



STREAMLINE BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

FOR A
PROPOSED RESIDENTIAL SUBDIVISION
AT
173 and 175 Wollombi Rd,
FARLEY NSW

Prepared by:

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Site Details:	173 & 175 Wollombi Rd, Farley, 2320.				
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Executive Summary

Introduction

Firebird ecoSultants Pty Ltd has been engaged by Egghill Pty Ltd to provide a Biodiversity Development Assessment Report (BDAR) for a residential subdivision (‘the proposal’) at 173 & 175 Wollombi Rd, Farley, 2320 (‘the Site’).

The site is ~3.5ha in size and is located in the Urban Release Area. The site is zoned as R1 – General Residential. The site contains two existing dwellings and landscaped curtilage comprising of planted native and exotic species. No drainage canals occur on site. However, in accordance with the Strahler stream ordering system in Appendix 3 of the BAM, nearby watercourses have been mapped. The site is surrounded by residential lots. The site does not contain important mapped areas for threatened species or any mapped biodiversity values.

Landscape features

Details	Response
IBRA Region and Subregion	Dominant landscape forms have been used to divide Australia into bioregions. The site is within the Sydney Basin IBRA bioregion and the Hunter IBRA subregion. See previous Figure 1-1 for the locations of IBRA regions/subregions within 1.5 km of the site.
Mitchell Landscape	Mitchell Landscapes are used to describe areas in NSW in a broad sense and group together areas with relatively homogenous geomorphology, soils and broad vegetation types and are mapped at a scale of 1:250000. The subject site is within the Newcastle Ramp landscape. See previous Figure 1-1 for the locations of Mitchell Landscapes within 1.5 km of the site.
Percent Native Vegetation Cover	All areas of native vegetation cover, within the site and within a 1,500 m buffer area surrounding the site, have been mapped (see Figure 2-1). It is estimated, from this mapping, that the native vegetation cover would be 15%.
Wetlands, Rivers, Streams and Estuaries	No wetlands, rivers, streams or estuaries occur within the site. However, in accordance with the Strahler stream ordering system in Appendix 3 of the BAM, watercourses have been mapped. Figure 1-1 for watercourses within 1.5 km of the site.
Connectivity Features	The site may form part of a network of ‘stepping stones’ throughout the area for fauna species that are able to traverse open areas. The site itself is maintained curtilage with planted native and exotic species. The proposal is not expected to impact on existing connectivity within the site
Areas of Geological Significance and Soil Hazard Features	No Karsts, caves, crevices and/or cliffs are present within the 1,500m buffer. No soil hazards were identified on the site or within a 1,500 m buffer around the site.
Areas of Outstanding Biodiversity Value	Under the BC Act, the Minister for the Environment may declare Areas of Outstanding Biodiversity Value (AOBV). These are special areas that contain irreplaceable biodiversity values that are considered important to NSW,



	Australia or globally. No listed AOBV occur within the site or within a 1,500 m buffer around the site.
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Assessment Method

Assessment of the vegetation within the site has shown that it is comprised of both planted native and exotic species, therefore this BDAR has been undertaken in accordance with Appendix D: Streamlined assessment module – Planted native vegetation. The decision-making key in section D.1 of the BAM resulted in the assessment being undertaken in accordance with D.2 6.i of the BAM. This stating the following:

The assessor must assess the suitability of the planted native vegetation for use by threatened species and record any incidental sightings or evidence (e.g. scats, stick nests) of threatened species credit species (flora and fauna) using, inhabiting or being part of the planted native vegetation.

If there is evidence that threatened species are using the planted native vegetation as habitat, the assessor must apply Section 8.4 of the BAM to mitigate and manage impacts on these species. Species credits are not required to offset the proposed impacts. The steps taken to assess threatened species habitat and all reasonable measures proposed to be taken to mitigate or minimise impacts must be set out in the BDAR or BCAR.

Furthermore, Chapters 4 and 5 of the BAM are not required to be applied in the BDAR.

Plant Community Types

Vegetation throughout the majority of the project site has been classified as planted native and non-native vegetation (see Photos 1-3. The planted vegetation within the site comprises mixed landscape plantings of native and non-native over-storey, over mown groundcover dominated by exotic plant species. No naturally regenerating canopy species, hollow-bearing trees, nor fallen woody debris occur within the site.

Typically, native over-storey plantings comprise *Casuarina glauca* (Swamp Oak), *Eucalyptus camuldensis* (River Red Gum), *Melaleuca linariifolia* (Flax-leaved Paperbark), *Callitemon viminalis* (Weeping Bottlebrush), *Grevillea robusta*, *E. piluiris*, and *Corymbia sp.* and exotic species such as *Ligustrum Sinense* (Chinese Privet), and *Nerium Oleander* (Oleander).

The ground layer is exotic grassland dominated (seeded with) *Digtoria didactyla*, and other species include *Kikuyu/ Buffallo Grass*, *Bidins Pilosa*, and *Trifolium sp.*

A grasslands and ground cover assessment has been undertaken within the site, this assessment determined that, in accordance with the OEH (2017) Interim Grasslands and other Groundcover Assessment Method, the site's grassland is regarded as non-native,



and is classified as low conservation value (refer to Appendix B for the Grasslands and other Groundcover Assessment).

It is therefore considered that the vegetation within the site has been modified to an extent that it comprised of planted native and exotic trees / shrubs and grasses. Therefore, no PCT could be determine for the site. In any case in accordance with D.2 6.i. of the BAM, Chapter 4 and 5 of the BAM does not need to be applied.

Vegetation Integrity

The vegetation within the site has been highly modified from its original form to an extent that it is no longer considered to be a native vegetation community.

Fauna

The site may provide marginal habitat for potentially occurring threatened species that are adapted to open areas, such as woodland birds and microbabts Other fauna observed included the Noisy miner (*Manorina melanocephala*), (Grey butcherbird (*Cracticus torquatus*), Rainbow lorikeet (*Trichoglossus haematodus*), Eastern rosella (*Platycercus eximius*), Australian magpie (*Gymnorhina tibicen*).

Habitat Assessment

The following describes the habitat attributes of the study area;

- No caves, tunnels, mines or culverts occur within the site.
- No stick nests were identified within the site at the time of survey
- No flying fox camps occur within or near the site.



Abbreviations

Abbreviation	Meaning
AOBV	Areas of Outstanding Biodiversity Value
BAM	Biodiversity Assessment Methodology 2020
BC Act	<i>Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
DCP	Development Control Plan
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DECCW	Department of Environment, Climate Change and Water
DEE	Department of Environment and Energy
DoE	Department of Environment
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
Ha	Hectare
LEP	Local Environmental Plan
LGA	Local Government Area
MU	Map Unit
NPWS	NSW National Parks and Wildlife Service
OEH	Office of Environment and Heritage
PCT	Plant Community Type
PFC	Projected Foliage Cover
SAIL	Serious and Irreversible Impacts
TBCD	Threatened Biodiversity Data Collection
TEC	Threatened Ecological Community



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I STAGE I – BIODIVERSITY ASSESSMENT

I.1 INTRODUCTION

Firebird ecoSultants Pty Ltd has been engaged by Egghill Pty Ltd to provide a Biodiversity Development Assessment Report (BDAR) for a residential subdivision ('the proposal') at 173 & 175 Wollombi Rd, Farley 2320 ("the Site"). The site is ~3.5ha in size and is located in the Urban Release Area. The site is zoned as R1 – General Residential. The site contains two existing dwellings and landscaped gardens comprising of planted native and exotic species. No drainage canals occur on site. See Figure 1-1 for the Location Map and Figure 1-2 for the Site Map. This BDAR has been prepared to satisfy the requirements of the *Biodiversity Conservation Act 2016* (BC Act). This assessment has been undertaken in accordance with Section D.2 of the Biodiversity Assessment Method 2020.

I.2 Description of the Proposal

The proposal is for the a 38 lot residential subdivision. Refer to Appendix A for Site Plans.

I.3 General Site Description

The site is ~3.5ha in size and is located in the Urban Release Area. The site is zoned as R1 – General Residential. The site contains two existing dwellings and landscaped gardens comprising of planted native and exotic species. The site does not contain important mapped areas for threatened species or any mapped biodiversity values. Refer to Figure 1-3 Biodiversity Value Map.

I.4 The Study Area

The study area is the area of land within the site that has been assessed in this report, which is the area of vegetation within the site that is relevant to this BDAR i.e. the area of vegetation within or potentially impacted by the construction and operational footprint. Land within the site that is not considered to be impacted by the proposal (either directly or indirectly) is considered to be outside the study area. In this case however, the study area encompasses the entire site.

I.5 Assessment Method

Assessment of the vegetation within the site has shown that it is comprised of both planted native and exotic species, therefore this BDAR has been undertaken in accordance with Appendix D: Streamlined assessment module – Planted native



vegetation. The decision-making key D.1 of the BAM resulted in the assessment being undertaken in accordance with D.2 of the BAM. This stating the following:

The assessor must assess the suitability of the planted native vegetation for use by threatened species and record any incidental sightings or evidence (e.g. scats, stick nests) of threatened species credit species (flora and fauna) using, inhabiting or being part of the planted native vegetation.

If there is evidence that threatened species are using the planted native vegetation as habitat, the assessor must apply Section 8.4 of the BAM to mitigate and manage impacts on these species. Species credits are not required to offset the proposed impacts. The steps taken to assess threatened species habitat and all reasonable measures proposed to be taken to mitigate or minimise impacts must be set out in the BDAR or BCAR.

It is noted that the use of Chapters 4 and 5 of the BAM are not required to be applied in the BDAR.

1.6 Information sources

1.6.1 Database Searches

The following database searches were undertaken, in order to compile a list of threatened flora and fauna species predicted to occur in the area:

- Review of threatened fauna and flora records within a 10 km radius of the site, contained in the OEH *Atlas of NSW Wildlife* (NSW BioNet).
- Review of the MNES records within a 10 km radius of the site, using the Commonwealth Department of Environment and Energy (DEE), EPBC Act Protected Matters Search Tool.

1.6.2 Regional Vegetation Mapping

Regional scale vegetation mapping, previously undertaken in the area, was reviewed. This included a review of *Greater Hunter Native Vegetation Mapping v4.0. VIS ID 3855*



1.6.3 Literature Review

Information sources reviewed included, but were not limited to:

- Aerial Photograph Interpretation (API)
- Relevant guidelines, including:
 - OEH *Biodiversity Assessment Method*, 2020
 - *NSW Guide to Surveying Threatened Plants* (OEH, 2016)
 - *'Species credit' threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method* (OEH, 2018)
 - *NSW Survey Guide for Threatened Frogs: A guide for the survey of frogs and their habitats for the Biodiversity Assessment Method* (DPI&E, 2020)
 - *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (Department of Environment and Conservation (DEC), 2004)
- Environmental / planning reports relevant to the site / area, including:
 - *Maitland LEP 2011*
- Any environmental / ecological reports relevant to the site or area, including vegetation mapping.
- Online tools and resources, including:
 - BioNet Vegetation Classification (OEH, 2022)
 - BioNet Threatened Biodiversity Data Collection (OEH, 2022)
 - Directory of Important Wetlands in Australia (Department of Environment and Energy (DEE), 2010)
 - NSW Scientific Committee Final Determinations (NSW Scientific Committee various dates)
 - Commonwealth Threatened Species Scientific Committee (TSSC) Final Determinations for threatened species (TSSC Various Dates)
 - OEH Threatened Species, Populations and Ecological Communities website
 - Commonwealth DEE Species, Profile and Threats Database
 - PlantNET NSW (Botanic Gardens Trust, 2018).

- Legend**
- Subject Site
 - 1.5km Buffer
 - 1st Order Watercourse
 - 2nd Order Watercourse
 - 3rd Order Watercourse
 - 4th Order Watercourse
 - 10m Riparian Buffer
 - 20m Riparian Buffer
 - 30m Riparian Buffer
 - 40m Riparian Buffer

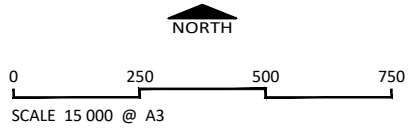


Note:
 Boundaries are not survey accurate.
 Although all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Google
 Nearmap

FIGURE 1-1: LOCALITY MAP

CLIENT Client
 SITE DETAILS Owlpen Lane Farley
 DATE 26 April 2022



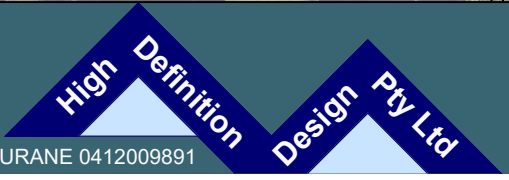
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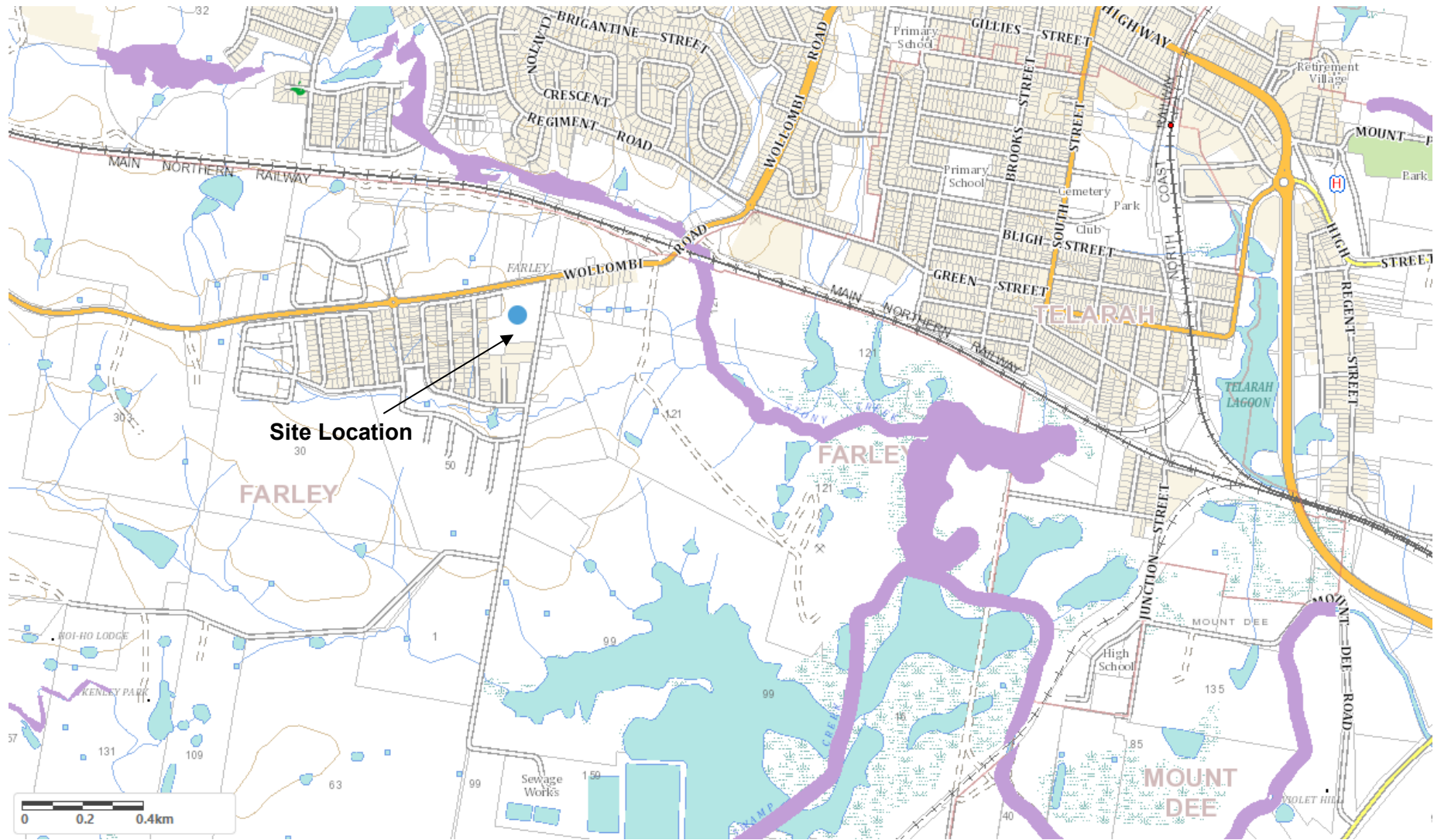
TITLE: PROPOSED SUBDIVISION LOT 102 DP UNREGISTERED
 OWL PEN LANE FARLEY
 AERIAL OVERLAY



KEVIN URANE 0412009891

Date: 28.09.21	Scale: 1:1000 @:A3	Designed: KU	Project No: HD346
Cad Ref: HD346 r5			
5	DA PLANS	KU 06.04.22	Drawing No: HD02
1	DA PLANS	KU 28.09.21	Revision: 5
No	Amendment	Drawn Date	

Figure 1-3: Biodiversity Values Map



1.7 Landscape features

This section details the landscape features occurring on the Subject Land or within the assessment area (i.e. a 1.5 km buffer) surrounding the Subject Land; see Table 2-1.

Table 1-1: Landscape Features

Details	Response
IBRA Region and Subregion	Dominant landscape forms have been used to divide Australia into bioregions. The site is within the Sydney Basin IBRA bioregion and the Hunter IBRA subregion. See previous Figure 1-1 for the locations of IBRA regions/subregions within 1.5 km of the site.
Mitchell Landscape	Mitchell Landscapes are used to describe areas in NSW in a broad sense and group together areas with relatively homogenous geomorphology, soils and broad vegetation types and are mapped at a scale of 1:250000. The subject site is within the Newcastle Ramp landscape. See previous Figure 1-1 for the locations of Mitchell Landscapes within 1.5 km of the site.
Percent Native Vegetation Cover	All areas of native vegetation cover, within the site and within a 1,500 m buffer area surrounding the site, have been mapped (see Figure 2-1). It is estimated, from this mapping, that the native vegetation cover would be 15%.
Wetlands, Rivers, Streams and Estuaries	No wetlands, rivers, streams or estuaries occur within the site. However, in accordance with the Strahler stream ordering system in Appendix 3 of the BAM, watercourses have been mapped. See previous Figure 1-1 for watercourses within 1.5 km of the site.
Connectivity Features	The site may form part of a network of 'stepping stones' throughout the area for fauna species that are able to traverse open areas. The site itself is maintained planted native and exotic species. The proposal is not expected to impact on existing connectivity within the site
Areas of Geological Significance and Soil Hazard Features	No Karsts, caves, crevices and/or cliffs are present within the 1,500m buffer. No soil hazards were identified on the site or within a 1,500 m buffer around the site.
Areas of Outstanding Biodiversity Value	Under the BC Act, the Minister for the Environment may declare Areas of Outstanding Biodiversity Value (AOBV). These are special areas that contain irreplaceable biodiversity values that are considered important to NSW, Australia or globally. No listed AOBV occur within the site or within a 1,500 m buffer around the site.

1.8 Native vegetation

1.8.1 Native Vegetation Cover Within the Site

Vegetation throughout the majority of the project site has been classified as planted native and non-native vegetation (see Photos 1-3. The planted vegetation within the site comprises mixed landscape plantings of native and non-native over-storey, over mown groundcover dominated by exotic plant species. No naturally regenerating canopy species, hollow-bearing trees, nor fallen woody debris occur within the site.

Typically, native over-storey plantings comprise *Casuarina glauca* (Swamp Oak), *Eucalyptus camuldensis* (River Red Gum), *Melaleuca linariifolia* (Flax-leaved Paperbark), *Callitemon viminalis* (Weeping Bottlebrush), *Grevillea robusta*, *E. piluiris*, and *Corymbia* sp. and exotic species such as *Ligustrum Sinense* (Chinese Privet), and *Nerium Oleander* (Oleander),

The ground layer is exotic grassland dominated (seeded with) *Digtoria didactyla*, and other species include *Kikuyu/ Buffallo Grass*, *Bidins Pilosa*, and *Trifolium* sp. Refer to Photos 1 -3 Showing Planted Native and Exotic Species within the site.





It is therefore considered that the vegetation within the site has been modified to an extent that it comprised of planted native and exotic trees / shrubs and grasses.



1.8.2 Fauna

The site may provide marginal habitat for potentially occurring threatened species that are adapted to open areas, such as woodland birds and microbats

1.8.3 Habitat Assessment

The following describes the habitat attributes of the study area;

- The site is heavily managed in a 'tidy' condition, with no ground timber. This would limit habitat for birds, reptiles, frogs and invertebrates that rely on ground timber for foraging, nesting, resting, perching or basking. However, it is most likely that common snakes and other reptiles do frequent the site.
- No hollow bearing trees within the site
- No flying fox camps occur within or near the site.

1.8.4 Endangered Ecological Communities and Threatened Flora

As discussed above, the vegetation within the site is comprised of planted native and exotic species. Therefore, no endangered ecological communities occur with the site.

No threatened flora species were observed on the site. It is considered that the current management on the site would prevent the establishment and persistence of threatened flora species predicted to occur in the area. Thus, it is concluded that they are unlikely to be present.



2 STAGE 2: IMPACT ASSESSMENT (BIODIVERSITY VALUES AND PRESCRIBED IMPACTS)

2.1 Avoiding and Minimising Impacts

Section 7 of the BAM provides a list of measures that need to be taken into consideration during project planning and design to minimise impacts upon native vegetation, habitat and other prescribed biodiversity values. Applicable measures taken as part of this project to minimise impacts are provided below.

The following sections 2.1.1 to 2.1.2 describe efforts undertaken to avoid and minimise impacts on biodiversity values in accordance with Chapter 7 of the BAM.

2.1.1 Project Design, Construction & Operation

The Subject Site is considered to be an appropriate location for development due to it being comprised of planted native and exotic species. It is noted that no biodiversity corridors will be impacted as a result of the proposal.

The following measures are provided to help mitigate impacts of the construction and ongoing operation of the proposed development on the biodiversity values identified within the Subject Site and surrounds.

2.1.2 General Measures

The following measures are provided to help mitigate impacts of the construction and ongoing operation of the proposed development on the biodiversity values identified within the Subject Site and surrounds:

- Prior to clearing of any vegetation, an ecologist is to inspect the area for any signs of fauna requiring attention, and in particular nesting/roosting birds, or other habitat features not previously identified. Where such is identified, appropriate strategies are to be developed and instigated to minimise impacts; and
- Best practice erosion and sedimentation (ERSED) and dust suppression control methods are to be adopted, enforced and maintained throughout any vegetation clearing works. Such are to be in accordance with “Soils and Construction – Managing Urban Stormwater” published by Landcom.

Table 2-1 Avoid and Minimise Impacts

Locating a Project to Avoid and Minimise Impacts on Native Vegetation and Habitat in accordance with Section 7.1.1 of the BAM	
Requirements	Strategies undertaken
<p>Knowledge of biodiversity values should inform decisions about the location of the proposal. The initial assessment of biodiversity values from Stage 1 may be used to inform the early planning of the route or location of a proposal.</p>	<p>The proposed residential development occurs on land that is comprised of planted native and exotic vegetation, and is not mapped on the biodiversity value map.</p>
<p>Selecting a final proposal location may be an iterative process. Decisions may need to be revisited after all field surveys have been complete</p>	<p>The proposed residential development occurs on land that is comprised of planted native and exotic vegetation, and is not mapped on the biodiversity value map.</p>
<p>Impacts from clearing native vegetation and threatened species habitat can be avoided or minimised by locating the proposal in areas: lacking biodiversity values</p> <p>where the native vegetation or threatened species, habitat is in the poorest condition (i.e., areas that have a low vegetation integrity score)</p> <p>that avoid habitat for species with a high biodiversity risk weighting or land mapped on the important habitat map, or native vegetation that is a TEC or a highly cleared PCT.</p> <p>outside of the buffer area around breeding habitat features such as nest trees or caves.</p>	<p>The Subject Site does not contain Biodiversity Value Mapped lands.</p> <p>The development has been located land that is comprised of planted native and exotic vegetation</p> <p>No threatened species were identified within the proposed development footprint and the site has a low vegetation integrity score.</p> <p>The site is not habitat for species with a high biodiversity risk weighting or land mapped on the important habitat map, or native vegetation that is a TEC or a highly cleared PCT.</p> <p>The site does not contain any nest trees or caves.</p>
<p>When selecting a proposal's location, all of the following should be analysed. Justification for the decisions in determining the final location must be based on consideration of:</p> <ul style="list-style-type: none"> a. alternative modes or technologies that would avoid or minimise impacts on biodiversity values b. alternative routes that would avoid or minimise impacts on biodiversity values c. alternative locations that would avoid or minimise impacts on biodiversity values 	<p>The entire site is comprised of planted native and exotic species.</p>

<p>d. alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values.</p>	
<p>The proposal may also list and map site constraints, such as:</p> <ul style="list-style-type: none"> a. bushfire protection requirements, including clearing for asset protection zones b. flood planning levels c. servicing constraints. 	<p>The APZs have been detailed on the site plan</p>
<p>In the BDAR or BCAR, the assessor must document and justify any actions taken to avoid or minimise impacts through careful location of the proposal.</p>	<p>The proposal has been located in an area associated with past clearing and will remove planted native and exotic vegetation.</p>
<p>Design the proposal to avoid or minimise direct and indirect impacts on native vegetation, threatened species, threatened ecological communities and their habitat</p>	
<p>The BDAR or BCAR must document and justify efforts to avoid or minimise impacts through design.</p> <p>Reducing the proposal's clearing footprint by minimising the number and type of facilities</p> <p>Locating ancillary facilities in areas where the native vegetation or threatened species habitat is in the poorest condition (i.e., areas with the lowest vegetation integrity scores)</p> <p>Locating ancillary facilities in areas that avoid habitat for species and vegetation that has a high threat status (e.g., an endangered ecological community (EEC) or critically endangered ecological community (CEEC) or is an entity at risk of a serious and irreversible impact (SAll)</p> <p>Actions and activities that provide for rehabilitation, ecological restoration and/or ongoing maintenance of retained areas of native vegetation, threatened species, threatened ecological communities and their habitat on the subject land</p>	<p>The proposed development is located in an area of cleared Land and planted native and exotic vegetation.</p> <p>There are no SAll or CEEC present within the development</p>

Design the proposal to avoid or minimise prescribed impacts	
<p>Design measures that can avoid or minimise prescribed impacts include: a. engineering solutions, such as proven techniques to:</p> <ul style="list-style-type: none"> i. minimise fracturing of bedrock underlying features of geological significance, or groundwater-dependent communities and their supporting aquifers ii. restore connectivity and movement corridors <p>Design elements that minimise interactions with threatened entities, such as:</p> <ul style="list-style-type: none"> i. designing turbines to dissuade perching and minimise the diameter of the rotor swept area ii. designing fencing to prevent animal entry to transport corridors iii. providing vegetated buffers rehabilitated with native species <p>c. maintaining environmental processes that are critical to the formation and persistence of habitat features not associated with native vegetation</p> <p>d. maintaining hydrological processes that sustain threatened entities</p> <p>e. controlling the quality of water released from the site, to avoid or minimise downstream impacts on threatened entities.</p>	<p>Water Sensitive Urban Design (WSUD) will be implemented to ensure that water quality and runoff are appropriately similar to existing conditions within the Site and to minimise prescribed impacts on biodiversity values linked to hydrology and water quality.</p>

2.1.3 Minimisation of Impacts

Mitigation measures are proposed to minimise potential impacts to the site’s biodiversity values; these are summarised in Table 3-1. These include measures to be implemented in the pre-construction, construction and post-construction phases. It is considered that these measures would serve to minimise any potential direct or indirect impacts.



Table 2-2: Proposed Mitigation Measures

Action	Responsibility	Timing
Pre-construction Phase Measures		
The boundaries of the development footprint will be delineated in the field using bunting / flagging tape to ensure inadvertent clearing / disturbance of the adjacent vegetation does not occur.	Project manager.	Prior to commencement of any excavation or clearing works.
Erosion and sediment control measures (e.g. silt fences, straw bales wrapped in geotextile etc) must be established before excavation or vegetation clearance begins and are to remain in place until all surfaces have been fully restored and stabilised.	Project manager.	Prior to commencement of any excavation or clearing works.
A pre-clearing survey will be conducted by a qualified ecologist	Project Ecologist	Prior to commencement of any excavation or clearing works.
Construction Phase Management Actions		
<p>During the clearing of native vegetation, and only if habitat trees occur within the development footprint, a suitably qualified and experienced ecologist must:</p> <ul style="list-style-type: none"> a) Ensure no vegetation clearing occurs outside of the approved clearing footprint. b) Ensure soft felling techniques are utilised for felling of any habitat/hollow-bearing trees. c) Supervise all habitat/hollow-bearing tree removal to capture and/or relocate any dispersed fauna. d) Transport any injured wildlife to appropriate veterinary care or transfer the animal to a local volunteer wildlife carer group. e) Provide post-clearing reporting back to Council should any threatened species be captured or encountered by clearing operations. 	Project ecologist	During clearing.
Appropriate weed control measures must be implemented, including for instance:	Project manager.	During excavation, clearing and construction works.



<ul style="list-style-type: none"> All weeds removed from the site must be transported in a sealed container or bag and disposed at a waste management facility licenced to accept green waste. Vehicles, machinery and equipment must be free from weed material (including seeds) before entering the construction corridor. 		
<p>Any spoil storage areas or stockpiles will have appropriate erosion control devices installed to control runoff and prevent sedimentation.</p>	<p>Project manager.</p>	<p>During excavation, clearing and construction works.</p>
<p>Materials, plant and equipment are not to be stored within the drip-lines of any retained trees at the site or near the site.</p>	<p>Project manager.</p>	<p>During excavation, clearing and construction works.</p>
<p>Topsoil is to be removed from newly cleared areas and then stockpiled for later use in the rehabilitation and/or landscaping works.</p>	<p>Project manager.</p>	<p>During excavation, clearing and construction works.</p>
<p>Cleared vegetation will be mulched and stockpiled for later use in any vegetation restoration/landscaping activities (provided that it doesn't contain weed material). Where possible, any felled trees may be cut into manageable sections and redistributed in the site.</p>	<p>Project manager.</p>	<p>During excavation, clearing and construction works.</p>
<p>Sediment and erosion control devices will be inspected regularly, maintained to ensure effectiveness over the entire duration of the project, and cleaned out before 30% capacity is reached.</p>	<p>Project manager.</p>	<p>During excavation, clearing and construction works.</p>
<p>Post-construction Phase Management Actions</p>		
<p>All temporary erosion and sediment control devices such as silt-stop fencing will be removed from the site at the completion of the works, but not until the site is fully revegetated/stabilised.</p>	<p>Project manager.</p>	<p>After construction, but not until the site is fully revegetated/stabilised.</p>

2.1.4 Indirect Impacts

The indirect impacts of the development have been identified and are outlined in Table 3-8. A risk assessment has been undertaken for any residual impacts likely to remain after the mitigation measures have been applied. Likelihood criteria, consequence criteria and risk matrix are provided in Table 3-5, Table 3-6 and Table 3-7.

Table 2-3: Likelihood Criteria

Likelihood criteria	Description
Almost certain (Common)	Will occur, or is of a continuous nature, or the likelihood is unknown. There is likely to be an event at least once a year or greater (up to ten times per year). It often occurs in similar environments. The event is expected to occur in most circumstances.
Likely (Has occurred in recent history)	There is likely to be an event on average every one to five years. Likely to have been a similar incident occurring in similar environments. The event will probably occur in most circumstances.
Possible (Could happen, has occurred in the past, but not common)	The event could occur. There is likely to be an event on average every five to twenty years.
Unlikely (Not likely or uncommon)	The event could occur but is not expected. A rare occurrence (once per one hundred years).
Remote (Rare or practically impossible)	The event may occur only in exceptional circumstances. Very rare occurrence (once per one thousand years). Unlikely that it has occurred elsewhere; and, if it has occurred, it is regarded as unique.

Table 2-4: Consequence Criteria

Consequence category	Description
Critical (Severe, widespread long-term effect)	Destruction of sensitive environmental features. Severe impact on ecosystem. Impacts are irreversible and/or widespread. Regulatory and high-level government intervention/action. Community outrage expected. Prosecution likely.
Major (Wider spread, moderate to long term effect)	Long-term impact of regional significance on sensitive environmental features (e.g. wetlands). Likely to result in regulatory intervention/action. Environmental harm either temporary or permanent, requiring immediate attention. Community outrage possible. Prosecution possible.
Moderate (Localised, short-term to moderate effect)	Short term impact on sensitive environmental features. Triggers regulatory investigation. Significant changes that may be rehabilitated with difficulty. Repeated public concern.
Minor (Localised short-term effect)	Impact on fauna, flora and/or habitat but no negative effects on ecosystem. Easily rehabilitated. Requires immediate regulator notification.
Negligible (Minimal impact or no lasting effect)	Negligible impact on fauna/flora, habitat, aquatic ecosystem or water resources. Impacts are local, temporary and reversible. Incident reporting according to routine protocols.

Table 2-5: Risk Matrix

Consequence	Likelihood				
	Almost certain	Likely	Possible	Unlikely	Remote
Critical	Very High	Very High	High	High	Medium
Major	Very High	High	High	Medium	Medium
Moderate	High	Medium	Medium	Medium	Low
Minor	Medium	Medium	Low	Low	Very Low
Negligible	Medium	Low	Low	Very Low	Very Low



Table 2-6: Risk Assessment for all Identified Potential Indirect Impacts

Indirect Impact	Development Phase	Risk (pre-mitigation)	Risk (post-mitigation)	Nature	Extent	Frequency	Duration	Timing
Inadvertent impacts on adjacent habitat or vegetation	Construction and operation	Medium	Low	Potential damage to adjacent habitat or vegetation	Adjacent vegetation	Daily, during construction	During construction	Potentially long-term impacts
Sedimentation and contaminated and/or nutrient rich run-off	Construction and operation	Medium	Low	Potential runoff during construction works	Into downstream areas	During heavy rainfall or storm events	During rainfall events	Potentially long-term impacts
Noise, dust or light spill	Construction and operation	Medium	Low	Noise and dust created from machinery during construction. No night works during construction. Minor noise and light during operation from residents	Adjacent vegetation	Daily during construction and sporadically during operation	Daily during construction and sporadically during operation	Short-term impacts during construction phase, long-term impacts during operation
Transport of weeds and pathogens from the site to adjacent vegetation	Construction and operation	Medium	Low	Potential spread of weed and pathogens from incoming machinery and equipment, as well as from gardens established in new lots	Potential to spread into nearby habitat	During construction and operation	Ongoing for the life of the development	Potentially long-term impacts
Rubbish dumping	Construction and operation	Low	Low	Potential rubbish dumped by workers and/or residents	Potential for rubbish to spread into areas outside the development footprint	Anytime during construction and operation	Ongoing for the life of the development	Ongoing for the life of the development



Wood collection	Construction and operation	Low	Low	Potential removal of habitat by workers and/or residents	Potential habitat to be removed from areas outside the development footprint	Anytime during construction and operation	Ongoing for the life of the development	Ongoing for the life of the development
Bush rock removal and disturbance	Construction and operation	Low	Low	No Bush rock within the site	Potential habitat to be removed from areas outside the development footprint	Anytime during construction and operation	Ongoing for the life of the development	Ongoing for the life of the development
Vehicle strike	Construction and operation	Low	Very Low	Potential for native fauna to be struck by working machinery and moving vehicles	Within access roads and within development footprint	Daily, during construction and operational phases	Ongoing for the life of the development	Potential long-term impacts.
Increased risk of fire	Construction and operation	Medium	Low	Potential for fire to spark during construction and operation from any machinery or electrical works	Adjacent vegetation	Anytime during construction and operation	Anytime during construction and operation	Anytime during construction and operation



2.1.5 Potential Prescribed Biodiversity Impacts

No prescribed biodiversity impacts are anticipated from the proposed development. The site does not contain any habitat features identified in s.8.2.1.2 of the BAM. The proposal would not severe or significantly interfere with a habitat corridor.

2.2 Impact Summary

2.2.1 Serious and Irreversible Impacts

The OEH (2017) *Guidance to Assist a Decision-maker to Determine a Serious and Irreversible Impact* lists the ecological communities and species that are 'potential serious and irreversible impact (SAII) entities. There are no serious and irreversible impact (SAII) entities relevant to this assessment.

2.2.2 Impacts Which Require an Offset

N/A

2.2.3 Impacts Not Requiring an Offset

The removal of the planted native and exotic vegetation within the site.

2.2.4 Identification of Areas Not Requiring Assessment

N/A



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APPENDIX A SITE PLANS



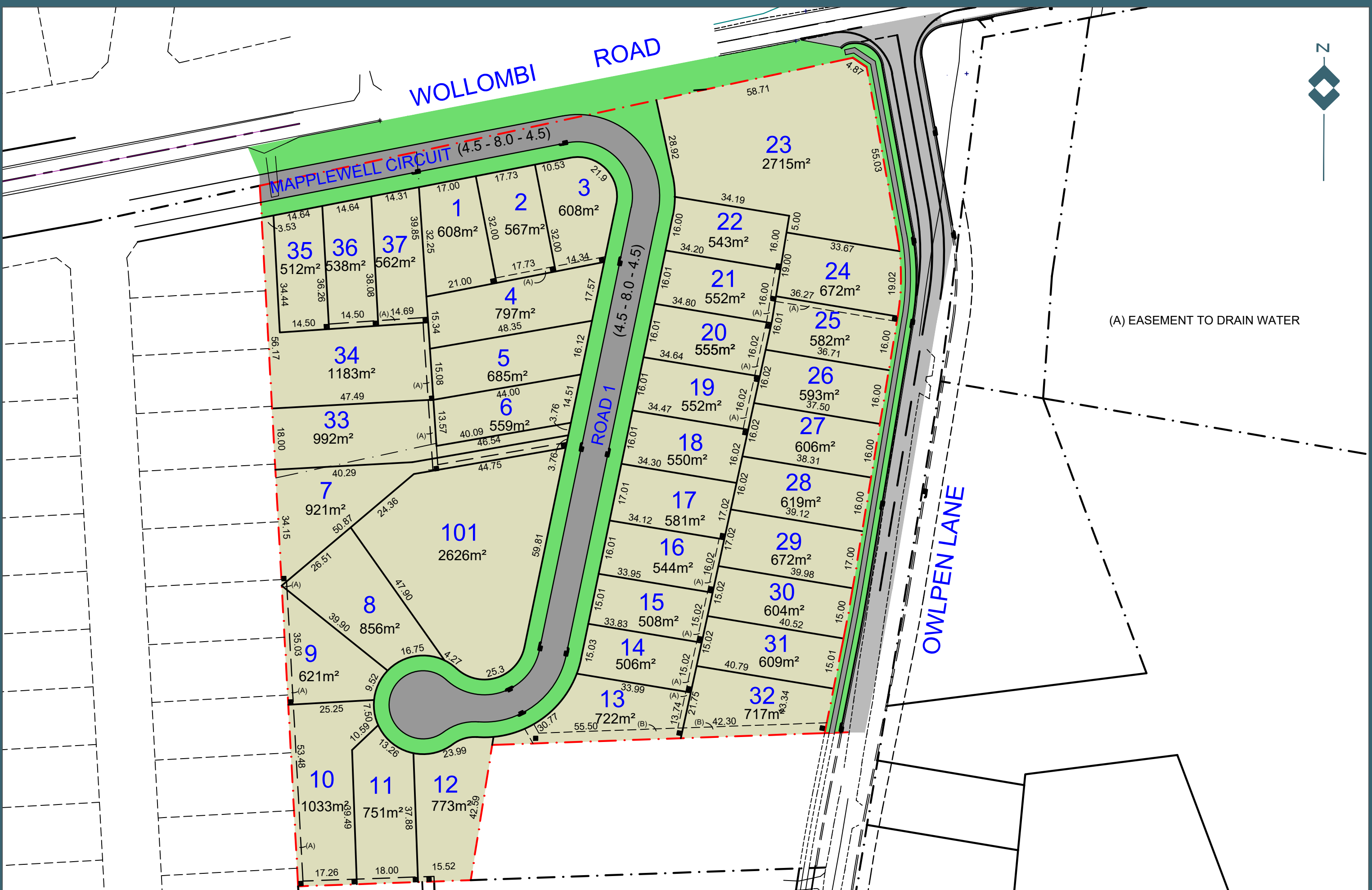
WOLLOMBI ROAD

MAPPLEWELL CIRCUIT (4.5 - 8.0 - 4.5)

ROAD 1 (4.5 - 8.0 - 4.5)

OWLPEN LANE

(A) EASEMENT TO DRAIN WATER



TITLE: PROPOSED SUBDIVISION LOT 102 DP UNREGISTERED
OWL PEN LANE FARLEY

OVERALL

High Definition Design Pty Ltd

KEVIN URANE 0412009891

Date: 16.03.22 Scale: 1:1000 @:A3 Designed: KU

Cad Ref: HD346 r5

Project No

HD346

5 DA PLANS KU 06.04.22

4 DA PLANS KU 31.03.22

3 DA PLANS KU 16.03.22

No Amendment Drawn Date

Drawing No

HD01

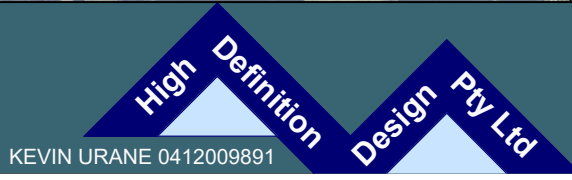
Date

Revision

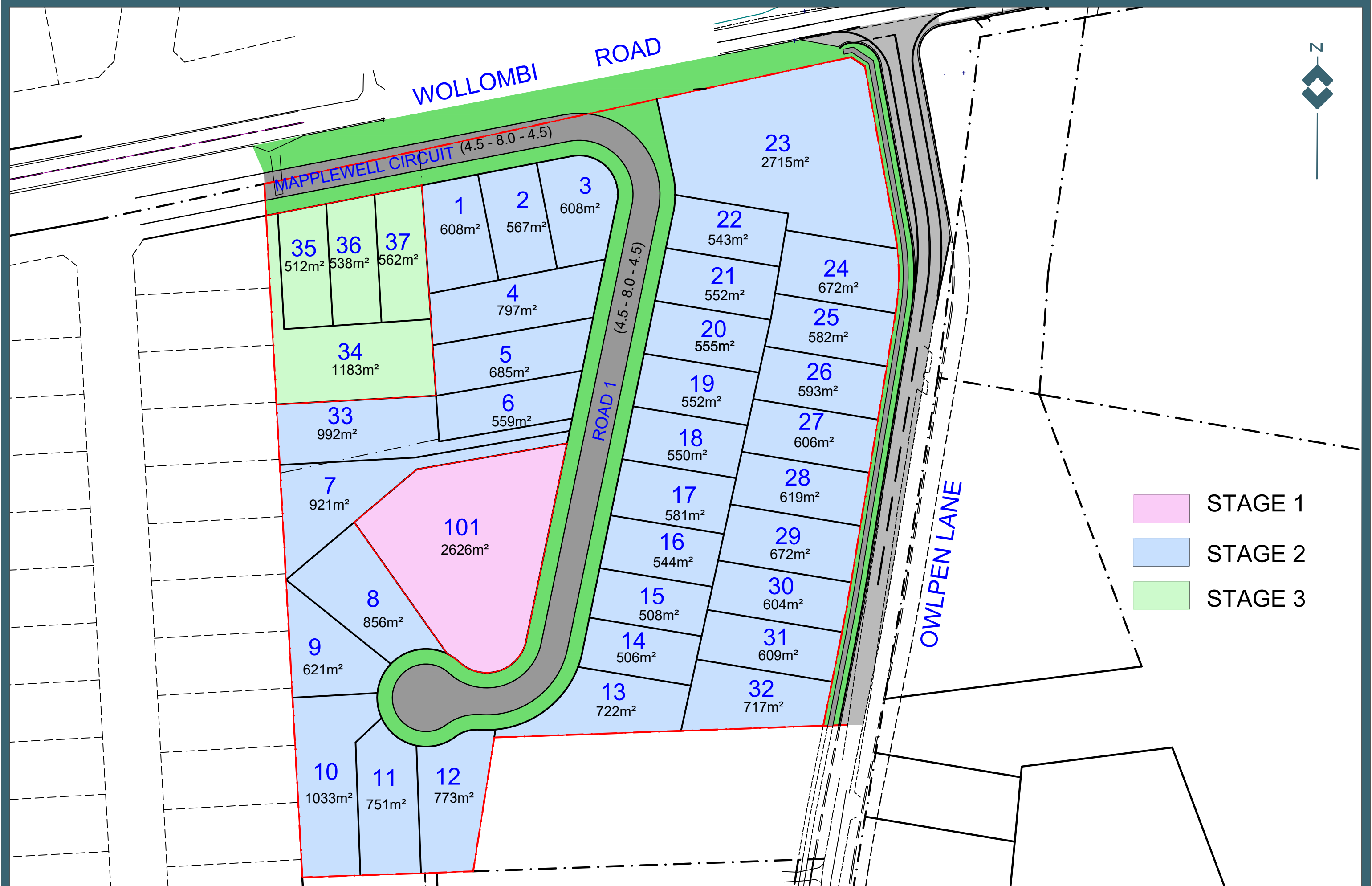
5



TITLE: PROPOSED SUBDIVISION LOT 102 DP UNREGISTERED
 OWL PEN LANE FARLEY
 AERIAL OVERLAY



Date: 28.09.21	Scale: 1:1000 @:A3	Designed: KU	Project No: HD346
Cad Ref: HD346 r5			
5	DA PLANS	KU 06.04.22	Drawing No: HD02
1	DA PLANS	KU 28.09.21	Revision: 5
No	Amendment	Drawn Date	



TITLE: PROPOSED SUBDIVISION LOT 102 DP UNREGISTERED
OWL PEN LANE FARLEY

STAGING PLAN



KEVIN URANE 0412009891

Date: 28.09.21	Scale: 1:1000 @:A3	Designed: KU	Project No: HD346
Cad Ref: HD346 r5			
3	DA PLANS	KU	15.03.22
2	AMEND INTERSECTION	KU	25.10.21
5	DA PLANS	KU	06.04.22
No	Amendment	Drawn	Date
		HD03	5



WOLLOMBI ROAD

RIGHT OF CARRIAGEWAY
5 WIDE

102
29163m²

101
2626m²

OWLPEN LANE

TITLE: PROPOSED SUBDIVISION
OWL PAN LANE FARLEY

STAGE 1

High Definition
Design Pty Ltd

KEVIN URANE 0412009891

Date: 15.03.22 Scale: 1:1000 @:A3 Designed: KU

Cad Ref: HD346 r5

Project No
HD346

No	Amendment	Drawn	Date	Drawing No	Revision
5	DA PLANS	KU	06.04.22	HD04	5
3	DA PLANS	KU	15.03.22		

**APPENDIX B
DATA**

PLOT FLORISTIC SURVEY

APPENDIX C RECORDED SPECIES LIST

Scientific Name	Common Name
Flora	
<i>Bidins Pilosa</i>	Black-jack
<i>Bouteloua dactyloides</i>	Buffalo Grass
<i>Callsitemon viminalis</i>	Weeping Bottlebrush
<i>Casuarina glauca</i>	Swamp Oak
<i>Corymbia sp.</i>	-
<i>Digtoria didactyla</i>	blue couch
<i>Eucalyptus camuldensis</i>	River Red Gum
<i>Eucalyptus piluiris</i>	Blackbutt
<i>Grevillea robusta</i>	Southern silky oak
<i>Ligustrum Sinense</i>	Chinese Privet
<i>Melaleuca linariifolia</i>	Flax-leaved Paperbark
<i>Nerium Oleander</i>	Oleander
<i>Trifolium sp</i>	-
Fauna	
<i>Cracticus torquatus</i>	Grey butcherbird
<i>Gymnorhina tibicen</i>	Australian magpie
<i>Manorina melanocephala</i>	Noisy miner
<i>Platycercus eximius</i>	Eastern rosella
<i>Trichoglossus haematodus</i>	Rainbow lorikeet

APPENDIX D QUALIFICATIONS, LICENSING AND CERTIFICATION

Qualifications

Fieldwork for this project was undertaken by Logan Shea and Andrew Carty. Report writing for this project was undertaken Sarah Jones and Logan Shea with editing and review by Sarah Jones. Qualifications are provided in the table below.

Sarah Jones	<i>Ecologist / Bushfire Planning Consultant</i> B.Env.Sc., G.DIP.DBPA (Design for Bushfire Prone Areas) <i>BAAS 18020 Accredited Assessor, as required by the Biodiversity Conservation Regulation 2017 and accredited to apply the BAM</i> Member of the Ecological Consultants Association of NSW
Logan Shea	<i>Ecologist</i>
Andrew Carty	<i>Botanist</i>

Licensing

Research was conducted under the following licences:

- NSW National Parks and Wildlife Service Scientific Investigation Licence SL100533;
- Animal Research Authority (Trim File No: TRIM 11/5655) issued by NSW Department of Primary Industries; and
- Animal Care and Ethics Committee Certificate of Approval (Trim File No: TRIM 11/5655) issued by Department of Primary Industries.

Certification

As the project certifier, I, Sarah Jones make the following certification:

- This Biodiversity Development Assessment Report has been prepared in accordance with the Biodiversity Assessment Method established under the NSW Biodiversity Conservation Act 2016.
- The results presented in the report are, in the opinion of the principal author and certifier, a true and accurate account of the species recorded, or considered likely to occur within the site;
- Commonwealth, state and local government policies and guidelines formed the basis of project surveying methodology, or where the survey work has been

undertaken with specified departures from industry standard guidelines, details of which are discussed and justified in Section 2;

- All research workers have complied with relevant laws and codes relating to the conduct of flora and fauna research, including the *Animal Research Act 1995*, *National Parks and Wildlife Act 1974* and the *Australian Code of Practice for the Care and Use of Animals for Scientific Purposes*.

Signature of Certifier:



Sarah Jones

B.Env.Sc., G.DIP.DBPA (Design for Bushfire Prone Areas)

Ecologist / Bushfire Planner

BAAS 18020 Accredited Assessor

APPENDIX E THREATENED SPECIES IN THE AREA.

Scientific Name	Common Name	BC Act	EPBC Act
Threatened Flora			
<i>Cynanchum elegans</i>	White-flowered Wax Plant	Endangered	Endangered
<i>Rutidosis heterogama</i>	Heath Wrinklewort	Vulnerable	Vulnerable
<i>Tetradlea juncea</i>	Black-eyed Susan	Vulnerable	Vulnerable
<i>Acacia bynoeana</i>	Bynoe's Wattle	Endangered	Vulnerable
<i>Prostanthera cineolifera</i>	Singleton Mint Bush	Vulnerable	Vulnerable
<i>Callistemon linearifolius</i>	Netted Bottle Brush	Vulnerable	Not Listed
<i>Eucalyptus camaldulensis</i>	River Red Gum	Not Listed	Not Listed
<i>Eucalyptus glaucina</i>	Slaty Red Gum	Vulnerable	Vulnerable
<i>Eucalyptus parramattensis</i>	Parramatta Red Gum	Not Listed	Not Listed
<i>Rhodamnia rubescens</i>	Scrub Turpentine	Critically Endangered	Not Listed
<i>Rhodomyrtus psidioides</i>	Native Guava	Critically Endangered	Not Listed
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	Endangered	Vulnerable
<i>Caladenia tessellata</i>	Thick Lip Spider Orchid	Endangered	Vulnerable
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	Vulnerable	Vulnerable
<i>Cymbidium canaliculatum</i>	Tiger Orchid	Not Listed	Not Listed
<i>Pterostylis gibbosa</i>	Illawarra Greenhood	Endangered	Endangered
<i>Rhizanthella slateri</i>	Eastern Australian Underground Orchid	Vulnerable	Endangered
<i>Euphrasia arguta</i>		Critically Endangered	Critically Endangered
<i>Arthraxon hispidus</i>	Hairy Jointgrass	Vulnerable	Vulnerable

Scientific Name	Common Name	BC Act	EPBC Act
<i>Dichanthium setosum</i>	Bluegrass	Vulnerable	Vulnerable
<i>Persicaria elatior</i>	Tall Knotweed	Vulnerable	Vulnerable
<i>Grevillea parviflora subsp. parviflora</i>	Small-flower Grevillea	Vulnerable	Vulnerable
<i>Persoonia hirsuta</i>	Hairy Geebung	Endangered	Endangered
<i>Pomaderris brunnea</i>	Brown Pomaderris	Endangered	Vulnerable
<i>Thesium australe</i>	Austral Toadflax	Vulnerable	Vulnerable
Threatened Birds			
<i>Chthonicola sagittata</i>	Speckled Warbler	Vulnerable	Not Listed
<i>Erythrotriorchis radiatus</i>	Red Goshawk	Critically Endangered	Vulnerable
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Vulnerable	Not Listed
<i>Oxyura australis</i>	Blue-billed Duck	Vulnerable	Not Listed
<i>Anseranas semipalmata</i>	Magpie Goose	Vulnerable	Not Listed
<i>Hirundapus caudacutus</i>	White-throated Needletail	Not Listed	Not Listed
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Endangered	Endangered
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	Vulnerable	Not Listed
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Vulnerable	Not Listed
<i>Charadrius leschenaultii</i>	Greater Sand-plover	Vulnerable	Vulnerable
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	Endangered	Not Listed
<i>Pycnoptilus floccosus</i>	Pilotbird	Not Listed	Not Listed
<i>Falco hypoleucos</i>	Grey Falcon	Endangered	Not Listed
<i>Sternula albifrons</i>	Little Tern	Endangered	Not Listed
<i>Anthochaera phrygia</i>	Regent Honeyeater	Critically Endangered	Critically Endangered
<i>Grantiella picta</i>	Painted Honeyeater	Vulnerable	Vulnerable
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Vulnerable	Not Listed

Scientific Name	Common Name	BC Act	EPBC Act
<i>Petroica boodang</i>	Scarlet Robin	Vulnerable	Not Listed
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	Vulnerable	Not Listed
<i>Glossopsitta pusilla</i>	Little Lorikeet	Vulnerable	Not Listed
<i>Lathamus discolor</i>	Swift Parrot	Endangered	Critically Endangered
<i>Rostratula australis</i>	Australian Painted Snipe	Endangered	Endangered
<i>Calidris ferruginea</i>	Curlew Sandpiper	Endangered	Critically Endangered
<i>Limosa lapponica baueri</i>	Bar-tailed Godwit (baueri)	Not Listed	Vulnerable
<i>Numenius madagascariensis</i>	Eastern Curlew	Not Listed	Critically Endangered
<i>Ninox connivens</i>	Barking Owl	Vulnerable	Not Listed
Threatened Mammals			
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Vulnerable	Endangered
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	Vulnerable	Not Listed
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Vulnerable	Not Listed
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	Endangered	Vulnerable
<i>Miniopterus australis</i>	Little Bent-winged Bat	Vulnerable	Not Listed
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Vulnerable	Not Listed
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Vulnerable	Not Listed
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	Not Listed	Vulnerable
<i>Petaurus norfolcensis</i>	Squirrel Glider	Vulnerable	Not Listed
<i>Phascolarctos cinereus</i>	Koala	Vulnerable	Vulnerable

Scientific Name	Common Name	BC Act	EPBC Act
<i>Petauroides volans</i>	Greater Glider	Not Listed	Vulnerable
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Vulnerable
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Vulnerable	Vulnerable
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Vulnerable	Not Listed
<i>Myotis macropus</i>	Southern Myotis	Vulnerable	Not Listed
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Vulnerable	Not Listed
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	Vulnerable	Not Listed
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V
Threatened Hepetofauna			
<i>Litoria aurea</i>	Green and Golden Bell Frog	Endangered	Vulnerable
<i>Litoria littlejohni</i>	Littlejohn's Tree Frog	Vulnerable	Vulnerable
<i>Delma impar</i>	Striped Legless Lizard	Vulnerable	Vulnerable
Ecological Communities			
Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions		E	CE
Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions (E, CE*)		E	CE
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (E, V*)		E	V
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (E)		E	-
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions (E)		E	-
Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions (E)		E	-
Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion (V, CE*)		V	CE
Lower Hunter Spotted Gum-Ironbark Forest in the Sydney Basin Bioregion (E)		E	-
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney		E	-

Scientific Name	Common Name	BC Act	EPBC Act
Basin and South East Corner Bioregions (E)			
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (E)		E	-
Other			
Hunter Estuary Wetland		-	Wetland of International Importance (Ramsar)