

# Ecological Report

for a

Rezoning Proposal

at

45 Tennyson Ave & 105 Eastern Rd, Turrumurra

Revision A, 31<sup>st</sup> May 2019

## Document Information

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**Approval Date: 31<sup>st</sup> May 2019**

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# 1 Introduction

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## 1.1 Background

GIS Environmental Consultants have been contracted by the applicant Winston Langley, to provide an ecological survey and report of the Study Area for a proposed rezoning application. The Study Area is Lot 1, DP4323 & lot 2 DP515147 and Lot 1 DP515147 known as 45 Tennyson Avenue and 105 Eastern Road, Turramurra in the Ku-ring-gai LGA.

On the 21<sup>st</sup> March 2018 there was a Pre-Planning Proposal meeting between the Applicant and Ku-ring-gai Council. In the Pre-Planning Proposal Letter (2018/081460) Council identified the need for further ecological information about the site, specifically *"the ecological values of the site relate to the remnant trees which are primarily clumped along the south eastern boundary, but which also occur on the northern boundary of the site. The remnant trees are mapped as the Critically Endangered Ecological Community-Blue Gum High Forest"*

Council also stated that *"A plan should be submitted with an indicative construction footprint and full extent of the Bluegum High Forest to indicate how the proposal could be managed in a way to avoid impacts on the Critically Endangered Ecological Community."*

In the Ku-ring-gai Local Planning Panel Meeting notes (18/03/19), Council has requested that the proposal be revised including reducing the impacts the Blue Gum High Forest CEEC on the site. Following the comments from Council, changes were made to the plans and the Aboricultural Impact Assessment. A new Landscape Report was also provided. This report and the associated Maps were updated on the 11<sup>th</sup> April 2019 to reflect the new plans and reports and the comments from Council.

This report describes the presence and location of Blue Gum High Forest Critically Endangered Ecological Community in the Study Area. This report assesses the likely impacts of the rezoning and indicative construction footprint on the vegetation and remnant native trees at the site. The purpose of this report is to assist the Applicant and Council in identifying the ecological constraints at the site in order to avoid and minimise ecological impact when planning the development of the site.

## 1.2 The Proposal

The site and adjacent allotments to the north, east and west are currently zoned R2 Low Density Residential. To the south is zoned B1 Neighbourhood Centre.

The proposal is for changes to Ku-ring-gai LEP 2015 which includes;

- Rezoning the three lots from R2 Low Density Residential to B1 Neighbourhood Centre.
- Amend the Minimum Lot Size Map and remove the 940m<sup>2</sup> minimum lot size.

The rezoning and amendment is to allow for future development and use as a Harris Farm grocer, 2 additional retail premises, café/nursery and landscaping on the lots.

The proposal will have an indicative construction footprint to show how the proposed use can be achieved. This report assessed the impact of the indicative construction footprint.

The impact from the proposal is assessed in section 5.1.

### 1.3 Plans and Documents Used for this Report

| Title  | Author               | Rev | DWG./Doc. No./Ref.                        | Date     |
|--|----------------------|-----|---|----------|
| Contour and Detail Survey                                    | SurDevel             | -   | S:\DETAILS\1900-1999\1996\1996_DET-V2.dwg | 26/08/18 |
| Pre-planning Proposal Application-Meeting Report             | Ku-ring-gai Council  | -   | 2018/081460                               | 21/03/18 |
| Plan Basement  | Tandem Design Studio | 04  | A101                                      | 18/04/19 |
| Aboricultural Impact Assessment and Tree Specification       | Tree iQ              |     | TENN/EAST/AIA/A                           | 17/04/19 |
| Landscape Report   | Oculus               | D   | -   | 31/05/19 |
| Planning Proposal – Ku-ring-gai Local Planning Panel Meeting |                      | -   | GB.2/354, S12120                          | 18/03/19 |

### 1.4 Legislation Addressed by the Report

#### 1.4.1 Biodiversity Conservation Act 2016

The primary requirement of the BC Act is that ecological impact is to be Avoided and Minimised and then any remaining impact is to be offset according to the Biodiversity Offset Scheme (BOS). The Schedules of the BC Act list Threatened flora and fauna species and define Endangered ecological communities in NSW.

Section 7.2 of the BC Act states that developments (defined in the EP&A Act) are likely to have a significant affect if any of the following triggers are met;

- the BOS threshold test is triggered (area of disturbance or affecting mapped Biodiversity value) (see below for details), or
- a Test of Significance (5 part test) for potential threatened species or ecological communities is positive (see below for details), or
- an Area of Outstanding Biodiversity Value is affected by the proposal (see below for details).

The **BOS Threshold test** is a 2 part test and either of the parts can trigger the test. Part 1 applies if the area of native vegetation (any plant native to NSW, as defined in section 60B of the LLS Act) disturbance (including bushfire APZ and other disturbance) is more than 0.25ha where the LEP lot size is less than 1ha or 0.5ha where the lot size is larger 1ha (section 7.2 of the BC Act regulation) . Part 2 is triggered if the proposal will have a direct or indirect impact on an area mapped as “Biodiversity Value” on the Biodiversity Values map.

The **Test of Significance** (section 7.3 of the BC Act) is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. Section 7.3 (2) of the BC Act provides guidance on the assessment of the Test of Significance in the form of a guideline (2018).

Areas of outstanding Biodiversity Value are mostly also mapped on the Biodiversity Values map.

**If any of the triggers are met, the Biodiversity Assessment Method (BAM) needs to be applied to determine the types of surveys and assessment and the amount of offsetting required.** Proposals also needs to be assessed to determine if they may cause a Serious And Irreversible Impacts may occur (SAII) as a result.

#### 1.4.2 Ku-ring-gai LEP 2015

The Ku-ring-gai Local Environment Plan (2015) aims to protect the environment and the quality of life in Ku-ring-gai while promoting sustainable development. The Ku-ring-gai DCP (2015) contains detailed planning controls. Both the LEP and the DCP must be considered when a determining authority assesses development in this area.

The parts of Ku-ring-gai LEP 2015 relevant to the proposed development are as follows:

##### **Clause 6.3 Biodiversity Protection**

*The site is mapped as "Biodiversity" on the Terrestrial Biodiversity Map and therefore Clause 6.3 of the Ku-ring-gai LEP 2015 applies to this property. This report addresses the requirements of clause 6.3 of the Ku-ring-gai LEP.*

#### 1.4.3 Federal Environment Protection and Biodiversity Conservation Act, EPBC Act

At the time of writing there was no agreement between the State and Federal governments in place removing the need to assess proposals with respect to the EPBC Act.

This report also identifies "matters of national environmental significance", relevant to the site that are listed under Part 13 Division 1 of the *Environment Protection & Biodiversity Conservation Act 1999 (Cwlth)* (EPBC). Species or communities listed in the Act are considered to be "matters of national environmental significance" and consideration needs to be given as to whether the proposed development will or is likely to have a "significant impact" on any "matters of national environmental significance". In determining whether a "significant impact" will occur, consideration is given to the EPBC Act Administrative guidelines on significance (DEH 2006)

Should the assessment in this report determine that a "significant impact" will occur or is likely to occur on "matters of national environmental significance" the proposed development will need to be referred to the Minister (Cwlth) to determine as to whether or not the proposed development is a "controlled action".

Assessment of a proposal with respect to the EPBC Act 1999 is not a Council issue but is the responsibility of the proponent. Proponents should be advised by their ecological consultant whether a referral is necessary.

This report addresses the requirements of this legislation.

## 1.5 Definitions and Acronyms

**5-Part Test of Significance (5-Part Test)** - Assessment under Section 7.3 of the BC ACT to determine whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

**BAM** - Biodiversity Assessment Method is the ecological survey and assessment technique that is required to be used for the BOS and it is described in a document by Office of Environment and Heritage August 2017 and referred to by the BC Act regulation. The Biodiversity Assessment Reports (**BAR**) that the BAM methods produces are a **BDAR**, **BSSAR** and a **BCAR**.

**BC Act** - NSW Biodiversity Conservation Act 2016 contains the lists of threatened species, the definitions of the threatened ecological communities, the 5-part Test of Significance and the BOS. There are associated Biodiversity Conservation regulations which refers to the BAM.

**BOS** – Biodiversity Offset Scheme the system of trading biodiversity offset credits or paying for offsets to the Biodiversity Trust.

**DCP** - Development Control Plan, a local planning document for each LGA.

**Direct Impacts** - are impacts that directly affect habitat, ecosystems and individuals. They include, but are not limited to, death, trampling, poisoning of the animal/plant itself and the removal of vegetation and suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development during construction. As defined by the 2006 DECC Assessment of significance guidelines.

**Indirect Impacts** - occur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas. Indirect impacts may occur after construction during the life of the development, e.g. escape of garden plants, excess nutrients and changes in fire frequency and grazing. As with direct impacts, consideration must be given, to all of the likely indirect impacts of the proposed activity or development (2006 DECC Assessment of Significance Guidelines)

**DPI** – NSW government of Department of Primary Industries

**EPA Act (EP&A Act)** – NSW Environment Planning and Assessment Act 1979, controls development in NSW.

**EPBC Act** – Federal Environment Protection and Biodiversity Conservation Act 1999

**LEP** – Local Environment Plan, a local planning instrument for each LGA.

**LGA**- Local Government Area.

**OEH** – NSW Office of Environment and Heritage, formerly NPWS, DEC, DECC and DECCW. Department responsible for the conservation of native flora and fauna.

**OPA** – Bushfire hazard Outer Protection Area, defined in the document '*Planning for Bushfire Protection 2006*'.

**Property** – Adjacent or nearby lot(s) that have the same ownership.

**Protected Fauna** - refers to any native bird, mammal, reptile or frog in NSW.

**Study Area** - means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account (DECC 2006).

**Subject Site** - means the area directly affected by the proposal (DECC 2006).

**Threatened Species or Ecological Community** - refers to those biotas listed in the schedules of the Biodiversity Conservation Act 2016 as "Critically Endangered ", "Endangered" or "Vulnerable".

## 1.6 Assumptions and Limitations

- This report assesses the impact of the rezoning proposal and an indicative building footprint on the Blue Gum High Forest CEEC on the site as per Council's comments in the Pre-Planning Proposal Letter (2018/081460).



- This report only addresses the impacts of the rezoning proposal described in this report and shown on the maps in this report. If there are changes or additions to the ecological impact of the proposal, then this report may require updating.
- This report describes the habitat and species within the Study Area at the time of the field survey. Vegetation and habitat will change over time, as does legislation. Therefore, the findings of this report are likely to be out of date in 12 months.
- There may be flora and/or fauna species present within the study area that were not recorded because they are seasonal, cryptic and/or have large home ranges. Some threatened species may use the study area as habitat at some time. The conclusions drawn in this report are a result of testing, observation and experience.
- This report assesses only the current proposal and does not consider the cumulative impact of other developments on this property or on adjacent land or the potential edge effects or impacts caused by the occupation of the land.
- This report should be read in its entirety and no part should be taken out of context.
- No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

### 1.7 Qualifications and Experience of the Field Ecologist and Authors

Nicholas Skelton's formal qualifications include a Bachelor of Science with Honours (B. Sc. (Hons) USyd) and a Masters in Applied Science (M. App. Sc. in Vegetation Management UNSW). Nick has been an environmental scientist for 25 years, including a university lecturer, research ecologist and a bush regenerator for 8 years. His work is focused on the Sydney bioregion and he has published many papers in independently reviewed journals on the ecology of Sydney. He has expert knowledge of the local soils, the climate of this area and the local indigenous plants and animals as a result of over 900 ecological surveys. Nick is a member of the relevant professional organisations including: a practising member of the Ecological Consultants Association of NSW and Royal Zoological Society. He is licensed by NSW OEH and NSW Department of Primary Industries to carry out surveys on threatened plants and animals and he is a qualified Biodiversity Assessor. Nick was the principle ecologist on all field surveys and was responsible for map making and report editing. Further details can be found at [www.ecology.net.au](http://www.ecology.net.au).

Sophia Mueller Sewell has a Bachelor of Science (Environmental Biology UTS). Sophia has been working with GIS Environmental Consultants for over 2 years and has assisted with many ecological surveys and written over 50 reports. Sophia is also responsible project and office management. Sophia was responsible for recording data for field surveys and report writing.

### 1.8 Locality and Adjacent Ecological Values

The properties to the north, east and west contain single residential dwellings. To the south are some small shops. There is drainage reserve approximately 500 west of the site between Tennyson Rd and Alice St. There is native tree canopy cover to the north (Alice Street) that forms a corridor along the street. Lovers Jump Creek Park is 750m to the north-east and is linked to Ku-ring-gai Chase National Park to the north. Development and nearby bushland is shown in Map 2.

Map 4 shows the vegetation types (ecological communities) in the locality that have been mapped at the regional scale (Native Vegetation of the Sydney Metropolitan Area V3 2016) and is a compilation of the best available vegetation maps by various authors. Parts of the site and adjacent land to the north and east are mapped as containing Blue Gum High Forest Critically Endangered Ecological Community (BGHF CEEC) (S\_WSF01, PCT 1237). Other mapped vegetation communities near the property are Sydney Turpentine Ironbark Forest EEC (S\_WSF09, PCT 1281), Coastal Sandstone Heath-Mallee (S\_HL08, PCT 1824) and Coastal Sandstone Gully Forest (S\_DSF09, PCT 1250).

## 1.9 Description of the Study Site

The Subject Site (Site) and Study Area are the same. The site is currently three lots with a total area of 5,129m<sup>2</sup>. Two of the lots (lot1, DP4323 & lot 2 DP515147) are currently used as a commercial plant nursery and the other lot (lot 1 DP515147) is used as an auto shop and service station (see Map 1).

The plant nursery lots currently contain remnant trees on the southern and eastern boundaries, planted garden beds along the northern, eastern and southern boundaries, a large one-storey brick building, four smaller buildings, large carpark area, outdoor nursery and concreted seating area. There is mesh metal fence or timber fence surrounding the plant nursery.

The auto shop and service station lot currently contains a concrete building and concreted hardstand area.

The site has 3 street frontages Alice Street to the north, Tennyson Ave to the south and Eastern Road to the west.

### 1.9.1 Geographic Co-ordinates

The latitude and longitude of the Study Area is -33.720167 ° S and 151.131438°E.

### 1.9.2 Topography

The site is mostly level with metal roofs, landscape garden and concrete. 10m contours of the site and the locality are shown on Map 2.

### 1.9.3 Drainage

Stormwater drains into the street gutters along Tennyson Avenue and Eastern Road. Drainage in the locality is shown in light blue on Maps 2, 3 and 4.

### 1.9.4 Riparian Land

The site is not mapped as Riparian Land and is more than 50m from any waterbody or drainage line. (see Maps 2, 3 and 4)

### 1.9.5 Geology and Soils

The site is mapped as Glenorie soil, however the site is mostly concrete and raised garden beds and the small areas where there is natural soil level are covered in mulch and stepping stones. The soils in the locality are shown in thick light blue outline on Map 4.

### 1.9.6 Fire History

The site has been cleared of most of its original vegetation for many years and has not been burnt in over 50 years.



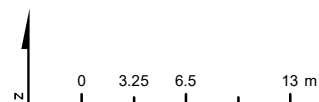
© Department of Finance, Services & Innovation 2017

Legend

### Map 1. Subject Site, Aerial Photo

Tennyson Ave, Turramurra

Date: 05/06/2018



Disclaimer: Mapping is indicative and may contain errors from the source of the data. Information on these maps should only be used at the scale provided. Dimensions need to be determined by a registered surveyor.

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**Legend**

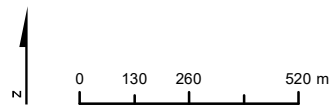
**Drainage Sydney Type**

-  Coast
-  Creek
-  Foreshore

## Map 2. Locality Aerial Photograph

Tennyson Ave, Turramurra

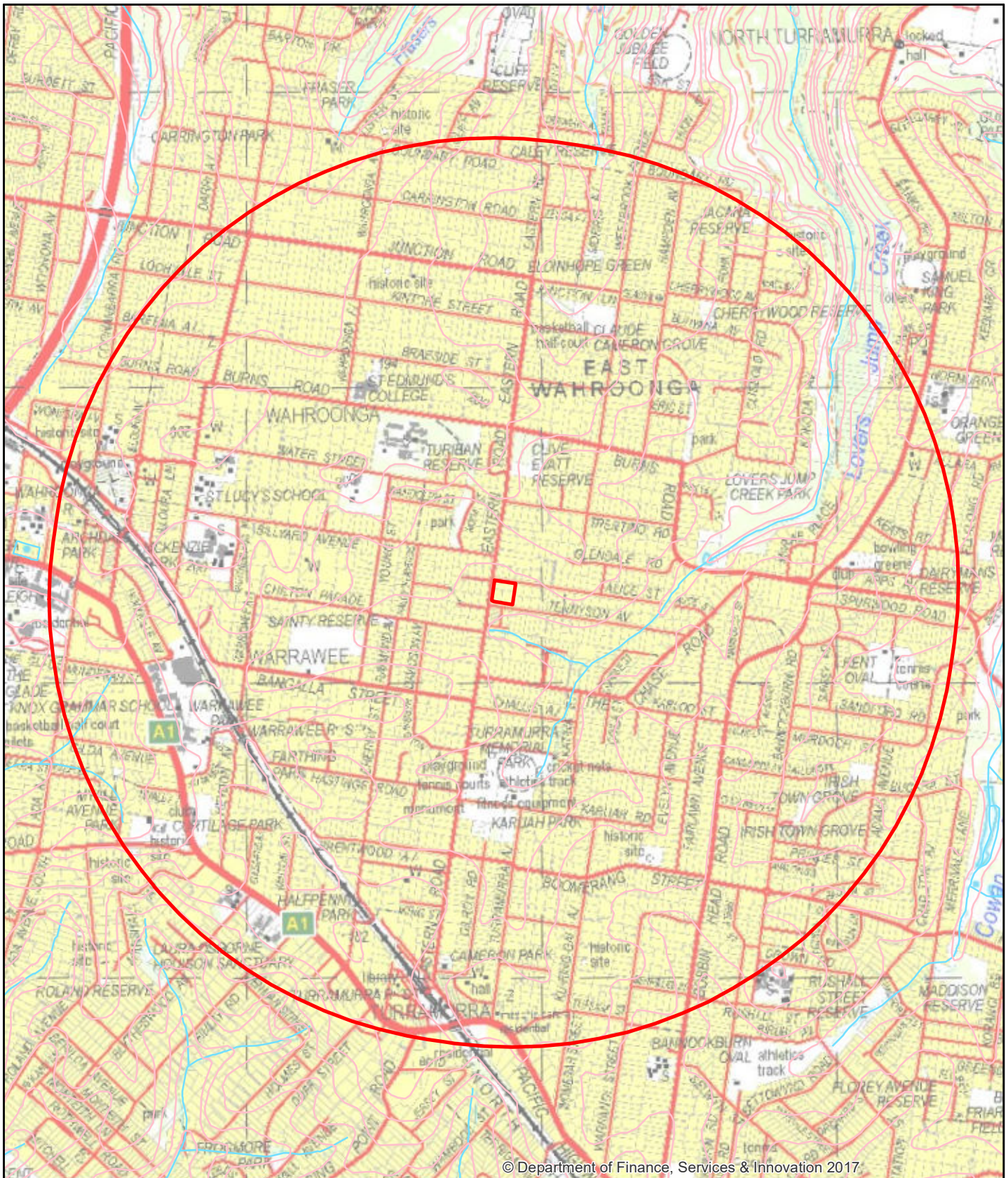
Date: 05/06/2018



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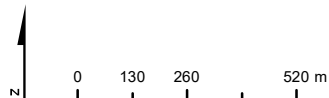
**Legend**

- Contour 10m
- Drainage Sydney Type**
- Coast
- Creek
- Foreshore

**Map 3.  
Locality, Topography and Features**

Tennyson Ave, Turrumurra

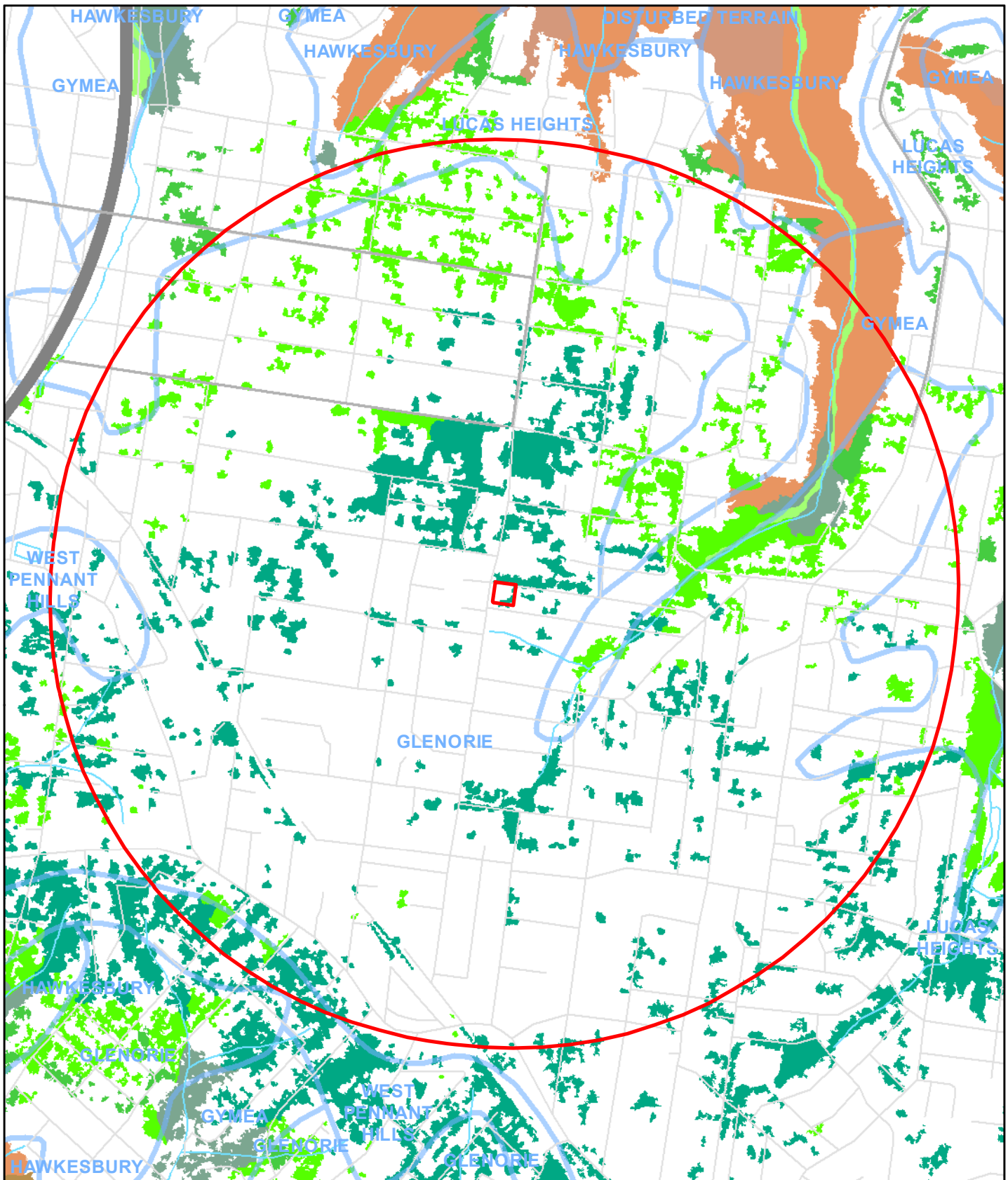
Date: 05/06/2018



Disclaimer: Mapping is indicative and may contain errors from the source of the data. Information on these maps should only be used at the scale provided. Dimensions need to be determined by a registered surveyor.

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Vegetation Data from: The Native Vegetation of the Sydney Metropolitan Area V3 2016

**Legend**

-  Tennyson Ave
-  Drainage
-  Soils Sydney ed4 DPI

**Vegetation of Sydney v3 2016**

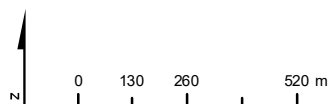
-  S\_DSF09: Coastal Sandstone Gully Forest
-  S\_DSF10: Hornsby Enriched Sandstone Exposed Woodland
-  S\_DSF11: Sydney North Exposed Sandstone Woodland
-  S\_RF02: Coastal Sandstone Gallery Rainforest
-  S\_WSF01: Blue Gum High Forest
-  S\_WSF02: Coastal Enriched Sandstone Moist Forest
-  S\_WSF06: Coastal Shale-Sandstone Forest
-  S\_WSF09: Sydney Turpentine-Ironbark Forest

**Map 4.**  
**Locality Mapped Vegetation Types & Soils**

45 Tennyson Ave and  
105 Eastern Rd, Turrumurra

Date: 24/05/2018

Disclaimer: Mapping is indicative and may contain errors from the source of the data. Information on these maps should only be used at the scale provided. Dimensions need to be determined by a registered surveyor.



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## 2 Methods

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### 2.1 Literature and Database Search

Relevant information was obtained from literature, local knowledge and established sources such as scientific journals, electronic databases and reports. The data in databases that were consulted included BioNet (5km search area) (including NPWS Atlas of NSW Wildlife records, Australian Museum specimen records and the Royal Botanic Gardens records), BAM Calculator, ROTAP records and Birds Australia Atlas. Searches were also undertaken on the DOEE – 'protected matters search tool' website to generate a report that will help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in the area of interest.

A flora survey of the site was conducted in 2015 by Anne Clements and Associates, this study recorded the plant species in various parts of the site and other botanical information.

### 2.2 Field Survey

The site was surveyed on the 10<sup>th</sup> May 2018 by two experienced ecologists for a total of 2 person hours. The weather was sunny and approximately 25°C. During the survey the site and parts of the surrounding land was fully traversed on foot and the presence of any native vegetation, Endangered Ecological Communities, Threatened Flora and evidence of Threatened fauna was recorded.

The trees and other vegetation in the locality were observed. The habitat features and ecological communities in the locality were verified.

The field survey involved the following procedures:

- Initial familiarisation with the study area and its extent and surrounding land;
- Assessment of the physical characteristics of the study area and location of the proposal;
- Mapping the extent of the existing vegetation;
- Identification and recording of all native flora species within the Subject Site;
- Classification of any vegetation into communities according to their structural and floristic attributes;
- Assessment of the habitats within the Study Area;
- Assessment of the extent of disturbance and weed invasion;
- Photography of the study area;

#### 2.2.1 Determining Plant Community Type (PCT)

The vegetation within the study area was classified using structural and floristic indicators and was compared with threatened ecological communities listed in schedule 2 of the BC Act 2016 and with the vegetation classification titled The Native Vegetation of the Sydney Metropolitan Area V3 Volume 2 (OEH 2016) and the PCT vegetation type database. The extend of the plant community on the site was determined using a combination of ground-truthing survey and recent aerial photographs showing the tree canopy.

#### 2.2.2 Threatened Ecological Communities in the Locality

The NSW Biodiversity Conservation Act, 2016 lists Threatened Ecological Communities (TECs) and Threatened Species that are likely to become extinct in nature unless the circumstances and factors threatening their survival cease to operate. The Threatened communities that occur in the locality are shown on Map 4. Drainage and soil types in the locality are also shown on the Maps. Abiotic factors and the site survey were used to determine targeted Threatened Ecological Communities.

### 2.2.3 Method of Establishing if EEC's Occur on this Study area

To establish if any endangered ecological community occurs within the study area and combination of three separate methods were used:

**Mapping Method:** The most accurate and up-to-date vegetation maps that are available were used to determine what is already known about the distribution of vegetation types in the locality. Where more accurate local maps are not available, the 'Vegetation of the Sydney Metropolitan Area' map and classification (OEH, 2016) are used. Vegetation mapping has inherent errors such as classification accuracy is limited due to the amount of field verification that was carried out when they were made, the spatial accuracy of the mapping and how old the mapping is. Vegetation maps do not provide a sufficient level of spatial accuracy for the assessment of the impact at the scale of this proposal but are useful in determining the ecological communities that are likely to occur in the vicinity. Fieldwork is necessary to determine the site-specific accurate vegetation mapping.

**Correlation Method:** Correlations between the species that occur in the study area and the listed characteristic species for the Endangered Ecological Community in; the Final Determination in Part 3 of Schedule 1 of the Threatened Species Conservation Act (1995). The floristics were also compared to the document 'Vegetation of the Sydney Metropolitan Area V3' by OEH 2016.

**Comparison Method:** Comparison of the ecological features on the site to the environmental description in the legal definition of the Threatened Ecological Community in the Final Determination in Biodiversity Conservation Act (2016). This comparison is essential when determining if the type of ecological community that occurs within a study area is an endangered community. Not all the sections of the determinations need to apply to the study area and the earlier sections are more important and should be given more weight (Preston and Adams).

## 3 Findings

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### 3.1 General Description of Habitat

The edges of the site have a dense and elevated tree canopy cover (see yellow areas on Map 5). The site mostly contains extensive concrete car parking, paving and buildings that provide no habitat for ground dwelling native flora and fauna (see Map 1). Raised garden beds and retaining walls provide habitat for small reptiles such a garden skinks.

There is an area along the southern part of the site and a narrow strip between the plant nursery and garage that appears to be at natural soil level and has the potential to support native vegetation. No native groundcover species occur at the site.

The Aboricultural Impact Assessment and Tree Protection Specification (TreeiQ, 17/04/19) identified 31 trees on the site. Fifteen trees of these trees are local native species. The native trees provide sheltering and foraging habitat for birds and aboreal mammals such as Brushtail Possums and gliders. Rainbow Lorikeets and Noisy Minors were observed in the Blue Gum (*Eucalyptus saligna*) trees on the site. Many other bird species are likely to use the native tree canopy for nectar, insects and seeds. Large remnant trees are valuable and complex (3 dimensional) habitat.

There is a least one hollow bearing tree (T27 in Arborist Report Tree iQ) on the site and one potential hollow bearing tree (T19 in Arborist Report Tree iQ). The confirmed hollow is south facing, approximately 10-15cm in diameter and suitable for small birds such a lorikeets and possible gliders. There was no evidence of any animals nesting in the hollow at the time of the survey.

There is drainage reserve approximately 500 west of the site between Tennyson Rd and Alice St. There are no caves, cave like structures (old building cavities) or drainage lines on the property. The buildings are in good condition and no signs of any insectivorous bat roost was found and it is very unlikely that bats would roost on this site. There is native tree canopy cover to the north (Alice



Street) that forms a corridor along the street. The habitat in the locality is shown on Maps 2 and 3.

## 3.2 Presence of Threatened Ecological Communities

### 3.2.1 Occurrence of TECs in this Study Area

#### Mapping Result

##### **Blue Gum High Forest CEEC**

The eastern side of the site has been mapped by OEH (2016) as Blue Gum High Forest, which is listed as a Critically Endangered Ecological Community (CEEC) in schedule 2 of the Biodiversity Conservation Act 2016 (see Map 4).

The spatial and classification accuracy of this mapping is limited due to the amount of field verification that was carried out and the time since the mapping in this locality was carried out. These maps have been made for broad scale planning and are useful in determining the ecological communities that are likely to occur in the vicinity. Field verification is needed to verify the extent of the community onsite, current condition and for plant species identification for floristic analysis.

#### Correlation Result – Listed Characteristic Species within the Final Determination and NVSMA

##### **Blue Gum High Forest CEEC**

The structure and floristic of composition of Blue Gum High Forest CEEC (PCT 1237) is described in the Scientific Committee's Final Determination (2007) and the Native Vegetation of the Sydney Metropolitan Area V3 Vol 2 (NVSMA, OEH 2016).

The NVSMA V3 (2016) describes Blue Gum High Forest a tall wet sclerophyll forest occurring on fertile shale influenced soils with high rainfall. The dominant tree species are Sydney Blue Gum (*Eucalyptus saligna*), Blackbutt (*Eucalyptus pilularis*) and Turpentine (*Syncarpia glomulifera*) with a sparse layer of small trees and a ferny, grassy or herbaceous groundcover.

This site contains remnant Sydney Blue Gums and Turpentines but no native groundcover and very little natural soil or likely soil/seed bank (see Map 5). The resilience is very low. The site does not fit well the description of Blue Gum High Forest as described in the NVSMA, 2016.

Section 2 of the Scientific Committee Determination lists 53 characteristic plant species, of these only 3 (5.6%)(Sydney Blue Gum, Blackbutt, *Pratia purpurascens*) occur at the site.

A flora survey of the site in 2015 by Anne Clements and Associates found 15 native plants growing in the soil of the site and 1 non-local native, 63 exotic and 1 cosmopolitan grass *Cynodon dactylon* were recorded on the site and including in the mown road verge in Tennyson Avenue. Only 11 of the 15 local native species were naturally occurring, the other four having apparently been planted. In all locations they recorded the % cover of native plants was less than 6%.

The native plants likely to be naturally occurring on or adjacent to the site were;

- Eucalyptus saligna,
- Syncarpia glomulifera,
- Cyclosorus dentatus
- Entolasia marginata
- Homalanthus populifolius
- Hydrocotyle peduncularis
- Hypolepis muelleri
- Microlaena stipoides
- Oxalis exilis
- Pratia purpurascens

*Solanum americanum*

The Arborist has since identified *Eucalyptus pilularis* as occurring on the site.

**Comparison Result – Ecological Features within the Final Determination**

The NSW Final Determination for Blue Gum High Forest CEEC has 13 Sections, of these 2, 4, 6, 8 and 9 are most relevant in determining the likely presence of the community.

2. See above.

4. The vegetation on the site does not fit the description of the structure of Blue Gum High Forest as described in section 4. It is highly modified and contains only remnant trees with no understorey.

6. The site is mapped as Glenorie soil type which is underlain with the Wianamatta Shale (See Map 4). Therefore the original soil on the site is the correct soil type to support Blue Gum High Forest CEEC. However, the site contains large areas of concrete and raised garden beds that have no resilience. Some parts of the site that are mulched, may have the natural soil, however there is no native understorey plants and there is unlikely to be a soil seedbank.

8. The site is within the Ku-ring-gai LGA, which is within the listed distribution of this community.

9. Section 9 states that *“highly modified relics of the community also persist as small clumps of trees without a native understorey”*. The site contains a clump of 11 large remnant trees and one small self-seeded Sydney Blue Gum with no native understorey species (see yellow areas on Map 5). It therefore meets the definition of the community under section 9 of the determination. The hard surfaces and raised garden beds under the canopy of the trees is not considered to be part of the community (See Map 5). The extent of the canopy on the site was determined using ground-truthing and recent aerial photographs.

**Conclusion regarding occurrence of TECs on the Site**

The clump of remnant characteristic remnant trees in the south-eastern corner of the site (some of which are rooted on the adjacent site to the east but overhang the site) are considered to meet the definition of a highly modified relic of Blue Gum High Forest CEEC under part 9 of the Final Determination. Only the EEC trees (see yellow areas on Map 5) and the areas under the canopy of the EEC, that are not hard surface or raised garden bed, are considered to be community (see green areas on Maps 5 and 6).

The BGHF CEEC on this site is considered to be in two types

1. Remnant tree canopy only (with concrete underneath). See yellow areas on Map 5.
2. Remnant tree canopy with potential natural soil underneath. See green areas on Map 5.

There is a possibility that the same area is Endangered Ecological Community known as *Sydney Turpentine Ironbark Forest* instead of BGHF.

*Blue Gum High Forest ... intergrades with Sydney Turpentine Ironbark Forest, which is currently listed as an Endangered Ecological Community under the TSC Act. Stands that exhibit intermediate characteristics are collectively covered by the Determinations of these communities and may be diagnosed by detailed consideration of the assemblage of species present at the site.*

The ground cover vegetation of the site is so heavily disturbed that it is not possible to definitively classify which of these two vegetation types was the original vegetation type of the site. A previous flora survey of the site by Anne Clements and Associates came to the conclusion that the site was more likely to be *Sydney Turpentine Ironbark Forest* we do not agree with this conclusion and as far as the conservation importance of the site is concerned there is little difference in which of these two communities it is.

**Presence of Blue Gum High Forest under the EPBC Act 1999**

Blue Gum High Forest is classified as a Critically Endangered Ecological Community (CEEC) under the Commonwealth EPBC Act 1999. The listing advice for this community under the EPBC Act states that "

*"Single isolated trees or stands of trees, characteristic of the canopy of Blue Gum High Forest of the Sydney Basin Bioregion, without a native understorey are considered important as biodiversity reservoirs. However, due to having been severely modified, these areas fall outside the definition of this ecological community and therefore do not form part of this listing."*

Therefore, the remnant trees on the site do not meet the description of this community under the Federal EPBC Act.

### **3.3 Other Native Vegetation Types**

No other native vegetation communities occur at the site.

## 4 Part 2. Impact Assessment

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### 4.1 Direct and Indirect Impacts

#### 4.1.1 Steps Taken to Avoid and Minimise Ecological Impact

The Biodiversity Conservation Act 2016 (Biodiversity Conservation Regulations 2017) requires that all developments "Avoid" then "Minimise" ecological impacts. Once all possible impact minimisation and avoidance has been undertaken, then offsetting can be used to mitigate the remaining impacts of the proposal on the environment. This report describes ecological constraints on this site for planning, including avoiding and minimising impacts.

The main ecological constraint that has been identified on this site is the Blue Gum High Forest CEEC, which is in the south-eastern part of the site (see Map 5).

The proposed construction footprint will retain most of the Blue Gum High Forest CEEC trees and most of the BGHF canopy and natural soil areas on the site. See Map 6.

The new plans (Tandem , 18/04/19) have slightly modified the extend of the basement carpark so that the encroachment into the TPZs of several of the CEEC trees has been reduced which has reduced the impact to the tree during construction and in the long-term (Aboricultural Impact Assessment, Tree iQ, 17/04/19).

The Landscape Report (Oculus, 31/05/19) includes a Blue Gum High Forest Conservation Zone along the southern and eastern parts of the site. The proposed planting in the Blue Gum High Forest Conservation Zone includes planting of some BGHF CEEC characteristic species and some other natives.

This report recommends doing onsite offsetting for the loss of BGHF CEEC by planting BGHF CEEC species within areas of existing BGHF (904m<sup>2</sup>). This offset area has increased from 737m<sup>2</sup> in the previous version of this report. This report also recommends native revegetation of areas that currently do not contains BGHF CEEC (226m<sup>2</sup>). The location potential offset area and a potential revegetation area on the site (see Map 6) is in the same footprint as the landscape report Blue Gum High Forest Conservation Zone. An additional offset area (354m<sup>2</sup>) is recommended along the council reserve adjacent to the northern boundary of the site. This will add to the existing corridor along Alice Street.

Detailed recommendations have been made in Part 3 of this report to further minimise the ecological impact from the proposal.

#### 4.1.2 Impact to Blue Gum High Forest CEEC

The Blue Gum High Forest CEEC on the site is comprised of the canopy of a clump of 11 remnant trees (some of which are rooted on the adjacent property to the east but overhang the site) and a small area of natural soil with no native understorey. See Maps 5 and 6

The site contains approximately 1232m<sup>2</sup> of mapped Blue Gum High Forest CEEC, which is comprised of 1100m<sup>2</sup> of tree canopy only (with hard surface underneath) and 132m<sup>2</sup> of natural soil under the canopy of the tree (but no native understorey).

The indicative construction footprint will remove 1 small Blue Gum (T30)(*Eucalyptus saligna*), and 15m<sup>2</sup> of natural soil under the canopy of the trees (see red outlined areas on Map 6) and the Aboricultural Impact Assessment and Tree Protection Specification (Tree iQ 17/04/19) recommends the trimming of branches from remnant Blue Gum High Forest trees (17,19,20, 24 and 27 in Aboricultural Impact Assessment Tree iQ 17/04/19) to allow the access for machinery for constructing the underground carpark and retaining walls. This will result in the loss of approximately 367m<sup>2</sup> of Blue Gum High Forest CEEC tree canopy (see red fuzzy area on Map 6).



There are areas of Blue Gum High Forest CEEC mapped to the north, east, south and west (as shown on Map 4). As shown on Map 5 the extent of the Blue Gum High Forest CEEC to be removed is less than 5% of the mapped extent in the locality (within 1.5km).

#### **4.1.4 Impact on Wildlife Corridor Values in the Locality**

There is a corridor of native trees along the Alice Street adjacent to the northern side of the site (see Maps 1 and 2). These are partly connected to reserves north of the site through remnant trees in residential backyards. The remnant native trees on the site do not form part of or overlap with this corridor. There is no native vegetation or remnant tree south, east or west of the site that could be a part of a wildlife corridor. Therefore, the site has low wildlife corridor value. There is potential for planting on the road reserve on the northern boundary of the site and along the eastern boundary to improve wildlife corridor value. There is a drainage reserve approximately 500m east of the site that connects to Ku-ring-gai National Park to the north (see Map 2). Fauna that are likely to use the site are highly mobile species such as birds, microbats and fruit bats and mammals that regularly occur in urban environment such as Brushtail and Ringtail Possums.

The Arboricultural Impact Assessment and Tree Protection Specification (Tree iQ 17/04/19) recommends the removal of two exotic Willow Myrtle trees along the eastern boundary of the property. Several branches of the Blue Gum High Forest trees will be trimmed, reducing the extent of the tree canopy (see red fuzzy areas on Map 6). These impacts are unlikely to reduce the corridor value along the eastern side of the property for the species that are likely to visit the site. The impact on the site is unlikely to affect corridor values in the locality.



**Property Boundary**



**BGHF CEEC Tree canopy only**



**BGHF Canopy and natural soil level  
no native ground cover plants**

### Map 5. Ecological Constraints

45 Tennyson Ave and  
105 Eastern Rd, Turramurra

Date: 18 April 2019

Disclaimer: Mapping is indicative and may contain errors from the source of the data. Information on these maps should only be used at the scale provided. Dimensions need to be determined by a registered surveyor.



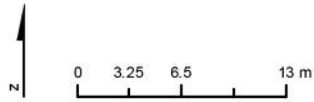
**GIS  
Environmental  
Consultants**  
Ph: (02) 9939 5129, Mobile: 0419 438 672  
ecology@ecology.net.au, ecology.net.au



- Loss of BGHF CEEC canopy only 367m<sup>2</sup>
- Loss of BGHF CEEC canopy & soil 15m<sup>2</sup>
- BGHF CEEC Tree canopy only 1100m<sup>2</sup>
- BGHF CEEC Canopy & natural soil level no native ground cover plants 132m<sup>2</sup>
- ⋈ Potential Revegetation Area 226 m<sup>2</sup>
- ⋈ Potential Offset Area 904m<sup>2</sup> inside site, 354m<sup>2</sup> outside site

**Map 6.**  
**Impact Loss of BGHF CEEC**  
 45 Tennyson Ave and  
 105 Eastern Rd, Turramurra  
 Date: 7 May2019

Disclaimer: Mapping is indicative and may contain errors from the source of the data. Information on these maps should only be used at the scale provided. Dimensions need to be determined by a registered surveyor.





## 4.2 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) would only be relevant if the proposal was to be or impact a Matter of National Environmental Significance (MNES), thus triggering referral to the Federal Department of the Environment and Water Resources.

A Protected Matters search was conducted within a 10km radius of the site. A Protected Matters search is a broad scale assessment that includes World Heritage Properties, National Heritage Places, Wetlands of International Importance, Great Barrier Reef Marine Park, Commonwealth Marine Areas, Listed Threatened Ecological communities, Listed Threatened Species and Listed Migratory Species. The only relevant categories to this report are Threatened species, Threatened Ecological Communities and Migratory species.

The report lists the following ecologically relevant items:

- 8 Threatened Ecological Communities
- 52 Threatened species
- 17 Migratory Species

Most of the migratory and aquatic bird species, as well as the fish, sharks and marine mammals are not assessed in this report. This report addresses terrestrial species, which are likely to have potential habitat on the site.

The EPBC Act TECs that have potential habitat onsite have been assessed. The assessments concluded that no significant impacts are likely to occur to those species or EECs as a result of the proposal. The vegetation on the site does not meet the definition of any EEC under the EPBC Act. It is recommended that this proposal (see Map 5) does not need to be referred to Environment Australia.

## 4.3 Ku-ring-gai LEP 2015 Assessment

### 4.3.1 Clause 6.3 Biodiversity Protection

*The objective of this clause is to protect, maintain and improve the diversity and condition of native vegetation and habitat, including:*

*(a) protecting biological diversity of native fauna and flora, and*

**Response:** The native trees on the site provide the majority of the habitat value on the property. The proposed construction footprint will remove 2 native trees (a *Eucalyptus saligna* (T30) and a planted *Melaleuca quinquenervia* (T1)). The Aboricultural Impact Assessment and Tree Protection Specification (Tree iQ 17/04/19 ) also recommended the trimming of branched of Blue Gum High Forest CEEC species. The removal of these trees/branches will remove some foraging habitat for a range of native species. The proposal will also remove a small potential hollow. Map 6 shows a potential offset areas and revegetation area for planting local native species.

*(b) protecting the ecological processes necessary for their continued existence, and*

**Response:** The proposal will unlikely impact connectivity between the site and surrounding native vegetation to the north. The proposed construction footprint will unlikely further impact any ecological processes.

- (c) *encouraging the recovery of threatened species, communities, populations and their habitats, and*

**Response:** Map 6 shows a potential offset areas and potential revegetation area for planting Blue Gum High Forest CEEC species.

- (d) *protecting, restoring and enhancing biodiversity corridors.*

**Response:** The proposed construction footprint will unlikely affect the movement of species that already use the site. Map 6 shows a potential offset areas and potential revegetation area for planting local native species that would improve the corridor value at the site.

- (2) *This clause applies to land identified as "Biodiversity" on the LEP [Terrestrial Biodiversity Map](#).*

**Response:** The south-eastern corner of the site is mapped as "Biodiversity".

- (3) *Before determining a development application for development on land to which this clause applies, the consent authority must consider:*

- (a) *the impact of the proposed development on the following:*

- (i) *any native vegetation community,*
- (ii) *the habitat of any threatened species, population or ecological community,*
- (iii) *any regionally significant species of plant, animal or habitat,*
- (iv) *any biodiversity corridor,*
- (v) *any wetland,*
- (vi) *the biodiversity values within any reserve,*
- (vii) *the stability of the land, and*

- (b) *any proposed measure to be undertaken to ameliorate any potential adverse environmental impact, and*

- (c) *any opportunity to restore or enhance remnant vegetation, habitat and biodiversity corridors.*

**Response:** The proposal is for a rezoning proposal to change the current LEP. This report addresses the requirements of Council as stated in the Pre-planning Proposal letter and addresses the impact of the indicative construction footprint on the Blue Gum High Forest CEEC on the site.

In the Local Planning Panel Meeting notes (18/03/19), Council has requested the proposal footprint be revised to reduce the impact the BGHF CEEC including the trees that are part of the community. Following these comments, the new plans (Tandem , 18/04/19) have slightly modified the extend of the basement carpark so that the encroachment into the TPZs of several of the CEEC trees has been reduced which has reduced the impact to the tree during construction and in the long-term (Aboricultural Impact Assessment, Tree iQ, 17/04/19).

The indicative construction footprint will remove 1 small Blue Gum (T30)(*Eucalyptus saligna*), and 15m<sup>2</sup> of natural soil under the canopy of the trees and the Aboricultural Impact Assessment and Tree Protection Specification (Tree iQ 17/04/19) recommends the trimming of branches from remnant Blue Gum High Forest trees (17,19, 20, 24 and 27) this will result in the loss of approximately 367m<sup>2</sup> of Blue Gum High Forest CEEC tree canopy.

The potential offset area to offset the loss of the BGHF CEEC has increased from 737m<sup>2</sup> to 904m<sup>2</sup> onsite and another potential 354m<sup>2</sup> outside the site. This report also recommended an additional 226m<sup>2</sup> revegetation area along the eastern boundary of the site.

Map 6 shows a potential offset area and revegetation area for planting Blue Gum High Forest CEEC species.

The proposal will unlikely impact the ecological values on adjacent land including corridor value. The proposal will not impact any wetland.

(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:*

(a) *is consistent with the objectives of this clause, and*

**Response:** The proposed rezoning and indicative construction footprint is consistent with the objectives of this clause.

(b) *is designed, and will be sited and managed, to avoid any potentially adverse environmental impact or, if a potentially adverse environmental impact cannot be avoided:*

**Response:** The proposal will impact the canopy on most BGHF trees on the site due to branches being trimmed. However the proposal will only remove one small tree and will only impact a small area of the natural soil.

(i) *the development minimises disturbance and adverse impacts on remnant vegetation communities, habitat and threatened species and populations, and*

**Response:** The proposal will impact the canopy on most BGHF trees on the site due to branches being trimmed. However the proposal will only remove one small tree and will only impact a small area of the natural soil. The Aboricultural impact Assessment and Tree Protection Specification (Tree iQ 17/04/19) details trees protection measures during construction.

(ii) *measures have been considered to maintain native vegetation and habitat in parcels of a size, condition and configuration that will facilitate biodiversity protection and native flora and fauna movement through biodiversity corridors, and*

**Response:** The proposal will impact the extent of the tree canopy on the site but will retain most of the native trees that provide habitat. The proposed construction footprint will unlikely affect the movement of species that already use the site. Map 6 provides a potential offset areas and potential revegetation area for planting local native species that would improve the corridor value at the site.

(iii) *the development avoids clearing steep slopes and facilitates the stability of the land, and*

**Response:** The site is not on a steep slope and retaining the large trees will maintain stability.

(iv) *measures have been considered to achieve no net loss of significant vegetation or habitat.*

Map 6 provides a potential offset area for planting Blue Gum High Forest CEEC species. The proposal will result in a loss of 15m<sup>2</sup> of natural soil under the canopy and approximately 367m<sup>2</sup> of tree canopy only. This report proposes a potential offset area (904m<sup>2</sup> onsite and 354m<sup>2</sup> offsite) and potential revegetation area (226m<sup>2</sup>) that are within the Landscape Reports (Oculus 31/05/19) Blue Gum High Forest Conservation Area. This report also proposed an addition offset area that is offsite and is within Council land adjacent to the northern boundary of the site.

#### 4.4 5-Part Test of Significance

A 5-part Test of Significance (Section 7.3 of the BC Act 2016) was completed for the following biota:



- Blue Gum High Forest CEEC

The 5-Part Tests concluded that this proposal is not likely to have a significant effect on these biota. These conclusions are reliant on the assumptions stated in this report.

#### 4.5 BOS Threshold Assessment

The Biodiversity Conservation Act Regulation (Aug 2017) requires that the Biodiversity Offset Scheme (BOS) threshold test (section 7.1 to 7.3) be applied to all development applications, to determine if the requirement to enter the BOS is triggered. If triggered then the Biodiversity Assessment Method (BAM) needs to be applied and a Biodiversity Development Assessment Report (BDAR) is required.

The Biodiversity Offsets Scheme applies to local developments, major projects or the clearing of native vegetation where the *State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017* applies.

This proposal as described in this report is **not** considered to meet the BC Act threshold as;

- 1) The minimum lot size for this site (as per Ku-ring-gai LEP 2015) is less than 1ha therefore the maximum cut off for clearing "Native vegetation" is 0.25ha. Native Vegetation is defined in the LLS act as any native plant whether tree, shrub or ground cover plant. The total amount of disturbance to native vegetation by this proposal is **less than 0.25ha**, which is below the threshold limit, therefore, this part of the test is **not triggered, and**
- 2) The, Biodiversity Values Map (BV Map) identifies land with high biodiversity value, as defined by the *Biodiversity Conservation Regulation 2017*. The area of impact for this proposal is **not** mapped on the "Biodiversity Values" Map as having high biodiversity value, **and**
- 3) This proposal is **not** likely to have a significant affect (5-part test of significance Section 7.3, BC Act) on any Threatened species or ecological community or their habitats. See the section above and Appendix A of this report for the 5-part tests.

Therefore, the proposal **does not require a BAM assessment or BDAR report** but does require a Flora and Fauna report to address; Council legislation (LEP, DCP), the Heads of Consideration in section 4.15 (1) a, b, c of the EP&A Act, SEPPs, other NSW environmental Acts and the Federal EPBC Act 1999. The Biodiversity Assessment Method (BAM) has been used as guide for the field survey and vegetation assessment in this report, however no offsetting is required.

#### 4.6 Biodiversity Impact Conclusions

The Blue Gum High Forest CEEC on the site is comprised of the canopy of a clump of 11 remnant trees (some of which are rooted on the adjacent property to the east but overhang the site) and a small are of natural soil with no native understorey. See Map 6

The site contains approximately 1232m<sup>2</sup> of mapped Blue Gum High Forest CEEC, which is comprised of 1100m<sup>2</sup> of tree canopy only (with hard surface underneath) (shown in yellow on Map 5) and 132m<sup>2</sup> of natural soil under the canopy of the tree (but no native understorey) (shown in green on Map 5).

The proposal is for rezoning of the Ku-ring-gai LEP to allow for future development of the site including a Harris Farm grocer, 2 additional retail premises, café/nursery and landscaping on the lots. In the Local Planning Panel Meeting notes (18/03/19), Council has requested the proposal footprint be revised to reduce the impact the BGHF CEEC including the trees that are part of the community. Following these comments, the new plans (Tandem , 18/04/19) have slightly modified the extend of the basement carpark so that the encroachment into the TPZs of several of the CEEC

trees has been reduced which has reduced the impact to the tree during construction and in the long-term (Aboricultural Impact Assessment, Tree iQ, 17/04/19).

The indicative construction footprint will remove 1 small Blue Gum (T30)(*Eucalyptus saligna*), and 15m<sup>2</sup> of natural soil under the canopy of the trees (see solid red outlined area on Map 6) and the Aboricultural Impact Assessment and Tree Protection Specification (Tree iQ 17/04/19) recommends the trimming of branches from remnant Blue Gum High Forest trees (17,19,20, 24 and 27). This will result in the loss of approximately 367m<sup>2</sup> of Blue Gum High Forest CEEC tree canopy (see fuzzy red area on Map 6).

This proposed rezoning and indicative construction footprint (see Map 6) is not likely to have a significant effect on the Blue Gum High Forest CEEC on the site and none of the BC Act thresholds are met, therefore a Biodiversity Development Assessment Report (BDAR) is not recommended in relation to this proposal. It must be noted that this conclusion only applies to the proposal described in this report, the assumptions made in this report and the development shown on the Maps in this report. The recommendations below should be followed to further reduce the impact of the proposal on the ecological values within the study area.

This report recommends doing onsite offsetting for the loss of BGHF CEEC by planting BGHF CEEC species within areas of existing BGHF (904m<sup>2</sup>) see Map 6. This offset area has increased from 737m<sup>2</sup> in the previous version of this report. This report also recommends native revegetation of areas that currently do not contains BGHF CEEC (226m<sup>2</sup>) see Map 6. An additional offset area (354m<sup>2</sup>) is recommended along the council reserve adjacent to the northern boundary of the site. See Map 6.

The proposal is not considered to be a 'matter of National Environmental Significance (NES)' EPBC Act referral of the proposal to the Federal Department of the Environment and Water Resources is not considered necessary.

The proposal meets the requirements and objective of Clause 6.3 *Biodiversity Protection* of the Kuring-gai LEP 2015.

We recommend that ameliorative conditions and management recommendations in this report be followed to reduce disturbance during construction and to improve ecological outcomes.

## 5 Part 3. Ameliorative Conditions & Recommendations

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### 5.1 Recommendations to Avoid and Minimise Impact During Planning

- **Potential Blue Gum High Forest Offsetting:** Map 6 proposes two areas for potential offsetting for the loss of Blue Gum High Forest CEEC. An 904m<sup>2</sup> onsite offset in the southern and eastern parts of the site and a 354m<sup>2</sup> area on council land adjacent to the northern boundary of the site. It is recommended that an area within this potential offset area be planted with Blue Gum High Forest CEEC tree and groundcover species. This offset area should be protected during construction and sign posted and incorporated in any future plans for development at the site.
- **Potential Revegetation Area:** A 226m<sup>2</sup> revegetation area is also recommended in the north-eastern part of the site (see Map 6) that currently does not contain any BGHF CEEC. This area is recommended to be planted with Blue Gum High Forest CEEC species to create a corridor along the eastern boundary of the property.
- The local native trees on the site should be retained where ever possible especially on the southern and eastern sides.
- Blue Gum, Blackbutt and Turpentine trees should be planted where possible. Turpentine is a most suitable tree adjacent to buildings and high use areas as it is very structurally stable.

- Plant species from the Blue Gum High Forest Critically Endangered Ecological Community should be used in planting in the Blue Gum High Forest Conversation Area shown on the Landscape Report (Oculus 31/05/19). This should be a mix of tree, shrub and groundcover species and be of local provenance. This would be consistent with the controls for Landscape Remnants under the Ku-ring-gai Development Control Plan and the recommendations for the offset and revegetation areas in this report.
- Educational signage regarding the conservation of Blue Gum High Forest CEEC is recommended to increase public awareness and education.
- Street landscape planting along Eastern Road and Tennyson Avenue should be local native canopy trees

### 5.3 During Construction

- Tree protection measures as per the Arboricultural Impact Assessment and Tree Protection Specification (Tree iQ 17/04/19) should be followed for the entire length of construction to ensure the retention of the Blue Gum High Forest CEEC and other native trees.

## 6 References

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45,47 Tennyson Avenue and 105 Eastern Road, Turramurra, Flora Constraints by Anne Clements and Associates (10 Aug 2015)

## 7 Appendix A: 5-part Tests of Significance

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### 7.1 Definitions (DEEC 2006)

**Direct impacts** - are those that directly affect the habitat and individuals. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development.

**Indirect impacts** - occur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas. As with direct impacts, consideration must be given, when applying each factor, to all of the likely indirect impacts of the proposed activity or development.

**Life cycle**: the series or stages of reproduction, growth, development, ageing and death of an organism.

**Viable**: the capacity to successfully complete each stage of the life cycle under normal conditions.

**Local population**: the population that occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated that contiguous or interconnecting parts of the population continue beyond the study area, according to the following definitions.

- The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.
- The local population of resident fauna species comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area.
- The local population of migratory or nomadic fauna species comprises those individuals that are likely to occur in the study area from time to time. In cases where multiple populations occur in the study area, each population should be assessed separately.

**Risk of extinction**: the likelihood that the local population will become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the viability of that population.

**Local occurrence**: the ecological community that occurs within the study area. However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of that ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.

**Risk of extinction**: similar to the meaning set out in factor (a), this is the likelihood that the local occurrence of the ecological community will become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the ecological community, and includes changes to ecological function.

**Composition**: both the plant and animal species present, and the physical structure of the ecological community. Note that while many ecological communities are identified primarily by their vascular plant composition, an ecological community consists of all plants and animals as defined under the TSC and FM Acts that occur in that ecological community.

**Habitat**: the area occupied, or periodically or occasionally occupied, by any threatened species, population or ecological community and includes all the different aspects (both biotic and abiotic) used by species during the different stages of their life cycles.

**Extent:** the physical area removed and/or to the compositional components of the habitat and the degree to which each is affected.

**Importance:** related to the stages of the species' life cycles and how reproductive success may be affected.

**Locality:** the same meaning as ascribed to local population of a species or local occurrence of an ecological community.

"likely" with respect to "significant affect" the term "likely" in the context of s 78A(8)(b) of the EPA Act means a "real chance or possibility". It does not mean "more probable than not". Case law

"significant" qualifying the verb "affect" means "important", "notable", "weighty" or "more than ordinary". Case law

## 7.2 5-Part Test of Significance for Blue Gum High Forest Critically Endangered Ecological Community

- 1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

- 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**,

**Response:** Blue Gum High Forest is not listed as an Threatened species and therefore this question does not apply.

- (b) in the case of an endangered ecological community or critically endangered ecological community, 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

**Response:** The Blue Gum High Forest CEEC on the site is comprised of the canopy of a clump of 11 remnant trees (some of which are rooted on the adjacent property to the east but overhang the site) and a small area of natural soil with no native understorey. See Map 5.

The site contains approximately 1232m<sup>2</sup> of mapped Blue Gum High Forest CEEC, which is comprised of 1100m<sup>2</sup> of tree canopy only (with hard surface underneath) (see yellow areas on Map 5) and 132m<sup>2</sup> of natural soil under the canopy of the tree (but no native understorey) (see green areas on Map 5).

The indicative construction footprint will remove 1 small Blue Gum (T30)(*Eucalyptus saligna*), and 15m<sup>2</sup> of natural soil under the canopy of the trees (see bold red outlined areas on Map 6) and Aboricultural Impact Assessment and Tree Protection Specification (Tree iQ 17/04/19) recommends the trimming of branches from remnant Blue Gum High Forest trees (17,19,20, 24 and 27). This will result in the loss of approximately 367m<sup>2</sup> of Blue Gum High Forest CEEC tree canopy (see red fuzzy areas on Map 6).

There are areas of Blue Gum High Forest CEEC mapped to the north, east, south and west (as shown on Map 4). As shown on Map 5 the extent of the Blue Gum High Forest CEEC to be removed is less than 5% of the mapped extent in the locality (within 1.5km). Therefore the amount to be removed is not likely to have an adverse effect of the extent of the ecological community on the locality such that the local occurrence is likely to be placed at risk of extinction.

- (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,

**Response:** The Blue Gum High Forest CEEC on this site has been substantially modified in the past and now only contain remnant trees with no native understorey or shrub layer and mostly concrete under the canopy. The proposal is not likely to further modify the composition of the community on the site.

(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*

**Response:** The indicative construction footprint will remove 1 small Blue Gum (T30)(*Eucalyptus saligna*), and 15m<sup>2</sup> of natural soil under the canopy of the trees.

The Aboricultural Impact Assessment and Tree Protection Specification (Tree iQ 17/04/19) recommends the trimming of branches from remnant Blue Gum High Forest trees (17,19,20, 24 and 27) this will result in the loss of approximately 367m<sup>2</sup> of Blue Gum High Forest CEEC tree canopy.

(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*

**Response:** the clump of remnant trees in the south-eastern corner of the site is already separated from the trees to the north along Alice Street, however there is likely to be exchange of pollen between the trees. The proposal will not likely further fragment or isolate the habitat and BGHF trees on the site.

(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,*

**Response:** The Blue Gum High Forest CEEC on the site is comprised of remnant tree canopy and a small area of natural soil. There is no native understorey and the majority of the area under the canopy of the trees is concrete. The habitat to be impacted is not considered to be important habitat.

(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),*

**Response:** The site is not mapped as an Area of Outstanding Biodiversity Value. The proposal will unlikely directly or indirectly impact any Area of Outstanding Biodiversity Value.

(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.*

**Response:**

Key Threatening Processes that are listed in the Biodiversity Conservation Act 2016 and that are relevant to this site include:

**Clearing of native vegetation.**

The proposal will reduce the extent of the native tree canopy of the site and will remove one small native BGHF tree. This will unlikely increase the impact of this Key Threatening Processes.

**Conclusion to the impact of the rezoning proposal on Blue Gum High Forest CEEC**

The proposal is not likely to have a significant impact on the Blue Gum High Forest CEEC in the locality and a BDAR is not recommended for this proposal at this site.



