

19 August 2021

James Edwards
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GIDDIS Project Management
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Macquarie Data Centre IC3 at 17-23 Talavera Rd, Macquarie Park – Biodiversity Development Assessment Report Waiver Request

Dear James,

The purpose of this letter is to assess the need for a Biodiversity Development Assessment Report (BDAR) utilising the Biodiversity Assessment Method for the proposed State Significant Development (SSD) of the Macquarie Data Centre IC3 (hereafter referred to as the 'project') at 17-23 Talavera Road, Macquarie Park.

This letter is provided as part of a package of information following a request for 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:** Likelihood of Threatened Species Occurrence; 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.

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If you have any queries regarding this assessment, please don't hesitate to contact me via email or on (02) 9868 1933.

Yours sincerely,



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APPENDIX A :

BDAR Waiver Request

A.1. Introduction

Macquarie Data Centres (MDC) c/- GIDDIS Project Management (GIDDIS) has proposed to construct a data centre within the western portion of Lot 527 DP 752035 located at 17-23 Talavera Rd, Macquarie Park (the 'subject site'). The proposed development includes the construction and operational use of an expansion to an existing Data Centre located on the property (the 'project'). The project is seeking approval as a State Significant Development (SSD) under Part 4 Division 4.7 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

Cumberland Ecology has been commissioned by GIDDIS on behalf of MDC 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 satisfies the definition of State Significant Development (SSD) pursuant to Schedule 1, Part 25 of *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP) as the proposed megawatt of the Data Centre expansion is more than the 10-megawatt threshold (~48 megawatt proposed).

Section 7.9 of the NSW *Biodiversity Conservation Act 2016* (BC Act), requires all development applications for SSDs 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.

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 will 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 the subject 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	Proponent: Macquarie Data Centres c/- GIDDIS Project Management Contact Name: Mr Matt Giddy (Project Director) Phone: 0421 059 501 Email: mattgiddy@giddis.com.au
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)	SSD-24299707
Name and ecological qualifications of person completing TABLE 2	Mikael Peck • Master of Marine Science and Management, Macquarie University, 2011 • Bachelor of Science. Washington State University, 2005 • BAM Accredited Assessor (BAAS 19002) Katrina Wolf • Bachelor of Environmental Science. The University of Sydney, 2007 • BAM Accredited Assessor (BAAS 18010)
Site details	
Street address, Lot and DP, local government area	17-23 Talavera Road, Macquarie Park, NSW Lot 527 DP 752035 City of Ryde Local Government Area
Description of existing development site, i.e. the area of land that is subject to the proposed development	The subject site is an existing car park/construction site surrounded by planted

Requirements	Responses
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.	vegetation. As the subject site comprises urban land it is not considered 'Category 1 - exempt land' under the <i>Local Land Services Act 2013</i>. Further details are provided in Section A.4.
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.)	The proposed development comprises the expansion of an existing data centre that will require the redevelopment of an existing car park/hard surfaces as well as planted vegetation. Further description is provided in Section A.2.2 and within the project's 'Request for Secretary's Environmental Assessment Requirements' document.
Proposed Site Plan	See Figure 1
Impacts on biodiversity values	
Complete TABLE 2 below on Biodiversity Values For each biodiversity value, the proponent must either: 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.	See Table 2
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 2

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 2
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. Site Context

The subject site and surrounds have a long history of agricultural and commercial uses. Currently, the subject site is zoned as 'B7 – Business Park' under the *Ryde Local Environmental Plan 2014*. The objectives of this zone are to:

- To provide a range of office and light industrial uses;
- To encourage employment opportunities;
- To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area; and
- To encourage industries involved in research and development.

Within the lot (hereafter referred to as the 'study area') there is an existing Data Centre which the project proposes to expand upon. In addition to the existing Data Centre, the study area includes planted vegetation in rows along its perimeters as well as landscaped areas around existing structures and the Talavera Road frontage in the north.

The study area is entirely surrounded by commercial facilities, that like the study area, are surrounded by planted vegetation primarily in the form of trees. Available vegetation mapping (OEH 2016) does not identify any vegetation within the adjoining lots of the study area to conform to a native vegetation community. Within the locality (5 km radius) of the study area exists Lane Cove National Park located approximately 600 m to the north and northeast at its closest point. Lane Cove National Park is an important conservation area within the locality that provides habitat for a number of threatened species and ecological communities; however, the

study area is separated from the National Park by significant artificial barriers including buildings (commercial and residential) and major roads including the M2, Talavera Road and Lane Cove Road.

A.2.2. The Proposed Development

The project includes the construction and operational use of an expansion to the existing Data Centre, to achieve optimal efficiency outcomes in line with best practice to cater for emerging and evolving data storage requirements throughout the Sydney CBD and wider Sydney Metropolitan Region. The proposed expansion will include the construction of a facility that will include:

- Data Centre building;
- Electrical substations and diesel storage;
- Offices;
- Access and parking; and
- Landscaping.

Full details of the project are provided within the project's formal 'Request for Secretary's Environmental Assessment Requirements'.

A.2.3. Native Vegetation Definition

For the purpose of the BC Act, native vegetation has the same definition as per the *Local Land Services Act 2013*. The definition of native vegetation is as follows:

60B Meaning of "native vegetation"

1. For the purposes of this Part, native vegetation means any of the following types of plants native to New South Wales:
 - a. trees (including any sapling or shrub or any scrub),
 - b. understorey plants,
 - c. groundcover (being any type of herbaceous vegetation),
 - d. plants occurring in a wetland.
2. A plant is native to New South Wales if it was established in New South Wales before European settlement. The regulations may authorise conclusive presumptions to be made of the species of plants native to New South Wales by adopting any relevant classification in an official database of plants that is publicly accessible.
3. For the purposes of this Part, native vegetation extends to a plant that is dead or that is not native to New South Wales if:

- a. the plant is situated on land that is shown on the native vegetation regulatory map as category 2-vulnerable regulated land, and
 - b. it would be native vegetation for the purposes of this Part if it were native to New South Wales.
4. For the purposes of this Part, native vegetation does not extend to marine vegetation (being mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water). A declaration under section 14.7 of the Biodiversity Conservation Act 2016 that specified vegetation is or is not marine vegetation also has effect for the purposes of this Part.

A.3. Methods

A.3.1. Database Analysis

Database searches were conducted to identify threatened species and populations, that occur within the locality (5 km) using the NSW Environment, Energy and Science Group (EES) BioNet Atlas database (EES 2021). 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 search area. 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 site.

A.3.2. GIS Mapping

A desktop analysis was completed to identify whether any vegetation communities were present on or nearby the subject site. To do this, the subject site was plotted against the broad scale mapping compiled by the former NSW Office of Environment and Heritage (OEH) for the Sydney Metropolitan area (OEH 2016). A vegetation map of the subject site was then produced based upon observations of vegetation during the site inspection.

The results from the EES BioNet Atlas search were downloaded and plotted onto an aerial image (Nearmap; dated 25/01/2021) corresponding to the subject site. This subsequently displayed any threatened species within the locality to determine the potential for the species to be present within the subject site.

A.3.3. Site Inspection

Two ecologists from Cumberland Ecology visited the subject site on 7 July 2021. The subject site was inspected by traversing the existing vegetated areas, with records of flora species and potential fauna habitat noted. Vegetation within the subject site was assessed in relation to Plant Community Types (PCTs) known to occur within the locality.

A single plot was surveyed, within the planted vegetation present in the western portion of the subject site, as shown in **Figure 2**. The plot was orientated in a southwest to northeast direction with the floristic plot measuring 10m x 40m, to accommodate the narrow shape and small size of the largest patch of native vegetation present on the subject site. Surveys followed the BAM and included establishment of one plot within the largest patch of native vegetation present on the subject site, 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 20 m x 50 m plot, including assessment of large trees, tree stem classes, regeneration, fallen logs, leaf litter and hollow-bearing trees.

Random meander transects were conducted throughout all other vegetation present on the subject site, and parts of the study area (**Figure 2**), in which flora species encountered were recorded. During the site inspection, notes and photographs were taken documenting vegetation and habitat features throughout the study area.

A.4. Key Findings

The subject site is predominantly an artificial landscape with planted trees in rows situated along the perimeter of the subject site as well as landscaped areas adjacent to the existing Data Centre. The study area includes the subject site, and also proximate trees that have previously been planted along the perimeters of the study area.

A.4.1. Native Vegetation Desktop Study

The desktop study of the broad scale native vegetation mapping of the Sydney metropolitan area revealed that a number of native vegetation communities exist within the locality; however none have been mapped as occurring within the subject site or the immediate surrounds as shown in **Figure 3** (OEH 2016). The entirety of the vegetation within the subject site and the majority of the vegetation of the immediate surrounds are mapped as "Urban Exotic/Native".

The subject site is currently used as a carpark and constructions site, and has been nearly entirely cleared since 1943 based on historical aerial photography (NSW Government 2018). Historical aerial photography also identifies that landscape plantings in rows and along the perimeters of the lot were undertaken sometime between 1970 and 1986. Therefore, all native vegetation within the subject site is considered to be planted and be no greater than ~50 years old.

A.4.2. Vegetation of the Subject Site

As indicated above, based on review of historic aerial imagery (NSW Government 2018), nearly all vegetation within the subject site has been planted after 1943 (**Figure 4**).

All of the plants described as being 'native' meet the definition of native vegetation as defined in **Section A.2.3**. Species that are not locally endemic to the Sydney region have been noted as such in the following descriptions of vegetation within the subject site.

Generally, the composition, structure and function of vegetation within the subject site and the surrounding landscape have been altered significantly from a near natural state and do not resemble any naturally occurring PCTs. Subsequently, the woody vegetation within the subject site has been condensed into the two following mapping units:

- Planted Natives; and
- Exotics.

A description of these mapping units are described below and their extent within the subject site is shown in **Figure 5**.

A.4.2.1. Planted Natives

Based on the review of historical aerial imagery, all vegetation of this mapping unit present within the subject site is likely to be planted. Further to this, all trees occurring are within garden beds with no native ground cover species, are in straight lines/rows, predominately bordering the boundaries of the subject site and other features such as building frontages and car parks (see **Photographs 1** and **2**). The mix of species does not match any naturally occurring vegetation community known to occur in the locality, consisting of both locally native and non-indigenous native species (all native to NSW), and of species which naturally occur in varying habitat types to the extent they would not naturally occur together.

Tall tree species include *Angophora costata* (Smooth-barked Apple), *Casuarina glauca* (Swamp Oak), *Eucalyptus botryoides* (Bangalay), *Eucalyptus botryoides* x *Eucalyptus saligna* (Bangalay x Sydney Blue Gum intergrade), *Eucalyptus robusta* (Swamp Mahogany), *Eucalyptus saligna* (Sydney Blue Gum), *Eucalyptus tereticornis* (Forest Red Gum) and *Lophostemon confertus* (Queensland Brush Box). A number of small trees species also occur which include *Acacia fimbriata* (Fringed Wattle), *Elaeocarpus reticulatus* (Blueberry Ash), *Syzygium paniculatum* (Magenta Lilly Pilly), *Waterhousea floribunda* (Weeping Lilly Pilly) and *Acacia binervia* (Coast Myall).

Shrub species are not common in plantings, but *Acacia suaveolens* (Sweet Wattle) and *Acacia longifolia* subsp. *longifolia* (Sydney Golden Wattle) are present, along with a hedged row of *Syzygium australe* (Brush Cherry) in the north.

A native ground layer is for the most part absent consisting of minor occurrences of native species that frequently persist in urban areas such as *Commelina cyanea* (Scurvy Weed) and *Dichondra repens* (Kidney Weed). The exception to this is plantings of *Doryanthes excelsa* (Gymea Lily), *Dianella caerulea* var. *producta* (Blue Flax-lily) and *Lomandra longifolia* (Spiny-headed Mat-rush) (**Photograph 3**) which are commonly planted in garden along the western and northern edges of existing buildings.

Exotic weeds are not particularly common within the planted vegetation, likely due to garden maintenance, but some shrub sized individuals of *Ligustrum lucidum* (Broad-leaved Privet), *Celtis sinensis* (Chinese Hackberry) and *Ligustrum sinense* (Small-leaved Privet) have a rare and scattered distribution in the community. A number of exotic herbaceous species are also present the most common being the grass *Ehrharta erecta* (Panic Veldtgrass), and others such as the forbs *Modiola caroliniana* (Red-flowered Mallow) and *Sida rhombifolia* (Paddys Lucerne). These are also scattered within the community and for the most part do not occur densely due to maintenance.

Photograph 1 Planted natives along western boundary of subject site



Photograph 2 *Lophostemon confertus* plantings along southern boundary of subject site



Photograph 3 Garden bed with planted natives in the north of the subject site



A.4.2.2. Exotics

Areas not mapped as Planted Natives predominately consist of plantings of the tree *Corymbia citriodora* (Lemon-scented Gum) (**Photograph 4**), which is native to Australia, but not NSW, so is not considered to be native vegetation under the BAM. A hedge consisting of individuals of *Murraya paniculata* (Orange Jessamine).

Photograph 4 *Corymbia citriodora* in the south of the subject site



A.4.3. Fauna Habitat of the Subject Site

The primary habitat for native fauna within the subject site are the native and exotic plantings present. This vegetation may fall within the foraging range of a number of non-threatened highly mobile or aerial groups of species including birds such as birds, microchiropteran bats and arboreal mammals. This vegetation may also form part of the foraging range of a number of threatened highly mobile or aerial species including birds such as the Powerful Owl (*Ninox strenua*), the Grey-headed Flying Fox (*Pteropus poliocephalus*) and threatened microchiropteran bats as discussed below.

Nectivorous and frugivorous species may utilise the native and exotic vegetation within the subject site to feed on flowers and fruit whilst insectivorous species such as microchiropteran bats may forage for insects throughout the canopy layer. The flowers of the numerous planted trees within the subject site would be expected to provide foraging resources for common species such as the Rainbow Lorikeet (*Trichoglossus moluccanus*) which were observed within the subject site.

No tree hollows, nests or man-made structures suitable for threatened species nesting/roosting/breeding were observed within the subject site. The only man-made structures present within the subject site are demountable construction site sheds that lack cracks/crevices suitable for microchiropteran bats (**Photograph 5**). Native fauna breeding habitat was limited to the presence of one likely Australian Brush-turkey (*Alectura lathami*) nest located in the south of the subject site as the mulch mound was typical of the species and multiple individuals were recorded within the subject site (see **Photograph 6**).

Photograph 5 Man-made structures within the subject site not suitable for microchiropteran bats



Photograph 6 Australian Brush Turkey in the south of the subject site



A.4.4. Threatened Communities and Species

A.4.4.1. Threatened Ecological Communities

As the vegetation within the subject site is of a planted origin situated throughout garden beds and rows of trees, it has been assessed as not conforming to any TEC listed under either the BC Act or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) known from the locality.

A.4.4.2. Threatened Flora

No naturally occurring threatened flora species were recorded on the subject site and no existing records occur in the subject site.

A total of three planted *Syzygium paniculatum* (Magenta Lilly Pilly) were recorded within the subject site as well as one *Eucalyptus nicholii* (Narrow-leaved Black Peppermint) recorded outside of the subject site, but within the study area. The locations of all individuals recorded are identified in **Figure 5**. *Syzygium paniculatum* is listed as endangered under the BC Act and vulnerable under the EPBC Act, while *Eucalyptus nicholii* is listed as vulnerable under both the BC Act and EPBC Act.

Syzygium paniculatum naturally occurs in littoral and riverside gallery rainforest from Upper Lansdowne to Conjola State Forest (NSW Government 2019). The species is also often planted as a landscaping species within the Sydney region. As the subject site contains no rainforest vegetation and the vegetation present primarily includes planted trees/shrubs (as well as exotics), the *Syzygium paniculatum* individuals present are considered to be planted as part of previous landscaping and therefore hold little conservation value.

Eucalyptus nicholii naturally occurs in dry grassy woodland in the New England Tablelands from Nundle to north of Tenterfield (NSW Government 2020). The species is also often planted as a landscaping species within the Sydney region. As the subject site is over 250 km to the south of the species known distribution, the *Eucalyptus nicholii* present is considered to be planted as part of previous landscaping and therefore holds little conservation value.

Threatened flora species are known to naturally occur within the locality (see **Appendix C**). However, due to the lack of nearby records and the highly modified nature of the subject site, it is considered unlikely that any threatened flora species would occur naturally within the subject site. Additionally, the site inspection did not reveal any locally endemic threatened flora species within the subject site.

A.4.4.3. Threatened Fauna and Associated Habitat

A moderate number of threatened fauna species are known to occur within the locality of the subject site (see **Appendix C**); however, no existing BioNet Atlas records of threatened fauna species are present on the subject site. The majority of threatened fauna species records are within the nearby Lane Cove National Park and immediate surrounds. An assessment of threatened species likelihood of occurrence within the subject site was undertaken (see **Appendix C**), which identifies the following species to have the potential to occur within the subject site:

- Square-tailed Kite (*Lophoictinia isura*) – listed as vulnerable under the BC Act;

- Gang-gang Cockatoo (*Callocephalon fimbriatum*) – listed as vulnerable under the BC Act;
- Little Lorikeet (*Glossopsitta pusilla*) – listed as vulnerable under the BC Act;
- Swift Parrot (*Lathamus discolor*) – listed as endangered under the BC Act and critically endangered under the EPBC Act;
- Turquoise Parrot (*Neophema pulchella*) – listed as vulnerable under the BC Act;
- Barking Owl (*Ninox connivens*) – listed as vulnerable under the BC Act;
- Powerful Owl (*Ninox strenua*) – listed as vulnerable under the BC Act;
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – listed as vulnerable under the BC Act and EPBC Act;
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*) – listed as vulnerable under the BC Act;
- Eastern Coastal Free-tailed Bat (*Mormopterus norfolkensis*) – listed as vulnerable under the BC Act;
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) – listed as vulnerable under the BC Act;
- Greater Broad-nosed Bat (*Scoteanax rueppellii*) – listed as vulnerable under the BC Act;
- Little Bent-winged Bat (*Miniopterus australis*) – listed as vulnerable under the BC Act; and
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*) – listed as vulnerable under the BC Act.

All threatened fauna assessed as having the potential to utilise habitat within the subject site are highly mobile, aerial species that would only occur within the subject site on occasion as part of a much broader foraging range. No suitable roosting/nesting/breeding habitat is present for any of these species within the subject site and therefore, if the subject site was utilised, it would not be considered as important to any of these species survival in the long-term as they are all capable of accessing larger areas of more suitable habitat, including areas within Lane Cove National Park.

A.5. Impact Assessment

A.5.1. Impacts to Vegetation and Habitat

Direct impacts of the project include the construction of a data centre building and associated structures and infrastructure, and will result in the removal of approximately 0.24 ha of Planted Native vegetation, which has previously been planted in garden beds or rows of street trees. A further 0.05 ha of Exotic vegetation will also be removed.

The removal 0.29 ha of vegetation and associated habitat is unlikely to significantly impact on any species or ecological communities listed under the BC Act or EPBC Act. All vegetation to be removed is of a planted nature and does not conform to a PCT known to occur in the locality. Further to this, the vegetation to be removed lacks important habitat features (e.g. nests, hollows) required to support the long-term survival of threatened species known to occur in the locality. Therefore, the habitat to be removed constitutes a small area of marginal

foraging habitat for highly mobile species (including threatened species) that would only be utilised on occasion as part of a much broader foraging range.

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. To demonstrate that the project will not impact upon biodiversity, **Table 2** systematically comments upon the relevance of each value.

Table 2 Assessment of biodiversity values within the subject site

Biodiversity Value	Assessment Within the Subject Site
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 upon analysis of historic aerial photography and surrounding land uses, it is not considered that remnant vegetation occurs on the subject site. Based upon the results of floristic surveys, it has been concluded that the existing vegetation is comprised predominantly of planted native species within garden beds. Based on aerial imagery, all vegetation present has been planted post-1970. The composition, structure and function of vegetation within the subject site and the surrounding landscape are considered to have been altered significantly from a near natural state and do not resemble any naturally occurring PCTs known from the locality.
(b) habitat suitability—being the degree to which the habitat needs of threatened species are present at a particular site,	As discussed above, the subject site 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 site include the Grey Headed Flying Fox and the Powerful Owl. Additionally, threatened microchiropteran bats may forage over the subject site, as part of a large range. These highly mobile species may occasionally and opportunistically utilise the limited foraging resources of the subject site as part of a larger foraging range.
(c) biodiversity values, or biodiversity-related values, prescribed by the regulations.	See below.
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,	Flora No naturally occurring threatened flora species were observed during the site inspection. The only threatened species recorded were planted individuals that hold minimal conservation/biodiversity value (refer to Section A.4.4.2).

Biodiversity Value	Assessment Within the Subject Site
	Fauna No threatened fauna species were observed during the site inspection. Only highly mobile, aerial fauna species would be expected to utilise the subject site occasionally and opportunistically (refer to Section A.4.4.3).
(b) vegetation abundance—being the occurrence and abundance of vegetation at a particular site,	The subject site contains planted native and exotic species along its perimeters and within garden beds. All vegetation present has either been planted in rows or is within garden beds. The project is expected to result in the clearing of all vegetation within the subject site.
(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,	The subject site may contribute to the habitat connectivity throughout the largely cleared and artificial landscape that dominates much of the areas. Vegetation within the subject site and its immediate surroundings may function as stepping stone habitat for highly mobile fauna, providing a degree of habitat connectivity between the patches of vegetation within local reserves and Lane Cove National Park to the north.
(d) threatened species movement—being the degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle,	As above, the subject site does not contribute to the movement of threatened species other than highly mobile, aerial species. Impacts within the subject site would not be expected to have any impact on the lifecycle of such species.
(e) flight path integrity—being the degree to which the flight paths of protected animals over a particular site are free from interference,	The proposed building heights are consistent with others present in the area. Subsequently the project is not expected to impact upon free-flying animals (threatened or otherwise) by interfering with flight paths.
(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.	The subject site is located within an urban environment and not located in close proximity to any water bodies and the project will have to meet relevant stormwater requirements. Therefore the project is considered unlikely to impact on water quality, water bodies or hydrological processes that would sustain threatened species and/or ecological communities.

A.6. Conclusion

The project for an expansion to the existing Data Centre, located within an existing carpark and construction site in Macquarie Park, is considered unlikely to have significant impacts upon defined biodiversity values. Although small areas of planted native vegetation as well as exotic vegetation will be removed, this vegetation comprises at most only a small area of potential, marginal habitat within the broad habitat ranges of highly mobile threatened species such as the Grey-headed Flying Fox, microchiropteran bats and the Powerful Owl.

When assessing impacts likely from the project, there is limited justification for considering impacts to threatened species with the detail required under the Biodiversity Offsets Scheme. The project may result in

marginal reduction in the foraging habitat of highly mobile, aerial threatened species. When assessing impacts likely from the project in its current form, there is very little likelihood of significant impacts to threatened species. Further to this, the subject site is not mapped on the biodiversity values map and less than 0.25 ha of native vegetation will be removed, which is less than the minimum native vegetation clearing threshold for the study area.

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.
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APPENDIX B :

Flora Species List

Table 3 Flora species recorded

Family	Scientific Name	Common Name	Exotic/ Non- endemic	BC Act Status	EPBC Act Status	HTW	BAM Plot		RMS
							Cover	Abundance	Presence
Araliaceae	<i>Hedera helix</i>	English Ivy	*			Yes			X
Asparagaceae	<i>Asparagus aethiopicus</i>	Asparagus Fern	*			Yes	0.1	3	
Asteraceae	<i>Bidens pilosa</i>	Cobbler's Pegs	*			Yes	0.2	5	
Asteraceae	<i>Cirsium vulgare</i>	Spear Thistle	*				0.1	1	
Asteraceae	<i>Sonchus oleraceus</i>	Common Sowthistle	*				0.1	10	
Casuarinaceae	<i>Casuarina cunninghamiana</i>	River Oak							X
Casuarinaceae	<i>Casuarina glauca</i>	Swamp Oak					15	10	
Commelinaceae	<i>Commelina cyanea</i>	Native Wandering Jew					0.5	100	
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed							X
Doryanthaceae	<i>Doryanthes excelsa</i>	Gymea Lily							X
Elaeocarpaceae	<i>Elaeocarpus reticulatus</i>	Blueberry Ash							X
Euphorbiaceae	<i>Euphorbia peplus</i>	Petty Spurge	*						X
Fabaceae (Mimosoideae)	<i>Acacia binervata</i>	Two-veined Hickory							X
Fabaceae (Mimosoideae)	<i>Acacia elata</i>	Mountain Cedar Wattle							X
Fabaceae (Mimosoideae)	<i>Acacia fimbriata</i>	Fringed Wattle					15	10	
Fabaceae (Mimosoideae)	<i>Acacia floribunda</i>	White Sally					0.5	2	
Fabaceae (Mimosoideae)	<i>Acacia longifolia</i> var. <i>longifolia</i>	Sydney Golden Wattle					0.5	2	
Fumariaceae	<i>Fumaria muralis</i>	Wall Fumitory	*				0.1	10	
Lomandraceae	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush							X

Family	Scientific Name	Common Name	Exotic/ Non- endemic	BC Act Status	EPBC Act Status	HTW	BAM Plot		RMS
							Cover	Abundance	Presence
Malvaceae	<i>Modiola caroliniana</i>	Red-flowered Mallow	*				0.2	10	
Malvaceae	<i>Sida rhombifolia</i>	Paddy's Lucerne	*						X
Myrtaceae	<i>Angophora costata</i>	Sydney Red Gum					4	1	
Myrtaceae	<i>Angophora floribunda</i>	Rough-barked Apple					3	1	
Myrtaceae	<i>Callistemon viminalis</i>	Weeping Bottlebrush							X
Myrtaceae	<i>Corymbia citriodora</i>	Lemon-scented Gum	*						X
Myrtaceae	<i>Eucalyptus botryoides</i>	Bangalay							X
Myrtaceae	<i>Eucalyptus grandis</i>	Flooded Gum							X
Myrtaceae	<i>Eucalyptus nicholii</i>	Narrow-leaved Black Peppermint		V	V				X
Myrtaceae	<i>Eucalyptus robusta</i>	Swamp Mahogany							X
Myrtaceae	<i>Eucalyptus saligna</i>	Sydney Blue Gum							X
Myrtaceae	<i>Eucalyptus saligna</i> x <i>Eucalyptus botryoides</i>						20	3	
Myrtaceae	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark					4	1	
Myrtaceae	<i>Eucalyptus tereticornis</i>	Forest Red Gum							X
Myrtaceae	<i>Lophostemon confertus</i>	Brush Box							X
Myrtaceae	<i>Syzygium australe</i>	Brush Cherry							X
Myrtaceae	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly		E	V		3	1	
Myrtaceae	<i>Waterhousea floribunda</i>	Weeping Lilly Pilly					10	15	
Ochnaceae	<i>Ochna serrulata</i>	Mickey Mouse Plant	*			Yes	0.2	3	

Family	Scientific Name	Common Name	Exotic/ Non- endemic	BC Act Status	EPBC Act Status	HTW	BAM Plot		RMS
							Cover	Abundance	Presence
Oleaceae	<i>Ligustrum sinense</i>	Small-leaved Privet	*			Yes			X
Oxalidaceae	<i>Oxalis corniculata</i>	Creeping Oxalis	*				0.1	10	
Phormiaceae	<i>Dianella caerulea</i> var. <i>producta</i>						0.2	2	
Pittosporaceae	<i>Pittosporum undulatum</i>	Sweet Pittosporum							X
Poaceae	<i>Ehrharta erecta</i>	Panic Veldtgrass	*			Yes	2	300	
Poaceae	<i>Poa annua</i>	Winter Grass	*				0.1	10	
Rutaceae	<i>Murraya paniculata</i>		*						X
Solanaceae	<i>Solanum nigrum</i>	Black-berry Nightshade	*				0.25	4	
Ulmaceae	<i>Celtis sinensis</i>	Japanese Hackberry	*				0.2	1	

HTW=High Threat Weed under BAM 2020

E=Endangered

V=Vulnerable

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APPENDIX C :

Threatened Species Likelihood of Occurrence Assessment



Table 4 Threatened flora likelihood of occurrence

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood on the subject site
Dilleniaceae	<i>Hibbertia spanantha</i>	Julian's Hibbertia	E	CE	Grows in forest with canopy species including <i>Eucalyptus pilularis</i> , <i>E. resinifera</i> , <i>Corymbia gummifera</i> and <i>Angophora costata</i> . The understorey is open with species of Poaceae, Orchidaceae, Fabaceae and Liliaceae. Associated soils are identified as a light clay occurring on a shale sandstone soil transition.	Unlikely. No suitable habitat. Subject site has been cleared and comprised of planted vegetation. No individuals have been recorded during surveys.
Elaeocarpaceae	<i>Tetratheca glandulosa</i>		V		Associated with shale-sandstone transition habitat where shale-cappings occur over sandstone. Occupies ridgetops, upper-slopes and to a lesser extent mid-slope sandstone benches. Occurs in open woodland, woodland and open forest.	Unlikely. No suitable habitat. Subject site has been cleared and comprised of planted vegetation. No individuals have been recorded during surveys.
Ericaceae	<i>Epacris purpurascens</i> var. <i>purpurascens</i>		V		Found in a range of habitat types, most of which have a strong shale soil influence.	Unlikely. No suitable habitat. Subject site has been cleared and comprised of planted vegetation. No individuals have been recorded during surveys.
Fabaceae (Mimosoideae)	<i>Acacia clunies-rossiae</i>	Kanangra Wattle	V		Grows in dry sclerophyll forest on skeletal soils on rocky slopes, or on alluvium along creeks and occurs entirely within the Kowmung and Coxs River areas within Kanangra-Boyd and Blue Mountains National Parks.	Unlikely. No suitable habitat is present and subject site is outside of the species' known occurrence.

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood on the subject site
Fabaceae (Mimosoideae)	<i>Acacia pubescens</i>	Downy Wattle	V	V	Found in open woodland and forest, in typically gravely alluvium, shale or shale/sandstone soils.	Unlikely. No suitable habitat. Subject site has been cleared and comprised of planted vegetation. No individuals have been recorded during surveys.
Grammitidaceae	<i>Grammitis stenophylla</i>	Narrow-leaf Finger Fern	E		Grows on rocks in rainforest and wet sclerophyll forest, usually near streams.	Unlikely. No suitable habitat.
Malvaceae	<i>Lasiopetalum joyceae</i>		V	V	Found in heath on sandstone.	Unlikely. No suitable habitat. Subject site has been cleared and comprised of planted vegetation. No individuals have been recorded during surveys.
Myrtaceae	<i>Callistemon linearifolius</i>	Netted Bottle Brush	V		Grows in dry sclerophyll forest on the coast and adjacent ranges.	Unlikely. Subject site has been cleared and comprised of planted vegetation. No individuals have been recorded during surveys.
Myrtaceae	<i>Darwinia biflora</i>		V	V	Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone.	Unlikely. No suitable habitat. Subject site has been cleared and comprised of planted vegetation. No individuals have been recorded during surveys.
Myrtaceae	<i>Eucalyptus nicholii</i>	Narrow-leaved Black Peppermint	V	V	Occurs in the New England Tablelands from Nundle to north of Tenterfield. Typically grows in dry grassy woodland, on shallow soils of slopes	Unlikely. Species was recorded within the study area but not within the subject site. Species does not occur naturally in the

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood on the subject site
					and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock.	area and individual has been planted.
Myrtaceae	<i>Leptospermum deanei</i>		V	V	Occurs in woodland on sandy alluvial soil or sand over sandstone.	Unlikely. No suitable habitat. Subject site has been cleared and comprised of planted vegetation. No individuals have been recorded during surveys.
Myrtaceae	<i>Melaleuca deanei</i>	Deane's Paperbark	V	V	Found in marshy heath on coastal sandstone plateaus. Restricted to sandstones of Sydney and south coast.	Unlikely. No suitable habitat is present as marshy heath is absent.
Myrtaceae	<i>Rhodamnia rubescens</i>	Scrub Turpentine	E		Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. The species is distributed in coastal districts north from Batemans Bay in NSW to areas inland of Bundaberg in Queensland. Populations of <i>R. rubescens</i> typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm.	Unlikely. No suitable habitat. Subject site has been cleared and comprised of planted vegetation. No individuals have been recorded during surveys.
Myrtaceae	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E	V	Grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest.	Present. Species was recorded within the subject site; however, individuals are planted as the subject site lacks littoral rainforest.

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood on the subject site
Orchidaceae	<i>Rhizanthella slateri</i>	Eastern Australian Underground Orchid	V	E	Habitat requirements are poorly understood and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest. The species is highly cryptic given that it grows almost completely below the soil surface, with flowers being the only part of the plant that can occur above ground. Flowers September to November.	Unlikely. No suitable habitat. Subject site has been cleared and comprised of planted vegetation. Any natural soils present that could provide habitat are highly modified as a result of historic land uses for agriculture and commerce.
Proteaceae	<i>Macadamia integrifolia</i>	Macadamia Nut		V	Species is not known to occur naturally in NSW.	Unlikely. Does not naturally occur in NSW.
Proteaceae	<i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut	V	V	Confined chiefly to the north of the Richmond River in north-east NSW, extending just across the border into Queensland. Species grows in subtropical rainforest, usually near the coast.	Unlikely. No suitable habitat is present and subject site is outside of the species' known occurrence within NSW.
Thymelaeaceae	<i>Pimelea curviflora</i> var. <i>curviflora</i>		V	V	Confined to the coastal area of Sydney between northern Sydney in the south and Maroota in the north-west. Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands.	Unlikely. No suitable habitat. Subject site has been cleared and comprised of planted vegetation. No individuals have been recorded during surveys.

V=vulnerable, E=endangered, CE=critically endangered

Table 5 Threatened fauna likelihood of occurrence

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
Amphibia	Hylidae	Green and Golden Bell Frog	<i>Litoria aurea</i>	E	V	Permanent or ephemeral swamps, dams and slow flowing streams with emergent vegetation such as reeds, particularly those containing bulrushes (<i>Typha</i> spp.) and Spikerushes (<i>Eleocharis</i> spp.). Optimal habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), have a grassy area nearby and sheltering sites available. Can occur in highly disturbed areas. It inhabits a variety of forest types including coastal forest, open woodland and cleared areas.	Unlikely, no suitable habitat present as the subject site lacks waterbodies.
Amphibia	Limnodynastidae	Giant Burrowing Frog	<i>Heleioporus australiacus</i>	V	V	Occurs in heath, woodland and open dry sclerophyll forest on a variety of soil types. Breeding habitat for this species usually contains soaks or pools within first of second order streams.	Unlikely, no suitable habitat present as the subject site lacks waterbodies and vegetation present is highly modified.

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
Amphibia	Myobatrachidae	Red-crowned Toadlet	<i>Pseudophryne australis</i>	V		Occurs in open forests, mostly on Hawkesbury and Narrabeen Sandstones. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. Shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter. Breeding congregations occur in dense vegetation and debris beside ephemeral creeks and gutters.	Unlikely, no suitable habitat present as the subject site lacks sandstone ridges or ephemeral creeks.
Aves	Accipitridae	Little Eagle	<i>Hieraaetus morphnoides</i>	V		Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.	Unlikely, no suitable habitat present as the subject site lacks preferred vegetation types.
Aves	Accipitridae	Square-tailed Kite	<i>Lophoictinia isura</i>	V		Found in a variety of timbered habitats including dry woodlands and open forests. It is a specialist hunter preying on passerine birds, especially honeyeaters and targets predominately nestlings and insects occurring in the tree canopy. It nests in tree forks or on large horizontal tree limbs located mostly along or near watercourses.	Possible, although only occasion as part of a much broader foraging range. Subject site is highly unlikely to be important to this species as preferred prey are not abundant.

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
Aves	Accipitridae	White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	V	C	Coastal habitats and terrestrial wetlands, characterises by the presence of large areas of open water.	Unlikely, no suitable habitat present as the subject site lacks waterbodies.
Aves	Anatidae	Cotton Pygmy-Goose	<i>Nettapus coromandelianus</i>	E		Species is a rare visitor to NSW and requires freshwater lakes, lagoons, swamps and dams.	Unlikely, no suitable habitat present as the subject site lacks waterbodies.
Aves	Apodidae	Fork-tailed Swift	<i>Apus pacificus</i>		C,J,K	Almost exclusively aerial; can occur over most habitats.	Unlikely. This species is exclusively aerial, and hence would not utilise the habitats present on the subject site.
Aves	Ardeidae	Australasian Bittern	<i>Botaurus poiciloptilus</i>	E	E	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bulrushes (<i>Typha</i> spp.) and spikerushes (<i>Eleocharis</i> spp.).	Unlikely, no suitable habitat present as the subject site lacks waterbodies.
Aves	Ardeidae	White-throated Needle-tail	<i>Hirundapus caudacutus</i>		V,C,J,K	Almost exclusively aerial; can occur over most habitats.	Unlikely. This species is exclusively aerial, and hence would not utilise the habitats present on the subject site.

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
Aves	Artamidae	Dusky Woodswallow	<i>Artamus cyanopterus cyanopterus</i>	V		Prefers dry, open eucalypt forests and woodlands, can also be found in shrublands or around farmland.	Unlikely, subject site lacks preferred vegetation types.
Aves	Cacatuidae	Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	V		In summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In winter, may occur at lower altitudes in drier more open eucalypt forests and woodlands, and often found in urban areas. In NSW, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes.	Possible, although only occasion as part of a much broader foraging range. Subject site is highly unlikely to be important to this species due to its small size and would more likely utilise habitat within the nearby Lane Cove National Park.
Aves	Cacatuidae	Gang-gang Cockatoo population in the Hornsby and Ku-ring-gai Local Government Areas	<i>Callocephalon fimbriatum</i>	V		More often found in forest and woodland habitats containing old growth attributes. Known occurrences in Lane Cove National Park and Pennant Hills Park as well as other forested gullies.	Possible, although only occasion as part of a much broader foraging range. Subject site is highly unlikely to be important to this species due to its small size and would more likely utilise habitat within the nearby Lane Cove National Park.

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
Aves	Cacatuidae	Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>	V		Inhabits open forest and woodlands of the coast and the Great Dividing Range up to 1000 m in which stands of she-oak species, particularly Black She-oak (<i>Allocasuarina littoralis</i>), Forest She-oak (<i>A. torulosa</i>) or Drooping She-oak (<i>A. verticillata</i>) occur.	Unlikely, subject site lacks preferred She-oak species and is small in size. Species would more likely utilise habitat within the nearby Lane Cove National Park.
Aves	Charadriidae	Eastern Osprey	<i>Pandion cristatus</i>	V		Coastal habitats of open water, especially mouths of large rivers, lagoons and lakes.	Unlikely, no suitable habitat present as the subject site lacks waterbodies.
Aves	Ciconiidae	Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	E		Occurs in floodplain wetlands of major coastal rivers along with minor floodplains, coastal sandplain wetlands and estuaries. Species builds nest in high in trees close to water.	Unlikely, no suitable habitat present as the subject site lacks waterbodies.
Aves	Columbidae	Superb Fruit-Dove	<i>Ptilinopus superbis</i>	V		Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees.	Unlikely, no suitable habitat present as the subject site lacks rainforest or closed forests, as well as figs and palms.

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
Aves	Cuculidae	Oriental Cuckoo	<i>Cuculus optatus</i>		C,J,K	Non-breeding visitor to Australia who is a brood parasite. Usually inhabits forested areas and can be found at all levels of the canopy and at a range of elevations.	Unlikely, subject site contains only a small area of habitat for the migratory species.
Aves	Neosittidae	Varied Sittella	<i>Daphoenositta chrysoptera</i>	V		Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Inhabits most of mainland Australia except the treeless deserts and open grasslands.	Unlikely, subject site contains only a small area of highly modified habitat for the species.
Aves	Petroicidae	Scarlet Robin	<i>Petroica boodang</i>	V		Occurs singly or in pairs in dry eucalypt forests and woodlands with an abundance of fallen timber and logs. It can occasionally be found in wetlands and swamps.	Unlikely, subject site lacks preferred vegetation types as well as fallen timber and logs.
Aves	Procellariidae	Short-tailed Shearwater	<i>Ardenna tenuirostris</i>		C,J,K	Breeding visitor to Australia that nests on small coastal islands.	Unlikely. No suitable breeding habitat present.

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
Aves	Psittacidae	Little Lorikeet	<i>Glossopsitta pusilla</i>	V		Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophoras, Melaleucas and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Also utilises isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees. Roosts in treetops, often distant from feeding areas. Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts.	Possible, although unlikely to frequently visit the marginal habitats of the subject site. Could occasionally occur as part of a large foraging area.
Aves	Psittacidae	Superb Parrot	<i>Polytelis swainsonii</i>	V	V	Occurs in Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	Unlikely, subject site lacks preferred vegetation types.
Aves	Psittacidae	Swift Parrot	<i>Lathamus discolor</i>	E	CE	Migratory, forage on winter-flowering eucalypts and/or lerp-infested trees.	Possible, although unlikely to frequently visit the marginal habitats of the subject site. Could occasionally occur as part of a large foraging area.

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
Aves	Psittacidae	Turquoise Parrot	<i>Neophema pulchella</i>	V		Found at the edges of eucalypt woodland adjacent to clearings, timbered ridges and creeks in farmland. Associated with coastal scrubland, open forest and timbered grassland. Nests in hollow-bearing trees, logs or posts.	Possible, although unlikely to frequently visit the marginal habitats of the subject site. Could occasionally occur as part of a large foraging area.
Aves	Strigidae	Barking Owl	<i>Ninox connivens</i>	V		Inhabits eucalypt woodland, open forest, swamp woodlands and, especially in inland areas, timber along watercourses. Denser vegetation is used occasionally for roosting. Nests in hollows of large, old eucalypts. Hunts small arboreal mammals such as Squirrel Gliders and Ringtail Possums, but when loss of tree hollows decreases these prey populations it becomes more reliant on birds, invertebrates and terrestrial mammals. Requires very large permanent territories in most habitats due to sparse prey densities.	Possible, although only occasion as part of a much broader foraging range. Subject site is highly unlikely to be important to this species due to its small size and would more likely utilise habitat within the nearby Lane Cove National Park.
Aves	Threskiornithidae	Black Bittern	<i>Ixobrychus flavicollis</i>	V		Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense	Unlikely, no suitable habitat present as the

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
						vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.	subject site lacks waterbodies.
Aves	Tytonidae	Powerful Owl	<i>Ninox strenua</i>	V		A variety of forest types including woodland, open sclerophyll forest, tall open wet forest, rainforest and occasionally fragmented areas. Territories may be as large as 1450 ha and nesting occurs in large tree hollows of old, mature trees.	Possible, although unlikely to frequently visit the marginal habitats of the subject site for foraging. No nesting or roosting habitat is present. Could occasionally occur as part of a large foraging area
Gastropoda	Camaenidae	Dural Land Snail	<i>Pommerhelix duralensis</i>	E	E	Species occurs under rocks or inside curled-up bark within communities in the interface region between sandstone-derived and shale-derived soils.	Unlikely, vegetation present is highly modified.

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
Mammalia	Burramyidae	Eastern Pygmy-possum	<i>Cercartetus nanus</i>	V		Species is found in a broad range of habitats from rainforest to wet and dry sclerophyll forests through to woodland and heath. Woodland and heath habitats are preferred. The species feeds on pollen and nectar from banksias, eucalypts, and bottlebrushes, though will eat soft fruits when flowers are unavailable, and will also eat insects throughout the year. They shelter in tree hollows, rotten stumps, holes in the ground, abandoned birds' nests and Ringtail Possum dreys, and thickets of vegetation. Tree hollows are preferred for nesting but the species will also nest under tree bark and shredded bark in tree forks.	Unlikely. Habitat is highly modified with little connectivity to more suitable areas offsite.
Mammalia	Dasyuridae	Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	V	E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees,	Unlikely. Habitat is highly modified with little connectivity to more suitable areas offsite.

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
						fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites.	
Mammalia	Emballonuridae	Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	V		Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	Possible, May forage over the subject site on occasion as part of a broader foraging range. No suitable roosting habitat is present
Mammalia	Miniopteridae	Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	V		Forages above the canopy and eats mostly moths. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.	Possible to occur. May forage over the subject site. No suitable roosting habitat is present
Mammalia	Miniopteridae	Little Bent-winged Bat	<i>Miniopterus australis</i>	V		Moist eucalypt forest, rainforest or dense coastal banksia scrub. Little Bentwing-bats roost in caves, tunnels and sometimes tree hollows during the day, and at night forage for small	Possible to occur. May forage over the subject site. No suitable roosting habitat is present

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
						insects beneath the canopy of densely vegetated habitats.	
Mammalia	Molossidae	Eastern Coastal Free-tailed Bat	<i>Mormopterus norfolkensis</i>	V		Occur in dry sclerophyll forest and woodland east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures.	Possible, May forage over the subject site on occasion as part of a broader foraging range. No suitable roosting habitat is present
Mammalia	Petauridae	Yellow-bellied Glider	<i>Petaurus australis</i>	V		Occurs in tall, mature, eucalypt forest generally in areas with high rainfall and nutrient rich soils. It feeds primarily on plant and insect exudate, with insects providing protein. It extracts sap from trees by biting into the trunk and branches leaving distinctive 'V' shaped scars. It dens in large hollows within trees, in groups of two to six individuals.	Unlikely. No hollows present within the subject site and preferred habitat is not present.
Mammalia	Phascolarctidae	Koala	<i>Phascolarctos cinereus</i>	V	V	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred feed species. Home range size varies with quality of	Unlikely. Habitat is highly modified with little connectivity to more suitable areas offsite.

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
						habitat, ranging from less than two ha to several hundred hectares in size.	
Mammalia	Pseudocheiridae	Greater Glider	<i>Petauroides volans</i>		V	Occurs in eucalypt forests and woodlands from north-eastern Queensland to the Central Highlands of Victoria. The species has a relatively small home range which consists of numerous tree hollows.	Unlikely. No hollows present within the subject site and preferred habitat is not present.
Mammalia	Pteropodidae	Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	V	V	Occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	Likely for foraging on occasion as part of a large foraging range. No camps are known to occur within the subject site or nearby.
Mammalia	Vespertilionidae	Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	V		Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	Possible, May forage over the subject site on occasion as part of a broader foraging range. No suitable roosting habitat is present

Class	Family	Common Name	Scientific Name	BC Act Status	EPBC Act Status	Habitat Requirements	Likelihood of Occurrence
Mammalia	Vespertilionidae	Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	V		Commonly occurs in tall wet forests. Roost mainly in tree hollows but will also roost in man-made structures.	Possible to occur. May forage over the subject site. No suitable roosting habitat is present
Mammalia	Vespertilionidae	Southern Myotis	<i>Myotis macropus</i>	V		Roosts in groups of up to fifteen, in caves, mine shafts, tree hollows, dense foliage, or in man-made structures. Forages over streams and pools.	Unlikely. No suitable roosting habitat within the subject site or potential foraging habitat nearby.
Reptilia	Varanidae	Rosenberg's Goanna	<i>Varanus rosenbergi</i>	V		Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component.	Unlikely, no suitable habitat present as the subject site lacks termite mounds and vegetation present is highly modified.

V=vulnerable, E=endangered, CE=critically endangered, J=Japan-Australian Migratory Bird Agreement (JAMBA), K=Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA), C=China-Australian Migratory Bird Agreement (CAMBA)

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FIGURES



Legend

- Subject Site
- Study Area

Image Source:
Image © Neamap (2021)
Dated: 25/01/2021



Coordinate System: MGA Zone 56 (GDA 94)

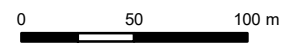
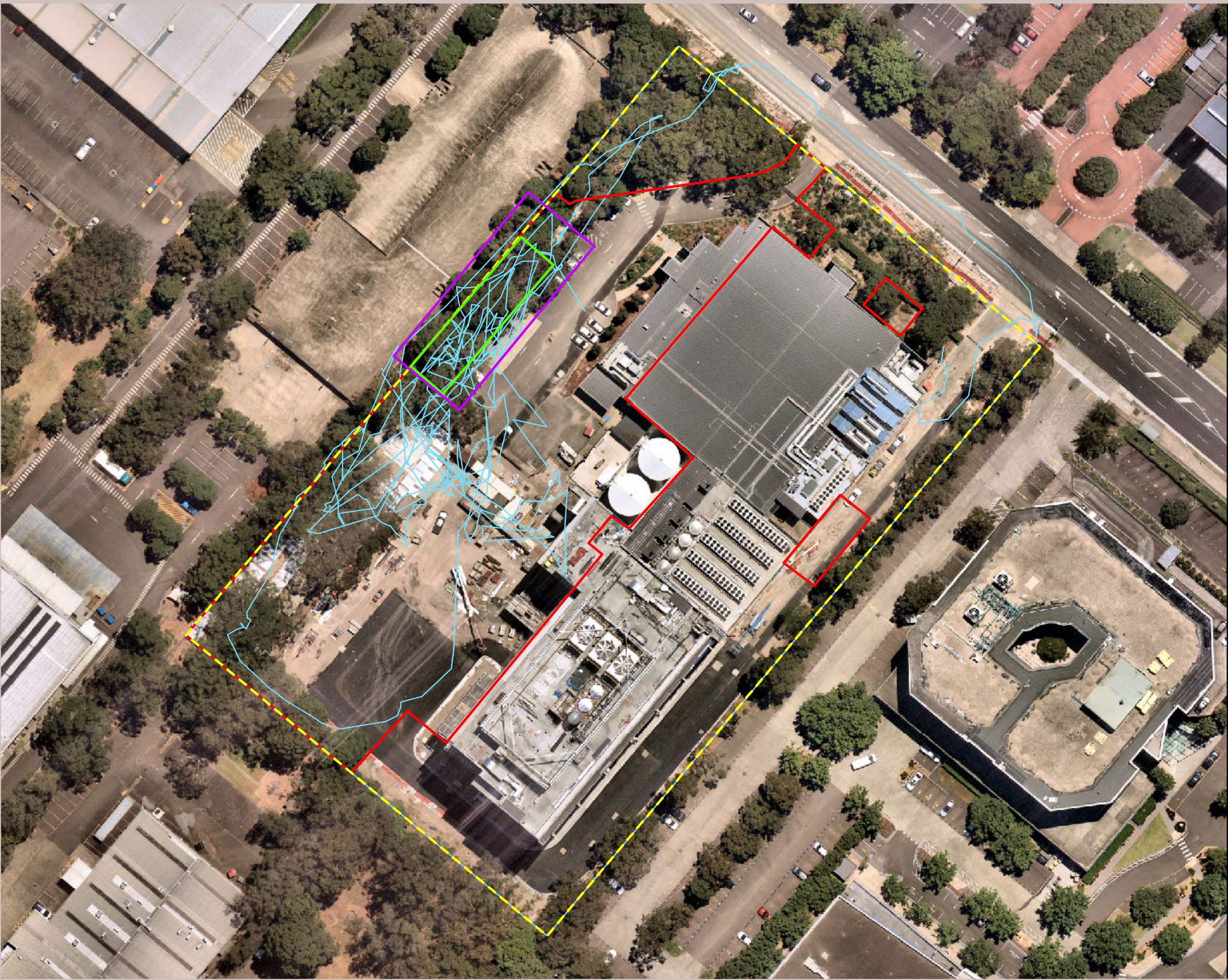


Figure 1. Location of the subject site and study area



- Legend**
- Subject Site
 - Study Area
 - 10 x 40m floristic plot
 - 20 x 50m function plot
 - Random Meander Locations

Image Source:
Image © Nearmap (2021)
Dated: 25/01/2021

Coordinate System: MGA Zone 56 (GDA 94)



Figure 2. Survey locations

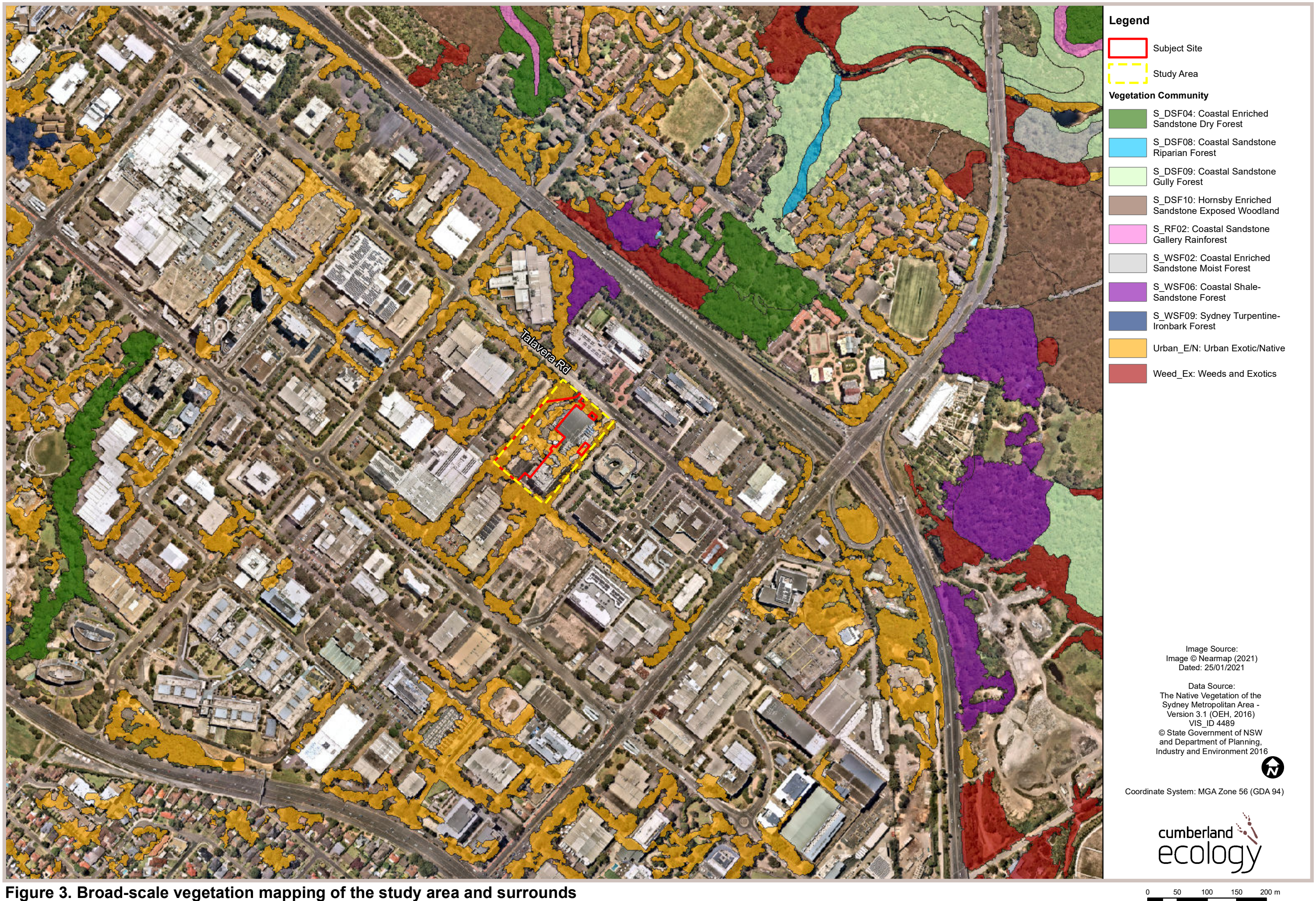


Figure 3. Broad-scale vegetation mapping of the study area and surrounds



Legend

-  Subject Site
-  Study Area

Image Source:
Image © Sixmaps (2021)
Dated: 1943



Coordinate System: MGA Zone 56 (GDA 94)

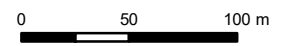


Figure 4. Historic aerial imagery of the study area



Legend

- Subject Site
- Study Area
- Vegetation Community**
 - Planted Native Vegetation
 - Exotic Vegetation
 - Cleared Land
- Fauna Habitat**
 - Australian Brush-turkey Nest
- Threatened Flora Species**
 - Eucalyptus nicholii
 - Syzygium paniculatum

Image Source:
Image © Nearmap (2021)
Dated: 25/01/2021

Coordinate System: MGA Zone 56 (GDA 94)



Figure 5. Vegetation, threatened species and fauna habitat of the study area

