Shoalhaven Hospital Redevelopment
Biodiversity Development Assessment Report

Health Infrastructure

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DOCUMENT TRACKING

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Template 2.8.1

Executive Summary

Eco Logical Australia Pty Ltd (ELA) was engaged by Health Infrastructure via Johnstaff Pty Ltd to prepare this Biodiversity Development Assessment Report (BDAR). This BDAR was prepared to meet the requirements of the Biodiversity Assessment Method (BAM) 2020. The proposed development is to be assessed as a State Significant Development (SSD- 35999468) under Division 4.7 of the EP&A Act. SEARs were issued on 23 February 2022.

The development site is at Shoalhaven Hospital, Scenic Drive, Nowra NSW 2541 (Lot 7034 DP 1031852, Lot 1 DP 1043088, Lot 104 DP 1165533, Lot 1032 DP 1208730 and Lot 373 DP 755952) and is within the Shoalhaven LGA.

The development site contains the existing Shoalhaven District Memorial Hospital buildings, carparks and landscaped gardens; the existing Shoalhaven Community Preschool building, carpark and landscaped gardens; and the open recreational areas of Nowra Park with planted and remnant trees.

The site was traversed on foot to:

- Determine if any of the vegetation met descriptions for any plant community types (PCTs) and associated threatened ecological communities (TECs)
- Search for any threatened flora species that may be present
- Search for hollows, nests, feed-trees or any other habitat feature that may be important for threatened fauna species.

Vegetation within the development footprint was identified as planted native and exotic species. Therefore, this BDAR was prepared under the streamlined assessment module for planted native vegetation in accordance with Appendix D of BAM 2020. Species credits are not required to offset the proposed impacts. Planted native vegetation will be reinstated as part of proposed landscaping.

This BDAR assesses prescribed biodiversity impacts, which are considered minor. ELA does not recommend offsets to these residual unavoidable impacts. Mitigation measures relating to the displacement of resident fauna and indirect impacts on native vegetation are provided in Section 7.3 and 7.4.

The planted native vegetation in the development footprint may provide occasional, marginal foraging resources for mobile, wide ranging bird and bat species, including some species listed as threatened under the BC Act and EPBC Act. No breeding habitat or other potentially important habitat would be affected by the development. No threatened species were recorded within the development site.

In accordance with Appendix D of BAM 2020, no offsets are required for impacts to planted vegetation or the associated marginal foraging habitat for threatened fauna.

Following consideration of the administrative guidelines for determining significance under the EPBC Act, it is concluded that the proposal is highly unlikely to have a significant impact on MNES or Commonwealth land.

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Abbreviations

Abbreviation	Description
BAM	Biodiversity Assessment Method
BAMC	Biodiversity Assessment Method Credit Calculator
BC Act	NSW *Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DPE	NSW Department of Planning and Environment
ELA	Eco Logical Australia Pty Ltd
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
FM Act	NSW *Fisheries Management Act 1994*
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
LLS	Local Land Service
NSW	New South Wales
PCT	Plant Community Type
SEPP	State Environmental Planning Policy
SSD	State Significant Development
TEC	Threatened Ecological Community
WM Act	NSW *Water Management Act 2000*

1. Introduction

This Biodiversity Development Assessment Report (BDAR) has been prepared by David Coombes and Ryan Smithers. Ryan is an Accredited Person (BAAS17061). This report was prepared to meet the requirements of the Biodiversity Assessment Method (BAM) 2020 under the NSW *Biodiversity Conservation Act 2016* (BC Act). The proposed development is to be assessed as a State Significant Development (SSD-35999468) under Division 4.7 of the EP&A Act. The Secretary's Environmental Assessment Requirements (SEARs) were issued on 23 February 2022. This BDAR assesses the biodiversity impacts of the proposed development in accordance with the requirements of the BC Act and *Biodiversity Conservation Regulation 2017* (BC Regulation).

Definitions of terminology used throughout this report are presented in Appendix A.

1.1. General description of the development site

The development site is at Shoalhaven Street, Nowra NSW 2541 (Lot 7034 DP 1031852, Lot 1 DP 1043088, Lot 104 DP 1165533, Lot 1032 DP 1208730 and Lot 373 DP 755952) and is within the Shoalhaven local government area (LGA). At the time of writing the development site is zoned SP2 Health Services Facilities, SP2 Educational Establishment and RE1 Public Recreation under the Shoalhaven Local Environmental Plan (SLEP) 2014.

The development site contains the existing Shoalhaven District Memorial Hospital buildings, carparks and landscaped gardens; the existing Shoalhaven Community Preschool building, carpark and landscaped gardens; and the open recreational areas of Nowra Park which includes planted and remnant trees.

This report includes two base maps, the Location Map (Figure 1) and the Site Map (Figure 2).

1.2. Brief description of the proposal

Health Infrastructure NSW (HI) is the applicant for the proposed Shoalhaven Hospital Redevelopment at Scenic Drive, Nowra in the City of Shoalhaven Local Government Area (LGA).

The proposal is State Significant Development (SSD) for the purposes of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and section 14(a) of Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP) as it involves development for the purposes of a hospital with a capital investment value in excess of $30 million.

The Shoalhaven Hospital Redevelopment seeks to deliver significantly enhanced acute services, as well as a new campus main entry and drop-off area.

The proposed Acute Services Building will be located south and east of the hospital's existing cluster of buildings at will address Shoalhaven Street to the hospital's east. The development is proposed to be located on the site of the existing Shoalhaven Community Pre-school (which will be separately relocated) and part of the former Nowra Park.

The proposed Shoalhaven Hospital Redevelopment under this SSD relates primarily to the development of a new hospital building and its ancillary works. The scope includes a new 7-level building of about 31,000m2 GFA, with rooftop plant and helipad, generally accommodating the following:

- Level 00 Back of House (BOH), Loading Dock, Kitchen, plant, Pharmacy, Staff amenities, Mortuary, and plant.
- Level 01 Front of House (FOH), Emergency Department (ED), Medical Imaging, and Cafe
- Level 02 Operating Suites & Endoscopy, Central Sterile Supply Department (CSSD), and linkway to Block B
- Level 03 Coronary Care Unit (CCU), Close Observation Unit (COU), Intensive Care Unit (ICU), cultural centre, and plant
- Level 04 In-Patient Unit (IPU), Mental Health, and plant
- Level 05 In-Patient Unit (IPU)
- Level 06 In-Patient Unit (IPU)
- Level 07 Rooftop plant
- Level 08 Helipad

This generally results in 279 new beds and treatment spaces across a range of departments, eight new operating theatres, and two new endoscopy theatres. The works include a new ambulance entry from Shoalhaven Street, new public and servicing accessway off North Street, and separate loading dock entry and mortuary parking off Shoalhaven Street.

A range of infrastructure and civil engineering works are proposed as well as demolition of existing structures within the footprint of the new building and/or on the existing hospital campus where a new linkway connection is proposed. Earthworks will be necessitated within the building's footprint and immediate environs.

Subdivision of the balance of Lot 104 (the former Nowra Park) remaining and consolidation of the existing pre-school lot into the hospital lot is also proposed.

A number of selected trees will require removal. Other significant trees will be retained and protected. Replacement planting at a minimum rate of 1:1 is proposed.

1.3. Development site footprint

The subject land boundary and development footprint, including the construction footprint, are presented in the Site Plan (Figure 3).

1.4. Sources of information used

The following data sources were reviewed as part of this report:

- NSW Government BioNet Vegetation Classification (2021)
- NSW BioNet / Atlas of NSW Wildlife 5 km database search (accessed 18 February 2022)
- Shoalhaven biometric vegetation mapping (OEH 2013)
- Arboricultural Development Impact Assessment prepared by Moore Trees (2021)
- Additional Geographic Information Systems (GIS) datasets including soil, topography, geology, and drainage
- Threatened Biodiversity Data Collection

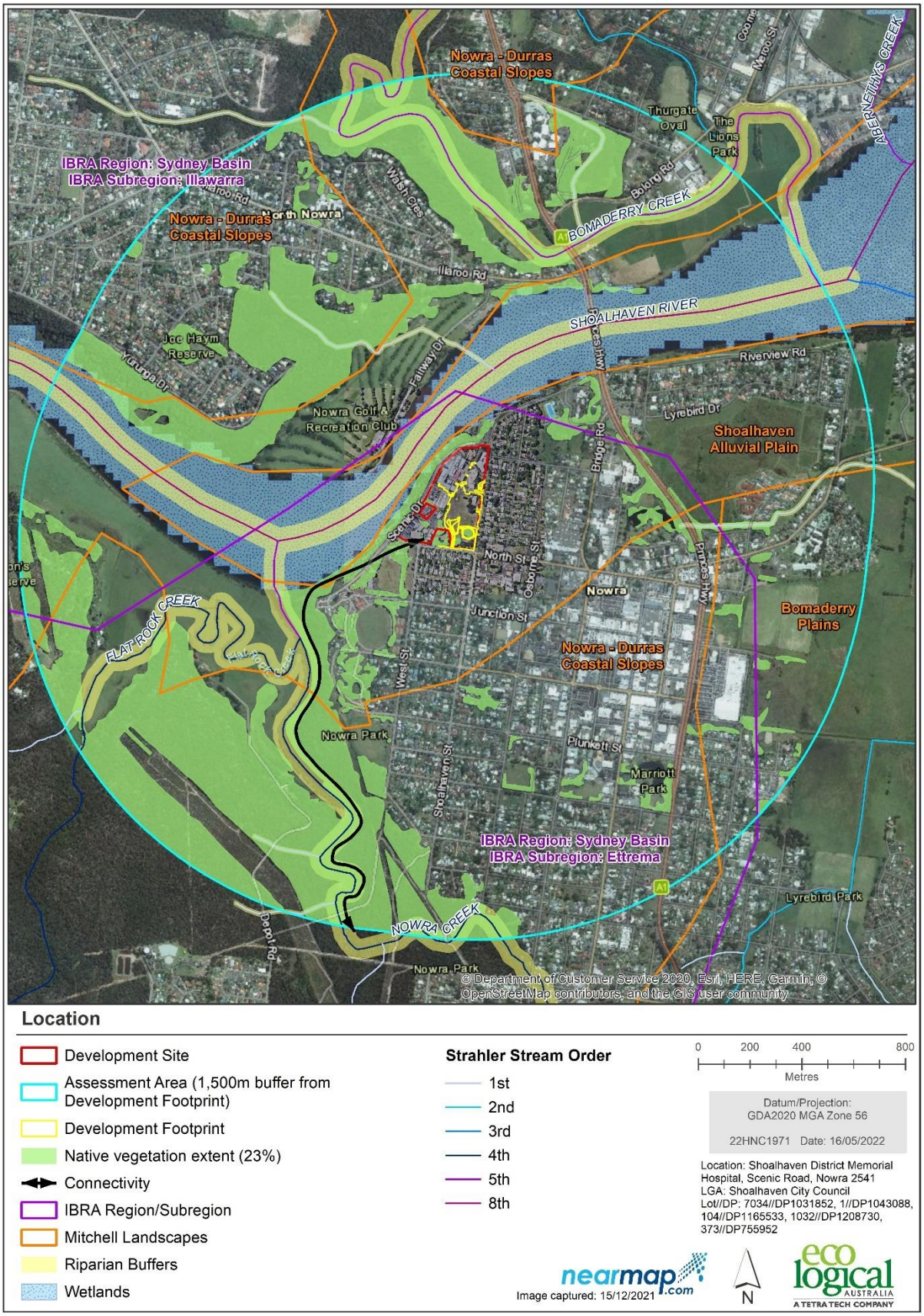

Figure 1: Location map

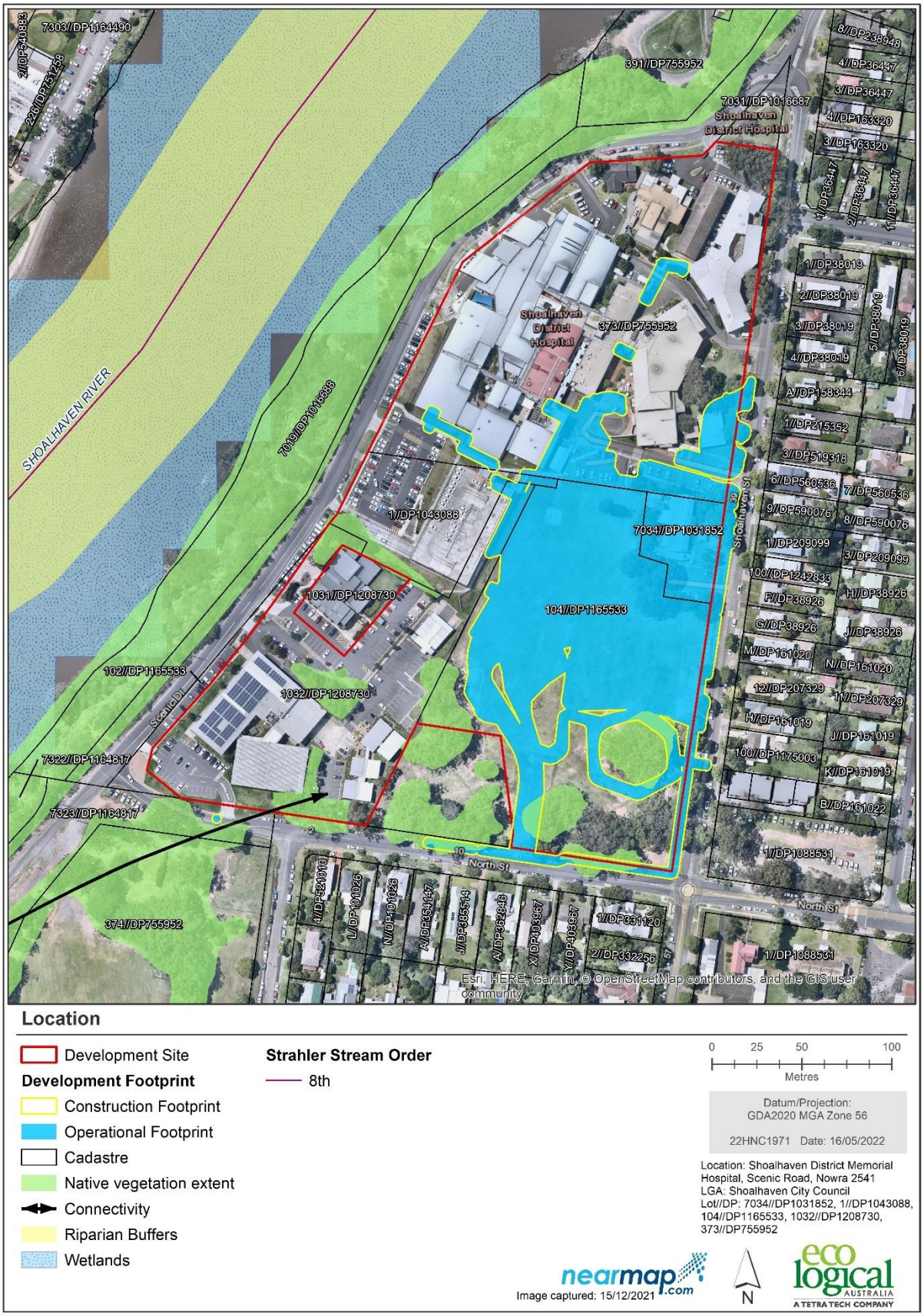

Figure 2: Site map

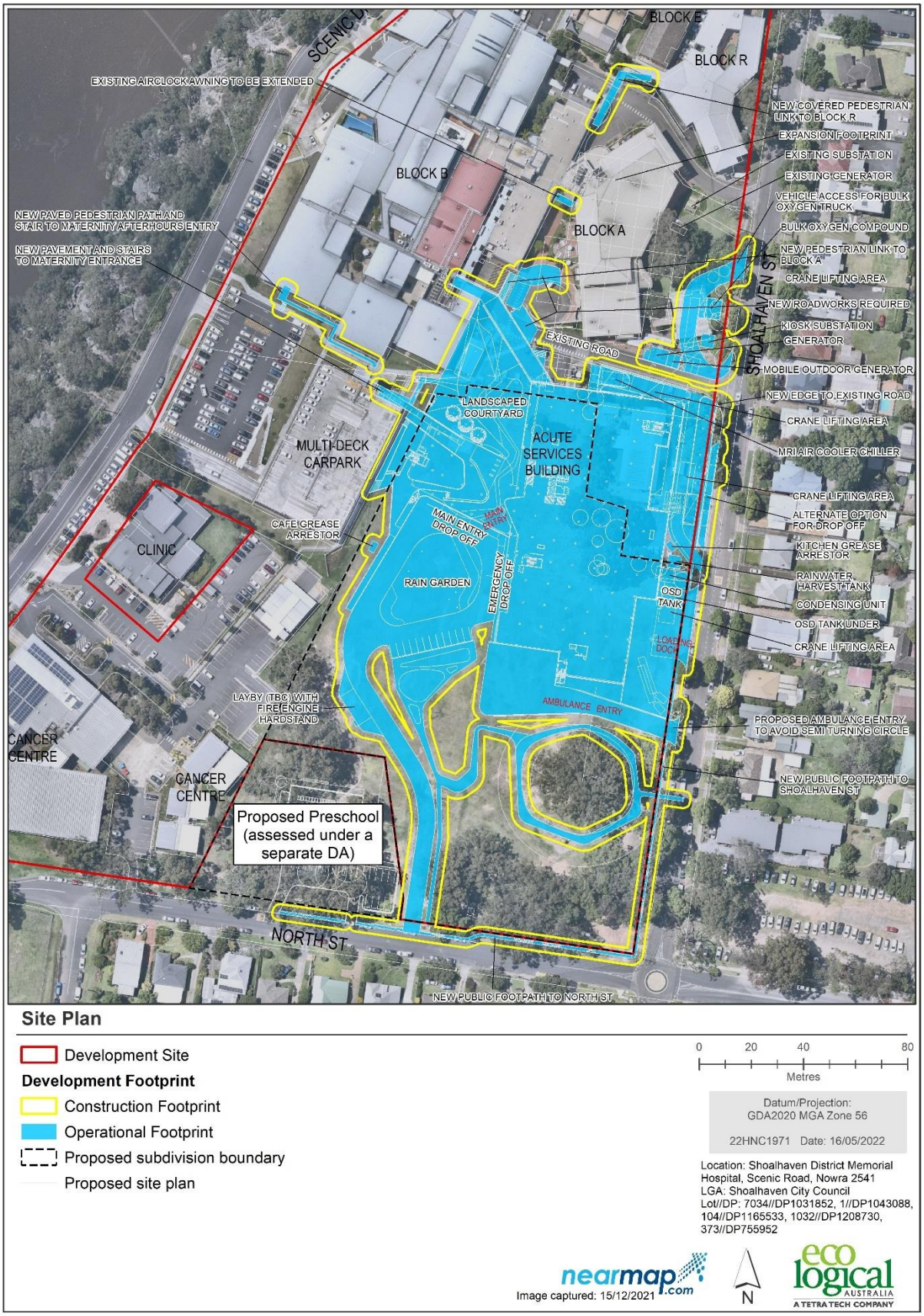

Figure 3: Site plan

1.5. Legislative context

Legislation relevant to the development site is outlined in Table 1.

Table 1: Legislative context

Name	Relevance to the project
Commonwealth	
Environment Protection and Biodiversity Conservation Act 1999	Matters of National Environmental Significance (MNES) have been identified on or near the development site. This report assesses impacts to MNES and concludes that the development is not likely to have a significant impact on MNES.
State	
Environmental Planning and Assessment Act 1979	The EP&A Act is the principal planning legislation for NSW. It provides a framework for the overall environmental planning and assessment of development proposals. The proposed development is to be assessed as a State Significant Development (SSD-17899480) under Division 4.7 of the EP&A Act. SEARs were issued on 23 February 2022. This report addresses Biodiversity requirements as follows: *"11. Biodiversity* • *Assess any biodiversity impacts associated with the development in accordance with the Biodiversity Conservation Act 2016 and the Biodiversity Assessment Method 2020, including the preparation of a Biodiversity Development Assessment Report (BDAR), unless a waiver is granted, or the development is on biodiversity certified land.* • *If the development is on biodiversity certified land, provide information to identify the site (using associated mapping) and demonstrate the proposed development is consistent with the relevant biodiversity measure conferred by the biodiversity certification."*
Biodiversity Conservation Act 2016	The proposed development is to be assessed as a SSD and therefore requires submission of a Biodiversity Development Assessment Report.
Fisheries Management Act 1994	The development does not involve impacts to Key Fish Habitat, does not involve harm to marine vegetation, dredging, reclamation or obstruction of fish passage. A permit or consultation under the FM Act is not required.
Water Management Act 2000	The project does not involve works on waterfront land. A Controlled Activity Approval under s91 of the WM Act is not required.
Planning Instruments	
State Environmental Planning Policy (Resilience and Hazards) 2021	Chapter 2 - Coastal Management - the development site is located within the Coastal Use Area and Coastal Environment Area. It is not located within 100 m of any Coastal Wetland or Littoral Rainforests mapped under the SEPP.
State Environmental Planning Policy (Biodiversity and Conservation) 2021	Chapter 4 – Koala habitat protection 2021 applies to the development. While there are trees within the development site, the urban context and lack of recent Koala records from surrounding areas strongly suggests that the site is not important Koala habitat and that the development will not adversely impact Koalas or Koala habitat.
Shoalhaven Local Environmental Plan (LEP) 2014	At the time of writing the development site is zoned SP2 Health Services Facilities, SP2 Educational Establishment and RE1 Public Recreation under the Shoalhaven LEP. The development site is not located on the Biodiversity or Riparian Lands overlay under the Shoalhaven LEP.
Shoalhaven Development Control Plan (DCP) 2014	There are no further provisions from the Shoalhaven DCP requiring assessment in relation to the development site.

2. Landscape features

The site-based method was applied for this assessment; therefore, the assessment area is the 1,500 m buffer surrounding the outside edge of the boundary of the subject land.

The landscape features considered for this assessment are presented in Table 2, Figure 1 and Figure 2.

Table 2: Landscape features

Landscape feature	Description	Data source
IBRA Region(s)	The assessment area and development site are within the Sydney Basin IBRA Region.	Interim Biogeographic Regionalisation for Australia, Version 7
IBRA subregion(s)	The assessment area is within the Ettrema and Illawarra IBRA subregions and the development site is within the Ettrema IBRA subregion.	Interim Biogeographic Regionalisation for Australia, Version 7
NSW (Mitchell) Landscapes	The development site is within the Shoalhaven Alluvial Plain. The Nowra - Durras Coastal Slopes and Bomaderry Plains also occur in the assessment area.	NSW (Mitchell) Landscapes - version 3.1 (DPIE 2016)
Rivers and streams	No rivers or streams are present within the development site.	NSW LPI Waterway mapping, Aerial imagery
Estuaries and wetlands	The development site does not contain estuaries or wetlands. In the assessment area, the Shoalhaven River estuary contains important wetlands.	NSW directory of important wetlands
Connectivity of different areas of habitat	Habitat connectivity is present within the assessment area associated with escarpments around north Nowra, Bomaderry Creek, Nowra Creek, and the Shoalhaven River (Figure 1). Vegetation within the development site has been heavily cleared, modified and fragmented, and lacks connectivity. At best, planted and remnant trees may provide stepping-stone type habitat linking vegetation within the development site to nearby intact habitat to the west and southwest for highly mobile species.	Aerial imagery
Geological features of significance and soil hazard features	The development site does not contain any geological features of significance (i.e., karst, caves, crevices, cliffs etc.) or soil hazard features. Numerous cliffs and minor caves are present in the assessment area, in association with Nowra Creek, Bomaderry Creek and the Shoalhaven River.	Aerial imagery
Biodiversity Values	The development site does not include areas mapped under the NSW Biodiversity Values Map	Biodiversity Values Map and Threshold Tool
Areas of Outstanding Biodiversity Value	The development site does not include declared Areas of Outstanding Biodiversity Values	Register of Declared Areas of Outstanding Biodiversity Value

3. Native Vegetation

3.1. Survey Effort

Vegetation survey was undertaken within the development site by David Coombes on 18 November 2021 and 29 January 2022.

The site was traversed on foot to:

- Determine characteristic species present
- Determine if any of the vegetation met descriptions for any plant community types (PCTs) and associated threatened ecological communities (TECs)
- Search for any threatened flora species that may be present
- Search for hollows, feed trees, nests or any other habitat feature that may be important for threatened fauna species.

Trees were noted and compared with the Arboricultural Impact Assessment Report (Moore Trees 2021).

3.2. Vegetation present

The development footprint contains planted native and exotic vegetation. No remnant native vegetation is present within this area and no PCTs could be assigned to the vegetation to be removed (Figure 4). The vegetation within the development footprint contained a mix of planted native and exotic trees, shrubs and groundcovers along with weeds (Figure 5 to 10).

The scattered canopy contained a variety of native and exotic trees planted for landscaping purposes including *Eucalyptus saligna* (Sydney Blue Gum), *Pinus radiata* (Radiata Pine), *Platanus orientalis* (Sycamore) and *Harpephyllum caffrun* (Kaffir Plum). *Lophostemon confertus* (Brush Box) was regularly planted as a street tree. While generally occurring as single, isolated trees, a number of younger *E. saligna* have become established, around one or more initial planted trees, next to the existing pre-school car park.

The mid layer contained a variety of planted native and exotic species, mainly within and around the existing pre-school grounds and hospital grounds. In areas that lack regular maintenance, a range of native and weed species have become established. Species included *Cinnamomum camphora* (Camphor Laurel), *Acer palmatum* (Japanese Maple), *Jacaranda mimosifolia* (Jacaranda), *Callistemon* spp. (Bottlebrush), G*lochidion ferdinandi* (Cheese Tree), *Syzygium australe* (Brush Cherry), *Fraxinus griffithii* (Evergreen Ash), *Pittosporum undulatum* (Sweet Pittosporum) and *Polygala myrtifolia* (Myrtle-leaf Milkwort).

Most of the groundcover comprised exotic grasses maintained as a lawn or parkland.

The south-eastern corner of the development site contains planted native and exotic trees and at least one remnant *Eucalyptus pilularis* (Blackbutt) (Figure 4). Other species present in this area are *C. camphora, L. confertus, Eucalyptus botryoides* (Bangalay), *Eucalyptus robusta* (Swamp Mahogany), *G. ferdinandi* and *Callistemon viminalis* (Weeping Bottlebrush), occurring within a parkland setting of exotic grass maintained as a lawn. A few of the larger trees have native and exotic understorey species growing around the base of the trunk, including *P. undulatum*, *Elaeocarpus reticulatus* (Blueberry Ash) and exotic *C. camphora*.

The *E. pilularis* trees are considered likely to be degraded examples of PCT 1206 Spotted Gum – Blackbutt shrubby open forest on coastal foothills in the southern Sydney Basin Bioregion. Other eucalypts in this area are planted and not representative of PCT 1206. All of the vegetation potentially associated with PCT 1206 will be retained by the proposed development.

3.3. Use of the streamlined assessment module – Planted native vegetation

Due to the presence of planted native vegetation within the development site, this BDAR was prepared under the streamlined assessment module for planted native vegetation in accordance with Appendix D of BAM 2020. This appendix contains a decision-making key which provides a framework for the assessment of planted native vegetation. This framework is applied to the proposal in Table 3.

Table 3: Decision-making key for the assessment of Planted native vegetation in accordance with Appendix D of the BAM 2020

Question	Response and justification
1) Does the planted native vegetation occur within an area that contains a mosaic of planted and remnant native vegetation and which can be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal? i Yes – the planted native vegetation must be allocated to the best-fit PCT and the BAM must be applied. ii No – Go to 2.	No – all trees to be removed are clearly planted and not associated with any PCT. The few remnant *Eucalyptus pilularis* in the south of Nowra Park may be associated with PCT 1206, but nearby planted trees are not. No trees in this area will be removed.
2. Is the planted native vegetation: a. Planted for the purpose of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9(2.), and b. The primary objective was to replace or regenerate a plant community type of a threatened plant species or its habitat? i Yes – the planted native vegetation must be assessed in accordance with Chapters 4 and 5 of the BAM ii No – Go to 3.	No - the planted native vegetation forms part of the landscaping for the existing hospital, pre-school, Nowra Park and adjoining streets.
3. Is the planted / translocated native vegetation individuals of a threatened species or other native species planted / translocated for the purpose of providing threatened species habitat under one of the following: a. A species recovery project b. *Saving our Species* project c. Other types of government funded restoration project d. Condition of consent for a development approval that required those species to be planted or translocated for the purpose of providing threatened species habitat e. Legal obligation as part of a condition of ruling of court. This includes regulatory directed or ordered remedial plantings (e.g. Remediation Order for clearing without consent issued under the BC Act or the Native Vegetation Act) f. Ecological rehabilitation to re-establish a PCT or TEC that was, or is carried out under a mine operations plan, or g. Approved vegetation management plan (e.g. as required as part of a Controlled Activity Approval for works on waterfront land under the NSW *Water Management Act 2000*)? i Yes – the planted native vegetation must be assessed in accordance with Chapters 4 and 5 of the BAM ii No – Go to 4.	No - the planted native vegetation forms part of the landscaping for the existing hospital, pre-school, Nowra Park and adjoining streets.

Question	Response and justification
4. Was the planted native vegetation (including individuals of a threatened flora species) undertaken voluntarily for revegetation, environmental rehabilitation, or restoration within a legal obligation to secure or provide for management of the native vegetation? i Yes – Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied) ii No – Go to 5.	No – the planted native vegetation forms part of the landscaping for the existing hospital, pre-school, Nowra Park and adjoining streets.
5. Is the planted native vegetation (including individuals of a threatened flora species) planted for functional, aesthetic, horticultural or plantation forestry purposes? This includes examples such as; windbreaks in agricultural landscapes, roadside plantings (including street trees, median stripes, roadside batters), landscaping in parks, gardens and sport fields/complexes, macadamia plantations or teatree farms? i Yes – Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied) ii No – Go to 6.	Yes – the planted native vegetation forms part of the landscaping for the existing hospital, pre-school, Nowra Park and adjoining streets.
6. Is the planted native vegetation a species listed as a widely cultivated native species on a list approved by the Secretary of the Department (or an officer authorised by the Secretary)? i Yes – Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied) ii No – There may be other types of occurrences of planted native vegetation that do not easily fit into the decision-making key above.	N/A

Figure 4: Vegetation identified within the development site

Figure 5: Planted native and exotic vegetation at the rear of the pre-school.

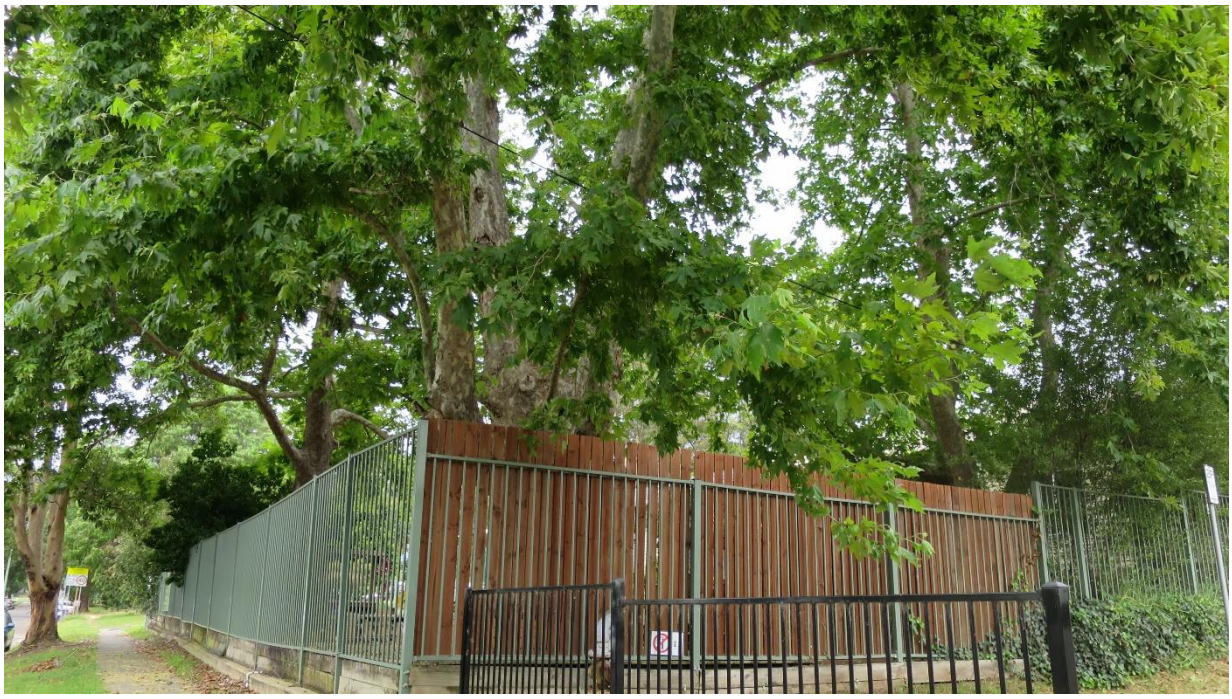

Figure 6: Planted native and exotic vegetation (*Platanus orientalis*) at the front of the pre-school.

Figure 7: Exotic grassland in Nowra Park looking north towards planted native and exotic trees around pre-school carpark. Planted street tree (*Lophostemon confertus*) in right foreground.

Figure 8: Planted native tree (*Eucalyptus saligna*) adjacent to pre-school carpark, with understorey garden containing exotic and native species.

Figure 9: Planted and subsequent regrowth *Eucalyptus saligna* adjacent to the pre-school carpark is not consistent with any local PCT. Smaller planted *Angophora costata* tree on right.

Figure 10: The south-eastern corner of Nowra Park contains planted native and exotic trees and a few possibly remnant *Eucalyptus pilularis* trees that may be associated with PCT 1206. All trees in this area will be retained.

4. Threatened species habitat

4.1. Habitat assessment

There were limited fauna habitat values present due to the highly modified and disturbed nature of the development site.

Trees and other vegetation would provide small amounts of generic foraging habitat (e.g. invertebrates and nectar) for some bird and bat species that tolerate disturbed, urban environments. Exotic grassland areas may also provide some foraging habitats for common species such as *Gymnorhina tibicen* (Australian Magpie) and *Grallina cyanoleuca* (Magpie Lark).

There were no tree hollows in, or near, any trees to be removed. There are six hollow-bearing trees in the south-eastern corner of the development site (ELA 2019), all of which will be retained. These hollow-bearing trees occur in highly modified parkland, in close proximity to roads and the children's playground. These disturbances reduce the habitat value of the tree hollows for fauna, but some common urban species may use the hollows for breeding or sheltering.

The existing pre-school and one hospital building will be removed for the proposal, but are unlikely to provide habitat for fauna such as roost sites for microchiropteran bats. Both buildings are regularly used and are in good condition. No obvious entrance points for microchiropteran bats were observed. The buildings are unlikely to provide habitat for fauna.

There were no areas of rocks, caves, water sources, coarse woody debris or dense understorey vegetation apart from small, landscaped patches. Habitat connectivity is absent apart from stepping-stone type connectivity for highly mobile species (birds and bats).

A few common native bird species were recorded in or flying over the development site, including Australian Magpie, Magpie Lark, *Manorina melanocephala* (Noisy Miner), *Trichoglossus moluccanus* (Rainbow Lorikeet), *Ocyphaps lophotes* (Crested Pigeon), *Anthochaera carunculata* (Red Wattlebird), *Cacatua galerita* (Sulphur crested Cockatoo) and *Coracina novaehollandiae* (Black-faced Cuckoo-shrike). The exotic *Acridotheres tristis* (Common Myna) was also recorded in the development site.

4.2. Threatened species and potential habitat for threatened species

No threatened flora or fauna species, listed under the BC Act or EPBC Act, were recorded during the survey period. No threatened flora species are likely to be present due to the highly modified nature of the site and the lack of detection of any threatened species planted for landscaping.

Native trees within the development site may provide occasional foraging resources for wide-ranging threatened species, including *Lophoictinia isura* (Square-tailed Kite), *Glossopsitta pusilla* (Little Lorikeet), *Callocephalon fimbriatum* (Gang-gang Cockatoo), *Pteropus poliocephalus* (Grey-headed Flying-fox) and several threatened microchiropteran bats.

A small proportion of these foraging resources, including planted *Eucalyptus saligna*, *Angophora costata*, *Corymbia maculata, Lophostemon confertus* and *Syzygium australe*, occur within the development footprint and would be removed.

The foraging resources to be removed represent marginal habitat for threatened fauna species. No threatened fauna species are likely to breed within the development site due to the lack of suitable habitat.

5. Prescribed impacts

5.1. Prescribed biodiversity impacts

The development site has prescribed biodiversity impacts as outlined in Chapter 6 of the BAM 2020 (Table 4).

Table 4: Direct impacts on prescribed biodiversity impacts

Prescribed biodiversity impact	Description (Nature, extent and frequency)	Consequences	Justification	Additional information
Karst, caves, crevices, cliffs, rocks and other geological features of significance	N/A – the development site does not contain geological features of significance			
Human made structures	N/A – Human-made structures within the development site are considered highly unlikely to contain habitat such as roosting sites for microchiropteran bats.			
Non-native vegetation	N/A – Non-native vegetation is considered highly unlikely to provide any habitat for threatened fauna.			
Habitat connectivity	Trees within the development site may provide stepping-stone type habitat connectivity for some highly mobile threatened species.	Vegetation removal is largely limited to planted trees (native and exotic) which provide, at best, marginal amounts of stepping-stone type connectivity within the surrounding urban landscape. This would result in a very minor reduction in local scattered tree connectivity.	Most trees within the development site would be retained, so connectivity would not be substantially disrupted. Proposed landscaping would replace at least some of the planted trees to be removed. Large areas of higher quality native vegetation are present within the assessment area. The habitat to be affected is not considered important to connectivity at a local or regional level.	The consequences of proposed impacts to stepping-stone habitat connectivity would be minimal.
Water bodies, water quality and hydrological processes	N/A – the development site does not contain water bodies and would not result in prescribed impacts to hydrological processes			
Wind turbine strikes on protected animals	N/A – the development does not involve the construction of wind turbines.			
Vehicle strikes	N/A – the proposed development would be unlikely to result in vehicle strike during construction or during operation due to the lack of habitat for susceptible species.			

6. Avoiding and Minimising Impacts on Biodiversity Values

6.1. Locating a project to avoid and minimise impacts on biodiversity values

6.1.1. Direct and indirect impacts

The development has been located and designed in a way which avoids and minimises impacts as outlined in Table 5.

Table 5: Locating a proposal to avoid and minimise impacts on vegetation and habitat

BAM location and design principles	How addressed and justification
Locating the proposal (including ancillary facilities) in areas lacking biodiversity values	The proposal is located in areas with low or no biodiversity values, i.e. built areas, exotic grassland and vegetation planted for landscaping. Higher value habitats including all remnant native trees have been appropriately avoided.
Locating the proposal (including ancillary facilities) in areas where the native vegetation or threatened species habitat is in the poorest condition	The proposal is located in areas with low or no biodiversity values, i.e. built areas, exotic grassland and vegetation planted for landscaping. Higher value habitats including all remnant native trees have been appropriately avoided. Peripheral parts of the development such as access roads and footpaths have been designed to avoid removal of native trees.
Locating the proposal (including ancillary facilities) in areas 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, a highly cleared PCT or an entity at risk of a serious and irreversible impact (SAII)	The proposal does not affect areas, habitats or entities with high biodiversity values.
Locating the proposal in areas outside of the buffer area around breeding habitat features such as nest trees or caves	The southern section of the development site contains a few trees with low quality hollows, which could be used for breeding by common fauna species. No hollow-bearing trees will be removed. The development site does not contain breeding habitat features such as caves, ledges or rocky overhangs.
Reducing the proposal's clearing footprint by minimising the number and type of facilities	The objective of the proposal is to extend and upgrade the existing hospital complex, therefore minimising the number and type of facilities is not a feasible design principle. The proposal's clearing footprint makes use of areas which are currently cleared, contain buildings or planted vegetation.
Designing a proposal to include 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	The proposal would only remove planted vegetation and has been designed to retain larger native trees wherever possible. The proposal includes landscaping which would include trees similar to those proposed for removal.

6.1.2. Prescribed biodiversity impacts

The development has been located and designed in a way which avoids and minimises prescribed biodiversity impacts as outlined in Table 6.

Table 6: Locating a proposal to avoid and minimise prescribed biodiversity impacts

BAM Section 7.2 location and design principles	How addressed / Justification
Locate surface works and design measures to avoid direct impacts on the habitat features identified as potential prescribed biodiversity impacts	The surface works have been designed to avoid prescribed biodiversity impacts wherever possible. Where this is not possible, the removal of small amounts of planted native and non-native vegetation and buildings are not considered to be potentially important habitat for any threatened species. Furthermore, similar habitat features will be retained within the development site and are abundant within the assessment area.
Locate subsurface works, in both the horizontal and vertical planes, and design measures to avoid and minimise operations beneath the habitat features identified as potential prescribed biodiversity impacts	N/A – the development site does not include geological features of significance or groundwater-dependent plant communities.
Locate the proposal to avoid severing or interfering with corridors connecting different areas of habitat and migratory flight paths, to important habitat or local movement pathways	The proposed development required the removal of planted vegetation which provides, at most, minor amounts of stepping-stone type habitat connectivity through the urban landscape of the Nowra Hospital and Nowra Park. None of the affected connectivity is considered important to local biodiversity. Most of the connectivity within the development site will be retained, and proposed landscaping will reinstate much of the connectivity removed.
Optimise the proposal layout and include design elements to minimise interactions with threatened entities	N/A – the proposed development does not include the construction of structures which could regularly interact with threatened entities (e.g., wind turbines).
Locate the proposal to avoid impacts on water bodies or hydrological processes and design measures that maintain hydrological processes that sustain threatened entities and control the quality of water released from the site, to avoid or minimise downstream impacts on threatened entities	N/A – the development site does not contain water bodies and would not result in prescribed impacts to hydrological processes. All runoff would be captured by the existing stormwater drainage system.
Engineering solutions, such as proven techniques to: • minimise fracturing of bedrock underlying features of geological significance or groundwater-dependent communities and their supporting aquifers • restore connectivity and movement pathways	N/A – the development site does not have prescribed impacts that require engineering solutions.

7. Assessment of Impacts

7.1. Assessment of direct impacts

The proposed development would directly affect approximately 0.3 ha of planted native and exotic vegetation which does not conform to a PCT or TEC. A map displaying the direct impacts to planted vegetation is shown in Figure 11. Species credits are not required to offset the proposed impacts in accordance with Appendix D.2 of BAM 2020.

The proposed development would not directly affect any threatened fauna species or breeding habitat for threatened fauna species. The planted vegetation may provide occasional foraging habitat for wide ranging species such as the Grey-headed Flying-fox, Square-tailed Kite, Little Lorikeet and microchiropteran bats.

7.2. Assessment of indirect impacts

An indirect impact area of 2 m was applied adjoining the direct impact area. The indirect impact zone is shown in Figure 11. The indirect impacts of the development are outlined in Table 7.

Table 7: Indirect impacts

Indirect impact	Description (nature, extent, and frequency)	Biodiversity affected	Duration/ Timing	Consequence
Inadvertent impacts on adjacent habitat or vegetation	Minor potential for inadvertent damage to native trees immediately adjacent to the development footprint.	Native trees	Construction phase	Minor
Reduced viability of adjacent habitat due to edge effects	N/A – Habitat adjacent to the development footprint is already highly modified	N/A	N/A	N/A
Reduced viability of adjacent habitat due to noise, dust or light spill	N/A – Habitats adjacent to the development footprint are already highly modified	N/A	N/A	N/A
Transport of weeds and pathogens from the site to adjacent vegetation	N/A – The development site will continue to be maintained and surrounding areas are largely urban.	N/A	N/A	N/A
Increased risk of starvation or exposure and loss of shade or shelter	N/A – the development site contains a marginal amount of foraging habitat for highly mobile species, the modification of habitat will not cause starvation or exposure or loss of shelter for these species.	N/A	N/A	N/A
Loss of breeding habitat	N/A – Adjacent breeding habitats will not be affected.	N/A	N/A	N/A
Trampling of threatened flora species	N/A – No threatened flora species are present.	N/A	N/A	N/A
Inhibition of nitrogen fixation and increased soil salinity	N/A – The proposal is unlikely to exacerbate the inhabitation of nitrogen fixation or increase soil salinity given the that the development site is significantly disturbed.	N/A	N/A	N/A
Fertiliser drift	N/A – fertiliser drift is unlikely to occur and unlikely to adversely affect the disturbed vegetation adjacent to the development footprint.	N/A	N/A	N/A
Rubbish dumping	Illegal dumping by construction crews, may affect local fauna which visit site intermittently	Potential for rubbish to spread via wind outside the development site.	Potential to occur at any time throughout construction phases	Minor. Rubbish is unlikely to remain beyond the construction phase of the proposal

Indirect impact	Description (nature, extent, and frequency)	Biodiversity affected	Duration/ Timing	Consequence
Wood collection	N/A – The development site is significantly disturbed; such that woody debris is absent.	N/A	N/A	N/A
Removal and disturbance of rocks including bush rock	N/A – The development site is significantly disturbed, such that bush rocks are absent.	N/A	N/A	N/A
Increase in predators	N/A – The development site is unlikely to result in an increase in predators.	N/A	N/A	N/A
Increase in pest animal populations	N/A – The development site is unlikely to result in an increase in pest animal populations.	N/A	N/A	N/A
Changed fire regimes	N/A – The proposal site would not change fire regimes.	N/A	N/A	N/A
Disturbance to specialist breeding and foraging habitat, e.g. beach nesting for shorebirds.	N/A – The development site does not contain specialist breeding or foraging habitat.	N/A	N/A	N/A
Sedimentation and contaminated and/or nutrient rich run-off	Minor potential for run off during construction phase.	Adjacent trees	Construction phase	Minor

7.3. Mitigating and managing direct and indirect impacts

Measures proposed to mitigate and manage impacts at the development site before, during and after construction are outlined in Table 8.

Table 8: Measures proposed to mitigate and manage impacts

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Measures for mitigating impacts related to the displacement of resident fauna:						
timing works to avoid critical life cycle events such as breeding or nursing	Moderate	Minor	Carry out pre-clearance survey to ensure fauna are not present (breeding) prior to clearing	Impacts to fauna during nesting/nursing avoided	During clearing works	Project Manager

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
instigating clearing protocols including pre-clearing surveys, daily surveys and staged clearing, the presence of a trained ecological or licensed wildlife handler during clearing events	Moderate	Minor	Pre-clearance survey of trees to be removed and identification/location of active nests by a suitably qualified ecologist	Any fauna utilising habitat within the footprint will be identified and managed to ensure clearing works minimise the likelihood of injuring resident fauna	During clearing works	Project Manager / Ecologist
Measures for mitigating indirect impacts on native vegetation and habitat include, but are not limited to:						
temporary fencing to protect significant environmental features such as riparian zones	Moderate	Minor	Temporary fencing to be used to delineate tree protection zones around any trees to be retained adjacent to development areas.	Any trees to be retained within the development site will be clearly identified and protected from accidental impacts.	Prior to and during clearing works	Project Manager

7.4. Mitigating prescribed impacts

Measures proposed to mitigate and manage prescribed biodiversity impacts at the development site before, during and after construction are outlined in Table 9.

Table 9: Mitigation measures for prescribed biodiversity impacts

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Scheduling timing of construction activities to avoid critical life cycle events	N/A	N/A	N/A	N/A	N/A	N/A
Instigating clearing protocols including pre-clearing surveys, daily surveys and staged clearing, and using a trained ecological or licensed wildlife handler during clearing, construction and maintenance activities for human made structures and non-native vegetation	Moderate	Minor	Pre-clearance survey by a suitably qualified ecologist to identify any active nests in non-native vegetation	Any fauna nesting within the clearing footprint will be identified and managed to ensure clearing works minimise the risk of injury or death.	During clearing works	Project Manager / Ecologist
Retaining habitat features within the subject land or relocating them to adjacent retained remnant vegetation	N/A	N/A	N/A	N/A	N/A	N/A

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Installing artificial connectivity measures to re-establish connections between habitat and favoured transport corridors	N/A	N/A	N/A	N/A	N/A	N/A
Erecting temporary fencing to protect significant environmental features such as karst, caves, rock outcrops and water bodies	N/A	N/A	N/A	N/A	N/A	N/A
Replacing habitat provided by human made structures and non-native vegetation with alternative habitat	N/A	N/A	N/A	N/A	N/A	N/A
Sediment barriers or sedimentation ponds to control the quality of water released from the site into the receiving environment	N/A	N/A	N/A	N/A	N/A	N/A
Staff training and site briefing to communicate environmental features to be protected and measures implemented to protect them	N/A	N/A	N/A	N/A	N/A	N/A
Ecological restoration, rehabilitation actions and/or maintenance of retained native vegetation on or adjacent to the subject land	N/A	N/A	N/A	N/A	N/A	N/A
Development control measures that regulate the types of activities that can occur in native vegetation and habitat adjacent to residential development including prohibiting the collection of bush rocks	N/A	N/A	N/A	N/A	N/A	N/A

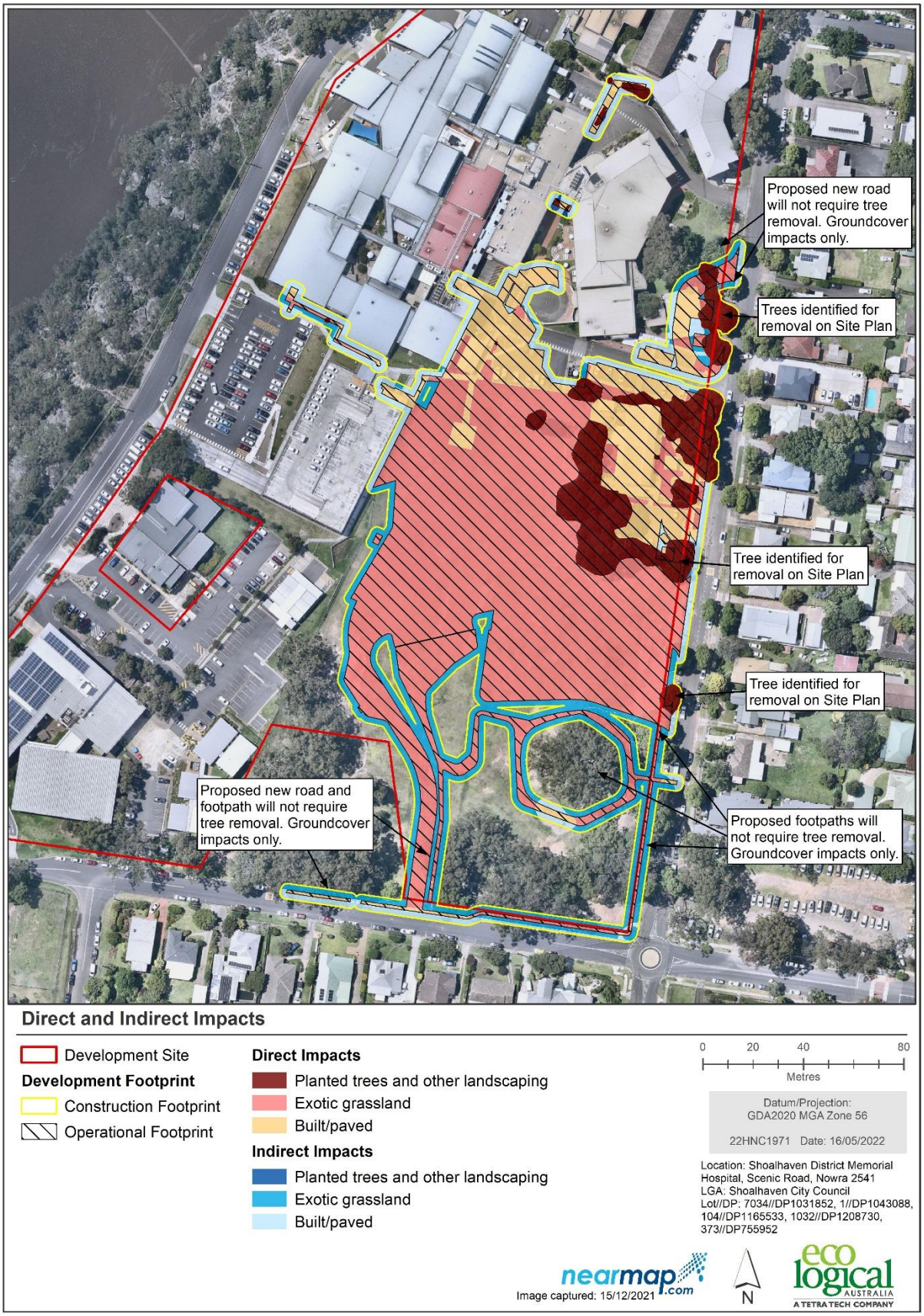

Figure 11: Direct and indirect impacts

8. Impact Summary

8.1. Serious and Irreversible Impacts (SAII)

The development does not have any Serious and Irreversible Impacts (SAII).

8.2. Impacts requiring offsets

There are no impacts that require offsets

8.3. Impacts not requiring offsets

The impacts of the development not requiring offset for native vegetation and threatened species are outlined in Table 10.

Table 10: Impacts to native vegetation and threatened species that do not require offsets

Native vegetation / threatened species and or habitat impacted	Direct impact (ha / number of individuals)	Rationale
Planted vegetation	0.14 ha	Under Appendix D: Streamlined assessment module – Planted native vegetation of the BAM 2020, the use of Chapters 4 and 5 are not required to be applied.
Foraging habitat for Grey-headed Flying-Fox etc.	0.14 ha	The planted native vegetation to be removed does not conform to a PCT or TEC under Chapters 4 and 5 of the BAM. Species credits are not required to offset the proposed impacts in accordance with Appendix D.2 of BAM 2020.

8.4. Areas not requiring assessment

There are no areas that do not require assessment.

9. Consistency with legislation and policy

9.1. Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act establishes a regime for assessing and regulating the environmental impact of activities (including development) where a Matters of National Environmental Significance (MNES) may be affected. Under the EPBC Act, any action which has, will have, or is likely to have a significant impact on a matter of MNES is defined as a "controlled action", and requires approval from the Minister. The Commonwealth Department of Agriculture, Water and the Environment (DAWE), is responsible for administering the EPBC Act.

The process includes undertaking an Assessment of Significance for listed threatened species and ecological communities that represent a matter of MNES that will be impacted as a result of the proposed action. The Significant Impact Guidelines 1.1 – Matter of National Environmental Significance' (DotE 2013) provide overarching guidance on determining whether an action is likely to have a significant impact on a MNES.

The following MNES were assessed in accordance with the Significant Impact Guidelines 1.1:

- *Pteropus poliocephalus* (Grey-headed Flying-Fox).

9.1.1. *Pteropus poliocephalus* (Grey-headed Flying-fox)

The Grey-headed Flying-fox is listed as vulnerable under the EPBC Act. This species was not identified within the development site during surveys for this assessment, however vegetation within the development footprint has the potential to provide seasonal foraging habitat. No roosting habitat is present within the development site. Significant Impact Criteria for this species are applied in Table 11.

Table 11: Application of the Significant Impact Criteria to the Grey-headed Flying-fox

Criterion	Question	Response
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:		
1)	Lead to a long-term decrease in the size of an important population of a species *Note: An 'important population' is a population that is necessary for a species' long-term survival and recovery.*	No roosting habitat (camps) will be affected by the proposed action. The proposed action would remove 0.3 ha of planted vegetation, of which about 0.14 ha may provide marginal foraging habitat for the Grey-headed Flying-fox. The Grey-headed Flying-fox is known to travel long distances (up to 50 km) on feeding forays. Extensive areas of more suitable foraging habitat occur within the assessment area. The removal of this potential foraging habitat would not lead to the long-term decrease in the size of an important population of Grey-headed Flying-fox.
2)	Reduce the area of occupancy of an important population	The proposed action would affect about 0.14 ha of potential foraging habitat for this species, which is highly mobile and known to regularly travel long distances to feed. The proposed action would not reduce the area of occupancy for the population.
3)	Fragment an existing important population into two or more populations	According to the National Recovery Plan for the Grey-headed Flying-fox (DAWE 2021), "the Grey-headed Flying-fox is considered to be a single, mobile population with

Criterion	Question	Response
		individuals distributed across Queensland, New South Wales, Victoria, South Australia, Tasmania and the ACT." The proposed action would not fragment an existing important population into two or more populations. No camps would be affected by the proposed action and extensive areas of foraging habitat are available for this highly mobile species.
4)	Adversely affect habitat critical to the survival of a species *Note: 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:* • *for activities such as foraging, breeding, roosting, or dispersal* • *for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)* • *to maintain genetic diversity and long-term evolutionary development, or* • *for the reintroduction of populations or recovery of the species or ecological community.*	The National Recovery Plan for the Grey-headed Flying-fox (DAWE 2021) identifies 'a continuous temporal sequence of productive foraging habitats, linked by migration corridors or stopover habitats, and suitable roosting habitat within nightly commuting distance of foraging areas' as habitat critical to the survival of the species. The proposed action would remove 0.14 ha of planted native vegetation, which does not adversely affect habitat critical to the survival of this species.
5)	Disrupt the breeding cycle of an important population	The proposed action would not disrupt the breeding cycle of the Grey-headed Flying-fox given that no camps would be affected by the proposed action and suitable foraging habitat is available elsewhere in the development site and extensively in the region.
6)	Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed action would remove 0.14 ha of planted vegetation representing marginal foraging habitat for the Grey-headed Flying-fox. This impact would not cause the species to decline because extensive areas of higher quality habitat is available in the vicinity.
7)	Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The proposed action is unlikely to result in the establishment of an invasive species that is harmful to the Grey-headed Flying-fox.
8)	Introduce disease that may cause the species to decline, or	The proposed action is unlikely to introduce disease that is harmful to the Grey-headed Flying-fox.
9)	Interfere substantially with the recovery of the species.	The proposed action would not interfere substantially with the recovery of the species, as only a small area of planted vegetation representing potential foraging habitat would be removed. The proposed action would not affect any camps and suitable foraging habitat is available throughout the region.

10. Conclusion

ELA was engaged by Health Infrastructure, via Johnstaff Pty Ltd, to prepare a BDAR to meet the requirements of the BAM 2020 and the SEARs pertaining to biodiversity for State Significant Development (SSD- 35999468) issued on 23 February 2022.

The development site is at Shoalhaven Hospital, Scenic Drive, Nowra NSW 2541 (Lot 7034 DP 1031852, Lot 1 DP 1043088, Lot 104 DP 1165533, Lot 1032 DP 1208730 and Lot 373 DP 755952) and is within the Shoalhaven LGA. The site was traversed on foot to:

- Determine if any of the vegetation met descriptions for any plant community types (PCTs) and associated threatened ecological communities (TECs)
- Search for any threatened flora species that may be present
- Search for hollows, nests, feed-trees or any other habitat feature that may be important for threatened fauna species.

Vegetation within the development footprint was identified as planted native and exotic vegetation. Therefore, this BDAR was prepared under the streamlined assessment module for planted native vegetation in accordance with Appendix D of BAM 2020. Species credits are not required to offset the proposed impacts. Planted native vegetation will be reinstated as part of proposed landscaping.

This BDAR assesses prescribed biodiversity impacts, which are considered minor. ELA does not recommend offsets to these residual unavoidable impacts. Mitigation measures relating to the displacement of resident fauna and indirect impacts on native vegetation and are provided in Section 7.3 and 7.4.

The development footprint contains planted native vegetation, which may provide occasional foraging resources for mobile, wide ranging bird and bat species, including some listed as threatened under the BC Act and EPBC Act. Planted native vegetation within the development footprint represents marginal foraging habitat for these species. No breeding habitat or other important habitat would be affected. No threatened species were recorded within the development site.

In accordance with Appendix D of BAM 2020, no offsets are required for impacts to planted vegetation or the associated marginal foraging habitat for threatened fauna.

Following consideration of the administrative guidelines for determining significance under the EPBC Act, it is concluded that the proposal is highly unlikely to have a significant impact on MNES or Commonwealth land.

11. References

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Department of Environment and Climate Change. (DECC) 2002, 'Descriptions for NSW (Mitchell) Landscapes Version 2'. Sourced November 2021 from: http://www.environment.nsw.gov.au/resources/conservation/landscapesdescriptions.pdf

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Appendix A Definitions

The following terminology has been used throughout this report for the purposes of describing the impacts of the proposal in the context of a biodiversity assessment in accordance with the NSW Biodiversity Assessment Method 2020. This terminology may or may not align with other technical documents associated with the proposed development.

Terminology	Definition
Biodiversity credit report	The report produced by the Credit Calculator that sets out the number and class of biodiversity credits required to offset the remaining adverse impacts on biodiversity values at a development site, or on land to be biodiversity certified, or that sets out the number and class of biodiversity credits that are created at a biodiversity stewardship site.
BioNet Atlas	The BioNet Atlas (formerly known as the NSW Wildlife Atlas) is the OEH database of flora and fauna records. The Atlas contains records of plants, mammals, birds, reptiles, amphibians, some fungi, some invertebrates (such as insects and snails) and some fish
Broad condition state:	Areas of the same PCT that are in relatively homogenous condition. Broad condition is used for stratifying areas of the same PCT into a vegetation zone for the purpose of determining the vegetation integrity score.
Connectivity	The measure of the degree to which an area(s) of native vegetation is linked with other areas of vegetation.
Credit Calculator	The computer program that provides decision support to assessors and proponents by applying the BAM, and which calculates the number and class of biodiversity credits required to offset the impacts of a development or created at a biodiversity stewardship site.
Development	Has the same meaning as development at section 4 of the EP&A Act, or an activity in Part 5 of the EP&A Act. It also includes development as defined in section 115T of the EP&A Act.
Development footprint	The area of land that is directly impacted on by a proposed development, including access roads, and areas used to store construction materials.
Development site	An area of land that is subject to a proposed development that is under the EP&A Act.
Ecosystem credits	A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur with a PCT. Ecosystem credits measure the loss in biodiversity values at a development site and the gain in biodiversity values at a biodiversity stewardship site.
Extent of occurrence (EOO)	Measures the spatial spread of a taxon to determine the degree to which risks from threatening factors could impact an entire population and is not intended to be an estimate of the amount of occupied or potential habitat.
High threat exotic plant cover	Plant cover composed of vascular plants not native to Australia that if not controlled will invade and outcompete native plant species.
Hollow bearing tree	A living or dead tree that has at least one hollow. A tree is considered to contain a hollow if: (a) the entrance can be seen; (b) the minimum entrance width is at least 5 cm; (c) the hollow appears to have depth (i.e. you cannot see solid wood beyond the entrance); (d) the hollow is at least 1 m above the ground. Trees must be examined from all angles.
Important wetland	A wetland that is listed in the Directory of Important Wetlands of Australia (DIWA) and SEPP 14 Coastal Wetlands
Linear shaped development	Development that is generally narrow in width and extends across the landscape for a distance greater than 3.5 kilometres in length
Local population	The population that occurs in the study area. In cases where multiple populations occur in the study area or a population occupies part of the study area, impacts on each subpopulation must be assessed separately.
Local wetland	Any wetland that is not identified as an important wetland (refer to definition of Important wetland).
NSW (Mitchell) landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000.

Terminology	Definition
Multiple fragmentation impact development	Developments such as wind farms and coal seam gas extraction that require multiple extraction points (wells) or turbines and a network of associated development including roads, tracks, gathering systems/flow lines, transmission lines
Operational Manual	The Operational Manual published from time to time by DPIE, which is a guide to assist assessors when using the BAM
Patch size	An area of intact native vegetation that: a) occurs on the development site or biodiversity stewardship site, and b) includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or ≤30 m for non-woody ecosystems). Patch size may extend onto adjoining land that is not part of the development site or stewardship site.
Proponent	A person who intends to apply for consent to carry out development or for approval for an activity.
Reference sites	The relatively unmodified sites that are assessed to obtain local benchmark information when benchmarks in the Vegetation Benchmarks Database are too broad or otherwise incorrect for the PCT and/or local situation. Benchmarks can also be obtained from published sources.
Regeneration	The proportion of over-storey species characteristic of the PCT that are naturally regenerating and have a diameter at breast height <5 cm within a vegetation zone.
Residual impact	An impact on biodiversity values after all reasonable measures have been taken to avoid, minimise or mitigate the impacts of development. Under the BAM, an offset requirement is determined for the remaining impacts on biodiversity values.
Retirement of credits	The purchase and retirement of biodiversity credits from an already-established biobank site or a biodiversity stewardship site secured by a biodiversity stewardship agreement.
Riparian buffer	Riparian buffers applied to water bodies in accordance with the BAM
Sensitive biodiversity values land map	Development within an area identified on the map requires assessment using the BAM.
Site attributes	The matters assessed to determine vegetation integrity. They include: native plant species richness, native over-storey cover, native mid-storey cover, native ground cover (grasses), native ground cover (shrubs), native ground cover (other), exotic plant cover (as a percentage of total ground and mid-storey cover), number of trees with hollows, proportion of over-storey species occurring as regeneration, and total length of fallen logs.
Site-based development	a development other than a linear shaped development, or a multiple fragmentation impact development
Species credits	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection.
Subject land	Is land to which the BAM is applied in Stage 1 to assess the biodiversity values of the land. It includes land that may be a development site, clearing site, proposed for biodiversity certification or land that is proposed for a biodiversity stewardship agreement.
Threatened Biodiversity Data Collection	Part of the BioNet database, published by DPIE and accessible from the BioNet website.
Threatened species	Critically Endangered, Endangered or Vulnerable threatened species as defined by Schedule 1 of the BC Act, or any additional threatened species listed under Part 13 of the EPBC Act as Critically Endangered, Endangered or Vulnerable.

Terminology	Definition
Vegetation Benchmarks Database	A database of benchmarks for vegetation classes and some PCTs. The Vegetation Benchmarks Database is published by OEH and is part of the BioNet Vegetation Classification.
Vegetation zone	A relatively homogenous area of native vegetation on a development site, land to be biodiversity certified or a biodiversity stewardship site that is the same PCT and broad condition state.
Wetland	An area of land that is wet by surface water or ground water, or both, for long enough periods that the plants and animals in it are adapted to, and depend on, moist conditions for at least part of their life cycle. Wetlands may exhibit wet and dry phases and may be wet permanently, cyclically or intermittently with fresh, brackish or saline water
Woody native vegetation	Native vegetation that contains an over-storey and/or mid-storey that predominantly consists of trees and/or shrubs

Appendix B : Species recorded within the subject site

Species name	Common name	Exotic / Native
Acacia filicifolia	Fern-leaved Wattle	N
Acacia ulicifolia	Prickly Moses	N
Acer palmatum	Japanese Maple	E
Agapanthus sp.		E
Angophora costata	Smooth-barked Apple	N
Asparagus aethiopicus	Asparagus Fern	E
Azalia sp.		E
Banksia integrifolia	Coast Banksia	N
Bidens pilosa	Cobbler's Pegs	E
Briza maxima	Quaking Grass	E
Briza minor	Shivery Grass	E
Briza subaristata		E
Callistemon sp.	Bottlebrush	N
Senna pendula var. glabrata		E
Cenchrus clandestinus	Kikuyu Grass	E
Chlorophytum sp.	Spider Plant	E
Cinnamomum camphora	Camphor Laurel	E
Conyza sp.	Fleabane	E
Corymbia maculata	Spotted Gum	N
Cynodon dactylon	Common Couch	N
Dianella sp.		N
Dichondra repens	Kidney Weed	N
Dimorphotheca ecklonis	Cape Daisy	E
Dodonaea triquetra	Large-leaf Hop Bush	N
Eucalyptus saligna	Sydney Blue Gum	N
Ficus rubiginosa	Port Jackson Fig	N
Fraxinus griffithii	Evergreen Ash	E
Gleditsia sp.		E
Glochidion ferdinandi	Cheese Tree	N
Glycene clandestina		N
Grona varians	Slender Tick Trefoil	N
Harpephyllum caffrun	Kaffir Plum	E
Hedera helix	English Ivy	E
Hibiscus sp.		E

Species name	Common name	Exotic / Native
Jacaranda mimosifolia	Jacaranda	E
Lantana camara	Lantana	E
Leptospermum sp.		N
Leucopogon juniperinus	Prickly Beard-heath	N
Ligustrum lucidum	Large-leaved Privet	E
Lobelia purpurascens	Whiteroot	N
Lomandra sp.		N
Lophostemon confertus	Brushbox	N
Lysimachia arvensis	Scarlet Pimpernel,	E
Ochna serrulata	Mickey Mouse Plant	E
Pandorea pandorana	Wonga Wonga Vine	N
Paspalum dilatatum	Paspalum	E
Pinus patula	Patula Pine	E
Pinus radiata	Pine Tree	E
Pittosporum tenuifolium		E
Pittosporum undulatum	Sweet Pittosporum	N
Plantago lanceolata	Lamb's Tongues	E
Platanus orientalis	Sycamore	E
Polygala myrtifolia	Myrtle-leaf Milkwort	E
Quercus robur?	Oak	E
Richardia humistrata		E
Sida rhombifolia	Paddy's Lucerne	E
Sonchus oleraceus	Common Sowthistle	E
Sporobolus africanus	Parramatta Grass	E
Stenotaphrum secundatum	Buffalo Grass	E
Syzygium australe	Brush Cherry	N
Taraxacum officinale	Dandelion	E
Themeda triandra	Kangaroo Grass	N
Trifolium repens	White Clover	E
Verbena sp.		E
Viola hederacea	Ivy-leaved Violet	N

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