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Westmead Children's Hospital Stage 2 Development - Biodiversity Development Assessment Report Waiver Request

Dear Oshara

The purpose of this letter is to assess the need for a biodiversity assessment utilising the Biodiversity Assessment Method, for the proposed State Significant Development (SSD) of the Westmead Children's Hospital Stage 2 Development (hereafter referred to as the 'project') on Lot 101 DP 1119583, located at 178 Hawkesbury Road, Westmead.

This letter is provided as part of a package of information to request Secretary's Environmental Assessment Requirements (SEARs) for the project. Section 7.9 of the NSW *Biodiversity Conservation Act 2016* requires all development applications for SSD to be accompanied by a BDAR, unless both the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values.

This letter has been prepared to provide information for the Planning Agency Head and the Environment Agency Head to assist them in determining whether the project is likely to have any significant impact on biodiversity values and whether a BDAR is required for the project.

This letter includes the following:

- **Appendix A:** BDAR Waiver Request;
- **Appendix B:** Flora Species List;
- **Appendix C:** Threatened Species BioNet Atlas Results; and
- **Figures.**

On the basis of our investigations, we believe that the preparation of a BDAR is not necessary, due to the low likelihood of impacts to biodiversity values.

If you have any queries regarding this assessment, please don't hesitate to contact me via email.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'V. Orsborn', with a long, wavy horizontal line extending to the right.

Vanessa Orsborn
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APPENDIX A :

BDAR Waiver Request

A.1. Introduction

Health Infrastructure is preparing an application for the proposed State Significant Development (SSD) of the Children's Hospital at Westmead (CHW) Stage 2 Development (hereafter referred to as the 'project'). The project is located within Lot 101 DP 1119583 located at 178 Hawkesbury Road, Westmead. The project involves redevelopment of parts of the existing Westmead Children's Hospital, and includes a Paediatric Services Building (PSB), Multi Storey Car Park (MSCP) and redevelopment of the CHW forecourt and connecting spaces (referred to as KIDSPARK). The project is seeking approval under Part 4 Division 4.7 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

Cumberland Ecology has been commissioned by Best-Practice Education Group Ltd (the 'Applicant') to prepare this BDAR waiver request for the Project. The purpose of this document is to provide the information requirements as set out in Table 1 and Table 2 of *How to apply for a biodiversity development assessment report waiver* (DPIE 2019).

A.1.1. Assessment Requirements for State Significant Development

The project is classified as SSD under Clause 15 (1) of Schedule 1 of *State Environmental Planning Policy (SEPP) (State and Regional Development) 2011*, as the proposal seeks consent for development with a capital investment value \$30 million, pursuant to Section 14 of the SEPP.

Section 7.9 of the NSW *Biodiversity Conservation Act 2016* (BC Act) requires all development applications for SSD to be accompanied by a Biodiversity Development Assessment Report (BDAR), unless both the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values. The BDAR is to be prepared by an accredited assessor utilising the Biodiversity Assessment Method (BAM).

A.1.2. Waiver of Requirement to Prepare a Biodiversity Development Assessment Report

Section 7.9 of the BC Act indicates that there are some circumstances in which the Planning Agency Head and the Environment Agency Head may determine that a proposed development is not likely to have a significant impact on biodiversity values and as such, a BDAR is not required to be prepared. Biodiversity values are defined under the BC Act and the *Biodiversity Conservation Regulation 2017* (BC Regulation), and include:

- Vegetation integrity - being the degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state;
- Habitat suitability - being the degree to which the habitat needs of threatened species are present at a particular site;
- Threatened species abundance - being the occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site;
- Vegetation abundance - being the occurrence and abundance of vegetation at a particular site;

- Habitat connectivity - being the degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range;
- Threatened species movement - being the degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle;
- Flight path integrity - being the degree to which the flight paths of protected animals over a particular site are free from interference; and
- Water sustainability - being the degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.

For a waiver to be applied for future development at a site, it needs to be demonstrated that the above listed biodiversity values will not be significantly impacted.

BDAR waiver request information requirements are set out in **Table 1** below, as per Table 1 of *How to apply for a biodiversity development assessment report waiver* (DPIE 2019).

Table 1 BDAR waiver request information requirements

Requirements	Responses
Admin	
Proponent name and contact details	Claire Muir Senior Planning Advisor Health Infrastructure 0403 754 736 claire.muir@health.nsw.gov.au Level 14, 77 Pacific Highway, North Sydney NSW 2060 PO Box 1060, North Sydney NSW 2059
Project ID (Information to identify which SSD or SSI project the request relates to and where the project is up to in the assessment process)	<ul style="list-style-type: none"> • Multi Storey Car Park at The Children's Hospital at Westmead • Paediatric Services Building (PSB) at The Children's Hospital at Westmead
Name and ecological qualifications of person completing TABLE 2	Vanessa Orsborn <ul style="list-style-type: none"> • Bachelor of Environmental Science. Australian Catholic University (2004) • BAM Accredited Assessor Training. Muddy Boots, 2018 (BAAS18166)
Site details	
Street address, Lot and DP, local government area	178 Hawkesbury Road, Westmead Lot 101 DP 1119583 City of Parramatta LGA

Requirements	Responses
Description of existing development site, i.e. the area of land that is subject to the proposed development application. If any part of the land is considered 'Category 1- exempt land' information must be provided to demonstrate how the land meets the criteria ³ that applies to Category 1 – Exempt Land.	<p>The subject land is an urban property comprised of a number of existing hospital buildings that are current in use with surrounding gardens.</p> <p>As the subject land comprises urban land it is not considered 'Category 1 - exempt land' under the <i>Local Land Services Act 2013</i>.</p> <p>Further details are provided in Section A.2.1.</p>
Location map showing the development site in the context of surrounding areas and landscape features. Satellite image of site in context of adjoining sites.	See Figure 1
Site Map (to scale, ideally as a spatial shapefile)	See Figure 1
Proposed development	
Project description providing enough information to enable an understanding of the nature and scale of the proposed development and any associated activities (including construction etc.)	<p>The proposed development involves the redevelopment of a portion of the existing Westmead Children's Hospital. This will involve demolition of some existing structures.</p> <p>Further description is provided in Section A.2.2.</p>
Proposed Site Plan	See Figure 2
Impacts on biodiversity values	
Complete TABLE 2 below on Biodiversity Values	See Table 3
For each biodiversity value, the proponent must either:	
<ul style="list-style-type: none"> • explain why the value is not relevant to the proposed development; or, • where a biodiversity value may be relevant, provide an explanation of how impacts have been avoided and identify the likelihood and extent of any remaining impacts of the proposed development, including impacts prescribed under clause 6.1 of the BC Regulation. 	
A biodiversity value is not relevant to a proposed development if the value is not present on the development site AND there is no potential for direct or indirect impacts on the biodiversity value if it occurs off-site.	See Table 3

Requirements	Responses
Where one or more biodiversity values may be relevant to the proposed development, TABLE 2 is to be completed by a suitably qualified person with tertiary qualifications in natural sciences including subjects that relate to the observation and description of terrestrial biodiversity and landforms, and at least three years of work experience in environmental assessment including field identification of plant and animal species and habitats The person does not need to be an accredited person under the BC Act.	See Table 3
Attach any additional information required where biodiversity values are relevant to the site. E.g. Vegetation Map (indicating plant community types), Ecology Reports, Water Quality data, BioNet Atlas, Directory of Important Wetlands (DIWA), migratory bird flyway information.	See Figures 1-5 and Appendix C

A.2. Background

A.2.1. Description of Site

The subject land consists of Lot 101 DP 1119583, located at 178 Hawkesbury Road, Westmead, within the site of the existing Children's Hospital at Westmead (CHW), as seen in **Figure 1**. The subject land consists of three discrete areas, adjacent to the existing hospital buildings. The subject land is generally bounded by Redbank Road to the north, Westmead Hospital to the west, Paringa Avenue to the east and Hawkesbury Road to the south. Further to the north, approximately 50 m from the Old Ronald McDonald House, is Toongabbie Creek which is part of the Parramatta River catchment which occurs to the east, as shown in **Figure 2**. The existing hospital grounds include extensive built areas, with a number of multi storey buildings, carparks, gardens and other facilities.

A.2.2. Proposed Development

The NSW Government is currently leading the progressive renewal of the Westmead Health and Education Precinct. This renewal is in line with Greater Sydney Commission's Central City District Plan and the NSW Government's vision for the precinct 'as a workable, loveable and accessible health city with a focus on integrated healthcare, teaching and research, that promotes patient, carer and staff well-being and community engagement, and attracts staff, students, residents, researchers and visitors from all over the world'.

In March 2019, the NSW Government committed \$619 million for Stage 2 of The Children's Hospital at Westmead (CHW) Redevelopment ('CHW Stage 2'). The CHW Stage 2 would include a new Paediatric Services Building (PSB) and refurbishment of existing facilities, with a focus on acute clinical services to complement the Stage 1 investment.

The CHW Stage 1 Redevelopment is currently underway in the Westmead Precinct Central Acute Services Building (CASB). The CASB is due to commence operations in 2021 and accommodates a new children's Emergency Department (ED), paediatric short stay unit, pharmacy, and medical imaging facilities.

CHW Stage 2 will address the dislocation of acute paediatric services arising from the CHW Stage 1 Redevelopment, will contribute to meeting the priorities outlined in the CHW Clinical Services Plan 2018-2031 (CSP), support contemporary models of care and further embed education and research into clinical practice.

CHW Stage 2 will also enable broader plans for the Westmead Health and Education Precinct, including concurrent development research and education facility known as 'KIDSPARK' development and the redevelopment of "Lot 3", adjacent to existing CHW facility, that will support broader redevelopment within the Cumberland Campus and Parramatta North Urban Transformation.

The Stage 2 Redevelopment includes three components are shown in **Figure 3**, as described below.

A.2.2.1. Paediatric Services Building (PSB)

A new PSB to be located adjacent to the CASB and on the site of the existing P17 car park, including development of the Hawkesbury Road forecourt and access links. Redevelopment of the CHW forecourt and connecting spaces will include a new entry statement for CHW and connect and integrate the PSB with the existing Hospital and Research facilities. Referred to as 'KIDSPARK', this integration zone will provide a community-activated, playful entrance for CHW, providing better integration and connections to all paediatric health services on the precinct.

A.2.2.2. Multi Storey Car Park (MSCP)

A new MSCP accommodating both staff and visitor car parking to be located on Labyrinth Way and on the site of the former Ronald McDonald House. The MSCP will support car parking requirements generated by the PSB and accommodate additional capacity to service future car parking demands at CHW.

A.2.2.3 KIDSPARK

A further enhancement of the KIDSPARK concept is also being considered in parallel with planning the CHW Stage 2 project. This proposal, referred to as the KIDSPARK Development, includes a new integrated front entry building spanning over KIDSPARK combining research, education and conference facilities through a partnership between Sydney Children's Hospital Network (SCHN), including Kids Research (KR), and the Children's Medical Research Institute (CMRI).

A.3. Methods

A.3.1. Database Analysis

Database searches were conducted to identify threatened species, populations, that occur within the locality using the NSW Environment, Energy and Science Group (EES) BioNet Atlas database (EES 2020). The BioNet Atlas search facility was used to generate records of threatened flora and fauna species and populations listed under the BC Act within the locality. The locality is defined as the area within a 5 km radius of the subject land. The number, age, and location of such records were considered to provide an indication of the species that could have the potential to occur on or around the subject land.

A.3.2. GIS Mapping

A desktop analysis was undertaken to identify the vegetation communities that were present on or nearby the subject land. This included broad scale mapping prepared for the Sydney Metropolitan area (OEH 2016) for the subject land and surrounds. A review of historical imagery from 1943 obtained from SixMap (NSW Government Spatial Services 2020) was undertaken to ascertain historical land uses and vegetation extent and identify changes over time. A vegetation map of the subject land was then produced based upon observations of vegetation during the field surveys.

A.3.3. Site Inspection

A botanist and ecologist surveyed the subject land on 23 June 2020. The subject land was inspected by traversing all vegetated areas of the subject land to verify existing vegetation mapping, with reference to Plant Community Types (PCTs) and potential threatened ecological communities (TECs) known to occur within the locality. The locations of the survey are shown in **Figure 4**.

A.3.3.1. Plot-based Floristic Survey

A plot-based floristic survey was undertaken within the subject land. The survey followed the BAM and included establishment of one 10 m x 100 m plot (configured to fit within a linear vegetation patch) within the only garden-bed with native vegetation that could be identified as a PCT, within which the following data was collected:

- Composition for each growth form group within a 10 m x 40 m plot;
- Structure of each growth form group within a 10 m x 40m plot; and
- Assessment of function attributes within a 10 m x 100 m plot, including assessment of large trees, tree stem classes, regeneration, fallen logs, leaf litter and hollow-bearing trees.

A.3.3.2. Random Meander Surveys

A random meander survey was undertaken within the subject land, where occurring flora species were recorded. The random meander survey also included targeted threatened species surveys for threatened flora species previously recorded within 5 km of the subject land (the 'locality'). Notes and photographs were taken documenting vegetation and habitat features throughout the subject land. All flora species for the subject land encountered during the surveys are included in **Appendix B**.

A.3.3.3. Fauna Habitat Assessment

A fauna habitat assessment was conducted within the subject land, which included consideration of important indicators of habitat condition and complexity, including the occurrence of microhabitats such as tree hollows, human-made structures and the nature and extent of the understorey, ground stratum and canopy of vegetation. Photographs obtained during the surveys are provided in subsequent sections .

A.4. Key Findings

A.4.1. Vegetation of the Subject Land

The vegetation within the subject land has been significantly altered from its original state and the majority of the vegetation is either exotic or commonly planted natives, and is currently maintained as garden beds. Generally, the composition, structure and function of vegetation within the subject land and the surrounding landscape have been altered significantly. Review of the historic aerial show that the entire subject land was cleared of native vegetation prior to 1943 (NSW Government Spatial Services 2020) and appears to have been farmland.

The subject land is an artificial landscape with planted garden beds and planted trees (exotic, non-endemic natives and locally endemic natives), with remnant trees absent from the subject land. Although the woody vegetation within the subject land predominately forms a single mapping unit consistent with OEH (2016) map unit of 'Urban Exotic/Native vegetation', due to the presence of clusters of locally endemic natives, non-endemic natives and exotic vegetation, the vegetation has been divided into two vegetation communities as described below and shown in **Figure 5**.

A.4.1.1. Planted Native Vegetation

Planted native vegetation occurs throughout the garden beds present within the subject land, as shown in **Photograph 1**, and has a total area of 0.463 ha. Each garden bed represents a different suite of species, but the most intact (that was surveyed in a BAM plot, as shown in **Figure 4**). The canopy is dominated by *Casuarina glauca* (Swamp Oak) and scattered occurrences of *Eucalyptus saligna* (Sydney Blue Gum), which appear to have been planted in a narrow strip as a screen. Understorey species are present, but sparse, and include a mix of natives; *Lomandra hystrix* *Acacia cultriformis*, and *Cyperus gracilis* and exotics; *Solanum nigrum* (Black-berry Nightshade), *Sonchus asper* (Prickly Sowthistle), *Hedera helix* (English Ivy) and *Sonchus oleraceus* (Common Sowthistle).

The planted native vegetation does not align to a naturally occurring PCT, although a best-fit may be considered PCT 1800 - Cumberland Swamp Oak riparian forest, which is mapped in the vicinity of the subject land, in association with Toongabbie Creek to the north. However, the subject land does not include a drainage line, and the narrow strip of native vegetation present that is dominated by Swamp Oak is located on a small embankment and not in a low-lying riparian area, as this PCT would naturally occur. As the vegetation is not natural occurring at the mapped location and not planted for the purpose of recreating existing vegetation, the PCT is only considered to be a surrogate.

Photograph 1 Planted Native Vegetation within the subject land



A.4.1.2. Exotic Vegetation

Exotic vegetation occurs within several of the garden beds throughout the subject land, as shown in **Figure 5** and **Photograph 2** and **Photograph 3** and has a total area of approximately 0.469 ha.

Depending on the location, the exotic vegetation consists of planted rows of *Corymbia citriodora* (Lemon-scented Gum) (which is native to Queensland) within a parkland/paved setting (without any understorey) (**Photograph 2**), or garden beds consisting of exotic canopy species including; *Ulmus parviflora* (Chinese Elm), *Olea europaea subsp. europaea* (Olive) and *Jacaranda mimosifolia* (Jacaranda) (**Photograph 3**). Understorey species vary depending on location but include; *Murraya paniculata* (Mock Olive) (as a hedge), *Lavender* sp., *Cordyline australis* (Cabbage Tree) and *Soliva sessilis* (Jo-jo).

Photograph 2 Exotic Vegetation adjoining the CHW front entry within the subject land



Photograph 3 Exotic Vegetation adjoining the Old Ronald McDonald House within the subject land



A.4.2. Fauna Habitat

The primary habitat for native fauna within the subject land is the native and exotic vegetation. This vegetation may fall within the foraging range of a range of native fauna species, including threatened species. The foraging resources of the subject land would be expected to be utilised occasionally and opportunistically by birds, bats and arboreal mammals.

Nectivorous and frugivorous species may utilise the native and exotic vegetation within the subject land to feed on blooms and fruit, whilst insectivorous species such as microchiropteran bats may forage for insects throughout the canopy layer. No hollow-bearing trees were observed within the subject land, ruling out the possibility of breeding habitat for hollow nesting and roosting species.

The existing buildings are currently in active use, and are well maintained, and therefore no openings suitable for roosting microchiropteran bats (microbats) were observed in the PSB or the MSCP buildings. These buildings are large concrete structures, and would not be likely to provide suitable cavities for microbats to roost. The Old Ronald McDonald House is a building with a defined ceiling cavity, and wooden rafters, and theoretically could provide habitat for microbats, if an opening was to be created, although none were identified during the site inspection.

A.4.3. Threatened Communities and Species

A.4.3.1. Threatened Ecological Communities

The vegetation within the subject land is comprised of a combination of exotic and native species of planted origin, with scattered remnant trees within a highly artificial context. A best-fit PCT was considered for the areas of planted native vegetation, being PCT 1800 - Cumberland Swamp Oak riparian forest. This PCT is associated with the TEC; Swamp Oak Floodplain Forest of the NSW Coast, Sydney Basin and South East Corner Bioregion. However, as this PCT was only considered as a surrogate for the planted native vegetation, it is considered unlikely to be associated with the TEC. Furthermore, due to the largely absent native understorey, complete lack of other indicator species (beyond Swamp Oak), and presence of sub-dominants that are not included in the listing (including Sydney Blue Gum), the vegetation is not considered to conform to the TEC, as described by the Final Determination (NSW Scientific Committee 2019). Therefore, the vegetation within the subject land is not considered to conform to any TEC listed under either the BC Act.

A.4.3.2. Threatened Flora

The database analysis determined that no existing records of threatened flora species are present within the subject land. No threatened flora species were recorded during the survey of the subject land.

Although threatened flora species are known to occur within the locality (see **Appendix C**), due to the highly developed and artificial nature of the subject land as well as the lack of threatened species found during surveys, it is considered unlikely that any threatened flora species would occur naturally within the subject land.

A.4.3.3. Threatened Fauna

A limited number of threatened fauna species are known to occur within the locality of the subject land (see **Appendix C**), although none have been recorded within the subject land. Threatened fauna that would be expected to utilise the foraging resources within the subject land and immediate surrounds include highly

mobile, aerial species such as the Grey-headed Flying-fox (*Pteropus poliocephalus*), the Powerful Owl (*Ninox strenua*) and microchiropteran bats.

Although the Grey-headed Flying-fox may use the subject land occasionally, especially when eucalypts are in flower (DPIE 2020f), the extent of foraging resources on site is fairly low. Similarly the lack of roosting/sheltering habitat for native fauna provides for limited foraging opportunities for predatory avifauna such as the Powerful Owl (DPIE 2020g).

Microbats are highly mobile species that access resources from a large area and are known to fly over disturbed areas while foraging. While these species may still pass through the subject land as part of a larger foraging range, they are unlikely to be dependent on the habitat present in the subject land.

Microbats are also known to forage for insects in urban areas and would be expected to occasionally and opportunistically access the foraging resources within the subject land. Species anticipated to frequent the subject land include but are not limited to the following:

- Little Bent-winged Bat (*Miniopterus australis*);
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*);
- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*);
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*); and
- Greater Broad-nosed (*Scoteanax rueppellii*).

The subject land contains very limited suitable breeding or refuge habitat for these species as the subject land lacks hollow-bearing trees considered suitable for roosting (DPIE 2020a, e, b). No roosting habitat for threatened microbats was identified in any of the existing buildings, due to a lack of entry points/crevasses to access the roof cavities etc.

While other large threatened avifauna, such as the Gang-gang Cockatoo (*Callocephalon fimbriatum*) and Glossy-Black Cockatoo (*Calyptorhynchus lathamii*) may pass through the site as part of a larger foraging range (DPIE 2020c, d), the subject land lacks suitable breeding or roosting habitat for these species.

A.5. Impact Assessment

A.5.1. Impacts to Vegetation and Habitat

The entire area within the subject land is assumed to be impacted by the project, and all vegetation will be removed, as is shown in **Table 2** below and on **Figure 5**. However, there is potential for retention of some trees, subject to detailed design of the project. Additionally, re-planting of similar garden beds will occur as part of landscaping for the project, and this vegetation will provide similar habitat values to that removed.

Table 2 Vegetation to be removed within the subject land

Vegetation Community	Area (ha)
Planted Native Vegetation	0.464
Exotic Vegetation	0.488
Total	0.952

A total of 0.464 ha of native vegetation and 0.488 ha of exotic vegetation will be removed as a result of the proposed development of the subject land. None of the vegetation is considered to conform to any TEC's listed under the BC Act.

This area of vegetation may comprise potential and marginal foraging habitat within the broad habitat ranges of highly mobile native fauna including threatened species such as the Grey-headed Flying-fox, microchiropteran bats and the Powerful Owl. No breeding habitat for threatened species is expected to be removed, due to a lack of these habitat features.

Foraging habitat removed will be replaced via the proposed landscaping. The proposed landscaping will include planting of additional trees, comprising a mix of locally endemic species and garden ornamentals consistent with the existing gardens on the subject land.

The removal of vegetation on the subject land is not considered to have a significant impact on threatened fauna species listed under the BC Act.

A.5.2. Biodiversity Values Assessment

The BC Act and the BC Regulation list a suite of biodiversity values that are relevant to assessments that must take place under the BC Act, as outlined in Table 2 of *How to apply for a biodiversity development assessment report waiver* (DPIE 2019). To demonstrate that the project will not impact upon biodiversity, **Table 4** systematically comments upon the relevance of each value.

Table 3 Biodiversity values assessment

Biodiversity Value	Assessment for the Project
BC Act - Part 1 Section 1.5 (2)	
(a) vegetation integrity - being the degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state.	Based on a review of historical aerial imagery from 1943 (NSW Government Spatial Services 2020), trees were almost entirely absent from the subject land prior to that time. The vegetation across the subject land has been significantly altered from its original state and the majority of the trees found within the subject land are either exotic, non-endemic natives or planted local endemics. No remnant trees occur, and all are considered to have been planted as part of landscaping, due to their presence in defined garden beds, or in a parkland/paved setting.

Biodiversity Value	Assessment for the Project
	<p>Based upon the results of floristic surveys, it has been concluded that the existing vegetation of the subject land is largely comprised of planted native vegetation and exotic vegetation within garden beds and in rows. Although patches of vegetation dominated by locally endemic trees show some conformity to PCT 1800 (being Swamp Oak), this is limited to a best-fit based on planted trees only.</p> <p>With consideration of the above, the composition, structure and function of vegetation within the subject land and the surrounding landscape are considered to have been altered significantly from a natural state.</p>
(b) habitat suitability - being the degree to which habitat needs of threatened species are present at a particular site.	<p>The subject land has little potential to provide habitat for threatened species other than highly mobile, aerial species. Threatened species with the highest likelihood to utilise the subject land include the Grey-headed Flying-fox, the Powerful Owl and microchiropteran bats. These highly mobile species may occasionally and opportunistically utilise the limited foraging resources of the subject land as part of a larger foraging range.</p>
(c) biodiversity values, or biodiversity-related values, prescribed by the regulations.	<p>See below.</p>
BC Regulation - Part 1 Clause 1.4	
(a) threatened species abundance - being the occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site.	<p>No TECs or threatened species were observed during the site inspection. Only highly mobile, aerial threatened species would be expected to utilise the foraging resources of the subject land occasionally and opportunistically.</p>
(b) vegetation abundance - being the occurrence and abundance of vegetation at a particular site.	<p>The subject land has been largely cleared and is predominately comprised of plantings of exotic, non-endemic natives and planted local endemics. All trees to be removed comprise planted individuals. Furthermore, the subject land is located in a highly modified/urbanised area.</p> <p>It is anticipated that the project will result in the impact of approximately 0.952 ha of vegetation comprising 0.464 ha of planted native vegetation and 0.488 ha of exotic vegetation.</p>

Biodiversity Value	Assessment for the Project
(c) habitat connectivity - being the degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range.	<p>The existing vegetation within the subject land may marginally contribute to habitat connectivity throughout the largely cleared and artificial landscape that dominates the locality. Trees within the subject land and its immediate surroundings may function as stepping stone habitat for highly mobile fauna, providing a degree of habitat connectivity between parks such as Toongabbie Creek riparian corridor, Parramatta Park and the Parramatta River riparian corridor.</p> <p>In addition, the future landscaping will result in replacement planting for the trees to be removed. Therefore, the connectivity value of the subject land will remain consistent with current conditions.</p>
(d) threatened species movement - being the degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle.	<p>As above, the subject land does not contribute to the movement of threatened species other than highly mobile, aerial species. Impacts associated with the project would not be expected to have any impact on the lifecycle of such species.</p>
(e) flight path integrity - being the degree to which the flight paths of protected animals over a particular site are free from interference.	<p>The project will increase the building heights to some extent, although the existing buildings are already multi-storey structures. Subsequently the project is not expected to impact upon free-flying animals (threatened or otherwise) by interfering with flight paths.</p>
(f) water sustainability - being the degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.	<p>No natural or artificial watercourse exists within the subject land. Toongabbie Creek occurs to the north of the subject land, and is approximately 50 m from Old Ronald McDonald House. The proposed development is not located within the riparian corridor for Toongabbie Creek, and is not expected to impact on the ecological function of the watercourse, provided that adequate mitigation measures are implemented.</p> <p>Aside from the canopy trees which may use ground water, the majority of the vegetation within the subject land would rely on rain or artificial watering as part of the landscaped garden beds. The project is consequently not expected to have any impacts on water sustainability.</p>

A.6. Conclusion

The project is considered highly unlikely to have significant impacts upon defined biodiversity values as impacts are limited to highly modified areas. The project is anticipated to impact approximately 0.464 ha area of planted native vegetation that shows limited, if any, structural/compositional features of a naturally occurring PCT, and approximately 0.488 ha of exotic vegetation. This area of vegetation may comprise potential and marginal foraging habitat within the broad habitat ranges of highly mobile native fauna including threatened species such as the Grey-headed Flying-fox, microchiropteran bats and the Powerful Owl.

When assessing impacts to potentially occurring threatened species from the project, there is limited justification for considering impacts to threatened species with the detail required under the BAM. The project may result in a small reduction of marginal foraging habitat for highly mobile, aerial threatened species. It is considered unlikely that a significant impact to threatened species would occur as a result of the proposed development.

On the basis of our investigations, we believe that the preparation of a BDAR is not necessary, due to the low likelihood of impacts to biodiversity values.

A.7. References

- DPIE. 2019. How to apply for a biodiversity development assessment report waiver for a Major Project Application. Environment, Energy and Science, Sydney.
- DPIE. 2020a. Eastern False Pipistrelle – Profile. NSW Department of Planning, Industry and Environment.
- DPIE. 2020b. Eastern Freetail-bat - Profile. NSW Department of Planning, Industry and Environment, Hurstville.
- DPIE. 2020c. Gang-gang Cockatoo - profile. NSW Department of Planning, Industry and Environment, Hurstville.
- DPIE. 2020d. Glossy Black Cockatoo - profile. NSW Office of the Environment and Heritage, Hurstville.
- DPIE. 2020e. Greater Broad-nosed Bat – profile. NSW Department of Planning, Industry and Environment, Hurstville.
- DPIE. 2020f. Grey-headed Flying-fox - profile. NSW Office of Environment and Heritage., Hurstville.
- DPIE. 2020g. Powerful Owl - profile. Office of Environment and Heritage, Hurstville.
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APPENDIX B :

Flora Species List

Table 4 Flora Species List

Family	Scientific Name	Exotic	Common Name
Agavaceae	<i>Yucca aloifolia</i>	*	Spanish Bayonet
Alliaceae	<i>Agapanthus praecox subsp. orientalis</i>	*	
Alliaceae	<i>Nothoscordum gracile</i>	*	Onion Weed
Amaranthaceae	<i>Gomphrena celosioides</i>	*	Gomphrena Weed
Apiaceae	<i>Cyclospermum leptophyllum</i>	*	Slender Celery
Apocynaceae	<i>Araujia sericiflora</i>	*	Moth Vine
Apocynaceae	<i>Trachelospermum jasminoides</i>	*	
Araliaceae	<i>Hedera helix</i>	*	English Ivy
Arecaceae	<i>Washingtonia spp.</i>	*	
Asteliaceae	<i>Cordyline australis</i>	*	Cabbage Tree
Asteraceae	<i>Bidens pilosa</i>	*	Cobbler's Pegs
Asteraceae	<i>Conyza sumatrensis</i>	*	Tall fleabane
Asteraceae	<i>Gamochaeta pensylvanica</i>	*	Cudweed
Asteraceae	<i>Hypochaeris radicata</i>	*	Catsear
Asteraceae	<i>Lactuca serriola</i>	*	Prickly Lettuce
Asteraceae	<i>Soliva sessilis</i>	*	Bindyi
Asteraceae	<i>Sonchus asper</i>	*	Prickly Sowthistle
Asteraceae	<i>Sonchus oleraceus</i>	*	Common Sowthistle
Bignoniaceae	<i>Jacaranda mimosifolia</i>	*	Jacaranda
Casuarinaceae	<i>Casuarina glauca</i>		Swamp Oak
Commelinaceae	<i>Commelina cyanea</i>		Native Wandering Jew
Cyperaceae	<i>Cyperus congestus</i>	*	
Cyperaceae	<i>Cyperus gracilis</i>		Slender Flat-sedge
Euphorbiaceae	<i>Euphorbia prostrata</i>	*	Red Caustic Weed
Euphorbiaceae	<i>Triadica sebifera</i>	*	Chinese Tallowood
Fabaceae (Faboideae)	<i>Trifolium repens</i>	*	White Clover
Fabaceae (Mimosoideae)	<i>Acacia cultriformis</i>		Knife-leaved Wattle
Hamamelidaceae	<i>Liquidambar styraciflua</i>	*	Sweetgum
Lamiaceae	<i>Lavandula spp.</i>	*	
Lamiaceae	<i>Westringia fruticosa</i>		Coastal Rosemary
Lomandraceae	<i>Lomandra hystrix</i>		
Lomandraceae	<i>Lomandra longifolia</i>		Spiny-headed Mat-rush
Magnoliaceae	<i>Magnolia spp.</i>	*	
Malaceae	<i>Photinia spp.</i>	*	

Malvaceae	<i>Modiola caroliniana</i>	*	Red-flowered Mallow
Malvaceae	<i>Sida rhombifolia</i>	*	Paddy's Lucerne
Meliaceae	<i>Melia azedarach</i>		White Cedar
Moraceae	<i>Morus alba</i>	*	White Mulberry
Myrtaceae	<i>Corymbia citriodora</i>	*	Lemon-scented Gum
Myrtaceae	<i>Corymbia gummifera</i>		Red Bloodwood
Myrtaceae	<i>Corymbia maculata</i>		Spotted Gum
Myrtaceae	<i>Eucalyptus botryoides</i>		Bangalay
Myrtaceae	<i>Eucalyptus saligna</i>		Sydney Blue Gum
Myrtaceae	<i>Syzygium luehmannii</i>		Small-leaved Lilly Pilly
Nandinaceae	<i>Nandina domestica</i>	*	Japanese Sacred Bamboo
Oleaceae	<i>Ligustrum lucidum</i>	*	Large-leaved Privet
Oleaceae	<i>Olea europaea subsp. europaea</i>	*	Olive
Oxalidaceae	<i>Oxalis corniculata</i>	*	Creeping Oxalis
Platanaceae	<i>Platanus hispanica 'Acerifolia'</i>	*	Hybrid Plane
Plumbaginaceae	<i>Plumbago auriculata</i>	*	Cape leadwort
Poaceae	<i>Axonopus fissifolius</i>	*	Narrow-leaved Carpet Grass
Poaceae	<i>Bromus catharticus</i>	*	Prairie Grass
Poaceae	<i>Cenchrus clandestinus</i>	*	Kikuyu Grass
Poaceae	<i>Cynodon dactylon</i>		Common Couch
Poaceae	<i>Ehrharta erecta</i>	*	Panic Veldtgrass
Poaceae	<i>Eragrostis tenuifolia</i>	*	Elastic Grass
Poaceae	<i>Poa annua</i>	*	Winter Grass
Poaceae	<i>Setaria parviflora</i>	*	
Poaceae	<i>Stenotaphrum secundatum</i>	*	Buffalo Grass
Portulacaceae	<i>Portulaca oleracea</i>		Pigweed
Primulaceae	<i>Lysimachia arvensis</i>	*	Scarlet Pimpernel
Proteaceae	<i>Grevillea 'Robyn Gordon'</i>	*	
Rutaceae	<i>Murraya paniculata</i>	*	
Salicaceae	<i>Populus alba</i>	*	White Poplar
Solanaceae	<i>Solanum nigrum</i>	*	Black-berry Nightshade
Ulmaceae	<i>Ulmus parvifolia</i>	*	Chinese Elm
Zingiberaceae	<i>Hedychium gardnerianum</i>	*	Ginger Lily

* Denotes exotic species

APPENDIX C :

BioNet Atlas Search
Results



Table 5 BioNet Atlas Search Results for the Locality of the Subject Land

Family	Scientific name	Common Name	Locality Count
Fauna			
Accipitridae	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	2
Apodidae	<i>Apus pacificus</i>	Fork-tailed Swift	1
Apodidae	<i>Hirundapus caudacutus</i>	White-throated Needletail	2
Ardeidae	<i>Botaurus poiciloptilus</i>	Australasian Bittern	1
Burhinidae	<i>Burhinus grallarius</i>	Bush Stone-curlew	1
Cacatuidae	<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	1
Camaenidae	<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	1
Camaenidae	<i>Pommerhelix duralensis</i>	Dural Land Snail	31
Dasyuridae	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	2
Emballonuridae	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	7
Hylidae	<i>Litoria aurea</i>	Green and Golden Bell Frog	5
Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater	2
Miniopteridae	<i>Miniopterus australis</i>	Little Bent-winged Bat	1
Miniopteridae	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	18
Molossidae	<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	7
Myobatrachidae	<i>Pseudophryne australis</i>	Red-crowned Toadlet	3
Neosittidae	<i>Daphoenositta chrysoptera</i>	Varied Sittella	1
Petroicidae	<i>Petroica boodang</i>	Scarlet Robin	1
Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala	2
Psittacidae	<i>Glossopsitta pusilla</i>	Little Lorikeet	3
Psittacidae	<i>Lathamus discolor</i>	Swift Parrot	6
Psittacidae	<i>Polytelis swainsonii</i>	Superb Parrot	1
Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	693
Strigidae	<i>Ninox connivens</i>	Barking Owl	5
Strigidae	<i>Ninox strenua</i>	Powerful Owl	64
Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy Ibis	4
Tytonidae	<i>Tyto novaehollandiae</i>	Masked Owl	3
Tytonidae	<i>Tyto tenebricosa</i>	Sooty Owl	1
Vespertilionidae	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	1
Vespertilionidae	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	6
Vespertilionidae	<i>Myotis macropus</i>	Southern Myotis	11
Vespertilionidae	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	6

Family	Scientific name	Common Name	Locality Count
Flora			
Campanulaceae	<i>Isotoma fluviatilis subsp. fluviatilis</i>		1
Dilleniaceae	<i>Hibbertia superans</i>		44
Elaeocarpaceae	<i>Tetratheca glandulosa</i>		1
Ericaceae	<i>Epacris purpurascens var. purpurascens</i>		54
Fabaceae (Mimosoideae)	<i>Acacia pubescens</i>	Downy Wattle	2
Myrtaceae	<i>Rhodamnia rubescens</i>	Scrub Turpentine	1
Myrtaceae	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	5
Orchidaceae	<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	2
Rhamnaceae	<i>Pomaderris prunifolia</i>	P. prunifolia	4
Thymelaeaceae	<i>Pimelea curviflora var. curviflora</i>		6

FIGURES

Figure 1 Site map

Figure 2 Location map

Figure 3 Site plan

Figure 4 Survey locations

Figure 5 Vegetation of the subject land



Legend

- Subject Land
- Lot Boundary

Image Source:
Image © Nearmap (2020)
Dated: 22/01/2020

Data Source:
Billard Leece Partnership
Pty Ltd, 2020

Coordinate System: MGA Zone 56 (GDA 94)



cumberland
ecology

0 25 50 75 100 m

Figure 1. Site map



Legend

- Subject Land
- Lot Boundary
- Watercourse

Image Source:
Image © Nearmap (2020)
Dated: 22/01/2020

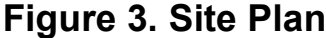
Data Source:
Billard Leece Partnership
Pty Ltd, 2020

Coordinate System: MGA Zone 56 (GDA 94)

cumberland
ecology

0 75 150 225 300 m

Figure 2. Location of the Subject Land





Legend

- Subject Land
- Lot Boundary

Image Source:
Image © Sixmaps (2020)
Spatial Services
NSW Department of
Finance and Services

Data Source:
Billard Leece Partnership
Pty Ltd, 2020

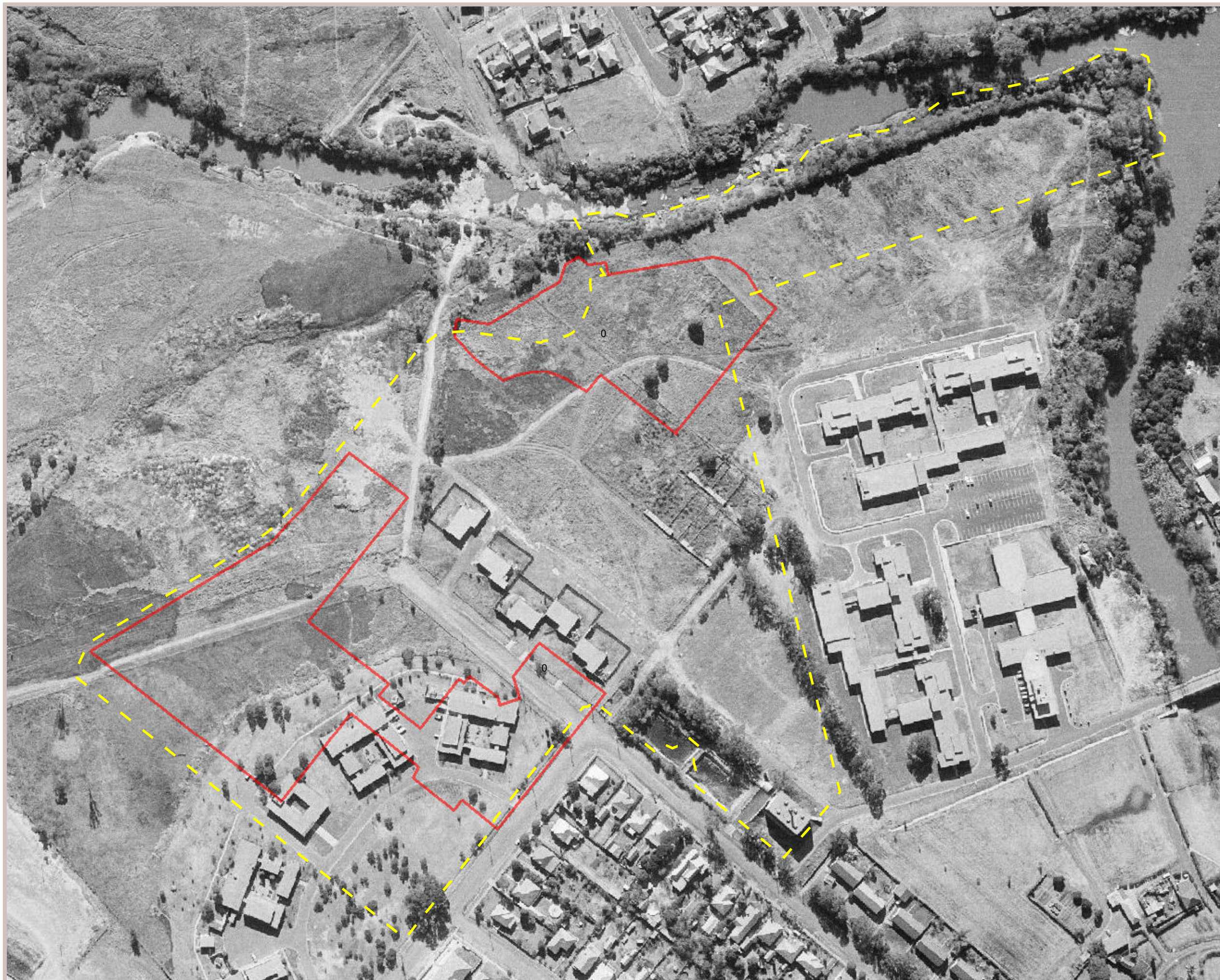


Coordinate System: MGA Zone 56 (GDA 94)

cumberland
ecology

0 25 50 75 100 m

Figure 4. Aerial imagery from 1943 (Sixmaps) showing the subject land



Legend

- Subject Land
- Lot Boundary

Image Source:
Image © Sixmaps (2020)
Spatial Services
NSW Department of
Finance and Services

Data Source:
Billard Leece Partnership
Pty Ltd, 2020



Coordinate System: MGA Zone 56 (GDA 94)

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ecology

0 25 50 75 100 m

Figure 5. Aerial imagery from 1970 (NSW Spatial Services) showing the subject land



Legend

- Subject Land
- Lot Boundary
- BAM Plot
- Survey Tracks

Image Source:
Image © Nearmap (2020)
Dated: 22/01/2020

Data Source:
Billard Leece Partnership
Pty Ltd, 2020

Coordinate System: MGA Zone 56 (GDA 94)



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Figure 6. Survey Locations



Legend

- Subject Land
- Lot Boundary
- Vegetation Community**
 - Planted Native Vegetation
 - Exotic Vegetation

Image Source:
Image © Nearmap (2020)
Dated: 22/01/2020

Data Source:
Billard Leece Partnership
Pty Ltd, 2020

Coordinate System: MGA Zone 56 (GDA 94)

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0 25 50 75 100 m

Figure 7. Vegetation of the Subject Land