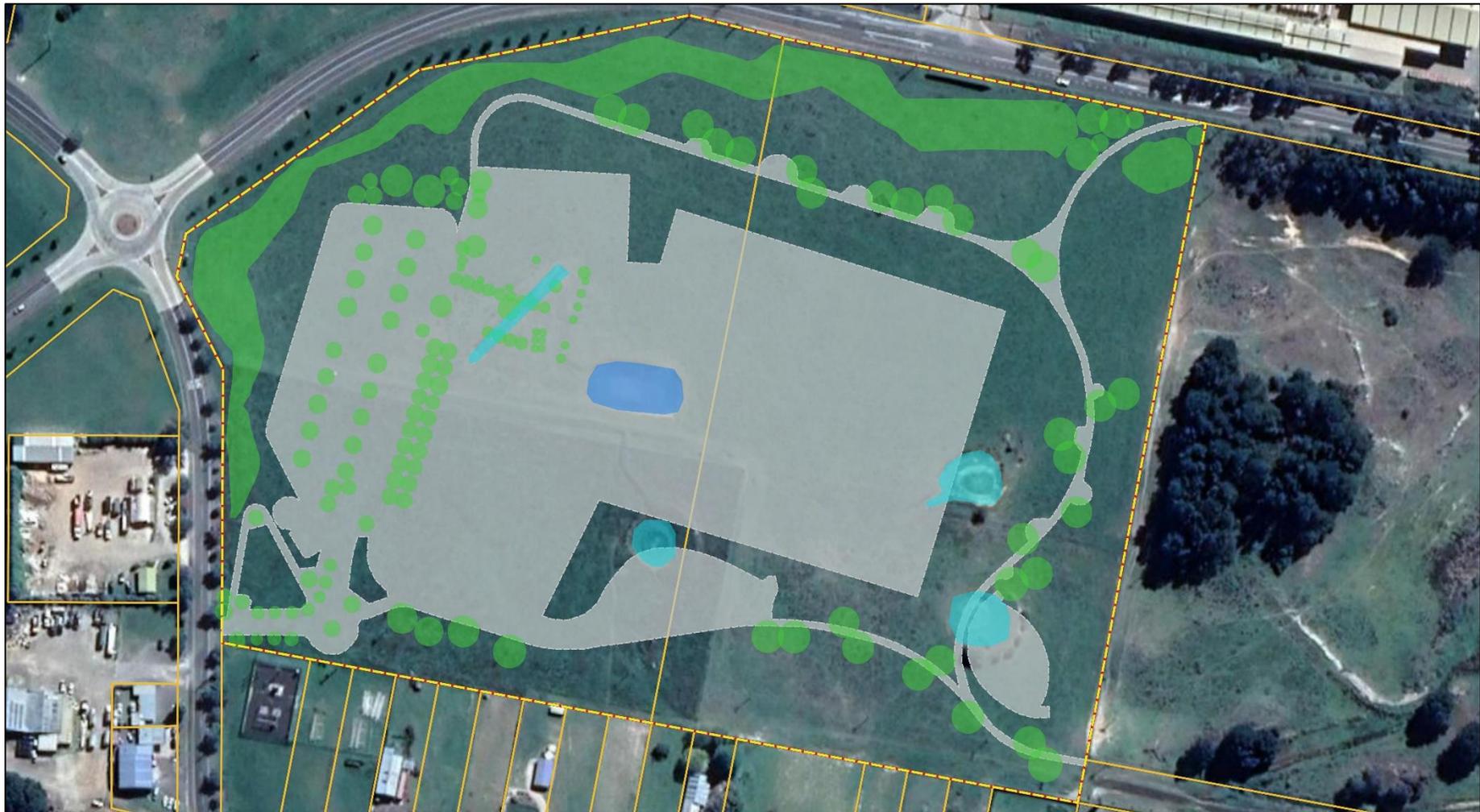
The objectives of this FFA were to:

- Establish the likelihood of occurrence of migratory species, threatened species, endangered populations and threatened ecological communities as listed under the New South Wales BC Act and/or the Commonwealth EPBC Act;
- Assess any potential impacts to species and/or communities listed under the BC Act and EPBC Act;
- Identify and map the distribution of vegetation communities in the Subject Property;
- Record the presence and extent of any known or potential fauna habitat features such as nests, drays, caves, crevices, culverts, pools, soaks, flowering trees, fruiting trees, hollow-bearing trees and provide recommendations for on-going management of these habitat features and any fauna present;
- Record the presence and extent of any priority weeds or weed infestations and provide recommendations for on-going management; and
- Recommend any controls or additional actions to be taken to protect or improve environmental outcomes of the proposed activity.

1.4 Study Limitations

This study was not intended to provide a complete inventory of all flora and fauna species with potential to occur on the Subject Site. The timing of the survey may not have coincided with emergence times of some species of flora and fauna, such as seasonally flowering herbs, seasonal migratory fauna or nocturnal fauna.

To account for those species that could not be identified during the field survey, detailed habitat assessments were combined with desktop research and local ecological knowledge to establish an accurate prediction of the potential for such species to occur on or adjacent to the Subject Property.



Components of the Subject Property

- Subject Property
- - - Subject Site
- Lot
- Mapped Hydroarea
- Unmapped Hydroareas
- Development Footprint
- Revegetation Area

0 25 50 75 100 125 m



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Date: 13/10/2021
 Coordinate System: GDA94 MGA Zone 55
 Data Source: SixMap (2021) | Meraki Green (2019)
 Image Source: Google Satellite 2020



Figure 1. The components of the Subject Property including Lot Boundaries, Subject Site, Development Footprint and Revegetation Area

1.5 Relevant Legislation and Policy

The legislation and policy that are addressed in this report are listed in **Table 1**.

Table 1. Relevant legislation and policy addressed.

Legislation/ Policy	Relevant Ecological Feature on Site	Triggered	Action Required
Environmental Planning and Assessment Act 1979 (EP&A Act)	All threatened species, populations and ecological communities and their habitat that occur or are likely to occur within the Subject Site during all or part of their lifecycle.	Yes	This FFA and all subsequent recommendations relevant to the planning process.
New South Wales Biodiversity Conservation Act 2016 (BC Act)	The proposed development is not anticipated to significantly impact any BC Act threatened species. No BC Act listed threatened species or communities were identified within the Subject Site during the site assessment.	Yes	This FFA, particularly the species considered likely to occur, likelihood tables for threatened fauna and flora species occurring or potentially occurring within the Subject Site, as well as severity of potential impacts.
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Commonwealth)	The proposed development is not anticipated to significantly impact any EPBC Act threatened species. No EPBC Act listed threatened species were identified within the Subject Site during the site assessment. One (1) EPBC Act listed migratory species was identified within the Subject Site, however, minor impact is anticipated.	Yes	This FFA, particularly the likelihood tables for EPBC Act listed fauna and flora species occurring or potentially occurring within the Subject Site, as well as severity of potential impacts
Water Management Act 2000	The Subject Site does not impact any areas of mapped waterfront land	No	None
Biosecurity Act 2015	Two (2) priority weed for the Central Tablelands was identified within the Subject Site: <ul style="list-style-type: none"> ▪ <i>Rubus fruticosus aggregate</i> (Blackberry); and ▪ <i>Nassella trichotoma</i> (Serrated Tussock) 	Yes	Priority weeds must be managed in accordance with the Biosecurity Act.
State Environmental Planning Policy (Coastal Management) 2018	The Subject Site does not contain areas mapped as: <ul style="list-style-type: none"> ▪ the coastal wetlands and littoral rainforests area; ▪ the coastal vulnerability area; 	No	None

Legislation/ Policy	Relevant Ecological Feature on Site	Triggered	Action Required
	<ul style="list-style-type: none"> the coastal environment area; or the coastal use area 		
State Environmental Planning Policy No 19— Bushland in Urban Areas	The Subject Site does not border any areas which adjoins bushland zoned or reserved for public open space purposes.	No	None
State Environmental Planning Policy (Koala Habitat Protection) 2021	This policy applies to the to the Subject Site, however, the Subject Site does not include any trees listed as koala use tree species listed in Schedule 2 of the SEPP and is not core koala habitat.	Yes	None

1.6 Biodiversity Assessment Pathway

The requirements of the BC Act 2016 and Biodiversity Conservation Regulation 2017 are mandatory for all development applications assessed pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) submitted in the Oberon LGA.

The Biodiversity Values (BV) Map (DPIE 2021c) identifies land with high biodiversity values that are particularly sensitive to impacts from development and clearing. The map forms part of the Biodiversity Offsets Scheme Entry Threshold which is one of the triggers for determining whether the Biodiversity Offset Scheme (BOS) applies to a clearing or development proposal. The map has been prepared by the Department of Planning, Industry and Environment (DPIE) under Part 7 of the Biodiversity Conservation Act 2016 (BC Act). The Subject Site does not contain any areas mapped on the BV Map (DPIE 2021c).

The BC Act and its regulations stipulate clearing ‘area threshold’ values that also determine whether a development is required to be assessed in accordance with the BOS. Minimum entry thresholds for vegetation clearing depend on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan) or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).

No minimum lot size is prescribed by the OLEP, as such the actual lot size of the smallest lot associated with the DA is to be used, 6.4ha. Therefore, to avoid triggering the BOS, the Principal Contractor must avoid the clearing/management of native vegetation of 0.5 ha or more (**Table 2**).

Three (3) 20m x 20m floristic plots were established within the Subject Site (**Figure 3**) to determine the percentage of native vegetation cover, which was calculated to be 0.4%. This was then divided by the area of the Subject Site to determine the amount of native vegetation within the site. It was determined that the proposed development will result in the removal/management of 0.03 ha of native vegetation.

Therefore, as the proposed development is not located on areas mapped on the BV Map, and requires the removal of <0.5 ha of native vegetation, the BOS does not apply.

Table 2. Biodiversity Offset Scheme Entry Thresholds. Bold text indicates the threshold relevant to this assessment.

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.50 ha or more
40 ha to less than 1000 ha	1 ha or more
1000 ha or more	2 ha or more

1.7 Oberon Local Environmental Plan 2013 (OLEP)

The proposed development will be undertaken in a manner that meets the requirements of the Oberon Local Environmental Plan 2013 (OLEP).

1.7.1 Zoning

The Subject Property is zoned as RU6- Transition, the objectives of this zone are:

- To protect and maintain land that provides a transition between rural and other land uses of varying intensities or environmental sensitivities;
- To minimise conflict between land uses within this zone and land uses within adjoining zones; and
- To protect and maintain land that provides a transition between the Oberon Timber Complex and adjoining residential land.

The proposed development will appropriately provide a transition between the Oberon Timber Complex and adjoining residential land increasing the visual amenity of the Subject Property to adjoining residences.

1.7.2 Riparian Land and Watercourses

This clause applies to all land mapped as 'Watercourse' on the Riparian Lands and Watercourse Map and all land within 40m of said land. The Subject Site does not contain land mapped as 'Watercourse' on the Riparian Land and Watercourse Map or land within 40m of said land.

2. Methodology

2.1 Desktop Assessment and Literature Review

A thorough literature review of local information relevant to the Oberon LGA was undertaken. Searches using NSW Wildlife Atlas (BioNet; DPIE 2021d) and the Commonwealth Protected Matters Search Tool (DAWE 2021) were conducted to identify all current threatened flora and fauna, as well as migratory fauna records within a 10km x 10km cell centred on the Subject Site. This data was used to assist in establishing the presence or likelihood of any ecological values as occurring on or adjacent to the Subject Site, and helped inform our Ecologist on what to look for during the site assessment.

Soil landscape and geological mapping was examined to gain a deeper understanding of the geology of the Subject Site that assists in determining whether any threatened flora or ecological communities may occur (Kovac et al. 2010).

2.2 Ecological Site Assessment

2.2.1 General Survey

A site assessment was undertaken by Narla Ecologists Chris Moore and Angus McClelland on the 22nd of September 2021. During the site assessment, the following activities were undertaken:

- Identifying and recording the vegetation communities within the Subject Site, with focus on identifying any threatened ecological communities (TECs);
- Recording a detailed list of flora species encountered within the Subject Site, with a focus on threatened species, species diagnostic of threatened ecological communities and priority weeds;
- Recording opportunistic sightings of any fauna species seen or heard on or within the immediate surrounds of the Subject Site;
- Targeted surveys for threatened flora;
- Identifying and recording the locations of notable fauna habitat such as important nesting, roosting or foraging microhabitats;
- Targeting the habitat of any threatened and regionally significant fauna including:
 - Tree hollows (habitat for threatened large forest owls, parrots, and arboreal mammals);
 - Caves and crevices (habitat for threatened reptiles, small mammals and microbats);
 - Termite mounds (habitat for threatened reptiles);
 - Soaks (habitat for threatened frogs);
 - Wetlands (habitat for threatened fish, frogs and water birds);
 - Drainage lines (habitat for threatened fish and frogs);
 - Fruiting trees (food for threatened frugivorous birds and mammals);
 - Flowering trees (food for threatened nectarivorous mammals and birds);
 - Trees and shrubs supporting nest structures (habitat for threatened birds and arboreal mammals); and
 - Any other habitat features that may support fauna (particularly threatened) species.
- Assessing the connectivity and quality of the vegetation within the Subject Site and surrounding area.

2.2.2 Weather Conditions

Weather conditions recorded at the nearest weather station prior to and during the general flora and fauna survey period are provided in **Table 3** (BOM 2021). These data reveal some rainfall and mild temperatures leading up to the survey, which may have been conducive to the emergence and flowering of threatened species that potentially occur within the Subject Site.

Table 3. Weather conditions recorded at Bathurst Airport AWS (station 063291) preceding and during the survey periods (survey date in bold).

Survey date	Day	Minimum Temp. (°C)	Maximum Temp. (°C)	Rainfall (mm)
15-Sep-21	We	-1.5	15.7	0
16-Sep-21	Th	1	16.5	0
17-Sep-21	Fr	0	19.6	0
18-Sep-21	Sa	8	18.7	1.6
19-Sep-21	Su	0	16.4	5.6
20-Sep-21	Mo	0.3	18.5	0
21-Sep-21	Tu	1.7	9.5	0.8
22-Sep-21	We	-1.5	15.5	0.6

2.2.3 Mapping and Analysis of Vegetation Communities

Narla examined high-quality satellite imagery, geological mapping, soil landscape mapping and topographic mapping in addition to existing vegetation mapping in order to stratify the Subject Site and guide the site assessment survey efforts. The following documents were consulted during assessment to assist with the identification of vegetation communities present within the Subject Site:

- Kovac M., Murphy B.W. and Lawrie J.A (2010) Soil Landscapes of the Bathurst 1:250,000 Sheet map, edition 2, Department of Environment, Climate Change and Water NSW, Sydney.
- NSW Office of Environment and Heritage (OEH) (2018) State Vegetation Type Map: Central Tablelands Region Version 1.0.

2.3 Impact Assessment

Locally occurring threatened species (as per DPIE 2021d) were assessed for their potential to occur within the Subject Site (**Table 5; Table 7**). It was then determined whether a further impact assessment (test of significance; 5-part test) was required.

3. Native Vegetation

3.1 Vegetation Community

3.1.1 Historically Mapped Vegetation Communities

The Subject Site is mapped in the State Vegetation Type Map: Central Tablelands Region Version 1.0. (OEH 2018), which outlines the presence of one vegetation community, 'Non-Native' (**Figure 2**).

3.1.2 Field Validated Vegetation Communities

Field survey conducted by the Narla Ecologists identified the vegetation within the Subject Site as containing Exotic Dominated Vegetation (**Table 4**). Mapping of field validated vegetation communities within the Subject Site are presented in **Figure 3**.



Historical Vegetation Mapping

 Subject Site

Central Tablelands State Vegetation Map (OEH 2018)

 Non Native

0 25 50 75 100 125 m



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Date: 03/11/2021
 Coordinate System: GDA94 MGA Zone 55
 Data Source: SixMap (2021) | Meraki Green (2019)
 Image Source: Google Satellite 2020



Figure 2. Historically mapped vegetation within and surrounding the Subject Site.



Field Validated Vegetation Mapping

- Subject Site
- 20x20m Floristic Plots
- Field Validated Vegetation**
- Exotic Dominated Vegetation
- Dam

0 25 50 75 100 125 m



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Date: 03/11/2021
 Coordinate System: GDA94 MGA Zone 55
 Data Source: SixMap (2021) | Meraki Green (2019)
 Image Source: Google Satellite 2020



Figure 3. Narla field validated vegetation within the Subject Site.

Table 4. Exotic Dominated Vegetation within the Subject Site

Exotic Dominated Vegetation	
	
Total area within Subject Site (approximate)	7.38 ha
Description of the vegetation within the zone	The vegetation within this community lacked a mid and over-storey and was dominated by exotic vegetation. Exotic grasses <i>Dactylis glomerata</i> and <i>Eragrostis tenuifolia</i> were dominant with scattered exotic herbs <i>Taraxacum officinale</i> , <i>Plantago lanceolata</i> and <i>Trifolium spp.</i> present. Minor occurrences of native species <i>Cassinia arcuata</i> and <i>Geranium solanderi</i> were also noted. Some occurrences of exotic <i>Cotoneaster spp.</i> were also present.
Associated TEC	N/A

4. Threatened Species

4.1 Threatened Flora

Desktop analysis revealed a range of threatened flora as occurring within a 10km x 10km cell centred on the Subject Site. These species were assessed for their potential to occur within the Subject Site (**Table 5**). Targeted surveys were undertaken throughout the Subject Site for potentially occurring threatened flora. No threatened flora species were found to occur within the Subject Site.

It was deemed that the proposed activity will have no significant impact on the aforementioned species. Therefore, no further assessment of impacts pursuant to the BC Act (e.g. Biodiversity Development Assessment Report (BDAR)) and/or EPBC Act Referral to Commonwealth will be required.

Table 5. Likelihood of occurrence of threatened flora species within the Subject Site.

Species	BC Act	EPBC Act	Likelihood of occurrence within the Subject Site	Further Impact Assessment Required?
<i>Eucalyptus aggregata</i> (Black Gum)	Vulnerable	Vulnerable	Low. Grows in the lowest parts of the landscape. Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers. Also occurs as isolated paddock trees in modified native or exotic pastures. While nearby records are present and landscape positioning is appropriate, site assessment did not detect this species.	No
<i>Eucalyptus macarthurii</i> (Paddy's River Box, Camden Woollybutt)	Endangered	Endangered	Low. Occurs on grassy woodland on relatively fertile soils on broad cold flats. Such landscape positioning is not present within the Subject Site, site assessment did not detect this species.	No
<i>Eucalyptus pulverulenta</i> (Silver-leafed Gum)	Vulnerable	Vulnerable	Low. Grows in shallow soils as an understorey plant in open forest, typically dominated by Brittle Gum (<i>Eucalyptus mannifera</i>), Red Stringybark (<i>E. macrorhynca</i>), Broad-leafed Peppermint (<i>E. dives</i>), Silvertop Ash (<i>E. sieberi</i>) and Apple Box (<i>E. bridgesiana</i>). Such features are not present within the Subject Site, site assessment did not detect this species.	No

4.2 Threatened Fauna

Desktop analysis revealed that a number of threatened fauna species have the potential to utilise habitat (**Table 6**) within the Subject Site during part of their lifecycles (**Table 7**). No threatened fauna species were observed within the Subject Site by the Narla Ecologists during the site assessment.

It was deemed that the proposed works will not have a significant impact such that a local viable population or occurrence of any of the threatened fauna species will be placed at risk of extinction (**Table 7**). Therefore, no BDAR or EPBC Act Referral to Commonwealth is required for the proposed development.

Table 6. Fauna habitat values.

Habitat component	Site values
Coarse woody debris	Absent.
Rock outcrops and bush rock	Absent.
Caves, crevices and overhangs	Absent.
Culverts, bridges, mine shafts, or abandoned structures	Absent.
Nectar/lerp-bearing Trees	Absent.
Koala Feed Trees	Absent.
Large stick nests	Absent.
Sap and gum sources	Absent.
She-oak fruit (Glossy Black Cockatoo feed)	Absent.
Seed-bearing trees and shrubs	Absent.
Soft-fruit-bearing trees	Absent.
Dense shrubbery and leaf litter	Absent.
Tree hollows	Absent.
Decorticating bark	Absent.
Wetlands, soaks and streams	Present, five wetlands areas are present within the Subject Site.
Estuarine, beach, mudflats, and rocky foreshores	Absent.

Table 7. List of potential threatened fauna that may occupy the Subject Site at some stage of their lifecycles. Vulnerable = V, Endangered = E, Endangered Population = EP, Critically Endangered = CE.

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
<i>Anthochaera Phrygia</i> (Regent Honeyeater)	CE	CE	Low.	The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. No Eucalyptus feed trees were identified within the Subject Site.	This species breeds in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak. Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and Sheoak. No such habitat was identified within the Subject Site.	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species. The Subject Site is not mapped on the BAM Important Area Map (DPIE 2021f).	No
<i>Artamus cyanopterus cyanopterus</i> (Dusky Woodswallow)	V	-	Low.	Often inhabit dry, open eucalypt forests and woodlands with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. No such habitat was present within the Subject Site.	Nest sites vary greatly, but generally occur in shrubs or low trees, living or dead, horizontal or upright forks in branches, spouts, hollow stumps or logs, behind loose bark or in a hollow in the top of a wooden fence post. No potential nesting trees were present within the Subject Site. No nest was identified during the site assessment.	No loss of foraging habitat and negligible impact to breeding habitat anticipated. Site assessment did not detect this species.	No
<i>Callocephalon fimbriatum</i> (Gang-gang Cockatoo)	V	-	Low.	In autumn and winter, the species often moves to drier more open eucalypt forests and woodlands, or in dry forest in coastal areas and often found in urban areas. No	This species favours Eucalypt tree species with hollows that are 10 cm in diameter or larger and at least 9m above the ground in eucalypts. Such	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
				such foraging habitat is present within the Subject Site.	habitat does not occur within the Subject Site.		
<i>Calyptorhynchus lathamii</i> (Glossy Black-Cockatoo)	V	-	Low.	This species feeds almost exclusively on the seeds of several species of she-oak (<i>Casuarina</i> and <i>Allocasuarina</i> species). No <i>Casuarina</i> or <i>Allocasuarina</i> species were present within the Subject Site.	This species breeds in living or dead tree with hollows greater than 15cm diameter and greater than 8m above ground. Such habitat does not occur within the Subject Site.	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species.	No
<i>Climacteris picumnus victoriae</i> (Brown Treecreeper – eastern subspecies)	V	-	Low.	This species is found in eucalypt woodlands. It forages in trees and on the ground, pecking and probing for insects, mostly ants, amongst the litter, tussocks and fallen timber, and along trunks and lateral branches. Eucalypt woodland is not present within the Subject Site.	Hollows in standing dead or live trees and tree stumps are essential for nesting. Such habitat does not occur within the Subject Site.	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species.	No
<i>Daphoenositta chrysoptera</i> (Varied Sittella)	V	-	Low.	This species predominantly inhabits well-connected eucalypt forests and woodlands, feeding on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. No such foraging habitat is present within the Subject Site.	This species builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years. No such breeding habitat is present within the Subject Site.	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species.	No
<i>Glossopsitta pusilla</i> (Little Lorikeet)	V	-	Low.	This species forages primarily in the canopy of open Eucalypt forests and woodlands. Riparian	Nests in proximity to feeding areas if possible, most typically selecting hollows in	No loss of foraging or breeding habitat anticipated. Site	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
				habitats are particularly used, due to higher soil fertility and hence greater productivity. No such habitat is present within the Subject Site.	the limb or trunk of smooth-barked Eucalypts. Entrance is small (3 cm) and usually high above the ground (2–15 m). No hollow bearing trees were identified within the Subject Site.	assessment did not detect this species.	
<i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)	V	-	Moderate.	Foraging habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, the sea, grassland and forest. Due to the small size of farm dams present within the Subject Site only sub-optimal foraging habitat may be present within the Subject Site.	Breeding habitat is live large old trees within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines. Such habitat does not occur within the Subject Site. No suitably sized trees or stick nests were identified during the site assessment.	Minor impact to potential sub-optimal foraging habitat with the removal of five farms dams; however, the development has proposed two large bio-retention swales that will provide potential foraging habitat for this species into the future. No anticipated loss to breeding habitat is anticipated for this species. Site assessment did not detect this species.	No
<i>Hieraetus morphnoides</i> (Little Eagle)	V	-	Low.	Occupies open eucalypt forest, woodland or open woodland. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion. No such habitat is present within the Subject Site.	This species nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. No tall trees or stick nests were present within the Subject Site.	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
<i>Lathamus discolor</i> (Swift Parrot)	E	CE	Low.	Favoured feed trees include winter flowering species such as <i>Eucalyptus robusta</i> , <i>Corymbia maculata</i> , <i>C. gummifera</i> , <i>E. tereticornis</i> , <i>E. sideroxylon</i> and <i>E. albens</i> . Commonly used lerp infested trees include <i>E. microcarpa</i> , <i>E. moluccana</i> , <i>E. pilularis</i> , and <i>E. melliodora</i> . No feed trees were present within the Subject Site.	The Swift Parrot only breeds in Tasmania.	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species The Subject Site is not mapped on the BAM Important Area Map (DPIE 2021f).	No
<i>Litoria aurea</i> (Green and Golden Bell Frog)	E	V	Moderate.	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.). Due to the lack of vegetation in farms dams present within the Subject Site, only Sub-optimal foraging habitat may be present for this species.	Females produce a raft of eggs that initially float before settling to the bottom, often amongst vegetation, usually breeds in summer when conditions are warm and wet. Due to the lack of vegetation in farms dams present within the Subject Site, only Sub-optimal breeding habitat may be present for this species.	Minor potential impact to potential foraging and potential breeding habitat with the removal of five farm dams, assuming the Impact Mitigation and Minimisation Recommendations (See Section 6.1. are followed). Furthermore, the development has proposed two large bio-retention swales that will provide potential habitat for this species into the future.	No
<i>Litoria booroolongensis</i> (Booroolong Frog)	E	E	Very low.	Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. No such features occur within the Subject Site.	Breeding occurs in spring and early summer and tadpoles metamorphose in late summer to early autumn.	No loss of foraging or breeding habitat anticipated. Site	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
					Eggs are laid in submerged rock crevices and tadpoles grow in slow-flowing connected or isolated pools. No such features occur within the Subject Site	assessment did not detect this species.	
<i>Miniopterus australis</i> (Little Bent-winged Bat)	V	-	Very Low.	This species occupies moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. The Subject Site does not contain said habitat.	This species only breeds in caves. No caves were present within the Subject Site.	No loss of foraging or breeding habitat anticipated.	No
<i>Miniopterus orianae oceanensis</i> (Large Bent-winged Bat)	V	-	Very Low.	Hunt in forested areas, catching moths and other flying insects above the tree tops. Such habitat is not present within the Subject Site.	This species only breeds in caves. No caves were present within the Subject Site.	No loss of foraging or breeding habitat anticipated.	No
<i>Oxyura australis</i> (Blue-billed Duck)	V	-	Low.	The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. No suitably sized wetlands are present within the Subject Site.	This species usually nests solitarily in Cumbungi over deep water between September and February. No suitable nesting areas were present within the Subject Site. No nests were identified during the site assessment.	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species.	No
<i>Petauroides volans</i> (Greater Glider)	-	V	Very Low.	This species is typically found in taller, montane, moist eucalypt forests within relatively old trees	This species is typically found in taller, montane, moist eucalypt forests within	No loss of foraging or breeding habitat anticipated.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
				and abundant hollows. Such habitat does not occur within the Subject Site.	relatively old trees and abundant hollows. Such habitat does not occur within the Subject Site (no hollows were present).		
<i>Petroica boodang</i> (Scarlet Robin)	V	-	Low.	This species forages from low perches, fence-posts or on the ground, from where they pounce on small insects and other invertebrates which are taken from the ground, or off tree trunks and logs. They sometimes forage in the shrub or canopy layer. They inhabit dry eucalypt forests and woodlands that contains abundant logs and fallen timber. They may also occur in mallee or wet forest communities. No such habitat is present within the Subject Site.	This species breeds on ridges, hills and foothills of eastern coastal regions. This species' nest is an open cup made of plant fibres and cobwebs and is built in the fork of tree usually more than 2 metres above the ground. No nests were identified during the site assessment.	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species.	No
<i>Petroica phoenicea</i> (Flame Robin)	V	-	Low.	This species forages from low perches, from which they sally or pounce onto small invertebrates which they take from the ground or off tree trunks, logs and other coarse woody debris. They prefer clearings or areas with open understoreys. No such habitat is present within the Subject Site.	This species breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. No nests were identified during the site assessment.	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
<i>Phascolarctos cinereus</i> (Koala)	V	V	Low.	This species feeds on the foliage of more than 70 eucalypt species and 30 non-eucalypt species. No Koala feed trees occur within the Subject Site.	Breeds in eucalypt woodlands and forests. No such habitat occurs within the Subject Site.	No loss of foraging or breeding habitat anticipated. Site assessment did not detect this species.	No

4.3 Migratory Fauna Species

One (1) individual of Latham' Snipe (*Gallinago hardwickii*) listed as Migratory in the EPBC Act was identified foraging within the Subject Site at the time of site assessment on the 22nd of September 2021.

A list of EPBC Act listed migratory fauna species were considered likely to occasionally use habitat within or around the Subject Site for foraging or passage (**Table 8**). It was deemed that the proposed works will have no significant impact on these species. Therefore, a Referral to Commonwealth pursuant to the EPBC Act is not required.

Table 8 List of migratory fauna that may occupy the Subject Site at some stage of their lifecycles.

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging or Breeding Habitat within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Black-faced Monarch (<i>Monarcha melanopsis</i>)	-	Migratory	Low	This species is found primarily in rainforest ecosystems and wet sclerophyll forests. No such habitat does not occur on the Subject Site.	No anticipated net loss to breeding or foraging habitat is anticipated for this species.	No
Curlew Sandpiper (<i>Calidris ferruginea</i>)	Endangered	Critically Endangered Migratory	Moderate	It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It roosts on shingle, shell or sand beaches; spits or islets on the coast or in wetlands; or sometimes in salt marsh, among beach-cast seaweed, or on rocky shores. No habitat for this species occurs within the Subject Site.	No anticipated net loss to breeding or foraging habitat is anticipated for this species.	No
Common Sandpiper (<i>Actitis hypoleucos</i>)	-	Migratory	Moderate	This species is found in coastal or inland wetlands, both saline or fresh. It is found mainly on muddy edges or rocky shores. This species does not breed in NSW. No habitat for this species occurs within the Subject Site.	No anticipated net loss to breeding or foraging habitat is anticipated for this species.	No
Eastern Curlew (<i>Numenius madagascariensis</i>)	-	Critically Endangered; Migratory	Low	This species is found on intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons. This species does not breed in NSW. No such habitat is presented within the Subject Site.	No anticipated net loss to breeding or foraging habitat is anticipated for this species	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging or Breeding Habitat within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Latham' Snipe (<i>Gallinago hardwickii</i>)	-	Migratory	Confirmed	This species is often seen in small groups or singly in freshwater wetlands on or near the coast, generally among dense cover. They are found in any vegetation around wetlands, in sedges, grasses, lignum, reeds and rushes and also in saltmarsh and creek edges on migration. This species does not breed in NSW. Sedges and grasses are present within the Subject Site. One (1) individual of this species was identified foraging within water logged grasses within the Subject Site.	Minor impact to potential sub-optimal foraging habitat with the removal of five farms dams; however, the development has proposed two large bio-retention swales that will provide potential foraging habitat for this species into the future.	No
Satin Flycatcher (<i>Myiagra cyanoleuca</i>)	-	Migratory	Low	The Satin Flycatcher takes insects on the wing, foraging actively from perches in the mid to upper canopy. It builds a broad-based, cup-shaped nest of shredded bark and grass, coated with spider webs and decorated with lichen. No native trees are present within the Subject Site, no nests were identified during the site assessment.	No anticipated net loss to breeding or foraging habitat is anticipated for this species	No
Pectoral Sandpiper (<i>Calidris melanotos</i>)	-	Migratory	Moderate	The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. This species does not breed in NSW. Artificial wetlands are present within the Subject Site	Minor impact to potential sub-optimal foraging habitat with the removal of five farms dams; however, the development has proposed two large bio-retention swales that will provide potential foraging habitat for this species into the future.	No
Rufous Fantail (<i>Rhipidura rufifrons</i>)	-	Migratory	Low	The Rufous Fantail feeds on insects, which it gleanes from the middle and lower levels of the canopy.	No anticipated net loss to breeding or foraging habitat is anticipated for this species	No
Sharp-tailed Sandpiper (<i>Calidris acuminata</i>)	-	Migratory	Moderate	This species prefers the grassy edges of shallow inland freshwater wetlands. It is also found around sewage farms, flooded fields, mudflats, mangroves, rocky shores and beaches. This species does not breed in NSW. Sub-optimal	Minor impact to potential sub-optimal foraging habitat with the removal of five farms dams; however, the development has proposed	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging or Breeding Habitat within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
				habitat in the form of dams was located within the Subject Site	two large bio-retention swales that will provide potential foraging habitat for this species into the future.	
White-throated Needletail (<i>Hirundapus caudacutus</i>)	Vulnerable	Vulnerable; Migratory	Moderate	This species is primarily aerial and are most recorded above wooded areas. This species does not breed in NSW.	No anticipated net loss to foraging habitat is anticipated for this species	No

5. Impact Summary

5.1 Vegetation loss

Approximately 7.38 ha of vegetation identified as Exotic Dominated Vegetation (**Table 4**) is proposed for removal to facilitate the Development Footprint and Revegetation Area (**Figure 3**), this vegetation removal does not include any native trees or vegetation that provides significant fauna habitat.

The proposed Landscape Plan (**Appendix C**) will see the planting of a suite of native species that will significantly increase the biodiversity value of the Subject Site, providing foraging and future breeding habitat for many species listed in **Table 5**.

5.2 Threatened species

It is not anticipated that the proposed development will have a significant impact on any BC Act or EPBC Act listed species.

5.3 Aquatic Habitat

The Proposed Development will see the removal of five farms dams that provides habitat for aquatic fauna species. However, the development has proposed the creation of two large bio-retention swales that are likely to adequately replace the biodiversity value of the farm dams into the future. Assuming the Impact Mitigation and Minimisation Recommendations (See **Section 6.1.**) are followed, this activity can be undertaken with little consequence to biodiversity.

6. Recommendations

6.1 Impact Mitigation and Minimisation Recommendations

This section of the report details recommended efforts to avoid and minimise impact on biodiversity values associated with the proposed development. Measures to be implemented before, during and post construction to avoid and minimise the impacts of the project are detailed in **Table 9**.

Table 9. Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the project.

Action	Outcome	Timing	Responsibility
Project Location, Design and Planning	The Subject Property is comprised of a historically cleared property dominated by exotic pasture species containing very little native biodiversity value. As such is the appropriate location for such a development. The Proposed development will result in net gain for the biodiversity of the Subject Property through the large areas of native species revegetation proposed.	Pre-construction phase	Principal Contractor
Preparation of a Construction Environmental Management Plan (CEMP)	A Construction Environmental Management Plan (CEMP) may be required for the construction phase of the project, and will be prepared prior to issue of the Construction Certificate. The CEMP would include, as a minimum, industry-standard measures for the management of soil, surface water, weeds and pollutants, as well as site-specific measures, including the procedures outlined below. The proposed mitigation measures would include environmental safeguards for protection of neighbouring properties and nearby waterways in accordance with relevant policy documentation and Government guidelines. In order to address the potential impacts of the proposal on biodiversity, the mitigation and management measures outlined within this table would be implemented as part of the CEMP for the site.	Pre-construction phase	Principal Contractor Construction Contractor
Assigning a Suitably Qualified Project Ecologist	<p>Prior to the construction phase of the development, the Principal Contractor may be required to commission the services of a qualified and experienced Ecologist with a minimum tertiary degree in Science, Conservation, Biology, Ecology, Natural Resource Management, Environmental Science or Environmental Management.</p> <p>The Ecologist must be licensed with a current Department of Primary Industries Animal Research Authority permit and New South Wales Scientific License issued under the BC Act.</p> <p>If required by Council, the Ecologist will be commissioned to:</p> <ul style="list-style-type: none"> ▪ Assist the applicant in identifying and assigning an appropriate skilled Bushland Restoration Professional to implement vegetation restoration; ▪ Undertake any required targeted searches for threatened flora prior to vegetation clearing; ▪ Supervise the clearance any fauna habitat in order to capture, treat and/or relocate any displaced fauna.; 	Pre-construction phase	Principal Contractor

Action	Outcome	Timing	Responsibility
	<ul style="list-style-type: none"> ▪ Supervise dam dewatering activities, including: <ul style="list-style-type: none"> ○ Apply best practice techniques to result in reduce risk of aquatic fauna injuries or deaths; ○ Remove fauna from dams; ○ Relocate native fauna to an appropriate release site; ○ Euthanize exotic fauna by best practice means; and ○ Produce an Ecological Dam Dewatering Report, presenting: <ul style="list-style-type: none"> ○ Methodology used; ○ Names and qualifications of Project Ecologist; ○ Native fauna species quantity relocated; ○ Release site/s; ○ Any fauna injuries; and ○ Exotic fauna species euthanized. 		
Removal of Priority Weeds	<p>Priority weeds must be managed in accordance with the Biosecurity Act 2015, this includes preventing the spread from their land where feasible. Therefore, in the effort to prevent the spread of priority weeds from the Subject Property it is feasible to eradicate these species from the Subject Property entirely. Control of priority weeds within the Subject Property should be consistent with NSW WeedWise (Department of Primary Industry) control recommendations.</p>	All stages	Principal Contractor
Stormwater	<p>The proposed development is unlikely to result in significant changes to storm-water runoff so it is expected there will be no exacerbated impact on native flora and fauna.</p>	Post-construction phase	Principal Contractor Construction Architect

7. Conclusion

The proposed development at 31 O'Connell Road Oberon, 2787 (Lot 2/-/DP1073827 and Lot 5/-/DP2364) includes 2 full sized rugby fields, 1 hockey field, 3 netball courts, Licensed Club including change rooms, amenities and tiered spectator seating, Walking/cycling perimeter pathway and fitness stations, Amenities and maintenance facilities, Car and bus parking facilities, Children's playground and Earthworks, storm water drainage, landscaping and lighting. It is expected that approximately 7.38 ha of vegetation identified as Exotic Dominated Vegetation is required to be removed.

The proposed Landscape Plan will see the planting of a suite of native species that will significantly increase the biodiversity value of the Subject Site, providing foraging and future breeding habitat for many threatened species considered likely to occur.

Five farm dams are proposed for removal, the development has proposed two large bio-retention swales that should replace the biodiversity value of the farm dams into the future.

It is not anticipated that any threatened flora, or fauna will be impacted by the proposed development. A number of impact mitigation and minimization measures, as outlined in this report, are to be implemented to reduce impacts to native vegetation and fauna where possible.

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9. Appendices

Appendix A. Flora species identified within the Subject Site during the site assessment.

Appendix B. Fauna species identified within the Subject Property during site assessment.

Appendix C Landscape Plan Oberon Sports Complex (Meraki Green Landscape Architecture 2019).

Appendix A. Flora species identified within the Subject Site during the site assessment.

Scientific Name	Canopy	Mid-Story/ Shrub	Ground layer	Status
<i>Cassinia arcuata</i>		x		
<i>Cirsium vulgare</i> *		x		
<i>Dactylis glomerata</i> *			x	
<i>Eragrostis tenuifolia</i>			x	
<i>Euchiton spp.</i>			x	
<i>Cotoneaster spp.</i> *	x			
<i>Geranium solanderi</i>			x	
<i>Hypochaeris radicata</i> *			x	
<i>Juncus spp.</i>			x	
<i>Nassella trichotoma</i> *			x	Priority Weed
<i>Plantago lanceolata</i> *			x	
<i>Rubus fruticosus agg.</i> *			x	Priority Weed
<i>Taraxacum officinale</i> *			x	
<i>Trifolium spp.</i> *			x	

* Denotes exotic species

Appendix B. Fauna species identified within the Subject Property during site assessment.

Class	Scientific Name	Common Name	Status
Amphibia	<i>Crinia signifera</i>	Common eastern froglet	
	<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog	
Aves	<i>Anas gracilis</i>	Grey teal	Protected
	<i>Anas superciliosa</i>	Pacific black duck	
	<i>Anthochaera carunculata</i>	Red Wattlebird	
	<i>Cacatua sanguinea</i>	Little Corella	
	<i>Chenonetta jubata</i>	Australian Wood Duck	
	<i>Corvus coronoides</i>	Australian Raven	
	<i>Dacelo novaeguineae</i>	Laughing Kookaburra	
	<i>Egretta novaehollandiae</i>	White-faced heron	
	<i>Eolophus roseicapilla</i>	Galah	EPBC Act: Migratory
	<i>Gallinago hardwickii</i>	Latham's snipe	
	<i>Grallina cyanoleuca</i>	Magpie Lark	Protected
	<i>Hirundo neoxena</i>	Welcome swallow	
	<i>Rhipidura leucophrys</i>	Willy Wagtail	
	<i>Turdus merula</i>	Common blackbird	Exotic
<i>Vanellus miles</i>	Masked lapwing	Protected	

Appendix C Landscape Plan Oberon Sports Complex (Meraki Green Landscape Architecture 2019).





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