PARRAMATTA LEAGUES CLUB HOTEL DEVELOPMENT

Biodiversity Development Assessment Report

Parramatta Leagues Club Pty Ltd

1 December 2021

Final

(02) 9868 1933 | PO Box 2474 Carlingford Court NSW 2118 | cumberlandecology.com.au

Report No. 18157RP2

The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or commendations contained within the report are based only on the aforementioned circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted by Cumberland Ecology.

Version	Date Issued	Amended by	Details
1	30/11/2018	Jesse Luscombe	Draft Report
2	04/12/2018	Jesse Luscombe	Final Report
3	30/5/2019	JL, KW, DR	Amended for Response to Submissions
4	1/12/2021	JL, JR, MP	Amended for modified footprint

Approved by:	**Dr David Robertson**
Position:	Director
Signed:	
Date:	7 December, 2021

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Glossary

Term	Definition
Assessment Area	Area of land within a 1500 m buffer around the outer boundary of the subject land
BAAS	Biodiversity Assessor Accreditation System
BAM	Biodiversity Assessment Method
BC Act	NSW Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
CBD	Central Business District
CEEC	Critically Endangered Ecological Community
DA	Development Application
Development site	The extent of the development footprint for the project
DoEE	Department of Environment and Energy
DP&E	Department of Planning and Environment
EEC	Endangered Ecological Community
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
GIS	Geographic Information Systems
GPS	Global Positioning System
ha	Hectares
IBRA	Interim Biogeographical Regionalisation of Australia
LGA	Local Government Area
LLSA Act	Local Land Services Amendment Act 2016
LMBC	NSW Land Management and Biodiversity Conservation
NSW	New South Wales
OEH	Office of Environment and Heritage
PCT	Plant Community Type
PLC	Parramatta Leagues Club
PMST	Protected Matters Search Tool
SAII	Serious and Irreversible Impact
SEARs	Secretary Environmental Assessment Requirements
SEPP	State Environment Planning Policy
SRD	State and Regional Development 2011 SEPP
SSD	State Significant Development
Subject land	The land on which the development site occurs
TEC	Threatened Ecological Community

Term	Definition
The 'project'	Parramatta Leagues Club Hotel Development Project

Executive Summary

S1 Introduction

Cumberland Ecology was commissioned by APP on behalf of Parramatta Leagues Club Pty Ltd (PLC) to prepare a Biodiversity Development Assessment Report (BDAR) for the PLC Hotel Development Project (the 'project') located at 1 Eels Place, Parramatta. The project involves the development of an integrated hotel, and aquatic, wellness and function centre. This BDAR will form part of the documentation to support an application for State Significant Development (SSD) Consent under Division 4.7 of Part 4 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (EP&A Act). Secretary's Environmental Assessment Requirements (SEARs) for the project were issued by the NSW Department of Planning and Environment (DP&E) on 6 November 2017 which specified the requirement for a BDAR to be prepared in accordance with the Biodiversity Assessment Method (BAM).

The project includes the following components:

- Removal of six (6) planted canopy trees as required, including six (6) native species and one (one) exotic species
- Excavation below ground;
- Construction of a 15 storey hotel building containing approximately 190 accommodation keys, retail uses and wellness recreational uses, ancillary to the hotel; and
- Shared access with Stage 2 construction of the Western Sydney Stadium along the Ross Street extension.

S2 Landscape Features

As the project is being assessed as a site-based project, the assessment area comprises the area of land within a 1,500 m buffer around the outer boundary of the subject land. A summary of the landscape features identified within the assessment area are detailed below:

- Native vegetation covers 9.44% of the assessment area;
- A category 4 stream within 150 m of the development site, (the Parramatta River);
- Areas mapped as coastal wetlands under the Coastal Management SEPP 2016 located 1300 m south-east of the development site;
- Little habitat connectivity exists within the development site. A minor flight path of the Grey-headed Flying-fox is located north-west of the development site;
- No karsts, caves, crevices cliffs or areas of geological significance were identified within the assessment area; and
- No Areas of Outstanding Biodiversity Value were identified within the assessment area.

S3 Native Vegetation Extent

The subject land has been subject to detailed surveys by Cumberland Ecology for the purpose of this BDAR. Vegetation mapping was undertaken by an ecologist on 6 November 2018. Vegetation mapping included inspection of vegetated areas within the subject land and the recording of flora species and identification of Plant Community Types (PCTs), where relevant.

The subject land is predominantly cleared, with limited areas of vegetation comprising planted native and exotic trees. These areas contain no mid- or shrub layer with a mulched ground layer. Although some native plant species occur in the subject land, no naturally occurring vegetation community is considered to exist. Mostly exotic ground covers occur in patches within the mulched areas with few native species occurring within these patches.

As the vegetation occurring within the subject land is planted and predominantly comprises non-endemic species, it is not considered to comprise a naturally occurring vegetation community and does not conform to a PCT.

The native vegetation in the subject land has been assigned to the closest mapped PCT. The closest mapped PCT to the subject land occurs on the banks of the Parramatta River, approximately 150 m west of the subject land. It comprises PCT 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion. Plant Community Type 835 is typically associated with River-flat Eucalypt Forest; a Threatened Ecological Community (TEC) listed under the BC Act. The vegetation within the subject land has been assessed as not conforming to the TEC.

The PCT identified within the subject land was considered to comprise one vegetation zone. This zone was identified as containing low condition vegetation with a vegetation integrity score of 33. Surveys followed the BAM, however the plot dimensions were adjusted to account for the linear nature of vegetation within the subject land. Surveys included establishment of a 10 m x 100 m plot.

S4 Threatened Species

The BAM Calculator generates a list of species credit species requiring assessment utilising a number of variables. The predicted ecosystem credit species for the one vegetation zone within the subject land produced a list of 19 species. None of these species have been removed from consideration.

The following species have been identified as candidate species credit species for further assessment:

- White-bellied Sea-eagle (breeding habitat);
- Eastern Osprey (breeding habitat); and
- Grey-headed Flying-fox (breeding habitat).

Targeted surveys for these species were conducted to determine their presence or absence within the subject land in accordance with Section 6.5 of the BAM.

Prescribed impacts are outlined within the NSW *Biodiversity Conservation Regulation 2017*. The project is considered to result in the following prescribed impacts:

- Impacts on the habitat of a threatened species which comprises non-native vegetation;

- Impacts on the connectivity of habitat that facilitates the movement of threatened species; and
- Impacts on movement of threatened species that maintains their lifecycle.

S5 Avoid and Minimise Impacts

Measures to avoid and minimise prescribed impacts identified in Section 5.4 for the below prescribed impacts are detailed within the report body:

- Threatened species habitat (non-native vegetation);
- Connectivity; and
- Species movement.

S6 Impact Assessment

The project will result in the removal of six planted native trees from the development site including six native species and one exotic species. The remaining native trees within the subject land are either approved for removal under a separate DA or will be retained as part of the project. The six native trees include; two *Corymbia maculata*, one *Eucalyptus grandis* and three *Eucalyptus nicholii*, none of which contain hollows. The single exotic species to be removed includes a *Platanus x acerifolia* (London Plane). These trees are planted with a predominantly cleared understorey.

The native trees to be removed form very small part of a large foraging range for the Grey-headed Flying-fox colony to the west of the subject land. While these trees serve as foraging habitat for the colony, they are not relied upon by the colony and will not significantly impact their foraging activities.

Indirect impacts associated with the project are detailed within the report body and include:

- Inadvertent impacts on adjacent habitat or vegetation; and
- Reduced viability of adjacent habitat due to noise, dust or light spill.

Prescribed impacts associated with the project are detailed in the report body and include impacts on:

- Threatened species habitat (non-native vegetation);
- Connectivity; and
- Species movement.

Table 1 details the measures that will be undertaken to mitigate impacts to native vegetation and habitat during and prior to construction:

Table 1 Mitigation Measures for Impacts to Native Vegetation and Habitat

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of residual impacts
Replacement Planting	Plant 11 advanced sized native trees within the landscaped works associated with the project.	Construction	Once	Contractor	Moderate	None
Dust Management	Establish erosion control and sediment controls as part of construction management.	Construction	Regular	Contractor	Moderate	Sedimentation in Parramatta River
Noise Management	All equipment used during construction is to meet Australian standards to minimise noise generation, Construction noise will be shielded at its source where possible, Construction equipment will be positioned as far from colony as possible; ideally on the eastern side of the subject land, and Establish monitoring plan to determine impacts of noise during construction and operational stages of development.	Construction/ operation	Regular	Contractor	Moderate	Shifting of Grey-headed Flying-fox colony
Light Spill Management	Install lights on the western side of the construction site so as to point them in an easterly direction, the opposite direction to the camp, Minimise the time in which lighting is needed, Use lowest possible brightness on light sources and machinery, and	Construction/ operation	Regular	Contractor	Moderate	Shifting of Grey-headed Flying-fox colony

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of residual impacts
	Turn off lighting at night as this may assist in navigation, and Adaptive management strategy to determine impacts of light spill during construction and operational stages of development.					
Bird Collision Management	Utilise patterned or ultraviolet reflective glazing to allow for urban birds to distinguish the development, or green walls and other facade treatments to minimise large expanses of glass surfaces,	Operation	Once	Contractor	Low	Increase mortality of urban native birds
Grey-headed Flying-fox Monitoring	An ecologist with experience in Flying-fox management experience must be engaged to provide regular monitoring of the camp; ecologist to determine the camp numbers at least one week prior to construction	12 months prior to construction, during construction, and 24 months following construction in the operational stage of development	Quarterly	Contractor	Low	Changed behaviour or shifting of the Grey-headed Flying-fox colony
Adaptive Management Strategy	Enacted if the Grey-headed Flying-fox colony decreases in number or shifts in location after construction commences	Regular	When triggered	Contractor	High	Changed behaviour or shifting of the Grey-headed Flying-fox colony

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of residual impacts
Stop Work Triggers	If more than 30%of the Grey-headed Flying Fox colony takes flight other than at dusk or dawn, Individuals are in flight more than 20 minutes other than at dusk or dawn, Adverse weather conditions or Severe Weather Warnings as issued by the Bureau of Meteorology, If Grey-headed Flying-foxes have been killed, injured or are showing signs of fatigue due to the development activities.	Regular	When triggered	Contractor	High	Death or injury to Grey-head Flying-foxes
Habitat Improvement	Installation of nest foxes for hollow-dwelling birds and Microchiropteran bats in retained vegetation within the subject land and subject to approval, within retained vegetation in surrounding vegetation (e.g. *Platanus x acerifolia* adjacent to the Parramatta Leagues Club carpark), and Tree trunks from trees to be removed are to be salvaged and used in landscaped areas within the subject land where possible.	Construction/ operation	Once	Contractor	Low	None
Other Mitigation Measures	The development footprint will be clearly flagged to ensure retention of planted Corymbia citriodora outside the construction area,	Construction	Regular	Contractor	Low	Death or injury to Grey-head Flying-foxes

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of residual impacts
	Placement of large machinery and plant equipment will be minimised in the north-western portion of the site, and Pump silencers are to be used on all large concrete pumps to the eastern side of the site. Removal of tree limbs or trees are not authorised when flying-foxes are in or within 30m of the tree.					

The extent of impacts due to noise, dust and light spill are the only uncertain impacts likely to be relevant to the project. Management of these impacts will be through implementation of the methods of adaptive management outlined below. The adaptive management strategy will be enacted if the monitoring demonstrates that the Grey-headed Flying-fox colony is decreasing in number or shifting location after construction commences. The methods of adaptive management include:

- During construction, near the Parramatta River and Cumberland Hospital East and West, the proponent will engage a suitably qualified and experienced fauna specialist to monitor the behaviour of the Grey-headed Flying-fox colony;
- Monitoring will commence 12 months before the commencement of construction within 300 m of the Grey-headed Flying-fox colony to establish baseline behaviour;
- Monitoring will be undertaken monthly in consultation with the OEH with the results compiled in a monitoring report submitted to the OEH following each survey;
- Monitoring will include species present, numbers, extent of the colony as a map, breeding status, and condition of animals;
- Monitoring will continue throughout construction and 24 months following construction during the operational phase of the project to assess the potential noise and light spill impacts due to the proposed rooftop bar; and
- If at any period, monitoring suggests that construction is changing the behaviour of the colony, causing a decrease in number of the colony and/or the colony is shifting location, the proponent must consult with the OEH to determine whether additional mitigation measures are required.
- Works must be scheduled to minimise disturbance to the Flying-fox camp. Noisy work near the camp must not occur during breeding season when there are crèching young present (usually January-February).

No potential Serious and Irreversible Impacts (SAII) entities have been assessed as likely to occur as a result of the proposed development.

As the project includes the removal of six native trees, offsets are required. In the absence of formal guidance on how planted vegetation is assessed under BAM, this assessment has assigned the vegetation to the closest mapped PCT to determine the offset liability. This assessment indicated that the removal of these trees results in an estimated credit liability of 1 ecosystem credit associated with PCT 835.

Further impacts of the project may entail minor indirect impacts and prescribed impacts. This includes indirect impacts on the Grey-headed Flying-fox, due to the proximity of the development to the colony occurring along the Parramatta River. The main impacts affecting this species include short-term impacts from construction activities and long-term impacts from disruption of flyways.

With the implementation of the proposed mitigation measures and the offsetting described previously, it is considered that the impacts of this project on biodiversity, in particular the Grey-headed Flying Fox will be minimal and can be appropriately managed.

1. Introduction

Cumberland Ecology was commissioned by APP on behalf of Parramatta Leagues Club Pty Ltd (PLC) to prepare a Biodiversity Development Assessment Report (BDAR) for the PLC Hotel Development Project (the 'project'). The project involves the development of an integrated hotel, and aquatic, wellness and function centre. This BDAR will form part of the documentation to support an application for State Significant Development (SSD) Consent under Division 4.7 of Part 4 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1. Requirement of the BDAR

Section 7.9 of the NSW *Biodiversity Conservation Act 2016* (BC Act), requires all Development Applications (DAs) for SSD to be accompanied by a BDAR unless the Planning Agency Head and the Environment Agency Head determines that the proposed development is not likely to have any significant impact on biodiversity values. Secretary's Environmental Assessment Requirements (SEARs) for the project were issued by the NSW Department of Planning and Environment (DP&E) on 6 November 2017 which specified the requirement for a BDAR to be prepared in accordance with the Biodiversity Assessment Method (BAM).

In addition to noting the standard requirements for a BDAR, the SEARs include the following requirement:

> *The BDAR is to also address the impacts of the proposed development on the existing Grey-headed Flying-fox colony adjacent the site. The report is to specifically consider the impact of construction noise, including any cumulative impacts of other developments in the area. The report is to provide detail on how the proposal will minimise and/or offset any identified impacts on the colony, this may include options to shift the location of the camp.*

Whilst the project is not considered likely to have a significant impact on biodiversity values, this BDAR has been prepared to address the requirements of the SEARs, specifically in relation to the indirect impacts on the Grey-headed Flying-fox.

This updated version of the BDAR has been submitted in response to modifications made to the development site by Parramatta Leagues Club following the Response to Submission Phase of the project. Road access to the building has been revised, prompting modification to the development site and thus impacted areas.

1.2. Purpose

The purpose of this BDAR is to document the findings of an assessment undertaken for the project in accordance with Stage 1 (Biodiversity Assessment) and Stage 2 (Impact Assessment) of the BAM. Specifically, the objectives of this BDAR are to:

- Identify the landscape features and site context (native vegetation cover) within the subject land and assessment area;
- Asses native vegetation extent, plant community types (PCTs), threatened ecological communities (TECs) and vegetation integrity (site condition) within the subject land;
- Assess habitat suitability for threatened species that can be predicted by habitat surrogates (ecosystem credits) and for threatened species that cannot be predicted by habitat surrogates (species credit species);

- Identify potential prescribed biodiversity impacts on threatened species;
- Describe measures to avoid and minimise impacts on biodiversity values and prescribed biodiversity impacts during project planning;
- Describe impacts to biodiversity values and prescribed biodiversity impacts and the measures to mitigate and manage such impacts;
- Identify the thresholds for the assessment and offsetting of impacts, including:
    - Impact assessment of potential entities of serious and irreversible impacts (SAII);
    - Impacts for which an offset is required;
    - Impacts for which no further assessment is required;
- Describe the application of the no net loss standard, including the calculation of the offset requirement.

1.3. Project Description

1.3.1. Location

The subject land comprises land within portions of Lot 369 DP 752058, Lot 7054 DP 1074335 and Residual Crown Plan 80-3000 (Sydney). The project is located on land commonly known as 1 Eels Place, Parramatta (although is also variously known as 1 Parramatta Park Land, Parramatta by Parramatta Council, and 17-19 O'Connell Street, Parramatta due to current linkages with Parramatta Leagues Club). It is to the south of the current Parramatta Leagues Club building and north of Parramatta Stadium (undergoing redevelopment) and currently contains parking on a bitumen surface, trees and services. The site is owned by Parramatta Park Trust and is under an exclusive lease by Parramatta Leagues Club.

A site map and location map have been prepared in accordance with the BAM and are presented in **Figure 1** and **Figure 2**, respectively.

1.3.2. Project Overview

The project involves the demolition of existing improvements and erection of a 15 storey hotel building (plus a single level basement for services) accommodating 190 keys and includes the lower 4 levels containing a café, pool, fitness/recreational uses and a function room ancillary to the hotel. Access is proposed from Eels Place to the north of the building (via an access road to the adjoining Parramatta Leagues Club). The proposal includes public domain works and service upgrades surrounding the building to integrate the building with the surrounding area and infrastructure. No additional parking is proposed, given the adjoining approved large carpark.

The proposal is depicted within the conceptual plans by HASSELL as attached to the EIS. The project includes the following components:

- Removal of six (6) planted canopy trees as required, including six (6) native species and one (one) exotic species (**Figure 3**);

- Excavation to one part below ground;
- Construction of a 15 storey hotel building containing approximately 190 accommodation keys, retail uses and wellness recreational uses, ancillary to the hotel; and
- Shared access with Stage 2 construction of the Western Sydney Stadium along Ross Street extension.

The layout of the project is shown in **Figure 4**.

1.3.3. Identification of the Development Site Footprint

For the purposes of this assessment, the terms development site and development site footprint represent the same area. The area impacted by the project includes the hotel footprint and shared access, as shown in **Figure 4**. The construction and operational footprints are wholly contained within the development site.

It is noted that some vegetation within the development site will not be removed as part of the project, including the single *Corymbia citriodora* (Lemon-scented Gum) in the east of the development site, and that a number of trees within the shared access area have already been approved for removal under the Western Sydney Stadium SSD. Therefore this assessment only assesses trees to be removed by the project, despite other trees occurring within the development site.

1.3.4. General Description of the Development Site

Historically, the development site has been cleared of native vegetation. The land uses following clearing have included residential development initially and subsequently, development in the form of the PLC. The development site currently comprises hardstand areas and planted trees. The development site and wider subject land are used as a public area in conjunction with the Western Sydney Stadium currently under construction.

1.4. Information Sources

1.4.1. Databases

A number of databases were utilised during the preparation of this BDAR, including:

- NSW Office of Environment and Heritage (OEH) BioNet Atlas;
- OEH Threatened Biodiversity Data Collection;
- OEH BioNet Vegetation Classification database;
- Commonwealth Department of the Environment and Energy (DoEE) Species Profile and Threat Database; and
- DoEE Protected Matters Search Tool (PMST).

1.4.2. Literature

This BDAR and/or spatial data from the following documents were utilised in the preparation of this BDAR:

- OEH (2016). *The Native Vegetation of the Sydney Metropolitan Area.*. NSW Office of Environment and Heritage, Sydney.

Other literature consulted during the preparation of this BDAR is referenced in text.

1.4.3. Aerial Photography

The aerial imagery utilised in this BDAR is sourced from Nearmap and is dated 9 September 2018.

1.5. Authorship and Personnel

This document has been authorised by Dr David Robertson (BAM Accredited Assessor No: BAAS17027). This document, and associated field surveys and Geographic Information Systems (GIS) mapping, was prepared with the assistance of additional personnel as outlined in **Table 2**.

Table 2 Personnel

Name	Tasks	Relevant Qualifications/Training	BAM Accredited Assessor No.
Dr David Robertson	Report review	Doctor of Philosophy. Ecology, University of Melbourne, 1986 Bachelor of Science (Honours) in Ecology, University of Melbourne, 1980 BAM Accredited Assessor Training. Muddy Boots, 2017	BAAS17027
Trevor Meers	Report review	Doctor of Philosophy. Restoration Ecology. University of Melbourne, 2007 Bachelor of Applied Science (Honours) in Natural Resource Management, Deakin University 2002 BAM Accredited Assessor Training. Muddy Boots, 2018	BAAS18119
Katrina Wolf	Report preparation	Bachelor of Science (Environmental). The University of Sydney, 2007 BAM Accredited Assessor Training. Muddy Boots, 2017	BAAS18010
Jesse Luscombe	Report preparation, field surveys, GIS	Bachelor of Marine Science. Macquarie University, 2013 Certificate III in Conservation and Land Management. TAFE NSW, 2016 BAM Accredited Assessor Training. Muddy Boots, 2018	-
Eleanor Saxon	Field surveys	Bachelor of Science (Honours). The University of New South Wales, 2017 Bachelor of Environmental Management. The University of New South Wales, 2016	-
Bryan Furchert	Field surveys	Bachelor of Biodiversity and Conservation. Macquarie University, 2012 Diploma of Conservation and Land Management. TAFE NSW, 2008	BAAS18095

Name	Tasks	Relevant Qualifications/Training	BAM Accredited Assessor No.
		BAM Accredited Assessor Training. Muddy Boots, 2017	
Michael Davis	Field surveys	Bachelor of Biodiversity and Conservation. Macquarie University, 2016 BAM Accredited Assessor Training. Muddy Boots, 2017	-

2. Landscape Features

2.1. Site Context

2.1.1. Assessment Area

As the project is being assessed as a site-based project, the assessment area comprises the area of land within a 1,500 m buffer around the outer boundary of the subject land. The location of the assessment area is shown in **Figure 2**.

2.1.2. Native Vegetation Cover

The native vegetation extent was determined through the use of GIS. To map native vegetation cover within the subject land and assessment area, this assessment utilised the data collected within the subject land by Cumberland Ecology in conjunction with broad scale mapping of the Sydney metropolitan area by OEH (2016). The native vegetation cover within the assessment area is shown in **Figure 2**. It occupies approximately 69.07 ha, which represents 9.44% of the assessment area. Therefore the native vegetation cover value is assigned to the cover class of 0-10%.

2.2. Landscape Features

Landscape features identified within the subject land and assessment area are outlined below. The extent of these features within the subject land is shown in **Figure 1** and the extent within the assessment area is shown in **Figure 2**.

2.2.1. IBRA Bioregions and IBRA Subregions

The subject land and assessment area occurs within the Sydney Basin Bioregion and within the Cumberland Subregion.

2.2.2. Rivers, Streams and Estuaries

The subject land and assessment area occurs within the Sydney Harbour and Parramatta River catchment. Notable surface drainage systems include the Parramatta River approximately 150 m west of the subject land. Category 1, 3 and 4 streams have been identified within the assessment area. A buffer of 10 m, 30 m and 40 m respectively on either side of the waterways applies to streams, in accordance with Appendix 3 of the BAM.

The location of streams and their associated riparian buffers within the assessment area are shown in **Figure 2**.

2.2.3. Important Local Wetlands

No important wetlands listed in the Directory of Important Wetlands in Australia are present in the subject land or assessment area. Coastal wetlands listed under the State Environmental Planning Policy (Coastal Management) 2018 do not occur within the subject land. However an area of coastal wetlands, and associated proximity area and coastal environment, occur within the assessment area, approximately 1,300 m south east of the subject land.

The location of wetland areas within the assessment area are shown in **Figure 2**.

2.2.4. Habitat Connectivity

The subject land and assessment area is located in a highly urban context and are surrounded by development on the northern, eastern and southern boundaries. The density of the urban landscape within the assessment area has significantly reduced habitat connectivity in the form of vegetation. Fragmented connectivity occurs along the Parramatta River and connects habitat within Parramatta Park to vegetated lands outside of the assessment area to the north and north east. Additionally, as a Grey-headed Flying-fox camp is located to the west of the subject land, fly-ways occur throughout the assessment area when the species disburses for foraging.

2.2.5. Karsts, Caves, Crevices, Cliffs and Areas of Geological Significance

No karsts, caves, crevices, cliffs or areas of geological significance have been identified within the assessment area.

2.2.6. Areas of Outstanding Biodiversity Value

No Areas of Outstanding Biodiversity Value have been mapped within the assessment area.

2.2.7. Additional Features Required by SEARs

The SEARs include a requirement for the BDAR to specifically assess the impacts of the project on the Grey-headed Flying-fox (Pteropus poliocephalus) colony located adjacent to the subject land. The location of the Grey-headed Flying-fox colony in relation to the subject land and assessment area is shown in **Figure 8**.

2.2.8. Mitchell Landscapes

The Mitchell Landscape that occurs in the subject land and surrounds is Ashfield Plains. These landscapes typically comprise undulating hills and valleys on horizontal Triassic shale and siltstone and are generally at an elevation of 0 to 45 m, Ashfield Plains are a coastal extension of the Cumberland Plain Landscape.

2.2.9. Soil Hazard Features

Soil Hazard Features are not required to be identified or mapped for SSDs, and much of the subject land is bitumen pavement.

3. Native Vegetation

3.1. Native Vegetation Extent

The subject land has been subject to detailed surveys by Cumberland Ecology for the purpose of this BDAR. Vegetation mapping was undertaken by an ecologist on 6 November 2018. Vegetation mapping included inspection of vegetated areas within the subject land and the recording of flora species and identification of PCTs, where relevant.

The subject land is predominantly cleared, with limited areas of vegetation comprising planted native and exotic trees. These areas contain no mid- or shrub layer with a mulched ground layer. Although some native plant species occur in the subject land, no naturally occurring vegetation community is considered to be present. The ground layer within mulched areas is mostly exotic with few native species occurring periodically in these patches.

The vegetation extent within the subject land is summarised in **Table 3** and shown in **Figure 5**. **Photograph 1** provides an example of the cleared and vegetated areas within the subject land.

Native vegetation within the subject land includes: two *Corymbia maculata* (Spotted Gum), one *Eucalyptus grandis* (Flooded Gum), four *Eucalyptus microcorys* (Tallowwood), one *Eucalyptus maidenii* (Maiden's Gum) and three *Eucalyptus nicholii* (Narrow-leaved Black Peppermint). While these canopy trees are native to NSW, only *Corymbia maculata* (Spotted Gum) is considered likely to occur in the immediate locality of the subject land.

Eucalyptus nicholii (Narrow-leaved Black Peppermint) is listed as Vulnerable under the BC Act and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). *Eucalyptus nicholii* is sparsely distributed but widespread on the New England Tablelands from Nundle to north of Tenterfield in northern NSW (OEH 2014). As this species are not endemic to the study area or locality, and the individuals have been planted, they are not considered to be natural components of the landscape and their ecological significance is reduced.

The exotic vegetation within the subject land also comprises planted canopy trees and exotic ground covers. The planted trees comprise one (1) *Corymbia citriodora* (Lemon-scented Gum) and one (1) *Platanus x acerifolia* (London Plane). Although (*Corymbia citriodora* Lemon-scented Gum) is native to Australia, it is not endemic to NSW and has therefore been considered as exotic for this assessment. Whilst the canopy of these trees extends over a large area, there is no understorey as asphalt extends to the base of the trees. The remaining area within the subject land comprises cleared land in the form of a car park.

Table 3 Vegetation extent within the subject land

Vegetation Type	Area (ha)
Planted native vegetation	0.04
Exotic vegetation	0.12
Cleared land	1.09
Total	1.25

Photograph 1 Overview of vegetation within the subject land, Corymbia citriodora (left) and planted natives (right)

3.2. Plant Community Types

As the vegetation occurring within the subject land is planted and predominantly comprises non-endemic species, it is not considered to comprise a naturally occurring vegetation community and does not conform to a PCT. Advice provided by OEH on a separate project with the same planted vegetation issue is as follows:

> *Where there is native vegetation on site that does not conform to a PCT OEH's advice is to apply the BAM and prepare a BDAR assessing it against the best-fit PCT. OEH will look to provide some additional advice on this to assist assessors in the short term. In the medium term, it appears the best solution will be to include an additional streamlined module in the BAM to assess planted vegetation and we hope to have this in place during the second half of 2018.*

To date, OEH has not released any further guidance to Accredited Assessors on this matter. Therefore for the purpose of this BDAR, the native vegetation has been assigned to the closest mapped PCT. The closest mapped PCT to the subject land occurs on the banks of the Parramatta River, approximately 150 m west of the subject land. It comprises PCT 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion. PCT 835 is typically associated with River-flat Eucalypt Forest; a Threatened Ecological Community (TEC) listed under the BC Act. The vegetation within the subject land has been assessed as not conforming to the TEC.

A summary of the selected PCT is as follows:

- **PCT**: 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion;
- Vegetation Formation: Forested Wetland;
- **Vegetation Class**: Coastal Floodplain Wetlands;
- **Area**: 0.04 ha (0.04 ha to be cleared within development site);

- Percent Cleared: 93%;
- **TEC Status**: Not listed; and
- **Justification of PCT Selection**: As vegetation comprises planted vegetation, the closest mapped PCT has been selected.

Figure 6 shows the PCT identified within the subject land.

3.3. Vegetation Integrity Assessment

The PCT identified within the subject land was considered to comprise one vegetation zone. A summary of this vegetation zone is provided in **Table 4**.

One vegetation integrity plot was undertaken within this vegetation zone, which meets the minimum number of plots required under BAM. The vegetation integrity of each vegetation zone has been assessed for composition, structure and function against the benchmark data for PCT 835.

Table 4 Vegetation zones and vegetation integrity assessment

Zone	PCT	Condition	Area (ha)	Patch Size (ha)	Vegetation Integrity Score
1	835	Low	0.04	101	33

Surveys followed the BAM, however the plot dimensions were adjusted to account for the linear nature of vegetation within the subject land. Surveys included establishment of a 10 m x 100 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 10 m x 40 m plot;
- Structure of each growth form group as the sum of all the individual projected foliage cover estimates of all native plant species recorded within each growth form group within a 10 m x 40m plot;
- Cover of 'High Threat Exotic' weed species;
- Assessment of function attributes within a 10 m x 100 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 steams <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 10 m x 100 m plot; and
- Number of trees with hollows that are visible from the ground within the 10 m x 100 m plot.

4. Threatened Species

4.1. Threatened Species for Assessment

The BAM Calculator generates a list of species credit species requiring assessment utilising a number of variables. The following criteria have been utilised to predict the threatened species requiring further assessment:

- IBRA subregion: Cumberland;
- Geographic constraints: the Parramatta River is adjacent to vegetation.
- Associated PCTs: 835 – Forest Red Gum – Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion;
- Percent native vegetation cover in the assessment area: 9.44%;
- Patch size: PCT 835: ≥100 ha; and
- Credit type: Ecosystem and Species.

It is noted that whilst no PCTs have been identified within the subject land, this assessment utilised the closest PCT mapped by OEH (2016) to determine a list of potential species credit species.

4.2. Ecosystem Credit Species

The predicted ecosystem credit species for the one vegetation zone within the subject land includes:

- Regent Honeyeater (*Anthochaera phrygia*) (Foraging);
- Dusky Woodswallow (*Artamus cyanopterus*);
- Australasian Bittern (*Botaurus poiciloptilus*);
- Speckled Warbler (Pyrrholaemus sagittatus);
- Brown Treecreeper (*Climacteris picumnus*) (eastern subspecies);
- Spotted-tailed Quoll (*Dasyurus maculatus*);
- Little Lorikeet (Glossopsitta pusilla);
- White-bellied Sea-Eagle (*Haliaeetus leucogaster*) (Foraging);
- Swift Parrot (*Lathamus discolor*) (Foraging);
- Hooded Robin (south-eastern form) (*Melanodryas cucullata*);
- Little Bentwing-bat (*Miniopterus australis*) (Foraging);
- Eastern Bentwing-bat (*Miniopterus schreibersii*) (Foraging);
- Eastern Freetail-bat (Mormopterus norfolkensis);

- Eastern Osprey (*Pandion Haliaeetus*) (Foraging);
- Scarlet Robin (*Petroica boodang*);
- Flame Robin (Petroica phoenicea);
- Koala (Phascolarctos cinereus) (Foraging);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (Foraging); and
- Diamond Firetail (Stagonopleura guttata).

None of these species have been removed from consideration.

4.3. Species Credit Species

4.3.1. Threatened Species Requiring Assessment

Table 5 lists the species credit species predicted by the BAM Calculator and details whether species have been further assessed based on the presence or absence of habitat constraints or microhabitats within the subject land.

Under Section 6.4.1.13 of the BAM, species credit species can be excluded from further assessment if it is determined that none of the habitat constraints are present within the subject land. Under Section 6.4.1.17 of the BAM, species credit species can be excluded from further assessment if an assessment of habitat constraints and microhabitats determines that the habitat within the subject land is substantially degraded such that the species credit species is unlikely to occur.

4.3.2. Assessment of Habitat Constraints and Microhabitats

A habitat assessment was undertaken by an ecologist on 6 November 2018. The habitat assessment focused on habitat features relevant to the species credit species predicted to occur. This included determining the presence/absence of the habitat constraints identified for the predicted threatened fauna species and the condition of these habitat constraints and other microhabitats.

It is noted that a species credit species that was not predicted by the BAM Calculator, has been recorded within the subject land. Three individuals of *Eucalyptus nicholii* occur within the subject land. As these individuals have been planted and the species is not endemic to the Sydney region, these trees have not been assessed as species credit species within this assessment. Clarification regarding this approach has been sought from OEH, however advice was not received prior to the finalisation of this assessment.

Table 5 Assessment of species credit species habitat

Species Credit Species	Habitat Constraint	Included or Excluded	Reason for Inclusion or Exclusion
FLORA			
Callistemon linearifolius Netted Bottle Brush	None	Excluded	No suitable habitat within the subject land, with the understorey previously cleared.
Cynanchum elegans White-flowered Wax Plant	None	Excluded	No suitable habitat within the subject land, with the understorey previously cleared.
Eucalyptus benthamii Camden White Gum	None	Excluded	No suitable habitat within the subject land, with the canopy previously cleared.
Hibbertia sp. Bankstown	None	Excluded	No suitable habitat within the subject land, with the understorey previously cleared.
Marsdenia viridiflora ssp. viridiflora	None	Excluded	No suitable habitat within the subject land, with the understorey previously cleared.
Persicaria elatior Tall Knotweed	Within 50 m of semi-permanent or ephemeral wet areas, swamps or waterbodies.	Excluded	Habitat constraint not present within subject land.
Persoonia hirsuta Hairy Geebung	None	Excluded	No suitable habitat within the subject land, with the understorey previously cleared.
Pilularia novae-hollandiae Austral Pillwort	None	Excluded	No suitable habitat within the subject land, with the understorey previously cleared.
Pomaderris brunnea Brown Pomaderris	None	Excluded	No suitable habitat within the subject land, with the understorey previously cleared.

Species Credit Species	Habitat Constraint	Included or Excluded	Reason for Inclusion or Exclusion
Wahlenbergia multicaulis	Land situated in damp, disturbed sites	Excluded	Habitat constraint not present within subject land.
FAUNA			
Anthochaera phrygia Regent Honeyeater (Breeding)	As per mapped areas	Excluded	Habitat constraint not present within subject land.
Haliaeetus leucogaster White-bellied Sea Eagle (Breeding)	Living or dead mature trees within suitable vegetation within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines	Included	Habitat constraint present within subject land. Requires further assessment.
Lathamus discolor Swift Parrot (Breeding)	As per mapped areas	Excluded	Habitat constraint not present within subject land.
Litoria aurea Green and Golden Bell Frog	Within 1km of wet areas, within 1km of swamp or within 1km of waterbody	Excluded	Habitat constraint present within the subject land, however habitat features (wet areas, swamp, waterbody) absent within subject land.
Meridolum corneovirens Cumberland Plain Land Snail	None	Excluded	No suitable habitat within the subject land, with the understorey previously cleared and an absence of fallen logs, and leaf litter.
Miniopterus australis Little Bentwing-bat (Breeding)	Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'; observation type code 'E nest-roost'; with numbers of	Excluded	Habitat constraint not present within subject land.

Species Credit Species	Habitat Constraint	Included or Excluded	Reason for Inclusion or Exclusion
	individuals >500; or from the scientific literature.		
Miniopterus schreibersii oceanensis Eastern Bentwing-bat (Breeding)	Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave;" observation type code "E nest-roost;" with numbers of individuals >500	Excluded	Habitat constraint not present within subject land.
Myotis macropus Southern Myotis	Within 200 m of riparian zone, bridges, caves or artificial structures within 200 m of riparian zone and rivers, creeks, billabongs, lagoons, dams and other waterbodies on or within 200m of the site	Excluded	Habitat constraint present within the subject land, however suitable hollow-bearing trees absent within the subject land.
Pandion cristatus Eastern Osprey (Breeding)	Living and dead trees (>15m) or artificial structures within 100m of a floodplain for nesting	Included	Habitat constraint present within subject land. Requires further assessment.
Petaurus norfolcensis Squirrel Glider	None	Excluded	No suitable habitat present within subject land, with no hollow-bearing trees present
Phascolarctos cinereus Koala (Breeding)	Areas identified via survey as important habitat. Important' habitat is defined by the density of koalas and quality of habitat determined by on-site survey	Excluded	No important habitat identified within the subject land.

Species Credit Species	Habitat Constraint	Included or Excluded	Reason for Inclusion or Exclusion
Pteropus poliocephalus Grey-headed Flying-fox (Breeding)	Breeding camps	Included	Known colony adjacent to subject land. Requires further assessment.

4.3.3. Candidate Species for Further Assessment

The following species were identified as candidate species credit species for further assessment:

- White-bellied Sea-eagle (breeding habitat);
- Eastern Osprey (breeding habitat); and
- Grey-headed Flying-fox (breeding habitat).

These species required targeted surveys to determine their presence or absence within the subject land in accordance with Section 6.5 of the BAM.

4.3.4. Presence of Candidate Species

4.3.4.1. Surveys

Targeted surveys for the candidate species credit species for further assessment undertaken within the subject land are summarised in **Table 6**. Survey locations are shown in **Figure 7**.

Table 6 Surveys for candidate species credit species

Species	Suitable Survey Months	Surveys Undertaken
White-bellied Sea-eagle (breeding habitat)	July – December	Subject land inspected by an ecologist for the presence of nests and individuals for a one hour period on 6 November 2018.
Eastern Osprey (breeding habitat)	April – November	Subject land inspected by an ecologist for the presence of nests and individuals a one hour period on 6 November 2018.
Grey-headed Flying-fox	October – December	Subject land inspected by an ecologist for the presence of roosting individuals on 6 November 2018. Additional surveys undertaken by two ecologists for a period of two hours on 12 November 2018 to determine fly-over and foraging occurrences within the subject land.

4.3.4.2. Species Occurrence

No individuals of the White-bellied Sea-eagle or Eastern Osprey were detected during surveys of the subject land, and no nests of these species were observed. As these species were not detected within the subject land, or considered likely to utilise the habitat within the subject land, no further assessment is required for these species.

Daytime surveys of the subject land did not record individuals of the Grey-headed Flying-fox within the subject land. A known camp of the species is located in vegetation immediately adjacent to the Parramatta River and the extent of the camp does not include the subject land. Individuals of the Grey-headed Flying-fox were recorded flying over the subject land and foraging on flowering eucalypts within the subject land during flyout

periods. As the subject land does not form part of the extent of the camp, which represents breeding habitat, no further assessment is required for this species.

4.4. Prescribed Impacts

Prescribed impacts are outlined within the NSW Biodiversity Conservation Regulation 2017. The project is considered to result in the following prescribed impacts:

- Impacts on the habitat of a threatened species which comprises non-native vegetation;
- Impacts on the connectivity of habitat that facilitates the movement of threatened species; and
- Impacts on the movement of threatened species that maintains their lifecycle.

The Grey-headed Flying-fox is potentially impacted by these prescribed impacts. The southern edge of a camp for this species is located approximately 110 m north west of the subject land (**Figure 8**). The occurrence of planted native vegetation within the subject land provides for some potential foraging habitat for the Grey-headed Flying-fox. This species has been recorded as flying over the subject land and may forage or roost within the habitat occurring within the subject land. More specifically, the flyout patterns of the colony have been previously identified by Eco Logical Australia (2016) and AMBS Ecology and Heritage (2017). These studies identified multiple flyways. The most recent study by AMBS Ecology and Heritage (2017) identified a northerly flyway along the Parramatta River, an easterly flyway from the northern tip of the colony, and a southerly flyway also along the Parramatta River. The direction of flight paths; however, will typically change seasonally depending on the emergence of food resources.

5. Avoid and Minimise Impacts

5.1. Avoid and Minimise Impacts on Native Vegetation and Habitat

5.1.1. Project Location

The project has been situated within the PLC Property to allow the development footprint to provide for operational requirements of the site, yet minimise impacts to biodiversity values. The development footprint does not require the removal of any naturally occurring native vegetation.

Alternative development layouts were considered throughout the planning stage; however these were amended due to the presence of the planted *Corymbia citriodora* within the subject land. This tree will be retained within the subject land. Therefore, it is determined the development footprint is location in a position that avoids significant direct impacts to biodiversity values of the subject land.

5.1.2. Project Design

The project design has been developed to avoid and minimise clearing of vegetation and habitat by restricting the development footprint mostly to the cleared land within the subject land. As noted above, the *Corymbia citriodora* and associated foraging habitat within the subject land will be retained and managed within landscaped areas.

5.2. Avoid and Minimise Prescribed Impacts

Measures to avoid and minimise prescribed impacts identified in Section 5.4 are outlined below.

5.2.1. Threatened Species Habitat (Non-native Vegetation)

The development footprint for the project has minimised removal of species habitat within non-native vegetation, with the existing canopy tree retained within the landscaped portions of the subject land. Additional landscaping will occur within the subject land, which may provide additional foraging resources for the Grey-headed Flying-fox.

5.2.2. Connectivity

The non-native vegetation within the subject land provides stepping-stone habitat between the vegetation occurring along the Parramatta River and other canopy trees within the urban landscape of Parramatta. The project will retain one non-native canopy tree within the subject land ensuring this stepping-stone habitat is maintained. An additional eleven (11) native canopy tree species will be planted as part of the project.

5.2.3. Species Movement

The building component of the project has the potential to impact the movement of the Grey-headed Flying-fox. Given the limited area of land on which the development footprint occurs, there were limited options for the relocation of the building envelope. The vegetation planned to be removed is however, not considered to be relied upon by the Grey-headed Flying-fox colony.

6. Impact Assessment

6.1. Assessment of Impacts to Native Vegetation and Habitat

6.1.1. Direct Impacts

The project will result in the removal of six planted native trees from the development site including six native species and one exotic species. The remaining native trees within the subject land are either approved for removal under a separate DA or will be retained as part of the project. The six native trees include; two *Corymbia maculata*, one *Eucalyptus grandis* and three *Eucalyptus nicholii*, none of which contain hollows. The single exotic species to be removed includes a *Platanus x acerifolia* (London Plane). These trees are planted with a predominantly cleared understorey.

The native trees to be removed form very small part of a large foraging range for the Grey-headed Flying-fox colony to the west of the subject land. While these trees serve as foraging habitat for the colony, they are not relied upon heavily by the colony and will not significantly impact their foraging activities.

6.1.2. Change in Vegetation Integrity Score

Approximately 0.04 ha of "native vegetation" will be removed as part of the project. The changes in vegetation integrity scores as a result of clearing are shown in **Table 7**.

Table 7 Change in Vegetation Integrity Score

Zone	PCT	Area (ha)	Current Vegetation Integrity Score	Future Vegetation Integrity Score	Change in Vegetation Integrity Zone
1	835	0.04	33	0	-33

6.1.3. Indirect Impacts

The following indirect impacts to native vegetation and habitat may occur as a result of the project:

- Inadvertent impacts on adjacent habitat or vegetation; and
- Reduced viability of adjacent habitat due to noise, dust or light spill.

An assessment of these indirect impacts is detailed below.

6.1.3.1. Inadvertent Impacts on Adjacent Habitat or Vegetation

i. Extent

The proposed development is not predicted to have any indirect impacts on vegetation.

The proposed new building may interfere with flying fox flight paths and the use of the surrounding land. The Grey-headed Flying-fox colony has been observed to utilise the airspace above the subject land as a minor flyway, through which some animals move to and from the adjacent colony. The construction will therefore likely cause some individuals to utilise alternative flyways in other directions.

ii. Frequency

This impact on flight paths of flying fox will be ongoing post construction throughout the operational stage of development.

iii. Duration

The impact on adjacent habitat is likely to be a long term, permanent impact, likely to occur throughout the operational stage of development, obstructing the minor flyway above the subject land.

iv. Likely Affected Threatened Entities

Grey-headed Flying-fox is the only likely affected threatened entity.

v. Consequences

The construction of the project will result in a 15 storey, approximately 65-69 m tall hotel. This will potentially have an indirect impact to the bioregional persistence of the Grey Headed Flying-fox colony to the west of the subject land on Parramatta River.

The vegetation within the subject land appears to act as a very minor stepping stone and foraging habitat for some individuals of the Grey-headed Flying-fox colony. Clearing for the construction of the project will result in the removal of 0.04 ha of planted trees and therefore; foraging habitat. The consequence of the removal of vegetation associated with the development is expected to be minimal as individuals would likely use these trees only as part of a much broader foraging range.

The building will interrupt a minor flight path for some bats but the colony is expected to adapt and fly alternate routes. This will affect the individuals utilising the minor flyway during flyout periods throughout both construction and operational stages of development. While the development will affect flyways for the Grey-headed Flying-fox colony, the impact will likely be minimal due to the insignificance of the flyway to the colony.

6.1.3.2. Reduced Viability of Adjacent Habitat Due to Noise, Dust or Light Spill;

i. Extent

The extent of impacts due to noise, dust or light spill is unable to be defined. It is likely that such impacts may occur within the immediate surrounds of the subject land.

ii. Frequency

The impacts due to noise, dust and light spill are likely to occur daily during the construction phase of the project. Noise and light spill specifically has the potential to continue through the operational stage of the hotel.

iii. Duration

The impacts due to noise, dust or light spill are likely to occur most in the short term during the construction phase of the project. There is potential for noise and light spill to continue during the operational stage of the development due to 24 hour operations.

iv. Likely Affected Threatened Entities

Grey-headed Flying-fox is the only likely affected threatened entity.

v. Consequences

An increase in dust is likely to be a predominantly short term impact that will occur as a result of construction activities. The dust has the potential to travel and settle in the patches of vegetation, including the patches of native vegetation bordering the Parramatta River. Extra dust is likely a short term impact to the habitat of the Grey-headed Flying-fox colony; potentially causing issues with visibility. The consequences of short term additional dust is likely to be insignificant in the long term to the threatened species; namely the colony of Grey Headed Flying-fox, and threatened ecological communities of the locality.

Noise and light spill may cause both short and long term impacts to the Grey-headed Flying-fox resulting from construction activities in the short term and from the expansion of production to include 24 hour operations in the long term; particularly due to the proposed rooftop bar, terrace and function room. Noise and light spill may potentially cause issues with the night vision of the Grey-headed Flying-fox, and noise may disturb the roost. These impacts are predicted to be highly localised and will have minor consequences to the surrounding habitats, including the Grey Headed Flying-fox colony, and will not significantly impact on the bioregional persistence of this species.

Noise from construction may disturb bats roosting during the day. Light spill during construction is not expected to be of consequence for the flying fox colony as the species is active at night and animals generally forage away from the roosting site. For this reason, flying foxes are likely to be absent during much or all of the period when there is additional lighting from construction.

The scale of the development envelope is minor in comparison to the scale of the inhabited land in the surrounding urban setting, and the marginal increase in these indirect impacts are not likely to have significant ongoing effects or undue consequences on biodiversity values of the PLC Property or surrounds.

6.1.3.3. Bird Collisions

i. Extent

According to Section 9.1.4.1 of the BAM, indirect impacts are those that affect species habitat beyond the subject site [land]. In the case of this indirect impact, there is potential for increased bird collisions due to the size of the development and amount of glazing associated with the hotel. This impact will likely only affect the urban native birds utilising the potential flyway that will become obstructed by the development.

ii. Frequency

The impacts due to bird collisions are likely to occur daily following the glazing of the hotel. This will be most prevalent during the operational stage of the development.

iii. Duration

The impacts due to bird collisions are likely to occur during the operational stage of development.

iv. Likely Affected Threatened Entities

No threatened species will likely be impacted.

v. Consequences

The construction of the project will result in a 15 storey, approximately 65-69 m tall hotel. This will potentially have an indirect impact to the local occurrence of urban native birds. This will increase the prevalence of tall glass buildings within the subject land.

Tall glass buildings can result in an increase in mortality to urban birds due to collisions. This is due to their inability to distinguish external glazing from open flyways while foraging. As the amount of glass will increase as a result of the proposed development, urban native birds could potentially be put at risk.

6.2. Assessment of Prescribed Impacts

Impacts associated with prescribed impacts identified in ***Section 6.2*** are outlined below.

6.2.1. Threatened Species Habitat (Non-native Vegetation)

The subject land occurs within a highly cleared landscape. A single non-native tree will be removed within the development site. The threatened species habitat within non-native vegetation to be indirectly impacted comprises only a single *Corymbia citriodora* within the subject land. Individuals from the Grey-headed Flying-fox colony to the west of the subject land potentially use this tree for foraging however, none were observed doing so during the survey period. The construction of the hotel adjacent to this tree will obstruct the potential for foraging within the tree. However, as no bats were observed within the tree during the surveys, this prescribed impact is not seen as significant. The potential foraging habitat provided by this tree is considered minor in the context of the large amounts of similar treed habitat that will remain in the locality.

6.2.2. Connectivity

Connectivity is very limited within the subject land. Individuals from the Grey-headed Flying-fox colony have been observed to utilise the vegetation as a stepping stone when dispersing in the evening during foraging activities. The erection of a 15 storey building will limit the Grey-headed Flying-fox use of the trees. The Stage 2 Assessment of the Western Sydney Stadium DA describes in detail that this flyway is not a main flyway for the colony. As stated previously, the colony primarily uses the river corridor in a northerly and southerly direction for their main flyways. The project will primarily be a long term impact for the duration of the operation of the hotel. The hotel will permanently obstruct the movement of the Grey-headed Flying-fox from foraging within the retained tree within the subject land.

6.2.3. Species Movement

The Grey-headed Flying-fox is known to fly over the subject land as it disperses from the nearby camp along the Parramatta River. The construction of a 15 storey hotel within this space will disrupt the movement of the species as the building will be avoided. The species is known to disperse through high-rise areas (e.g. Sydney CBD) and the species is likely to adapt to the presence of the building. Like the impacts on connectivity, the project is likely to have a long term impact on the movement of the Grey-headed Flying-fox colony however, as stated above; previous studies have detailed the flyway over the subject land to be secondary to the colony's

main flyways along the Parramatta River. The project is therefore unlikely to have a significant impact on the movement of threatened species.

6.3. Mitigation Measures for Impacts to Native Vegetation and Habitat

Table 8 discusses the measures that will be undertaken to mitigate impacts to native vegetation and habitat during both construction and operational stages of development:

Table 8 Mitigation Measures for Impacts to Native Vegetation and Habitat

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of residual impacts
Replacement Planting	Plant 11 advanced sized native trees within the landscaped works associated with the project.	Construction	Once	Contractor	Moderate	None
Dust Management	Establish erosion control and sediment controls as part of construction management.	Construction	Regular	Contractor	Moderate	Sedimentation in Parramatta River
Noise Management	All equipment used during construction is to meet Australian standards to minimise noise generation, Construction noise will be shielded at its source where possible, Construction equipment will be positioned as far from colony as possible; ideally on the eastern side of the subject land, and Establish monitoring plan to determine impacts of noise during construction and operational stages of development.	Construction/ operation	Regular	Contractor	Moderate	Shifting of Grey-headed Flying-fox colony
Light Spill Management	Install lights on the western side of the construction site so as to point them in an easterly direction, the opposite direction to the camp, Minimise the time in which lighting is needed, Use lowest possible brightness on light sources and machinery, and Turn off lighting at night as this may assist in navigation, and	Construction/ operation	Regular	Contractor	Moderate	Shifting of Grey-headed Flying-fox colony

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of residual impacts
	Adaptive management strategy to determine impacts of light spill during construction and operational stages of development.					
Bird Collision Management	Utilise patterned or ultraviolet reflective glazing to allow for urban birds to distinguish the development, or green walls and other facade treatments to minimise large expanses of glass surfaces,	Operation	Once	Contractor	Low	Increase mortality of urban native birds
Grey-headed Flying-fox Monitoring	An ecologist with experience in Flying-fox management experience must be engaged to provide regular monitoring of the camp; ecologist to determine the camp numbers at least one week prior to construction	12 months prior to construction, during construction, and 24 months following construction in the operational stage of development	Quarterly	Contractor	Low	Changed behaviour or shifting of the Grey-headed Flying-fox colony
Adaptive Management Strategy	Enacted if the Grey-headed Flying-fox colony decreases in number or shifts in location after construction commences	Regular	When triggered	Contractor	High	Changed behaviour or shifting of the Grey-headed

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of residual impacts
						Flying-fox colony
Stop Work Triggers	If more than 30%of the Grey-headed Flying Fox colony takes flight other than at dusk or dawn, Individuals are in flight more than 20 minutes other than at dusk or dawn, Adverse weather conditions or Severe Weather Warnings as issued by the Bureau of Meteorology, If Grey-headed Flying-foxes have been killed, injured or are showing signs of fatigue due to the development activities.	Regular	When triggered	Contractor	High	Death or injury to Grey-head Flying-foxes
Habitat Improvement	Installation of nest foxes for hollow-dwelling birds and Microchiropteran bats in retained vegetation within the subject land and subject to approval, within retained vegetation in surrounding vegetation (e.g. *Platanus x acerifolia* adjacent to the Parramatta Leagues Club carpark), and Tree trunks from trees to be removed are to be salvaged and used in landscaped areas within the subject land where possible.	Construction/ operation	Once	Contractor	Low	None
Other Mitigation Measures	The development footprint will be clearly flagged to ensure retention of planted Corymbia citriodora outside the construction area,	Construction	Regular	Contractor	Low	Death or injury to Grey-head Flying-foxes

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of residual impacts
	Placement of large machinery and plant equipment will be minimised in the north-western portion of the site, and Pump silencers are to be used on all large concrete pumps to the eastern side of the site. Removal of tree limbs or trees are not authorised when flying-foxes are in or within 30m of the tree.					

6.4. Mitigation Measures for Prescribed Impacts

6.4.1. Threatened Species Habitat (Non-native Vegetation)

Non-native vegetation in the form of a single *Corymbia citriodora* will be retained and incorporated into landscaping within the subject land. Additional vegetation will be planted to provide additional biodiversity value.

6.4.2. Connectivity

As stated in Section 6.4.1 above, the development footprint was designed to minimise direct impacts on vegetation. There is one occurrence of a *Corymbia citriodora* within the subject land and it is to be incorporated into the overall plan for the completed hotel. The project will also plant eleven (11) advanced sized native trees that in the long term will provide further foraging habitat for the Grey-headed Flying-fox colony.

6.4.3. Species Movement

The project will limit works to occur outside of breeding times for the Grey-headed Flying fox colony. Additionally, typically, the Grey-headed Flying-fox utilise dusk and dawn for fly-out periods. Works will not commence until after the morning fly-in period and will cease prior to the evening fly-out period.

6.5. Adaptive Management of Uncertain Impacts

The extent of impacts due to noise, dust and light spill are the only uncertain impacts likely to be relevant to the project. Management of these impacts will be through implementation of the methods of adaptive management Outlined below. The adaptive management strategy will be enacted if the monitoring demonstrates that the Grey-headed Flying-fox colony is decreasing in number or shifting location after construction commences. The methods of adaptive management include:

- During construction, near the Parramatta River and Cumberland Hospital East and West, the proponent will engage a suitably qualified and experienced fauna specialist to monitor the behaviour of the Grey-headed Flying-fox colony;
- Monitoring will commence 12 months before the commencement of construction within 300 m of the Grey-headed Flying-fox colony to establish baseline behaviour;
- Monitoring will be undertaken monthly in consultation with the OEH with the results compiled in a monitoring report submitted to the OEH following each survey;
- Monitoring will include species present, numbers, extent of the colony as a map, breeding status, and condition of animals;
- Monitoring will continue throughout construction and 24 months following construction during the operational phase of the project to assess the potential noise and light spill impacts due to the proposed rooftop bar; and

- If at any period, monitoring suggests that construction is changing the behaviour of the colony, causing a decrease in number of the colony and/or the colony is shifting location, the proponent must consult with the OEH to determine whether additional mitigation measures are required.
- Works must be scheduled to minimise disturbance to the Flying-fox camp. Noisy work near the camp must not occur during breeding season when there are crèching young present (usually January-February).

6.6. Assessment Thresholds

Unavoidable impacts of the project have been considered and a determination made of the assessment thresholds. The following sections outline the assessment thresholds and their relevance to the project.

6.6.1. Impacts to Potential Serious and Irreversible Impact Entities

No potential SAII entities have been assessed as occurring within the subject land.

6.6.2. Impacts that Require an Offset

6.6.2.1. Native Vegetation

As noted in ***Section 3.2***, the native vegetation within the development site comprises planted vegetation that does not conform to a PCT. In the absence of further guidance from OEH in dealing with planted vegetation, the closest mapped PCT to the subject land was utilised to assess native vegetation within the development site. PCT 835 was used as a surrogate for the native vegetation within the development site. **Table 9** details the offset requirements for the clearing of the six planted native trees within the development site. A total of one ecosystem credit for PCT 835 was generated within the development site. **Table 10** details the like-for-like options to offset these credits. The current price for one PCT835 credit is $22,232.45 including GST.

The area of land requiring an offset is shown in **Figure 9**.

Table 9 Ecosystem credit liability

PCT	TEC	Area (ha)	Credits
835-Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Not a TEC	0.04	1

Table 10 Like for like options for PCT 835

Any PCT in the below class	And in any of below trading groups	Containing HBT	In the below IBRA subregions
Coastal Floodplain Wetlands (including PCT's 835, 1234, 1720)	Coastal Floodplain Wetlands - ≥ 90% cleared group (including Tier 2 or higher)	Yes	Cumberland ,Burragorang, Pittwater, Sydney Cataract, Wollemi and Yengo. or Any IBRA subregion that is within 100 kilometres of the outer edge of the impacted site

6.6.2.2. Threatened Species

No species credit species have been assessed as directly impacted within the development footprint and therefore no offset is required.

6.6.3. Impacts that do not Require Further Assessment

Much of the subject land has been previously cleared. All areas that are cleared or comprise exotic vegetation that do not require further assessment are identified in **Figure 10**.

7. Conclusion

This BDAR has been prepared to assess the impacts of the proposed development on threatened species. The preparation of this BDAR is a requirement of the SEARs, which also included the following specific requirement:

The BDAR is to also address the impacts of the proposed development on the existing Grey-headed Flying-fox colony adjacent the site. The report is to specifically consider the impact of construction noise, including any cumulative impacts of other developments in the area. The report is to provide detail on how the proposal will minimise and/or offset any identified impacts on the colony, this may include options to shift the location of the camp.

No naturally occurring native vegetation occurs within the subject land. Minor potential habitat for the Grey-headed Flying-fox occurs within the subject land in the form of planted native/exotic vegetation. Six native canopy trees and one non-native tree are planned for removal while the remaining vegetation within the subject land will be retained as part of the hotel development. The project will not impact any potential SAII entities.

As the project includes the removal of six native trees, offsets are required. In the absence of formal guidance on how planted vegetation is assessed under BAM, this assessment has assigned the vegetation to the closest mapped PCT to determine the offset liability. This assessment indicated that the removal of these trees results in an estimated credit liability of one (1) ecosystem credit associated with PCT 835.

Further impacts of the project may entail minor indirect impacts and prescribed impacts. Whilst these impacts may generally affect biodiversity values, it is considered that the project may indirectly affect the Grey-headed Flying-fox, due to the proximity of the development to the colony occurring along the Parramatta River. The main impacts affecting this species include short-term impacts from construction activities and long-term impacts from disruption of flyways.

Some mitigation measures are proposed to minimise the impacts to biodiversity values and the Grey-headed Flying-fox. Ongoing monitoring of the adjacent colony of Grey-headed Flying-fox will also be undertaken during both the construction and operational period.

With the implementation of the proposed mitigation measures and the offsetting described previously, it is considered that the impacts of this project on biodiversity, in particular the Grey-headed Flying Fox will be minimal and can be appropriately managed.

8. References

AMBS Ecology & Heritage. 2017. Western Sydney Stadium Stage 2: Biodiversity Assessment. AMBS Ecology & Heritage Pty Ltd.

Eco Logical Australia. 2016. Western Sydney Stadium, Parramatta - Biodiversity Assessment. Prepared for AECOM. Eco Logical Australia Pty Ltd.

OEH. 2014. *Eucalyptus nicholii* - profile. Office of Environment and Heritage, Hurstville.

OEH. 2016. The Native Vegetation of the Sydney Metropolitan Area - VIS_ID 4489. Office of Environment and Heritage, Sydney.

APPENDIX A :
BAM Plot/Transect Data

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Table 11 BAM Plot Data

Scientific Name	Common Name	Native	Exotic	High Threat Weed	BAM Growth Form Group	Plot	
						Cover	Abundance
Nothoscordum borbonicum	Onion Weed		YES		N/A		
Gomphrena celosioides	Gomphrena Weed		YES		N/A	3.00	300
Cyclospermum leptophyllum	Slender Celery		YES		N/A	0.10	10
Bidens pilosa	Cobbler's Pegs		YES	YES	N/A	0.10	5
Conyza bonariensis	Flaxleaf Fleabane		YES		N/A	0.10	10
Cotula australis	Common Cotula	YES			Forb (FG)	0.10	15
Gamochaeta spp.			YES		N/A	0.10	5
Hypochaeris microcephala var. ***albiflora***	White Flatweed		YES		N/A	1.00	50
Hypochaeris radicata	Catsear		YES		N/A	0.50	30
Soliva sessilis	Bindyi		YES		N/A	1.00	100
Sonchus asper	Prickly Sowthistle		YES		N/A	0.10	20
Sonchus oleraceus	Common Sowthistle		YES		N/A		
Taraxacum officinale	Dandelion		YES		N/A	0.10	15
Capsella bursa-pastoris	Shepherd's Purse		YES		N/A	0.25	35
Lepidium africanum	Common Peppercress		YES		N/A	0.25	30
Buxus microphylla			YES		N/A		
Paronychia brasiliana	Chilean Whitlow Wort, Brazilian Whitlow		YES		N/A	1.00	100

Scientific Name	Common Name	Native	Exotic	High Threat Weed	BAM Growth Form Group	Plot	
Polycarpon tetraphyllum	Four-leaved Allseed		YES		N/A	0.25	35
Stellaria media	Common Chickweed		YES		N/A	0.10	10
Commelina cyanea	Native Wandering Jew	YES			Forb (FG)	0.10	5
Ophiopogon japonicus	Dwarf lilyturf		YES		N/A	0.10	5
Dichondra repens	Kidney Weed	YES			Forb (FG)	0.10	30
Cyperus gracilis	Slender Flat-sedge	YES			Grass & grasslike (GG)	0.10	25
Chamaesyce prostrata	Red Caustic Weed		YES		N/A	0.10	20
Medicago polymorpha	Burr Medic		YES		N/A	0.50	100
Fumaria officinalis			YES		N/A	0.10	10
Lavandula spp.			YES		N/A		
Lomandra longifolia 'Tanika'		YES			N/A		
Malva parviflora	Small-flowered Mallow		YES		N/A	1.00	50
Modiola caroliniana	Red-flowered Mallow		YES		N/A	1.00	50
Sida rhombifolia	Paddy's Lucerne		YES		N/A		
Ficus microcarpa			YES		N/A		
Corymbia citriodora	Lemon-scented Gum		YES		N/A		
Corymbia maculata	Spotted Gum	YES			Tree (TG)		
Eucalyptus grandis	Flooded Gum	YES			Tree (TG)		
Eucalyptus microcorys	Tallowwood	YES			Tree (TG)		

Scientific Name	Common Name	Native	Exotic	High Threat Weed	BAM Growth Form Group	Plot	
Eucalyptus nicholii	Narrow-leaved Black Peppermint	YES			Tree (TG)		
Eucalyptus microcorys	Tallowwood	YES			Tree (TG)	20.00	2
Eucalyptus maidenii	Maiden's Gum	YES			Tree (TG)	10.00	1
Oxalis corniculata	Creeping Oxalis		YES		N/A	0.25	50
Oxalis purpurea			YES		N/A	0.10	10
Plantago lanceolata	Lamb's Tongues		YES		N/A	0.10	10
Platanus acerifolia			YES		N/A		
Bromus catharticus	Praire Grass		YES		N/A	0.50	30
Cenchrus clandestinus	Kikuyu Grass		YES		N/A	0.25	30
Cenchrus spp.			YES		Grass & grasslike (GG)		
Cynodon dactylon	Common Couch	YES			Grass & grasslike (GG)	10.00	
Digitaria sanguinalis	Crab Grass		YES		N/A		
Echinochloa crus-galli	Barnyard Grass		YES		N/A		
Ehrharta erecta	Panic Veldtgrass		YES	YES	N/A	0.25	50
Eragrostis tenuifolia	Elastic Grass		YES		N/A	2.00	200
Lolium perenne	Perennial Ryegrass		YES		N/A	0.10	5
Paspalum dilatatum	Paspalum		YES	YES	N/A		
Sporobolus africanus	Parramatta Grass		YES		N/A		
Stenotaphrum secundatum	Buffalo Grass		YES	YES	N/A		

Scientific Name	Common Name	Native	Exotic	High Threat Weed	BAM Growth Form Group	Plot	
Eleusine tristachya	Goose Grass		YES		N/A	0.50	100
Rumex brownii	Swamp Dock	YES			Forb (FG)	0.25	20
Portulaca oleracea	Pigweed	YES			Forb (FG)	0.10	15
Gardenia spp.			YES		N/A		

**HBT = Hollow-bearing Trees, HTE = High Threat Exotic*

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APPENDIX B :
Credit Report

BAM Credit Summary Report

Proposal Details

Assessment Id
00012986/BAAS17027/18/00012987

Proposal Name
18157 - PLC Hotel

BAM data last updated *
24/11/2021

Assessor Name
David Robertson

Report Created
24/11/2021

BAM Data version *
50

Assessor Number
BAAS17027

BAM Case Status
Open

Date Finalised
To be finalised

Assessment Revision
1

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

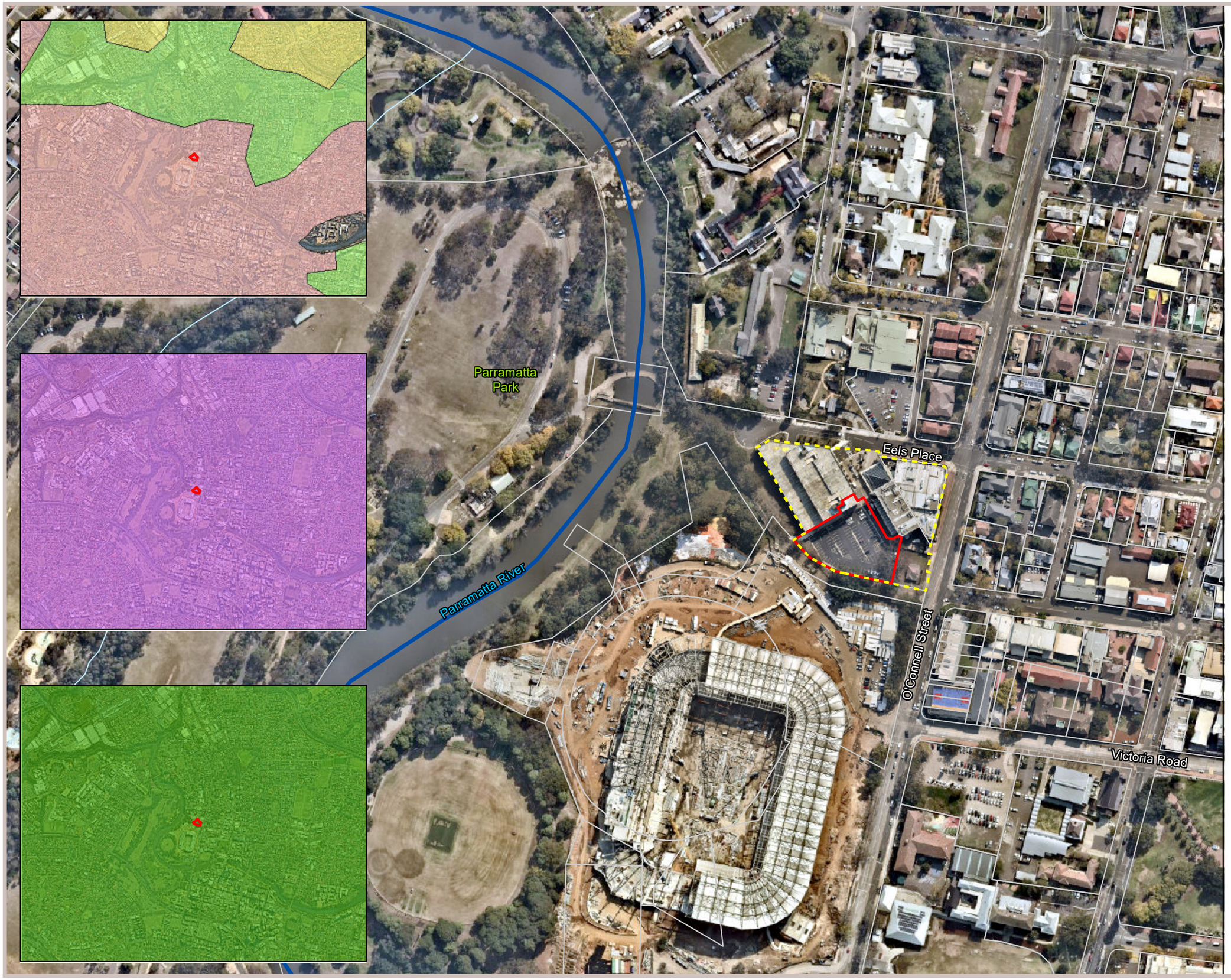
Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	BC Act Listing status	EPBC Act listing status	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Potential SAII	Ecosystem credits
Cumberland riverflat forest											
1	835_Low	Not a TEC	33	33.0	0.04			Low Sensitivity to Potential Gain	2.00		1
										Subtotal	**1**
										Total	**1**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Species credits

FIGURES



Legend

- Development Site
- PLC Property
- Cadastre

Watercourses

- 1st Order Stream
- 4th Order Stream

Mitchell Landscapes

- Ashfield Plains
- Pennant Hills Ridges
- Port Jackson Basin

IBRA Bioregions

- Sydney Basin

IBRA Subregions

- Cumberland

Image Source:
Image © NearMap 2018
Dated: 2/5/2018

Data Source:
State Environmental Planning Policy (Coastal Management) 2018
© Department of Finances, Sercives and Innovation 2017

DECCW (2008). Landscapes (Mitchell) of NSW - Version 3.

DSEWPaC (2012). Interim Biogeographic Regionalisation for Australia (IBRA) - Version 7.

NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Parramatta LGA

Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 50 100 m

I:\...\18157\Figures\RP2\20211124\Figure 1. Site map

Figure 1. Site map

Legend

- Development Site
- Subject Land
- Assessment Area
- Native Vegetation Cover
- Riparian Buffers
- LGA Boundaries

Watercourses

- 1st Order Stream
- 2nd Order Stream
- 3rd Order Stream
- 4th Order Stream

Coastal Management SEPP

- Coastal Wetlands
- Proximity area for Coastal Wetlands
- Coastal Environment

Mitchell Landscapes

- Ashfield Plains
- Pennant Hills Ridges
- Port Jackson Basin

IBRA Bioregions

- Sydney Basin

IBRA Subregions

- Cumberland

Image Source:
Image © NearMap 2018
Dated: 2/5/2018

Data Source:
State Environmental Planning Policy (Coastal Management) 2018
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DECCW (2008). Landscapes (Mitchell) of NSW - Version 3.

DSEWPaC (2012). Interim Biogeographic Regionalisation for Australia (IBRA) - Version 7.

NSW Government Spatial Services
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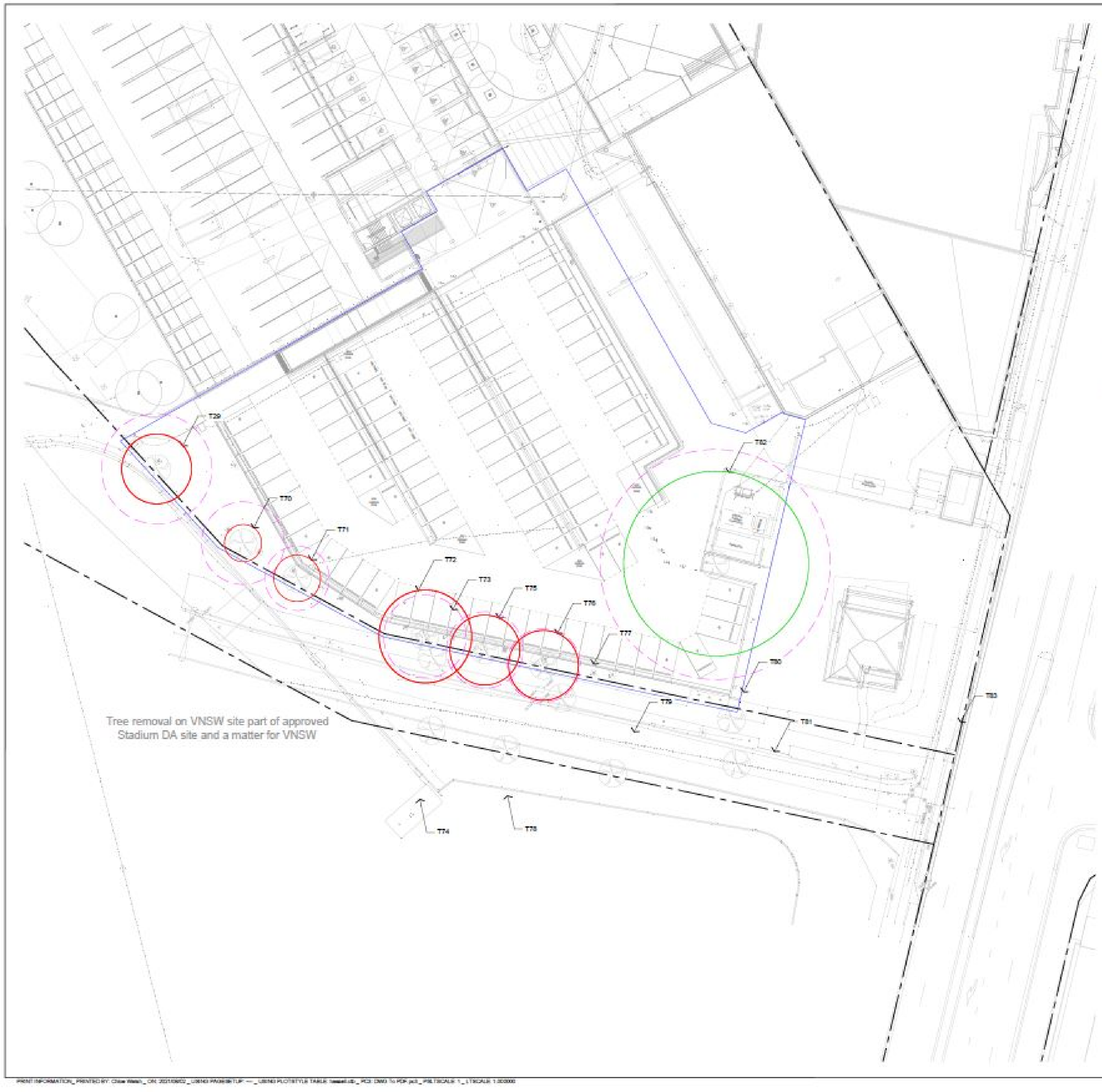
0 100 200 300 400 m

I:\...\18157\Figures\RP2\20211124\Figure 2. Location map

Figure 2. Location map



LEGEND

HOTEL EXTENT OF WORKS BOUNDARY

CADASTRAL BOUNDARY

TREE RETENTION AND REMOVAL

EXISTING TREE LOCATION - Surveyed as part of leagues club car park DA

EXISTING TREE TO BE RETAINED Refer to Arboricultural Report

EXISTING TREE TO BE REMOVED Refer to Arboricultural Report

EXISTING TREE REMOVED AS PART OF ADJACENT STADIUM WORKS BY VNSW (Not part of this application)

ROOT PROTECTION AREA Refer to Arboricultural Report

NOTES

1. NUMBERS SHOWN RELATE TO ARBORIST REPORT.
2. DRAWING SHOWN FOR COORDINATION PURPOSES ONLY - ARBORIST REPORT AND DRAWINGS TO TAKE PRECEDENT IN ALL OCCASIONS.

REFERENCE MAP

NORTH

NOTES

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REV	DESCRIPTION	DATE
03	SSDA Traffic Access Update	9/09/2021
BB	For SSDA Reduced Height	27/07/2020
AA	FOR SSDA	03/12/2019
D	DA SSDLR	29/11/2019
C	Draft DA Issue	01/11/19
B	Draft DA Issue	01/11/2019
A	Draft DA Issue	16/10/19
01	Draft Issue for Comment	22/10/19

CONSULTANT

HASSELL LIMITED ACN 007 711 435
LEVEL 2 PIER 8/9 23 HICKSON ROAD
SYDNEY NSW 2000 AUSTRALIA
SYDNEY@HASSELLSTUDIO.COM
TEL 2 9101 2000
Nominated architects NSW: Tony Urbal 5300 Rosa de la Motte 7396

HASSELL

PROJECT

PARRAMATTA LEAGUES CLUB HOTEL
1 EELS PLACE
PARRAMATTA

DRAWING TITLE

TREE RETENTION AND REMOVAL PLAN

STATUS

DEVELOPMENT APPLICATION

SCALE @ A1	DRAWN	CO-ORD	REVIEWED	APPROVED
1:250	WS	LV	JC	JC

PROJECT NUMBER	DRAWING NUMBER	REV
012961	DA_0501	GG

0 5 10 20m

I:\...\18157\Figures\RP\20211124\Figure 3. Tree retention and removal plan

Figure 3. Tree retention and removal plan

Image Source: Hassell 2021

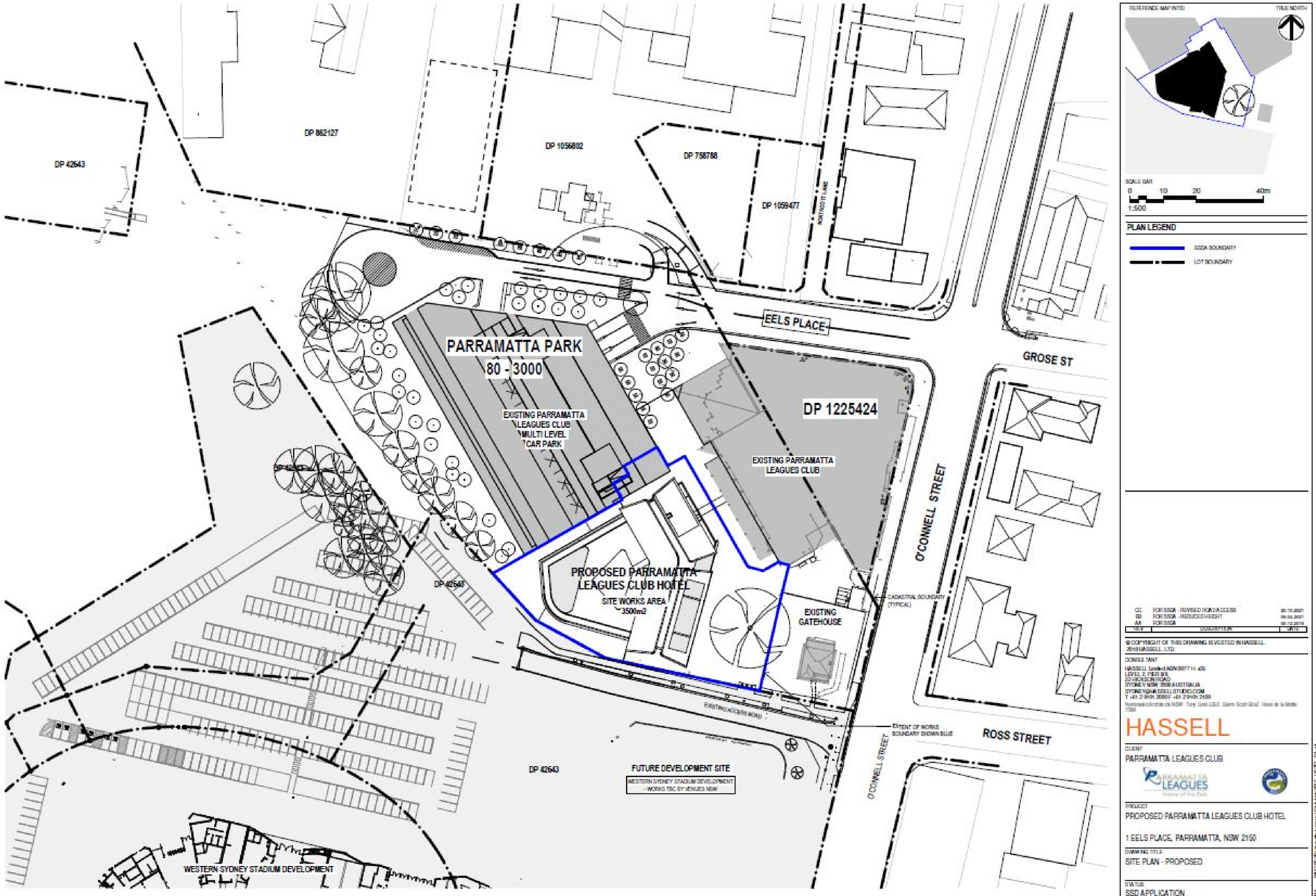


Figure 4. Layout of the project

Image Source: Hassell 2021

I:\...\18157\Figures\RP2\20211124\Figure 4. Layout of the Project

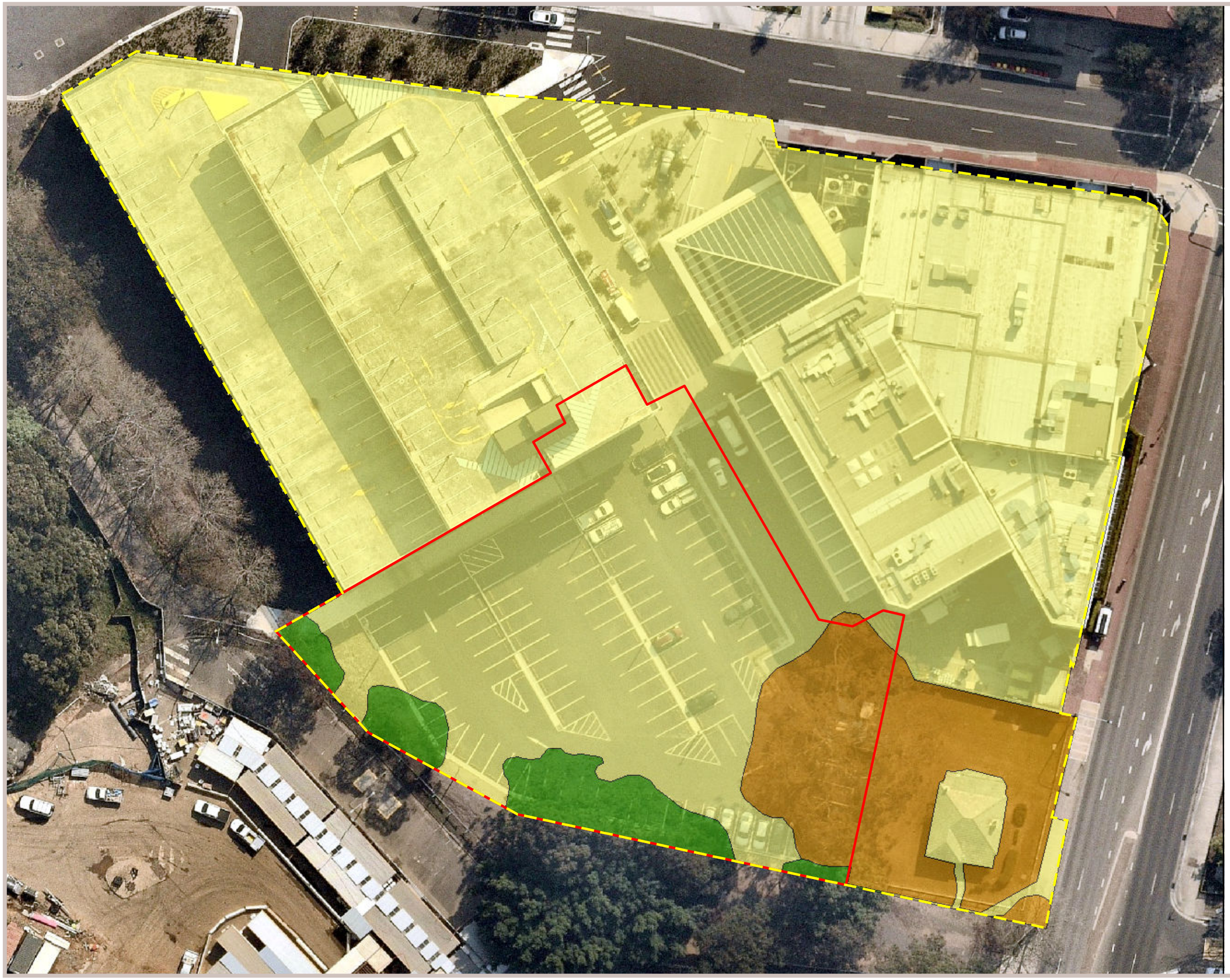


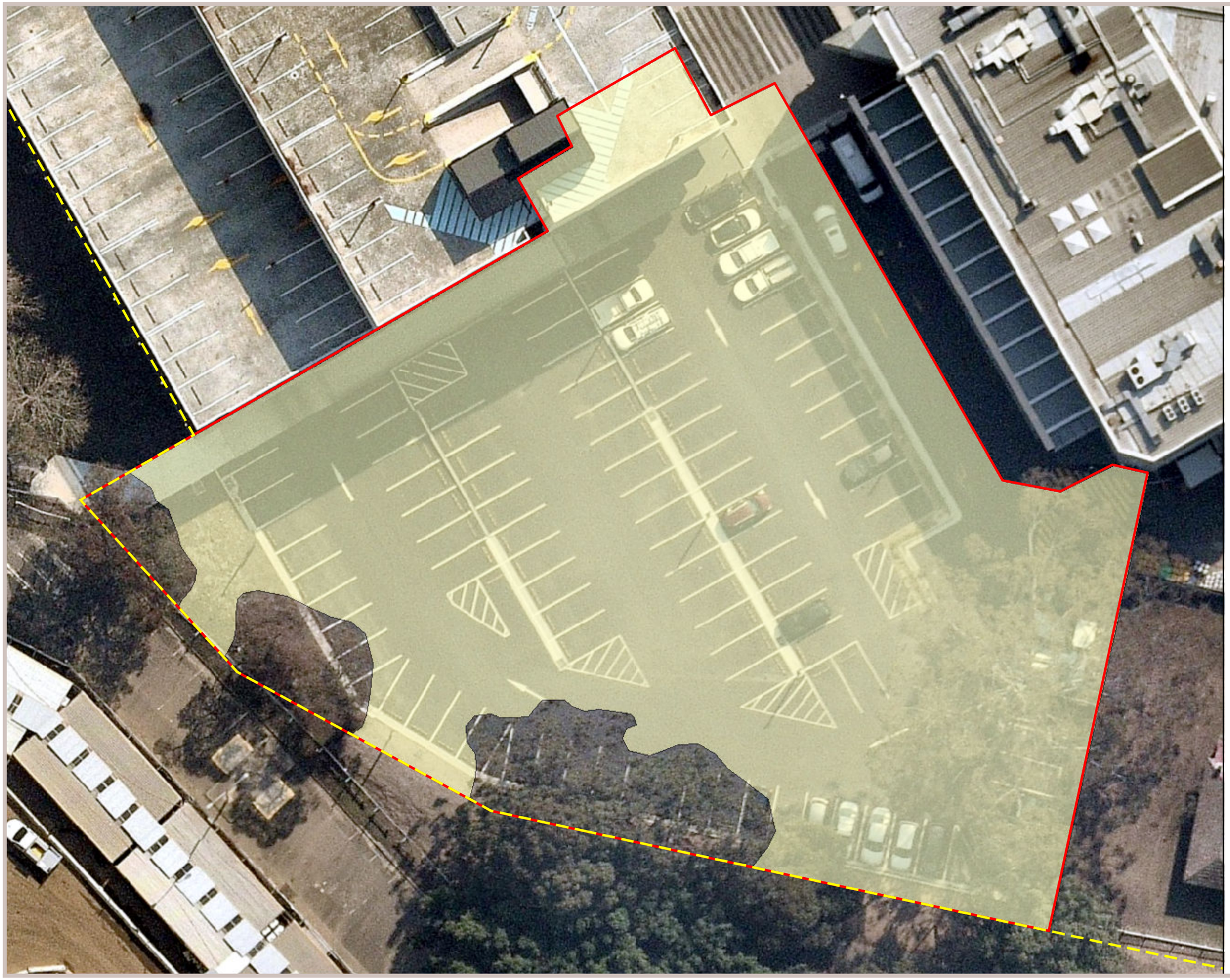
Figure 5. Vegetation extent within the subject land

Figure 6. PCTs within the subject land

Figure 7. Targeted species credit species survey locations

Figure 8. Approximate location of the Grey-headed Flying-fox camp

Figure 9. Location of impacts that require an offset



Legend

- Development Site
- Subject Land
- Impacts that do not require Offsets

Image Source:
Image © NearMap 2018
Dated: 9/9/2018

NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Parramatta LGA

Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 10 m

I:\...\18157\Figures\RP2\20211124\Figure 10. Location of impacts that do not require an offset

Figure 10. Location of impacts that do not require an offset