



Flora and Fauna Impact Assessment Report

Industrial Development
27 Ross Street, Goulburn

24 October 2022





Report:	Flora and Fauna Impact Assessment Report Industrial Development 27 Ross Street Lot 90-/DP1119204 Goulburn NSW 2580
Prepared for:	Goulburn Mulwaree Council
Prepared by:	Land Eco Consulting
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Glossary

Acronym/ Term	Definition
APZ	Asset Protection Zone
BAM	Biodiversity Assessment Method (NSW)
BC Act	New South Wales Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
CEEC	Critically Endangered Ecological Community
DA	Development Application
DCP	Development Control Plan
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).
DPIE	Department of Planning Industry and Environment
EEC	Endangered Ecological Community
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
Ha	Hectares
Km	Kilometre
KTP	Key Threatening Process (as listed in the BC Act)
LEP	Local Environmental Plan
LGA	Local Government Area
Locality	The area within a 10km radius of the Subject Land. The same meaning when describing a local population of a species or local occurrence of an ecological community.
M	Metres
Mm	Millimetres
NPWS	NSW National Parks and Wildlife Services
NSW	The state of New South Wales, Australia
OEH	Office of Environment and Heritage (now the Department of Planning Industry and Environment)
Proposal	The development, activity or action proposed.
ROTAP	Rare or Threatened Australian Plants
SIS	Species Impact Statement pursuant to s. 5A of the Environmental Planning and Assessment Act 1979
Subject Land	Location of the proposed subdivision and development including all associated bushfire Asset Protection Zones (APZ) within the Subject Property.
Subject Property	27 Ross Street, Goulburn. Lot 90/-/DP1119204.
Threatened species, populations and ecological communities	Species, populations and ecological communities specified in Schedules 1, 1A and 2 and <i>threatened species, population or ecological community</i> means a species, population or ecological community specified in any of those Schedules.
TPZ	Tree Protection Zone

1. Introduction

1.1 Background and Project Proposal

Land Eco Pty Ltd (Land Eco) was engaged by Goulburn Building Products Pty Ltd to deliver a Flora and Fauna Impact Assessment Report (FFA) for the development of 27 Ross Street, Goulburn, NSW, 2580 (Lot 90/-/DP1119204). Here forward referred to as the 'Subject Property' (**Figure 1**).

1.1.1 Site Description and Location

The Subject Property is located within north-east Goulburn in the Goulburn-Mulwaree Local Government Area. The property is situated on the western side of Ross Street and south side of Brewer St.

The proposed development will require clearing of all vegetation and replacing with hardstand and built structure which will be used for industrial purposes.

The Subject Property covers an area of approximately 0.29 ha. It is comprised of a partially vegetated urban block with an asphalt driveway and fence.

The Subject Property is zoned as 'IN1 – General Industrial', the neighbouring properties to the south and south-west are also zoned as the same. The Subject Properties northern perimeter is bordered with an area mapped as 'C2-Environmental Conservation'.

1.1.2 Summary of Proposed Impact

This report assesses the potential impacts to biodiversity from the proposed development assuming most of the native vegetation within the Subject Property will be cleared.

A maximum total of 0.24 ha of partially cleared open grassy woodland which is classified as a modified extent of 'White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered Ecological Community' (here forward 'Yellow Box Woodland CEEC') as listed under Schedule 2 of the NSW Biodiversity Conservation Act 2016 (BC Act) will be permanently removed for the proposed development.

The Subject Property does not contain any land mapped as containing 'Terrestrial Biodiversity' under Goulburn-Mulwaree Local Environmental Plan 2009 (LEP) (**Figure 3**).

1.1.3 Landscape, Soils and Geology

The Subject Property occurs at altitudes that range between 670m and 700m above sea level.

The Subject Property occurs on Monastery Hill Soil Landscape (NSW DPIE 2022e). This soil landscape has formed on two teschenite intrusions which have penetrated upper Silurian sediments. The upper Silurian sediments include an extensive outcrop of limestone. Soils have formed in situ and from alluvial-colluvial material derived from the parent rock. It is described as having undulating rises with prairie soils, grey clays and alluvial soils occurring on foot slopes and in drainage lines. Relief 10-30m, slope gradients <10%. Elevation 670-700m.

Prior to the current urban developments, this area was not significantly eroded. Disturbance of the soil surface for urban development will create a significant short-term erosion problem. This is of particular significance because of the close proximity of the Wollondilly river.

1.1.4 Hydrology

Wollondilly River is the nearest watercourse running near the Subject Property (NSW Spatial Services 2022). The Wollondilly River is ~450m away from the Subject Property at its closest point. A small man-made dam is also located ~370m away from the Subject Property to the south-west.

Average annual rainfall for Goulburn city is ~640mm (NSW DPIE 2022e).



Legend

- Subject Land
- Lot



Date: 20/10/2022

Coordinate System: GDA 1994 MGA Zone 55

Imagery: Nearmap

This map was produced for this report only.
It is indicative, not survey-accurate.
It should not be used for design
or construction purposes.

Figure 1. Map of Subject Property

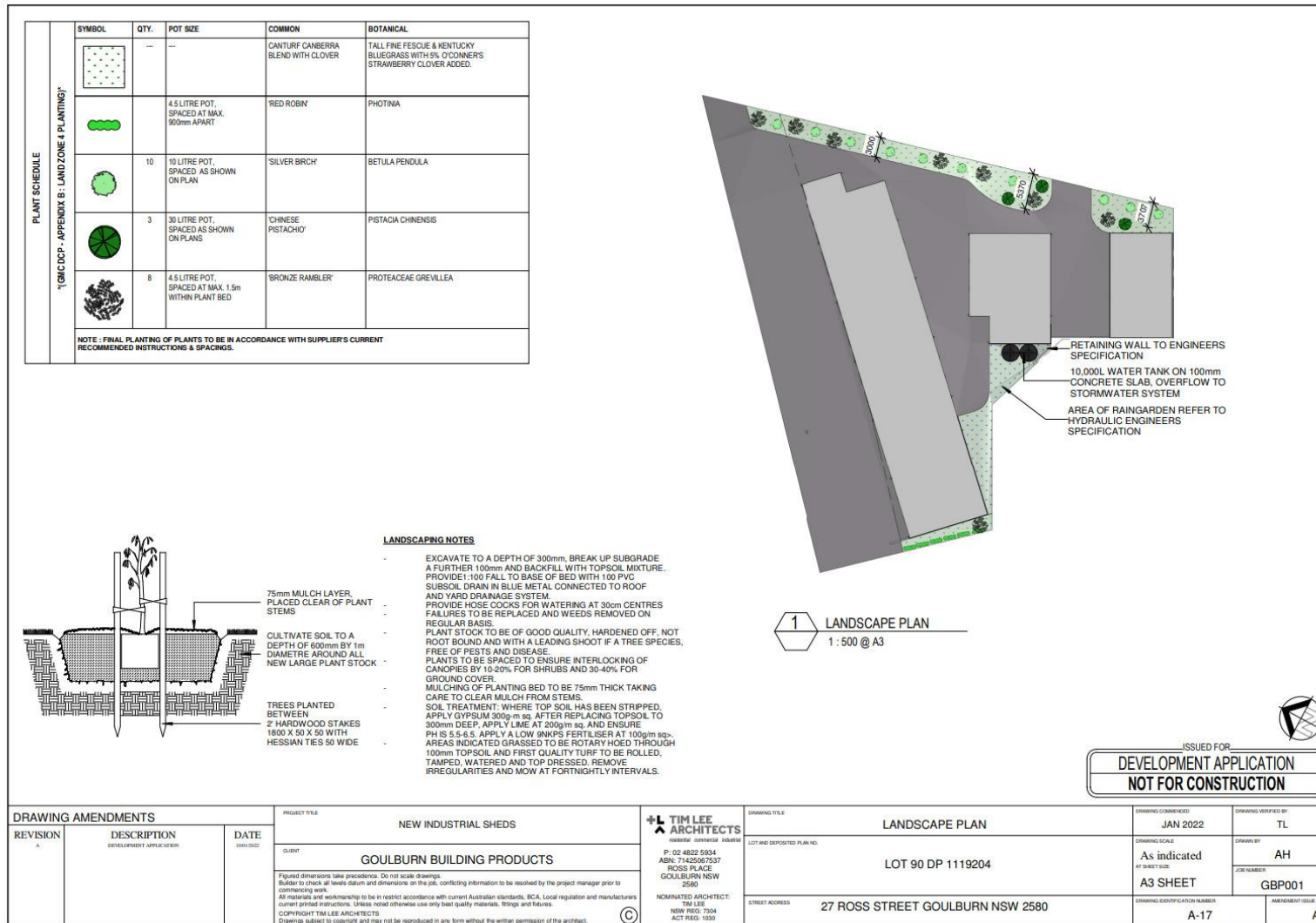


Figure 2. Development plan for the Subject Property (Tim Lee Architects 2022)

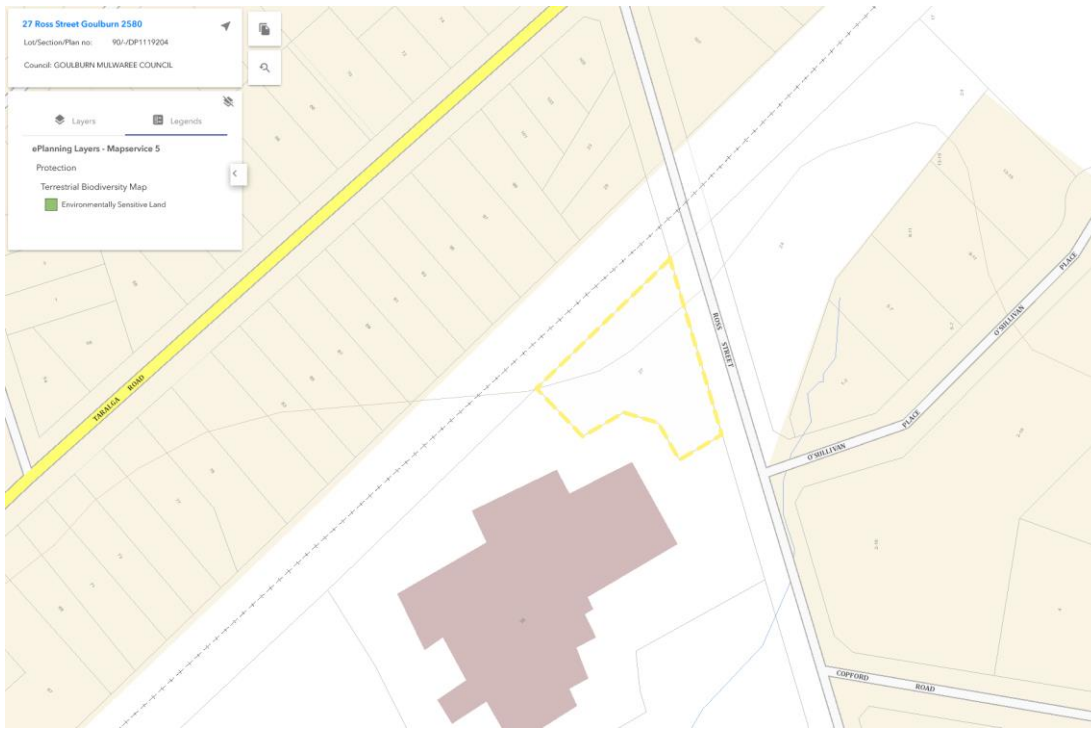


Figure 3. Land mapped as 'Terrestrial Biodiversity' within the Subject Property and surrounds (NSW DPIE 2022a).

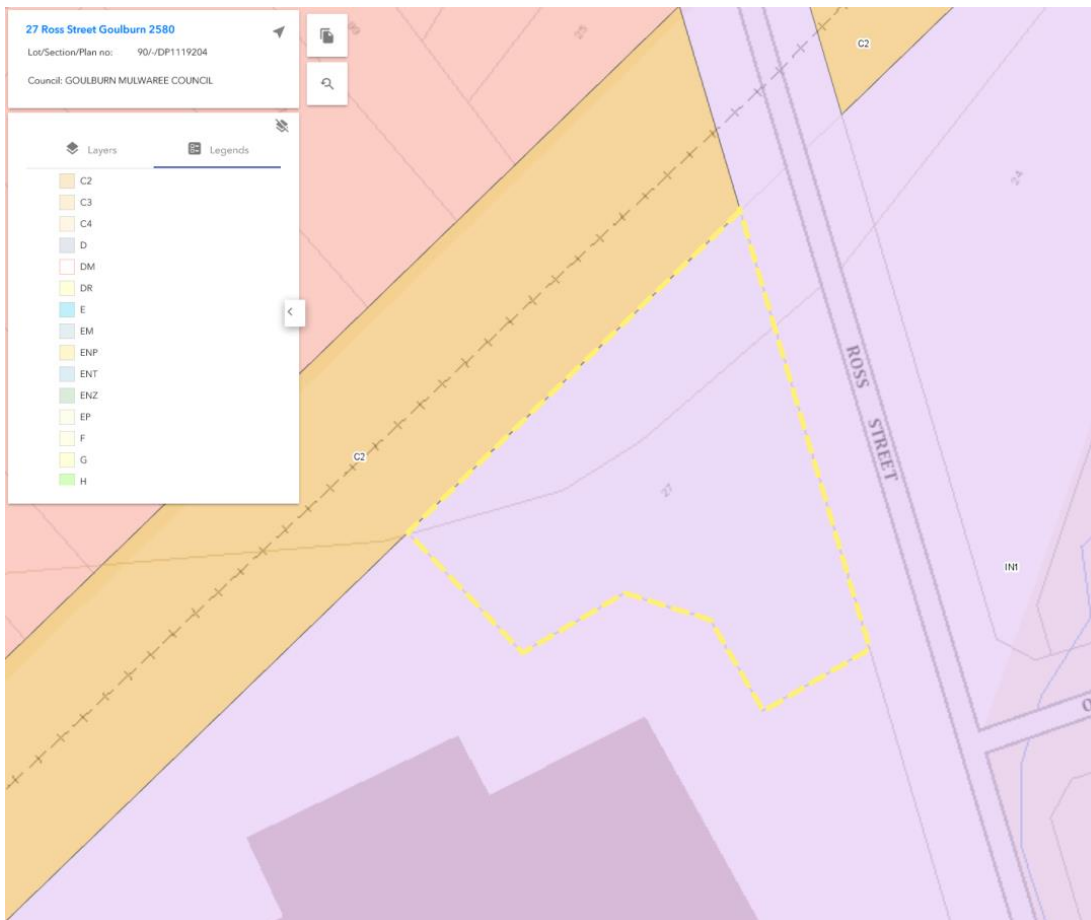


Figure 4. Zoning map of the Subject Property (NSW DPIE 2022a).

1.2 Matters for Consideration

The following list of legislation and policy are addressed in this report (**Table 1**).

Table 1. Relevant Legislation and Policy Addressed

Legislation/ Policy	Relevance	Triggered	Action Required
Environmental Planning and Assessment Act 1979 (EP&A Act)	The proposed development is being assessed under Part 4 of the EP&A Act. This requires the development to be assessed of impacts to threatened species, populations or communities that are listed under the BC Act.	Yes	This Flora and Fauna Impact Assessment Report includes a Test of Significance under section 7.3 of the BC Act, as required for a DA under Part 4 of the EP&A Act.
Goulburn Mulwaree Local Environmental Plan 2009 (LEP)	The proposed development is being assessed under Part 4 of the EP&A Act. This requires the development to be assessed under the LEP.	Yes	This Flora and Fauna Impact Assessment Report includes information on how the project meets the requirements of the LEP, as required for a DA under Part 4 of the EP&A Act.
Goulburn Mulwaree Development Control Plan 2009 (DCP)	The proposed development is being assessed under Part 4 of the EP&A Act. This requires the development to be assessed under the DCP.	Yes	This Flora and Fauna Impact Assessment Report includes information on how the project meets the requirements of the DCP, as required for a DA under Part 4 of the EP&A Act.
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The Subject Property is not known to contain any matters of national significance, but Grey-head Flying-fox and Green and Golden Bell Frog occurrences have been recorded within 10km of the Subject Property.	No	No further action.
Biodiversity Conservation Act 2016 (BC Act)	Habitat for threatened species or populations is likely to be impacted by the proposed development. White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland occurs on site and is likely to be impacted by development. Potential habitat for Key's Matchstick Grasshopper	Yes	Test of Significance (5-part Test) in accordance with Section 7.3 of the BC Act were undertaken to assess the impact of the proposed development.
Biosecurity Act 2015 (Bio Act)	No known Priority Weeds occur on site.	No	No further action.
Water Management Act 2000 (WM Act)	The proposed development will not encroach upon waterfront land (within 40m of a watercourse).	No	No further action.
State Environmental Planning Koala Habitat Protection 2021	The Subject Property is zoned as IN1. The Subject Property is not considered to be 'core koala habitat' as it is not considered highly suitable for koalas and is not an area of land with recent proximal koala records.	No	No further action.

1.3 Goulburn – Mulwaree Local Environmental Plan 2009

1.3.1 Zoning

The Subject Property is zoned as 'IN1 – General Industrial' (Figure 4).

Zone IN1 - General Industrial

1 Objectives of zone

- To provide a wide range of industrial and warehouse land uses.
- To encourage employment opportunities.
- To minimise any adverse effect of industry on other land uses.
- To support and protect industrial land for industrial uses.

2 Permitted without consent

Roads

3 Permitted with consent

Depots; Extensive agriculture; Freight transport facilities; Funeral homes; Garden centres; General industries; Hardware and building supplies; Industrial training facilities; Kiosks; Landscaping material supplies; Light industries; Markets; Medical centres; Neighbourhood shops; Oyster aquaculture; Places of public worship; Plant nurseries; Rural supplies; Tank-based aquaculture; Timber yards; Vehicle sales or hire premises; Warehouse or distribution centres; Any other development not specified in item 2 or 4

4 Prohibited

Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Boat launching ramps; Boat sheds; Business premises; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Eco-tourist facilities; Educational establishments; Exhibition homes; Exhibition villages; Function centres; Health services facilities; Heavy industrial storage establishments; Heavy industries; Helipads; Home-based child care; Home businesses; Home occupations; Home occupations (sex services); Jetties; Marinas; Mooring pens; Moorings; Pond-based aquaculture Recreation facilities (major); Residential accommodation; Restricted premises; Retail premises; Tourist and visitor accommodation; Water recreation structures; Wharf or boating facilities.

This development is permitted with consent.

1.3.2 Terrestrial biodiversity (7.2)

(1) The objectives of this clause are to protect, maintain or improve the diversity of the native vegetation, including—

- (a) protecting biological diversity of native flora and fauna, and
- (b) protecting the ecological processes necessary for their continued existence, and
- (c) encouraging the recovery of threatened species, communities or populations and their habitats.

(2) This clause applies to development on land that is identified as “Biodiversity” on the Terrestrial Biodiversity Map.

(3) Development consent must not be granted to development on land to which this clause applies unless the consent authority has considered a report that addresses the following matters—

- (a) identification of any potential adverse impact of the proposed development on any of the following—
 - (i) a native vegetation community,
 - (ii) the habitat of any threatened species, population or ecological community,
 - (iii) a regionally significant species of plant, animal or habitat,
 - (iv) a habitat corridor,
 - (v) a wetland,
 - (vi) the biodiversity values within a reserve, including a road reserve or a stock route, and
- (b) a description of any proposed measures to be undertaken to ameliorate any such potential adverse impact.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development is consistent with the objectives of this clause and—

- (a) the development is designed, sited and managed to avoid the potential adverse environmental impact, or
- (b) if a potential adverse impact cannot be avoided, the development—
 - (i) is designed and sited so as to have minimum adverse impact, and
 - (ii) incorporates effective measures so as to have minimal adverse impact, and

- (iii) mitigates any residual adverse impact through the restoration of any existing disturbed or modified area on the site.

No region of the Subject Property is mapped as "Biodiversity" on the Terrestrial Biodiversity Map (Figure 3).

1.4 Goulburn Mulwaree Development Control Plan 2009

1.4.1 Tree and Vegetation Preservation (3.9)

Objective

- Support the aims of the Biodiversity and Conservation SEPP to protect the biodiversity values of trees and other vegetation in non-rural areas and to preserve the amenity of non-rural areas through the preservation of trees and other vegetation.
- Achieve the long term retention of existing trees, appropriate tree maintenance, and in relation to replacement trees, suitable tree locations and considered species selection.
- Protect and enhance trees and vegetation in non-rural areas including street trees, park trees (including bushland) and trees on private property as an important community and tourism asset;
- Facilitate the removal or pruning of undesirable exotics, environmental weeds, priority weeds, dangerous trees and any other inappropriate plantings e.g. plantings that are causing damage to buildings or other infrastructure;
- Facilitate the removal or pruning of vegetation for maintenance of existing rural infrastructure; and
- Minimise impacts to vegetation with high environmental value e.g. threatened ecological communities, threatened species and their habitats.

Controls

Definitions

tree means:

a perennial plant with:

- (i) one or more self supporting trunks, any one of which has a circumference of 400mm or more measured at ground level
- (ii) a height of 3 metres or more, or a crown/branch spread of more than 3 metres.

Other Vegetation means:

Remnant Native Vegetation including:

- (i) trees,
- (ii) understorey plants,
- (iii) ground cover,
- (iv) plants occurring in a wetland.

A plant is native to NSW if it was established in NSW before European settlement.

Removal of any native vegetation including trees, shrubs and other vegetation will require consent under the NSW EP&A Act. This report assesses the impacts of the DA upon such vegetation removal.

1.4.2 High Environmental Conservation Value areas (3.15)

Objectives

1. Protect remaining high conservation value vegetation.
2. To prevent trading unless considered to be a social and economic benefit of State significance.
3. Protect and restore buffer areas to high conservation value vegetation.
4. Protect the contribution high conservation value vegetation has to regional connectivity areas and riparian corridors.

Controls

A person must not undertake an action in or adjacent to high conservation lands where that action:

- will not meet the 'maintaining and improve' biodiversity outcomes
- leads to a long-term adverse effect on high conservation value vegetation
- reduces the extent of high conservation value vegetation
- fragments an occurrence of high conservation value vegetation
- adversely affects habitat critical to the survival of high conservation value vegetation
- modifies or destroys abiotic factors (such as water, nutrients or soil) necessary for the survival of high conservation value vegetation
- results in invasive species that are harmful to high conservation value vegetation
 - becoming established in an occurrence of these lands
- diminishes the capacity of a buffer area adjacent to high conservation value vegetation
- adversely affects the capacity of a regional connectivity area or riparian corridor.

1.4.3 Medium conservation valued areas (3.15.1)

Objectives

1. No net loss of medium conservation value vegetation.
2. Some flexibility for trading and offsets.
3. Protect the viable remnants of medium conservation value.
4. Restore medium conservation value when low conservation value native vegetation is to be cleared.
5. Protect the contribution medium conservation value lands have to regional and riparian corridors.

Controls

A person must not undertake an action in or adjacent to medium conservation value lands where that action:

- leads to a long-term adverse effect on medium conservation value vegetation
- reduces the extent of a medium conservation value vegetation
- fragments an occurrence of the medium conservation value vegetation
- adversely affects the capacity of a regional connectivity area or riparian corridor

Note: A person must not undertake an action in or adjacent to medium conservation value vegetation where the requirements under the Threatened Species Conservation Act and an applicable Property Vegetation Plan certified by the relevant Catchment Management Authority have not been met.

The Subject Property area is mapped as 'low conservation valued areas'. Therefore neither of the above clauses apply.

1.4.4 Key fish habitat (3.15.2)

Objectives

Protect and restore fish habitat.

Restore degraded vegetation in riparian corridors.

Controls

- NSW Department of Primary Industries:
 - Many developments within or adjacent to waterways (Refer to Key Fish Habitat Map Figure 3.11) are subject to the provisions of the Fisheries Management Act 1994. The Act may apply regardless of whether or not development consent from Council is requested or has been granted.
 - Proponents are strongly advised to contact the Department of Primary Industries for advice before undertaking any development work in the Key Fish Habitat areas.
- Key threatening processes:
 - "Installation of instream structures that modify flow regimes" is listed as a Key Threatening Process under the provisions of the Fisheries Management Act 1994." Careful consideration of the appropriateness of a development proposal that will involve the installation of a dam, weir, causeway or culvert is required.
 - Removal of large woody debris (snags) is listed as a Key Threatening Process under the provisions of the Fisheries Management Act 1994." Careful consideration of the appropriateness of a development proposal that will involve or contribute to the removal of large woody debris is required.
 - "Degradation of Native Riparian Vegetation" is listed as a Key Threatening Process under the provisions of the Fisheries Management Act 1994. Careful consideration of the appropriateness of a development proposal that will contribute to a loss or decline in riparian vegetation is required.

Approvals or concurrence required from NSW Department of Primary Industries include:

- Any dredging or reclamation in any waters (permanent or intermittent, man-made or natural, public or private) will require a permit from NSW DPI, whether carried out by a developer or the Council itself (unless approved by another NSW Public Authority). The definitions of dredging or reclamation under (s198-203) of the Fisheries Management Act 1994 are very broad and essentially can be interpreted as any works within a waterway or "water land". This potentially includes:
- Waterway crossings, culverts, weirs, bridges or similar structures;
- Water recreation structures (eg wharf, jetty, boat ramps);
- Earthworks and drainage works (in "water land");
- Stormwater control devices;
- Environmental protection work (e.g. erosion control devices, wetland restoration, riverbank erosion protection);
- Extractive industries;
- Flood mitigation work;
- Maintenance dredging;
- Irrigation works (pipelines, pumping stations);

- Any blockages or obstructions to fish passage under (s218-220) of the Fisheries Management Act 1994;
- Any release or importation of “fish” under (s216-217) of the Fisheries Management Act 1994 into any waters will require a permit from NSW DPI Fisheries;
- Removal or movement of in-stream snags including large woody debris or boulders (i.e. Fish Habitat Protection Plan No. 1);
- Use of explosives or electrical devices within a waterway under (s111-114) of the Fisheries Management (General) Regulations 1995; and
- Any damage to gravel beds in waters where trout are likely to spawn under (s206-207) of the Fisheries Management Act 1994.

Subdivision – Consent Requirements

NSW DPI recommends that the consent authority, before granting consent for subdivision, must consider the following matters:

1. Roads or subdivision access across watercourses are potential blockages to fish passage. Single access points across a watercourse should be incorporated into planning (e.g. a single road easement across a watercourse to subdivisions). All such structures should require development consent and a minimum requirement to grant consent should be compliance with NSW DPI's Policy and Guidelines for Waterway Crossings (Why do fish need to cross the road?) which is available from the Department's website.
2. Rural subdivision adjacent to waterways needs to be minimised or controlled so that there is no net increase in basic riparian water rights and extraction levels of surface water from natural watercourses. Subdivision of water front land can result in a proliferation of Basic Landholder Rights (formerly Riparian Rights) administered by the Water Management Act 2000. Increased extraction has a severe cumulative negative impact on the protection of downstream aquatic habitats.

Wollondilly River and its tributaries are mapped as Key Fish Habitat under this DCP and the NSW Fisheries Management Act 1994 (NSW DPI 2022b). The proposed future development of the Subject Land will not have an impact on Key Fish Habitat, the Subject Land is >40m away from the Wollondilly River (**Figure 5**). The development will avoid all key threatening process listed above.



Figure 5. Key fish habitat on the Subject Property (NSW DPI 2022b)

1.5 Koala Habitat Protection SEPP 2021 (NSW DPIE 2022f)

The Subject Land is located within a Local Government Area listed in Schedule 1 of the Koala Habitat Protection SEPP. There are at least 20 species of 'Koala Use Tree Species', as listed under Schedule 2, within 10km of the Subject Property (OEH 2018, NSW DPIE 2022f). The one Eucalypt on the Subject Property is a *Eucalyptus melliodora* (Yellow Box) (Table 2), which is listed under Schedule 2, of the Koala Habitat Protection SEPP. A review of NSW Wildlife Atlas data (BioNet) (NSW DPIE 2022c) revealed no koala records within 10km of the Subject Property. A substantial koala population occurs approximately 25km east of the Subject Property in Bungonia National Park with a cluster of records spread across the past 25 years including records from 2020 (ALA 2022). The Subject Property is not considered to be 'core koala habitat' as it does not contain highly suitable koala habitat or have koalas recorded present.

Table 2. Koala use tree species identified on the Subject Property (OEH 2018)

Species	Documented Koala use in Central and Southern Tablelands Koala management area
<i>Eucalyptus melliodora</i>	Irregular use

1.6 Qualifying for the NSW Biodiversity Offset Scheme

The requirements of the BC Act and Biodiversity Conservation Regulation 2017 are mandatory for all development applications assessed pursuant to Part 4 of the EP&A Act submitted in the Goulburn Mulwaree Council Local Government Area.

The BC Act and its regulations stipulate native vegetation clearing 'area threshold' values that determine whether a development is required to be assessed in accordance with the 'Biodiversity Offset Scheme' (BOS). Minimum entry thresholds for native vegetation clearing depend on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan [LEP]), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP). Vegetation clearing includes all lopping, felling, slashing, or mowing of native trees, shrubs, or groundcover for the purpose of construction, landscaping, excavation, or bushfire Asset Protection Zone (APZ) works. Developments that trigger the Biodiversity Offset scheme will require a 'Biodiversity Development Assessment Report' (BDAR) that addresses the Biodiversity Assessment Method and the purchasing of Biodiversity Credits.

The native vegetation area clearing threshold trigger will vary depending on the minimum lot size of the proposed subdivision, as per **Table 3**.

Table 3. Biodiversity Offset Scheme Entry Thresholds

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	0.5 ha or more
40 ha to less than 1000 ha	1 ha or more
1000 ha or more	2 ha or more

The Subject Land has not been mapped as containing biodiversity values within the Biodiversity Values Map (NSW DPIE 2022b).

2. Methods

2.1 Sources of Information Used

A thorough literature review of local information relevant to the locality and the Goulburn Mulwaree Council Local Government Area (LGA) was undertaken. Relevant literature that was reviewed in preparation of this report included:

- Relevant State and Commonwealth Databases
 - NSW BioNet. The website of the Atlas of NSW Wildlife (DPIE 2022c)
 - Atlas of Living Australia Spatial Portal (ALA 2022)
 - Fisheries NSW Spatial Data Portal (DPI 2022b)
- Vegetation and Landscape Mapping
 - eSpade Soil and Land Information (DPIE 2022f)
 - Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands (Tozer et al 2010)
- Council Documents
 - Goulburn Mulwaree Council Local Environmental Plan (LEP) 2009
 - Goulburn Mulwaree Council Development Control Plan (DCP) 2009
- Additional Databases
 - eBird (Cornell Lab of Ornithology 2022)

Online databases and literature review were utilised to gain an understanding of the natural environment and ecology of the Subject Land and its surrounds to an area of approximately 20 km². Searches utilising NSW Wildlife Atlas (DPIE 2022c) and the Commonwealth Protected Matters Search Tool (Commonwealth of Australia Department of the Environment 2022) were conducted to identify current threatened and migratory flora and fauna records within a 10km² search area centred on the

Subject Land. This data was used to assist in establishing the presence or likelihood of any such ecological values as occurring on or adjacent the Subject Land and helped inform our Ecologist on what to look for during the site assessment.

Soil landscape and geological mapping was examined to gain an understanding of the environment on the Subject Land and assist in determining whether any threatened flora or ecological communities may occur there (NSW DPIE 2022f).

2.2 Ecological Site Assessment

The following sections of this report detail the site assessments undertaken by Land Eco.

2.2.1 General Survey

Site assessment was undertaken by Land Eco Consulting Ecologists on 23rd August 2022. During the site assessment, the following activities were carried-out:

- Identifying and recording the vegetation communities present on the Subject Land, with a focus on identifying any threatened ecological communities (TEC);
- Searching for threatened species, species diagnostic of threatened ecological communities and priority weeds;
- Recording opportunistic sightings of any fauna species seen or heard within the immediate surrounds of the Subject Land;
- Identifying and recording the locations of threatened 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, cockatoos and arboreal mammals);
 - Caves and crevices (habitat for threatened reptiles, small mammals and microbats);
 - Termite mounds (habitat for threatened reptiles and the echidna);
 - Soaks (habitat for threatened frogs and dragonflies);
 - Wetlands (habitat for threatened fish, frogs and water birds);
 - Waterbodies (habitat for threatened fish, frogs and water birds);
 - Old buildings and other artificial structures (habitat for microbats) drainage lines (habitat for threatened fish and frogs);
 - Fruiting trees (food for threatened frugivorous birds and mammals);
 - Flowering trees (food for threatened nectarivores 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 Land and surrounding area.
- Identifying the species and habitat values of all trees proposed to be removed.

2.2.2 Vegetation Community Assessment

Land Eco examined local satellite imagery, geological mapping, soil landscape mapping and topographic mapping, in addition to existing vegetation mapping (BMCC 2002; DPIE 2019; DPIE 2021e) in order to stratify the Subject Land and guide the site assessment survey efforts.

The vegetation community was determined based on desktop and field analysis of the geomorphology and geology of the Subject Land, in addition to a quantitative analysis of the 'positive diagnostic' flora species.

A full list of flora species recorded during the site visits is presented (Appendix 2).

2.2.3 Spring Flora and Key's Matchstick Grasshopper Targeted Surveys

On 20th September 2022, Land Eco Personnel attended the site to conduct a survey for threatened flora species, and Key's Matchstick Grasshopper (*Keyacris scurra*).

The survey method involved walking the Subject Property at 5m transects while lightly disturbing grass and closely observing for the target species. (Figure 6).



0 5 10 20 30 40 50 Meters



Date: 21/10/2022

Coordinate System: GDA 1994 MGA Zone 55

Legend

-  Subject Land
-  Ecologist Transect



Imagery: Nearmap

This map was produced for this report only.
It is indicative, not survey-accurate.
It should not be used for design
or construction purposes.

Figure 6. Ecologist Survey Transects Walked on Subject Property on 20 September 2022

3. Native Vegetation

3.1 Historical Vegetation Mapping

There is no Historical Vegetation mapping on the subject property. However, Tozer *et al.* (2010) mapping identifies three remnant Vegetation Communities within a 1500m radius of the Subject Property:

- p9: Tableland Low Woodland
- p14: Western Tablelands Dry Forest
- p11: Elevated Gorge Forest
- p24: Tableland Grassy Box-Gum Woodland

3.2 Confirmed Vegetation

Upon examining the Subject Property, Land Eco found one native vegetation community occurring in up to two condition classes (**Figure 7; Table 4**).

Table 4. Vegetation communities and condition classes present on the Subject Property

Mapping Unit	Native vegetation of southeast NSW Community (Tozer <i>et al.</i> 2010)	Condition Class	Description
Tableland Grassy Box-Gum Woodland	GW p24: Tableland Grassy Box-Gum Woodland	Canopy	Native vegetation that has remained uncleared for >50 years, or Native woody vegetation that has been historically cleared and is naturally regenerating.
		Derived Native Grassland	Vegetation with a cleared canopy and a native grassy understorey representative of this vegetation community.
Non-native Vegetation & Artificial Surfaces	N/A	Non-native Vegetation & Artificial Surfaces	Planted non-native vegetation and artificial structures including asphalt driveway.

All of the native vegetation in the Subject Property qualifies as part of the Yellow Box Woodland CEEC as listed under the BC Act. The overall condition of this vegetation is poor owing to historical clearing, on-going disturbances (e.g. routine mowing) and weed infestation.

This vegetation is comprised of one young *Eucalyptus melliodora* tree with a stem diameter of approximately 20 cm, growing above an area of weed-infested grassland with scattered *Cassinia sifton* shrubs.

There was very little native floristic species richness in the Subject Property (**Appendix 2**).



0 5 10 20 30 40 50 Meters



Date: 20/10/2022

Coordinate System: GDA 1994 MGA Zone 55

Legend

- Subject Land
- Lot
- Tableland Grassy Box-Gum Woodland (Remnant Canopy)
- Tableland Grassy Box-Gum Woodland (Derived Grassland)
- Non-native Vegetation & Artificial



Imagery: Nearmap

This map was produced for this report only.
It is indicative, not survey-accurate.
It should not be used for design
or construction purposes.

Figure 7. Land Eco Consulting Vegetation Mapping

4. Threatened Species

4.1 Threatened Flora

No threatened flora species were found on the Subject Land during the site assessment by Land Eco.

The NSW Wildlife Atlas online survey tool (DPIE 2022c) was used to obtain a list of threatened flora previously recorded within a 10km radius of the Subject Land (**Table 5**). There were no historical records of threatened flora within the Subject Property. The habitat requirements of each species were assessed (DPIE 2022d) to determine the likelihood of species occurrence and/or impact from the proposed development.

Targeted survey was carried out in September 2022 and the survey effort revealed no threatened flora in the Subject Land.

Table 5. List of Threatened Flora that May Occupy the Subject Land at Some Stage of their Lifecycles as Identified by BioNet (DPIE 2022c)

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Land	NSW BC Act Test of Significance Required?
<i>Leucochrysum albicans</i> var. <i>tricolor</i>	Hoary Sunray	-	Endangered	Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Can occur in modified habitats such as semi-urban areas and roadsides. Highly dependent on the presence of bare ground for germination. In some areas, disturbance is required for successful establishment	Unlikely. Targeted surveys revealed no individuals in the Subject Property.	No
<i>Rutidosis leptorrhynchoides</i>	Button Wrinklewort	Endangered	Endangered	Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in Natural Temperate Grassland. Grows on soils that are usually shallow, stony red-brown clay loams; tends to occupy areas where there is relatively less competition from herbaceous species. Exhibits an ability to colonise disturbed areas including after wildfire. Normally flowers between December to March. Has regenerative buds at the surface of the soil but not below, so plants do not have the ability to resprout from underground structures; the stems usually die back in late summer or autumn and new basal leaves are evident by early winter. Susceptible to grazing, being retained in only a small number of populations on roadsides, rail reserves and other un-grazed or very lightly grazed sites.	Unlikely. Targeted surveys revealed no individuals in the Subject Property.	No
<i>Bossiaea oligosperma</i>	Few-seeded Bossiaea	Vulnerable	Vulnerable	Occurs on stony slopes or ridges on sandstone in the Yerranderie area and in low woodlands on loamy soil in the Windellama area. Nothing is known about its ecology but it probably has hard-coated seeds that	Unlikely. Targeted surveys revealed no individuals in the Subject Property.	No

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Land	NSW BC Act Test of Significance Required?
				respond well to fire and soil disturbance.		
<i>Diuris aequalis</i>	Buttercup Doubletail	Endangered	Vulnerable	Recorded in forest, low open woodland with grassy understorey and secondary grassland on the higher parts of the Southern and Central Tablelands (especially on the Great Dividing Range).	Unlikely. Targeted surveys revealed no individuals in the Subject Property.	No
<i>Persoonia oxycoccoides</i>	-	Endangered	-	Occurs in open dry sclerophyll forest, sandy/montane heath, on sandstone.	Unlikely. Targeted surveys revealed no individuals in the Subject Property.	No
<i>Pomaderris delicata</i>	Delicate Pomaderris	Critically Endangered	Critically Endangered	Dry open forest dominated by <i>Eucalyptus sieberi</i> with a dense she-oak understorey. Soils are shallow and derived from sandstone and siltstone.	Unlikely. Targeted surveys revealed no individuals in the Subject Property.	No

4.2 Threatened Fauna

No threatened fauna species were found on the Subject Land during the site assessment by Land Eco.

The desktop analysis revealed a suite of threatened fauna species which have the potential to utilise habitat on the Subject Property during part of their lifecycles (**Table 7**) (DPIE 2022c; 2022d).

The Subject Property contains a range of habitat features suitable for use by threatened fauna (**Table 6**).

Targeted survey was carried out in September 2022 and the survey effort revealed no threatened fauna, such as Key's Matchstick Grasshopper in the Subject Land.

Table 6. Threatened fauna habitat features in or adjacent to the Subject Land

Habitat component	Site values
Hollow-bearing trees, including living trees and dead stags	Nil
Large trees with basal cavities	Nil
Rock outcrops and bush rock	Nil
Caves, crevices and overhangs	Nil
Natural burrows	Nil
Coarse woody debris (logs)	Nil
Wetlands, soaks and streams	Nil
Open water bodies	Nil
Nests and roosts	Nil
Sap and gum sources (feed trees for gliders)	Gliders may feed on the Yellow Box (<i>Eucalyptus melliodora</i>), within the Subject Property.
Distinctive scats or latrine sites	Nil.
She-oak fruit (Glossy Black Cockatoo feed)	Nil
Culverts, bridges, mine shafts, or abandoned structures (microbat subterranean roosts)	Nil
Decorticated bark or palm fronds suitable for microbat roosts	Nil
Flying-fox camps	Nil
Nectar-bearing trees (e.g. winter-flowering)	A single Yellow Box (<i>Eucalyptus melliodora</i>) on the Subject Property may provide a food source for nectivorous fauna such as birds and flying-foxes when this tree is in flower.
Lerp-bearing trees	A single Yellow Box (<i>Eucalyptus melliodora</i>), on the Subject Property have the potential provide lerp for fauna such as birds and flying-foxes.
Nectar-bearing shrubs	Nil
Mistletoes	Nil
Koala browse trees	One species of koala use tree (<i>Eucalyptus melliodora</i>) was identified on the Subject Property with documented koala use in the Central and South Tablelands Koala Management Area.
Seed-bearing trees and shrubs	A <i>Eucalyptus</i> sp. Tree, Yellow Box (<i>Eucalyptus melliodora</i>) on the Subject Property produces woody fruit and seeds.
Soft-fruit-bearing trees or shrubs	Nil
Dense shrubbery and leaf litter	Nil
Dense grassland	Derived grassland is the predominant habitat feature across the Subject Property.
Estuarine, beach, mudflats, and rocky foreshores	Nil

Table 7. List of Threatened Fauna that May Occupy the Subject Land at Some Stage of their Lifecycles as Identified by BioNet (DPIE 2022c) and Commonwealth PMST

Taxa	Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Land	NSW BC Act Test of Significance Required?
Arthropoda	<i>Keyacris scurra</i>	Key's Matchstick Grasshopper	Endangered	-	Typically found in native grasslands and grassy woodlands but it has also been recorded in other vegetation associations usually containing a native grass understory (especially kangaroo grass <i>Themeda triandra</i>) and known food plants (particularly Asteraceae). Opportunistic sightings (as opposed to records from systematic surveys) have been reported in a wide range of vegetation types in south-east NSW, including wet sclerophyll forest, montane low forest, dry woodlands, heathland, and montane grasslands. In some reported locations there is an absence of <i>Themeda</i> and very few or no Asteraceae. Being flightless, this species does not disperse large distances (<10m) which suggests these observations are indicative of resident populations (rather than dispersing individuals).	Unlikely. Presence of <i>Themeda</i> . Targeted survey conducted in September 2022 confirmed this species absence.	No
Amphibia	<i>Litoria aurea</i>	Green and Golden Bell Frog	Endangered	Vulnerable	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), have a grassy area nearby and diurnal sheltering sites available. Diurnal, breed in summer when warm and moist. Tadpoles eat algae/plant matter, adults eat insects and other frogs.	Unlikely. no water bodies evident on site, one (1) observation ~2km from Subject Property, >45 years.	No
Reptilia	<i>Suta flagellum</i>	Little Whip Snake	Vulnerable	-	Occurs in natural temperate grasslands, grassy woodlands and secondary grasslands from clearing of woodlands; particularly in association with well drained hillsides, with scattered loose rocks. Most specimens found under rocks or logs that are lying on or partially embedded in soil. Primarily nocturnal. Diet of lizards and frogs.	Unlikely. No suitable habitat or reliable food source. One (1) recent observation ~5km from Subject Property in 2022.	No
Aves	<i>Hieraetus morphnoides</i>	Little Eagle	Vulnerable	-	Occupies open eucalypt forest, woodland or open woodland. Also uses Sheoak or <i>Acacia</i> woodlands and riparian woodlands on interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	Unlikely. No suitable nesting habitat, foraging habitat small percentage of available space in region.	No
Aves	<i>Falco subniger</i>	Black Falcon	Vulnerable	-	Plains, grasslands, foothills, timbered watercourses, wetland environments, crops and occasionally over towns/cities.	Unlikely. Individuals of the species travel very broadly over its geographic range, may fly over Subject Property, but no suitable habitat otherwise.	No
Aves	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Vulnerable	-	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves	Unlikely. No suitable foraging habitat within the Subject Property.	No

Taxa	Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Land	NSW BC Act Test of Significance Required?
					to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. Favours old growth forest and woodland attributes for nesting and roosting.		
Aves	<i>Chthonicola sagittata</i>	Speckled Warbler	Vulnerable	-	The Speckled Warbler lives in a wide range of <i>Eucalyptus</i> dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. Consumes seeds and insects, foraging low to ground among tussocks and bushes. Breeding pairs occupy areas approximately ten (10) hectares when breeding, slightly larger when not breeding. Nest is a dome of dry grass & bark strips, low to ground.	Unlikely. No suitable habitat on Subject Property.	No
Aves	<i>Daphoenositta chrysoptera</i>	Varied sittella	Vulnerable	-	Inhabits eucalypt forest and woodlands, particularly those containing rough bark species and smooth-barked gums with dead branches, mallee and <i>Acacia</i> woodland. Diet of arthropods gleaned from crevices in rough or decorticated bark, dead branches, standing dead trees and small branches/twigs from within the canopy. Builds cup nests in tree forks of living canopy, reuses nest/fork for successive years of breeding.	Unlikely. No suitable habitat on Subject Property.	No
Aves	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	Vulnerable	-	Inhabits primarily dry, open, eucalypt forests and woodlands, with an open or sparse understory of eucalypt saplings or acacias, with a ground covering of grasses, sedges or fall woody debris. Will also occupy shrublands, heathlands, moist forest/rainforest habitat, and farmland along the edges of remnant forest. Diet of insects caught in flight above a canopy or water, also eats seeds, fruit & nectar. Populations can be migratory or sedentary based on local conditions. Nests in an open cup of twigs, grass, fibrous rootlets and occasionally casuarina needles. 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. Nest sites may be exposed or well concealed by foliage.	Low. Subject Property historically disturbed, habitat unlikely to be used.	Yes

Taxa	Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Land	NSW BC Act Test of Significance Required?
Aves	<i>Petroica boodrang</i>	Scarlet Robin	Vulnerable	-	Inhabits dry eucalypt forest/woodlands, both old growth and regrowth, with understory or scattered shrubbery and grass. Abundant fallen logs important habitat component. May occupy more open habitat post breeding. Nest, open cup of plant fibres and cobwebs, located 2m above ground in a fork of a dead branch, or dead tree/shrub.	Low. Subject Property is mostly historically cleared. Species is nomadic and may utilise habitat.	Yes
Aves	<i>Petroica phoenicea</i>	Flame Robin	Vulnerable	-	Inhabits clearings or open understories, breeds in in upland, tall, moist eucalypt forests and woodlands with a ground layer dominated by native grasses, often on ridges and slopes. Forage from low perches. Diet, feeds on insects on the fly, and from foliage and under bark. Nest low to ground in shallow cavities in trees, stumps or banks. Open cup nest of plant fibres and cobwebs. Often occurs in conjunction with Scarlet Robin.	Low. Subject Property is mostly historically cleared. Species is nomadic and may utilise habitat.	Yes
Mammalia	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Vulnerable	Occur in subtropical/temperate rainforests, tall sclerophyll forests/woodlands, heaths, swamps, urban gardens and cultivated fruit orchards. Feed on nectar/pollen of native tree sp. (<i>Eucalyptus</i> , <i>Melaleuca</i> , <i>Banksia</i> etc.), a fruit from native rainforest trees, vines, cultivated gardens & orchards.	Unlikely. Not a resident in the Goulburn area. Species may occur in the area on occasion and temporarily forage upon nectar in the <i>Eucalyptus mellidora</i> however this is considered to be infrequent and not likely to provide important habitat to this nomadic bat species.	No
Mammalia	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	Vulnerable	-	Roosts singly or in groups of up to six (6), in tree hollows and buildings. Forage for insects high above canopy, lower in open country.	Unlikely. No appropriate tall forest habitat, uncommon visitor. May fly over on rare occasions.	No
Mammalia	<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Vulnerable	-	Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous	Unlikely. No suitable habitat on Subject Property.	No
Mammalia	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Vulnerable	-	Prefers moist habitats, with trees taller than 20 m. Generally roosting in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Forages for flying insects above or just below the tree canopy.	Unlikely. No suitable habitat on Subject Property.	No

Taxa	Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Land	NSW BC Act Test of Significance Required?
Mammalia	<i>Miniopterus australis</i>	Little Bent-winged Bat	Vulnerable	-	Generally found in well-timbered moist eucalypt forest, rainforest, vine thicket, wet & dry sclerophyll forest, <i>Melaleuca</i> swamps, dense coastal forests and <i>Banksia</i> scrub. Roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, bridges and buildings during the day. Feed below canopy of dense vegetation at night.	Unlikely. No suitable roosting or foraging habitat on Subject Property. May fly over on rare occasions.	No
Mammalia	<i>Miniopterus orianae oceanesis</i>	Large Bent-winged Bat	Vulnerable	-	Primarily roosts in caves (groups of 100-150,000), derelict mines, stormwater tunnels, and other man-made structures. Form discrete populations around maternity cave, revisited annually (spring and summer) for breeding and rearing young. Can disperse up to 300km from maternity cave. Forage in forested areas for flying insects above canopy.	Unlikely. No suitable roosting or foraging habitat on Subject Property. May fly over on rare occasions.	No

5. Impact Summary

This section of the report provides a summary of impacts to biodiversity as a result of the proposed development upon threatened species, populations and ecological communities listed under the BC Act.

5.1 Vegetation Effects

The majority of the Subject Property has been historically cleared, with limited ecological value.

All of the Yellow Box Woodland CEEC on the Subject Property is proposed to be cleared for the DA, this consists of one young *Eucalyptus melliodora* tree with a stem diameter at breast height (DBH) of approximately 40cm along with an area of weed-infested grassland with scattered *Cassinia sifton* shrubs.

5.2 Threatened Species Effects

A narrow suite of threatened species are likely to occur on the Subject Property and may be impacted by the proposed subdivision (**Table 7**).

The greatest impact on threatened species would be the loss of habitat through vegetation clearing.

Localised removal of the single *Eucalyptus melliodora* tree and groundcover will reduce structural habitat diversity however this habitat is not significant or important to any viable local population of threatened species, owing to its isolated and disturbed condition **Table 7**.

5.3 Impact Assessments

5.3.1 Biodiversity Conservation Act 2016 (BC Act)

A Test of Significance pursuant of Section 7.3 of the BC Act has been conducted for each species considered likely to occur on the Subject Land (**Appendix 2**). No significant impacts were deemed likely as a result of the proposed development.

Impacts to threatened flora, and woodland birds including Scarlet Robin (*Petroica boodang*), Flame Robin (*Petroica phoenicea*), Dusky Woodswallow (*Artamus cyanopterus*) could not be assessed as no targeted surveys have been undertaken. Such surveys were outside the scope of this assessment. It is recommended that targeted surveys and appropriate impact assessments of the above species are undertaken for any future subdivision and development on the Subject Land.

6. Impact Mitigation Measures

A suite of impact mitigation measures are proposed in order to avoid, minimise and mitigate impacts to threatened species from the proposed development (**Table 8**).

Table 8. Measures to be Implemented Before, During and After Construction to Avoid and Minimise the Impacts of the Project

Action	Mitigation Measure / Outcome	Timing	Responsibility
Project Location and Design	The location of the proposed subdivision should be positioned to limit native vegetation clearing, retain remnant hollow-bearing trees, establish conservation zones as recommended and avoid adverse impacts to riparian vegetation, water bodies, and breeding habitat for threatened species.	Pre-construction phase	<ul style="list-style-type: none"> Proponent
Tree Protections	<p>All trees to be retained immediately outside of the development footprint must be protected in accordance with Australian Standard - <i>Protection of Trees on Development Sites</i> (AS-4970-2009), which outlines that a Tree Protection Zone (TPZ) is the principal means of protecting trees on development sites. It is an area isolated from construction disturbance so that the tree remains viable.</p> <p>Works will be avoided within the TPZ of any trees located outside of the development site that require retention. This includes trees on neighbouring properties.</p>	Pre-construction phase	<ul style="list-style-type: none"> Arborist and fence contractor under guidance of Arboriculturist.
Stormwater and Sewage	Sewage and stormwater will be managed according to the current infrastructure plans (Tim Lee Architects 2021).	Design and construction phase	<ul style="list-style-type: none"> Construction Contractor Engineer
Erosion and Sedimentation	Appropriate erosion and sediment control will be erected and maintained during construction. At minimum such measures will comply with the relevant industry guidelines such as 'the Blue Book' (Landcom 2004).	Construction phase	<ul style="list-style-type: none"> Construction Contractor
Dust Suppression	Dust suppression techniques will be enforced to reduce impacts on local fauna.	Construction phase	<ul style="list-style-type: none"> Construction Contractor
Noise Suppression	Noise suppression techniques will be enforced to reduce impacts on local fauna.	Construction phase	<ul style="list-style-type: none"> Construction Contractor
Minimising Artificial Lighting Impacts	Low spill lighting or shielding should be used where possible and restrictions around night-time construction work will be enforced to minimise the impacts on nocturnal fauna using nearby habitats.	Construction phase	<ul style="list-style-type: none"> Construction Contractor
Storage and Stockpiling (Soil and Materials)	All storage, stockpile and laydown sites will be established away from any native vegetation that is planned to be retained. Never stockpile under the 'drip zone' of a tree. Avoid importing any soil from outside the site as this can introduce weeds and pathogens to the site.	Construction phase	<ul style="list-style-type: none"> Construction Contractor
Weed eradication and Vegetation Regeneration	Priority and High Threat Weeds should be controlled across all areas of the Subject Property. Native vegetation regeneration will be conducted to maintain and improve the biodiversity values outlined in the Goulburn Mulwaree LEP and DCP.	<ul style="list-style-type: none"> Construction phase Post-construction phase 	<ul style="list-style-type: none"> Project Ecologist Landscape Contractor

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8. Appendices

Appendix 1. Fauna species identified during survey of Subject Property by Land Eco Consulting

Class	Scientific Name	Common Name	BC Act Status
Aves	<i>Vanellus miles</i>	Masked Lapwing	Protected
Aves	<i>Corvus coronoides</i>	Australian Raven	Protected
Aves	<i>Malurus cyaneus</i>	Superb Fairywren	Protected
Aves	<i>Sturnus vulgaris</i>	Common Starling	Not Protected

Appendix 2. Flora species identified during survey of Subject Property by Land Eco Consulting

Species	Stratum	Status
<i>Eucalyptus melliodora</i>	Canopy	Native
<i>Setaria pumila</i>	Ground	Non-native
<i>Cassinia sifton</i>	Shrub	Native
<i>Geranium solanderi</i>	Ground	Native
<i>Romulea rosea</i>	Ground	Non-native
<i>Plantago lanceolatus</i>	Ground	Non-native
<i>Taraxacum officinale</i>	Ground	Non-native
<i>Paspalum dilatatum</i>	Ground	Non-native
<i>Juncus articulatus</i>	Ground	Non-native
<i>Cyperus eragrostis</i>	Ground	Non-native
<i>Themeda triandra</i>	Ground	Native
<i>Holcis lanatus</i>	Ground	Non-native
<i>Hypochaeris radicata</i>	Ground	Non-native
<i>Hypericum perforatum</i>	Ground	Non-native, WoNS
<i>Panicum decompositum</i>	Ground	Non-native
<i>Rubus fruticosus</i> sp. Agg	Ground	Non-native, WoNS
<i>Rytidosperma</i> spp.	Ground	Native
<i>Nassella trichotoma</i>	Ground	Non-native, WoNS
<i>Medicago polymorpha</i>	Ground	Non-native
<i>Modiola carolinana</i>	Ground	Non-native
<i>Cupressus sempervirens</i>	Ground	Non-native
<i>Eragrostis curvula</i>	Ground	Non-native
<i>Lycium ferocissimum</i>	Ground	Non-native, WoNS
<i>Microlaena stipoides</i>	Ground	Native
<i>Erharta erecta</i>	Ground	Non-native
<i>Nassella neesiana</i>	Ground	Non-native, WoNS
<i>Hypochaeris glabra</i>	Ground	Non-native
<i>Phalaris aquatica</i>	Ground	Non-native
<i>Rapistrum rugosum</i>	Ground	Non-native
<i>Conyza bonariensis</i>	Ground	Non-native

Appendix 2. Biodiversity Conservation Act 2016 - Test of Significance (5 Part Test)

Threatened Ecological Communities

- White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered Ecological Community (BC Act)

Woodland Birds

- Artamus cyanopterus cyanopterus* Dusky Woodswallow (BC Act: Vulnerable)
- Petroica boodang* Scarlet Robin (BC Act: Vulnerable)
- Petroica phoenicea* Flame Robin (BC Act: Vulnerable)

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016 For Endangered Ecological Communities	
Endangered Ecological Communities <ul style="list-style-type: none"> White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered Ecological Community (Critically Endangered Ecological Community) 	
Ecology (DPIE 2021b)	<p>White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (commonly referred to as Box-Gum Woodland) was listed as a Critically Endangered Ecological Community (CEEC) on July 17, 2020. It is an open woodland community (sometimes occurring as a forest formation), in which the most obvious species are one or more of the following: White Box <i>Eucalyptus albens</i>, Yellow Box <i>E. melliodora</i> and Blakely’s Red Gum <i>E. blakelyi</i>. Intact sites contain a high diversity of plant species, including the main tree species, additional tree species, some shrub species, several climbing plant species, many grasses and a very high diversity of herbs. The community also includes a range of mammal, bird, reptile, frog and invertebrate fauna species. Intact stands that contain diverse upper and mid-storeys and ground layers are rare. Modified sites include the following:</p> <ul style="list-style-type: none"> Areas where the main tree species are present ranging from an open woodland formation to a forest structure, and the ground layer is predominantly composed of exotic species; and Sites where the trees have been removed and only the grassy ground layer and some herbs remain
Habitat Impacted by this Activity/Development	<p>A total of 0.24 ha of Box-Gum Woodland will be cleared for the proposed development, as well as a likely increase in a range of indirect impacts.</p> <p>This ecological community occurs in the Subject Property which has been historically cleared and disturbed. All that remains is one young <i>Eucalyptus melliodora</i> tree over a weed-infested, managed, grassland with scattered emergent <i>Cassinia sifton</i> bushes. The remaining remnant canopy tree is large (>40cm DBH) and bears no large hollows.</p>
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	<p>NA</p>
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	<p>(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or</p> <p>The occurrence of Box-Gum Woodland on the Subject Property is already historically cleared and severely weed infested (Figure 2). The clearing required for the proposed development represents a small percentage (less than 0.1%) of the overall extent of the CEEC in the Goulburn locality, and is unlikely 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.</p>

**Test of Significance
(Five Part Test)
s.7.3 of the Biodiversity Conservation Act 2016
For
Endangered Ecological Communities**

	(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,	The proposed development will cause complete removal of the ecological community from the Subject Property, however, the local occurrence will continue to survive and will not likely be placed at risk of extinction. This is because the patch to be cleared is small, degraded, lacks connectivity, and represents less than 0.1% of the local occurrence in the Goulburn area.
(c) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	A total of 0.24 ha of Box-Gum Woodland will be cleared for the proposed development, as well as a likely increase in a range of indirect impacts and edge effects on the vegetation that is to be retained. This vegetation is already isolated and degraded. The indirect impacts from the proposed development are unlikely to be significant.
	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	This CEEC is already fragmented and isolated in this locality. The development will not increase fragmentation or isolation.
	(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	The habitat to be modified contains only one Yellow Box tree, and the area is already heavily modified and degraded. Edge effects are unlikely to impact the long-term survival of this CEEC. Native grassland may be impacted however it is not important to the long-term survival of the ecological community in the locality.
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	The development proposed is not likely to have an adverse effect on any declared area of outstanding biodiversity value, directly or indirectly.	
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	<p>The following key threatening processes (KTP) were observed to already be impacting the Subject Property:</p> <ul style="list-style-type: none"> • Invasion of native plant communities by exotic perennial grasses <p>The proposed development has the potential to increase impacts from the following KTP:</p> <ul style="list-style-type: none"> • Clearing of native vegetation 	
Conclusion		
The proposed development will not significantly impact a substantial area of Box-Gum Woodland, therefore no further impact assessment, such as a Biodiversity Development Assessment Report (BDAR) is necessary for this project to proceed.		

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016		
For Woodland Birds		
1. <i>Artamus cyanopterus</i> Dusky Woodswallow (BC Act: Vulnerable) 2. <i>Petroica boodang</i> Scarlet Robin (BC Act: Vulnerable) 3. <i>Petroica phoenicea</i> Flame Robin (BC Act: Vulnerable)		
Ecology	<p>The Dusky Woodswallow primarily inhabits dry, open eucalypt forests and woodlands, including mallee associations. Primarily eats invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Nest is an open, cup-shape, made of twigs, grass, fibrous rootlets and occasionally casuarina needles, and may be lined with grass. 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. Nest sites may be exposed or well concealed by foliage.</p> <p>The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. 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; nests are often found in a dead branch in a live tree, or in a dead tree or shrub.</p> <p>The Flame Robin breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Nests are often near the ground and are built in sheltered sites, such as shallow cavities in trees, stumps or banks.</p>	
Extent of Habitat Impacted on Subject Site	<p>All of these woodland birds may forage in the grassy woodland and exotic grassland on the Subject Property.</p> <p>A total of 0.24 ha of potential foraging and breeding habitat will be removed for the proposed development. The species may forage in the open grassland from the trees and fence lines. It is unlikely that this isolated and open patch of woodland located in an urban setting would be used for breeding by these sensitive woodland birds.</p>	
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	<p>The proposed development is not 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.</p> <p>The habitat to be impacted represents a small portion of historically degraded habitat.</p> <p>These birds are mobile and not likely to rely on the habitat in the Subject Property.</p>	
(b) in the case of an endangered ecological community or , whether the proposed development or activity:	(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or	NA
	(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,	NA
(c) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	A total of 0.24ha of potential foraging habitat including will be removed for the proposed development as well as associated increase in human activity such as noise pollution.

**Test of Significance
(Five Part Test)
s.7.3 of the Biodiversity Conservation Act 2016**

**For
Woodland Birds**

1. *Artamus cyanopterus cyanopterus* Dusky Woodswallow (BC Act: Vulnerable)
2. *Petroica boodang* Scarlet Robin (BC Act: Vulnerable)
3. *Petroica phoenica* Flame Robin (BC Act: Vulnerable)

	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	The habitat is already fragmented with no connectivity to more substantial remnant bushland to the north-east of the Subject Property. The proposed development will not result in a significant increase in habitat fragmentation or isolation. These birds are mobile and not likely to rely on the habitat in the Subject Property.
	(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	The habitat to be removed represents a small portion of the habitat available within the locality. It is not important to the long-term survival of the species in the locality. These species are nomadic, mobile and capable of moving multiple kilometres in a single day.
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	The development proposed is not likely to have an adverse effect on any declared area of outstanding biodiversity value, directly or indirectly.	
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	<p>The following key threatening processes (KTP) were observed to already be impacting the Subject Property:</p> <ul style="list-style-type: none"> • Invasion of native plant communities by exotic perennial grasses <p>The proposed development has the potential to increase impacts from the following KTP:</p> <ul style="list-style-type: none"> • Clearing of native vegetation • Aggressive exclusion of birds by Noisy Miners <i>Manorina melanocephala</i>. 	

Conclusion

The proposed development will not significantly impact on a viable local population of these species, therefore no further impact assessment, such as a Biodiversity Development Assessment Report (BDAR) is necessary for this project to proceed.

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