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WARAKIRRI COLLEGE - BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT WAIVER REQUEST

Dear Tony,

The purpose of this letter is to assess the need for biodiversity assessments, utilising the Biodiversity Assessment Method (BAM), for the proposed State Significant Development (SSD) of a new secondary college campus, Warakirri College, located at 6A Watsford Road, Campbelltown (hereafter referred to as the 'project'). This assessment considers the entire land area within the Lot 113 DP 1183297 (hereafter referred to as the 'subject land').

This letter is a response to No.18 of the Secretary's Environmental Assessment Requirements (SEARs) requesting a Biodiversity Development Assessment Report (BDAR) for the project under Section 7.9 of the NSW *Biodiversity Conservation Act 2016* (BC Act). All SSDs trigger the requirement to prepare a BDAR unless a waiver is approved by the Planning Agency Head and the Environment Agency Head (Section 7.9 (2) of the BC Act).

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.

Our assessment is set out below, with the BDAR Waiver Request provided in **Appendix A**. Flora species lists are provided in **Appendix B**, threatened species records and likelihood of occurrence are summarised in **Appendix C**, and Figures shown in **Appendix D**.

Based on our assessment of biodiversity within the subject land, we recommend that a waiver for the preparation of a BDAR be sought from the Department of Planning, Industry and Environment as the project is not anticipated to have a significant impact on biodiversity values within the subject land.

Yours sincerely



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APPENDIX A :

BDAR Waiver Request

A.1. Introduction

Cumberland Ecology has been commissioned by IBIZ Design and Construction (the 'Applicant') to prepare this report in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the SSD-10420 for the development of a new secondary college campus, Warakirri College (the 'project') at 6A Watsford Road, Campbelltown.

Specifically, this report addresses the following SEARs, as shown in **Table 1** below:

Table 1 List of relevant SEARs

SEARs	Report Reference
18. Biodiversity Assessment	
Biodiversity impacts related to the proposed development (SSD-10420) are to be assessed in accordance with the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form detailed in the <i>Biodiversity Conservation Act 2016 (s6.12), Biodiversity Conservation Regulation 2017 (s6.8)</i> and Biodiversity Assessment Method.	Not applicable to this report, pending BDAR waiver request approval. Report is a BDAR waiver request.
The BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the Biodiversity Assessment Method.	Not applicable to this report.
The BDAR must include details of the measures proposed to address the offset obligation as follows: <ul style="list-style-type: none"> the total number and classes of biodiversity credits required to be retired for the development/project the number and classes of like-for-like biodiversity credits proposed to be retired the number and classes of biodiversity credits proposed to be retired in accordance with the variation rules any proposal to fund a biodiversity conservation action any proposal to make a payment to the Biodiversity Conservation Fund. 	Not applicable to this report.
If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits	Not applicable to this report.
The BDAR must be submitted with all spatial data associated with the survey and assessment as per the BAM.	Not applicable to this report.

SEARs	Report Reference
The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the Biodiversity Conservation Act 2016 .	Not applicable to this report.
Where a Biodiversity Assessment Report is not required, engage a suitably qualified person to assess and document the flora and fauna impacts related to the proposal.	A Flora and Fauna Assessment report will be prepared if the waiver request is approved.
<i>Note: Notwithstanding these requirements, the Biodiversity Conservation Act 2016 requires that State Significant Development Applications be accompanied by a Biodiversity Development Assessment Report unless otherwise specified under the Act.</i>	Report is a BDAR Waiver request. Under s7.9 (2) of the BC Act a BDAR is required "unless 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.2. Background

A.2.1. Description of Site

The proposed Warakirri College development (hereafter referred to as the 'project') is located at 6A Watsford Road, Campbelltown, Lot 113 DP 1183297 (hereafter referred to as the 'subject land'), which is approximately 0.18 hectares (see **Figure 1**). The project is located in the Campbelltown local government area (LGA) and is approximately 500m north east of the Campbelltown Town Centre. The subject land is located 400m north of Campbelltown showgrounds and 350m north-east of Campbelltown train station.

The subject land is currently cleared, vacant land and is comprised of predominantly exotic dominated grasslands with a row of planted native vegetation. The key land use characteristics surrounding the subject land are an industrial business park, an adjoining radio station to the west, a Pedders Suspension workshop to the north east, and the T8 railway line to the south-east.

A.2.2. Project Description

The Warakirri College operates three existing campuses which are located in Fairfield, Blacktown, and Campbelltown. The Colleges are State and Federal Government funded Special Assistance Schools (SAS). The project entails the development of a new secondary college campus for up to 120 students and includes the following:

- Construction of a new two-storey building comprising learning spaces and occupant facilities, including indoor sport/recreational areas;
- Basement carpark; and
- Landscaping works surrounding the new building, including a landscaped front garden and a ground floor garden area at the rear of the new building.

The project plan is identified in **Figure 2**.

A.2.3. Assessment Requirements for State Significant Development

The project is classified as Stage Significant Development (SSD) under Clause 15 of Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011*, as the development has been identified as being for the purpose of a new school (regardless of the capital investment value).

Section 7.9 of the 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 a significant impact on biodiversity values.

The main steps in the biodiversity assessment process for SSD are as follows:

1. The Planning Agency Head and the Environment Agency Head determines if the Biodiversity Offsets Scheme applies to the SSD and specifies the environmental assessment requirements;
2. The proponent engages an accredited person to assess the development site using the Biodiversity Assessment Method (BAM) and a BDAR is prepared;
3. The approval authority considers any serious and irreversible impacts and determines whether there are additional and appropriate measures to minimise impacts;
4. The approval authority sets an offset obligation as part of the Conditions of Approval; and
5. The proponent meets their offset obligation and begins their development.

The BAM sets out clear and repeatable methods to conduct assessment of direct and indirect impacts. The BAM is supported by the BAM Calculator, which is a web-based tool that quantifies direct impacts using 'biodiversity credits'. Two types of credits are generated by the BAM Calculator, ecosystem credits and species credits. Ecosystem credits are calculated based on variables including landscape features, native vegetation and ecosystem credit species (species that are reliably predicted by habitat surrogates). Species credits are calculated based on the number of individuals (selection of flora species) or the area of habitat (selection of

flora species and all fauna species) of species credit species (species that are not reliably predicted by habitat surrogates).

The BAM includes a requirement to prepare a BDAR for the proposed development site, which must be prepared by an accredited assessor. A proponent is required to submit the BDAR as part of an Environmental Impact Statement for an SSD.

A.2.4. 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.

A.3. Methods

A.3.1. Database Analysis

Database searches were conducted to identify threatened species and populations, that occur within the locality using the NSW Office of Environment and Heritage (OEH) BioNet Atlas database (OEH 2019). The BioNet Atlas search facility was used to generate records of threatened flora and fauna species and populations listed under the BC Act within a 5km radius of the subject land (hereafter referred to as 'the locality'). 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. Literature

This letter has utilised the results and/or spatial data from the following documents:

- Consulting Earth Scientists Pty Ltd (2018) Preliminary Site Investigation 6a Watsford Road Campbelltown NSW 2560, CES DOCUMENT REFERENCE: CES180704-IDC-ACCES180704-IDC-AC

A.3.3. GIS Mapping

A desktop analysis was completed to identify whether any vegetation communities were present on or nearby the subject land. This included broad scale mapping compiled by the OEH for the Sydney Metropolitan area (OEH 2016). A review of historical imagery provided in a preliminary site investigation report prepared by Consulting Earth Scientist (2018) was undertaken to ascertain historical land uses and vegetation and identify changes over time.

The results from the OEH BioNet Atlas search were downloaded and plotted onto an aerial image corresponding to the subject land. This subsequently displayed any threatened species within the locality to determine the potential for the species to be present within the subject land.

A.3.4. Site Inspection

A Cumberland Ecology botanist and ecologist surveyed the subject land on Tuesday, 11 February 2020. The subject land was inspected by traversing all vegetated areas of the subject land to determine vegetation mapping, with reference to Plant Community Types (PCTs) known to occur within the locality.

A.3.4.1. Plot-based Floristic Survey

Plot-based floristic surveys were undertaken within the study area. Surveys followed the Biodiversity Assessment Method (NSW Government 2017) and included establishment of a 20 m x 50 m plot within which the following data was collected:

- Composition for each growth form group by counting the number of native plant species recorded for each growth form group within a 20 m x 20 m plot;
- Structure of each growth form group as the sum of all the individual percent foliage cover estimates of all native plant species recorded within each growth form group within a 20 m x 20m plot;
- Cover of 'High Threat Exotic' weed species within a 20 m x 20m plot;

- Assessment of function attributes within a 20 m x 50 m plot, including:
 - Count of number of large trees;
 - Tree stem size classes, measured as 'diameter at breast height over bark' (DBH);
 - Regeneration based on the presence of living trees with stems <5 cm DBH;
 - The total length in metres of fallen logs over 10 cm in diameter;
 - Assessment of litter cover within five 1 m x 1 m plots evenly spread within the 20 m x 50 m plot; and
- Number of trees with hollows that are visible from the ground within the 20 m x 50 m plot.

A total of one plot was surveyed across the subject land (see **Figure 3**).

A.3.4.2. 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 the locality. Notes and photographs were taken documenting vegetation and habitat features throughout the subject land.

A.3.4.3. 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. Any incidental vertebrate fauna species that were heard calling or were observed during the surveys were recorded and listed in the total species list for the subject land.

A.4. Key Findings

A.4.1. Vegetation of the subject land

Vegetation within the subject land is likely to have been planted or regenerated naturally since 1956 as determined from review of historical imagery provided in a preliminary site investigation report prepared by Consulting Earth Scientist (2018). Historical aerial imagery of the subject land in 1956 shows that the area was cleared, vacant land with no existing trees.

It was also found that the subject land was not mapped by the Office of Environment and Heritage (OEHS 2016) as part of the Native Vegetation of the Sydney Metropolitan Area project Broad-scale mapping. Generally, the composition, structure and function of vegetation within the subject land and the surrounding landscape have been altered significantly and do not resemble any naturally occurring PCTs. The subject land is predominantly an artificial landscape with planted trees situated along the southern boundary adjacent to the railway fence line. Subsequently, the vegetation within the subject land predominately forms a single mapping unit of 'Exotic Dominated Grassland' vegetation as described below and as shown in **Figure 3**.

A.4.1.1. Exotic Dominated Grassland

The Exotic Dominated Grassland vegetation within the subject land is comprised of a cleared grassland area and a row of trees of planted origin. There were no canopy tree species within the subject land. Small shrubs were present as a row along the southern boundary within the subject land and include the native planted species *Acacia falciformis* (Broad-leaved Hickory), *Acacia floribunda* (White Sally) and *Daviesia acicularis*. Some of these shrubs were dying/dead at the time of the site inspection. The extent of these shrubs was insufficient for them to be mapped a distinct vegetation community (see **Photograph 2**). The ground layer of the vegetation on the subject land is dominated by the exotic *Eragrostis curvula* (African Lovegrass), with other species such as the exotic *Paspalum dilatatum* (Paspalum), *Ehrharta erecta* (Panic Veldtgrass) and *Cenchrus clandestinus* (Kikuyu Grass) and the endemic *Bothriochloa macra* (Red Grass), *Portulaca oleracea* (Pigweed) and *Sporobolus elongatus* (Slender Rat's Tail Grass). Representative photographs of this community are provided in **Photographs 1** and **2** below.

Photograph 1 Exotic Dominated Grassland in the subject land



Photograph 2 Row of planted shrubs along southern boundary of subject land, in dead or dying state



A.4.2. Fauna Habitat

The primary habitat for native fauna within the subject land is the limited native and exotic plantings along the southern boundary of the subject land, most of which are dead or dying, and a log pile consisting of woody debris situated in the north eastern corner of the subject land. The 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. Insectivorous species such as Microchiropteran bats may move through and/or forage for insects across the open exotic grassland within the subject land and within the canopy of trees on neighbouring properties. Four bird species were observed during the site visit, all of which are common, urban adapted species: Indian Mynah (*Acridotheres tristis*), Magpie Lark (*Grallina cyanoleuca*), Australian Raven (*Corvus coronoides*), and Australian Magpie (*Cracticus tibicen*). There are no waterbodies or watercourses found within the subject land ruling out the potential for aquatic or wetland species. No hollow-bearing trees or nests were observed within the subject land, ruling out the possibility of breeding habitat for hollow nesting and roosting species.

A.4.3. Threatened Communities and Species

A.4.3.1. Threatened Ecological Communities

As the vegetation identified as Exotic Dominated Grassland within the subject land is comprised of a combination of exotic and native species of planted origin situated within a highly modified industrial-complex context, it is not considered to conform to any Threatened Ecological Communities listed under either the BC Act or the Commonwealth EPBC Act known from the locality.

A.4.3.2. Threatened Flora

No existing records of threatened flora species are present on 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**). A review of the BioNet Atlas records of threatened fauna species within 5 km of the subject land indicates that there are no existing records of threatened fauna present on 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 Microchiropteran bats.

Microchiropteran bats are 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:

- Large Bent-winged Bat (*Miniopterus orianae oceanensis*);
- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*);
- Eastern False Pippistrelle (*Falsistrellus tasmaniensis*);
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*); and
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).

All of these species are listed as Vulnerable under the BC Act (OEH 2017a, 2017b, 2017c, 2017d, 2019). The subject land contains very limited suitable breeding or refuge habitat for these species as the subject land lacks caves or hollow-bearing trees considered suitable for roosting (OEH 2017a, 2017b, 2017c, 2017d, 2019).

A.5. Impact Assessment

A.5.1. Impacts to Vegetation and Habitat

The approximate area within the site that will be impacted by the project is referred to as the impact area and is shown in **Table 3** below and on **Figure 4**. It is anticipated that the project will result in the impact of approximately 0.18 ha of Exotic Dominated Grassland and planted vegetation, comprising a combination of exotic and native shrubs and groundcovers. Note that two species identified on the subject land *Eragrostis curvula* (African Lovegrass) and *Chloris gayana* (Rhodes Grass), are listed as a Weeds of Regional Concern under the Greater Sydney Weed Management Plan (LLS: Greater Sydney 2019).

Table 2 Areas of vegetation and land to be impacted within the subject land

Vegetation Community	Subject Land (ha)	Impact Area (ha)
Exotic Dominated Grassland	0.18	0.18
TOTAL	0.18	0.18

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 4** systematically comments upon the relevance of each value.

Table 3 Biodiversity values assessment

Biodiversity Value	Assessment within the subject land
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.	<p>Based on a review of historical aerial imagery from 1956, the subject land was cleared, vacant land with no remnant trees. Thus, the row of shrubs identified on site would have been a result of plantings occurring post-1956. Based upon the results of floristic surveys, it has been concluded that the existing vegetation of the subject land is entirely comprised of Exotic Dominated Grassland with a single row of planted native shrubs along the southern boundary of the subject land and does not resemble any naturally occurring PCTs.</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.	As discussed above, 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 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.
(c) biodiversity values, or biodiversity-related values, prescribed by the regulations.	See below

Biodiversity Value	Assessment within the subject land
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 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> <p>No vegetation conforming to any threatened ecological community were observed during the site inspection.</p>
(b) vegetation abundance - being the occurrence and abundance of vegetation at a particular site.	<p>As described above, the subject land has been largely cleared and predominately comprised of exotic and native grasses with a row of plantings of native species. As a result, the project will result in the clearing of Exotic Dominated Grassland Vegetation comprised of grasses and rows of planted trees.</p>
(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 subject land may marginally contribute to habitat connectivity throughout the largely cleared and artificial landscape that dominates the locality. The subject land and its immediate surroundings may function as stepping-stone habitat for highly mobile fauna, providing a small degree of habitat connectivity between the Heathcote National Park, small parks and reserves, such as Mawson Park, Kanbyugal Reserve, and the Australian Botanical Gardens.</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 is not anticipated to exceed the height of existing structures throughout the subject land. 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 water watercourse exists within the subject land. 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 ~0.18 ha area of Exotic Dominated Grassland vegetation that does not conform to any recognised PCT. This area of vegetation may comprise potential and marginal foraging habitat within the broad habitat ranges of highly mobile native fauna including Microchiropteran bats.

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. Nevertheless, when assessing impacts likely from the project in its current form, there is very little likelihood of significant impacts to threatened species.

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. Therefore, we recommend that a waiver for the preparation of a BDAR be sought from DPIE for the proposed project, constituting an SSD.

A.7. References

LLS: Greater Sydney (2019). Greater Sydney Regional Strategic Weed Management Plan 2017 - 2022 - Revised September 2019, Local Land Services NSW.

NSW Government (2017). Biodiversity Assessment Method. Sydney, Office of the Environment and Heritage.

OEH (2016). The Native Vegetation of the Sydney Metropolitan Area - VIS ID 4489. Sydney, Office of Environment and Heritage.

OEH (2017a). "Eastern False Pipistrelle – Profile." 2019, from <https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10331>.

OEH (2017b). "Eastern Freetail-bat - Profile." Accessed 2019, from <https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10544>.

OEH (2017c). "Greater Broad-nosed Bat – Profile." 2019, from <https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10748>.

OEH (2017d). "Yellow-bellied Sheath-tail-bat - profile." Retrieved 2019, from <https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10741>.

OEH (2019). "BioNet Atlas." 2019, from http://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx.

OEH (2019). "Large Bent-winged Bat - profile." 2019, from <https://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10157>.

APPENDIX B : Flora

Species List

Table 4 List of flora species identified on subject land

Family	Scientific Name	Exotic	Common Name	BC Act Status	EPBC Act Status
BAM Flora Plot List:					
Apocynaceae	<i>Araujia sericiflora</i>	*	Moth Vine		
Asteraceae	<i>Bidens pilosa</i>	*	Cobbler's Pegs		
Asteraceae	<i>Conyza bonariensis</i>	*	Flaxleaf Fleabane		
Asteraceae	<i>Conyza sumatrensis</i>	*	Tall fleabane		
Asteraceae	<i>Sonchus oleraceus</i>	*	Common Sowthistle		
Asteraceae	<i>Taraxacum officinale</i>	*	Dandelion		
Caryophyllaceae	<i>Paronychia brasiliana</i>	*	Chilean Whitlow Wort		
Caryophyllaceae	<i>Spergularia rubra</i>	*	Sandspurry		
Chenopodiaceae	<i>Einadia polygonoides</i>		Knotweed Goosefoot		
Chenopodiaceae	<i>Einadia trigonos</i>		Fishweed		
Cyperaceae	<i>Carex inversa</i>		Knob Sedge		
Euphorbiaceae	<i>Euphorbia prostrata</i>	*	Red Caustic Weed		
Oxalidaceae	<i>Oxalis corniculata</i>	*	Creeping Oxalis		
Plantaginaceae	<i>Plantago lanceolata</i>	*	Lamb's Tongues		
Poaceae	<i>Bothriochloa macra</i>		Red Grass		
Poaceae	<i>Bromus catharticus</i>	*	Praire Grass		
Poaceae	<i>Cenchrus clandestinus</i>	*	Kikuyu Grass		
Poaceae	<i>Cynodon dactylon</i>		Common Couch		
Poaceae	<i>Ehrharta erecta</i>	*	Panic Veldtgrass		
Poaceae	<i>Eleusine tristachya</i>	*	Goose Grass		
Poaceae	<i>Elymus scaber</i>		Wheatgrass, Common Wheatgrass		
Poaceae	<i>Eragrostis curvula</i>	*	African Lovegrass		
Poaceae	<i>Eriochloa pseudoacrotricha</i>		Early Spring Grass		

Family	Scientific Name	Exotic	Common Name	BC Act Status	EPBC Act Status
Poaceae	<i>Paspalum dilatatum</i>	*	Paspalum		
Poaceae	<i>Setaria parviflora</i>	*			
Poaceae	<i>Sporobolus elongatus</i>		Slender Rat's Tail Grass		
Polygonaceae	<i>Rumex crispus</i>	*	Curled Dock		
Portulacaceae	<i>Portulaca oleracea</i>		Pigweed		

Species List: Random Meander:

Asteraceae	<i>Lactuca serriola</i>	*	Prickly Lettuce		
Poaceae	<i>Themeda triandra</i>				
Malvaceae	<i>Malva parviflora</i>	*	Small-flowered Mallow		
Poaceae	<i>Chloris gayana</i>	*	Rhodes Grass		
Malvaceae	<i>Sida rhombifolia</i>	*	Paddy's Lucerne		
Poaceae	<i>Eleusine indica</i>	*	Crowsfoot Grass		
Malvaceae	<i>Modiola caroliniana</i>	*	Red-flowered Mallow		
Brassicaceae	<i>Lepidium didymum</i>	*	Lesser Swinecress		
Fabaceae (Faboideae)	<i>Glycine tabacina</i>		Variable Glycine		
Fabaceae (Mimosoideae)	<i>Acacia falciformis</i>		Broad-leaved Hickory		
Fabaceae (Mimosoideae)	<i>Acacia floribunda</i>		White Sally		
Brassicaceae	<i>Brassica rapa</i>	*	Turnip		
Chenopodiaceae	<i>Einadia hastata</i>		Berry Saltbush		
Fabaceae (Faboideae)	<i>Daviesia acicularis</i>				

APPENDIX C :

Threatened species
likelihood of
occurrence



Table 5 Threatened flora likelihood of occurrence

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Fabaceae (Mimosoideae)	<i>Acacia pubescens</i>	Downy Wattle	V	V	1	Occurs on alluviums, shales and at the intergrade between shales and sandstones. Occur in open woodland and forest, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland.	Unlikely to occur. Suitable habitat is not present in subject lands.
Myrtaceae	<i>Eucalyptus scoparia</i>	Wallangarra White Gum	E	V	1	Found in open eucalypt forest, woodland and heaths on well-drained granite/rhyolite hilltops, slopes and rocky outcrops, typically at high altitudes. In NSW, the species is only known from three locations near Tenterfield.	Unlikely to occur. Suitable habitat is not present in subject lands.
Dilleniaceae	<i>Hibbertia puberula</i>		E	-	12	Known to occur from one population at Bankstown Airport in Sydney's southern suburbs. The population comprises fewer than 100 individuals.	Unlikely to occur.
Ericaceae	<i>Leucopogon exolasius</i>	Woronora Beard-heath	V	V	3	Found along the upper Georges River area and in Heathcote National Park. Occurs in woodland on sandstone.	Unlikely to occur. Suitable habitat is not present in subject lands.
Apocynaceae	<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>	<i>Marsdenia viridiflora</i> R. Br. subsp. <i>viridiflora</i> population in the Bankstown, Blacktown,	E	-	1	Found in open shale woodland in vine thickets.	Unlikely to occur. Suitable habitat is not present in subject lands.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
		Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas					
Thymelaeaceae	<i>Pimelea spicata</i>	Spiked Rice-flower	E	E	1256	On the Cumberland Plain sites it is associated with Grey Box communities (particularly Cumberland Plain Woodland variants and Moist Shale Woodland) and in areas of ironbark. In the coastal Illawarra it occurs commonly in Coast Banksia open woodland with a better developed shrub and grass understorey. Coastal headlands and hilltops are the favoured sites.	Unlikely to occur. Suitable habitat is not present in subject lands.
Rhamnaceae	<i>Pomaderris brunnea</i>	Brown Pomaderris	E	V	1	In the region, the species is only found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. It grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines.	Unlikely to occur. Suitable habitat is not present in subject lands.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Orchidaceae	<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	E	E		The species occurs in small pockets of shallow soil in flat areas on top of sandstone rock shelves above cliff lines, or on mossy rocks in gullies. Sclerophyll forest/woodland often occurs growing above where the species occurs, on shale or shale/sandstone transition soils. Flowering time is from October to December. It is currently only known to occur at five locations within western Sydney: Georges River National Park, close to Yeramba Lagoon, Peter Meadows Creek, and St Marys Towers.	Unlikely to occur. Suitable habitat is not present in subject lands.
Myrtaceae	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E	V	3	On south coast of NSW occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest. On the central coast occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities.	Unlikely to occur. Suitable habitat is not present in subject lands.

Table 6 Threatened fauna likelihood of occurrence

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Hylidae	<i>Litoria aurea</i>	Green and Golden Bell Frog	E	V	3	The species is found in a wide range of water bodies except fast moving streams. It commonly inhabits disturbed sites such abandoned quarries and mines, though generally breeds in habitats that include still, shallow, unpolluted water bodies, that are unshaded, contain aquatic plants are free of Mosquito fish and other predators, with a range of diurnal shelter sites (emergent aquatic vegetation).	Unlikely to occur. No waterbodies present in subject land.
Myobatrachidae	<i>Pseudophryne australis</i>	Red-crowned Toadlet	V	-	1	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 to occur. No suitable habitat and no waterbodies present in subject land.
Accipitridae	<i>Hieraaetus morphnoides</i>	Little Eagle	V	-	3	The Little Eagle occupies habitats rich in prey within open eucalypt forest, woodland, or open woodland. She-oak or acacia woodlands and riparian woodlands	Unlikely to occur. No suitable habitat is present in subject land.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
						of interior NSW are also used. For nest sites it requires a tall living tree within a remnant patch.	
Accipitridae	<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	1	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.	Unlikely to occur. No suitable habitat is present in subject land.
Anatidae	<i>Stictonetta naevosa</i>	Freckled Duck	V	-	11	This species occurs primarily in south-eastern and south-western Australia and occurs as a vagrant elsewhere. It breeds in large, temporary swamps created during flood events in the Bulloo and Lake Eyres basins and along the Murray-Darling river system. During inland droughts the species disperses to wetlands in the Murray River basin, and occasionally to coastal areas. The species prefers permanent freshwater swamps and creeks heavy with shrub, sedge, and rush growth. It rests in dense cover during the day, usually in deep water and feeds at dusk and dawn on algae, seeds, and vegetative parts of aquatic sedges and grasses. It nests generally during October to December in dense vegetation near to the water level.	Unlikely to occur. No suitable habitat and no waterbodies present in subject land.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Ardeidae	<i>Ardea ibis</i>	Cattle Egret	-	C,J	76	Found in grasslands, woodlands and wetlands, and is not common in arid areas. It also uses pastures and croplands, especially where drainage is poor. Will also forage at garbage dumps, and is often seen with cattle and other stock.	Unlikely to occur. No suitable habitat is present in subject land.
Artamidae	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V	-	83	In New South Wales the species is widespread from coast to inland, including the western slopes of the Great Dividing Range and farther west. The Dusky Woodswallow is found in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. The species primarily eats invertebrates, mainly insects, which are captured whilst hovering and sallying above the canopy or over water.	Unlikely to occur. No suitable habitat is present in subject land.
Cacatuidae	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V	-	20	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.	Unlikely to occur. No suitable habitat is present in subject land.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Cacatuidae	<i>Calyptrorhynchus lathamii</i>	Glossy Black-Cockatoo	V	-	6	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 to occur. No suitable habitat is present in subject land.
Charadriidae	<i>Pluvialis squatarola</i>	Grey Plover	-	C,J,K	1	Found in coastal areas.	Unlikely to occur. No suitable habitat is present in subject land.
Meliphagidae	<i>Anthochaera phrygia</i>	Regent Honeyeater	E	CE	6	Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. The Regent Honeyeater is a generalist forager, which mainly feeds on the nectar from a wide range of eucalypts and mistletoes.	Unlikely to occur. No suitable habitat is present in subject land.
Meliphagidae	<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V	-	3	Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (<i>Eucalyptus sideroxylon</i>), White Box (<i>E. albens</i>), Inland Grey Box (<i>E. microcarpa</i>), Yellow Box (<i>E. melliodora</i>) and Forest Red Gum (<i>E. tereticornis</i>). In NSW it is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina.	Unlikely to occur. No suitable habitat is present in subject land.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Neosittidae	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-	20	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 to occur. No suitable habitat is present in subject land.
Petroicidae	<i>Petroica boodang</i>	Scarlet Robin	V	-	7	Occurs in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Habitat usually contains abundant logs and fallen timber: these are important components of its habitat. Nests are often found in a dead branch in a live tree, or in a dead tree or shrub.	Unlikely to occur. No suitable habitat is present in subject land.
Psittacidae	<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-	48	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.	Unlikely to occur. No suitable habitat is present in subject land.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Psittacidae	<i>Lathamus discolor</i>	Swift Parrot	E	CE	2886	In NSW mostly occurs on the coast and south west slopes. On the mainland they occur in areas where eucalypts are flowering profusely or where there is abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as <i>Eucalyptus robusta</i> , <i>Corymbia maculata</i> , <i>C. gummifera</i> , <i>E. sideroxylon</i> , and <i>E. albens</i> . Breeds in Tasmania in spring and summer.	Unlikely to occur. No suitable habitat is present in subject land.
Scolopacidae	<i>Gallinago hardwickii</i>	Latham's Snipe	-	C,J,K	16	Seen in small groups or singly in freshwater wetlands on or near the coast, generally among dense cover. They are found in any vegetation around wetlands, in sedges, grasses, lignum, reeds and rushes and also in saltmarsh and creek edges on migration. They also use crops and pasture.	Unlikely to occur. No suitable habitat is present in subject land.
Strigidae	<i>Ninox connivens</i>	Barking Owl	V	-	1	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.	Unlikely to occur. No large trees and no hollows present in subject land, as such, there is no suitable habitat present in subject land.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Strigidae	<i>Ninox strenua</i>	Powerful Owl	V	-	6	In NSW the Powerful Owl lives in forests and woodlands occurring in the coastal, escarpment, tablelands and western slopes environments. Specific habitat requirements include eucalypt forests and woodlands on productive sites on gentle terrain; a mosaic of moist and dry types, with mesic gullies and permanent streams; presence of leafy sub canopy trees or tall shrubs for roosting; presence of large old trees to provide nest hollows. Optimal habitat includes a tall shrub layer and abundant hollows supporting high densities of arboreal marsupials.	Unlikely to occur. No large trees and no hollows present in subject land, as such, there is no suitable habitat present in subject land.
Tytonidae	<i>Tyto novaehollandiae</i>	Masked Owl	V	-	1	Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats.	Unlikely to occur. No large trees and no hollows present in subject land, as such, there is no suitable habitat present in subject land.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Camaenidae	<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	E	-	127	Primarily inhabits Cumberland Plain Woodland. Lives under litter of bark, leaves and logs, or shelters in loose soil around grass clumps. Lives in a very small area on the Cumberland Plain west of Sydney, from Richmond and Windsor south to Picton and from Liverpool west to the Hawkesbury and Nepean Rivers at the base of the Blue Mountains.	Unlikely to occur. Minimal leaf litter and tree debris (bark, leaves, logs etc) within subject land, as such, there is no suitable habitat present in subject land.
Burramyidae	<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V	-	2	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 to occur. No suitable habitat is present in subject land.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Emballonuridae	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	V	-	2	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.	Potential to occur. Possible use of subject land for foraging, no suitable roosting habitats in subject land.
Miniopteridae	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V	-	8	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.	Potential to occur. Possible use of subject land for foraging, no suitable roosting habitats in subject land.
Molossidae	<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V	-	7	Found in dry sclerophyll forest, woodland, swamp forest and mangrove forests east of the Great-dividing Range. Primarily roosts in tree hollows but will also utilise man-made structures.	Potential to occur. Possible use of subject land for foraging, no suitable roosting habitats in subject land.
Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala	V	V	1056	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 habitat, ranging from less than two ha to several hundred hectares in size.	Unlikely to occur. No suitable habitat is present in subject land.

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
Pseudocheiridae	<i>Petauroides volans</i>	Greater Glider	-	V	2	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 to occur. No suitable habitat is present in subject land.
Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	121	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	Unlikely to occur. The species may fly over the subject land as it is situated between two roosting camps (Macquarie Fields (~approximately 12km to North east of subject land) and Brownlow Hill (~ approximately 14 km west of the subject land)). However, there is no suitable foraging or roosting habitats in the subject land. There are no flowering trees and the existing row of planted native

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records	Habitat Requirements	Likelihood of Occurrence
							species are mostly dead.
Vespertilionidae	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-	1	Favours hollow trunks of Eucalypt trees over 20m high in wet sclerophyll forest and coastal mallee. Occasionally found in old wooden buildings.	Potential to occur. Possible use of subject land for foraging, no suitable roosting habitats in subject land.
Vespertilionidae	<i>Myotis macropus</i>	Southern Myotis	V	-	10	Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	Unlikely to occur. No suitable roosting habitat and no waterbodies present in subject land.
Vespertilionidae	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	-	3	Found mainly in the gullies and river systems that drain the Great Dividing Range. Usually roosts in tree hollows and buildings. Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects.	Potential to occur. Possible use of subject land for foraging, no suitable roosting habitats in subject land.

APPENDIX D :

Figures





Legend

 Subject Land

Coordinate System: MGA Zone 56 (GDA 94)



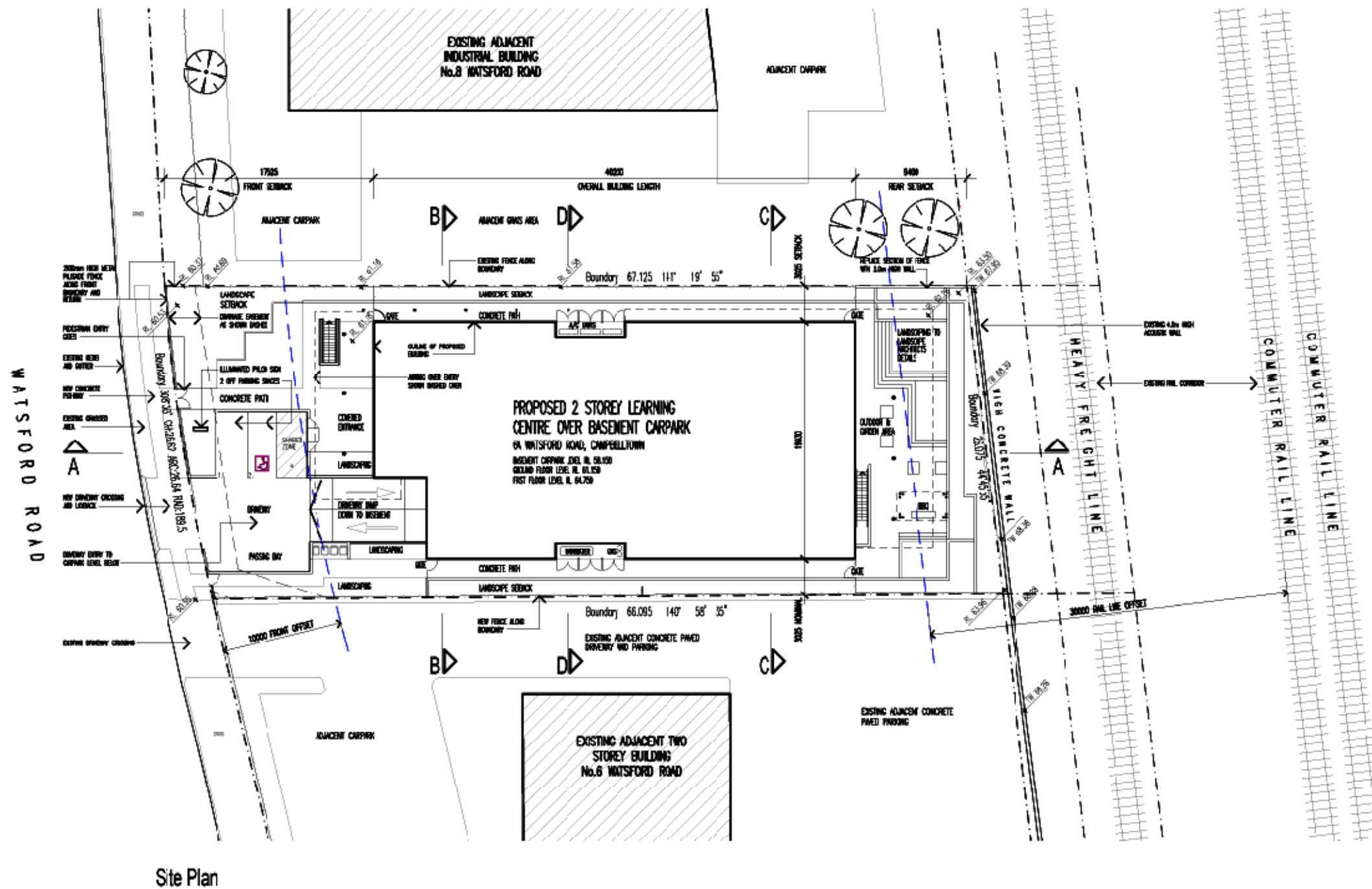
Image Source:
Image © NearMap 2020
Dated: 23/1/2020

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Campbelltown LGA

cumberland
ecology

Figure 1. The subject land

0 50 m



KEY:	
	INDICATES EXISTING TREES TO REMAIN
	INDICATES PROPOSED TREES TO REMAIN
	EXISTING SPOT LEVEL. VERIFY ON SITE.
	PROPOSED FINISH FLOOR LEVEL.
	PROPOSED TOP OF CONCRETE SURFACE.
	PROPOSED FINISH LEVEL ON SPOT RL.

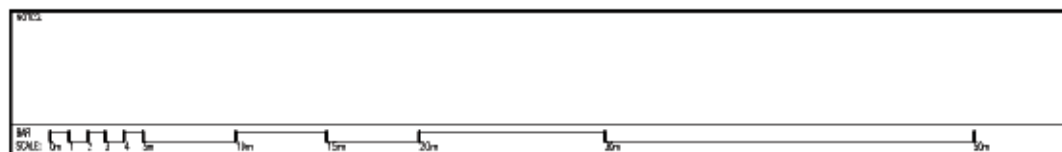
DRAWING LIST:	
ARCHITECTURAL:	
DA-01	SITE PLAN
DA-02	LOWER GROUND FLOOR PLAN
DA-03	GROUND FLOOR PLAN
DA-04	FIRST FLOOR PLAN
DA-05	ROOF PLAN
DA-06	ELEVATIONS
DA-07	SECTIONS
DA-08	SITE ANALYSIS PLAN
DA-09	STREETSCAPE CHARACTER ANALYSIS
DA-10	RENDERED 3D IMAGES ANALYSIS
LANDSCAPE:	
SL-01	LANDSCAPE PLAN
SL-02	PLANTING PLAN
HYDRAULIC:	
SH-01	COVER SHEET
SH-02	SITE PLAN
SH-03	ROOF PLAN
SH-04	CALCULATION SHEET
SH-05	DETAILED SHEET
SH-06	SEGMENT & EMISSION CONTROL PLAN

SITE/DEVELOPMENT FIGURES:	
SITE AREA	1746.3m ²
TOTAL CARPARK AREA	438m ²
INDOOR RECREATION AREA	280m ²
TOTAL PROPOSED OFFICE PARKING	13 CARPARKS
LEARNING CENTRE CALCULATIONS:	
GROUND FLOOR LEVEL	730m ²
FIRST FLOOR LEVEL	721m ²
TOTAL FLOOR AREA	1451m ²

LOCATION PLAN



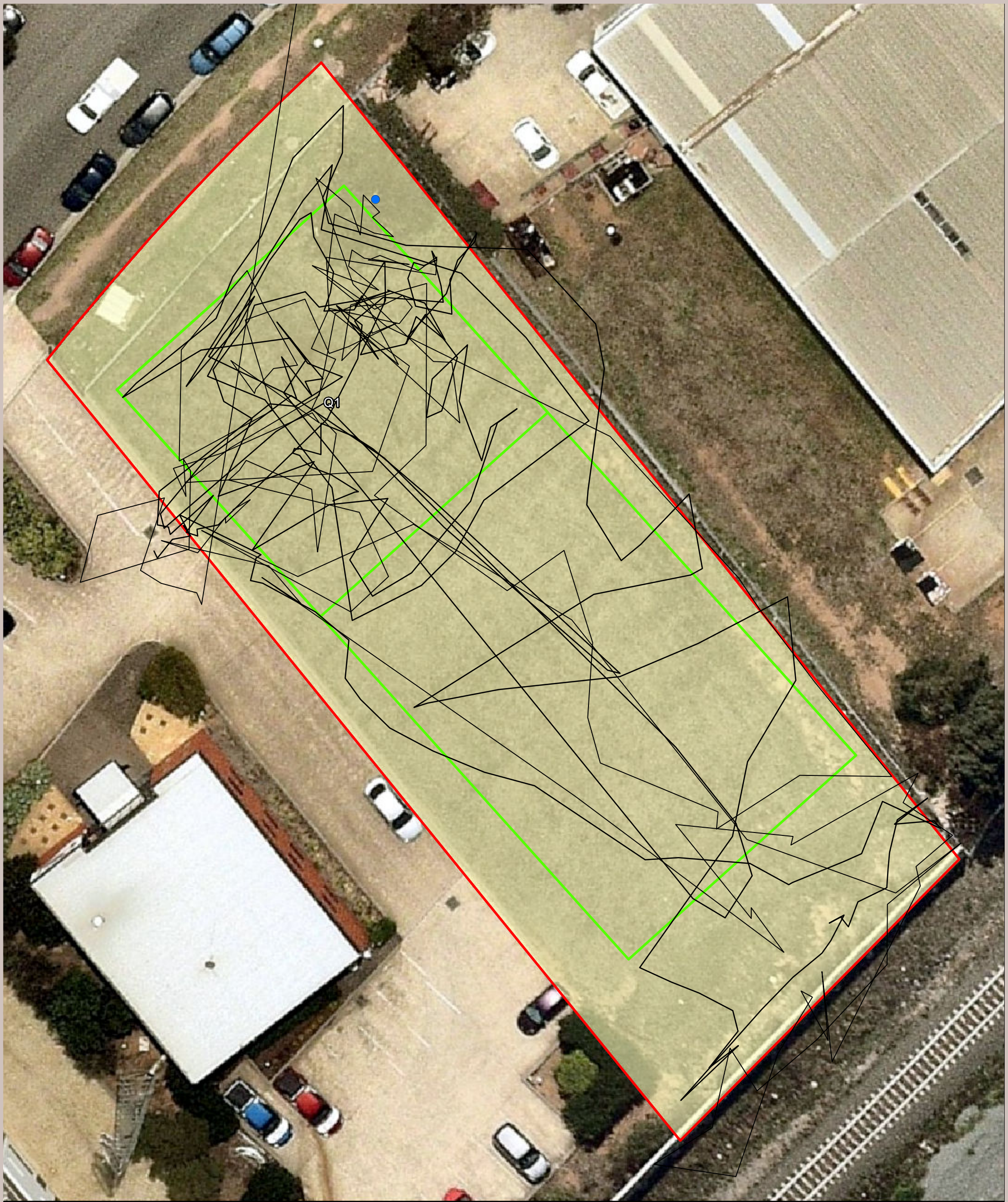
REVISIONS	
No.	DESCRIPTION
1	ISSUE TO COUNCIL



PROJECT:	
NEW LEARNING CENTRE 6A WATSFORD ROAD, CAMPBELLTOWN	
SCALE: 1:200 @ A1	DATE: APRIL 2019
DRAWING: DFP	JOB NO: 1901

DRAWING:	
SITE PLAN	
No. IN SET	DATE
A-01	A

Figure 2. Proposed site plan



Legend

- Subject Land
- BAM Plot Location
- Exotic Grassland
- Survey Effort
- Log Pile

Coordinate System: MGA Zone 56 (GDA 94)

Image Source:
Image © NearMap 2020
Dated: 23/1/2020

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Campbelltown LGA



Figure 3. Vegetation mapping of the subject land





Legend

Subject Land

Impact Area

Coordinate System: MGA Zone 56 (GDA 94)

Image Source:
Image © NearMap 2020
Dated: 23/1/2020

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Campbelltown LGA



Figure 4. Impact area

