John Palmer Public School
Biodiversity Development Assessment Report

85 The Ponds Blvd, The Ponds NSW 2769

NCA21R127729

06 December 2021

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Biodiversity Development Assessment Report

85 The Ponds Blvd NSW 2769

Kleinfelder Document: NCA21R127729

Kleinfelder Project: 20221139

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Document Control:

Version	Description	Date
3.0	Final	06 December 2021
2.0	Final	12 October 2021
1.0	Draft	19 July 2021
Prepared	**Reviewed**	**Endorsed**
Mark Dean, David Martin	Gilbert Whyte	Gilbert Whyte

Biodiversity Accredited Assessor System (BAAS) Accredited Assessor Authorisation:

Name	Position	Assessor Number	Assessment Number	Date
Dr. Gilbert Whyte	Senior Ecologist/ Team Leader	BAAS18041	00026230/BAAS18041/21/00026231	12 October 2021

TABLE OF CONTENTS

TABLES

FIGURES

PLATES

APPENDICES

1 INTRODUCTION

1.1 SCOPE

This Biodiversity Development Assessment Report (BDAR) accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of a State Significant Development Application (SSD - 23330227).

The development is for upgrading works comprising alterations and additions to John Palmer Public School (JPPS) at 85 The Ponds Boulevard, The Ponds (**Figure 1**). The site is legally described as Lot 1 DP 1131340.

The site is roughly rectangular in shape, with a total area of 29,830m2 and street frontages to Pebble Crescent to the west, Jetty Street to the south and The Ponds Boulevard to the east (**Figure 2**). The Ponds Shopping Centre adjoins the northern property boundary of the school.

This report addresses the relevant Secretary's Environmental Assessment Requirements (SEARs), specifically **Item 11 – Biodiversity:** "*Provide a Biodiversity Development Assessment Report (BDAR), that assesses the biodiversity impacts of the proposed development in accordance with the requirements of the Biodiversity Conservation Act 2016, Biodiversity Conservation Regulation 2017 and Biodiversity Assessment Method, except where a BDAR waiver has been issued in relation to the development or the development is located on biodiversity certified land.*"

This assessment has been undertaken in accordance with the NSW Biodiversity Assessment Method (BAM) Streamlined Assessment Module (Department of Planning, Infrastructure and Environment [DPIE] 2020a) under the *Biodiversity Conservation Act 2016* (NSW) (BC Act) and *Biodiversity Conservation Regulation 2017* (BC Regulation) (s6.8).

The following terms are used throughout this report to describe particular geographical areas:

- **Study Area** – 85 The Ponds Blvd, The Ponds NSW 2769 (Lot 1/DP1131340). (2.98 hectares [ha])
- **Development Site** - The area within the Study Area to be directly impacted by the proposed development (0.51 ha)
- **Locality** - Land within a 5-kilometre (km) radius of the Study Area.

This report identifies flora, fauna, and threatened species known, or likely to occur within the Study Area based on species and/or habitats detected during field surveys and threatened flora and fauna records from the locality. An assessment of the likely impacts on identified threatened species, habitat features and vegetation communities as a result of the development proposal is also undertaken.

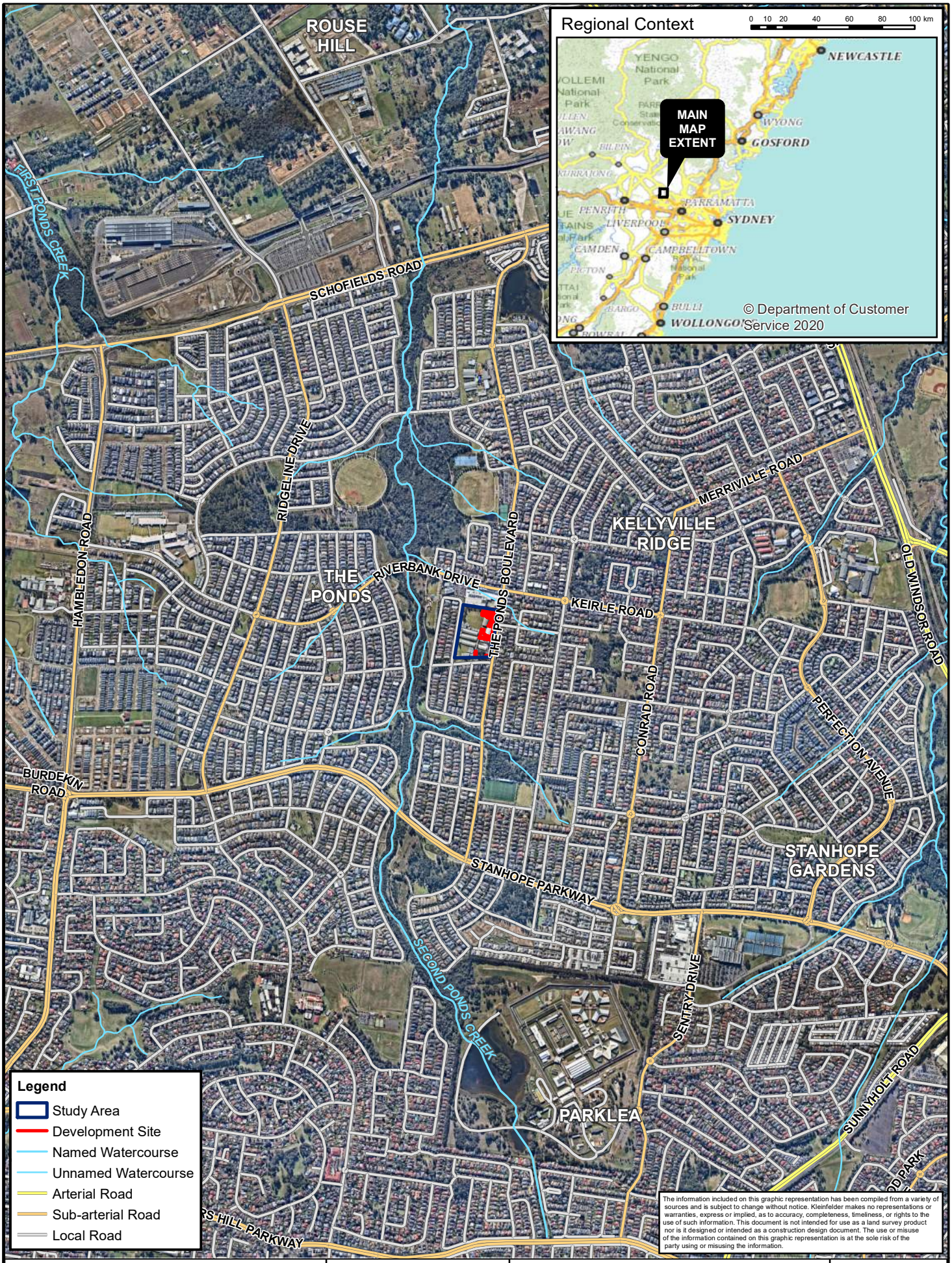
1.2 PROPOSED DEVELOPMENT

The proposed development seeks to upgrade John Palmer Public School. The upgrade consists of the following alterations and additions:

- Construction of a new three-storey building facing The Ponds Boulevarde which will accommodate 29 Permanent Learning Spaces and 1 new staff room;

- Construction of a one storey new library building;
- Relocation of service access to staff car park off The Ponds Boulevarde, including alterations to the existing car park to accommodate service vehicle;
- One-storey extension to and refurbishment of existing School Hall building. The School Hall extension will accommodate ancillary spaces for Out of Hours School Care;
- Building Block D will be re-purposed from an existing library to special program spaces and administration;
- Refurbishment of Building F to provide 1 new support unit;
- Minor additions and internal refurbishments to Building A;
- Removal of all 20 existing demountable classroom buildings once alterations and additions have been completed; and
- Ancillary works to support the alterations and additions including landscaping and service provision.

Disturbance within the Development Site will impact an area of approximately 0.20 ha of exotic grassland (managed), 0.10 ha of planted native/exotic vegetation (36 trees) and 0.22 ha of existing infrastructure. Disturbance will involve the removal of all vegetation from these areas. Limb removal of some trees may be required for building protection.



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DRAWN BY: JBaldry

DATA SOURCE:
NSW DFSI - 2021
Nearmap - 2021

Locality

Jacobs Group (Australia) Pty Ltd
Biodiversity Development Assessment Report
John Palmer Public School (Lot 1 DP1131340)
85 The Ponds Blvd, The Ponds NSW

FIGURE:

1

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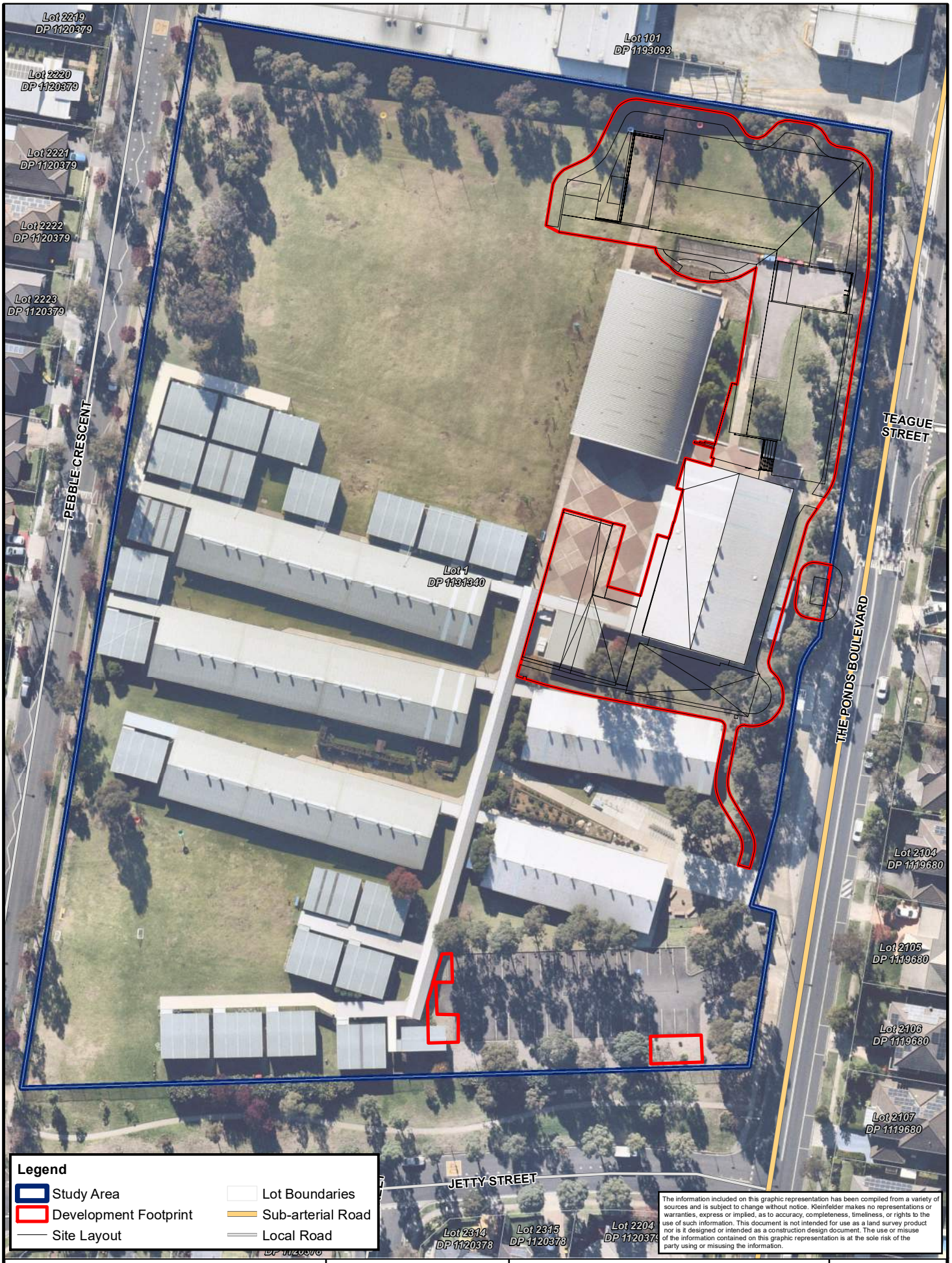

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DATA SOURCE:
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Nearmap - 2021

Study Area and Development Site

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Biodiversity Development Assessment Report
John Palmer Public School (Lot 1 DP1131340)
85 The Ponds Blvd, The Ponds NSW

FIGURE:

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1.3 INFORMATION SOURCES

The following sources of information were used to appropriately inform the BDAR:

- The NSW DPIE, BioNet Atlas (DPIE 2021a) for previous records of threatened species, populations and ecological communities within 5 km radius of the Development Site.
- The Commonwealth Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) (DAWE 2021a) for Matters of National Environmental Significance (MNES) including predicted threatened species, populations and ecological communities
- The Commonwealth Department of Agriculture, Water and the Environment (DAWE) Threatened Species Profile and Threat Database (SPRAT) (DAWE 2021b).
- The NSW DPIE, BioNet Vegetation Classification Database (DPIE 2021b) for identification and allocation of Plant Community Types (PCTs) to vegetation zones on site.
- The NSW DPIE, BioNet Threatened Biodiversity Data Collection (DPIE 2021c), Threatened Species Profiles (DPIE 2021d) and Final Determinations (DPIE 2021e) for information on threatened species, populations, and ecological communities.
- Relevant published literature (see **Section 7**).

1.4 LEGISLATIVE CONTEXT

This assessment was undertaken in accordance with and/or in consideration of the following Acts and Policies:

- **Commonwealth:**
  - *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- **NSW:**
  - Biodiversity Assessment Method (BAM) (DPIE 2020a).
  - *Biodiversity Conservation Act 2016* (NSW) (BC Act).
  - *Biodiversity Conservation Regulation 2017* (NSW) (BC Regulation).
  - *Biosecurity Act 2015* (NSW).
  - *Coastal Management Act 2016*.
  - *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).
  - *Local Land Services Act 2013* (NSW) (LLS Act).
  - *State Environmental Planning Policy (Koala Habitat Protection) 2021* (NSW) (Koala SEPP).
  - *State Environmental Planning Policy (Coastal Management) 2018* (NSW) (SEPP Coastal Management).
  - *State Environmental Planning Policy (Vegetation in Non-Rural Areas)* 2017 (NSW).
  - *Water Management Act 2000* (NSW) (WM Act).
- **Local:**
  - Blacktown Local Environmental Plan 2015
  - Blacktown Development Control Plan 2015

1.4.1 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Under the EPBC Act, an approval is required for actions that are likely to have a significant impact on MNES. An action includes a project, development, undertaking, activity or series of activities. When a person proposes to take an action they believe may need approval under the EPBC Act, they must refer the proposal to the Australian Government Minister for the Environment. The Act identifies nine MNES:

- World Heritage properties.
- National heritage places.
- Wetlands of international importance (Ramsar Convention).
- Listed threatened species and communities.
- Migratory species listed under international agreements.
- Great Barrier Reef Marine Park.
- Commonwealth marine areas.
- Nuclear actions; and
- Water resources in respect to CSG and large coal mines.

While this BDAR is not required to address MNES, the proponent is required to address the EPBC Act as part of a SSDA. Refer to **Section 5** for a summary of the impact assessment.

1.4.2 Biodiversity Conservation Act 2016 (NSW)

The NSW *Biodiversity Conservation Act 2016* (NSW BC Act), the NSW *Biodiversity Conservation Regulation 2017* (NSW BC Regulation) and amendments to the NSW *Local Land Services Act 2013* (LLS Act) commenced on 25 August 2017. The legislation aims to "maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development". The NSW BC Act repeals several pre-existing Acts, most notably the NSW *Threatened Species Conservation Act 1995* (TSC), the NSW *Nature Conservation Trust Act 2001* and the NSW *Native Vegetation Act 2003*.

The NSW BC Act together with the NSW BC Regulation outlines the framework for addressing impacts on biodiversity from development and clearing. The framework details a pathway to avoid, minimise and offset impacts on biodiversity from development through the Biodiversity Offset Scheme (The BOS).

1.4.2.1 Entry into the Biodiversity Offset Scheme

Entry into the BOS is triggered by developments, projects and activities that meet criteria or certain thresholds for significant impacts on biodiversity in accordance with Section 6.3 of the BC Act. Alternatively, the BOS can be entered into on an opt-in basis.

Criteria to which the BOS applies includes the following:

- Local Development (assessed under Part 4 of the *Environmental Planning and Assessment Act 1979*) that triggers the BOS Threshold, or is "likely to significantly affect threatened species" (based on a test of significance pursuant to Section 7.3 of the BC Act). The BOS Threshold has two parts, and is triggered by the following:
  - Clearing of vegetation that exceeds an area threshold (based on the minimum lot size), or
  - Impacts are predicted to occur within an area mapped on the Biodiversity Values Map (the BV Map).

- State Significant Development (SSD) and State Significant Infrastructure projects (SSI), unless "the Secretary of the Department of Planning, Industry and Environment and the environment agency head determine that the project is not likely to have a significant impact".
- Biodiversity certification proposals.
- Clearing of native vegetation in urban areas and areas zoned for environmental conservation that exceeds the BOS threshold and does not require development consent.
- Clearing of native vegetation that requires approval by the Native Vegetation Panel under the *Local Land Services Act 2013.*
- Activities assessed and determined under Part 5 of the *Environmental Planning and Assessment Act 1979* (generally, proposals by government entities) if proponents choose to 'opt in' to the Scheme.

The proposed JPPS development is a State Significant Development (SSD).

The Project has been assessed in accordance with the BAM (DPIE 2020a). The Biodiversity Accredited Assessor System (BAAS) Case number for the Project is 00026116/BAAS18041/21/00026117. Gilbert Whyte (Assessor Number BAAS18041) is the Biodiversity Accredited Assessor for the project.

1.4.2.2 Application of the Biodiversity Offset Scheme

The proposed development will result in the removal of 0.10 ha planted native/exotic vegetation (36 trees) (not consistent with plant communities within the locality), and 0.20 ha of exotic grassland (managed). Whilst entry into the BOS is triggered by the proposed development's status as a SSD, Section 2.2 of the BAM (DPIE 2020a) details three (3) streamlined assessment modules intended to align assessment requirements in relation to the level of biodiversity risk, enabling the preparation of a reduced assessment scope in accordance with the BAM.

These streamlined assessment modules may be used where the proposed development impacts on:

A. Scattered trees (Appendix B of the BAM).
B. A small area (Appendix C of the BAM).
C. Planted native vegetation, where the planted native vegetation was planted for purposes such as street trees and other roadside plantings, windbreaks, landscaping in parks and gardens, and revegetation for environmental rehabilitation (Appendix D of the BAM).

Appendices B, C and D of the BAM set out the circumstances where each of the streamlined assessment modules can be used to assess a proposal and the specific assessment requirements. Streamlined assessment modules cannot be used to assess clearing within areas mapped by the NSW Biodiversity Values Map.

One (1) streamlined assessment module is applicable to this assessment: the *Streamlined Assessment Module – Planted Native Vegetation* (Appendix D of the BAM).

Streamlined Assessment Module - Planted Native Vegetation

The decision-making key in Appendix D of the BAM (DPIE 2020a) was utilised to determine if the Streamlined Assessment Module – Planted Native Vegetation is applicable to the proposed development. The following determinations were made:

- The planted native vegetation to be impacted as a result of the proposed development cannot be reasonably assigned to a PCT (Plant Community Type) known to occur in the IBRA (Interim Biogeographic Regionalisation for Australia) subregion.

- The planted vegetation has not been planted for the purposes of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9 (2).
- The planted native vegetation is not comprised of individuals of a threatened species or other native species planted/translocated for the purposes of providing threatened species habitat.
- The planted native vegetation is planted for aesthetic purposes (i.e. landscaping).

Justification for the use of the Streamlined Module – Planted Native Vegetation is presented in **Table D-1-1.**

1.4.3 Koala SEPP 2021

The Koala SEPP aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline. Where an approved Koala Plan of Management (KPoM) applies to the land, council's determination of the development application must be consistent with the approved koala plan of management that applies to the land.

There is currently no KPoM for the Blacktown LGA, which is not a listed LGA within Schedule 1 of the Koala SEPP 2021; therefore, the SEPP does not apply to the proposed development.

1.4.4 Biosecurity Act 2015 (NSW)

Under the *Biosecurity Act 2015* (NSW) all plants are regulated with a general biosecurity duty "to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable." Under the Act, a biosecurity impact "is an adverse effect on the economy, environment, or the community that arises, or has the potential to arise, from a biosecurity matter." This legislation is addressed in **Section 5.4**.

1.4.5 *Coastal Management Act 2016*

The *Coastal Management Act 2016* replaces the *Coastal Protection Act 1979* and establishes a strategic framework and objectives for managing coastal issues in NSW. The Act promotes a focus on ecologically sustainable development in relation to the 'coastal zone' as defined by the Act comprising of four coastal management areas:

- Coastal wetlands and littoral rainforests area – areas which display the characteristics of coastal wetlands or littoral rainforests that were previously protected by SEPP 14 and SEPP 26
- Coastal vulnerability area – areas subject to coastal hazards such as coastal erosion and tidal inundation
- Coastal environment area – areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and lagoons and undeveloped headlands. Marine and estuarine waters are also included
- Coastal use area – land adjacent to coastal waters, estuaries and coastal lakes and lagoons.

The Coastal Management SEPP (commenced on 3 April 2018) updates and consolidates into one integrated policy: SEPP 14 (Coastal Wetlands), SEPP 26 (Littoral Rainforests) and SEPP 71 (Coastal Protection), including clause 5.5. of the Standard Instrument – Principal Local Environmental Plan. These policies are now repealed.

The Coastal Management SEPP gives effect to the objectives of the *Coastal Management Act 2016* from a land use planning perspective, by specifying how development proposals are to be assessed if they fall within the coastal zone. It defines the four coastal management areas in the Act through detailed mapping and specifies assessment criteria that are tailored for each coastal management area. Councils and other consent authorities must apply these criteria when assessing proposals for development that fall within one or more of the mapped areas.

The four coastal management areas are:

- **Coastal wetlands and littoral rainforests area** – areas which display the characteristics of coastal wetlands or littoral rainforests that were previously protected by SEPP 14 and SEPP 26.
- **Coastal vulnerability area** – areas subject to coastal hazards such as coastal erosion and tidal inundation.
- **Coastal environment area** – areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and lagoons and undeveloped headlands. Marine and estuarine waters are also included.
- **Coastal use area** – land adjacent to coastal waters, estuaries and coastal lakes and lagoons.

No Areas of Coastal Wetland, mapped under the Coastal Management SEPP, occur within the Study Area. The closest mapped area of Coastal Wetlands occurs 9km to the northwest of the Study Area.

1.4.6 *Water Management Act 2000*

Controlled activities carried out in, on or under waterfront land are regulated by the Water Management Act (WM Act). 'Waterfront land' is defined as the bed of any river, lake or estuary, and the land within 40 m of the river banks, lake shore or estuary mean high water mark. A third order stream (Second Ponds Creek) exists 150m to the west of the proposed development. As such, the Project has avoided impacts to the waterbody and the vegetated riparian zone. The Project therefore does not constitute a 'controlled activity' as per the WM Act.

1.4.7 Draft Environment State Environmental Planning Policy

The Draft Environment State Environmental Planning Policy (Draft Environment SEPP) aims to promote the protection and improvement of key environmental assets for their intrinsic value and the social and economic benefits they provide.

The Draft Environment SEPP aims to deliver a planning framework that:

- consolidates existing state level planning provisions into a single instrument
- is in a format capable of being expanded and amended as future needs dictate
- reflects and is consistent with other legislation and environmental planning instruments
- maintains and improves environmental protections in existing State Environmental Planning Policies.

The Draft Environment SEPP will set out provisions under four parts being:

- catchments
- waterways
- bushland
- protected areas.

Two (2) parts of the Draft Environment SEPP are considered relevant to the proposed development including Catchments and Bushland. These parts of the Draft Environment SEPP considered below.

Catchments

The general objectives of the 'Catchments' part will be based on the principle of protecting the catchments for existing and future generations by applying the principles of total catchment management to:

- ensure a healthy and sustainable environment on land and water
- achieve a high quality and ecologically sustainable urban environment
- provide public access to waterways and their foreshores
- protect, maintain and rehabilitate watercourses, freshwater wetlands, riparian lands, remnant vegetation and ecological connectivity
- maintain water quality and flows
- maintain and enhance watercourses for their value to ecological diversity, recreation, scenic quality, the economy, tourism, heritage and culture
- support the maintenance or achievement of the water quality objectives for the Sydney drinking water catchment.

No impacts to aquatic habitat are expected to occur as part of the proposed development. Indirect impacts to aquatic habitat and appropriate mitigation measures are addressed in **Section 5.2.3**.

Bushland

The 'Bushland' section of the proposed new SEPP will provide aims and objectives consistent with the intent of those from the existing SEPP 19, including preserving publicly owned and managed remnant vegetation on land used for open space and bushland for its aesthetic, recreational, scientific, heritage, biodiversity, and educational value.

The 'Bushland' part of the Draft Environment SEPP will contain provisions outlining:

- the land the 'Bushland' part applies to via a map on the NSW ePlanning Portal
- what is meant by terms like 'bushland' and 'public open space'
- consent requirements for the disturbance of public 'bushland' or bushland on land adjoining public 'bushland'
- what a public authority must consider if proposing to disturb 'bushland'
- guidance for councils who want to prepare a plan of management under the provisions in the 'bushland' part of Draft SEPP

No areas within the site are mapped as Urban Bushland under the Draft Environment SEPP. Consideration of impacts to native vegetation are considered in **Section 5.1.1**.

1.4.8 Sydney Regional Environmental Plan No 20—Hawkesbury-Nepean River (No 2—1997)

The Sydney Regional Environmental Plan No 20 – Hawkesbury-Nepean River (No 2) (1997) aims to protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are

considered in a regional context. This plan applies to certain land within the Sydney Greater Metropolitan Region, including the LGA of Blacktown, whereby the Study Area is located.

Strategies detailed within the plan relevant to the proposed development include the following:

- **Clause 6, subclause 6 – Flora and Fauna**:

  a) Conserve and, where appropriate, enhance flora and fauna communities, particularly threatened species, populations and ecological communities, aquatic habitats, wetland flora, rare flora and fauna, riverine flora, flora with heritage value, habitats for indigenous and migratory species of fauna, and existing or potential fauna corridors.
  b) Locate structures where possible in areas which are already cleared or disturbed instead of clearing or disturbing further land.
  c) Minimise adverse environmental impacts, protect existing habitat and, where appropriate, restore habitat values by the use of management practices.
  d) Consider the range of flora and fauna inhabiting the site of the development concerned and the surrounding land, including threatened species and migratory species, and the impact of the proposal on the survival of threatened species, populations and ecological communities, both in the short and longer terms.
  e) Consider the need to control access to flora and fauna habitat areas.

The BDAR considers each of these impact mitigation and minimisation strategies within **Section 5.2.3**.

1.4.9 State Environmental Planning Policy No 19—Bushland in Urban Areas.

The State Environmental Planning Policy No 19—Bushland in Urban Areas (the "Urban Bushland SEPP") aims to protect and preserve bushland within the urban areas referred to in Schedule 1 of the SEPP because of its value to the community as part of the natural heritage, its aesthetic value, and its value as a recreational, educational and scientific resource. The Urban Bushland SEPP applies to the proposed development owing to the inclusion of the Blacktown LGA within Schedule 1.

Considerations required under the SEPP in relation to the proposed development include:

a) The need to retain any bushland on the land,
b) The effect of the proposed development on bushland zoned or reserved for public open space purposes and, in particular, on the erosion of soils, the siltation of streams and waterways and the spread of weeds and exotic plants within the bushland, and
c) Any other matters which, in the opinion of the approving or consent authority, are relevant to the protection and preservation of bushland zoned or reserved for public open space purposes.

The John Palmer Primary School BDAR considers each of these impact mitigation and minimisation strategies including avoiding impacts to bushland and weed management within **Section 5.2.3**.

2 LANDSCAPE CONTEXT

2.1 LANDSCAPE FEATURES

The landscape features detailed in Section 3 of the BAM (DPIE 2020f) and applicable to the Development Site are described in **Table 1**. These landscape features are also shown on **Figure 3**.

Table 1: Landscape Features relevant to the Development Site.

Landscape Feature	Development Site
IBRA Region	**NSW Sydney -** The Development Site occurs centrally withing the Sydney Basin Bioregion.
IBRA Sub Region	**Cumberland -** The Development Site occurs within the Cumberland IBRA Sub Region.
Local Government Area (LGA)	**Blacktown City Council Local Government Area**
Mitchell Landscapes	**Cumberland Plains** (Department of Environment and Climate Change [DECC], 2002; Mitchell 2002) Low rolling hills and valleys in a rain shadow area between the Blue Mountains and the coast on horizontal Triassic shales and lithic sandstones forming a down-warped block on the coastal side of the Lapstone monocline. Intruded by a small number of volcanic vents and partly covered by Tertiary river gravels and sands (Hawkesbury-Nepean Terrace Gravels landscape). Quaternary alluvium along the mains streams. General elevation 30 to 120m, local relief 50m. and sometimes affected by salt in tributary valley floors. Pedal uniform red Page 110to brown clays on volcanic hills. Red and brown texture-contrast soils on crests grading to yellow harsh texture-contrast soils in valleys. Woodlands and open forest of grey box (*Eucalyptus moluccana*), forest red gum (*Eucalyptus tereticornis*), narrow-leaved ironbark (*Eucalyptus crebra*), thin-leaved stringybark (*Eucalyptus eugenioides*), cabbage gum (*Eucalyptus amplifolia*) and broad-leaved apple (*Angophora subvelutina*). Grassy to shrubby understorey often dominated by Australian boxthorn (*Bursaria spinosa*), poorly drained valley floors, often salt affected with swamp oak (*Casuarina glauca*) and paperbark (*Melaleuca sp*.).
Rivers, streams and estuaries	Mapped watercourses occur 150m to the West (Second Ponds Creek). The Study Area is outside of the Riparian Buffer for this waterbody (**Figure 3**). No other streams, rivers or estuaries are within proximity to the Study Area.
Wetlands	The Study Area is not in proximity to any Wetlands of Importance or RAMSAR wetlands. The closest wetland is 9km to the northwest.
Connectivity of different areas of habitat	The Study Area is not connected to any larger areas of vegetation as it is isolated by roads and residential dwellings (**Figure 3**).
Areas of geological significance and soil hazard features	The Study Area is not located with an area identified as having any particular geological significance. No mapping was identified that would indicate the site contains any soil hazard features.
Areas of outstanding biodiversity value	There are no areas of outstanding biodiversity value mapped within the Development Site or Study Area.
Geology and Soils	**Blacktown (9030bt) -** This Soil Landscape occurs on gently undulating rises on Wianamatta Group shales. Local relief to 30 m, slopes usually >5%. Broad rounded crests and ridges with gently inclined slopes. Cleared Eucalypt woodland and tall open-forest (dry sclerophyll forest).

Legend

- Development Site
- Landscape Assessment - 1500m
- Landscape Assessment - Native

Biodiversity Values (V11.7)

- Threatened species or communities with potential for serious and irreversible impacts
- IBRA Sub-region Boundary (V7) - (Entire Landscape Assessment Area is Sydney Basin - Hunter)
- Mitchell Landscapes Boundary (V3)
- Watercourse (Labelled with stream order)
- Riparian Buffers
- Arterial Road
- Sub-arterial Road

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DATA SOURCE:
NSW DFSI - 2021
NSW EOH - 2021
Nearmap - 2021

Landscape Context

Jacobs Group (Australia) Pty Ltd
Biodiversity Development Assessment Report
John Palmer Public School (Lot 1 DP1131340)
85 The Ponds Blvd, The Ponds NSW

FIGURE:
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3 NATIVE VEGETATION

3.1 METHODOLOGY

Native vegetation at the site was assessed in accordance with Section 4 of the BAM (DPIE 2020a).

3.1.1 Site Assessment

Vegetation Mapping and Surveys

Detailed vegetation surveys were conducted across the Study Area on 6 July 2021. Areas of vegetation to be impacted by the amended development design were mapped during this period.

The boundaries of each of the identified vegetation communities within the Study Area were mapped using a combination of rapid data points (RDP) and walking transects, using the polygons produced through aerial photo interpretation (API) to assist in targeting survey effort. RDPs involved collecting waypoints over the Study Area using a handheld Trimble™ GPS unit and recording dominant species, structure and condition. Walking transects involved verifying polygons where homogenous in floristic composition and condition, as well as walking vegetation ecotones and using the recorded tracks to define vegetation community boundaries. The RDPs and survey tracks were then overlaid on an aerial photograph and used to delineate and/or clarify vegetation boundaries.

Plant Community Type and Determination

Vegetation zones were identified based on dominant flora species present within each structural layer (i.e. canopy, shrub and ground layers). Exotic or highly modified native vegetation types were defined based on structure and species composition. A review of Plant Community Types (PCTs) listed in the BioNet Vegetation Classification database (DPIE 2021b), including floristics, composition, landscape position, soil type and diagnostic features, was completed to determine the most representative PCT for vegetation on site.

The closest equivalent PCT for each vegetation community was determined through a comparison of the floristic descriptions of PCTs in the database with the plot / transect data collected from the Development Site. In addition to floristic and structural similarity, the landscape position, soil type and other diagnostic features of the vegetation communities on the site were compared to the descriptions in the database to determine the most suitable PCT. Threatened ecological communities (TECs) as defined in NSW and Commonwealth legislation were also identified if present.

Vegetation Zones

Vegetation zones were identified and delineated in the Study Area in accordance with Section 4.3 of the BAM (DPIE 2020a). A vegetation zone is defined in the BAM as a relatively homogenous area that is the same vegetation type and broad condition.

Assessing Vegetation Integrity (Site Condition)

Following stratification of the Development Site into vegetation zones, random meanders were undertaken to collect site condition data for the composition, structure and function attributes listed in **Table 2** in accordance with Section 4.3 of the BAM (DPIE 2020a).

Table 2: Composition, Structure and Function components of vegetation integrity

Growth form groups used to assess composition (species richness) and structure (percent foliage cover)	Function attributes
• Tree (TG) • Shrub (SG) • Grass and grass-like (GG) • Forb (FG) • Fern (EG) • Other (OG)	• Number of large trees • Tree regeneration (presence/absence) • Tree stem size class (presence/absence) • Total length of fallen logs • Litter cover • High threat exotic vegetation cover (HTE) • Hollow-bearing trees (HBT)

Floristic Identification and Nomenclature

Floristic identification and nomenclature is based on classification by Royal Botanic Gardens and Domain Trust, Sydney, published on PlantNET (the NSW Plant Information Network System http://plantnet.rbgsyd.nsw.gov.au).For use in the BAM Calculator, native species were assigned to growth forms as per their classification in BioNet, and High Threat Weeds were classified as per the list published by The Biodiversity Conservation Division (BCD, formerly known as the Office of Environment and Heritage or OEH).

3.2 RESULTS

3.2.1 Flora

Field surveys determined that the vegetation within the site is characterised by a mix of native and exotic planted vegetation, gardens and managed exotic grassland. The vegetation within the Study Area was assigned to two (2) vegetation zones based on floristics and vegetation condition, these are identified **Table 3**, and include the following:

- **Vegetation Zone 1:** *Planted Native/Exotic Vegetation* – Characterised by a mix of planted native and exotic trees and shrubs, dominated by a canopy of *Corymbia maculata* (Spotted Gum) and a midstorey comprised of a mix of *Melaleuca sp.*
- **Vegetation Zone 2:** *Exotic Grassland (Managed)* –Dominated by a managed lawn of *Cynodon incompletus* as well as a variety of other exotic grasses and forbs such as *Sporobolus africanus* (Parramatta Grass), *Eragrostis curvula* (African Love Grass) and *Soliva sessilis* (Bindyi).

The Planted Native Vegetation within the Development Site could not be reasonably assigned to a PCT occurring within the Cumberland IBRA sub-region (see Appendix D). Therefore, the *Streamlined Assessment Module – Planted Native Vegetation* was deemed appropriate in accordance with Appendix D of the BAM (DPIE 2020a).

In accordance with Table 28 of the BAM (DPIE, 2020a) impacts to the Planted Native/Exotic Vegetation have been considered in the context of potential habitat for threatened species throughout this report (see **Section 5**) The removal of this vegetation from the Development Site does not generate an ecosystem credit obligation.

A summary of vegetation communities is provided in **Table 3**.

Table 3: Vegetation Communities within the Study Area

Vegetation Community	Vegetation Formation	Vegetation Class	Area (ha) within Study Area	Area (ha) within Development Site
Planted Native/Exotic Vegetation (Zone 1)	NA	NA	0.39 ha	0.10 ha (36 trees)
Exotic Grassland (managed) (Zone 2)	NA	NA	1.32 ha	0.20 ha
Existing Infrastructure (Buildings, footpaths, and associated infrastructure).	NA	NA	1.27 ha	0.22 ha
Total			2.98 ha	0.51 ha

Vegetation Zone 1

Plate 1: Planted Native/Exotic Vegetation

PCT	Vegetation Formation
Vegetation Formation and Class	**Not applicable**
Area within Development Site	0.10 ha (removal of 36 trees)
Survey Effort	**Required:** 0 plots/transects **Conducted:** 0 plots/transects
Floristic description	The vegetation within this zone is characterised by a diverse planting of canopy tree species, scattered shrubs, and a managed mixed native/exotic grassy groundcover. The canopy species are dominated by *Corymbia maculata* (Spotted Gum) within the study area with a mix of other planted native species including; *Eucalyptus amplifolia* (Cabbage Gum), *Eucalyptus bosistoana* (Coast Grey Box), *Eucalyptus crebra* (Narrow-leaved Ironbark), *Eucalyptus fibrosa* (Red ironbark), *Eucalyptus sideroxylon* (Mugga Ironbark) and *Angophora costata* (Smooth-barked Apple). The open shrub layer is dominated by a mix of Melaleuca species including; *Melaleuca armillaris subsp. armillaris* (Bracelet Honey-myrtle), *Melaleuca decora, Melaleuca linariifolia* (Flax-leaved paperbark) and *Melaleuca styphelioides* (Prickly-leaved Tea Tree). Other species include *Doryanthes excelsa* (Gymea Lily), *Westringia fruticosa* (Coastal Rosemary) and *Grevillea sp.* The groundlayer retains a sparse distribution of native *Lomandra sp.* including *Lomandra longifolia* (Spiney-headed Mat-rush) and *Lomandra fluviatilis*. Exotic species within the planted native/exotic vegetation include *Jacaranda mimosifolia* (Jacaranda), *Triadica sebifera* (Chinese Tallowood), *Senecio madagascariensis* (Fireweed) and *Sonchus asper* (Prickly Sowthistle).

PCT	Vegetation Formation
Condition within Development Site	The vegetation within this zone is of moderate condition, characterised by a mix of planted native/exotic trees and shrubs, the majority of which are not locally indigenous.
Justification for PCT selection	Vegetation within this zone is not representative of a PCT. Justification for the status of this vegetation zone as “Planted Native Vegetation” is provided in **Appendix D,** including consideration of historic aerial photos (**Plate 2**).
Status	**BC Act:** N/A **EPBC Act:** N/A
SAII	No
PCT % Cleared	N/A

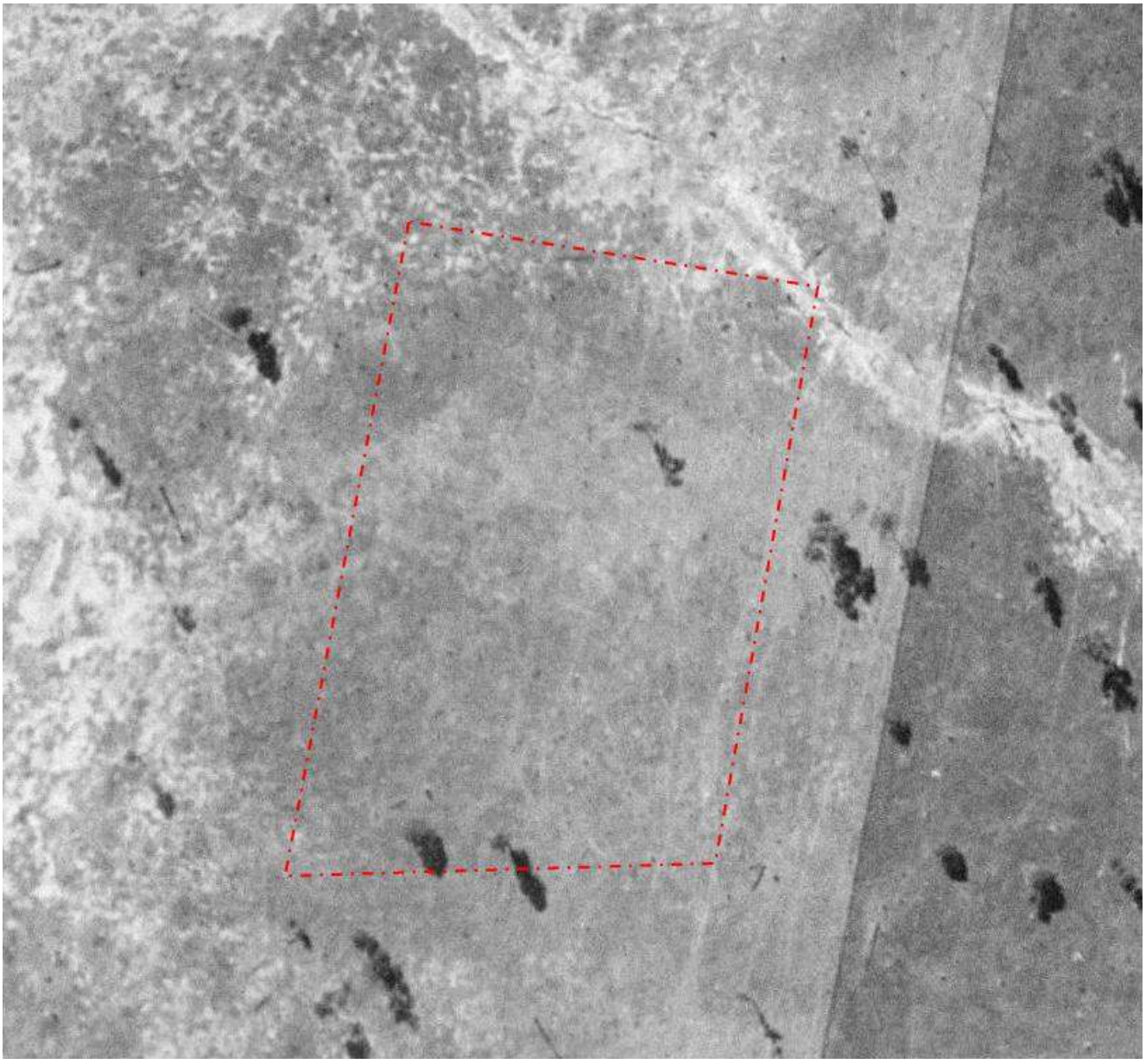

Plate 2: Historical Aerial Imagery of The Ponds 1943 (NSW Govt. 2021). See approximate location of Study Area in red.

Vegetation Zone 2

Plate 3: Exotic Grassland

PCT	Vegetation Formation
Vegetation Formation and Class	N/A
Area within Development Site	0.20 ha
Survey Effort	**Required: 0** plot/transect **Conducted: 0** plot/transect.
Floristic description	Vegetation within Zone 2 is highly managed with no remaining canopy or midstratum. This zone is dominated by the exotic grass *Cynodon incompletus,* intermixed within other exotic grasses and forbs such as *Sporobolus africanus* (Parramatta Grass), *Eragrostis curvula* (African Love Grass), *Soliva sessilis* (Bindyi), *Sonchus asper* (Prickly Sow thistle) and *Trifolium repens* (White Clover).
Condition within Development Site	Zone 2 represented highly managed low condition exotic grassland. This is based on the absence of upper and mid strata, as well as the high proportion of exotic ground cover species. Native flora is sparse and low in diversity within this zone.
Justification for PCT selection	Vegetation within this zone is not representative of a PCT.
Status	**BC Act:** N/A **EPBC Act:** N/A
SAII	No
PCT % Cleared	N/A

3.2.2 Fauna

A hollow bearing tree and nest surveys were conducted within the Development Site. No hollow bearing trees or nests were found. A list of opportunistic fauna sightings was recorded and are listed in Appendix C. No threatened species were recorded during the site visit.

Legend

- Study Area
- Development Site
- Site Layout
- Sub-arterial Road
- Local Road
- Trees to be removed

Vegetation Zone

- Vegetation Zone 2: Exotic Grassland (Managed)
- Vegetation Zone 1: Planted Native/Exotic Vegetation
- Existing Infrastructure

Metres
0 5 10 20 30 40 50

N

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DRAWN BY: GJoyce

DATA SOURCE:
NSW DFSI - 2021
Nearmap - 2021

Plant Community Types and Vegetation Zones

Jacobs Group (Australia) Pty Ltd
Biodiversity Development Assessment Report
John Palmer Public School (Lot 1 DP1131340)
85 The Ponds Blvd, The Ponds NSW

FIGURE:

4

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4 THREATENED SPECIES

Flora and fauna field surveys were conducted by Kleinfelder on 6 July 2021. These surveys were undertaken to determine the likelihood of occurrence of threatened flora and fauna species within the Development Site. The survey effort is shown in **Figure 5.**

The flora and fauna survey methods were designed to satisfy standards established by the Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (DEC 2004). A reduced survey effort was considered adequate given that the vegetation assessment revealed that the Development Site contains minimal biodiversity values and habitat features for threatened species.

4.1 ASSESSING HABITAT SUITABILITY

To inform the assessment of suitable habitat for threatened species and populations within the Study Area, a database search of the NSW DPIE BioNet Atlas (DPIE 2021a) and the Commonwealth DAWE Protected Matters Search Tool (PMST) (DAWE 2021a) were conducted. Results of the database search and 'likelihood of occurrence' assessment are provided in **Appendix A**.

A total of 91 threatened species and communities have previously been recorded or are modelled to occur within a 5 km radius of the Study Area (**Appendix A**) (DAWE 2021 Department of Planning, Industry and Environment 2020). These include 8 Threatened Ecological Communities, 36 flora, three amphibian, 25 bird, 17 mammal and two gastropod species. Additionally, there were nine migratory bird species modelled to occur within a 5 km radius of the Study Area.

4.1.1 Flora

The Development Site is characterised by planted vegetation dominated by *Corymbia maculata* throughout the garden areas planted with a diverse mix of native and non-native species (Vegetation Zone 1) and managed exotic grassland throughout the site (Vegetation Zone 2). Historical aerial imagery indicates the site was previously cleared of native vegetation as early as 1943 (see **Plate 2**). Furthermore, the existing vegetation and floristics within the site have been highly influenced by its use as a Public School since it was established in 2008, including the planting of a number of non-indigenous species and native species of non-local provenance.

As a result of historic vegetation clearing, long-term farmland, and management of groundlayer vegetation, the site is not considered to represent suitable habitat for many locally occurring threatened flora species.

4.1.2 Fauna

4.1.2.1 Habitat Assessment

The assessment of fauna habitat undertaken across the Development Site was conducted during the field surveys conducted by Kleinfelder on the 6 July 2021. A map of the vegetation assessed within the Study Area is provided in **Figure 4.**

Fauna habitat values observed during inspections of the Development Site were recorded. Attributes considered important to fauna include hollow-bearing trees, nests, caves, fallen timber/hollow logs, abundance of nectar and fruit resources, water bodies, vegetation cover and structural complexity, fallen timber, leaf litter and connectivity

to surrounding vegetation (corridors). Suitability of habitat for threatened fauna species occurring in the locality was also assessed during the survey.

The Study Area has been historically cleared and managed as lawns and gardens in the school grounds. The tree species may provide marginal foraging and nesting habitat for bird species, but no habitat exists for arboreal fauna/hollow dependent species due to the lack of hollows and the isolation of the site surrounded by residential developments and a shopping complex.

No key terrestrial habitat features such as rocks or logs were detected within the Development Site. Small amounts of leaf litter were found such as mulch, which was applied to the managed gardens.

4.1.2.2 Habitat Tree Survey

A survey of trees within the Development Site was undertaken to locate hollow-bearing trees, dead standing stags and trees containing nests. The location of habitat trees was recorded using a handheld GPS unit and the type of feature it contained was recorded. For trees with hollows, the number and size of hollows was recorded. Hollow size was classified as either small (< 8 cm diameter), medium (8 – 20 cm diameter) or large (> 20 cm diameter) based on the size of the hollow entrance.

No hollow-bearing trees were identified within the Development Site; therefore, no roosting or breeding habitat for hollow dependent fauna species occurs.

4.1.3 Flora Surveys

The site inspection involved random meanders over the Development Site. These meanders were used to compile a list of flora species present within the Development Site as well as targeted searches for threatened flora known to occur within the locality and potentially in the Study Area. All plant species observed during meander surveys were recorded (see **Appendix B**).

4.2 Threatened Species Surveys

4.2.1 Fauna Surveys

4.2.1.1 Diurnal Survey

During the diurnal fauna survey, any vertebrate fauna detected via sighting or calls were recorded. This included:

- Searching through any microhabitat that may be available in each Section of Development Site for fauna that may use litter for cover.
- Diurnal bird surveys were conducted during the site visit all bird species were noted whilst onsite.
- No nocturnal surveys were required due to the lack of hollows/habitat present onsite.

Metres
0 5 10 20 30 40 50
N

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DATE DRAWN: 2021/07/19 13:03 Version 1

DRAWN BY: GJoyce

DATA SOURCE:
NSW DFSI - 2021
Nearmap - 2021

Survey Effort

Jacobs Group (Australia) Pty Ltd
Biodiversity Development Assessment Report
John Palmer Public School (Lot 1 DP1131340)
85 The Ponds Blvd, The Ponds NSW

FIGURE:

5

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4.2.2 Flora Survey Results

A total of 33 flora species were identified during field surveys in the three vegetation strata (**Appendix B**). The data from the flora survey was used to update **Appendix A**. A total of 17 flora species were native and 16 species were considered exotic species. Native plant species were comprised of the following growth forms:

- 6 shrub species,
- 2 grass and grass-like species;
- 1 other species; and
- 8 tree species.

A complete list of the flora species identified within the Study Area is provided in (**Appendix B**).

4.2.3 Fauna Survey Results

No threatened fauna species were identified within the Study Area during the site assessment.

A total of ten (10) species of fauna were detected within the Study Area during field surveys. These include ten (10) bird species common to urban/suburban environments, including the Australian Magpie (*Gymnorhina tibicen*), Rainbow Lorikeet (*Trichoglossus moluccanus*), Crested Pigeon (*Ocyphaps lophotes*), and Common Myna (*Acridotheres tristis*).

5 IMPACT SUMMARY

5.1 ASSESSMENT OF IMPACTS

No prescribed impacts as defined under Part 7.2 of the BC Act are expected as a result of the proposed development.

5.1.1 Impacts to Vegetation

No native vegetation communities were identified within the Development Site. Vegetation Zone 1 was characterised as planted native/exotic vegetation and could not be reasonably assigned to a Plant Community Type (PCT). A total of 0.10 ha of Vegetation Zone 1 will be impacted as part of the proposed development. This will involve the removal of 36 trees including *Corymbia maculata* (Spotted Gum), *Eucalyptus fibrosa* (Red Ironbark), *Eucalyptus crebra* (Narrow-leaved Ironbark), *Angophora costata* (Smooth-barked Apple), *Triadica sebifera** (Chinese Tallowwood), *Eucalyptus tereticornis* (Forest Red Gum), and *Fraxinus griffithii** (Evergreen Ash). Trees to be removed are shown on **Figure 4.**

Mitigation measures to minimise indirect impacts to vegetation are detailed in **Section 5.2.3**.

5.1.2 Impacts on Threatened Species

5.1.2.1 Direct Impacts – Threatened Flora Species

No threatened flora species were observed or modelled to occur within the Study Area or are likely to occur within the Development Site (**Appendix A**). The Study Area contains only planted native/exotic vegetation and exotic grassland (managed) and is unlikely to provide habitat for any potentially occurring threatened flora species.

5.1.2.2 Direct Impact – Threatened Fauna species

Birds

One bird species was determined to have a moderate likelihood of occurrence in the Study Area (**Appendix A**). This was:

- Little Lorikeet (*Glossopsitta pusilla*) (vulnerable) not observed in the Study Area.

The above species was not observed in the Study Area during the fauna surveys. Approximately 0.10 ha (36 trees) of foraging habitat for this species, in the form of planted native/exotic vegetation, would be modified as a result of the proposed development. The proposed development is unlikely to have a significant impact on any individuals potentially occurring in the Study Area, as the area to be modified is relatively small, and is comprised of isolated planted native/exotic vegetation and exotic grassland (managed).

Mammals

Two mammal species were determined to have a moderate likelihood of occurrence in the Study Area (**Appendix A**). These were:

- Grey-headed Flying-fox (*Pteropus poliocephalus*) (vulnerable), potential foraging habitat present but not observed in the Study Area.
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*) (vulnerable) potential foraging habitat present although no roosting habitat.

There is potential foraging habitat for the two threatened mammal species but no roosting or breeding habitat occurs within the Study Area. The potential impact on these species due to the modification of vegetation within the construction areas is expected to be negligible given vegetation disturbance would be limited to the removal of planted native/exotic vegetation and exotic grassland (managed). No large trees containing hollows are present within the Development Site.

The proposed development will not result in any habitat fragmentation or loss of connectivity at the local level which may hinder arboreal mammals from moving across the Study Area. The site has been historically cleared of native vegetation. The vegetation within the Development Site comprises only planted native vegetation and exotic grassland (managed).

Given the highly mobile nature of these species and minor scale of the development, it is unlikely that direct impacts would lead to a significant decline or local extinction of threatened mammals within the locality.

Amphibians, Reptiles, Gastropods and Insects

All amphibians, reptiles, gastropods, or insects returned by the database searches (**Appendix A**) were considered to have a nil or low likelihood of occurrence in the Study Area and would not be impacted by the development.

5.1.3 Indirect Impacts

The Project has the potential to cause the following indirect impacts on land adjacent to the Development Site during construction:

- Increased levels of dust during construction.
- Increased levels of noise.
- Increased levels of light; however, the majority of operations are expected to be during the day, so increased light levels would be minimal.
- Erosion and sedimentation.
- Transfer of weeds and pathogens.

Mitigation measures outlined in **Section 5.2** would minimise and avoid potential indirect impacts associated with the proposed development.

5.2 AVOIDING AND MINIMISING IMPACTS

5.2.1 Avoid and Minimising Impacts on Native Vegetation and Habitat

The proponent has reviewed various options regarding the location and layout of the Project. The proposed Development Site has been selected to limit clearing native vegetation. Areas of intact vegetation, current land use, location of approved developments, location of existing (or approved) roads and services and land zoning were all considered when selecting the location of the proposed development. Only disturbance to exotic grassland (managed) and planted native/exotic vegetation have been proposed for the location of the development. As such the use of this site was considered the best option to minimise environmental impacts.

5.2.2 Avoid and Minimise Impacts on Prescribed Biodiversity Impacts

The following are prescribed impacts which need to be considered as per section 8.3 of the BAM (DPIE 2020a).

5.2.2.1 Impact of development on the habitat of threatened species or ecological communities associated with significant geological features, human made structure or non-native vegetation.

No significant geological features, human made structures or non-native vegetation associated with threatened species habitat or ecological communities occur within the Study Area.

5.2.2.2 Impacts of the development on the connectivity of different habitat which facilitates movement of threatened species

The vegetation within the Study Area is a not a key area for regional connectivity and does not represent an important local wildlife corridor; therefore, the proposed development would not increase fragmentation on a local scale. The proposed development will not impact any corridors or significantly increase fragmentation in the area.

5.2.2.3 Impact of the development on the movement of threatened species that maintains their life cycle

Impacts on vegetation as a result of the proposed development is confined to removal of planted native/exotic vegetation in the form of aesthetic trees and removal of exotic grassland (managed). Removal of such vegetation is not expected to be important to the movement of threatened species through the locality, nor are these habitats presumed to be necessary to maintain their life cycle.

5.2.2.4 Impacts of the development on water quality, bodies and hydrological processes that sustain threatened species or ecological communities.

The site contains no rivers, streams, estuaries or is within any buffer zones of the before mentioned.

5.2.2.5 Impact of wind turbine strikes on protected animals

Not applicable to the current application.

5.2.2.6 Impacts of vehicle strikes on threatened species or on animals that are part of a TEC

Vehicle and machinery movements are necessary during the construction phase of the Project. The site has an existing cleared area which allow access within the Study Area. Measures to minimise any potential impacts would be through the implementation of reduced vehicle speeds within and around the site.

5.2.3 Proposed Mitigation Measures

The final disturbance footprint for the proposed development is provided in **Figure 2**. A summary of mitigation and management measures for the project are outlined in **Table 4**.

Table 4 Mitigation and management measures for the proposed development

Impact	Action and Outcome	Responsibility	Timing
Direct impact / prescribed impact			
Clearing of native vegetation	▪ The area of disturbance should be kept to the minimum required. ▪ Where practicable, canopy-layer vegetation within the maintenance areas should be pruned/lopped and any unnecessary clearing or tree removal should be avoided. ▪ Clearly delineate the boundaries of the Development Site to ensure no accidental incursions within retained vegetation. ▪ Identify and clearly mark 'No-Go Zones' (retained vegetation and site boundary). ▪ Ensure vehicle and equipment parking areas and stockpile areas are identified and sited to avoid areas containing ecological value wherever practicable. ▪ All personnel onsite to be made aware of the sensitivity of the surrounding environmental features.	Construction site manager	Prior to and during vegetation clearing.
Vehicle collision with fauna	▪ Speed limits within the Development Site will be limited to 10 km/hr. This limit should be clearly signed at all entry points to site. ▪ Limit vehicle entry into Development Site were possible.	Construction site manager	During construction and operation
Displacement of resident fauna during clearing works	▪ Directional clearing shall be undertaken whereby clearing will progress from the most disturbed parts of the site, working outwards towards retained vegetation, to encourage fauna to move into these areas.	Construction site manager	During vegetation clearing
Indirect Impact			
Transfer of weeds and pathogens to and from site.	▪ All plant, machinery and equipment to be used for vegetation clearing should be washed down before entering and leaving the site to prevent the spread and establishment of weeds, or fungal pathogens. ▪ Restriction to designated roads (out of 'No-Go' zones). ▪ All exotic vegetation removed from the Development Site to be disposed of off-site. ▪ Weed infestations should be controlled as required during and following construction works.	Construction site manager	During vegetation clearing and construction
Accidental incursions during clearing	▪ Identify and clearly mark 'No-Go Zones' (retained vegetation and site boundary). ▪ All personnel onsite to be made aware of the sensitivity of the surrounding environmental features (e.g. Planted native vegetation to be retained).	Construction site manager	During vegetation clearing and construction

Impact	Action and Outcome	Responsibility	Timing
Increase in dust and noise during clearing works	▪ Limit exposure of bare ground during clearing. ▪ Reduce machinery noise where possible during clearing. ▪ Dust suppression measures such as water to be utilised, as necessary.	Construction site manager	During vegetation clearing and construction
Increase in light pollution	▪ Limit construction to daylight hours to limit light pollution on nocturnal fauna.	Construction site manager	During vegetation clearing and construction
Erosion and sedimentation	▪ Erosion and sedimentation mitigation measures to be put in place prior to commencement of tree clearing works to prevent sedimentation into retained vegetation (e.g. bunds or sediment fencing).	Construction site manager	Prior to commencement of works.
Waste	▪ Waste management procedures to be identified prior to commencement of works. ▪ Spill Response Procedures to be in place and spill kits to be present during clearing works. ▪ All general waste to be removed from site.	Construction site manager	Prior to and during tree clearing.

5.2.4 Proposed Landscaping

Proposed landscaping within the Study Area includes the planting of a number of native species representative of the locally occurring Cumberland Plain Woodland Critically Endangered Ecological Community (CEEC) and accordance with requirements of the Blacktown City Council "Vegetation Management Plan Guideline" and the Blacktown Development Control Plan (DCP).

Large Areas of groundcover planting are proposed to be directed seeded with low groundcover, understory planting of grassy woodland and grassland species derived from the Greening Australia Native Seed Services. Species selected include: *Melaleuca quinquenervia* (Broad-leaved Paperbark), *Dianella revoluta*, and *Syncarpia glomulifera* (Turpentine).

5.3 Environment Protection and Biodiversity Conservation Act 1999

5.3.1 Assessment Requirements

The EPBC Act requires that developments or undertakings that are likely to have a significant impact on MNES be referred for a determination as to whether they are a controlled action which requires approval under the EPBC Act (Section 1.5.1). Of the nine MNES listed under the Act, those considered relevant to the Study Area are potential impacts on listed threatened species or communities and potential impacts on migratory species listed under international agreements. The results of a search of the relevant threatened species database and an assessment of the likelihood of occurrence of threatened and migratory species is provided in **Appendix A**. Three Fauna Species were assessed to have a Moderate likelihood of occurrence within the Study Area these include one threatened species Grey-headed Flying-fox (*Pteropus poliocephalus*) and two Migratory species Pacific Swift (*Apus pacificus)* and White-throated Needletail (*Hirundapus caudacutus*).

Approximately 0.10 ha (36 trees) of marginal habitat for these species, in the form of planted native/exotic vegetation, would be modified as a result of the proposed development. The proposed development is unlikely to have a significant impact on any individuals potentially occurring in the Study Area, as the area to be modified is relatively small, and comprises isolated planted native/exotic vegetation and exotic grassland (managed).

It was determined that impacts to MNES are unlikely. An EPBC referral to the Commonwealth Minister for the Environment is not recommended.

5.4 BIOSECURITY ACT 2015

Species which require control prior to and post construction of the Project to ensure they are not spread due to works, include the high threat species listed in **Table 5**.

Table 5: Weed species requiring control within the Development Site

Family	Scientific Name	Common Name	Weeds of National Significance (WONS)	Priority weeds of the Greater Sydney LLS (Biosecurity Act)	High Threat Weeds (BAM)
Agavaceae	*Agave americana*	Century Plant	-	-	-
Agavaceae	*Yucca aloifolia*	Spanish Bayonet	-	-	-
Amaranthaceae	*Alternanthera pungens*	Khaki Weed	-	-	✓
Asteraceae	*Gamochaeta calviceps*	Cudweed	-	-	-
Asteraceae	*Senecio madagascariensis*	Fireweed	✓	✓	-
Asteraceae	*Soliva sessilis*	Bindyi	-	-	-
Asteraceae	*Sonchus asper*	Prickly Sowthistle	-	-	-
Asteraceae	*Taraxacum officinale*	Dandelion	-	-	-
Bignoniaceae	*Jacaranda mimosifolia*	Jacaranda	-	-	-
Euphorbiaceae	*Triadica sebifera*	Chinese Tallowood	-	-	✓
Fabaceae (Faboideae)	*Trifolium repens*	White Clover	-	-	-
Fabaceae (Faboideae)	*Vicia sativa*	Common vetch	-	-	-
Poaceae	*Cynodon incompletus*	-	-	-	-
Poaceae	*Eragrostis curvula*	African Lovegrass	-	-	✓
Poaceae	*Sporobolus africanus*	Parramatta Grass	-	-	-
Primulaceae	*Lysimachia arvensis*	Scarlet Pimpernel	-	-	-

6 CONCLUSION

The proposed John Palmer Public School development at 85 The Ponds Blvd, The Ponds NSW 2769, comprises a new Homebase block in the north-east corner of the site, new library, hall refurbishment, building A and D refurbishments and the extension to the existing carpark in the south-east corner of the site.

The proposed development would involve the removal of approximately 0.10 ha of planted native/exotic vegetation (36 trees), 0.20 ha of exotic grassland (managed), and 0.22 ha of existing infrastructure. This vegetation provides potential foraging habitat for three threatened fauna species; however, the habitat is not considered to be important to the long-term viability of populations of any of these species in the locality.

The proposed development is unlikely to have a significant impact on any threatened species, as the area to be modified is very small, and comprises isolated native planted vegetation or exotic grassland (managed). Any local populations of these species which may exist are likely to continue to persist should the proposed development be conducted.

Potential direct and indirect impacts associated with the proposed development would be avoided and/or minimised through the implementation of mitigation and management measures outlined in **Section 5.2.3**.

No threatened species or ecological communities identified as being vulnerable to Serious and Irreversible Impacts (SAIIs) were identified within the Development Site.

7 REFERENCES

Blacktown Council (2015) Blacktown Local Environmental Plan 2015

Blacktown Council (2015) Blacktown Development Control Plan 2015

Department of Agriculture, Water and the Environment (DAWE) (2021a). *Protected Matters Search Tool*. Available at: Protected Matters Search Tool | Department of Agriculture, Water and the Environment

Department of the Agriculture, Water and the Environment (DAWE) (2021b). *Species Profile and Threats Database (SPRAT)*. Available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

Department of Environment and Conservation (DEC). (2004). *Threatened Species Survey and Assessment: Guidelines for developments and activities (working draft)*. New South Wales Department of Environment and Conservation, Hurstville, NSW.

Department of Environment and Climate Change (DECC) (2002). *Descriptions for NSW (Mitchell) Landscapes, Version 2*. Based on descriptions compiled by Dr. Peter Mitchell.

Department of Planning, Industry and Environment (DPIE) (2018b). *Coastal Wetlands and Littoral Rainforest Area Map.* Published by the Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW. Available at: https://webmap.environment.nsw.gov.au/PlanningHtml5Viewer/?viewer=SEPP_CoastalManagement

Department of Planning, Industry and Environment (DPIE) (2021a). *BioNet Atlas of NSW*. Available at: http://www.bionet.nsw.gov.au/

Department of Planning, Industry and Environment (DPIE) (2021b). *BioNet Vegetation Classification.* Available at: https://www.environment.nsw.gov.au/research/Visclassification.htm

Department of Planning, Industry and Environment (DPIE) (2021c). *BioNet Threatened Biodiversity Data Collection*. Available at: https://www.environment.nsw.gov.au/threatenedSpeciesApp/

Department of Planning, Industry and Environment (DPIE) (2021d). *Threatened Biodiversity Profile Search*. Available at: https://www.environment.nsw.gov.au/threatenedspeciesapp/

Department of Planning, Industry and Environment (DPIE) (2021e). *NSW Threatened Species Scientific Committee – Final Determinations*. Available at: https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations

Department of Planning, Industry and Environment (DPIE) (2020a). *Biodiversity Assessment Method*. Published by the Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW.

Department of Planning, Industry and Environment (DPIE) (2020b). *Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method*. Published by Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW.

Department of Spatial Services (DSS) *Six Maps* Available at: https://maps.six.nsw.gov.au/

Harden, G.J. (ed.) (1992). *Flora of New South Wales,* Volume 3, NSW University Press, Sydney.

Harden, G.J. (ed.) (1993). *Flora of New South Wales,* Volume 4, NSW University Press, Sydney.

Harden, G.J. (ed) (2000). *Flora of New South Wales,* Volume 1, NSW University Press, Sydney.

Harden, G.J. (ed.) (2002). *Flora of New South Wales*, Volume 2, NSW University Press, Sydney.

Matthei, L. E. (1995). *Soil Landscapes of Newcastle 1:100 000 Sheet*. Sydney, Department of Land and Water Conservation.

Pizzey G. & Knight F. (2017) Birds of Australia Digital Edition V1.5. 8th edn. Gibbon Multimedia (Aus) Pty Ltd, Craigieburn, Australia.

APPENDIX A – THREATENED SPECIES DATABASE SEARCH

THREATENED SPECIES DATABASE SEARCH

A list of threatened species, populations and ecological communities that have been reported or modelled to occur from within a five-kilometre radius of the Study Area was obtained from the following databases:

- NSW Department of Planning, Industry and Environment (DPIE) BioNet Atlas: (http://www.bionet.nsw.gov.au/).
- Protected matter database search tool (https://www.environment.gov.au/epbc/protected-matters-search-tool)

An assessment was then made of the likelihood of the threatened species, populations, and / or ecological communities reported or modelled to occur in the locality occurring within the Study Area or using the habitat within the Study Area as an essential part of a foraging range.

The table below summarises the likelihood of threatened species and EPBC Act listed migratory species occurring within the Study Area based on the habitat requirements of each species. A brief definition of the likelihood of occurrence criteria is provided below:

- Known – species identified within the site during surveys.
- High – species known from the area (DPIE Wildlife Atlas records), suitable habitat (such as roosting and foraging habitat) present within the site.
- Moderate – species may be known from the area, potential habitat is present within the site.
- Low – species not known from the area and/or marginal habitat is present within the site.
- Nil – habitat requirements not met for this species within the site.

Note: Marine species identified within the desktop assessment i.e. marine bird species, have been excluded from the list based on obvious habitat constraints. However, indirect impacts on these species and ecological communities have been considered.

Table A1 'Likelihood of Occurrence' table

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
Flora								
1.	***Acacia bynoeana*** Bynoe's Wattle	E	V	-	PMST	Bynoe's wattle is found in central eastern NSW, from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains. Occurs in heath or dry sclerophyll forest on sandy soils. Seems to prefer open, sometimes slightly disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches.	Low	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
2.	***Acacia pubescens*** Downy Wattle	V	V	3	PMST	Concentrated around the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. Occurs in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland.	Low	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
3.	***Allocasuarina galreicola***	E	E	-	PMST	Primarily restricted to the Richmond (NW Cumberland Plain) district, but with an outlier population found at Voyager Point, Liverpool. Grows in Castlereagh woodland on lateritic soil. Found in open woodland with Eucalyptus parramattensis, Eucalyptus fibrosa, Angophora bakeri, Eucalyptus sclerophylla and Melaleuca decora.	Low	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
4.	***Asterolasia elegans***	E	E	-	PMST	Occurs north of Sydney, in the Baulkham Hills, Hawkesbury and Hornsby local government areas. Found in sheltered forests on mid- to lower slopes and valleys, e.g. in or adjacent to gullies which support sheltered forest.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
5.	***Callistemon linearifolius*** Netted Bottle Brush	V	-	1	BioNet	Recorded from the Georges River to Hawkesbury River in the Sydney area, and north to the Nelson Bay area of NSW. Grows in dry sclerophyll forest on the coast and adjacent ranges.	Low	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
6.	***Caladenia tessellate*** Thick-lipped Spider-orchid	E	V	-	PMST	The Thick Lip Spider Orchid is known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
7.	***Cryptostylis hunteriana*** Leafless Tongue Orchid	V	V	-	PMST	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum (*Eucalyptus sclerophylla*), Silvertop Ash (*E. sieberi*), Red Bloodwood (*Corymbia gummifera*) and Black Sheoak (*Allocasuarina littoralis*); appears to prefer open areas in the understorey of this community.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
8.	***Cynanchum elegans*** White-flowered Wax Plant		E	-	PMST	Restricted to eastern NSW where it is distributed from Brunswick Heads on the north coast to Gerroa in the Illawarra region. The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
9.	***Darwinia biflora***	V	V	340	BioNet, PMST	Recorded in Ku-ring-gai, Hornsby, Baulkham Hills and Ryde local government areas. Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone. Associated overstorey species include Eucalyptus haemastoma, Corymbia gummifera and/or E. squamosa. The vegetation structure is usually woodland, open forest or scrub-heath.	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
10.	***Dillwynia tenuifolia***	V	-	2	BioNet	The core distribution is the Cumberland Plain from Windsor and Penrith east to Dean Park near Colebee. In western Sydney, may be locally abundant particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays.	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
11.	***Epacris purpurascens var. purpurascens***	V	-	34	BioNet	Recorded from Gosford in the north, to Narrabeen in the east, Silverdale in the west and Avon Dam vicinity in the South. Found in a range of habitat types, most of which have a strong shale soil influence.	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
12.	***Eucalyptus sp. Cattai***	CE	CE	262	BioNet, PMST	Occurs in The Hills Local Government Area, with known populations occurring within the area bounded by Kellyville - Maraylya – Glenorie. Occurs as a rare emergent tree in scrub, heath and low woodland on sandy soils, usually as isolated individuals or occasionally in small clustered groups. The sites at which it occurs are generally flat and on ridge tops.	Low	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
13.	***Eucalyptus nicholii***	V	V	3	BioNet	This species is sparsely distributed but widespread on the New England Tablelands from Nundle to north of Tenterfield, being most common in central portions of its range. Found largely on private property and roadsides, and occasionally in conservation reserves. Planted as urban trees, windbreaks and corridors. Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock.	Nil	No suitable habitat within the Development Site. Records within the locality, outside of known distribution. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
14.	***Genoplesium baueri*** Yellow Gnat-orchid	E	E	-	PMST	The species has been recorded from locations between Ulladulla and Port Stephens. Currently the species is known from just over 200 plants across 13 sites. The species has been recorded at locations now likely to be within the following conservation reserves: Berowra Valley Regional Park, Royal National Park and Lane Cove National Park. May occur in the Woronora, O'Hares, Metropolitan and Warragamba Catchments. Grows in dry sclerophyll forest and moss gardens over sandstone.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
15.	***Grevillea juniperina subsp. Juniperina*** Juniper-leaved Grevillea	V	-	33	BioNet	Endemic to Western Sydney, centred on an area bounded by Blacktown, Erskine Park, Londonderry and Windsor with outlier populations at Kemps Creek and Pitt Town. Recorded from Cumberland Plain Woodland, Castlereagh Ironbark Woodland, Castlereagh Scribbly Gum Woodland and Shale/Gravel Transition Forest.	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
16.	***Haloragodendron lucasii***	E	E	-	PMST	The known locations of this species are confined to a very narrow distribution on the north shore of Sydney. Associated with dry sclerophyll forest. Reported to grow in moist sandy loam soils in sheltered aspects, and on gentle slopes below cliff-lines near creeks in low open woodland.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
17.	***Hibbertia superans***	E	-	488	BioNet	Occurs from Baulkham Hills to South Maroota in the northern outskirts of Sydney, where there are currently 16 known sites, and at one locality at Mount Boss, inland from Kempsey. Occurs in both open woodland and heathland, and appears to prefer open disturbed areas, such as tracksides.	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
18.	***Isotoma fluviatilis subsp. fluviatilis***	-	Extinct	2	BioNet	Currently known from only two adjacent sites on a single private property at Erskine Park in the Penrith LGA. Previous sightings are all from western Sydney, at Homebush and at Agnes Banks. Known to grow in damp places, on the Cumberland Plain, including freshwater wetland, grassland/alluvial woodland and an alluvial woodland/shale plains woodland (Cumberland Plain Woodland) ecotone.	Nil	No suitable habitat within the Development Site. Only two records in the locality. **Not recorded during site assessment.**
19.	***Lasiopetalum joyceae***	V	V	1	BioNet, PMST	Has a restricted range occurring on lateritic to shaley ridgetops on the Hornsby Plateau south of the Hawkesbury River. Grows in heath on sandstone.	Nil	No suitable habitat within the Development Site. Only one record within the locality. **Not recorded during site assessment.**
20.	***Leucopogon fletcheri subsp. fletcheri***	E	-	5	Bionet	Restricted to north-western Sydney between St Albans in the north and Annangrove in the south, within the local government areas of Hawkesbury, Baulkham Hills and Blue Mountains. Occurs in dry eucalypt woodland or in shrubland on clayey lateritic soils, generally on flat to gently sloping terrain along ridges and spurs.	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
21.	***Melaleuca deanei*** Deane's Paperbark	V	V		PMST	Deane's Paperbark occurs in two distinct areas, in the Ku-ring-gai/Berowra and Holsworthy/Wedderburn areas respectively. The species occurs mostly in ridgetop woodland, with only 5% of sites in heath on sandstone.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
22.	***Persicaria elatior*** Tall Knotweed	V	V	-	PMST	Tall Knotweed has been recorded in south-eastern NSW (Mt Dromedary (an old record), Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertson, Bermagui, and Picton Lakes. This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
23.	***Persoonia hirsute*** Hairy Geebung	E	E	6	BioNet	Persoonia hirsuta has a scattered distribution around Sydney. The species is distributed from Singleton in the north, along the east coast to Bargo in the south and the Blue Mountains to the west. The Hairy Geebung is found in sandy soils in dry sclerophyll open forest, woodland and heath on sandstone.	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
24.	***Persoonia nutans*** Nodding Geebung	E	E	-	PMST	Restricted to the Cumberland Plain in western Sydney, between Richmond in the north and Macquarie Fields in the south. Northern populations are confined to aeolian and alluvial sediments and occur in a range of sclerophyll forest and woodland vegetation communities, with the majority of individuals occurring within Agnes Banks Woodland or Castlereagh Scribbly Gum Woodland and some in Cooks River / Castlereagh Ironbark Forests.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
25.	***Pimelea curviflora var. curviflora***	V	V	6	BioNet	Confined to the coastal area of the Sydney and Illawarra regions. Populations are known between northern Sydney and Maroota in the north-west. Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Also recorded in Illawarra Lowalnd Grassy Woodland habitat at Albion Park on the Illawaraa coastal plain.	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
26.	***Pimelea spicata*** Spiked Rice-flower	E	E	83	BioNet, PMST	Once widespread on the Cumberland Plain, the Spiked Rice-flower occurs in two disjunct areas; the Cumberland Plain (Marayong and Prospect Reservoir south to Narellan and Douglas Park) and the Illawarra (Landsdowne to Shellharbour to northern Kiama). In both the Cumberland Plain and Illawarra environments this species is found on well-structured clay soils	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
27.	***Pomaderris brunnea*** Rufous pomaderris	E	V	-	PMST	Brown Pomaderris is found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. It also occurs near Walcha on the New England tablelands and in far eastern Gippsland in Victoria. Brown Pomaderris grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
28.	***Pterostylis gibbose*** Illawarra Greenhood	E	E	-	PMST	It is apparently extinct in western Sydney which is the area where it was first collected (1803). All known populations grow in open forest or woodland, on flat or gently sloping land with poor drainage.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
29.	***Pterostylis Saxicola*** Sydney Plains Greenhood	E	E	-	PMST	Restricted to western Sydney between Freemans Reach in the north and Picton in the south. There are very few known populations and they are all very small and isolated. Most commonly found growing in small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines. The vegetation communities above the shelves where Pterostylis saxicola occurs are sclerophyll forest or woodland on shale/sandstone transition soils or shale soils.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
30.	***Pultenaea parviflora***	E	V	-	PMST	Endemic to the Cumberland Plain. Core distribution is from Windsor to Penrith and east to Dean Park. Outlier populations are recorded from Kemps Creek and Wilberforce. May be locally abundant, particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
31.	***Rhizanthella slateri*** Eastern Australian Underground Orchid	V	E	-	PMST	Habitat requirements are poorly understood and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest. Highly cryptic given that it grows almost completely below the soil surface, with flowers being the only part of the plant that can occur above ground. Therefore usually located only when the soil is disturbed. Flowers September to November.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
32.	***Rhodamnia rubescens*** Scrub Turpentine	CE	-	-	PMST	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
33.	***Rhodomyrtus psidioides*** Natiive Guava	CE	-	-	PMST	Occurs from Broken Bay, approximately 90 km north of Sydney, New South Wales, to Maryborough in Queensland. Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
34.	***Syzgium paniculatum*** Magenta Lilly Pilly	CE	-	7	BioNet	Occurs from Broken Bay, approximately 90 km north of Sydney, New South Wales, to Maryborough in Queensland. Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
35.	***Zieria involucrata***	E	V	90	BioNet, PMST	Has a disjunct distribution north and west of Sydney, in the Baulkham Hills, Hawkesbury, Hornsby and Blue Mountains local government areas. Occurs primarily on Hawkesbury sandstone. Also occurs on Narrabeen Group sandstone and on Quaternary alluvium. Found primarily in sheltered forests on mid- to lower slopes and valleys, e.g. in or adjacent to gullies which support sheltered forest, although some populations extend upslope into drier vegetation.	Nil	No suitable habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
Birds								
1.	***Anthochaera phrygia*** Regent Honeyeater	CE	CE	10	BioNet, PMST	Mostly recorded in box-ironbark eucalypt associations. At times of food shortage, the species also uses other woodland types and wet lowland coastal forest dominated by Swamp Mahogany or Spotted Gum.	Low	Marginally suitable habitat within the Development Site. **Not recorded during site assessment.**
2.	***Artamus cyanopterus cyanopterus*** Dusky woodswallow	V	-	19	BioNet	The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris.	Low	Marginal habitat within the Development Site. Records within the locality. **Not recorded during site assessment.**
3.	***Botaurus poiciloptilus*** Australasian Bittern	E	E	2	BioNet, PMST	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha spp*.) and spikerushes (*Eleocharis spp*.).	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
4.	***Calidris ferruginea*** Curlew Sandpiper	E	CE	-	PMST	It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
5.	***Callocephalon fimbriatum*** Gang-gang Cockatoo	V	-	2	BioNet	In New South Wales, 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. In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
6.	***Calyptorhynchus lathami*** Glossy Black-Cockatoo	V	-	10	BioNet	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (Allocasuarina littoralis) and Forest Sheoak (A. torulosa) are important foods.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
7.	***Chthonicola sagittata*** Speckled Warbler	V	-	2	BioNet	The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
8.	***Climacteris picumnus victoriae*** Brown Treecreeper	V	-	1	BioNet	The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
9.	***Daphoenositta chrysoptera*** Varied Sittella	V	-	17	BioNet	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Low	Marginal suitable habitat within the Development Site. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
10.	***Falco hypoleucos*** Grey Falcon	E	V	P	PMST	Medium-sized, compact, pale falcon with a heavy, thick-set, deep-chested appearance. The species is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast.	Nil	No suitable habitat within the Development Site. No records within the locality. **Not recorded during site assessment.**
11.	***Glossopsitta pusilla*** Little Lorikeet	V	-	13	NSW Atlas	Forages primarily in the canopy of open Eucalyptus Forest and woodland, yet also finds food in *Angophora*, *Melaleuca* and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	Low-Moderate	Suitable foraging habitat within the Development Site. No nesting habitat present. **Not recorded during site assessment.**
12.	***Grantiella picta*** Painted Honeyeater	V	V	P	PMST	Inhabits Acacia pendula, Acacia harpophylla, Box-Gum Woodlands and Box-Ironbark Forests. Feeds on the fruits of mistletoes growing on woodland eucalyptus and acacia.	Nil	No suitable habitat within the Development Site.No records within locality. **Not recorded during site assessment.**
13.	***Haliaeetus leucogaster*** White-bellied Sea-Eagle	V	M	2	BioNet	Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest).	Low	Marginal foraging habitat within the Development Site. No nests were detected during habitat assessments within the Development Site. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
14.	***Hieraaetus morphnoides*** Little Eagle	V	-	10	BioNet	Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.	Low	Marginal foraging habitat within the Development Site. No nests were detected during habitat assessments during targeted surveys. **Not recorded during site assessment.**
15.	***Hirundapas caudacutus*** White-throated Needletail		V,M	2	BioNet, PMST	Most often seen in eastern Australia before storms, low pressure troughs and approaching cold fronts and occasionally bushfire. These conditions are often used by insects to swarm (eg termites and ants) or tend to lift insects away from the surface which favours sighting of White-throated Needletails as they feed.	**Moderate**	Broadly suitable habitat within the Development Site. The species may occasionally utilise the aerial habitat above the site as part of a broader range. **Not recorded during site assessment.**
16.	***Lathamus discolor*** Swift Parrot	E	CE, M	24	BioNet, PMST	This migratory species has been recorded on the mainland from a variety of habitat types including dry and wet sclerophyll forest, forested wetlands, coastal swamp forests and heathlands. This species does not breed within mainland Australia. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	Low	Marginal foraging habitat within the Development Site. No breeding habitat present within the Development Site. **Not recorded during site assessment.**
17.	***Lophoictinia isura*** Square-tailed Kite	V	-	8	BioNet	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria.	Low	Marginal foraging habitat within the Development Site. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
18.	***Melithreptus gularis gularis*** Black-chinned Honeyeater	V	-	1	BioNet	The Black-chinned Honeyeater has two subspecies, with only the nominate (gularis) occurring in NSW. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (Eucalyptus sideroxylon), White Box (E. albens), Inland Grey Box (E. microcarpa), Yellow Box (E. melliodora), Blakely's Red Gum (E. blakelyi) and Forest Red Gum (E. tereticornis).	Low	Marginal habitat within the Development Site. **Not recorded during site assessment.**
19.	***Neophema pulchella*** Turquoise Parrot	V	-	2	BioNet	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland.	Low	Marginal habitat within the Development Site. **Not recorded during site assessment.**
20.	***Ninox strenua*** Powerful Owl	V	-	19	NSW Atlas	The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine, Black She-oak, Blackwood, Rough-barked Apple, Cherry Ballart and a number of eucalypt species. Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old.	Low	Marginal foraging habitat within the Development Site. No potential nesting/roosting habitat present. **Not recorded during site assessment.**
21.	***Numenius madagascariensis*** Eastern Curlew	-	CE	-	PMST	The eastern curlew is Australia's largest shorebird and a long-haul flyer. It is easily recognisable, with its long, down-curved bill. The species takes an annual migratory flight to Russia and north-eastern China to breed, arriving back home to Australia in August.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
22.	***Oxyura australis*** Blue-billed Duck	V	-	2	BioNet	It is widespread in NSW, but most common in the southern Murray-Darling Basin area. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
23.	***Petroica boodang*** Scarlet Robin	V	-	1	NSW Atlas	The Scarlet Robin is found from south east Queensland to south east South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs.	Low	Marginal foraging habitat within the Development Site. **Not recorded during site assessment.**
24.	***Rostratula australis*** Australian Painted Snipe	E	E	-	PMST	In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
25.	***Tyto novaehollandiae*** Masked Owl	V	-	1	BioNet	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. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	Low	Marginal foraging suitable habitat within the Development Site. **Not recorded during site assessment.**
Mammals								
1.	***Chalinolobus dwyeri*** Large-eared Pied Bat	V	V	7	BioNet, PMST	Found in well-timbered areas containing gullies. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features.	Nil	No suitable nesting habitat (caves) within the Development Site. Not suitable foraging habitat due to the absence of nesting habitat within the area.

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
2.	***Dasyurus maculatus*** Spotted-tailed Quoll	V	E	-	PMST	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	Nil	No suitable habitat within the Development Site due the surrounding residential area. No breeding habitat due to a general lack of any habitat.
3.	***Falsistrellus tasmaniensis*** Eastern False Pipistrelle	V	-	26	BioNet	Prefers moist habitats, with trees taller than 20 m. Generally, roosts in tree hollows but has also been found under loose bark on trees or in buildings.	Low	Marginal foraging habitat present within the Development Site. No roosting habitat present.
4.	***Micronomus norfolkensis*** Eastern Coastal Free-tailed Bat	V	-	52	BioNet	Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures.	Low	Marginal foraging habitat present within the Development Site. No roosting habitat present.
5.	***Miniopterus australis*** Little Bentwing-bat	V	-	15	BioNet	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings.	Low	Marginal foraging habitat present within the Development Site. No roosting habitat present.
6.	***Miniopterus orianae oceanensis*** Large Bent-winged Bat	V	-	63	BioNet	Forages in forested habitats. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings, and other man-made structures.	Low	Marginal foraging habitat present within the Development Site. No roosting habitat present.
7.	***Myotis macropus*** Southern Myotis	V	-	47	BioNet	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.	Nil	No foraging or roosting habitat present onsite.

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
8.	***Petauroides volans*** Greater Glider	-	V	-	PMST	Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelters during the day in tree hollows.	Nil	No suitable habitat within the Development Site. No records within locality.
9.	***Petaurus australis*** Yellow-bellied Glider	V	-	6	BioNet	The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils.	Nil	No suitable habitat within the Development Site.
10.	***Petaurus norfolcensis*** Squirrel Glider	V	-	1	BioNet	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas.	Nil	No suitable habitat within the Development Site.
11.	***Petrogale penicillata*** Brush-tailed Rock-wallaby	-	E	P	PMST	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north.	Nil	No suitable habitat within the Development Site. No records within locality. **Not recorded during site assessment.**
12.	***Phascolarctos cinereus*** Koala	V	V	1	BioNet, PMST	Found in a variety of forest types with suitable feed tree species.	Low	Marginal habitat present within the Development Site due to presence of schedule 2 koala use trees. Although the Study Area is isolated and would not be accessed by Koalas. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
13.	***Pseudomys novaehollandiae*** New Holland Mouse	-	V	P	PMST	Inhabits open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes.	Nil	No suitable habitat within the Development Site. No records within locality.
14.	***Pteropus poliocephalus*** Grey-headed Flying-fox	V	V	133	BioNet, PMST	Occurs across a wide range of habitat types along the eastern seaboard of Australia, depending on food availability. Fruit from myrtaceous trees and rainforest trees form the major components of their diet.	**Moderate**	Potential foraging habitat present across the Development Site when Eucalypt species are in flower. No camps detected on site. **Not recorded during site assessment.**
15.	***Saccolaimus flaviventris*** Yellow-bellied Sheathtail-bat	V	-	19	BioNet	Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Roosts in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows.	**Moderate**	Potential foraging habitat present within the Development Site. No roosting habitat present.
16.	***Scoteanax rueppellii*** Greater Broad- nosed Bat	V	-	33	BioNet	This species occurs in a variety of habitats including rainforest, dry and wet sclerophyll forest and eucalypt woodland.	Low	Marginal foraging habitat present within the Development Site. No roosting habitat present.
17.	***Vespadelus troughtoni*** Eastern Cave Bat	V	-	2	BioNet	The Eastern Cave Bat is found in a broad band on both sides of the Great Dividing Range from Cape York to Kempsey, with records from the New England Tablelands and the upper north coast of NSW. A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals	Nil	No suitable habitat within the Development Site.
Amphibians								

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
1.	***Heleioporus australiacus*** Giant Burrowing Frog	V	V	1	BioNet, PMST	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Breeding habitat of this species is generally soaks or pools within first or second order streams. They are also commonly recorded from 'hanging swamp' seepage lines and where small pools form from the collected water.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
2.	***Litoria aurea*** Green and Golden Bell Frog	E	V	6	BioNet, PMST	This species prefers open water bodies, fringed by reeds and other aquatic vegetation for breeding and foraging purposes. Needs fallen logs and debris for shelter and over-wintering purposes.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
3.	***Pseudophryne australis*** Red-crowned Toadlet	V	-	1	BioNet	The Red-crowned Toadlet has a restricted distribution. It is confined to the Sydney Basin, from Pokolbin in the north, the Nowra area to the south, and west to Mt Victoria in the Blue Mountains. 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.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
Gastropod								
1.	***Pommerhelix duralensis*** Dural Land Snail	E	E	16	BioNet, PMST	The species is a shale-influenced-habitat specialist, which occurs in low densities along the western and northwest fringes of the Cumberland IBRA subregion on shale-sandstone transitional landscapes. The species has a strong affinity for communities in the interface region between shale-derived and sandstone-derived soils, with forested habitats that have good native cover and woody debris.	Nil	No suitable habitat within the Development Site.

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
2.	***Meridolum corneovirens*** Cumberland Plain Land Snail	E	-	110	BioNet	Lives in small areas 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. Lives under litter of bark, leaves and logs, or shelters in loose soil around grass clumps. Occasionally shelters under rubbish.	Nil	No suitable habitat within the Development Site.
Migratory Species								
1.	***Apus pacificus*** Pacific Swift	-	M	3	NSW Atlas	Almost entirely aerial and give spectacular displays of high-speed flying above any habitat, urban or rural. Swifts are most often seen in late summer, nearly always in flocks. They are typically associated with stormy weather when they feed on nuptial swarms of various insects.	**Moderate**	Potential aerial foraging habitat within the Development Site. **Not recorded during site assessment.**
2.	***Cuculus optatus*** Oriental Cuckoo	-	M	-	PMST	Inhabits rainforest margins, monsoon forest, vine scrub, riverine thickets, wet densely canopied Eucalypt forests, paperbark swamp and mangroves.	Nil	No suitable habitat within the Development Site.
3.	***Gallinago hardwickii*** Latham's Snipe		M	5	BioNet	Latham's Snipe is a non-breeding migrant to the south east of Australia.	Nil	No suitable habitat within the Development Site. **Not recorded during site assessment.**
4.	***Hirundapus caudacutus*** White-throated Needletail	-	M,V	2	BioNet	Forages in high open spaces over varied habitat types. May aerially forage over the Development Site.	**Moderate**	Broadly suitable habitat within the Development Site. The species may occasionally utilise the aerial habitat above the site as part of a broader range. **Not recorded during site assessment.**

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
5.	***Monarcha melanopsis*** Black-faced Monarch	-	M	-	PMST	Found in rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating.	Nil	No suitable habitat within the Development Site.
6.	***Monarcha trivirgatus*** Spectacled Monarch	-	M	-	PMST	Prefers thick understorey in rainforests, wet gullies and waterside vegetation, as well as mangroves.	Nil	No suitable habitat within the Development Site.
7.	***Motacilla flava*** Yellow Wagtail	-	M	-	PMST	Typically inhabits inundated fields, saltmarsh and wetlands and occasionally coastal areas.	Nil	No suitable habitat within the Development Site.
8.	***Myiagra cyanoleuca*** Satin Flycatcher	-	M	-	PMST	Found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests.	Nil	No suitable habitat within the Development Site.
9.	***Rhipidura rufifrons*** Rufous Fantail	-	M	-	PMST	Found in rainforest, dense wet forests, swamp woodlands and mangroves, preferring deep shade, and is often seen close to the ground.	Nil	No suitable habitat within the Development Site.
Threatened Ecological Communities								
1.	Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	CE	E		PMST	Occurs in western Sydney and originally extended over about 615 hectares, but now has only 98 hectares remaining intact, mostly near Agnes Banks on the east bank of the Hawkesbury River, in the Penrith local government area.	Nil	Absent from Development Site
2.	Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community.	-	E	P	PMST	The ecological community is found within the South Eastern Queensland (SEQ), NSW North Coast (NNC), Sydney Basin (SYB) and part of the South East Corner (SEC) IBRA7 bioregions. The canopy layer is dominated2 by Casuarina glauca (swamp oak, swamp she-oak).	Nil	Absent from Development Site

	Species	Status		Records	Source	Habitat	LoO	Summary
		BC	EPBC					
3.	Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	E	CE	P	PMST	Occurs in western Sydney, and the extent of intact remnants is now reduced to 1011 hectares, with the most extensive stands occurring in the Castlereagh and Holsworthy areas. Smaller remnants occur in the Kemps Creek area and in the eastern section of the Cumberland Plain. Good examples can be seen at the Castlereagh and Windsor Downs Nature Reserves.	Nil	Absent from Development Site
4.	Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	E	CE	P	PMST	The Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest is endemic to New South Wales, specifically the area in and around western Sydney.	Nil	Absent from Development Site
5.	River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	E	CE	P	PMST	Given its habitat, the community has an important role in maintaining river ecosystems and riverbank stability Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains. Generally occurs below 50 m elevation, but may occur on localised river flats up to 250 m above sea level.	Nil	Absent from Development Site
6.	Shale Sandstone Transition Forest of the Sydney Basin Bioregion	CE	CE	P	PMST	9,950 ha remains intact (22.6% of its original extent) and the bulk of this occurs in the Hawkesbury, Baulkham Hills, Liverpool, Parramatta, Penrith, Campbelltown and Wollondilly local government areas. Good examples can be seen at Gulguer Nature Reserve, in the Wilton area and in the Sackville - Maroota area.	Nil	Absent from Development Site
7.	Turpentine-Ironbark Forest of the Sydney Basin Bioregion	CE	CE	P	PMST	This subtropical forest occurs on the coastal floodplains of the North Coast of NSW.	Nil	Absent from Development Site
8.	Western Sydney Dry Rainforest and Moist Woodland on Shale	E	CE	P	PMST	Very restricted and occurs most commonly in the far southern section of the Cumberland Plain, in the Razorback Range near Picton. Outlying occurrences have been recorded at Grose Vale and Cattai.	Nil	Absent from Development Site

APPENDIX B – FLORA SPECIES LIST

Table B1 Flora Species List

Family	Scientific	Common Name	BAM Growth Form*	Status
Planted Vegetation within and adjacent to the Development Site				
Agavaceae	*Agave americana*	Century Plant	Exotic	-
Agavaceae	*Yucca aloifolia*	Spanish Bayonet	Exotic	-
Amaranthaceae	*Alternanthera pungens*	Khaki Weed	HTW	-
Asteraceae	*Gamochaeta calviceps*	Cudweed	Exotic	-
Asteraceae	*Senecio madagascariensis*	Fireweed	Exotic	-
Asteraceae	*Soliva sessilis*	Bindyi	Exotic	-
Asteraceae	*Sonchus asper*	Prickly Sowthistle	Exotic	-
Asteraceae	*Taraxacum officinale*	Dandelion	Exotic	-
Bignoniaceae	*Jacaranda mimosifolia*	Jacaranda	Exotic	-
Doryanthaceae	*Doryanthes excelsa*	Gymea Lily	Other (OG)	-
Euphorbiaceae	*Triadica sebifera*	Chinese Tallowood	HTW - Manageable	-
Fabaceae (Faboideae)	*Trifolium repens*	White Clover	Exotic	-
Fabaceae (Faboideae)	*Vicia sativa*	Common vetch	Exotic	--
Lamiaceae	*Westringia fruticosa*	Coastal Rosemary	Shrub (SG)	-
Lomandraceae	*Lomandra fluviatilis*	-	Grass & grasslike (GG)	-
Lomandraceae	*Lomandra longifolia*	Spiny-headed Mat-rush	Grass & grasslike (GG)	-
Myrtaceae	*Angophora costata*	Sydney Red Gum	Tree (TG)	-
Myrtaceae	*Corymbia maculata*	Spotted Gum	Tree (TG)	-
Myrtaceae	*Eucalyptus amplifolia*	Cabbage Gum	Tree (TG)	-
Myrtaceae	*Eucalyptus bosistoana*	Coast Grey Box	Tree (TG)	-
Myrtaceae	*Eucalyptus crebra*	Narrow-leaved Ironbark	Tree (TG)	-
Myrtaceae	*Eucalyptus fibrosa*	Red Ironbark	Tree (TG)	-
Myrtaceae	*Eucalyptus sideroxylon*	Mugga Ironbark	Tree (TG)	-
Myrtaceae	*Melaleuca armillaris subsp. armillaris*	Bracelet Honey-myrtle	Shrub (SG)	-
Myrtaceae	*Melaleuca decora*	-	Shrub (SG)	-

Family	Scientific	Common Name	BAM Growth Form*	Status
Myrtaceae	*Melaleuca linariifolia*	Flax-leaved Paperbark	Shrub (SG)	-
Myrtaceae	*Melaleuca styphelioides*	Prickly-leaved Tea Tree	Shrub (SG)	-
Myrtaceae	*Tristaniopsis laurina*	Kanooka	Tree (TG)	-
Poaceae	*Cynodon incompletus*	-	Exotic	-
Poaceae	*Eragrostis curvula*	African Lovegrass	HTW	-
Poaceae	*Sporobolus africanus*	Parramatta Grass	Exotic	-
Primulaceae	*Lysimachia arvensis*	Scarlet Pimpernel	Exotic	-
Proteaceae	*Grevillea spp.*	-	Shrub (SG)	-

APPENDIX C – FAUNA SPECIES LIST

Table C1 Fauna Species List

No.	Scientific Name	Common Name	Status		Observation Type*	General Abundance within Development Site**
			BC Act	EPBC Act		
	Birds					
1.	*Acridotheres tristis*	Common Myna	Feral	-	VO	C
2.	*Corvus coronoides*	Australian Raven	-	-	VO	UC
3.	*Gymnorhina tibicen*	Australian Magpie	-	-	VO	C
4.	*Hirundo neoxena*	Welcome Swallow	-	-	VO	C
5.	*Manorina melanocephala*	Noisy Miner	-	-	VO	C
6.	*Ocyphaps lophotes*	Crested Pigeon	-	-	VO	UC
7.	*Spilopelia chinensis*	Spotted Turtle-Dove	Feral	-	VO	UC
8.	*Threskiornis moluccus*	Australian White Ibis	-	-	VO	C
9.	*Trichoglossus haematodus*	Rainbow Lorikeet	-	-	H	UC
10.	*Vanellus miles*	Masked Lapwing	-	-	VO	

* Observation Type: VO (Visual Observation), H (Heard whilst on site), E (Evidence recorded inc scats, tracks or markings), C (Caught on Remote Camera), T (Trapped), R (Recorded through the use of call detectors).

** General Abundance: I (Individual record), UC (Uncommon, 2-5 records), C (Common occurrence on site >5 records). Anabat Detections are classed by confidence: Confident (C), Probable (Pr), and Possible (Po)

^ Denotes introduced species.

APPENDIX D – PLANTED NATIVE VEGETATION DETERMINATION

Appendix D-1: Planted Native Vegetation Determination

The decision key below details the assessment of Planted Native Vegetation in accordance with Appendix D of the BAM (DPIE 2020a).

Vegetation Zone 1 – Planted Native/Exotic Vegetation.

Table D-1-1: Planted Native Vegetation Determination – In accordance with Planted Native Vegetation decision-making key in Appendix D of the BAM (DPIE 2020a). – Vegetation Zone 1 – Planted Native/Exotic Vegetation

Decision Key Criteria	Answer	Justification
1. Does the planted native vegetation occur within an area that contains a mosaic of planted and remnant native vegetation and which can be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal? (i). ***Yes*** *- The planted native vegetation must be allocated to the best-fit PCT and the BAM must be applied.* (ii). ***No -*** *Go to 2.*	**No**	The vegetation within this zone is characterised by a mix of planted native and exotic species. A PCT could not be allocated to the vegetation onsite with the assemblage of species present within the development footprint. Two locally occurring PCTs were considered when assigning a community to Vegetation Zone 1, these are discussed below: **PCT 835 *Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion* –** Whilst this community can contain *E. amplifolia* (minor planted component of Vegetation

Decision Key Criteria	Answer	Justification
		Zone 1) the vegetation on site does not contain other key canopy species or shrub species. These include *Acacia parramattensis, Bursaria spinosa*, or any diagnostic groundcover species. *Corymbia maculata* was the dominant canopy species within the site. Whilst this species can form a component of PCT 835, this is only within select examples of the community located in south-western Sydney, near Hoxton Park. **PCT 849 *Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion* –** The vegetation within Zone 1 was not dominated by canopy species representative of the community, including *Eucalyptus moluccana*, *E. tereticornis*, or *E. crebra*/*E. fibrosa*. *Corymbia maculata* was the dominant canopy species within the site. Whilst this species can form a component of PCT 849, this is only within select examples of the community located in within the Fairfield LGA. Furthermore, the vegetation on site does not contain diagnostic shrub or groundcover species for the community.
2. *Is the planted native vegetation:* a. *planted for the purpose of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9(2.), and* b. *the primary objective was to replace or regenerate a plant community type or a threatened plant species population or its habitat?* (i). ***Yes -*** *The planted native vegetation must be assessed in accordance with Chapters 4 and 5 of the BAM.* (ii) ***No -*** *Go to 3.*	**No**	The planted vegetation present onsite does not constitute rehabilitation or regeneration of a plant community type. The vegetation was cleared prior to 1958 (see **Plate 2**). The existing floristics within this vegetation zone is dominated by *Corymbia maculata* for the purpose of aesthetics and vegetation buffer from public areas.
3. Is the planted/translocated native vegetation individuals of a threatened species or other native species planted/translocated for the purpose of providing threatened species habitat under one of the following: a. *a species recovery project* b. *Saving our Species project* *c. other types of government funded restoration project* d. condition of consent for a development approval that required those species to be planted or translocated for the purpose of providing threatened species habitat e. legal obligation as part of a condition or ruling of court. This includes regulatory directed or ordered remedial plantings	**No**	The native vegetation within the Development Site was not planted/translocated for the purposes listed in Decision Criteria 3.

Decision Key Criteria	Answer	Justification
(e.g. Remediation Order for clearing without consent issued under the BC Act or the Native Vegetation Act) f. ecological rehabilitation to re-establish a PCT or TEC that was, or is carried out under a mine operations plan, or g. approved vegetation management plan (e.g. as required as part of a Controlled Activity Approval for works on waterfront land under the NSW Water Management Act 2000)? (i). ***Yes -*** *The planted native vegetation must be assessed in accordance with Chapters 4 and 5 of the BAM.* (ii) ***No -*** *Go to 4.*		
4. Was the planted native vegetation (including individuals of a threatened flora species) undertaken voluntarily for revegetation, environmental rehabilitation or restoration without a legal obligation to secure or provide for management of the native vegetation? (i). ***Yes -*** *Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied).* (ii) ***No -*** *Go to 5.*	**No**	The native vegetation within the Development Site was not planted for the purposes of revegetation, environmental rehabilitation or restoration.
5. Is the native vegetation (including individuals of a threatened flora species) planted for functional, aesthetic, horticultural or plantation forestry purposes? This includes examples such as: windbreaks in agricultural landscapes, roadside plantings (including street trees, median strips, roadside batters), landscaping in parks, gardens and sport fields/complexes, macadamia plantations or teatree farms? (i). ***Yes -*** *Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied).* (ii) ***No -*** *Go to 6.*	**Yes**	The native vegetation present onsite has been planted for aesthetic purposes (i.e. landscaping).
6. Is the planted native vegetation a species listed as a widely cultivated native species on a list approved by the Secretary of the Department (or an officer authorised by the Secretary)? (i). ***Yes -*** *Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied).* (ii) ***No -*** *There may be other types of occurrences of planted native vegetation that do not easily fit into the decision-making key above. Assessors should contact the BAM Support mailbox at bam.support@environment.nsw.gov.au for further advice on using the BAM to assess other types of occurrences of planted native vegetation.*	**N/A**	N/A

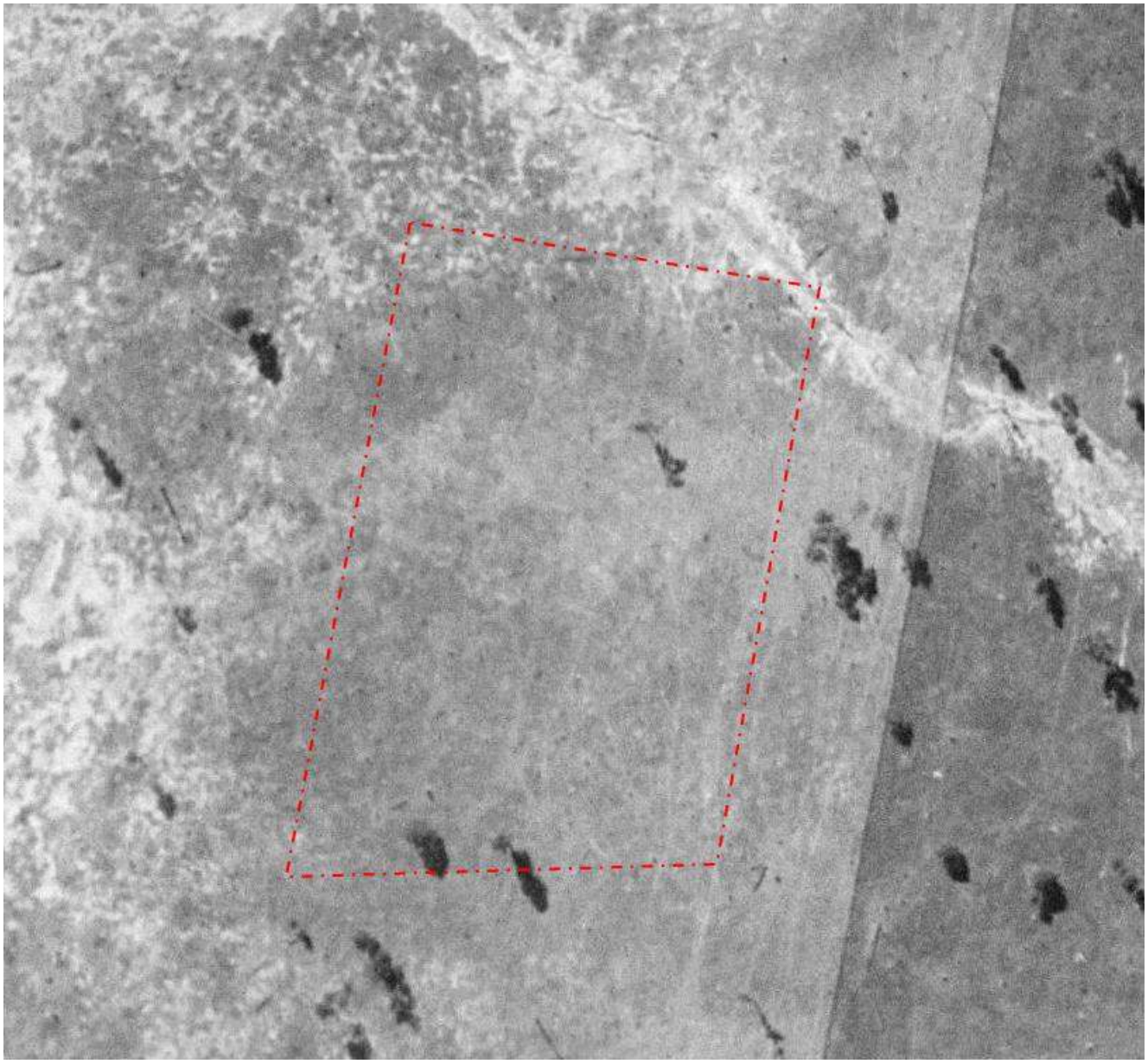

Plate 4: **Historical Aerial Imagery of The Ponds(1943) (NSW Govt. 2021). See approximate location of Study Area in red.**

APPENDIX E – STAFF CONTRIBUTIONS

The following staff were involved in the compilation of this report.

Table E1 Staff Contributions

Name	Qualification	Title/Experience	Contribution
Mark Dean	BEnvSc & Mgt	Ecologist (Zoologist)	Report Author
David Martin	MSc	Ecologist (Botanist)	Field Surveys
Gayle Joyce	BSc (Forestry) (Hons)	GIS Specialist	GIS and figure preparation
Dr. Gilbert Whyte	BSc (PhD) Accredited BAM Assessor	Senior Ecologist	Report Review

APPENDIX F – LICENCING

Kleinfelder employees involved in the current study are licensed or approved under the *Biodiversity Conservation Act 2016* (License Number: SL100730, Expiry: 31 March 2022) and the *Animal Research Act 1985* to harm/trap/release protected native fauna and to pick for identification purposes native flora and to undertake fauna surveys.