Transport
for NSW

# ZEB Macquarie Park Bus Depot:

## Biodiversity assessment report for REF

April 2024

NSW GOVERNMENT

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# Executive summary

A Biodiversity Assessment has been conducted as Transport for NSW is proposing to establish a new Zero Emission Buses depot at 1A and 1B Talavera Road, Macquarie Park, within Ryde Local Government Area, NSW.

The proposal broadly includes:

- building new facilities to support future bus operations including:
  - a single-level underground staff and visitor car park accommodating up to 163 cars including accessible parking spaces, car share spaces, electric vehicle spaces with charging equipment and bike storage options.
  - a multilevel administration office featuring a wide selection of office spaces and staff facilities including end of trip facilities, a first aid room, social breakout and gaming rooms, and an outdoor rooftop garden.
  - a bus maintenance facility accommodating up to 30 staff and featuring a spray booth, inspection pits and a multilevel staff facility including an outdoor BBQ area, a kitchen and toilet facilities.
  - a designated bus wash bay with washing and water recycling equipment
- removal of the existing one-way bike path connection between the M2 motorway and Talavera Road to make way for the new bus maintenance facility
- delivering up to 165 bus parking spaces including:
  - 129 charging bays for 12.5 metre standard rigid buses
  - 22 charging bays for 19 metre articulated buses
  - 14 maintenance bays
- one breakdown bay
- one bus wash bay
- installation of gantries to facilitate the preferred bus arrangement and charging structure
- installation of standard 75kW and fast 150kW plug-in chargers for buses around the depot
- upgrading Pittwater Road to enable two-way bus access to and from the bus depot
- essential fire services such as hydrant and sprinkler system, a fire control room and pump building, smoke detection and warning systems, hardstand area for one fire truck, portable fire extinguishers and fire blankets
- installation of new pedestrian crossing and footpaths, security booths, fencing and lighting.

To permit the proposal, based on a worst-case estimate, about 2.2 hectares of vegetation mapped as Plant Community Type '0 - Not native vegetation/Unclassified' would require disturbance/removal, within which an estimated 332 trees (158 small, 148 medium, 23 large, and 3 extra-large) would be removed; of these 31 being hollow-bearing and suitable for occupation by fauna.

In line with Transport for NSW's *The Tree and Hollow Replacement Program: An implementation plan for payments to and from the Transport for NSW Conservation Fund* (2022) [Tree and hollow replacement guidelines (EMF-BD-GD-0129)], to replace the loss of up to 332 trees, 1140 trees are required to be re-planted and 50 artificial hollows installed within the project boundary or on land adjacent or close to the project with landowner's consent. Where this cannot be accommodated for locally [or only partially], Transport for NSW will be required to make payment into their Conservation Fund in line with the fund contributions outlined in Transport's Tree and Hollow Replacement Guidelines.

No threatened ecological communities, flora or fauna species listed, or currently being considered for listing, under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* or NSW *Biodiversity Conservation Act 2016*, were recorded during the course of the field survey.

Though not recorded during the current investigation, as they have been previously recorded within, or near the proposal area, and as suitable habitat is present and is to be impacted by the proposal (i.e., native and exotic trees, some of which are hollow-bearing), it was considered appropriate to adopt a precautionary approach to the potential presence of the following threatened species listed as Vulnerable under the NSW *Biodiversity Conservation Act 2016*:

- Powerful Owl (*Ninox strenua*)
- Gang-gang Cockatoo (*Callocephalon fimbriatum*)
- Little Lorikeet (*Glossopsitta pusilla*)
- Grey-headed Flying-fox (*Pteropus poliocephalus*)
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)
- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*)
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)
- Southern Myotis (*Myotis macropus*)
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).

The Gang-gang Cockatoo and Grey-headed Flying-fox are also listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as Endangered and Vulnerable respectively.

Assessments provided within this report, referencing the criteria provided under Section 7.3 of the NSW *Biodiversity Conservation Act 2016* and the EPBC Significant Impact Guidelines, concluded that the conducting of the proposal works would not have a significant impact on the potentially occurring threatened Yangochiroptera, Grey-headed Flying-fox or birds, or their habitats. Therefore, the matter does not require referral to the Federal Minister for the Environment and Water as a controlled action, nor is the preparation of a Species Impact Statement [or alternatively a Biodiversity Development Assessment Report] considered necessary.

Mitigation measures to reduce any ecological impact as a result of the proposal have been recommended in Section 6 of this report. Two primary measures include:

- Minimising impact through detailed design.
- Adhering to Transport's Biodiversity Guidelines.

In addition, the following is proposed:

- Limit vegetation removal to the minimum required to successfully permit the proposal
- In accordance with the *Tree and hollow replacement guidelines*, and a Tree and Hollow Replacement Plan to be prepared (as part of the Construction Environment Management Plan to be prepared for the proposal):
    - Replant 1140 trees to replace the removal of up to 332 trees, and install 50 hollow replacements to offset the removal of the 31 hollow-bearing trees
    - Should planting and hollow replacement within the project boundary or on land adjacent or close to the project not occur [or only partially], Transport for NSW would be required to make payment into their Conservation Fund in line with the fund contributions outlined in Transport's Tree and Hollow Replacement Guidelines.
- An Erosion and Sediment Control Plan is to be prepared, this aimed at minimising soil erosion and the off-site transfer of sediment.

Adoption of these mitigation measures would ensure that the proposal is carried out in an ecologically sustainable manner.

# 1. Introduction

## 1.1 Proposal background

Transport for NSW (Transport) are proposing to establish a new bus depot at Macquarie Park, within the Ryde Local Government Area, NSW. The proposal is to accommodate the infrastructure required to operate battery electric buses. Transport proposed to transition the NSW bus fleet from internal combustion engines to battery electric buses to reduce emissions by 78 percent.

The proposal is located within an urban landscape within the Sydney Basin Bioregion and Pittwater Subregion (Figure 1-1).

Lesryk, at the request of AtkinsRéalis, on behalf of Transport, has been engaged to prepare a BAR; this required to consider and assess all ecological matters affecting, or likely to affect, the environment as a result of the proposal The BAR will contribute to a Review of Environmental Factors (REF) being prepared for the proposal, this produced in compliance with the requirements of Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

## 1.2 The proposal

Transport proposes to construct a new ZEB depot at 1A and 1B Talavera Road, Macquarie Park (Figure 1-2).

Key features of the proposal would include:

- building new facilities to support future bus operations including:
  - a single-level underground staff and visitor car park accommodating up to 163 cars including accessible parking spaces, car share spaces, electric vehicle spaces with charging equipment and bike storage options.
  - a multilevel administration office featuring a wide selection of office spaces and staff facilities including end of trip facilities, a first aid room, social breakout and gaming rooms, and an outdoor rooftop garden.
  - a bus maintenance facility accommodating up to 30 staff and featuring a spray booth, inspection pits and a multilevel staff facility including an outdoor BBQ area, a kitchen and toilet facilities.
  - a designated bus wash bay with washing and water recycling equipment
- removal of the existing one-way bike path connection between the M2 motorway and Talavera Road to make way for the new bus maintenance facility
- delivering up to 165 bus parking spaces including:
  - 129 charging bays for 12.5 metre standard rigid buses
  - 22 charging bays for 19 metre articulated buses
  - 14 maintenance bays
- one breakdown bay
- one bus wash bay
- installation of gantries to facilitate the preferred bus arrangement and charging structure
- installation of standard 75kW and fast 150kW plug-in chargers for buses around the depot
- upgrading Pittwater Road to enable two-way bus access to and from the bus depot
- essential fire services such as hydrant and sprinkler system, a fire control room and pump building, smoke detection and warning systems, hardstand area for one fire truck, portable fire extinguishers and fire blankets

- installation of new pedestrian crossing and footpaths, security booths, fencing and lighting

Unless a specific aspect is referred to, the work would hereafter be referred to as 'the proposal'.

The following machinery/equipment would be used during the course of the proposal:

| Work activity | Plant and equipment requirement | |
|---|---|---|
| Clearing and demolition | • 20-30t excavators<br>• Semi-trailer tippers<br>• Truck and dogs<br>• Tub grinder/mulcher<br>• Water truck | • Motor grader<br>• Demolition hammers<br>• Small tools<br>• Generators and air compressors<br>• Water pump |
| Bulk earthworks | • 20-40t excavators<br>• Truck and dogs<br>• 815 soil compactor<br>• Vibrating roller | • Water truck<br>• Motor grader<br>• Water pump |
| Flood storage culvert | • Franna crane<br>• Mobile hydraulic crane<br>• Concrete pump<br>• Formwork<br>• Concrete vibrators | • Small tools<br>• Generators and air compressors<br>• Elevated work platforms<br>• Water pump |
| Retaining walls | • Shotcrete pump (where required for temporary/permanent slope stabilisation)<br>• Drill rig (where rock dowels are used)<br>• Elevated work platforms<br>• Formwork and falsework<br>• 12-20t excavator<br>• Vibrating roller | • Concrete vibrators<br>• Small tools<br>• Generators and air compressors<br>• Franna crane<br>• Mobile hydraulic crane (where large precast panels are used)<br>• Elevated work platforms |
| Drainage and services | • 15-20t excavator<br>• Trench compactor | • Small tools<br>• Generator |
| Pavement works | • Truck and dog<br>• Motor grader<br>• Vibrating roller<br>• Water cart<br>• Power broom<br>• Smooth drum roller | • Asphalt paver<br>• Bitumen spray truck<br>• Concrete pump<br>• Small tools<br>• Generators and air compressors |
| Concrete works | • Franna crane<br>• Concrete pump<br>• Formwork and falsework<br>• Concrete vibrators | • Small tools<br>• Generators and air compressors |
| Building works | • Piling rig<br>• 5-20t excavators<br>• Franna crane<br>• Forklift/materials handler<br>• Mobile cranes<br>• Self-erecting crane<br>• Concrete pump<br>• Formwork and falsework | • Scaffolding<br>• Concrete vibrators<br>• Welder<br>• Small tools<br>• Generators and air compressors<br>• Elevated work platforms |

The proposal is anticipated to commence in 2024 and would be completed in 2025.

### 1.2.1 Assessment areas

Based on a worse-case estimate, the proposal would require a disturbance footprint (i.e., impact footprint in which 'disturbances would occur') that totalling about 3.3 ha, this composed of:

- The construction of a hardstand area, inclusive of:
  - Maintenance workshop
  - Underground carpark
  - Bus parking
  - Charging stations
  - Security booth
  - Wash bay
  - Staff building
  - Fire truck area
- Disturbance/removal of 2.2 ha of exotic vegetation and isolated native trees to achieve the objectives of the proposal
- The movement of personnel and vehicles/machinery.

The study area is defined as the proposal area and any additional areas which are likely to be affected by the proposal, either directly or indirectly.

The assessment area is defined as the proposal area and a 1500 m buffer surrounding the boundary.

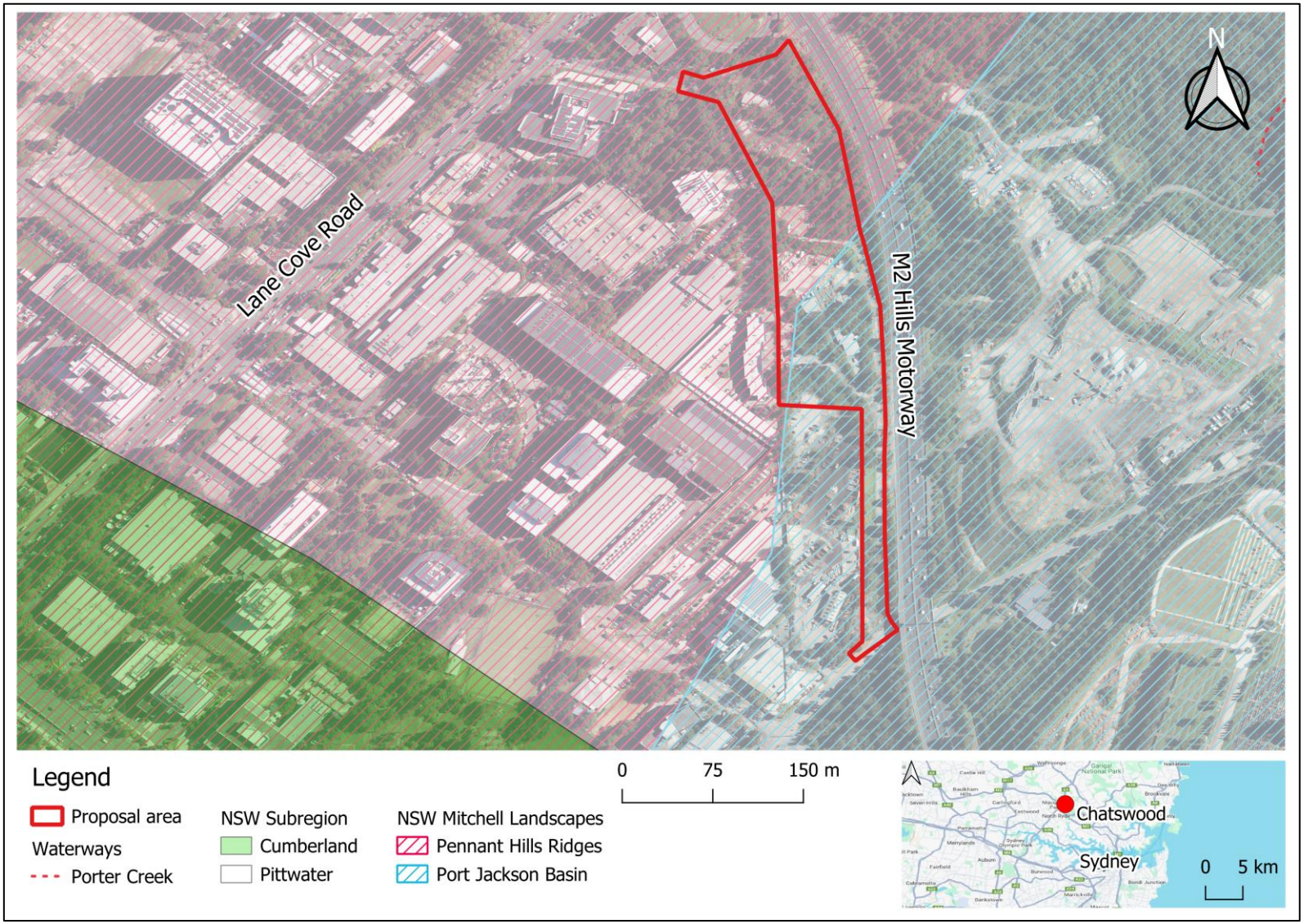


Figure 1-1: Proposal context

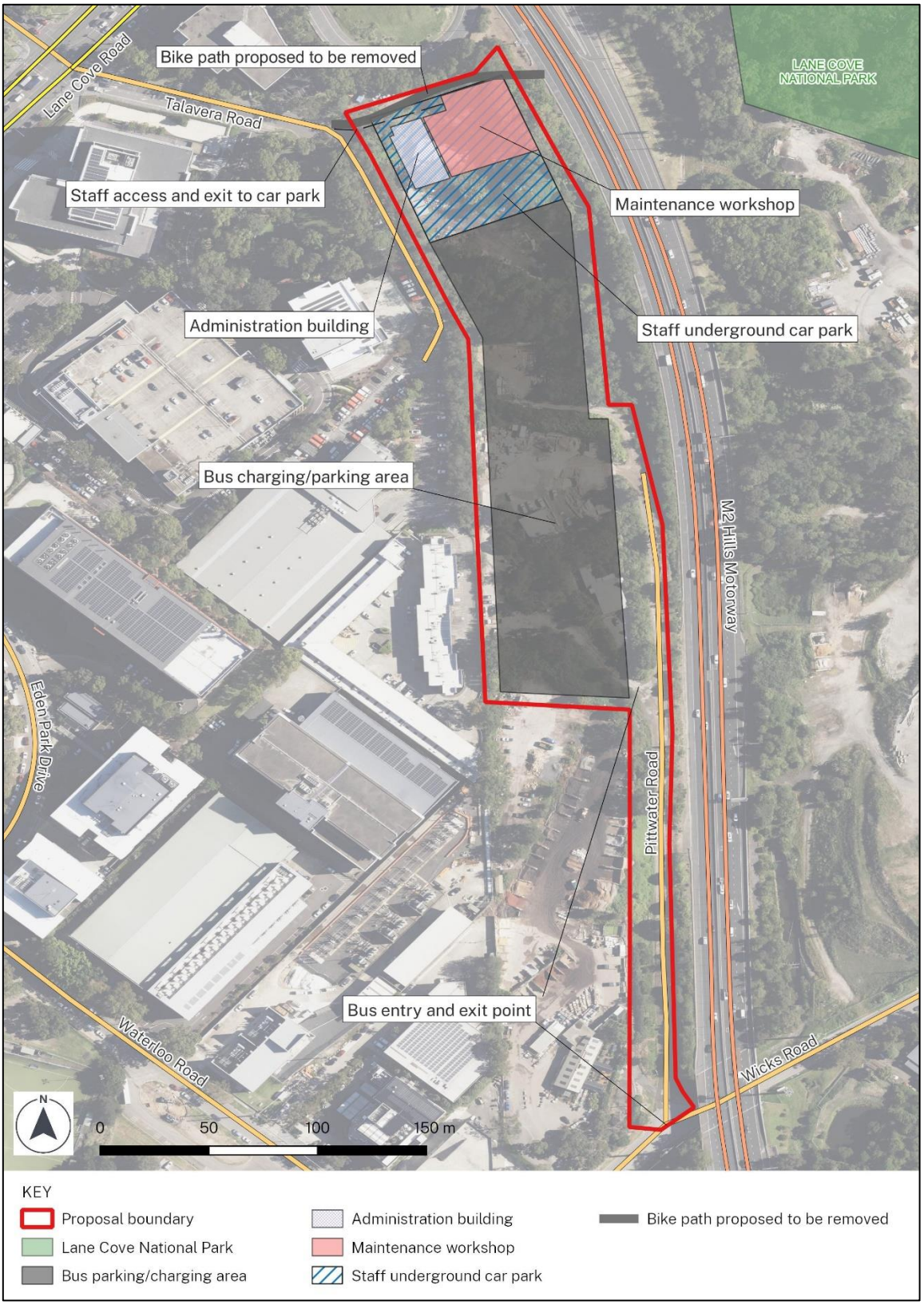


Figure 1-2: The proposal (WSP Australia 2024)

## 1.3 Legislative context

A REF is prepared to satisfy Transport duties under s.5.5 of the EP&A Act to "examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity" and s.5.5 in making decisions on the likely significance of any environmental impacts. This biodiversity impact assessment forms part of the REF being prepared for the Zero Emissions Buses and assesses the biodiversity impacts of the proposal to meet the requirements of the EP&A Act.

The BC Act requires that the significance of the impact on threatened species, populations and threatened ecological communities is assessed using the test listed in Section 7.3 of the BC Act. Similarly, Part 7A of the NSW *Fisheries Management Act 1994* (FM Act) requires that significance assessments are undertaken in accordance with Division 12 of the FM Act. Where a significant impact is likely to occur, a species impact statement (SIS) must be prepared in accordance with the Environment Agency Head's requirements, or a biodiversity development assessment report (BDAR) must be prepared by an accredited assessor in accordance with the biodiversity assessment method (BAM) (DPIE 2020a).

As a result, Transport proposals assessed via an REF:

- Must address and consider potential impacts on EPBC Act listed threatened species, populations, ecological communities and migratory species, including application of the "avoid, minimise, mitigate and offset" hierarchy
- Do not require referral to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for these matters, even if the activity is likely to have a significant impact
- Must use the Biodiversity Assessment Method (BAM) to calculate credits that would offset significant impacts on EPBC Act listed threatened species, populations, ecological communities and migratory species.

Assessments of impact significance are required for all relevant biodiversity values in accordance with the *Matters of National Environmental Significance: Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999* (DoE 2013).

# 2. Methods

## 2.1 Personnel

A biodiversity assessment of the proposal was carried out over two days, being 11 August, 12 October 2023. Personnel involved in the assessment and an overview of their qualifications are provided in Table 2-1.

Table 2-1: Personnel

| Name | Role | Qualifications |
|---|---|---|
| Mr Deryk Engel | Director and Senior Ecologist.<br>Project management, BAR review and quality assurance | B.Env.Sc. (Hons) |
| Ms Itzel Gonzalez | Field Ecologist, site investigation, BAR write-up | B.Sc. (Hons) |
| Mr Edward Langston | Field Ecologist, site investigation | Cert II Conservation and Land Management and B.Sc |
| Mr Harry Engel | Field Ecologist, site investigation | B. Mar. Sci |

## 2.2 Background research

Prior to carrying out any fieldwork, known databases and any previous studies conducted in the region were consulted to identify the diversity of ecological communities, flora and fauna species known for, or potentially occurring in, the study region. The identification of those known or potentially occurring native species and communities within this portion of the Ryde LGA, particularly those listed under the Schedules to the EPBC, BC and/or FM Acts, thereby permits the tailoring of the field survey strategies to the detection of these plants and animals, their vegetation associations and/or necessary habitat requirements. By identifying likely species, particularly any threatened plants and animals, either the most appropriate species-specific survey techniques may be selected [should their associated vegetation communities/habitat requirements be present] or a precautionary approach to their presence adopted.

The carrying out of a literature search also ensures that the results from surveys conducted during different climatic, seasonal and date periods are considered and drawn upon as required. This approach therefore increases the probability of considering the presence of, and possible impact on, all known and likely native species, particularly any plants and animals that are of regional, State and/or national conservation concern. This approach also avoids issues inherent with a one off 'snap-shot' study.

A list of all databases, date these were accessed, and the search area employed is provided in Table 2-2.

Other reports and documents referred to are provided within the bibliography section of this report.

All these databases and reports were reviewed and drawn upon where relevant. While reviewing these documents, particular attention was paid to identifying relevant ecological matters listed, or currently being considered for listing, under the Schedules of the EPBC, BC and/or FM Acts, plants, animals and ecological communities that have been recorded in the region and which may occur within, or in the vicinity of, the proposal.

Table 2-2: Database searches

| Database/Information sources | Date accessed | Search area |
|---|---|---|
| Protected Matters Search Tool (PMST) (DCCEEW 2023a) | October 2023 | 10 km buffer on proposal area |
| Register of critical habitat (DCCEEW 2023e) | October 2023 | N/A |
| BioNet Atlas (DPE 2023a) | October 2023 | 10 km buffer on proposal area |
| Areas of Outstanding Biodiversity Value register (DPE 2023c) | October 2023 | N/A |
| NSW Weedwise Database (DPI 2023a) | October 2023 | Ryde LGA |
| Fisheries NSW Spatial Data Portal (DPI 2023b) | October 2023 | Sydney Metro layer |
| NSW State Vegetation Type Map (State Government of NSW and DPE 2022) | October 2023 | Proposal area |
| BioNet Vegetation Classification database (NSW Government 2023a) | October 2023 | N/A |
| Biodiversity Values Map and Threshold Tool (NSW Government 2023b) | October 2023 | Proposal area |
| PlantNet (2023) | October 2023 | N/A |
| SEED map viewer (NSW Government 2023c) | October 2023 | Proposal area |
| Threatened Species website (OEH 2023) | October 2023 | N/A |
| Groundwater Dependent Ecosystems Atlas (BoM 2023b) | October 2023 | Proposal area |
| National Flying-fox monitoring viewer (DCCEEW 2023f) | October 2023 | Proposal area |

Field guides and standard texts used include:

- Brooker and Kleinig (1999) [used to identify eucalypts]
- Fairley and Moore (2010) [other vegetation]
- Cogger (2014) [reptiles and frogs]
- Anstis (2017) [frogs]
- Churchill (2008) [Yangochiroptera]
- Simpson and Day (2010) [birds]
- Van Dyck and Strahan (2008) [non-flying mammals]
- Triggs (1996) [identification of scats, tracks and markings].

Nomenclature follows that presented in these texts, or within the EPBC and BC Acts. It is noted that the current accepted scientific names for some of the threatened fauna species previously recorded in this locality are not consistent with the names used/provided under either the EPBC and/or BC Acts. In these instances, nomenclature used within this report follows the current approved scientific conventions.

Where applicable, any TECs were classified and named according to the NSW Scientific Committee's Final and Preliminary Determinations [various dates].

The conservation significance of those ecological communities, plants and animals recorded is made with reference to:

- The EPBC, BC and/or FM Acts
- Vegetation mapping of the study region (State Government of NSW and NSW DCCEW 2022)
- The BioNet Vegetation Classification database (NSW Government 2023a).

## 2.3 Vegetation assessment

### 2.3.1 Vegetation mapping

Vegetation of the locality has been mapped and described in the NSW State Vegetation Type Map (SVTM) [Version C2.0M2.0] (State Government of NSW and NSW DCCEW 2023). Mapping identifies the most likely Plant Community Type (PCT) to occur in a given polygon. Figure 2-1 illustrates the SVTM in relation to the proposal area and ancillary sites. Refer also to Section 3.1 for further details of PCTs and vegetation zones.

### 2.3.2 Vegetation survey and classification

The purpose of the vegetation survey was to confirm the dominant species with reference to the mapped PCTs, assess the condition of the vegetation, search for threatened species (or their habitats) and identify weeds.

Surveys were conducted by traversing the proposal area and, as far as possible, identifying all plants present as well as documenting dominant species in each stratum.

The vegetation at the site was found to be highly modified, occurring on fill deposited from past land use (Stantec 2023). As the vegetation did not conform to any PCT, no surveys conducted in accordance with the BAM were completed for this project as it was considered superfluous to do so. Therefore, associated template tables and figures have been removed from this report.


Figure 2-1: Plant community types within the proposal

## 2.4 Threatened species assessment

The purpose of the field investigation was to identify those vegetation communities, fauna habitats, plants and animals present within, and in close proximity to, the proposed new bus depot that are of State and/or national conservation significance as listed under the Schedules to the EPBC, BC and/or FM Acts.

While conducting the habitat assessments, efforts were made to identify features such as known vegetation associations, geological features (e.g., caves or suitable cave substitutes), feed trees, mature trees with hollows, connectivity of fauna corridors, aquatic environments and other habitat features important to the lifecycle requirements of those threatened plants and animals previously recorded in the study region (as listed in Appendix A).

The survey methods employed during the field investigation were:

- The identification of those plants present within, and proximate to, the areas of likely disturbance, including both direct and indirect impact
- The identification of the structure of those vegetation communities and fauna habitats present at, and close to, the area investigated
- The direct observation of those fauna species present within or near to the area investigated
- Diurnal call identifications of those fauna species present, with all calls being identified in the field
- The identification of any indirect evidence such as tracks, scats, scratchings and diggings that would suggest the presence of a particular fauna species
- Leaf litter and ground debris searches for sheltering reptiles and amphibians
- Targeted searches for any species of State and/or national conservation concern, as listed under the EPBC, BC and/or FM Act, or their likely habitat areas, which were identified during the literature review stage of the project.

Where required, a more detailed description on one or more of the survey methods employed is provided below.

### 2.4.1 Habitat suitability assessment

An assessment of available habitat for each threatened species, population or community identified in the database searches, and their likelihood of occurrence, is provided in Appendix A.

### 2.4.2 Targeted flora surveys

Targeted (species specific) surveys for threatened plants were informed based on the results of the literature review, including consideration of the habitat requirements of those threatened flora species identified as potentially occurring in the proposal area (see Appendix A), aerial photography interpretation and the site specifics of the proposal.

Given that the habitat within the proposal area were observed to be substantially degraded, no threatened flora was considered likely to occur within the area. As such, targeted flora surveys were not conducted.

### 2.4.3 Targeted fauna surveys

Based on the observations made during the diurnal investigations, the disturbed and modified nature of the areas investigated and the identification of those habitats present, it was not considered necessary to employ any species-specific fauna survey methods (e.g., nocturnal surveys, echolocation targeting Yangochiroptera [hereafter referred to as microbats]). Those survey methods that were conducted to target threatened species are as follows (Table 2-3; Figure 2-2).

**Diurnal investigation**

During the field investigation, these conducted over the course of 7 hours, those birds present were identified using visual identification of observed individuals or aural identification of their vocalisations. Any opportunistic observations obtained while carrying out other field activities were also recorded.

If present, other features such as the presence of water bodies, culverts, caves and large logs were also inspected.

**Ground debris searches**

Ground debris searches were carried out on foot within the limited number of vegetated portions of the proposal area. This involved conducting random meanders through these areas and turning over any occurrences of natural debris or urban refuse. Leaf litter accumulations around the bases of any trees were also searched.

While conducting the ground debris searches, tracks, diggings and characteristic scats were also searched for, and identified in the field.

**Tree removal count**

Within the proposal, the individual native and exotic trees with amenity value that are likely to require removal were identified and recorded (Appendix B). Where tree removal work would be required, the position of those trees that were ≥ 5 cm at DBH at 1 m of height were recorded through use of the iPad™ application 'Field Maps' by Esri's ArcGIS (Esri 2022) which incorporates a GPS tool. In addition, for each tree expected to be cleared, the following data was collected (and is presented in Appendix B):

- Status: whether the tree is alive or dead
- Native or amenity[1]
- Species identification, if alive, and
- DBH (indicative).

No access restrictions to those trees present within the proposal area were encountered.

**Hollow-bearing tree survey**

Within the surveyed proposal area, the position of those mature trees that were, or were considered to be, hollow-bearing (potentially used by microbats, birds and arboreal mammals), were recorded through use of a Garmen™ hand-held GPS.

Hollow-bearing trees were generally recorded in accordance with methods described in the Operation Manual for BioMetric 3.1 (DECCW 2011), in that hollows were only recorded if the:

- Entrance could be seen from the ground
- Hollow appeared to have depth, or
- Hollow was at least 1 m above the ground (basal hollows were only recorded if they continued up into the tree above 1 m).

That stated, if a tree presented a dead vertical limb or branch that could potentially be hollow-bearing, and was of predicted sufficient diameter to be utilised by a native species, it was also recorded based on the adoption of a precautionary approach.

For each recorded hollow-bearing tree, the following data was collected (and is presented in Appendix B):

- Status: whether the tree is alive or dead
- Species identification, if alive

[1] *Amenity trees are defined as trees, both native and exotic, that are valued by people due to their beauty, functional, historical, biodiversity or cultural significance (Transport 2022a). A precautionary assumption has been made for some exotic trees due to beauty and functional significance of the species.*

- DBH
- Approximate number of hollows, and
- Estimated size classes of hollows:
  - Small 5-50 mm
  - Medium 50-150 mm
  - Large > 150 mm.

The survey methods employed and level of effort required were generally based on descriptions provided in the following:

- DEC (2004) Threatened Species Survey and Assessment – Guidelines for developments and activities (working draft)
- DECC (2009) Threatened species survey and assessment guidelines - field survey methods for fauna: Amphibians
- DEWHA survey guidelines for Australia's threatened bats, bird and frogs (DEWHA 2010a, 2010b, 2010c)
- DSEWPC survey guidelines for Australia's threatened mammals and reptiles (DSEWPC 2011a, 2011b, 2011c)
- The 'Species credit' threatened bats and their habitats NSW survey guide for the Biodiversity Assessment Method (State of NSW and OEH 2018c), and
- The NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (State of NSW and DPIE 2020c).

Table 2-3: Targeted threatened fauna survey details

| Species name | Common name | Required survey period | Associated PCTs in the subject land | Minimum survey requirements[1] | Survey completed |
|---|---|---|---|---|---|
| *Ninox strenua* | Powerful Owl | January to August | N/A | Acoustic recordings (undertaken year round)<br>Call playbacks | No. Presence assumed. |
| *Callocephalon fimbriatum* | Gang-gang Cockatoo | N/A | N/A | 1 x 20 min diurnal search per 1 ha (min.); however, several surveys are recommended | Yes. Bird surveys undertaken and indirect evidence sought. |
| *Glossopsitta pusilla* | Little Lorikeet | N/A | N/A | 1 x 20 min diurnal search per 1 ha (min.); however, several surveys are recommended | Yes. Bird surveys undertaken and indirect evidence sought. |
| *Pteropus poliocephalus* | Grey-headed Flying-fox | October to March | N/A | Location of breeding camps<br>Spotlighting/nocturnal surveys | No. Presence assumed. |
| *Saccolaimus flaviventris* | Yellow-bellied Sheathtail-bat | October to March | N/A | Survey methods: Harp trap (or mist net) placed in areas of potential breeding habitat (hollow-bearing trees). The | No. Assumed present and, as hollow-bearing trees are to be removed, assessed accordingly. |

| Species name | Common name | Required survey period | Associated PCTs in the subject land | Minimum survey requirements[1] | Survey completed |
|---|---|---|---|---|---|
| | | | | survey may use harp traps or a combination of harp traps and mist nets.<br><br>Acoustic detectors may be used. | |
| *Myotis macropus* | Southern Myotis | October to March | N/A | Harp trap or mist net placed in areas of potential habitat. For larger water bodies mist nets may be necessary. Traps or nets should be set beside or preferably over pools of water along creeks or rivers, particularly in flat or areas of low relief if present. Traps can be set under bridges or culverts, or overhanging branches. The survey may use only mist nets, or a combination of harp traps and mist nets.<br><br>Roost search: Any bridges, tunnels, culverts or other structures identified as potential breeding habitat should be searched for bats or signs of bats (guano etc). A torch should be used and attention paid to inspecting cracks or seams in the roof. A handheld bat detector can alert the searcher to ultrasonic calls. If bats or signs of bats are observed, the bats may need to be captured to identify species and breeding status using traps, nets or other methods. | No. Assumed present and, as hollow-bearing trees are to be removed, assessed accordingly. |
| *Micronomus norfolkensis* | Eastern Coastal Free-tailed Bat | October to March | N/A | Survey methods: Harp trap (or mist net) placed in areas of potential breeding habitat (hollow- | No. Assumed present and, as hollow-bearing trees are to be removed, assessed accordingly. |

| Species name | Common name | Required survey period | Associated PCTs in the subject land | Minimum survey requirements[1] | Survey completed |
|---|---|---|---|---|---|
| | | | | bearing trees). The survey may use harp traps or a combination of harp traps and mist nets.<br><br>Acoustic detectors may be used. | |
| *Falsistrellus tasmaniensis* | Eastern False Pipistrelle | October to March | N/A | Survey methods: Harp trap (or mist net) placed in areas of potential breeding habitat (hollow-bearing trees). The survey may use harp traps or a combination of harp traps and mist nets.<br><br>Acoustic detectors may be used. | No. Assumed present and, as hollow-bearing trees are to be removed, assessed accordingly. |
| *Scoteanax rueppellii* | Greater Broad-nosed Bat | Spring and Summer | N/A | Survey methods: Harp trap (or mist net) placed in areas of potential breeding habitat (hollow-bearing trees). The survey may use harp traps or a combination of harp traps and mist nets.<br><br>Acoustic detectors may be used. | No. Assumed present and, as hollow-bearing trees are to be removed, assessed accordingly. |
| *Note: 1. This should be based on BAM survey guidelines and any relevant Commonwealth survey guideline.* | | | | | |


Figure 2-2: Threatened species previously recorded

## 2.5 Aquatic surveys

An unnamed storm water drainage line is present on site; the proposed bus depot designs retain this feature and formalising its currently degraded state. To accommodate movements across this feature a box culvert will be installed. This would improve the overall water quality, and as such, would not have an adverse impact on the drainage line.

There are two stagnant bodies of water present on site. The two bodies of water, which are about 4 m wide and 2 m long appear to be feed by overflow stormwater runoff. During the site inspection a layer of film (Biofilm) was present on each water body. There are no reed beds or other habitat features important for aquatic species. Urban refuse is present around and within each body and both water bodies are isolated from any natural or human made drainage lines. Limited inspections of each body did not reveal any tadpoles or aquatic invertebrates.

Based on a visual and qualitative assessment it is not considered that either waterbody would be of value for aquatic species particularly those that are intolerant of urban runoff.

## 2.6 Limitations

While not considered to compromise the scientific rigor of the field assessment, no nocturnal work was carried out. To overcome this limitation:

- Database searches were conducted for threatened species, populations and ecological communities known to occur within the region
- The precautionary principle was adopted where necessary (i.e., suitable habitat for those threatened species known to occur, or that have been previously recorded within the surrounding locality, was identified).

Not all flora and fauna can be fully accounted for within any given proposal area. The presence of threatened species is not static; and changes often in response to longer term natural forces that can, at any time, be dramatically influenced by human-made disturbances.

No additional limitations, such as reduced site visibility, adverse weather conditions or access to achieving the objectives of the ecological survey were encountered.

This report is based upon data acquired from the current investigation. However, data gathered is indicative of the environmental conditions of the site at the time the field work was conducted.

## 2.7 Survey effort

By the completion of the field investigation a total of about 14.5 person hours of active survey had been accumulated. Given the disturbed nature, physical condition and size of the proposal, this is considered more than adequate when endeavouring to determine the diversity of native species present, their habitats and vegetation associations, and the conservation status of each of these.

# 3. Existing environment

For reference, a photographic record of the area investigated is provided in Appendix C.

The proposal area is located within a parcel of land located in the Ryde LGA. The parcel of land occurs within Lot 1 DP1006960, Lot 12 and 13 DP883750, Lot 25 DP232697, Lot 27 DP232964, Lot 80 DP1100553, Lot 105 DP1001474 and Lot 182 DP1154992; and is about 3.3 ha in size. The proposal area is bound by the M2 to the north and east, a landscaping supply store to the south, and urban infrastructure to the west.

The proposal area is highly disturbed and supports large areas of native and exotic species. This comprising of Allo*casuarina* species along the road verges and various exotic amenity trees. Exotic trees

that provide beauty and functional significance are considered to provide amenity values and are therefore amenity trees.

The topography of the land is gently undulating, with Porters Creek flowing west approximately 350 m east of the proposal area. While Porters Creek is not mapped as Key Fish Habitat (KFH), it is connected to the Lane Cove River which is identified as KFH (Figure 3-1). Impacts on these waterways due to the undertaking of the works are considered to be negligible.

Reference to the Biodiversity Values Map and Threshold Tool (BVMTT) (NSW Government 2023b), the proposal does not contain Biodiversity Values.

Reference to the Soil Landscapes of the Sydney 1:100,000 sheet (Chapman & Murphy 1989) and SEED mapping (State Government of NSW and DPE 2009) indicates that the proposal is located within the Lucas Heights and Glenorie Erosional soil landscapes (Figure 3-2).

Lucas Heights geology is Mittagong Formation – interbedded shale, laminite and fine to medium grained quartz sandstone (Chapman & Murphy 1989). The Mittagong Formation is located stratigraphically between the Ashfield Shale and Hawkesbury Sandstone (Chapman & Murphy 1989). It is often relatively shallow. Minor areas of Hawkesbury Sandstone and minor areas of Ashfield Shale may occur (Chapman & Murphy 1989). Topography is gently undulating plateau, 200-1000 m in width, with level to gently inclined slope gradients of <10 percent. Local relief is <30 m, with rock outcrop absent (Chapman & Murphy 1989).

Lucas Heights soils are moderately deep (50–150 cm), hardsetting Yellow Podzolic Soils and Yellow Soloths; Yellow Earths on outer edges. Limitations are stony soil, low soil fertility, low available water capacity (Chapman & Murphy 1989).

Glenorie geology is underlain by Wianamatta Group Ashfield Shale and Bringelly Shale formations (Chapman & Murphy 1989). It is located on undulating to rolling low hills on Wianamatta Group Shales (Chapman & Murphy 1989). Topography is low rolling and steep hills; local relief 50-120 m, slopes 5-20%; convex narrow ridges and hillcrests grade into moderately inclined sideslopes with narrow concave drainage lines; moderately inclined slopes of 10-15% are the dominant landform elements (Chapman & Murphy 1989).

The Glenorie soils are shallow to moderately deep (<100 cm) Red Podzolic Soils on crests; moderately deep Red and Brown Podzolic Soils on upper slopes; deep Yellow Podzolic Soils and Gleyed Podzolic Soils along drainage lines (Chapman & Murphy 1989). Limitations are high soil erosions hazard, localised impermeable highly plastic soils, moderately reactive (Chapman & Murphy 1989).

Reference to the SEED map viewer (NSW Government 2023c), this accessed to determine the extent of acid sulfate soils within the proposal area, shows that the area investigated is mapped wholly within Class 5 (Figure 3-2). Typically, acid sulfate soils are not found in Class 5 areas.

For reference, Table 3-1identifies attributes of the area investigated.

Table 3-1: Site attributes

| Site Attributes | |
|---|---|
| Estimated size (ha) | About 3.3 ha |
| Metres above sea level | Between 36 m and 50 m |
| Climate[2] | Mean summer high: 27.7 °C (January)<br>Mean winter low: 4.9 °C (July)<br>Mean annual rainfall: 1157.7 mm |
| Waterbody | Unnamed stormwater drainage line and 2 stagnant bodies of water |

[2] Macquarie Park (Willandra Village) (Station number: 066156) – This being the nearest operating weather station to the area investigated.

| Site Attributes | |
|---|---|
| Critical habitat | No |
| IBRA Bioregion/Subregion | Sydney Basin/Pittwater |
| Mitchell Landscape | Pennant Hills Ridges and Port Jackson Basin |
| Soil Landscape | Lucas Heights |
| NPWS estate | Lane Cove National Park about 80 m to the east |


Figure 3-1: Key Fish Habitat and Waterways

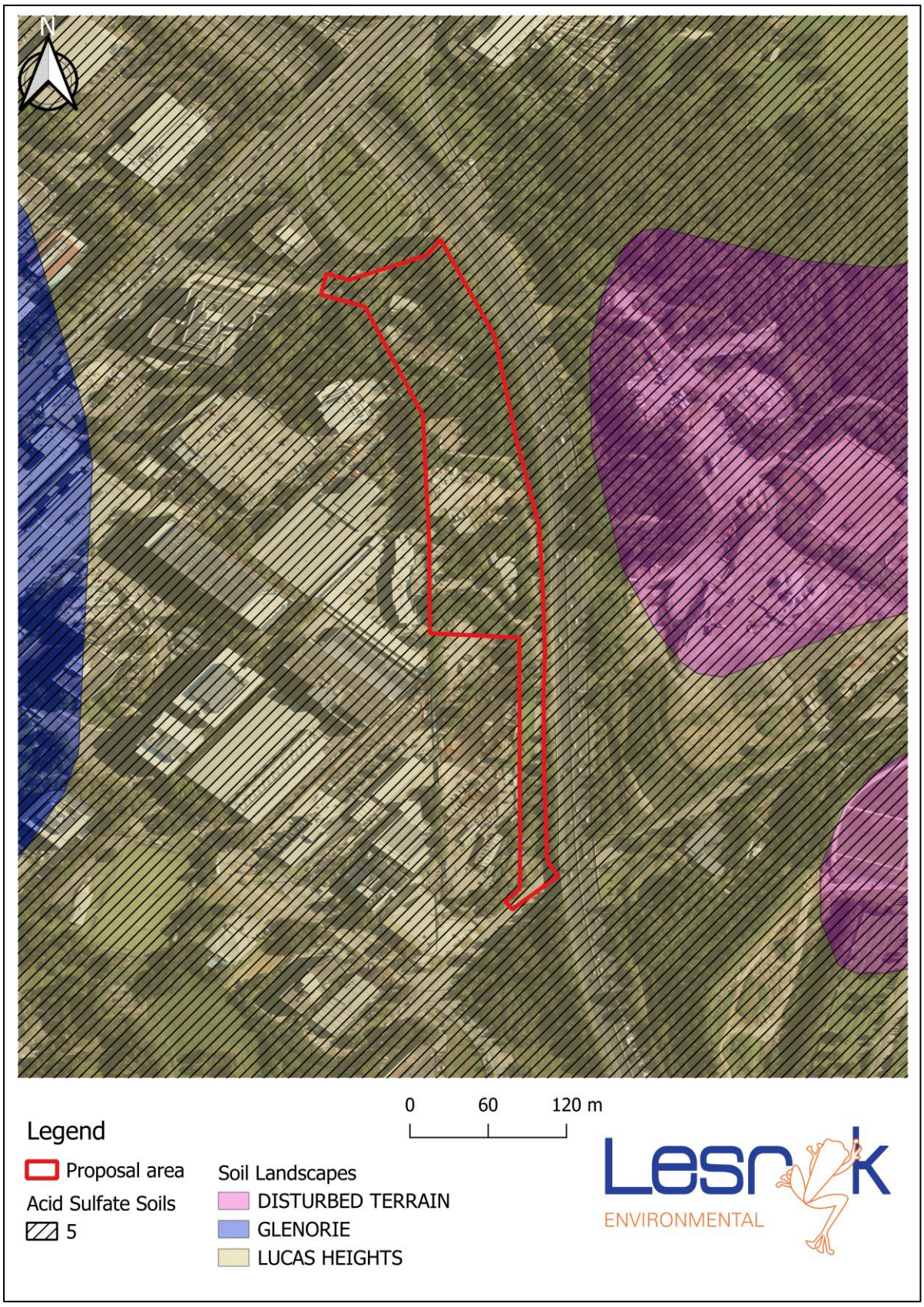


Figure 3-2: Soil landscapes and acid sulfate soils

## 3.1 Plant community types and vegetation zones

With reference to the State Type Vegetation Mapping (State Government of NSW and NSW DCCEW 2023) the proposal area is mapped as PCT 0 – Not classified vegetation (Figure 2-1).

The field investigation found the proposal area, where vegetation occurred, was comprised of a canopy containing native species such as Blackbutt (*Eucalyptus pilularis*), Smooth-barked Apple (*Angophora costata*) and Red Mahogany (*Eucalyptus resinifera*) and exotic White Poplar (*Populus alba*) and Radiata Pines (*Pinus radiata*) up to 25 m tall. The midstory was comprised of exotic Large-leaved Privet (*Ligustrum lucidum*) and Lantana (*Lantana camara*), with native River She-oak (*Allocasuarina littoralis*) and Oleander (*Nerium oleander*) present. The groundcover was dominated by exotic grasses and climbers including Blackberry (*Rubus fruticosus* agg. spp.), Rhodes Grass (*Chloris gayana*), Paspalum (*Paspalum dilatatum*), Kikuyu Grass (*Cenchrus clandestinus*) and Asparagus Fern (*Asparagus aethiopicus*)

PCT 3259 – Sydney Coastal Shale-Sandstone Forest and PCT 3262 – Sydney Turpentine Ironbark Forest, occur in proximity to the proposal area. Given these PCTs proximity to the study area, the vegetation within the proposal area was assessed as if mapped as this PCT, to confirm the accuracy of the SVTM.

PCT 3259 is described as a tall to very tall sclerophyll open forest with a sparse layer of dry sclerophyllous shrubs and a grassy ground cover found on clay-influenced sandstone crests in the greater Sydney metropolitan area (State Government of NSW and DPE 2023). PCT 3262 is described as a tall to very tall sclerophyll open forest with mid-stratum of mixed sclerophyll and mesophyll shrubs and a ground layer of grasses and forbs, found on shale or sheltered shale-sandstone soils mainly in the northern suburbs of Sydney and lower Blue Mountains (State Government of NSW and DPE 2023).

The level of disturbance and highly modified nature of the site has led to the midstory and groundcover to be dominated by invasive weeds and exotics, with no native shrub layer present. Large remnant trees exist scattered and in rows along the northern boundary of the proposal area with River She-oaks present in a row along the western boundary and a small section within the centre of the proposal, which alone, do not conform to a native plant community.

There are no listed derived plant communities associated with the PCT 3259 or PCT 3262 which could have occurred within the proposal area.

Reference to historic imagery of the site (Plate A) shows the site has been previously cleared of vegetation and has been used as a pastoral, agricultural or grazing land between 1965 – 1970, and was later used as a construction laydown facility for storage of materials (possibly for the M2 construction) (Stantec 2023).

Given past and present land use, the soil composition of the site is highly modified and includes anthropogenic materials within fill materials generally consisted of plastics, glass, metal, gravels, concrete/rubble, bricks, tiles, terracotta, timber, ashy material, PVC piping, geofabric and loose insulation (Stantec 2023). No native plant communities are listed as occurring on anthropogenic fill, with PCT 3259 occurring on sandstone crests, which were not observed within the proposal area. It is noted that significant portions of the proposal area were concreted over and as such would not be permitted to naturally regenerate.

Based on the above, the SVTM mapping as PCT 0 – Not Classified was identified to be accurate and that the vegetation within the proposal area does not conform to a native vegetation community.

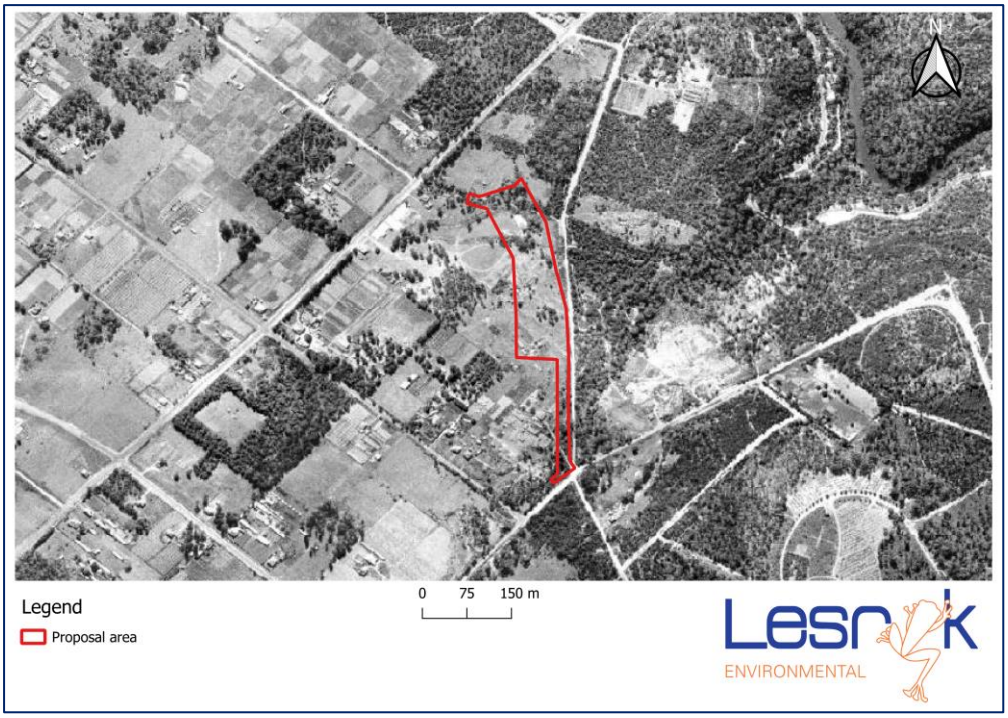


**Plate A:** 1943 Historic Imagery (SixMaps 2024)

## 3.2 Threatened ecological communities

No TECs occur within the proposal area.

## 3.3 Groundwater dependent ecosystems

Groundwater dependent ecosystems (GDE) are communities of plants, animals and other organisms whose extent and life processes are dependent on groundwater. Some examples of ecosystems which depend on groundwater are:

- Wetlands
- Red gum forests, vegetation on coastal sand dunes and other terrestrial vegetation
- Ecosystems in streams fed by groundwater
- Limestone cave systems
- Hanging valleys and swamps.

Reference to the GDE Atlas (BoM 2023b) identified low – high potential terrestrial (Figure 3-3) northeast beyond the proposal area. No aquatic or subterranean GDE were identified for the proposal area.

In reference to the DPI's (Office of Water) Risk Assessment guidelines for GDE (Serov *et al.* 2012), the proposal would not have a direct or indirect impact on a water source or aquifer structure, and, with the adoption of mitigation measures, would not contribute to the off-site movement of sediment.

The proposed work would not result in any direct or indirect adverse impact on surface hydrology within the proposal area.

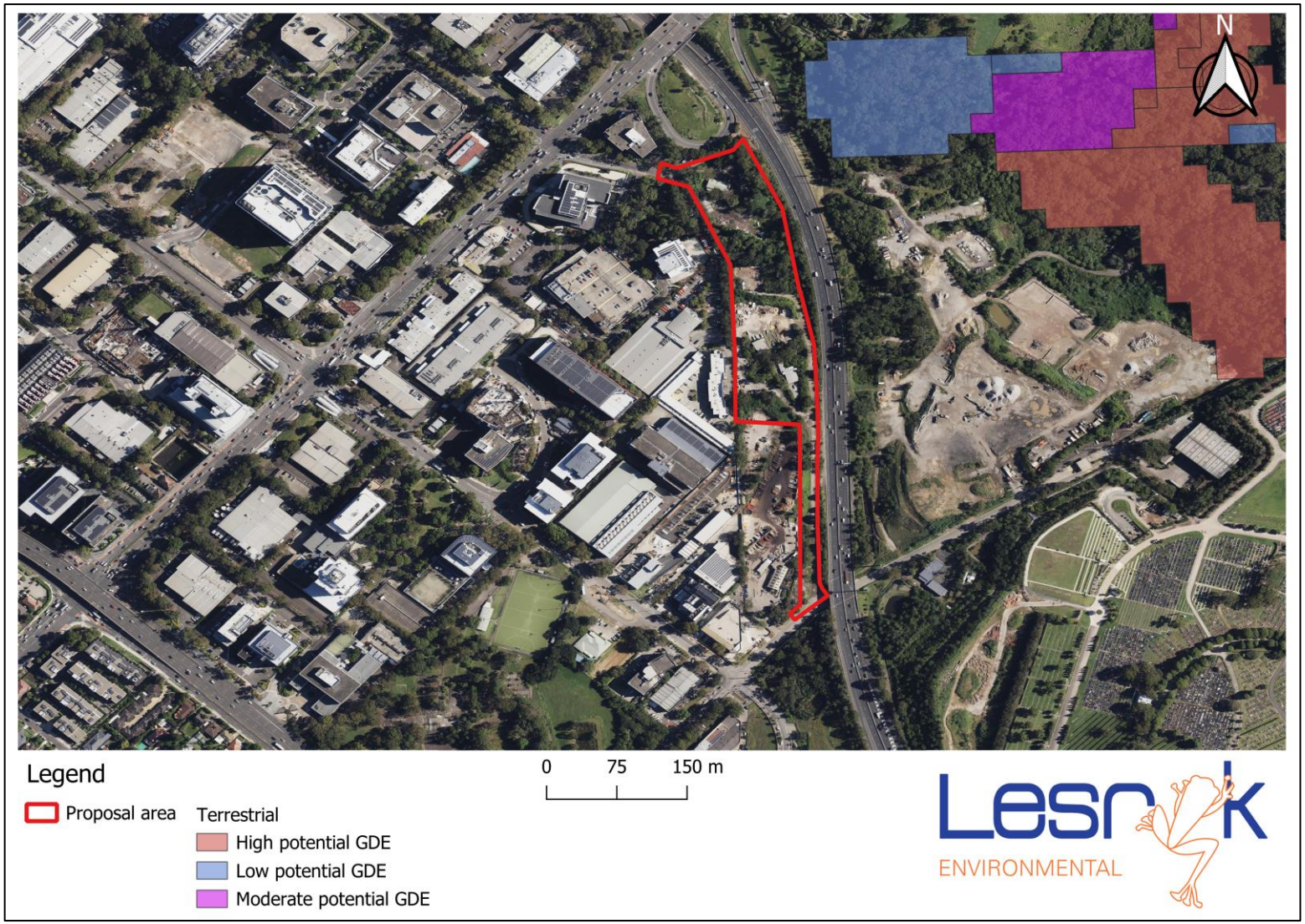


Figure 3-3: Groundwater dependent ecosystems

## 3.4 Threatened species

Prior to conducting the field investigation, a review of the BioNet Atlas and PMST databases (DPE 2023a, DCCEEW 2023a) identified 71 threatened plants and/or their populations, and 88 threatened fauna species listed under the EPBC, BC and FM Acts that have been previously recorded or are considered to have habitat within 10 km of the proposal (Appendix A). Those species that have been previously recorded within 10 km of the proposal as per the BioNet Atlas are presented in Figure 2-2 (note: the locations were some species were recorded overlap so one dot may represent several animals/plants).

In the case of fauna, numerous highly mobile threatened species with large territorial requirements (e.g., bats, birds) may traverse or occupy the proposal area on occasions. Only those that have a documented association with those habitat components that were identified within the proposal area were considered for assessment under the EPBC and/or BC Acts.

While previously recorded within and/or predicted as having habitat within 10 km of the proposal, the majority of threatened species listed in Appendix A were assessed to have an 'unlikely' or 'low' likelihood of occurrence, given the disturbed and heavily modified condition of the locality. These species would not occur within, or be reliant upon, within the impact footprint of the proposal.

The majority of these animals and plants have specific habitat requirement (as identified in Appendix A), no significant components of which are present within, or close to, the impact footprint. Better resources are present within the surrounding, larger bushland areas.

No threatened flora or fauna species listed under the EPBC or BC Acts were detected within the proposal area.

As they have been previously recorded in the surrounding region, as suitable habitat is to be cleared (being a number of insect attracting/pollen producing plants and the recorded 31 hollow-bearing trees [Figure 3-4]) and as no targeted nocturnal work was conducted, it was considered appropriate to adopt a precautionary approach to the potential presence of the following threatened species listed as Vulnerable under the BC Act (Table 3-2):

- Powerful Owl (*Ninox strenua*)
- Gang-gang Cockatoo (*Callocephalon fimbriatum*)
- Little Lorikeet (*Glossopsitta pusilla*)
- Grey-headed Flying-fox (*Pteropus poliocephalus*)
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)
- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*)
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)
- Southern Myotis (*Myotis macropus*)
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).

The Gang-gang Cockatoo and Grey-headed Flying-fox are also listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as Endangered and Vulnerable respectively. Assessments provided within this report, referencing the criteria provided under Section 7.3 of the NSW *Biodiversity Conservation Act 2016* and the EPBC Significant Impact Guidelines, concluded that the conducting of the proposal works would not have a significant impact on the potentially occurring threatened Yangochiroptera, Grey-headed Flying-fox, birds, or their habitats. Therefore, the matter does not require referral to the Federal Minister for the Environment and Water as a controlled action, nor is the preparation of a Species Impact Statement [or alternatively a Biodiversity Development Assessment Report] considered necessary.

Table 3-2: Threatened species surveys results

| Species name | EPBC Act | BC Act | Identification method (not recorded, assumed, recorded, expert report) | Survey effort compliant?[1] | Results |
|---|---|---|---|---|---|
| Powerful Owl (*Ninox strenua*) | Not Listed | V | Recording of habitat trees for potential roosting habitat | No | Assumed potential presence. Assessments conducted. |
| Gang-gang Cockatoo (*Callocephalon fimbriatum*) | E | V | Dedicated bird survey and searches for indirect evidence (crushed eucalyptus fruit) | Yes | Not recorded but assumed present other times of the year. Assessments conducted. |
| Little Lorikeet (*Glossopsitta pusilla*) | Not Listed | V | Dedicated bird survey and searches for indirect evidence (crushed eucalyptus fruit) | Yes | Not recorded but assumed present other times of the year. Assessments conducted. |
| Grey-headed Flying-fox (*Pteropus poliocephalus*) | V | V | Recording of trees for potential foraging habitat | No | Assumed potential presence. Assessments conducted. |
| Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) | Not Listed | V | Recording of habitat trees for potential roosting habitat | No | Assumed potential presence. Assessments conducted. |
| Southern Myotis (*Myotis macropus*) | Not Listed | V | Recording of habitat trees for potential roosting habitat | No | Assumed potential presence. Assessments conducted. |
| Yellow-bellied Sheathtailbat (*Saccolaimus flaviventris*) | Not Listed | V | Recording of habitat trees for potential roosting habitat | No | Assumed potential presence. Assessments conducted. |
| Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) | Not Listed | V | Recording of habitat trees for potential roosting habitat | No | Assumed potential presence. Assessments conducted. |
| Greater Broad-nosed Bat (*Scoteanax rueppellii*) | Not Listed | V | Recording of habitat trees for potential roosting habitat | No | Assumed potential presence. Assessments conducted. |

*Note: 1. As identified in Section 2.4 of this BAR.*


Figure 3-4: Suitable habitat for threatened species

## 3.5 Aquatic results

Within the area investigated the unnamed stormwater drainage line is about 4 m wide and at the time of investigation was generally still (i.e., lightly flowing), though its water quality was heavily turbid negating the visual assessment of its depth. An additional two small bodies of water are present within the proposal area, these stagnant with large amounts of refuse present.

With reference to the Fisheries NSW Spatial Data Portal no KFH is present within the proposal area (Figure 3-5).

One of the objectives of the FM Act is to '... conserve key fish habitats...' (NSW Government 2022b). While the term 'key fish habitat' is not defined within the FM Act, DPI has identified KFH to include all marine and estuarine habitats up to highest astronomical tide level (that reached by 'king' tides) and most permanent and semipermanent freshwater habitats including rivers, creeks, lakes, lagoons, billabongs, weir pools and impoundments up to the top of the bank (DPI 2022f).

Reference to the BioNet Atlas and PMST did not identify any previously recorded threatened fish species listed under the EPBC or FM Acts, or their predicted habitat, within 10 km of the proposal area (Appendix A).

The proposal will not affect fish, fish habitat or marine vegetation. No approvals are required under this Act to permit the work. Referral to the relevant Minister responsible for administering this Act would not be required.

Post-work, the aquatic habitat will remain and it is considered there will be no net loss of Key Fish Habitat.

Aquatic impacts as a result of the proposal are identified in Section 5.1.4.


Figure 3-5: Key fish habitat

## 3.6 Areas of outstanding biodiversity value

The DCCEEW's Register of Critical Habitat (DCCEEW 2023e) and DPE's Area of Outstanding Biodiversity Value (AOBV) register (DPE 2023c) (in conjunction with Part 3 of the Biodiversity Conservation Regulation 2017) per listings provided under the EPBC and/or BC Acts, did not identify any gazetted areas of critical habitat or AOBV for any flora or fauna species or communities occurring within or near the proposal.

## 3.7 Wildlife connectivity corridors

Reference to SEED Dataset mapping (NSW Government 2023e) does not identify the proposal area as part of Fauna Key Habitats or Fauna Corridor.

Within the area investigated, the remnant bushland within the Lane Cove National Park east of the site connects into a heavily vegetated landscape that forms part of a relatively continuous vegetated corridor that is present beyond the proposal area. Limited connectivity currently exists between areas of vegetation surrounding the proposal area due to the presence of the M2.

Numerous barriers to ground traversing fauna are present within the area surveyed, including the M2. Beyond existing influences, the undertaking of the works will not affect any fauna movements, nor will they have an adverse cumulative impact when associated with the existing situation. The works will not further fragment or isolate any habitat area, nor present a barrier to fauna dispersal patterns (particularly those of the potentially occurring threatened flying species assessed within this report).

Post-work, flying species, and those highly tolerant of traversing both urban infrastructure and bushland environments, would still be able to move across and through the proposal area.

As a worst-case scenario, the site investigation identified that about 332 trees would require removal, 31 of which are hollow-bearing trees. The removal of these trees would not have a major effect on the structure of the existing tree canopy nor the movement patterns of any gliding mammals that may occupy the surrounding bushland. Trees would be retained where possible. The proposal would not isolate or further fragment any habitat areas, nor erect any barriers (beyond those that currently exist e.g., surrounding environment) to the movement and dispersal patterns of flying species (i.e., birds, bats), that may be currently negotiating the proposal area.

Temporary measures incorporated as part of the proposal (i.e., erosion and sediment controls, exclusion fencing) would be established in accordance with applicable guidelines to prevent direct or indirect impact on fauna.

No fauna migration patterns would be adversely impacted by the proposal.

No direct or indirect impact to wildlife connectivity would occur as a result of the operational phase of the proposal. Species currently negotiating the existing proposal area and surrounding area are considered to continue to do so post-establishment (and during the operation) of the new bus depot.

## 3.8 SEPPs (Biodiversity and Conservation) 2021

**Chapter 4 Koala Habitat Protection 2021**

The Ryde LGA is not identified under Schedule 2 - LGAs of the SEPP, Chapter 4 'Koala Habitat Protection 2021' does not apply to the proposal. Furthermore, Chapter 4 'Koala habitat protection 2021' of the SEPP only applies to development applications assessed under Part 4 of EPA Act, not those considered under Part 5. That stated, it is Transport's practice to consider the SEPP criteria as part of the environmental assessment process.

No Koala Plan of Management exists for the locality. No evidence (i.e., sightings, calls, scats etc.) to suggest that the area investigated supported a resident Koala population were identified. With reference to the BioNet Atlas (DPE 2023a), the closest and most recent Koala sighting (dated August 2017), was about 3.7 km to the west of the proposal.

'For koalas, suitable habitat from a vegetation point of view includes trees that they like to eat. Shade trees are important too, especially in inland areas of NSW; however, without a food source an area cannot sustain koala populations' (Department of Planning, Industry and Environment 2019 page 49).

Given the position of the proposed bus depot in the urban context, and acknowledging features such as the M2 and other major roads, Koalas would not be able to access this site.

In accordance with the following definitions provided under Chapter 4, Section 4.2 of the SEPP, the proposal area is not considered to constitute Core Koala habitat:

- an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or
- an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years.

The carrying out of the proposal would not require the preparation of a Plan of Management for the conservation and management of areas of Koala habitat.

## 3.9 Matters of national environmental significance

By the completion of the field investigation no threatened flora or fauna species, or TECs listed under the EPBC Act were recorded within the proposal area.

Reference to the PMST did not identify any World or national heritage listed places, nor Wetlands of international importance, within, or near to, the proposal area. Additionally, no threatened species or ecological communities predicted to occur near the proposal area would be reliant upon the fauna habitats or vegetation communities present, and none would be affected by the conducting of the activities proposed.

## 3.10 Sydney Green Grid

With reference to the Sydney Green Grid (North District) (DPHI 2024), no green or blue zones were identified within the proposal area. It is noted that a Green Grid area mapped as BioMap Core Areas is located about 20 m east of the proposal area (Figure 3-6).

It is noted that Transport has outlined that the detailed design is to consider species connectivity through the site to adjacent areas.

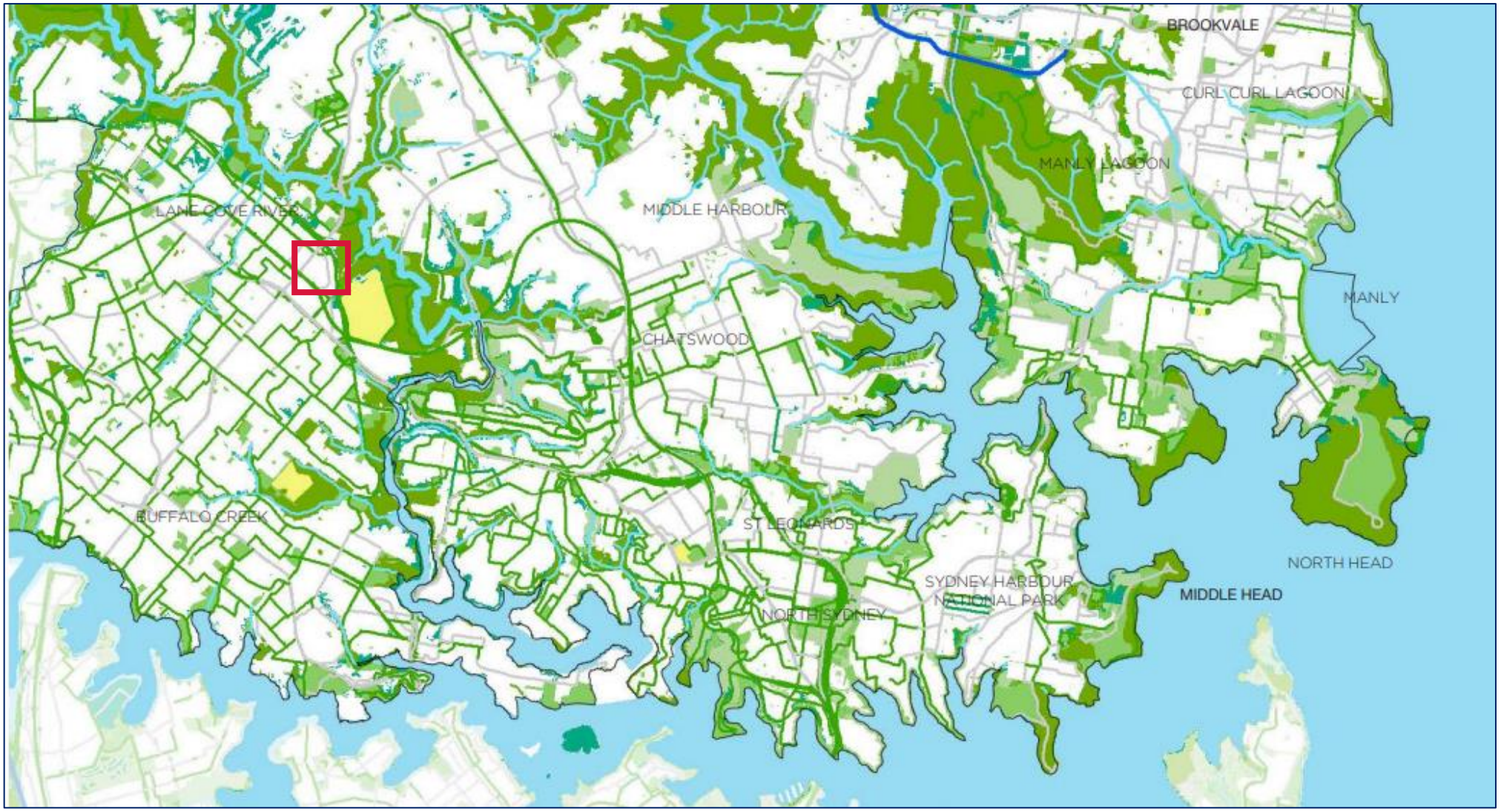


Figure 3-6: North Green Grid Existing Values Detail Plan (DPHI 2024)

# 4. Avoidance and minimisation

A key part of Transport's management of biodiversity for this proposal is the application of the 'avoid, minimise, mitigate and offset' hierarchy as follows:

1. Avoid and minimise impacts.
2. Mitigate impacts.
3. Offset impacts in accordance with Transport guidelines.

This chapter of the BAR demonstrates the efforts taken to avoid and minimise impacts on biodiversity values.

## 4.1 Application of avoid and minimise principles

The objective of the proposal is to establish a new bus depot to accommodate the infrastructure required to operate battery powered electric buses.

To permit the proposal, based on a worst-case estimate, about 2.2 hectares of exotic and native vegetation would require disturbance/removal.

The proposal would take place predominately within a cleared/previously modified area and is adjacent to the road corridor of the M2; as such, the potential to avoid wider impact to biodiversity is high.

To permit the proposed work, 332 trees (comprised of 158 small, 148 medium, 23 large and 3 very large) would be removed, 31 of which are hollow-bearing. Of those mature trees to be removed, hollow-bearing trees are recommended to be retained where possible.

Vegetation clearance would be limited to the minimum required to successfully achieve establishment of the new bus depot; with the selection of equipment to be used also aimed at minimising clearance requirements. Vegetation clearance and work limits would be identified both on site maps/plans and on-site through the erection of temporary exclusion fencing, bunting or similar in accordance with Guide 2 of the Transport Biodiversity Management Guidelines EMF-BD-GD-0039. Fencing etc. would be established at the outer limits of the drip line of any retained trees present and the areas marked as 'no-go zones', to avoid indirect impact.

To avoid the removal of additional vegetation, the temporary compound/stockpile sites required to assist the proposal would be located within existing cleared/disturbed sites.

Designs for the bus depot are currently being finalised. The design process will involve an assessment to consider suitable remediation options and select the most appropriate solution regarding minimising impact on the ecological values of the proposal area wherever possible.

In line with Transport's 'The Tree and Hollow Replacement Program: An implementation plan for payments to and from the Transport for NSW Conservation Fund (2022)' (EMF-BD-GD-0129) [hereafter referred to as the Tree and hollow replacement guidelines], off-setting the loss of 332 trees through the re-planting of 1140 trees would be required. Where this cannot be accommodated for locally [or only partially], Transport for NSW will be required to make payment into the Conservation Fund in line with the fund contributions outlined in Transport's Tree and Hollow Replacement Guidelines. Transfer of funds must occur prior to commencement of work.

No TECs, or threatened flora or fauna occur within the disturbance/impact footprint of the proposal.

# 5. Impact assessment

## 5.1 Construction direct impacts

Construction impacts as a result of conducting the activity, within a proposal impact footprint of about 2.2 ha, include:

- the disturbance/removal of 2.2 ha of native and exotic vegetation, including 332 trees (158 small, 148 medium, 23 large and 3 very large [as per table 5-3])
- the disturbance/removal of 31 hollow-bearing trees
- disturbance/removal of suitable habitat for EPBC and BC Act listed threatened hollow-dependant species.

Further potential construction impact includes temporary noise and/or vibration levels, erosion, injury and/or mortality to fauna, edge effects, weed proliferation and introduction of pathogens.

No significant adverse impact is expected during the operational phase of the proposal.

Mitigation measures have been provided in Section 6 of this report.

### 5.1.1 Removal of native vegetation

By the completion of the field survey a number of exotic species and isolate native trees were recorded within the area investigated (Appendix D). It is noted that Appendix D is not intended to be a comprehensive list of all species present within the area investigated, and only represents those plants that were recorded whilst conducting searches for:

- those native species and ecological communities of State and/or national conservation concern that are known, or expected to occur, in the locality
- weeds of significance that would require treatment (refer to Section 5.2.4).

The vegetation is dominated by exotic species and does not conform to a native vegetation community.

Based on a worst-case estimate it is expected that 2.2 ha of exotic vegetation and isolated native trees would be disturbed/removed to permit the proposal. Similar resources will be retained within the proposal area and beyond.

Within the proposal area, 332 trees have been recorded within the proposed impact footprint face potential removal. Of the 332 trees to be removed (comprised of 158 small,148 medium, 23 large and 3 very large), 31 are hollow-bearing.

Table 5-1: Tree replacement requirements

| Tree size | Tree replacement requirement |
|---|---|
| Small tree (DBH 5 – 20 cm) | Plant minimum two trees |
| Medium tree (DBH 20 – 50 cm) | Plant minimum four trees |
| Large tree (DBH 50 – 100 cm) | Plant minimum eight trees |
| Very Large tree (DBH > 100 cm) | Plant minimum 16 trees |
| Hollow replacement requirement | Provide three artificial hollows for every occupied hollow removed[3] |

Table 5-2: Conservation Fund contributions

| Tree size | Tree replacement requirement |
|---|---|
| Small tree (DBH 5 – 20 cm) | $125 |
| Medium tree (DBH 20 – 50 cm) | $500 |
| Large tree (DBH 50 – 100 cm) | $1000 |
| Very Large tree (DBH > 100 cm) | $2500 |
| Hollow | $500 |

In line with the calculation, and in reference to Appendix B, 1140 trees would require planting and 50 artificial hollows would require provision (Table 5-3). Where this cannot be accommodated for locally [or only partially], Transport for NSW will be required to make payment into their Conservation Fund in line with the fund contributions outlined in Transport's Tree and Hollow Replacement Guidelines. Transfer of funds must occur prior to commencement of work.

Table 5-3: Calculated tree replacement or (alternatively) cost transfer into Conservation Fund

| Tree size | Estimated native tree removal (worst-case scenario) | Required number of replacement trees | Required cost transfer into Conservation Fund |
|---|---|---|---|
| Small trees | 158 | 316 | $19,750 |
| Medium trees | 148 | 592 | $74,000 |
| Large trees | 23 | 184 | $23,000 |
| Extra Large trees | 3 | 48 | $7,500 |
| Hollow-bearing trees | 31 HBT (83 hollows) | 50 hollows | $25,000 |
| Total | 332 trees and 31 HBT | 1140 plantings & 50 hollow replacements | $149,250 |

The works proposed do not meet any of the activities excluded from the requirement of replacing trees or hollows (Transport 2022b). The works proposed are not considered low-risk activities.

Relevant to the proposal's impact on vegetation, the following Key Threatening Processes (KTP) are applicable:

- Clearing of native vegetation
- Loss of hollow-bearing trees
- Removal of dead wood and dead trees

Given the extent of similar resources within the proposal area and beyond, and provided recommended mitigation measures are adopted, the loss of 2.2 ha of native and exotic vegetation, this including the clearing of 332 trees, 31 of which are hollow-bearing, and the removal of dead wood and dead trees, is not considered to significantly contribute to, or increase the impact of, these KTP.

Stands of similar vegetation, in which trees that supported a range of hollow sizes and in which both dead wood/trees were observed, are present beyond the project limits.

Clearing within the proposal area would be carried out in accordance with Guide 4 of the Transport Biodiversity Management Guidelines EMF-BD-GD-0039 to minimise disturbance to surrounding flora and fauna habitats.

Where possible, relocate locally the felled trees as opposed to the mulching of these plants. Relocation of the felled trees would aim at providing habitat for native species and their prey (as per DEC 2004 'Threatened Species Survey and Assessment: Guidelines for developments and activities and the Transport Biodiversity Management Guidelines EMF-BD-GD-0039.

### 5.1.2 Removal of threatened fauna habitat

The proposal area is located adjacent to a major road and is present within a heavily disturbed and built-up landscape. The site was previously a construction laydown facility for the storage of materials. The urban landscape in which the proposal area occurs presents numerous barriers to ground traversing species. Flying species can, and were recorded, occupying the site. Excluding species that are highly tolerant of occupying urban environments, the site offers limited to no resources for native fauna.

Of the 332 trees to be removed, 31 are hollow-bearing. The diameter of the entrance cavities for the 31 hollow-bearing trees would permit access/use by microbats and small to medium sized birds (it is noted that none of the hollow utilising birds previously recorded in the surrounding region were heard calling or observed during the course of the field surveys).

The loss of these 31 trees, considering the extent of similar resources present adjacent to and beyond the limits of the proposal, would not significantly affect the extent of foraging and/or breeding sites available for these species. The removal of these trees would also not limit the extent of insect attracting or pollen producing plants present in this locality.

Reference to the National Flying-fox monitoring viewer did not indicate the presence of a Grey-headed Flying-fox (*Pteropus poliocephalus*) camp within, or in proximity to, the area investigated (DCCEEW 2023d). The nearest camp (Gordon #45) is located about 4.2 km north of the proposal area, the development not having a direct or indirect impact on this site. Within the project area, no evidence, such as tree dieback, that would suggest the project area was previously used as a Flying-fox camp was obtained during the field surveys.

Consultation of the BioNet database indicates that there are 1973 records for the State listed Powerful Owl (*Ninox strenua*) and 2610 records for the State and nationally listed Grey-headed Flying-fox (DPE 2023b). Whilst these are considered to reflect research undertaken with both the Lane Cove National Park Powerful Owls and Gordon Flying-fox camp (both of which are well known and documented (e.g. Ku-ring-gai Council 2021, Friends of Lane Cove National Park 2024), site where well developed roosting, breeding ad foraging habitat (that is regularly utilised) is present, there is the chance, given the proximity of the subject site to these areas, that individuals may use the trees present in the proposed bus depot on occasion. Whilst highly unlikely as the subject site is heavily disturbed, offers limited foraging and roosting opportunities and occurs within a modified urban environment, compared to the natural bushland of Lane Cove National Park, a precautionary approach to the present of these species has been adopted.

Whilst resources available for use by those hollow-dependent threatened species previously recorded within this portion of the Ryde LGA would be cleared, the impact of this on populations of these animals is not considered significant.

To further consider the impact of the proposed bus depot development on the potentially occurring Powerful Owl, Grey-headed Flying-fox and hollow-dependent species, the criteria provided under Section 7.3 of the BC Act have been referred to (Appendix E). As the Grey-headed Flying-fox is also listed as Vulnerable under the EPBC, the assessment criteria provided in the Significant Impact Guidelines have been drawn upon (Appendix E).

Use of these criteria concluded that the proposed bus depot development would not have a significant effect on the potentially occurring Powerful Owl, Grey-headed Flying-fox and hollow-dependent species or their habitat. As such, preparation of further studies, such as a Species Impact Statement or BDAR, is not required.

During the sight inspection, no large stick nests, white-wash accumulations, caves or suitable cave-substitutes are present. Similarly, no species of threatened bird were observed entering those hollow-bearing trees inspected. Inspections around the base of these did not record any regurgitated owl pellets, preened feathers or similar.

There is not connectivity between hollow-bearing trees and proximate areas of similar bushland. As such, movements of species such as the Sugar Glider (*Petaurus breviceps*), would not be possible. In regards to these species, the site is considered inaccessible. Highly tolerant urban species such as the Common Brushtail Possum (*Trichosurus vulpecula*) would be able to access the site.

Those culverts present were inspected and not found to be suitable for occupation by cave-dependent microbats. They were noted to support occurrences of spider webs, the presence of these indicating that no animals are entering or existing the culverts present (if animals were using these sites their movements would 'clear' the cobwebs).

No further threatened fauna habitat, than those listed in Table 5-4, important to the local occurrence of threatened species previously recorded within the surrounding region was observed within the area investigated.

No further KTP than those identified above in Section 5.1.1 pertain to the removal of habitat.

Removal of habitat, including the 31 hollow-bearing trees, within the proposal area would be carried out in accordance with Guide 4 of the Transport Biodiversity Management Guidelines EMF-BD-GD-0039.

Table 5-4: Summary of direct impacts on threatened fauna and habitat

| Species name | EPBC Act | BC Act | Credit type[1] | Potential occurrence (Moderate, High, Recorded) | Associated habitat in subject land | Impact (ha) |
|---|---|---|---|---|---|---|
| Powerful Owl (*Ninox strenua*) | | V | Ecosystem | Moderate | May perch in trees present on occasion | 2.2 ha of native and exotic vegetation |
| Gang-gang Cockatoo (*Callocephalon fimbriatum*) | E | V | Species | Moderate | May breed in tree hollows and forage on those plants present. | |
| Little Lorikeet (*Glossopsitta pusilla*) | N/A | V | Ecosystem | Moderate | May breed in tree hollows and forage on those plants present. | |
| Grey-headed Flying-fox (*Pteropus poliocephalus*) | V | V | Ecosystem | Moderate | May forage in trees present on occasion | |
| Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) | N/A | V | Ecosystem | Moderate | May occupy hollow-bearing trees present. Ecological assessment conducted. | |
| Southern Myotis (*Myotis macropus)* | N/A | V | Species | Moderate | May occupy hollow-bearing trees present. Ecological assessment conducted. | |
| Yellow-bellied Sheathtailbat *(Saccolaimus flaviventris)* | N/A | V | Ecosystem | Moderate | May occupy hollow-bearing trees present. Ecological assessment conducted. | |
| Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) | N/A | V | Ecosystem | Moderate | May occupy hollow-bearing trees present. Ecological assessment conducted. | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Greater Broad-nosed Bat (*Scoteanax rueppellii*) | N/A | V | Ecosystem | Moderate | May occupy hollow-bearing trees present. Ecological assessment conducted. | |
| *Note: 1. For dual-credit species, identify the credit type being assessed (i.e., where there is no breeding habitat present the credit type would be 'ecosystem').* | | | | | | |

### 5.1.3 Removal of threatened flora

No threatened flora species listed under the EPBC or BC Acts were recorded within the area investigated.

### 5.1.4 Aquatic impacts

Beyond existing conditions, the works proposed would not result in any direct or indirect adverse impact on surface hydrology within the proposal area, and are not expected to impact any of those drainage lines that occur beyond the limits of the work.

No land identified by SEPP Resilience and Hazards 2021 (i.e., coastal wetlands) occurs within, or near to, the proposal. No aquaculture, commercial or recreational fishing occurs within, or near to, the proposal.

### 5.1.5 Injury and mortality

Given the proposal would be conducted within a previously disturbed/modified environment, there is minimal expectation that sheltering animals would be injured during the course of the proposed work.

During the construction phase of the proposal some rural and semi-urban adaptable, sheltering fauna species (i.e., frogs and ground-traversing mammals) could be present and be subject to injury. Mitigation measures such as checking beneath vehicles/machinery prior to their use have been provided to address this matter (Section 9).

Beyond current levels of impact due to the existing presence of the M2 and the volume of traffic that typically use this road network, the operation phase of the proposal is not expected to significantly increase injury or mortality of fauna within the proposal area. The proposal is not expected to significantly alter vehicle strikes on those fauna species recorded or potentially occurring than may be currently transpiring. The proposal would not have an adverse impact on the long-term viability of these species or their local populations.

### 5.1.6 Groundwater dependent ecosystems

In reference to the DPI's (Office of Water) Risk Assessment guidelines for GDE (Serov *et al*. 2012), the proposal would not have any adverse direct or indirect impact on a water source or aquifer structure, it would not involve groundwater extraction and, with the adoption of mitigation measures, would not contribute to the off-site movement of sediment.

## 5.2 Indirect and operational impacts

### 5.2.1 Edge effects on adjacent native vegetation and habitat

Weeds are readily spread by existing dispersal factors such as wind, birds, water and the movement of vehicles along roads. Clearing and opening up of new vegetation edges can facilitate the recruitment of these species and provide opportunity for the establishment of other exotic species. These weeds are often able to out-compete native flora and fauna species and reduce the habitat values of these areas.

While this is the case, edge effects beyond those that are currently occurring along the investigated area are not expected to be exaggerated due to the carrying out of the proposal.

### 5.2.2 Wildlife connectivity and habitat fragmentation

The works proposed will not have any direct or indirect impact on those fauna corridors that exist beyond the limits of the activity. The proposal is not considered to isolate or further fragment any habitat areas or erect any additional barriers to the movement and dispersal patterns of fauna species currently negotiating the proposal area. No blocking or degrading of fish passage, habitat tree removal, nor thinning of canopy cover is required to permit the proposal.

Temporary measures incorporated as part of the proposal (i.e., erosion and sediment controls, exclusion fencing) would be established in accordance with applicable guidelines to prevent direct or indirect impact on fauna.

No migration or dispersal patterns of native fauna would be adversely impacted by the proposal.

No direct or indirect impact to wildlife connectivity would occur as a result of the operational phase of the proposal. Species currently negotiating the existing road network and surrounding area are considered to continue to do so post-work.

### 5.2.3 Injury and mortality

The proposal would generally be conducted within existing disturbed/modified areas. As such, the potential for fauna injury and mortality impact, beyond that identified during the construction phase of the proposal (Section 5.1.5), would not increase during the operational phase of the proposal.

### 5.2.4 Invasion and spread of weeds

Under the *Biosecurity Act 2015*, '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.'

Of the introduced plant species recorded within the proposal area, Lantana (*Lantana camara*), Asparagus Fern (*Asparagus aethiopicus*) and Blackberry (*Rubus fruticosus* sp. agg.) are listed:

- As Priority Weeds in the Greater Sydney region, which includes the Ryde LGA (DPI 2023a)
- Under Schedule 3 of the *NSW Biosecurity Regulation 2017*
- As Weeds of National Significance (Weeds Australia 2023).

Additionally, the following species is listed as Priority Weeds in the Greater Sydney region, which includes the Ryde LGA:

- Pampas Grass (*Cortaderia selloana*).

Where these weeds occur on site, they must be controlled to result in their suppression. This would be done prior to the commencement of work to avoid further spread of these species.

### 5.2.5 Invasion and spread of pests

Beyond the existing exotic species recorded within the proposal area, the operational phase of the proposal is unlikely to introduce or increase the presence of pest species. The proposal will not benefit any exotic pests at the expense of native species.

### 5.2.6 Invasion and spread of pathogens and disease

There is a risk that the proposal would introduce, spread or exacerbate the plant diseases caused by the pathogen *Phytophthora cinnamomi*. This is most likely introduced or spread through the importation or movement of soil, water and landscaping materials, either directly or through incidental attachment to machinery.

'*Infection of native plants by Phytophthora cinnamomi*' and '*Dieback caused by the root-rot fungus (Phytophthora cinnamomi)*', is a listed KTP under the BC and EPBC Acts, respectively.

Although there was no obvious evidence for the presence of *Phytophthora cinnamomi*, nor Myrtle Rust (*Austropuccinia psidii*) or Chytrid Fungus (*Batrachochytrium dendrobatidis*) in the vegetation of the proposal area, recommendations to disinfect personnel footwear and machinery prior to its use in construction activities have been presented in Section 6.

### 5.2.7 Changes to hydrology

The proposal would not result in any direct or indirect adverse changes to surface hydrology within the proposal area.

### 5.2.8 Noise, light, dust and vibration

During construction, activities associated with the proposal may cause additional noise and vibration; however, given the presence of the existing road network (and surrounding area), it is not considered that the proposal would result in adverse changes to existing levels of noise, vibration and/or light from this existing source such that there would be a significant impact to native fauna species.

The Interim Construction Noise Guideline (EPA 2009) would be referenced, as would compliance of all vehicles and machinery with industry noise guidelines.

## 5.3 Cumulative impacts

When associated with the existing road infrastructure and the traffic volumes that traverse this, the activity proposed would not have an adverse cumulative impact. As none were recorded, the works will not remove any threatened species or TECs, nor further fragment or isolate areas of bushland.

To permit the proposal, based on a worst-case estimate, about 2.2 ha of predominantly exotic vegetation, isolated native trees and 31 hollow-bearing plants would require disturbance/removal.

The removal of the 31 hollow-bearing trees and 2.2 ha of vegetation will not have a negative adverse cumulative impact on those threatened microbats or birds considered as being present based on the adoption of the precautionary approach.

The proposal is not expected to have a cumulative impact on any existing or planned developments within the surrounding locality.

The proposal is not considered to contribute to an adverse cumulative ecological impact in a local and regional context; nor is it considered to further contribute to the decline of any threatened species, populations or ecological communities within the locality.

## 5.4 Assessments of significance

To consider the impact the proposal may have on the potentially occurring hollow-dependent fauna, assessments referencing the criteria provided under Section 7.3 of the BC Act and EPBC Significant Impact Guidelines have been conducted (Appendix E); the findings of these summarised in Tables 5-5.

Table 5-5: Summary of BC Act significance assessments findings

| Significance assessment question<br>*(per Section 7.3 of the BC Act and Threatened Species Test of Significance Guidelines (OEH 2018))* | | | | | | |
|---|---|---|---|---|---|---|
| Threatened species, or communities | a | b | c | d | e | Likely significant impact? |
| Powerful Owl (*Ninox strenua*) | N | X | N | N | N | No |
| Gang-gang Cockatoo (*Callocephalon fimbriatum*) | N | X | N | N | N | No |
| Little Lorikeet (*Glossopsitta pusilla*) | N | X | N | N | N | No |
| Grey-headed Flying-fox (*Pteropus poliocephalus*) | N | X | N | N | N | No |
| Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) | N | X | N | N | N | No |
| Southern Myotis (*Myotis macropus*) | N | X | N | N | N | No |
| Yellow-bellied Sheathtailbat (*Saccolaimus flaviventris*) | N | X | N | N | N | No |
| Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) | N | X | N | N | N | No |
| Greater Broad-nosed Bat (*Scoteanax rueppellii*) | N | X | N | N | N | No |

***Y** = Yes (negative impact), **N** = No (no or positive impact), **X** = Yes/No answer not applicable,? = unknown impact.*

Table 5-6: Summary of EPBC Act significance assessments findings

| Threatened species, or communities | Important population *(per Significant Impact Guidelines 1.1 (DoE 2013))* | Likely significant impact? |
|---|---|---|
| Gang-gang Cockatoo (*Callocephalon fimbriatum*) | X | No |
| Grey-headed Flying-fox (*Pteropus poliocephalus*) | X | No |

***Y** = Yes (negative impact), **N** = No (no or positive impact), **X** = Yes/No answer not applicable, **?** = unknown impact.*

# 6. Mitigation

Table 6-1 provides safeguards and mitigation measures that aim to ensure that the proposal would not have an adverse impact on those environments that occur within or near to the proposal area.

Where applicable, safeguards are made with reference to the Transport Biodiversity Management Guidelines EMF-BD-GD-0039 (Transport 2024).

Table 6-1: Mitigation measures

| ID | Impact | Mitigation measure | Timing and duration | Likely efficacy of mitigation | Residual impacts anticipated? | Responsibility |
|---|---|---|---|---|---|---|
| B01 | General | An Erosion Sediment Control Plan (ESCP) would be prepared for the proposal and would be in line with the publication *Managing Urban Stormwater: Soils & Construction Guidelines* (Landcom 2004). | Detailed design | Effective | No | Contractor |
| B02 | | A Tree and Hollow Replacement Plan is to be prepared (this can be prepared as part of the proposal's CEMP). | Prior to construction | Effective | No | Contractor |
| B03 | | A temporary stockpile site will be located within an existing cleared hardstand area of the proposal area, and managed in accordance with *Managing Urban Stormwater: Soils & Construction Guidelines* (Landcom 2004). | Prior/during construction | Effective | No | Contractor |
| B04 | | The unexpected species find procedure is to be followed under Transport's *Biodiversity Management Guidelines: Protecting and managing biodiversity on Transport for NSW projects* (Transport, 2024). if threatened ecological communities and threatened fauna or flora not assessed in the biodiversity assessment, are identified in the proposal site. | During construction | Proven | No | Contractor |
| B05 | | All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project (i.e., site induction, 'toolbox' briefings). | Prior to construction | Effective | N/A | Contractor |
| B06 | | Spill kits commensurate with the type and quantity of hazardous material used must be available on-site. | During construction | Effective | No | Contractor |
| B07 | | If required, refuelling of machinery is to occur within an impervious bunded area located more than 50 m from any drainage line to prevent the escape of substances into the surrounding environment. | During construction | Effective | No | Contractor |
| B08 | Removal of native vegetation and threatened fauna habitat | Native vegetation removal and threatened fauna habitat removal will be minimised through detailed design, where feasible. | Detailed design | Effective | There would be a residual impact from the loss of 2.2 ha of native/exotic vegetation, encompassing 332 trees; including 31 hollow-bearing trees. | Contractor |
| B09 | | Vegetation clearance limits would be identified both on site maps/plans and on-site through the erection of temporary exclusion fencing, bunting or | Prior to construction | Effective | No | Contractor |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Removal of native vegetation and protection of retained and adjacent vegetation and habitats | similar in accordance with *Guide 2: Exclusion Zones in Transport's Biodiversity Management Guideline* (Transport 2024).<br>Exclusion zones will be set up at the limit of clearing in accordance with *Guide 2: Exclusion zones of Transport's Biodiversity Management Guideline* (Transport 2024).<br>Fencing etc. would be established at the outer limits of the drip line of any retained trees and the areas marked as 'no-go zones' to avoid direct impact. | | | | |
| B11 | Removal of vegetation | Pre-clearing surveys will be undertaken in accordance with *Guide 1: Pre-clearing process* in Transport's *Biodiversity Management Guideline (Transport 2024)* | Prior to construction | Effective | No | Contractor |
| B12 | Removal of trees | Pre-clearing surveys to be conducted to determine the exact number of trees required to be replace/off-set and biodiversity offsetting requirements finalised. | Prior to Construction | Effective | No | Contractor |
| B13 | Removal of native vegetation/ threatened fauna habitat | Vegetation removal and threatened habitat removal will be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bushrock in Transport's Biodiversity Management Guideline* (Transport 2024) to minimise disturbance to surrounding flora and fauna habitats. | During construction | Effective | There would be a residual impact from the loss of 2.2 ha of native/exotic vegetation, encompassing 332 trees; including 31 hollow-bearing trees. | Contractor |
| B14 | Removal of native vegetation | Where feasible, removed native and non-seed-bearing exotic vegetation would be mulched or re-used on-site (e.g., to stabilise disturbed areas). | During/post construction | Effective | No | Contractor |
| B15 | | Vegetation removal work is not to be conducted during periods of high winds. | During construction | Effective | No | Contractor |
| B16 | | The contractor must submit for review and endorsement by the Transport Senior Manager Environment and Sustainability, a Tree and Hollow Replacement Plan, which prioritises local planting in accordance with Transport's Tree and Hollow Replacement Guidelines EMF-BD-GD-0129 (Transport 2023).<br>Unless otherwise agreed to by Transport, this plan will be submitted within three months of commencing construction. | Pre/post construction | Effective | No | Contractor |

| | | | | | | |
|---|---|---|---|---|---|---|
| B17 | Unexpected threatened species | The unexpected find procedure in *Guide 1: Pre-clearing process* in Transport's *Biodiversity Management Guideline (Transport 2024)* is to be followed if threatened ecological communities and threatened flora and fauna not assessed in the biodiversity assessment, are identified in the proposal site | During construction | Effective | No | Contractor |
| B18 | Removal of threatened fauna habitat | An ecologist (or similar qualified person) is to be present on-site during the removal of the 31 hollow-bearing trees. The ecologist is to:<br>• develop lines of communication with the tree felling operator<br>• inspect each tree prior to its clearing<br>• inspect the tree once it is on the ground<br>• collect and relocate locally any sheltering fauna<br>• transport to a local veterinarian any animals that require treatment | During construction | Effective | The loss of 31 hollow-bearing trees | Contractor |
| B19 | | The 31 hollow-bearing trees are to be marked during pre-clearing surveys. Pre-clearing surveys will be undertaken in accordance with *Guide 1: Preclearing process* of Transport's *Biodiversity Management Guideline* (Transport 2024).<br>If possible, all vegetation around the hollow-bearing trees to be removed would be cleared 24 to 48 hours prior to the removal of the hollow-bearing trees. This approach isolates the hollow-bearing trees and reduces their habitat value (particularly for ground-traversing fauna that are exposed to predation). | During construction | Effective | | Contractor |
| B20 | | The 31 hollow-bearing trees should be 'soft- felled' in sections, the cut being about 100 mm below the bottom of the cavity, with hollow-limbs lowered to the ground. Once on the ground, the ecologist, or similar, would inspect the cavities for sheltering species. These should be collected and used locally as habitat as part of the off-setting requirements.<br>If possible, relocate locally the felled trees as opposed to the mulching f these plants. Relocation of the felled trees would aim at providing habitat for native species and their prey (as per DEC 2004 Threatened Species Survey and Assessment: Guidelines for developments and activities and Transport's *Biodiversity Management Guidelines* (Transport 2024). | During construction | Effective | | Contractor |

| | | | | | | |
|---|---|---|---|---|---|---|
| B21 | | Fauna will be managed in accordance with *Guide 9: Fauna handling* of Transport's *Biodiversity Management Guideline* (Transport 2024). | During construction | Effective | | Contractor |
| B22 | | If an arborist [or similar] is to be employed, they would climb each identified hollow-bearing tree and provide confirmation if the predicted hollows are actual cavities.<br>• Whilst examining the tree, the arborist is to use a hand-held torch to inspect any cavities for sheltering animals. A photographic record of the cavity is to be obtained, this included in a pre-clearing report that is submitted to the appropriate Transport Environmental representative.<br>• If animals are observed sheltering in the cavity, the entrance is to be temporarily plugged through the placement of a breathable material (cloth bag, towel etc.). The limb/branch is then to be roped off; a chainsaw being used to remove this from the main plant (the cut made at least 100 mm beyond the predicted limit of the cavity). The limb is to be gently lowered to the ground, relocated to the edge of the road corridor and the cloth plug removed (if possible, upon dusk). The sheltering animal is to be permitted to naturally disperse from the cavity.<br>• If birds are present, particularly fledglings, these are to be collected and taken to a wildlife carer or veterinarian for assessment.<br>Prior to the trees' removal (if an excavator employed) these would be knocked several times to alert potential sheltering fauna and provide an opportunity for these animals to disperse. The trees would not be felled until approval from the ecologist is given. | During construction | Effective | | Contractor |
| B23 | Replacement of habitat | Habitat will be replaced or re-instated in accordance with *Guide 5: Re-use of woody debris and bushrock* and *Guide 8: Nest boxes* of Transport's *Biodiversity Management Guideline* (Transport 2024).<br>To replace the loss of a calculated one 'occupied' hollow from the cumulative 83 hollows from within 31 hollow-bearing trees to be removed, 50 artificial hollows as per the *Tree and hollow replacement guidelines* would be established. Artificial hollows would be provided in accordance with *Guide 8: Artificial hollows of Transport's Biodiversity Management Guideline*.<br>Where hollow replacement cannot be accommodated for locally [or only partially], payment of $500 would be made into the Transport Conservation Fund for each hollow replacement required (Refer to Section 7.2). | During construction | Proven | No | Contractor |

| | | | | | | |
|---|---|---|---|---|---|---|
| B24 | Injury and mortality of fauna | Checks beneath vehicles/machinery will be undertaken prior to their use for the presence of sheltering fauna species (i.e., frogs and ground-traversing mammals).<br>Fauna will be managed in accordance with *Guide 9: Fauna handling* of Transport's *Biodiversity Management Guideline* (Transport 2024). | During construction | Effective | No | Contractor |
| B25 | Invasion and spread of weeds | In accordance with the NSW *Biosecurity Act 2015*, the weeds listed in s 5.2.4 on site would be controlled, thereby mitigating impacts on adjoining land to which it could spread.<br>Weed species will be managed in accordance *with Guide 6: Weed management* of Transport's *Biodiversity Management Guideline (*Transport 2024). | Prior/during construction | Effective | No | Contractor |
| B26 | Invasion and spread of pests | Pest species will be managed within the proposal site. | During construction | Effective | No | Contractor |
| B27 | Invasion and spread of pathogens and disease | Pathogens will be managed in accordance with *Guide 2: Exclusion zones* of Transport's *Biodiversity Management Guideline* (Transport, 2024). | During construction | Effective | | Contractor |
| B28 | Noise, light, dust and vibration | Shading and artificial light impacts will be minimised through detailed design. | Detailed design | Effective | | Contractor |
| B29 | Greenstar credit | The detailed design is to consider species connectivity through the site to adjacent areas. | Detailed design | Effective | | Contractor |

# 7. Offsets and other measures

## 7.1 Thresholds

The proposal would trigger thresholds set out by No Net Loss Guidelines (Transport 2022b) listed in Table 7-1 (refer to Section 7.2 of this report).

Table 7-1: Offset thresholds (Transport No Net Loss Guidelines)

| Impact | Threshold |
|---|---|
| Works involving clearing of a CEEC | Not triggered.<br>The proposed does not involve any clearing of an CEEC in 'moderate to good' condition |
| Works involving clearing of an EEC | Not triggered.<br>The proposed does not involve clearing of a EEC ≥ 2 ha in 'moderate to good' condition |
| Works involving clearing of VEC | Not triggered.<br>The proposed does not involve clearing of VEC ≥ 5 ha in 'moderate to good' condition |
| Works involving clearing of any habitat for a known species credit fauna species or clearing of breeding habitat (as defined by the TBDC) for dual-credit fauna species (excluding exotic and planted vegetation that cannot be assigned to a plant community type) | Not triggered.<br>The proposed does not involve clearing ≥ 1 ha in 'moderate to good' condition |
| Works involving removal of known threatened flora species and their habitat | Not triggered.<br>The proposed does not involve loss of individuals is ≥10 or where clearing of habitat is ≥ 1 ha |
| Type 1 or Type 2 key fish habitats | Not triggered.<br>The proposed does not involve a net loss of habitat |
| **Any residual biodiversity impact that doesn't require offsets in accordance with the No Net Loss Guideline is to be assessed against the requirements of the Tree and Hollow Replacement Guideline.** | **Triggered. Removal of hollow and/or trees** ≥5cm DBH |

## 7.2 Biodiversity offset strategy/tree and hollow replacement plan

The proposed work will require the removal of 332 trees; 31 of which are hollow-bearing.

Transport's *Tree and hollow replacement guidelines* (Transport 2022b) provides a calculation to assess the number of replacement plants (Table 7-2). In accordance with Section 2.4 of the Tree and hollow replacement guidelines, where tree replacement cannot be accommodated locally [or only partially], payment must be made to Transport's Conservation Fund as per the rates set out in Table 7-3. For trees with multiple stems/trunks, the replacement/payment required is only calculated for the largest stem DBH.

To replace this loss, per the *Tree and hollow replacement guidelines* (Transport 2022b), 1140 plants require replanting within the project boundary or on land adjacent or close to the project with landowner's consent. Additionally, the installation of 50 artificial hollows to offset the removal of 31 hollow-bearing trees is required. Where tree replacement cannot be accommodated locally [or only partially], payment must be made to the Transport Conservation Fund in line with the fund contributions outlined in Transport's Tree and Hollow Replacement Guidelines. Transfer of funds must occur prior to commencement of work.

Table 7-2: Tree replacement requirements

| Tree size | Tree replacement requirement |
|---|---|
| Small tree (DBH 5 – 20 cm) | Plant minimum two trees |
| Medium tree (DBH 20 – 50 cm) | Plant minimum four trees |
| Large tree (DBH 50 – 100 cm) | Plant minimum eight trees |
| Very Large tree (DBH > 100 cm) | Plant minimum 16 trees |
| Hollow replacement requirement | Provide three artificial hollows for every occupied hollow removed[3] |

Table 7-3: Conservation Fund contributions

| Tree size | Tree replacement requirement |
|---|---|
| Small tree (DBH 5 – 20 cm) | $125 |
| Medium tree (DBH 20 – 50 cm) | $500 |
| Large tree (DBH 50 – 100 cm) | $1000 |
| Very Large tree (DBH > 100 cm) | $2500 |
| Hollow | $500 |


Figure 7-1: Tree register

# 8. Conclusion

A Biodiversity Assessment has been conducted as Transport for NSW is proposing to establish a new Zero Emission Buses depot at 1A and 1B Talavera Road, Macquarie Park, within Ryde Local Government Area, NSW.

The proposal broadly includes:

- building new facilities to support future bus operations including:
  - a single-level underground staff and visitor car park accommodating up to 163 cars including accessible parking spaces, car share spaces, electric vehicle spaces with charging equipment and bike storage options.
  - a multilevel administration office featuring a wide selection of office spaces and staff facilities including end of trip facilities, a first aid room, social breakout and gaming rooms, and an outdoor rooftop garden.
  - a bus maintenance facility accommodating up to 30 staff and featuring a spray booth, inspection pits and a multilevel staff facility including an outdoor BBQ area, a kitchen and toilet facilities.
  - a designated bus wash bay with washing and water recycling equipment
- removal of the existing one-way bike path connection between the M2 motorway and Talavera Road to make way for the new bus maintenance facility
- delivering up to 165 bus parking spaces including:
  - 129 charging bays for 12.5 metre standard rigid buses
  - 22 charging bays for 19 metre articulated buses
  - 14 maintenance bays
- one breakdown bay
- one bus wash bay
- installation of gantries to facilitate the preferred bus arrangement and charging structure
- installation of standard 75kW and fast 150kW plug-in chargers for buses around the depot
- upgrading Pittwater Road to enable two-way bus access to and from the bus depot
- essential fire services such as hydrant and sprinkler system, a fire control room and pump building, smoke detection and warning systems, hardstand area for one fire truck, portable fire extinguishers and fire blankets
- installation of new pedestrian crossing and footpaths, security booths, fencing and lighting.

To permit the proposal, based on a worst-case estimate, about 2.2 hectares of vegetation mapped as Plant Community Type '0 - Not native vegetation/Unclassified' would require disturbance/removal, within which an estimated 332 trees (158 small, 148 medium, 23 large, and 3 extra-large) would be removed; of these 31 being hollow-bearing and suitable for occupation by fauna.

In line with Transport for NSW's *The Tree and Hollow Replacement Program: An implementation plan for payments to and from the Transport for NSW Conservation Fund* (2022) [Tree and hollow replacement guidelines (EMF-BD-GD-0129)], to replace the loss of up to 332 trees, 1140 trees are required to be re-planted and 50 artificial hollows installed within the project boundary or on land adjacent or close to the project with landowner's consent. Where this cannot be accommodated for locally [or only partially], Transport for NSW will be required to make payment into their Conservation Fund in line with the fund contributions outlined in Transport's Tree and Hollow Replacement Guidelines

No threatened ecological communities, flora or fauna species listed, or currently being considered for listing, under the EPBC and/or BC Acts, were recorded during the course of the field survey.

Though not recorded during the current investigation, as they have been previously recorded within, or near the proposal area, and as suitable habitat is present and is to be impacted by the proposal (i.e., hollow-bearing trees), it was considered appropriate to adopt a precautionary approach to the potential presence of the following threatened species listed as Vulnerable under the BC Act:

- Powerful Owl (*Ninox strenua*)

- Gang-gang Cockatoo (*Callocephalon fimbriatum*)
- Little Lorikeet (*Glossopsitta pusilla*)
- Grey-headed Flying-fox (*Pteropus poliocephalus*)
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)
- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*)
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)
- Southern Myotis (*Myotis macropus*).
- Greater Broad-nosed Bat (*Scoteanax rueppellii*) – listed as Vulnerable.

The Gang-gang Cockatoo and Grey-headed Flying-fox are also listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as Endangered and Vulnerable respectively.

Assessments provided within this report, referencing the criteria provided under Section 7.3 of the NSW *Biodiversity Conservation Act 2016* and the EPBC Significant Impact Guidelines, concluded that the conducting of the proposal works would not have a significant impact on the potentially occurring threatened Yangochiroptera, Grey-headed Flying-fox or birds, or their habitats. Therefore, the matter does not require referral to the Federal Minister for the Environment and Water as a controlled action, nor is the preparation of a Species Impact Statement [or alternatively a Biodiversity Development Assessment Report] considered necessary.

Mitigation measures to reduce any ecological impact as a result of the proposal have been recommended in Section 6 of this report. Two primary measures include:

- Minimising impact through detailed design.
- Adhering to Transport's Biodiversity Guidelines.

In addition, the following is proposed:

- Limit vegetation removal to the minimum required to successfully permit the proposal
- In accordance with the *Tree and hollow replacement guidelines*, and a Tree and Hollow Replacement Plan to be prepared (as part of the Construction Environment Management Plan to be prepared for the proposal):
    - Replant 1140 trees to replace the removal of up to 332 trees, and install 50 hollow replacements to offset the removal of the 31 hollow-bearing trees
    - Should planting and hollow replacement within the project boundary or on land adjacent or close to the project not occur [or only partially], Transport for NSW would be required to make payment into their Conservation Fund in line with the fund contributions outlined in Transport's Tree and Hollow Replacement Guidelines.
- An Erosion and Sediment Control Plan is to be prepared, this aimed at minimising soil erosion and the off-site transfer of sediment.

Adoption of these mitigation measures would ensure that the proposal is carried out in an ecologically sustainable manner.

# 9. Glossary

| Term | Definition |
|---|---|
| Accredited person or assessor | Means as person accredited under section 6.10 (of the BC Act) to prepare reports in accordance with the BAM. |
| Biodiversity Assessment Method | The Biodiversity Assessment Method is established under section 6.7 of the BC Act. The BAM is established for the purpose of assessing certain impacts on threatened species and threatened ecological communities (TECs), and their habitats, and the impact on biodiversity values. |
| Biodiversity Assessment Method Calculator | Biodiversity Assessment Method Calculator (BAM-C) – the online computer program that provides decision support to assessors and proponents by applying the BAM and referred to as the BAM-C.<br>The BAM-C contains biodiversity data from the BioNet Vegetation Classification and the Threatened Biodiversity Data Collection that the assessor is required to use in a BAM assessment. The BAM-C applies the equations used in the BAM, including those to determine the number and class of biodiversity credits required to offset the impacts of a development, or created at a biodiversity stewardship site. It is published by the Department (DPIE 2020a). |
| Biodiversity credit report | The report produced by the BAM-C that sets out the number and class of biodiversity credits required to offset the remaining adverse impacts on biodiversity values at a development site, or on land to be biodiversity certified, or that sets out the number and class of biodiversity credits that are created at a biodiversity stewardship site (DPIE 2020a). |
| Biodiversity offsets | The gain in biodiversity values achieved from the implementation of management actions on areas of land, to compensate for losses to biodiversity values from the impacts of development (DPIE 2020a). |
| Biodiversity Offsets and Agreement Management System | The online system used to administer the Biodiversity Offsets Scheme. The BOAMS is used by accredited assessors (to carry out specific BAM-related tasks involving access to the BAM-C to perform assessments, submit data, generate credits and calculate a credit price), by landholders (to apply for a Biodiversity Stewardship Agreement and manage ongoing reporting obligations for their agreement) and by proponents of developments (to view their credit obligation or the payment required to the Biodiversity Conservation Fund). |
| Biodiversity risk weighting | A factor of the formulas used by the BAM to calculate credits. The biodiversity risk weighting (BRW) is a score given to each vegetation zone and species based on the 'sensitivity to loss' versus the 'sensitivity to gain'. The value is set for threatened species and listed in the TBDC. The BRW for vegetation is calculated for each vegetation zone by the BAM-C using a factor of the 'sensitivity to loss' of the PCT or TEC (located in the BioNet vegetation classification) and the 'sensitivity to gain' of the ecosystem credit species (in the TBDC) that are predicted to occur. |
| Biodiversity Stewardship site | Refers to land which is the subject to a Biodiversity Stewardship Agreement under the BC Act. |
| BioNet Atlas | The DPIE database of flora and fauna records (formerly known as the NSW Wildlife Atlas). The Atlas contains records of plants, mammals, birds, reptiles, amphibians, some fungi, some invertebrates (such as insects and snails listed under the BC Act) and some fish (DPIE 2020a). |
| BioNet Vegetation classification | Refers to the vegetation community-level classification for use in vegetation mapping programs and regulatory biodiversity impact assessment frameworks in NSW. Refer About BioNet Vegetation Classification \| NSW Environment and Heritage (DPE 2020a). |

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| Construction footprint | The area to be directly impacted by the proposal during construction activities. See also definition for subject land. |
| Cumulative impact | The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Refer to Clause 228(2) of the EP&A Regulation 2000 for cumulative impact assessment requirements. |
| Direct impact | Direct impacts on biodiversity values include those related to clearing native vegetation and threatened species habitat and impacts on biodiversity values prescribed by the Biodiversity Conservation Regulation 2017 (the BC Regulation) (DPIE 2020a). |
| Ecosystem credit species | Threatened species or components of species habitat that are identified in the Threatened Species Data Collection as requiring assessment for ecosystem credits. This is analogous with the definition of 'predicted species'. |
| Ecosystem credits | A measurement of the value of threatened ecological communities, threatened species habitat for species that can be reliably predicted to occur with a PCT, and PCTs generally. Ecosystem credits measure the loss in biodiversity values at a development, activity, clearing or biodiversity certification site and the gain in biodiversity values at a biodiversity stewardship site (DPIE 2020a). |
| Habitat | An area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community, including any biotic or abiotic component (DPIE 2020a). |
| Indirect impact | Impacts that occur when the proposal affects native vegetation and threatened species habitat beyond the development footprint or within retained areas (e.g., transporting weeds or pathogens, dumping rubbish). This includes impacts from activities related to the construction or operational phase of the proposal and prescribed impacts (DPIE 2020a). |
| Landscape assessment area | The area which includes the subject land and a 1500 m buffer surrounding the outside edge of the boundary of the subject land or 500 m along each side of the centre line of a linear-shaped proposal |
| Local population | The population that occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated that contiguous or interconnecting parts of the population continue beyond the study area, according to the following definitions:<br>• *The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.*<br>• *The local population of resident fauna species comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area.*<br>• *The local population of migratory or nomadic fauna species comprises those individuals that are likely to occur in the study area from time to time or return year to year (OEH 2018).* |
| Matter of national environmental significance | A matter of national environmental significance (MNES) is any of the nine defined components protected by a provision of Part 3 of the EPBC Act (Commonwealth). |
| Mitigation | Action to reduce the severity of an impact. |
| Native vegetation | Has the same meaning as in section 1.6 of the BC Act and section 60B of the LLS Act. In summary, |

| | |
|---|---|
| | a) trees (including any sapling or shrub or any scrub)<br>b) understorey plants<br>c) groundcover (being any type of herbaceous vegetation)<br>d) plants occurring in a wetland.<br>A plant is native to New South Wales if it was established in New South Wales before European settlement (BC Act).<br>Native vegetation does not extend to marine vegetation (being mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water). Marine vegetation is covered by the provisions of the FM Act. |
| NSW (Mitchell) landscape | Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000 (DPIE 2020a). |
| Operational footprint | The area that will be subject to ongoing operational impacts from the proposal. This includes the road, surrounding safety verges and infrastructure, fauna connectivity structures and maintenance access tracks and compounds. |
| Patch size | An area of native vegetation that:<br>• *occurs on the development site or biodiversity stewardship site*<br>• *includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or ≤30 m for non-woody ecosystems).*<br>Patch size may extend onto adjoining land that is not part of the development site or biodiversity stewardship site (DPIE 2020a). |
| PlantNET | An online database of the flora of New South Wales which contains currently accepted taxonomy for plants found in the State, both native and exotic. |
| Population | A group of organisms, all of the same species, occupying a particular area (DPIE 2020a). |
| Spatial datasets | Spatial databases required to prepare a BAR<br>• *BioNet NSW (Mitchell) Landscapes – Version 3.1*<br>• *NSW Interim Biogeographic Regions of Australia (IBRA region and sub-regions) – Version 7*<br>• *NSW soil profiles*<br>• *hydrogeological landscapes*<br>• *acid sulfate soils risk*<br>• *digital cadastral database*<br>• *Vegetation Information Systems maps*<br>• *Geological sites of NSW.* |
| Species credit species | Threatened species or components of species habitat that are identified in the Threatened Species Data Collection as requiring assessment for species credits (DPIE 2020a). This is analogous with the definition of 'candidate species'. |
| Species credits | The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection (DPIE 2020a). |
| Species polygon | An area of land identified in Chapter 5 (of the BAM) that contains habitat or is occupied by a threatened species (DPIE 2020a). |
| Study area | The area directly affected by the proposal (subject land or construction footprint) and any additional areas likely to be affected by the proposal, either directly or indirectly. |

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| Subject land | Land subject to a development, activity, clearing, biodiversity certification or a biodiversity stewardship proposal. It excludes the landscape assessment area which surrounds the subject land (i.e., the area of land in the 1500 m buffer zone around the subject land or 500m buffer zone for linear proposals). In the case of a biodiversity certification proposal, subject land includes the biodiversity certification assessment area (DPIE 2020a). See also definition for construction footprint. |
| Threatened Biodiversity Data Collection | A publicly assessable online database (registration required) which contains information for listed threatened species, populations and ecological communities (DPIE 2020a).<br>Part of the BioNet database, published by the EHG and accessible from the BioNet website at www.bionet.nsw.gov.au. |
| Vegetation integrity (score) | The condition of native vegetation assessed for each vegetation zone against the benchmark for the PCT. The vegetation integrity score is the quantitative measure of vegetation condition calculated by the BAM-C (DPIE 2020a). |
| Vegetation zone | A relatively homogeneous area of native vegetation on a development site, clearing site, land to be biodiversity certified or biodiversity stewardship site that is the same PCT and has the same broad condition state (DPIE 2020a). |

# 10. Abbreviations

| Term | Definition |
|---|---|
| AOBV | Area of Outstanding Biodiversity Value |
| BAM | Biodiversity Assessment Method |
| BAM-C | Biodiversity Assessment Method calculator |
| BC Act | Biodiversity Conservation Act 2016 (NSW) |
| BC Regulation | Biodiversity Conservation Regulation 2017 (NSW) |
| BDAR | Biodiversity Development Assessment Report |
| BOAMS | Biodiversity Offsets and Agreement Management System |
| BOS | Biodiversity Offset Scheme |
| BRW | Biodiversity risk weighting |
| CEEC | Critically Endangered Ecological Community |
| CEMP | Construction Environmental Management Plan |
| DCCEEW | Department of Climate Change, Energy, the Environment and Water |
| DIWA | Directory of Important Wetlands in Australia |
| DPE | Department of Planning and Environment |
| DPHI | Department of Planning, Housing and Infrastructure |
| DPI | Department of Primary Industries |
| EEC | Endangered ecological community |
| EHG | NSW Environment and Heritage Group within the Department of Planning and Environment |
| EIS | Environmental Impact Statement |
| EP&A Act | *Environment Planning and Assessment Act 1979* (NSW) |
| EPBC Act | *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) |
| Fisheries NSW Policy and guidelines | Fisheries NSW Policy and guidelines for fish habitat conservation and management (Update 2013) |
| FM Act | *Fisheries Management Act 1994* (NSW) |
| GDE | Groundwater dependent ecosystems |
| IBRA | Interim Biogeographically Regionalisation of Australia |
| MNES | Matters of national environmental significance |
| PCT | Plant community type |
| PMST | Protected Matters Search Tool |
| REF | Review of Environmental Factors |
| SEPP | State Environmental Planning Policy |
| SSD | State Significant Development |
| SSI | State Significant Infrastructure |
| TBDC | Threatened Biodiversity Data Collection |
| TECs | Threatened ecological communities (VECs, EECs and CEECs) |
| Transport | Transport for NSW |

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# Appendix A: Habitat suitability

| Likelihood | Criteria |
|---|---|
| Recorded | The species was observed in the study area during the current survey or has been recorded within the past five years (known from a reputable source). |
| High | A species is considered highly likely to occur in the study area if:<br>• *There are previous credible records on BioNet within the study area from the last 10 years and suitable habitat is present.*<br>**OR**<br>• *The species is highly mobile, is dependent on identified suitable habitat within the study area (i.e., for breeding or important life cycle periods such as winter flowering resources) and has been recorded recently (within five years) on BioNet in the locality. This also includes species known or likely to visit the study area during regular seasonal movements or migration.* |
| Moderate | A species is considered moderately likely to occur in the study area if:<br>• *Any suitable habitat (e.g., foraging) is present in the study area, the species is highly mobile and has been recorded in the locality in the last 10 years on BioNet. The species may be unlikely to maintain sedentary populations, however, may seasonally use resources within the study area opportunistically or during migration. The species is unlikely to be dependent (i.e., for breeding or important life cycle periods such as winter flowering resources) on habitat within the study area.*<br>**OR**<br>• *The species is not highly mobile, is dependent on identified suitable habitat features (e.g., hollows, rocky outcrops) within the study area and has been recorded in the locality in the last 10 years on BioNet.*<br>**OR**<br>• *For flora species that are associated with PCTs in the study area (see TBDC) or have been recorded in the locality in the last 10 years on BioNet – the associated PCT/habitat present in the study area is not degraded and the species was not targeted by surveys in accordance with the BAM and relevant survey guidelines. In addition, for flora species known to occur in disturbed areas (e.g., orchids), records from any time within the locality may warrant inclusion in this category.* |
| Low | A species is considered to have a low likelihood of occurring in the study area if:<br>• *For highly mobile species, the species may be an occasional visitor, but habitat similar to the study area is widely distributed in the locality, meaning that the species is not dependent (i.e., for breeding or important life cycle periods such as winter flowering resources) on habitats in the study area and the species has not been recorded in the locality in the last 10 years on BioNet.*<br>**OR**<br>• *The species is not highly mobile, is dependent on identified suitable habitat features (e.g., hollows, rocky outcrops) within the study area and has not been recorded in the locality in the last 10 years on BioNet.*<br>**OR**<br>• *For flora species that are associated with PCTs in the study area (see TBDC) and the species was not identified following targeted surveys in accordance with the BAM and relevant survey guidelines. Flora species that have been recorded in the locality on BioNet at any time, associated suitable habitat (see the TBDC) is not present in the study area, though similar habitats of the same vegetation formation is present in the study area.* |
| Unlikely | Suitable habitat for the species is absent from the study area. |

## Habitat suitability assessment table

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| Plants | | | | | | |
| Bynoe's Wattle<br>*Acacia bynoeana* | V | E | Occurs in heath or dry sclerophyll forest on sandy soils. | Species | BioNet (13), PMST | Low.<br>No suitable habitat. |
| Kanangra Wattle<br>*Acacia clunies-rossiae* | | V | Grows in the Kowmung and Coxs River areas entirely within Kanangra-Boyd and Blue Mountains National Parks. Grows in dry sclerophyll forest on skeletal soils on rocky slopes, or on alluvium along creeks. | Species | BioNet (1) | Low.<br>No suitable habitat. |
| Downy Wattle<br>*Acacia pubescens* | V | V | Occurs in open woodland and forest, in a variety of plant communities. | Species | BioNet (42), PMST | Low.<br>No suitable habitat. |
| Sunshine Wattle (Sydney region)<br>*Acacia terminalis subsp. terminalis MS* | E | E | Coastal scrub and dry sclerophyll woodland on sandy soils. | Species | BioNet (21), PMST | Low. No suitable habitat. |
| Nielsen Park She-oak<br>*Allocasuarina portuensis* | E | E | The original known habitat of the Nielsen Park She-oak is at Nielsen Park, in Woollahra local government area. There are no plants left at the original site where it was discovered. However, propagation material has been planted successfully at a number of locations at Nielsen Park and other locations in the local area, e.g. Gap Bluff, Hermit Point and Vaucluse House. Original habitat is tall closed woodland. | Species | BioNet (5) | Low. No suitable habitat. |
| *Allocasuarina glareicola* | E | E | Primarily restricted to the Richmond district, with an outlier population found at Voyager Point, Liverpool. Grows in Castlereagh woodland on lateritic soil. Found in open woodland. | Species | PMST | Low. No suitable habitat. |
| *Asterolasia elegans* | E | E | Found in sheltered forests on mid- to lower slopes and valleys, e.g. in or adjacent to gullies which support sheltered forest. | Species | PMST | Low. No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
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| | EPBC Act | BC Act | | | | |
| Thick-lipped Spider-orchid *Caladenia tessellata* | V | E | Generally found in grassy sclerophyll woodland on clay loam or sandy soils. | Species | BioNet (5), PMST | Low. No suitable habitat. |
| Netted Bottle Brush *Callistemon linearifolius* | | V | Grows in dry sclerophyll forest on the coast and adjacent ranges. | Species | BioNet (25) | Low. No suitable habitat. |
| Leafless Tongue Orchid *Cryptostylis hunteriana* | V | V | Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. | Species | BioNet (2), PMST | Low. No suitable habitat. |
| White-flowered Waxplant *Cynanchum elegans* | E | E | Usually occurs on the edge of dry rainforest vegetation but also in littoral rainforest, coastal scrub and aligned open forest and woodland. | Species | PMST | Low. No suitable habitat. |
| *Darwinia biflora* | V | V | Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone. | Species | BioNet (503), PMST | Low. No suitable habitat. |
| *Darwinia peduncularis* | | V | Usually grows on or near rocky outcrops on sandy, well drained, low nutrient soil over sandstone. | Species | BioNet (6) | Low. No suitable habitat. |
| *Deyeuxia appressa* | E | E | Known only from two pre-1942 records in the Sydney area. Was first collected in 1930 at Herne Bay, Saltpan Creek, off the Georges River, south of Bankstown. Was then collected in 1941 from Killara, near Hornsby. Given that *D. appressa* hasn't been seen in over 60 years, almost nothing is known of the species' habitat and ecology. | Species | BioNet (3), PMST | Low. No suitable habitat. |
| *Dillwynia tenuifolia* | | V | 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. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland. | Species | BioNet (4) | Low. No suitable habitat. |
| *Epacris purpurascens var. purpurascens* | | V | Found in a range of habitat types, most of which have a strong shale soil influence. | Species | BioNet (158) | Low. No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
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| | EPBC Act | BC Act | | | | |
| Sparse Heath<br>*Epacris sparsa* | V | V | Restricted to the lower Grose River, within the Hawkesbury and Blue Mountains LGAs. Grows in Riparian Sandstone Scrub, where it is found on the base of cliffs or rock faces, on rock ledges or among rocks in the riparian flood zone. Grows in small pockets of damp clay soil, chiefly on south-west facing slopes. | Species | PMST | Low. No suitable habitat. |
| Camfield's Stringybark<br>*Eucalyptus camfieldii* | V | V | Localised and scattered distribution includes sites at Menai, Wattamolla and a few other sites in RNP (among others). Poor coastal country in shallow sandy soils overlying Hawkesbury sandstone. Coastal heath mostly on exposed sandy ridges. Occurs mostly in small scattered stands near the boundary of tall coastal heaths and low open woodland of the slightly more fertile inland areas. | Species | BioNet (36), PMST | Low. No suitable habitat. |
| Narrow-leaved Black Peppermint<br>*Eucalyptus nicholii* | V | V | Grows in dry grassy woodland, on shallow soils of slopes and ridges. | Species | BioNet (9) | Low. No suitable habitat. |
| Tangled Bedstraw<br>*Galium australe* | | E | In NSW (and ACT Territory in Jervis Bay), Tangled Bedstraw has been recorded in Turpentine forest and coastal Acacia shrubland. | Species | BioNet (5) | Low. No suitable habitat. |
| Bauer's Midge Orchid<br>*Genoplesium baueri* | E | E | Grows in dry sclerophyll forest and moss gardens over sandstone. | Species | BioNet (31), PMST | Low. No suitable habitat. |
| Tallong Midge Orchid<br>*Genoplesium plumosum* | E | CE | Known from two areas - the village of Tallong and its immediate environs, and a site in Morton National Park 8.5 km south-east of the town of Wingello. Occurs exclusively in heathland, generally dominated by Violet Kunzea (*Kunzea parvifolia*), Common Fringe-myrtle (*Calytrix tetragona*) and parrot-peas (*Dillwynia* spp.). Grows on very shallow soils, often with lichens and mosses on sandstone conglomerate rock shelves. | Species | BioNet (2) | Low. No suitable habitat. |
| Narrow-leaf Finger Fern<br>*Grammitis stenophylla* | | E | Moist places, usually near streams, on rocks or in trees, in rainforest and moist eucalypt forest. | Species | BioNet (7) | Low. No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
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| | EPBC Act | BC Act | | | | |
| Juniper-leaved Grevillea *Grevillea juniperina* subsp. *juniperina* | | V | Grows on reddish clay to sandy soils derived from Wianamatta Shale and Tertiary alluvium (often with shale influence), typically containing lateritic gravels. | Species | BioNet (1) | Low. No suitable habitat. |
| Caley's Grevillea *Grevillea caleyi* | CE | CE | Restricted to an 8 km square area around Terrey Hills, approximately 20 km north of Sydney. All natural remnant sites occur on the ridgetop between elevations of 170 to 240m asl, in association with laterite soils and a vegetation community of open forest, generally dominated by *Eucalyptus sieberi* and *E. gummifera*. Commonly found in the endangered Duffys Forest ecological community. | Species | PMST | Low. No suitable habitat. |
| *Haloragodendron lucasii* | E | E | 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. | Species | BioNet (48), PMST | Low. No suitable habitat. |
| *Hibbertia puberula* | | E | Occurs on sandy soil often associated with sandstone, or on clay. Habitats are typically dry sclerophyll woodland communities, although heaths are also occupied. | Species | BioNet (1) | Low. No suitable habitat. |
| Julian's Hibbertia *Hibbertia spanantha* | CE | CE | Grows in forest with canopy species including *Eucalyptus pilularis, E. resinifera, Corymbia gummifera* and *Angophora costata*. The understorey is open with species of *Poaceae*, *Orchidaceae, Fabaceae* and *Liliaceae*. | Species | BioNet (7), PMST | Low. No suitable habitat. |
| Wingless Raspwort *Haloragis exalata* subsp. *exalata* | V | V | Appears to require protected and shaded damp situations in riparian habitats. | Species | PMST | Low. No suitable habitat. |
| *Isotoma fluviatilis* subsp. *fluviatilis* | PX | | 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. 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. | Species | BioNet (1) | Low. No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
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| | EPBC Act | BC Act | | | | |
| *Kunzea rupestris* | V | V | Grows in shallow depressions on large flat sandstone rock outcrops. Characteristically found in short to tall shrubland or heathland. | Species | PMST | Low. No suitable habitat. |
| *Lasiopetalum joyceae* | V | V | Has a restricted range occurring on lateritic to shaley ridgetops on the Hornsby Plateau south of the Hawkesbury River. It is currently known from 34 sites between Berrilee and Duffys Forest. Seventeen of these are reserved. Grows in heath on sandstone. | Species | BioNet (6), PMST | Low. No suitable habitat. |
| Deane's Tea-tree *Leptospermum deanei* | V | V | Woodland on lower hill slopes or near creeks. Sandy alluvial soil or sand over sandstone. | Species | BioNet (51), PMST | Low. No suitable habitat. |
| Woronora Beard-heath *Leucopogon exolasius* | V | V | Occurs in woodland on sandstone. | Species | PMST | Low. No suitable habitat. |
| Macadamia Nut *Macadamia integrifolia* | V | | Grows in remnant rainforest, preferring partially open areas such as rainforest edge. | Species | BioNet (27) | Low. No suitable habitat. |
| Rough-shelled Bush Nut *Macadamia tetraphylla* | V | V | Confined chiefly to the north of the Richmond River in north-east NSW. Found in subtropical rainforest, usually near the coast. | Species | BioNet (1) | Low. No suitable habitat. |
| Biconvex Paperbark *Melaleuca biconvexa* | V | V | Scattered and dispersed populations of this species are found in the Jervis Bay area in the south and the Gosford-Wyong area in the north. Generally, grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects. | Species | BioNet (1), PMST | Low. No suitable habitat. |
| Deane's Melaleuca *Melaleuca deanei* | V | V | Occurs in two distinct areas, in the Ku-ring-gai/Berowra and Holsworthy/Wedderburn areas. Occurs mostly in ridgetop woodland, with only 5% of sites in heath on sandstone. | Species | BioNet (59), PMST | Low. No suitable habitat. |
| Angus' Onion Orchid *Microtis angusii* | E | E | Currently known from only one site at Ingleside, north of Sydney. It is not easy to define the preferred natural | Species | BioNet (1), PMST | Low. No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
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| | EPBC Act | BC Act | | | | |
| | | | habitat of this orchid as the Ingleside location is highly disturbed. The dominant species occurring on the site are introduced weeds *Hyparrhenia hirta* (Coolatai grass) and *Acacia saligna*. | | | |
| *Micromyrtus blakelyi* | V | V | Typically occurs within heathlands in shallow sandy soil in cracks and depressions of sandstone rock platforms. | Species | PMST | Low. No suitable habitat. |
| Tall Knotweed *Persicaria elatior* | V | V | This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. | Species | PMST | Low. No suitable habitat. |
| Hairy Geebung *Persoonia hirsuta* | E | E | Found in sandy soils in dry sclerophyll open forest, woodland and heath on sandstone. | Species | BioNet (7), PMST | Low. No suitable habitat. |
| *Persoonia mollis subsp. maxima* | E | E | Occurs in sheltered aspects of deep gullies or on the steep upper hillsides of narrow gullies on Hawkesbury Sandstone. These habitats support relatively moist, tall forest vegetation communities, often with warm temperate rainforest influences. | Species | BioNet (1), PMST | Low. No suitable habitat. |
| *Pimelea curviflora var. curviflora* | V | V | Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. | Species | BioNet (21), PMST | Low. No suitable habitat. |
| Spiked Rice-flower *Pimelea spicata* | E | E | Found on well-structured clay soils. In the coastal Illawarra it occurs commonly in Coast Banksia open woodland with a better developed shrub and grass understorey. Coastal headlands and hilltops are the favoured sites. | Species | PMST | Low. No suitable habitat. |
| Sydney Plains Greenhood *Pterostylis saxicola* | E | E | Most commonly found growing in small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines. | Species | PMST | Low. No suitable habitat. |

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| | EPBC Act | BC Act | | | | |
| *Pomaderris prunifolia* in the Parramatta, Auburn, Strathfield and Bankstown LGAs | | EP | Known from only three sites within the listed local government areas, at Rydalmere, within Rookwood Cemetery and at The Crest of Bankstown. At Rydalmere it occurs along a road reserve near a creek, among grass species on sandstone. At Rookwood Cemetery it occurs in a small gully of degraded Cooks River / Castlereagh Ironbark Forest on shale soils. | - | BioNet (5) | Low. No suitable habitat. |
| Rufous Pomaderris *Pomaderris brunnea* | V | V | Found on skeletal soils in rocky shrubland or tall open forest chiefly on escarpment ranges. | Species | PMST | Low. No suitable habitat. |
| Seaforth Mintbush *Prostanthera marifolia* | CE | CE | Currently only known from the northern Sydney suburb of Seaforth and has a very highly restricted distribution within the Sydney Basin Bioregion. Occurs in localised patches in or in close proximity to the endangered Duffys Forest ecological community. | Species | BioNet (12), PMST | Low. No suitable habitat. |
| Somersby Mintbush *Prostanthera junonis* | E | E | Restricted to the Somersby Plateau. It occurs on both the Somersby and Sydney Town soil landscapes on gently undulating country over weathered Hawkesbury sandstone within open forest/low woodland/open scrub. It occurs in both disturbed and undisturbed sites. | Species | PMST | Low. No suitable habitat. |
| Villous Mintbush *Prostanthera densa* | V | V | Recorded within the RNP. Generally, grows in sclerophyll forest and shrubland on coastal headlands and near coastal ranges, chiefly on sandstone, and rocky slopes near the sea. | Species | PMST | Low. No suitable habitat. |
| Eastern Underground Orchid *Rhizanthella slateri* | E | V | 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. | Species | BioNet (1), PMST | Low. No suitable habitat. |
| Scrub Turpentine *Rhodamnia rubescens* | E | V | Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. | - | BioNet (16), PMST | Low. No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
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| | EPBC Act | BC Act | | | | |
| Native Guava *Rhodomyrtus psidioides* | V | V | Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines. | - | PMST | Low. No suitable habitat. |
| *Sarcochilus hartmannii* | V | V | Favours cliff faces on steep narrow edges supporting eucalypt forests and clefts in volcanic rock from 500 – 1000m in altitude. | Species | BioNet (1) | Low. No suitable habitat. |
| Magenta Lilly Pilly *Syzygium paniculatum* | V | E | Found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest.. | Species | BioNet (58), PMST | Low. No suitable habitat. |
| *Tetratheca glandulosa* | | V | Restricted to the following LGAs: Baulkham Hills, Gosford, Hawkesbury, Hornsby, Ku-ring-gai, Pittwater, Ryde, Warringah, and Wyong. Associated with shale-sandstone transition habitat where shale-cappings occur over sandstone, with associated soil landscapes such as Lucas Heights, Gymea, Lambert and Faulconbridge. Topographically, the plant occupies ridgetops, upper-slopes and to a lesser extent mid-slope sandstone benches. | Species | BioNet (183) | Low. No suitable habitat. |
| Black-eyed Susan *Tetratheca juncea* | V | V | Usually found in low open forest/woodland with a mixed shrub understorey and grassy groundcover. However, it has also been recorded in heathland and moist forest. | Species | BioNet (4) | Low. No suitable habitat. |
| Austral Toadflax *Thesium australe* | V | V | Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. | Species | PMST | Low. No suitable habitat. |
| *Wahlenbergia multicaulis - endangered population* Tadgell's Bluebell in the LGAs of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield | | EP | There are 13 known sites, two of which are in northern Sydney (Thornleigh and Mt Ku-Ring-Gai) with the remainder in western Sydney (Rookwood, Chullora, Bass Hill, Bankstown, Georges Hall, Campsie, South Granville and Greenacre). There are likely to be more sites than those listed here.<br>In Western Sydney most sites are closely aligned with the Villawood Soil Series, which is a poorly drained, yellow podsolic extensively permeated with fine, concretionary | - | BioNet (1) | Low. No suitable habitat. |

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| | EPBC Act | BC Act | | | | |
| | | | ironstone (laterite). However, the sites in Hornsby LGA are on the 'Hawkesbury' soil landscape.<br>Found in disturbed sites and grows in a variety of habitats including forest, woodland, scrub, grassland and the edges of watercourses and wetlands. Typically occurs in damp, disturbed sites (with natural or human disturbance of various forms), typically amongst other herbs rather than in the open.<br>In Hornsby LGA it occurs in or adjacent to sandstone gully forest. In Western Sydney it is found in remnants of Cooks River/ Castlereagh Ironbark Forest. | | | |
| Narrow-leafed Wilsonia<br>*Wilsonia backhousei* | | V | Found on the coast between Mimosa Rocks National Park and Wamberal north of Sydney. This is a species of the margins of salt marshes and lakes. | Species | BioNet (132) | Low. No suitable habitat. |
| *Zannichellia palustris* | E | | Known from the lower Hunter and in Sydney Olympic Park. Aquatic plant that grows in fresh or slightly saline stationary or slowly flowing water. | Species | BioNet (6) | Low. No suitable habitat. |
| Birds | | | | | | |
| Regent Honeyeater<br>*Anthochaera phrygia* | CE | CE | Inhabits dry open forest and woodland. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Does not breed in the Sydney Metropolitan Area. | Species/Ecosystem | BioNet (10), PMST | Low.<br>No suitable habitat. |
| Dusky Woodswallow<br>*Artamus cyanopterus cyanopterus* | | V | 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. Uses a nest constructed from twigs, grass and other plant material for breeding. | Ecosystem | BioNet (51) | Low.<br>May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |
| Australasian Bittern<br>*Botaurus poiciloptilus* | E | E | Occupies shallow, vegetated freshwater or brackish swamps, usually dominated by tall, dense reed beds of Typha sp., Juncus sp. and Phragmites sp. Nests on platforms of reeds and rushes, usually built over water in dense cover. | Ecosystem | BioNet (11), PMST | Low.<br>No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
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| | EPBC Act | BC Act | | | | |
| Bush Stone-curlew *Burhinus grallarius* | | E | Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. | Species | BioNet (5) | Low. No suitable habitat. |
| Red Knot *Calidris canutus* | E, M | | Mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs. | Species/ Ecosystem | BioNet (17), PMST | Low. No suitable habitat. |
| Curlew Sandpiper *Calidris ferruginea* | CE, M, Ma | E | Generally, occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. | Species/ Ecosystem | BioNet (368), PMST | Low. No suitable habitat. |
| Great Knot *Calidris tenuirostris* | CE, M | V | Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons. Often recorded on sandy beaches with mudflats nearby, sandy spits and islets and sometimes on exposed reefs or rock platforms. | Species/ Ecosystem | BioNet (2), PMST | Low. No suitable habitat. |
| Gang-gang Cockatoo *Callocephalon fimbriatum* | E | V | Prefers tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests during summer, these being at higher altitudes. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, or in dry forest in coastal areas. Uses hollows for breeding. | Species/ Ecosystem | BioNet (124), PMST | Low. May roost in hollow bearing trees. Assessment conducted |
| South-eastern Glossy Black-Cockatoo *Calyptorhynchus lathami lathami* | V | V | Inhabits eucalypt woodland and feeds almost exclusively on Casuarina fruits. Uses hollows for breeding. | Species/ Ecosystem | BioNet (50), PMST | Low. No crushed casuarina cones observed. Species not heard calling or observed. May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |
| Greater Sand-plover *Charadrius leschenaultii* | V, M | V | Almost entirely restricted to coastal areas in NSW, occurring mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks. | Species/ Ecosystem | BioNet (1), PMST | Low. No suitable habitat. |

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| | EPBC Act | BC Act | | | | |
| Lesser Sand-plover *Charadrius mongolus* | E, M | V | Almost entirely coastal in NSW, favouring the beaches of sheltered bays, harbours and estuaries with large intertidal sandflats or mudflats; occasionally occurs on sandy beaches, coral reefs and rock platforms. | Species/ Ecosystem | PMST | Low. No suitable habitat. |
| Spotted Harrier *Circus assimilis* | | V | Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. | Ecosystem | BioNet (4) | Low. May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |
| Brown Treecreeper (eastern subsp) *Climacteris picumnus victoriae* | V | V | The western boundary of the range of *Climacteris picumnus victoriae* runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell and along this line the subspecies intergrades with the arid zone subspecies of Brown Treecreeper *Climacteris picumnus picumnus* which then occupies the remaining parts of the state. 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, usually with an open grassy understorey, sometimes with one or more shrub species. Uses hollows for breeding. | Ecosystem | BioNet (1), PMST | Locally extinct. |
| Eastern Bristlebird *Dasyornis brachypterus* | E | E | Habitat for central and southern populations is characterised by dense, low vegetation including heath and open woodland with a heathy understorey. | Species | PMST | Low. No suitable habitat. |
| Varied Sittella *Daphoenositta chrysoptera* | | V | Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Uses a nest constructed from twigs, grass and other plant material for breeding. | Ecosystem | BioNet (7) | Low. No suitable habitat. |
| Black-necked Stork *Ephippiorhynchus asiaticus* | | E | Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries. | Ecosystem | BioNet (1) | Low. No suitable habitat. |

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| | EPBC Act | BC Act | | | | |
| Red Goshawk<br>*Erythrotriorchis radiatus* | E | CE | Very rare in NSW, extending south to about 30°S, with most records north of this, in the Clarence River Catchment, and a few around the lower Richmond and Tweed Rivers. Formerly, it was at least occasionally reported as far south as Port Stephens. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers. | Species | PMST | Low.<br>No suitable habitat. |
| White-fronted Chat<br>*Epthianura albifrons* | | V | Usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. | Ecosystem | BioNet (508) | Low.<br>No suitable habitat. |
| Grey Falcon<br>*Falco hypoleucos* | V | V | 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. | Ecosystem | BioNet (1), PMST | Low.<br>May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |
| Black Falcon<br>*Falco subniger* | | V | Found along tree-lined watercourses and in isolated stands of trees, mainly in arid and semi-arid areas. | Ecosystem | BioNet (1) | Low.<br>May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |
| Little Lorikeet<br>*Glossopsitta pusilla* | | V | Forages primarily in the open Eucalypt forest and woodland canopies, particularly along water courses; occasionally in Angophoras, Melaleucas and other tree species, also riparian habitats are used. Uses hollows for breeding. | Ecosystem | BioNet (46) | Low.<br>May roost in hollow bearing trees.<br>Assessment conducted |
| Painted Honeyeater<br>*Grantiella picta* | V | V | Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema. | Ecosystem | PMST | Low.<br>No suitable habitat. |
| Sooty Oystercatcher<br>*Haematopus fuliginosus* | | V | Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries. Forages | Species | BioNet (3) | Low.<br>No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
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| | EPBC Act | BC Act | | | | |
| | | | on exposed rock or coral at low tide for foods such as limpets and mussels. | | | |
| Pied Oystercatcher *Haematopus longirostris* | | E | Favours intertidal flats of inlets and bays, open beaches and sandbanks. Forages on exposed sand, mud and rock at low tide, for molluscs, worms, crabs and small fish. The chisel-like bill is used to pry open or break into shells of oysters and other shellfish. | Species | BioNet (2) | Low. No suitable habitat. |
| White-bellied Sea-eagle *Haliaeetus leucogaster* | Ma | V | Found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia. Uses stick nests for breeding. | Species/ Ecosystem | BioNet (466) | Low. May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |
| Little Eagle *Hieraaetus morphnoides* | | V | Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Uses stick nests for breeding. | Species/ Ecosystem | BioNet (18) | Low. May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |
| White-throated Needletail *Hirundapus caudacutus* | V, M, Ma | | Almost exclusively aerial. Takes insects on wing over a range of habitat types. Recorded most often above wooded areas, including open forest and rainforest. | - | BioNet (113), PMST | Low. May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |
| Black Bittern *Ixobrychus flavicollis* | | V | Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves. | Ecosystem | BioNet (15) | Low. No suitable habitat. |
| Swift Parrot *Lathamus discolor* | CE, Ma | E | Eucalypt forests. When over-wintering on the mainland, this species is dependent on winter-flowering eucalypt species. Breeding in Tasmania. | Species/ Ecosystem | BioNet (37), PMST | Low. May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| Broad-billed Sandpiper *Limicola Falcinellus* | V | | Favor sheltered parts of the coast such as estuarine sandflats and mudflats, harbors, embayments, lagoons, saltmarshes and reefs. May be recorded in sewage farms or within shallow freshwater lagoons. | Species/ Ecosystem | BioNet (3) | Low. No suitable habitat. |
| Black-tailed Godwit *Limosa limosa* | M, Ma | V | Usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. | Species/ Ecosystem | BioNet (14) | Low. No suitable habitat. |
| Bar-tailed Godwit *Limosa lapponica* | M, Ma | | Found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. | Species/ Ecosystem | PMST | Low. No suitable habitat. |
| Square-tailed Kite *Lophoictinia isura* | | V | Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. Uses stick nests for breeding. | Species/ Ecosystem | BioNet (20) | Low. May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |
| Hooded Robin (south-eastern) *Melanodryas cucullata cucullata* | E | V | Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. | Ecosystem | PMST | Locally extinct. |
| Turquoise Parrot *Neophema pulchella* | | V | Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Breeds in tree hollows with main breeding occurring west of the Great Dividing Range. | Ecosystem | BioNet (1) | Locally extinct. |
| Blue-winged Parrot *Neophema chrysostoma* | V, Ma | V | The main populations of Blue-winged Parrots are in Tasmania and Victoria, particularly in southern Victoria and the midlands and eastern areas of Tasmania. Sparser populations are found in western New South Wales and eastern South Australia, extending to south-west Queensland and occasionally into the Northern Territory.The Blue-winged Parrot inhabits a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones. Throughout their range, they favour grasslands and grassy woodlands. They are often found near wetlands both near the coast and in semi-arid zones. Blue-winged Parrots can also be seen in altered | Ecosystem | PMST | Locally extinct. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| | | | environments such as airfields, golf courses and paddocks. | | | |
| Cotton Pygmy-Goose *Nettapus coromandelianus* | | E | Only a rare visitor to NSW. Uncommon in Queensland. Freshwater lakes, lagoons, swamps and dams, particularly those vegetated with waterlilies and other floating and submerged aquatic vegetation. The Cotton Pygmy-goose uses tall standing dead trees with hollows located close to water for roosting and breeding. | Species | BioNet (4) | Low. No suitable habitat. |
| Barking Owl *Ninox connivens* | | V | Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. | Species/ Ecosystem | BioNet (19) | Low. May fly over site during foraging or movement periods. Hollow-bearing trees present are not suitable to roosting requirements. No assessment required. |
| Powerful Owl *Ninox strenua* | | V | Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. | Species/ Ecosystem | BioNet (1973) | Moderate. May perch in the trees present on occasion. Assessment conducted. |
| Sooty Owl *Tyto tenebricosa* | | V | Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. | Species/ Ecosystem | BioNet (3) | Low. May fly over site during foraging or movement periods. Hollow-bearing trees present are not suitable to roosting requirements. No assessment required. |
| Masked Owl *Tyto novaehollandiae* | | V | Lives in dry eucalypt forests and woodlands from sea level to 1100 m. | Species/ Ecosystem | BioNet (6) | Low. May fly over site during foraging or movement periods. Hollow-bearing trees present are not suitable to roosting requirements. No assessment required. |
| Eastern Grass Owl *Tyto longimembris* | | V | Found in areas of tall grass, including grass tussocks, in swampy areas, grassy plains, swampy heath, and in cane grass or sedges on flood plains. | Ecosystem | BioNet (2) | Low. May fly over site during foraging or movement periods. Hollow-bearing trees present are not suitable to roosting requirements. No assessment required. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| Eastern Curlew *Numenius madagascariensis* | CE, M, Ma | | Found on intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons. | Species/ Ecosystem | BioNet (31), PMST | Low. No suitable habitat. |
| Eastern Osprey *Pandion cristatus* | M, Ma | V | Occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. Uses stick nests for breeding. | Species/ Ecosystem | BioNet (18) | Low. May fly over site during foraging or movement periods. Will not be affected by the scope of works proposed. No assessment required. |
| Scarlet Robin *Petroica boodang* | | V | Lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. Uses a nest constructed from twigs, grass and other plant material for breeding. | Ecosystem | BioNet (6) | Low. No suitable habitat. |
| Flame Robin *Petroica phoenicea* | | V | Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. Uses a nest constructed from twigs, grass and other plant material for breeding. | Ecosystem | BioNet (2) | Low. No suitable habitat. |
| Superb Parrot *Polytelis swainsonii* | V | V | Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. Breeds in tree hollows with main breeding occurring west of the Great Dividing Range. | Species/ Ecosystem | BioNet (1) | Low. No suitable habitat. |
| Superb Fruit-Dove *Ptilinopus superbus* | | V | Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees. Uses a nest constructed from twigs, grass and other plant material for breeding | Ecosystem | BioNet (19) | Low. No suitable habitat. |
| Rose-crowned Fruit-Dove *Ptilinopus regina* | | V | Occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest, where fruit is plentiful. Uses a nest constructed from twigs, grass and other plant material for breeding | Ecosystem | BioNet (1) | Low. No suitable habitat. |
| Pilotbird *Pycnoptilus floccosus* | V | | Found in wet forested areas and heathland in eastern Victoria and south-eastern New South Wales. Forages on the ground, turning over leaf litter using strong legs. | - | PMST | Low. No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| Australian Painted Snipe *Rostratula australis* | E, Ma | E | Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. | Ecosystem | BioNet(3), PMST | Low. No suitable habitat. |
| Diamond Firetail *Stagonopleura guttata* | | V | Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. | Ecosystem | PMST | Locally extinct |
| Little Tern *Sternula albifrons* | M, Ma | E | Almost exclusively coastal, preferring sheltered environments; however may occur several kilometres from the sea in harbours, inlets and rivers (with occasional offshore islands or coral cay records). Nests in small, scattered colonies in low dunes or on sandy beaches just above high tide mark near estuary mouths or adjacent to coastal lakes and islands. | Species/ Ecosystem | BioNet (9) | Low. No suitable habitat. |
| Australian Fairy Tern *Sternula nereis nereis* | V | | Occurs along the coasts of Victoria, Tasmania, South Australia and Western Australia. The subspecies has been known from NSW in the past, but it is unknown if it persists there. Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. The subspecies has been found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline. | Species | PMST | Low. No suitable habitat. |
| Freckled Duck *Stictonetta naevosa* | | V | Prefer permanent freshwater swamps and creeks with heavy growth of *Cumbungi, Lignum* or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. | Ecosystem | BioNet (2) | Low. No suitable habitat. |
| Terek Sandpiper *Xenus cinereus* | M, Ma | V | Recorded on coastal mudflats, lagoons, creeks and estuaries. | Species/ Ecosystem | BioNet (1) | Low. No suitable habitat. |
| Mammals | | | | | | |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| Australian Fur-seal *Arctocephalus pusillus doriferus* | V | | Prefers rocky parts of islands with flat, open terrain. | - | BioNet (1) | Low. No suitable habitat. |
| Eastern Pygmy-possum *Cercartetus nanus* | | V | Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes. | Species | BioNet (260) | Low. No suitable habitat. |
| Large-eared Pied Bat *Chalinolobus dwyeri* | V | V | Cave-roosting bat that forages in timbered woodland and dry sclerophyll forest. | Species | BioNet (17), PMST | Low. No suitable roosting habitat. May fly over site during its foraging or movement periods. Local viability of this species' population will not be affected given proximity of nearby conservation reserve and significant areas of foraging opportunities. Will not be affected by the scope of works proposed. No assessment required. |
| Spotted-tailed Quoll *Dasyurus maculatus* | E | V | 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. | Ecosystem | BioNet (18), PMST | Low. No suitable habitat. |
| Southern Brown Bandicoot *Isoodon obesulus obesulus* | E | E | Generally, only found in heath or open forest with a heathy understorey on sandy or friable soils. | Species | BioNet (103), PMST | Low. No suitable habitat. |
| Eastern Coastal Free-tailed Bat *Micronomus norfolkensis* | | V | Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. | Ecosystem | BioNet (51) | Moderate. May roost in hollow bearing trees. Assessment conducted |
| Eastern False Pipistrelle *Falsistrellus tasmaniensis* | | V | Prefers moist habitats, with trees taller than 20 m. Generally, roosts in hollow-bearing trees (eucalypts), but has also been found under loose bark on trees or in buildings. | Ecosystem | BioNet (16) | Moderate. May roost in hollow bearing trees. Assessment conducted |

| | | | | | | |
|---|---|---|---|---|---|---|
| Little Bent-winged Bat<br>*Miniopterus australis* | | V | Generally found in well-timbered areas. Roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day. | Species/ Ecosystem | BioNet (167) | Low.<br>No suitable habitat. |
| Large Bent-winged Bat<br>*Miniopterus orianae oceanensis* | | V | Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. | - | BioNet (467) | Low.<br>No suitable roosting habitat.<br>May fly over site during foraging or movement periods. Local viability of this species' population will not be affected given proximity of nearby conservation reserve and significant areas of foraging opportunities. Will not be affected by the scope of works proposed. No assessment required. |
| Southern Myotis<br>*Myotis macropus* | | V | 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. | Species | BioNet (126) | Moderate.<br>May roost in hollow bearing trees.<br>Assessment conducted. |
| Parma Wallaby<br>*Notamacropus parma* | V | V | Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest. | Species | | Low.<br>No suitable habitat. |
| Southern Greater Glider<br>*Petauroides volans* | E | E | Largely restricted to eucalypt forests and woodlands, utilising tree hollows. | Species | BioNet (3), PMST | Locally extinct. |
| Yellow-bellied Glider<br>*Petaurus australis* | | V | Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. | Ecosystem | BioNet (1), PMST | Locally extinct. |
| Squirrel Glider<br>*Petaurus norfolcensis* | | V | Inhabits woodlands and dry sclerophyll forests, usually in diverse stands of shrubs and trees. Shelters and breeds in tree hollows, and is primarily an insectivorous animal but, has also been known to ingest plant exudates. | Species | BioNet (2) | Locally extinct. |
| Brush-tailed Rock-wallaby<br>*Petrogale penicillata* | V | E | Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges. | Species | PMST | Low.<br>No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| Koala<br>*Phascolarctos cinereus* | E | E | Open eucalypt forest and woodland, containing a variety of 'preferred' food tree species. | Species/ Ecosystem | BioNet (27), PMST | Low.<br>No suitable habitat. |
| Eastern Chestnut Mouse<br>*Pseudomys gracilicaudatus* | | V | Mostly found, in low numbers, in heathland and is most common in dense, wet heath and swamps. | Ecosystem | BioNet (1) | Low.<br>No suitable habitat. |
| New Holland Mouse<br>*Pseudomys novaehollandiae* | V | | Open heathland, open woodland with a heathland understorey and vegetated sand dunes. | Ecosystem | BioNet (7), PMST | Low.<br>No suitable habitat. |
| Grey-headed Flying-fox<br>*Pteropus poliocephalus* | V | V | Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. | Species/ Ecosystem | BioNet (2610), PMST | Moderate.<br>May forage in the trees present on occasion when these are in flower<br>Assessment conducted. |
| Yellow-bellied Sheathtailbat<br>*Saccolaimus flaviventris* | | V | Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. | Ecosystem | BioNet (29) | Moderate.<br>May roost in hollow bearing trees.<br>Assessment conducted. |
| Greater Broad-nosed Bat<br>*Scoteanax rueppellii* | | V | Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Usually roosts in tree hollows but also in buildings. | Ecosystem | BioNet (31) | Moderate.<br>May roost in hollow bearing trees.<br>Assessment conducted. |
| Amphibians | | | | | | |
| Giant Burrowing Frog<br>*Heleioporus australiacus* | V | V | Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. | Species | BioNet (5), PMST | Low.<br>No suitable habitat. |
| Green and Golden Bell Frog<br>*Litoria aurea* | V | E | Inhabits a variety of environments, including disturbed sites, ephemeral ponds, wetlands, marshes, dams and stream-sides, particularly those that contain one or more of the following aquatic plants: bullrush (*Typha* spp.), spikerush (*Eleocharis* spp.), *Juncus kraussii*, *Schoenoplectus littoralis* and *Sporobolus virginicus.* | Species | BioNet (17072), PMST | Low.<br>No suitable habitat. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| Red-crowned Toadlet<br>*Pseudophryne australis* | | V | Occurs in open forests, mostly on Hawkesbury and Narrabeen Sandstones. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. | Species | BioNet (412) | Low.<br>No suitable habitat. |
| Stuttering Frog<br>*Mixophyes balbus* | V | E | Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. | Species | PMST | Low.<br>No suitable habitat. |
| Invertebrates | | | | | | |
| Dural Land Snail<br>*Pommerhelix duralensis* | E | E | 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. It favours sheltering under rocks or inside curled-up bark. | Species | BioNet (29), PMST | Low.<br>No suitable habitat. |
| Maroubra Woodland Snail<br>*Meridolum maryae* | | E | Confined to a narrow band of habitat along the coast from the north-eastern corner of the Royal National Park to Palm Beach in Sydney. Found in the leaf litter of coastal vegetation communities, most commonly in heathland on foredunes also from areas of podsolised dunes/sand plains that support taller heath communities including Eastern Suburbs Banksia Scrub. | - | PMST | Low.<br>No suitable habitat. |
| Insecta | | | | | | |
| Giant Dragonfly<br>*Petalura gigantea* | | E | Live in permanent swamps and bogs with some free water and open vegetation. | Species | BioNet (1) | Low.<br>No suitable habitat. |
| Reptiles | | | | | | |
| Loggerhead Turtle<br>*Caretta Caretta* | E | E | Found in tropical and subtropical waters off the Australian Coast. | Species | BioNet (13), PMST | Low.<br>No suitable habitat. |
| Leatherback Turtle<br>*Dermochelys coriacea* | E | E | Occurs in inshore and offshore marine waters. | Species | BioNet (1), PMST | Low.<br>No suitable habitat. |
| Rosenberg's Goanna<br>*Varanus rosenbergi* | | V | Found in heath, open forest and woodland. | Ecosystem | BioNet (49) | Low. |

| Scientific name | Status | | Distribution and habitat | BAM credit type | Number of records (source) | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| | | | | | | No suitable habitat. |
| Broad-headed Snake *Hoplocephalus bungaroides* | V | E | Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. | Species/ Ecosystem | PMST | Low.<br>No suitable habitat. |

# Appendix B: Tree and hollow register

Hollow table

| ID | GPS | | Species | Native or Amenity Tree | DBH (cm) | Number of hollows per entrance size (cm) | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Latitude | Longitude | | | | 2-4 | 4-10 | 10-15 | 15-30 | >30 | |
| 1 | -33.78282219 | 151.133422099999990 | *Acer negundo* | Amenity | 30 | | | 1 | | | |
| 2 | -33.78304147 | 151.133053399999994 | *Angophora costata* | Native | 95 | | 7 | | | | |
| 3 | -33.78301404 | 151.132875100000007 | Stag | Native | 35 | | 2 | | | | |
| 4 | -33.78288441 | 151.133517059073057 | *Eucalyptus haemastoma* | Native | 108 | | 2 | 3 | | | |
| 5 | -33.78270738 | 151.133403499999986 | *Eucalyptus haemastoma* | Native | 65 | | 3 | | | | |
| 6 | -33.78289518 | 151.133490899230253 | *Eucalyptus haemastoma* | Native | 98 | | 4 | | | | |
| 7 | -33.78262493 | 151.133422999049998 | *Acer negundo* | Amenity | 71 | | 5 | | | | |
| 8 | -33.78296289 | 151.133580150458556 | *Eucalyptus resinifera* | Native | 102 | | 5 | | | | |
| 9 | -33.78295289 | 151.133487821601676 | *Eucalyptus haemastoma* | Native | 105 | | 5 | | | | Potential HBT |
| 10 | -33.78284533 | 151.133486599999998 | *Acer negundo* | Amenity | 13 | | 5 | | | | |
| 11 | -33.78372537 | 151.133649397101209 | *Salix cinerea* | Amenity | 50 | | | | 1 | | |
| 20 | -33.78472926 | 151.133372218178636 | *Allocasuarina littoralis* | Native | 45 | | 1 | | | | Potential HBT |
| 21 | -33.78306522 | 151.133167748231159 | *Angophra costata* | Native | 95 | 1 | | | | | Potential HBT |
| 22 | -33.78246181 | 151.133329131378815 | *Angophora floribunda* | Native | 60 | 1 | | | | | Potential HBT |
| 23 | -33.78251567 | 151.133352213593042 | *Angophora floribunda* | Native | 70 | | 4 | | | | |
| 24 | -33.78487928 | 151.133883999999995 | Stag | Native | 20 | | 1 | 2 | | | |
| 25 | -33.7855334 | 151.134097800000006 | Stag | Native | 35 | | 1 | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | -33.78495796 | 151.133771732836578 | *Eucalyptus piperita* | Native | 40 | | | | | 1 | Large hollow is 100 x 5 cm |
| 27 | -33.78312901 | 151.133556300000009 | *Grevillea robusta* | Amenity | 40 | | 1 | | | | |
| 28 | -33.78262339 | 151.133259115329025 | *Grevillea robusta* | Amenity | 40 | | | | 1 | | |
| 29 | -33.78492809 | 151.133977499999986 | Stag | Native | 45 | | 3 | 1 | | | |
| 30 | -33.78276169 | 151.132663401850522 | *Eucalyptus pilularis* | Native | 45 | | 3 | 2 | | | One hollow inhabited by Rainbow Lorikeets |
| 31 | -33.78280824 | 151.132690715803989 | *Eucalyptus pilularis* | Native | 45 | | | 4 | | | |
| 32 | -33.78260144 | 151.133305500000006 | Stag | Native | 45 | | 1 | | | | Potential HBT |
| 33 | -33.78545761 | 151.133328199999994 | Stag | Native | 60 | | | 2 | | | Potential HBT |
| 34 | -33.78355666 | 151.133050800000007 | Stag | Native | 60 | | | 2 | | | Potential HBT |
| 35 | -33.78358823 | 151.133053683622478 | Stag | Native | 60 | | | 2 | | | |
| 36 | -33.78256742 | 151.133087729888615 | *Angophora floribunda* | Native | 25 | | | 2 | | | |
| 37 | -33.78283498 | 151.132811320373122 | *Angophora floribunda* | Native | 45 | | | 2 | | | |
| 38 | -33.78289884 | 151.132862101244370 | *Angophora floribunda* | Native | 45 | 1 | | | | | Potential HBT |
| 39 | -33.78282344 | 151.132959046544130 | *Angophora floribunda* | Native | 90 | 1 | | | | | Potential HBT |
| Total | | | | | | 4 | 53 | 23 | 2 | 1 | 83 total hollows |
| | | | | | | | | | | Artificial hollows to be installed | 50 |
| | | | | | | | | | | Contribution into conservation fund | $25,000 |
| | | | | | | | | | | | |

Tree table

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 1 | -33.78282219 | 151.133422099999990 | *Acer negundo* | Amenity | 30 | Medium | 4 | $500.00 |
| 2 | -33.78304147 | 151.133053399999994 | *Angophra costata* | Native | 95 | Large | 8 | $1,000.00 |
| 3 | -33.78301404 | 151.132875100000007 | Stag | Native | 35 | Medium | 4 | $500.00 |
| 4 | -33.78288441 | 151.133517059073057 | *Eucalyptus haemastoma* | Native | 108 | Very large | 16 | $2,500.00 |
| 5 | -33.78270738 | 151.133403499999986 | *Eucalyptus haemastoma* | Native | 65 | Large | 8 | $1,000.00 |
| 6 | -33.78289518 | 151.133490899230253 | *Eucalyptus haemastoma* | Native | 98 | Large | 8 | $1,000.00 |
| 7 | -33.78262493 | 151.133422999049998 | *Acer negundo* | Amenity | 71 | Large | 8 | $1,000.00 |
| 8 | -33.78296289 | 151.133580150458556 | *Eucalyptus resinifera* | Native | 102 | Very large | 16 | $2,500.00 |
| 9 | -33.78295289 | 151.133487821601676 | *Eucalyptus haemastoma* | Native | 105 | Very large | 16 | $2,500.00 |
| 10 | -33.78284533 | 151.133486599999998 | *Acer negundo* | Amenity | 13 | Small | 2 | $125.00 |
| 11 | -33.78372537 | 151.133649397101209 | *Salix cinerea* | Amenity | 50 | Large | 8 | $1,000.00 |
| 12 | -33.78536883 | 151.133597077415629 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 13 | -33.7854893 | 151.133396400000009 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 14 | -33.7849772 | 151.133278542859415 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 15 | -33.7855381 | 151.133896376793388 | *Allocasuarina littoralis* | Native | 35 | Medium | 4 | $500.00 |
| 16 | -33.78537114 | 151.133705563822474 | *Allocasuarina littoralis* | Native | 35 | Medium | 4 | $500.00 |
| 17 | -33.7853242 | 151.133605540894195 | *Allocasuarina littoralis* | Native | 35 | Medium | 4 | $500.00 |
| 18 | -33.78537498 | 151.133627853701256 | *Allocasuarina littoralis* | Native | 35 | Medium | 4 | $500.00 |
| 19 | -33.78539272 | 151.133618700000000 | *Allocasuarina littoralis* | Native | 40 | Medium | 4 | $500.00 |
| 20 | -33.78472926 | 151.133372218178636 | *Allocasuarina littoralis* | Native | 45 | Medium | 4 | $500.00 |
| 21 | -33.78306522 | 151.133167748231159 | *Angophra costata* | Native | 95 | Large | 8 | $1,000.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 22 | -33.78246181 | 151.133329131378815 | *Angophora floribunda* | Native | 60 | Large | 8 | $1,000.00 |
| 23 | -33.78251567 | 151.133352213593042 | *Angophora floribunda* | Native | 70 | Large | 8 | $1,000.00 |
| 24 | -33.78487928 | 151.133883999999995 | Stag | Native | 20 | Medium | 4 | $500.00 |
| 25 | -33.7855334 | 151.134097800000006 | Stag | Native | 35 | Medium | 4 | $500.00 |
| 26 | -33.78495796 | 151.133771732836578 | *Eucalyptus piperita* | Native | 40 | Medium | 4 | $500.00 |
| 27 | -33.78312901 | 151.133556300000009 | *Grevillea robusta* | Amenity | 40 | Medium | 4 | $500.00 |
| 28 | -33.78262339 | 151.133259115329025 | *Grevillea robusta* | Amenity | 40 | Medium | 4 | $500.00 |
| 29 | -33.78492809 | 151.133977499999986 | Stag | Native | 45 | Medium | 4 | $500.00 |
| 30 | -33.78276169 | 151.132663401850522 | *Eucalyptus pilularis* | Native | 45 | Medium | 4 | $500.00 |
| 31 | -33.78280824 | 151.132690715803989 | *Eucalyptus pilularis* | Native | 45 | Medium | 4 | $500.00 |
| 32 | -33.78260144 | 151.133305500000006 | Stag | Native | 45 | Medium | 4 | $500.00 |
| 33 | -33.78545761 | 151.133328199999994 | Stag | Native | 60 | Large | 8 | $1,000.00 |
| 34 | -33.78355666 | 151.133050800000007 | Stag | Native | 60 | Large | 8 | $1,000.00 |
| 35 | -33.78358823 | 151.133053683622478 | Stag | Native | 60 | Large | 8 | $1,000.00 |
| 36 | -33.78256742 | 151.133087729888615 | *Angophora floribunda* | Native | 25 | Medium | 4 | $500.00 |
| 37 | -33.78283498 | 151.132811320373122 | *Angophora floribunda* | Native | 45 | Medium | 4 | $500.00 |
| 38 | -33.78289884 | 151.132862101244370 | *Angophora floribunda* | Native | 45 | Medium | 4 | $500.00 |
| 39 | -33.78282344 | 151.132959046544130 | *Angophora floribunda* | Native | 90 | Large | 8 | $1,000.00 |
| 40 | -33.78495335 | 151.133884066279137 | *Eucalyptus piperita* | Native | 60 | Large | 8 | $1,000.00 |
| 41 | -33.78411965 | 151.133813300000014 | *Acacia parramattensis* | Native | 5 | Small | 2 | $125.00 |
| 42 | -33.78416975 | 151.133696899999990 | *Allocasuarina littoralis* | Native | 11 | Small | 2 | $125.00 |
| 43 | -33.78416914 | 151.133732600000002 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 44 | -33.78409251 | 151.133648499999993 | *Acacia parramattensis* | Native | 5 | Small | 2 | $125.00 |
| 45 | -33.7840064 | 151.133596115656644 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 46 | -33.78398013 | 151.133659899999998 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 47 | -33.78400018 | 151.133660499999991 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 48 | -33.78396919 | 151.133690999999999 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 49 | -33.78393312 | 151.133689400000009 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 51 | -33.78312908 | 151.133721721372467 | *Acacia parramattensis* | Native | 5 | Small | 2 | $125.00 |
| 53 | -33.78248105 | 151.133306049164588 | *Angophora floribunda* | Native | 5 | Small | 2 | $125.00 |
| 54 | -33.78424857 | 151.133806356157862 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 55 | -33.78417103 | 151.133715999999993 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 56 | -33.78425761 | 151.133697677399198 | *Acacia decurrens* | Native | 6 | Small | 2 | $125.00 |
| 57 | -33.78416573 | 151.133667400000007 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 58 | -33.78421376 | 151.133467624664121 | *Acacia parramattensis* | Native | 6 | Small | 2 | $125.00 |
| 59 | -33.78402102 | 151.133582266328091 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 60 | -33.78396344 | 151.133613900000000 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 61 | -33.78399096 | 151.133682399999998 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 62 | -33.78400819 | 151.133686600000004 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 63 | -33.78322834 | 151.133710180265382 | *Eucalyptus pilularis* | Native | 6 | Small | 2 | $125.00 |
| 64 | -33.78264416 | 151.133108311529440 | *Heptapleurum actinophyllum* | Amenity | 6 | Small | 2 | $125.00 |
| 65 | -33.78267075 | 151.133052999999990 | *Heptapleurum actinophyllum* | Amenity | 6 | Small | 2 | $125.00 |
| 66 | -33.78538729 | 151.134117196642791 | *Eucalyptus robusta* | Native | 6 | Small | 2 | $125.00 |
| 67 | -33.78596042 | 151.134102600000006 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 69 | -33.78456709 | 151.133975200000009 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 70 | -33.78415143 | 151.133593807435176 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 71 | -33.78416471 | 151.133606310301303 | *Acacia parramattensis* | Native | 7 | Small | 2 | $125.00 |
| 72 | -33.78422912 | 151.133428799999990 | *Acacia parramattensis* | Native | 7 | Small | 2 | $125.00 |
| 73 | -33.78404641 | 151.133640741270796 | *Acacia parramattensis* | Native | 7 | Small | 2 | $125.00 |
| 74 | -33.78393753 | 151.133647400000001 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 75 | -33.78354899 | 151.133454544742762 | *Populus alba* | Amenity | 7 | Small | 2 | $125.00 |
| 77 | -33.78276375 | 151.133466099999993 | *Acer negundo* | Amenity | 7 | Small | 2 | $125.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 78 | -33.7826643 | 151.132898899999986 | *Acacia parramattensis* | Native | 7 | Small | 2 | $125.00 |
| 81 | -33.78412507 | 151.133600999999999 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 82 | -33.78402594 | 151.133707299999998 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 84 | -33.78474542 | 151.133359907664385 | *Populus alba* | Amenity | 8 | Small | 2 | $125.00 |
| 85 | -33.78689202 | 151.134078299999999 | *Pinus radiata* | Amenity | 8 | Small | 2 | $125.00 |
| 87 | -33.78483467 | 151.133478396364040 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 88 | -33.78476927 | 151.133437617785603 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 89 | -33.78447016 | 151.133991783278788 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 90 | -33.78416453 | 151.133908399999996 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 91 | -33.78415835 | 151.133624499999996 | *Acacia parramattensis* | Native | 10 | Small | 2 | $125.00 |
| 92 | -33.78413203 | 151.133583100000010 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 93 | -33.78412358 | 151.133609799999988 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 94 | -33.78410296 | 151.133625737831551 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 95 | -33.78403718 | 151.133593807435204 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 96 | -33.78399409 | 151.133617659056569 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 97 | -33.78397822 | 151.133645400000006 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 98 | -33.78387023 | 151.133446700000007 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 99 | -33.7839606 | 151.133638999999988 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 100 | -33.78395206 | 151.133675000000011 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 101 | -33.78403665 | 151.133670300000006 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 102 | -33.78330897 | 151.133589199999989 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 103 | -33.78323218 | 151.133590922158561 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 104 | -33.78331073 | 151.133602599999989 | *Populus alba* | Amenity | 10 | Small | 2 | $125.00 |
| 105 | -33.78244018 | 151.133351299999987 | *Angophora floribunda* | Native | 10 | Small | 2 | $125.00 |
| 106 | -33.78386829 | 151.133572264035251 | *Acacia parramattensis* | Native | 11 | Small | 2 | $125.00 |
| 107 | -33.78380597 | 151.133580700000010 | *Acacia parramattensis* | Native | 11 | Small | 2 | $125.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 108 | -33.78386857 | 151.133323100000013 | *Eucalyptus piperita* | Native | 12 | Small | 2 | $125.00 |
| 109 | -33.78381858 | 151.133187099999986 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 110 | -33.78381192 | 151.133236699999998 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 111 | -33.78416561 | 151.133638499999989 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 112 | -33.78411681 | 151.133606502653038 | *Acacia parramattensis* | Native | 12 | Small | 2 | $125.00 |
| 113 | -33.7833549 | 151.133551682394398 | *Heptapleurum actinophyllum* | Amenity | 12 | Small | 2 | $125.00 |
| 118 | -33.78454941 | 151.133261615902285 | *Acacia parramattensis* | Native | 12 | Small | 2 | $125.00 |
| 119 | -33.78316991 | 151.133482200000003 | *Heptapleurum actinophyllum* | Amenity | 13 | Small | 2 | $125.00 |
| 121 | -33.78378874 | 151.133391799999998 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 122 | -33.7842353 | 151.133595346249507 | *Acacia parramattensis* | Native | 15 | Small | 2 | $125.00 |
| 123 | -33.78402355 | 151.133630100000005 | Stag | Native | 15 | Small | 2 | $125.00 |
| 124 | -33.78382537 | 151.133684700000003 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 125 | -33.78383495 | 151.133540299999993 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 126 | -33.78388233 | 151.133835593629243 | *Eucalyptus piperita* | Native | 15 | Small | 2 | $125.00 |
| 127 | -33.78390618 | 151.133861753472019 | *Eucalyptus piperita* | Native | 15 | Small | 2 | $125.00 |
| 128 | -33.78389676 | 151.133604963838707 | *Acacia parramattensis* | Native | 15 | Small | 2 | $125.00 |
| 129 | -33.78319448 | 151.133497823894515 | *Eucalyptus fibrosa* | Native | 15 | Small | 2 | $125.00 |
| 131 | -33.78261993 | 151.133217599999995 | *Jacaranda mimosifolia* | Amenity | 15 | Small | 2 | $125.00 |
| 134 | -33.78271899 | 151.133104656845632 | *Heptapleurum actinophyllum* | Amenity | 17 | Small | 2 | $125.00 |
| 135 | -33.78387991 | 151.133367999999990 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 136 | -33.78388196 | 151.133663200000001 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 151 | -33.7854 | 151.133603999999991 | *Allocasuarina littoralis* | Native | 23 | Medium | 4 | $500.00 |
| 153 | -33.78387021 | 151.133525714903243 | *Acacia parramattensis* | Native | 24 | Medium | 4 | $500.00 |
| 154 | -33.78382586 | 151.133360399999987 | *Allocasuarina littoralis* | Native | 25 | Medium | 4 | $500.00 |
| 155 | -33.78381456 | 151.133414399999992 | *Allocasuarina littoralis* | Native | 25 | Medium | 4 | $500.00 |
| 156 | -33.78383876 | 151.133443499999998 | *Allocasuarina littoralis* | Native | 25 | Medium | 4 | $500.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 157 | -33.78384602 | 151.133413600000011 | *Allocasuarina littoralis* | Native | 25 | Medium | 4 | $500.00 |
| 158 | -33.7838791 | 151.133423300000004 | *Allocasuarina littoralis* | Native | 25 | Medium | 4 | $500.00 |
| 159 | -33.78378713 | 151.133450699999997 | *Allocasuarina littoralis* | Native | 25 | Medium | 4 | $500.00 |
| 160 | -33.78401813 | 151.133812000000006 | *Allocasuarina littoralis* | Native | 25 | Medium | 4 | $500.00 |
| 162 | -33.78329157 | 151.132888000000008 | *Banksia integrifolia* | Native | 25 | Medium | 4 | $500.00 |
| 163 | -33.78540638 | 151.133707100000009 | *Allocasuarina littoralis* | Native | 30 | Medium | 4 | $500.00 |
| 164 | -33.78543674 | 151.133697000000012 | *Allocasuarina littoralis* | Native | 30 | Medium | 4 | $500.00 |
| 165 | -33.78478081 | 151.133414535571347 | *Allocasuarina littoralis* | Native | 30 | Medium | 4 | $500.00 |
| 166 | -33.78378895 | 151.133164399999998 | *Allocasuarina littoralis* | Native | 24 | Medium | 4 | $500.00 |
| 167 | -33.78382989 | 151.133313600000008 | *Allocasuarina littoralis* | Native | 30 | Medium | 4 | $500.00 |
| 168 | -33.7839087 | 151.133163400000001 | *Allocasuarina littoralis* | Native | 26 | Medium | 4 | $500.00 |
| 169 | -33.78386238 | 151.133471399999991 | *Allocasuarina littoralis* | Native | 30 | Medium | 4 | $500.00 |
| 170 | -33.78387449 | 151.133612900000003 | Stag | Native | 30 | Medium | 4 | $500.00 |
| 171 | -33.78399281 | 151.133750600000013 | *Allocasuarina littoralis* | Native | 30 | Medium | 4 | $500.00 |
| 172 | -33.78382067 | 151.133473900000013 | *Allocasuarina littoralis* | Native | 30 | Medium | 4 | $500.00 |
| 173 | -33.78352764 | 151.133727876629564 | *Angophora floribunda* | Native | 30 | Medium | 4 | $500.00 |
| 174 | -33.78327297 | 151.133632299999988 | *Allocasuarina littoralis* | Native | 30 | Medium | 4 | $500.00 |
| 177 | -33.78296366 | 151.133533986030130 | *Grevillea robusta* | Amenity | 30 | Medium | 4 | $500.00 |
| 178 | -33.78281658 | 151.133383000000009 | *Acer negundo* | Amenity | 30 | Medium | 4 | $500.00 |
| 179 | -33.78600955 | 151.134111618440954 | *Acacia parramattensis* | Native | 30 | Medium | 4 | $500.00 |
| 181 | -33.78352302 | 151.133825591336461 | *Angophora floribunda* | Native | 33 | Medium | 4 | $500.00 |
| 182 | -33.7850526 | 151.133639394808398 | *Angophora floribunda* | Native | 35 | Medium | 4 | $500.00 |
| 183 | -33.78488925 | 151.133884300000005 | *Eucalyptus piperita* | Native | 35 | Medium | 4 | $500.00 |
| 184 | -33.78400743 | 151.133815800000008 | *Allocasuarina littoralis* | Native | 35 | Medium | 4 | $500.00 |
| 185 | -33.78406833 | 151.133782499999995 | *Allocasuarina littoralis* | Native | 35 | Medium | 4 | $500.00 |
| 186 | -33.78403354 | 151.133770900000002 | *Allocasuarina littoralis* | Native | 35 | Medium | 4 | $500.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 187 | -33.78392429 | 151.133798799999994 | *Allocasuarina littoralis* | Native | 35 | Medium | 4 | $500.00 |
| 188 | -33.78383766 | 151.133505299999996 | *Allocasuarina littoralis* | Native | 35 | Medium | 4 | $500.00 |
| 189 | -33.78346974 | 151.133249113036186 | *Heptapleurum actinophyllum* | Amenity | 35 | Medium | 4 | $500.00 |
| 190 | -33.78347282 | 151.133171402914968 | *Erythrina crista-galli* | Amenity | 35 | Medium | 4 | $500.00 |
| 191 | -33.78314755 | 151.133253152423777 | *Jacaranda mimosifolia* | Amenity | 35 | Medium | 4 | $500.00 |
| 194 | -33.78286287 | 151.133577072830008 | *Eucalyptus haemastoma* | Native | 37 | Medium | 4 | $500.00 |
| 195 | -33.78547843 | 151.133700699999991 | *Allocasuarina littoralis* | Native | 40 | Medium | 4 | $500.00 |
| 196 | -33.78502413 | 151.133684020422550 | *Eucalyptus piperita* | Native | 40 | Medium | 4 | $500.00 |
| 197 | -33.78371809 | 151.133519500000006 | *Allocasuarina littoralis* | Native | 40 | Medium | 4 | $500.00 |
| 199 | -33.78378751 | 151.133821299999994 | *Araucaria heterophylla* | Amenity | 40 | Medium | 4 | $500.00 |
| 200 | -33.78378751 | 151.133821299999994 | *Araucaria heterophylla* | Amenity | 40 | Medium | 4 | $500.00 |
| 201 | -33.78356688 | 151.133088499295638 | *Araucaria heterophylla* | Amenity | 40 | Medium | 4 | $500.00 |
| 202 | -33.78327989 | 151.133704794415394 | *Eucalyptus haemastoma* | Native | 40 | Medium | 4 | $500.00 |
| 203 | -33.78329681 | 151.133783273943720 | *Eucalyptus robusta* | Native | 40 | Medium | 4 | $500.00 |
| 204 | -33.78319055 | 151.133443099999994 | *Erythrina crista-galli* | Amenity | 40 | Medium | 4 | $500.00 |
| 205 | -33.78321064 | 151.133515520258754 | *Erythrina crista-galli* | Amenity | 40 | Medium | 4 | $500.00 |
| 208 | -33.78271271 | 151.133058599999998 | *Ulmus parviflora* | Amenity | 40 | Medium | 4 | $500.00 |
| 209 | -33.78618344 | 151.134102385555252 | *Eucalyptus robusta* | Native | 40 | Medium | 4 | $500.00 |
| 210 | -33.78618902 | 151.134056413478675 | *Eucalyptus pilularis* | Native | 40 | Medium | 4 | $500.00 |
| 211 | -33.78725695 | 151.134106424942814 | *Grevillea robusta* | Amenity | 40 | Medium | 4 | $500.00 |
| 212 | -33.78737611 | 151.134106900000006 | *Grevillea robusta* | Amenity | 40 | Medium | 4 | $500.00 |
| 214 | -33.78545192 | 151.134110271978500 | *Eucalyptus piperita* | Native | 45 | Medium | 4 | $500.00 |
| 215 | -33.78520645 | 151.133505600000007 | *Allocasuarina littoralis* | Native | 45 | Medium | 4 | $500.00 |
| 216 | -33.78481346 | 151.133929099999989 | *Eucalyptus piperita* | Native | 45 | Medium | 4 | $500.00 |
| 217 | -33.78486132 | 151.133965399999994 | *Eucalyptus piperita* | Native | 45 | Medium | 4 | $500.00 |
| 218 | -33.783915 | 151.133807899999994 | *Allocasuarina littoralis* | Native | 45 | Medium | 4 | $500.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 219 | -33.78349883 | 151.133330999999998 | *Araucaria heterophylla* | Amenity | 45 | Medium | 4 | $500.00 |
| 220 | -33.78307143 | 151.133543199999991 | *Araucaria heterophylla* | Amenity | 45 | Medium | 4 | $500.00 |
| 221 | -33.78289003 | 151.133436200000006 | *Pinus radiata* | Amenity | 45 | Medium | 4 | $500.00 |
| 222 | -33.78287766 | 151.133410400000002 | *Pinus radiata* | Amenity | 45 | Medium | 4 | $500.00 |
| 223 | -33.78493203 | 151.133638600000012 | *Eucalyptus paniculata* | Native | 50 | Large | 8 | $1,000.00 |
| 224 | -33.78384845 | 151.133483799999993 | *Allocasuarina littoralis* | Native | 50 | Large | 8 | $1,000.00 |
| 226 | -33.78343925 | 151.133137699999992 | *Araucaria heterophylla* | Amenity | 55 | Large | 8 | $1,000.00 |
| 228 | -33.78268656 | 151.133437700000002 | *Eucalyptus haemastoma* | Native | 57 | Large | 8 | $1,000.00 |
| 230 | -33.78309065 | 151.133488499999999 | *Acer negundo* | Amenity | 60 | Large | 8 | $1,000.00 |
| 231 | -33.78267168 | 151.133367600000014 | *Acer negundo* | Amenity | 62 | Large | 8 | $1,000.00 |
| 233 | -33.78272257 | 151.133394399999986 | *Eucalyptus haemastoma* | Native | 63 | Large | 8 | $1,000.00 |
| 235 | -33.78385923 | 151.133835500000004 | *Eucalyptus piperita* | Native | 70 | Large | 8 | $1,000.00 |
| 236 | -33.78308019 | 151.133111500000012 | *Eucalyptus punctata* | Native | 70 | Large | 8 | $1,000.00 |
| 237 | -33.78263304 | 151.133324100000010 | *Eucalyptus acmenoides* | Native | 71 | Large | 8 | $1,000.00 |
| 238 | -33.78342385 | 151.132955500000008 | *Allocasuarina littoralis* | Native | 25 | Medium | 4 | $500.00 |
| 239 | -33.78397994 | 151.133219900000000 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 240 | -33.78331496 | 151.132899299999991 | *Allocasuarina littoralis* | Native | 29 | Medium | 4 | $500.00 |
| 241 | -33.78340532 | 151.132947699999988 | *Allocasuarina littoralis* | Native | 28 | Medium | 4 | $500.00 |
| 242 | -33.78344607 | 151.132962600000013 | *Allocasuarina littoralis* | Native | 21 | Medium | 4 | $500.00 |
| 243 | -33.78333755 | 151.132915400000002 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 244 | -33.78354006 | 151.133010200000001 | *Allocasuarina littoralis* | Native | 17 | Small | 2 | $125.00 |
| 245 | -33.78355724 | 151.133022000000011 | *Allocasuarina littoralis* | Native | 24 | Medium | 4 | $500.00 |
| 246 | -33.7832839 | 151.132871499999993 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 247 | -33.78353279 | 151.132998899999990 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 248 | -33.78324437 | 151.132857000000001 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 249 | -33.78350859 | 151.132990500000005 | *Allocasuarina littoralis* | Native | 16 | Small | 2 | $125.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 250 | -33.78337588 | 151.132929600000011 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 251 | -33.78347931 | 151.132973899999996 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 252 | -33.78345615 | 151.132969900000006 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 253 | -33.78338838 | 151.132939700000009 | *Allocasuarina littoralis* | Native | 34 | Medium | 4 | $500.00 |
| 254 | -33.78315482 | 151.132798900000012 | *Allocasuarina littoralis* | Native | 32 | Medium | 4 | $500.00 |
| 255 | -33.78303703 | 151.132739200000003 | *Allocasuarina littoralis* | Native | 26 | Medium | 4 | $500.00 |
| 256 | -33.78310319 | 151.132766599999997 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 257 | -33.7833307 | 151.132900500000005 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 258 | -33.78356698 | 151.133012900000011 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 259 | -33.7832601 | 151.132871099999988 | *Allocasuarina littoralis* | Native | 26 | Medium | 4 | $500.00 |
| 260 | -33.78299004 | 151.132731500000006 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 261 | -33.78336498 | 151.132932399999987 | *Allocasuarina littoralis* | Native | 28 | Medium | 4 | $500.00 |
| 262 | -33.78319516 | 151.132816600000012 | *Allocasuarina littoralis* | Native | 26 | Medium | 4 | $500.00 |
| 263 | -33.78349044 | 151.132985200000007 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 264 | -33.78316349 | 151.132822699999991 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 265 | -33.78319415 | 151.132838800000002 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 266 | -33.78313364 | 151.132807299999996 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 267 | -33.78308201 | 151.132777500000003 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 268 | -33.78305861 | 151.132767000000001 | *Allocasuarina littoralis* | Native | 28 | Medium | 4 | $500.00 |
| 269 | -33.78301424 | 151.132742000000007 | *Allocasuarina littoralis* | Native | 34 | Medium | 4 | $500.00 |
| 270 | -33.78335369 | 151.132923500000004 | *Allocasuarina littoralis* | Native | 38 | Medium | 4 | $500.00 |
| 271 | -33.78322703 | 151.132853299999994 | *Allocasuarina littoralis* | Native | 28 | Medium | 4 | $500.00 |
| 272 | -33.78310621 | 151.132791200000014 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 273 | -33.78304248 | 151.132757300000009 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 274 | -33.78396392 | 151.133200100000010 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 275 | -33.78399315 | 151.133195900000004 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 276 | -33.78400984 | 151.133211200000005 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 277 | -33.78403489 | 151.133201500000013 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 278 | -33.78407525 | 151.133205599999997 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 279 | -33.78410308 | 151.133212600000007 | *Allocasuarina littoralis* | Native | 32 | Medium | 4 | $500.00 |
| 280 | -33.78413926 | 151.133218199999988 | *Allocasuarina littoralis* | Native | 30 | Medium | 4 | $500.00 |
| 281 | -33.78416848 | 151.133216800000014 | *Allocasuarina littoralis* | Native | 9 | Small | 2 | $125.00 |
| 282 | -33.7842144 | 151.133218199999988 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 283 | -33.78425893 | 151.133222300000000 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 284 | -33.78429929 | 151.133222300000000 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 285 | -33.78434799 | 151.133220899999998 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 286 | -33.78438556 | 151.133219599999990 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 287 | -33.784412 | 151.133230700000013 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 288 | -33.78445236 | 151.133230700000013 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 289 | -33.78448297 | 151.133230700000013 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 290 | -33.78451776 | 151.133232099999987 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 291 | -33.78454281 | 151.133236299999993 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 292 | -33.78456925 | 151.133250199999992 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 293 | -33.78461378 | 151.133243200000010 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 294 | -33.78463604 | 151.133252999999996 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 295 | -33.78468475 | 151.133257100000009 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 296 | -33.78471954 | 151.133243200000010 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 297 | -33.78469031 | 151.133236299999993 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 298 | -33.78466805 | 151.133237600000001 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 299 | -33.78464578 | 151.133237600000001 | *Allocasuarina littoralis* | Native | 16 | Small | 2 | $125.00 |
| 300 | -33.78462074 | 151.133223700000002 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 301 | -33.78472093 | 151.133220899999998 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 302 | -33.78474737 | 151.133229300000011 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 303 | -33.78473484 | 151.133206999999999 | *Allocasuarina littoralis* | Native | 10 | Small | 2 | $125.00 |
| 304 | -33.78469588 | 151.133218199999988 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 305 | -33.7845943 | 151.133239000000003 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 306 | -33.78457203 | 151.133236299999993 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 307 | -33.78450941 | 151.133254300000004 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 308 | -33.78447323 | 151.133252999999996 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 309 | -33.78394305 | 151.133214000000009 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 310 | -33.78392426 | 151.133224399999989 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 311 | -33.78390548 | 151.133204199999994 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 312 | -33.78388252 | 151.133200799999997 | *Allocasuarina littoralis* | Native | 16 | Small | 2 | $125.00 |
| 313 | -33.78400915 | 151.133225100000004 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 314 | -33.78403976 | 151.133227900000009 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 315 | -33.78407038 | 151.133239000000003 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 316 | -33.78405368 | 151.133234899999991 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 317 | -33.78408568 | 151.133234899999991 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 318 | -33.78410795 | 151.133234899999991 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 319 | -33.7841316 | 151.133233499999989 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 320 | -33.78414413 | 151.133240400000005 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 321 | -33.78416639 | 151.133234899999991 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 322 | -33.78419144 | 151.133240400000005 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 323 | -33.78422762 | 151.133237600000001 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 324 | -33.78425685 | 151.133241800000008 | *Allocasuarina littoralis* | Native | 19 | Small | 2 | $125.00 |
| 325 | -33.78393192 | 151.133188899999993 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 326 | -33.78394027 | 151.133191699999998 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 327 | -33.78401124 | 151.133193799999987 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 328 | -33.78403628 | 151.133191699999998 | *Allocasuarina littoralis* | Native | 16 | Small | 2 | $125.00 |
| 329 | -33.78405646 | 151.133213299999994 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 330 | -33.78427424 | 151.133225799999991 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 331 | -33.78429094 | 151.133236299999993 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 332 | -33.78431738 | 151.133239699999990 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 333 | -33.78432294 | 151.133225100000004 | *Allocasuarina littoralis* | Native | 24 | Medium | 4 | $500.00 |
| 334 | -33.78433199 | 151.133241800000008 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 335 | -33.78434451 | 151.133237600000001 | *Allocasuarina littoralis* | Native | 16 | Small | 2 | $125.00 |
| 336 | -33.78437513 | 151.133227900000009 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 337 | -33.78437443 | 151.133239699999990 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 338 | -33.78395557 | 151.133182699999992 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 339 | -33.78399175 | 151.133174999999994 | *Allocasuarina littoralis* | Native | 26 | Medium | 4 | $500.00 |
| 340 | -33.78402515 | 151.133177799999999 | *Allocasuarina littoralis* | Native | 15 | Small | 2 | $125.00 |
| 341 | -33.78398619 | 151.133238299999988 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 342 | -33.78395766 | 151.133221600000013 | *Allocasuarina littoralis* | Native | 16 | Small | 2 | $125.00 |
| 343 | -33.7840328 | 151.133213299999994 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 344 | -33.78406203 | 151.133179200000001 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 345 | -33.78402724 | 151.133236299999993 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 346 | -33.7839681 | 151.133226500000006 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 347 | -33.78407316 | 151.133227199999993 | *Allocasuarina littoralis* | Native | 24 | Medium | 4 | $500.00 |
| 348 | -33.78448923 | 151.133238299999988 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 349 | -33.7844621 | 151.133247399999988 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 350 | -33.78444053 | 151.133245299999999 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 351 | -33.78441409 | 151.133246000000014 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 352 | -33.78440435 | 151.133244600000012 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 353 | -33.78443079 | 151.133243200000010 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| 354 | -33.78435773 | 151.133241800000008 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 355 | -33.78430555 | 151.133237600000001 | *Allocasuarina littoralis* | Native | 14 | Small | 2 | $125.00 |
| 356 | -33.78474598 | 151.133252300000009 | *Allocasuarina littoralis* | Native | 18 | Small | 2 | $125.00 |
| 357 | -33.78476963 | 151.133245299999999 | *Allocasuarina littoralis* | Native | 16 | Small | 2 | $125.00 |
| 358 | -33.78481543 | 151.133244496593278 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 359 | -33.78472928 | 151.133259199999998 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 360 | -33.78466109 | 151.133254999999991 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 361 | -33.78454003 | 151.133248100000003 | *Allocasuarina littoralis* | Native | 12 | Small | 2 | $125.00 |
| 362 | -33.7844788 | 151.133241099999992 | *Allocasuarina littoralis* | Native | 16 | Small | 2 | $125.00 |
| 363 | -33.78425337 | 151.133239699999990 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 364 | -33.78424502 | 151.133231400000000 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 365 | -33.78426867 | 151.133234200000004 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 366 | -33.78421858 | 151.133232800000002 | *Allocasuarina littoralis* | Native | 24 | Medium | 4 | $500.00 |
| 367 | -33.7841991 | 151.133227199999993 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 368 | -33.78418518 | 151.133229999999998 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 369 | -33.78415596 | 151.133225799999991 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 370 | -33.78411839 | 151.133224399999989 | *Allocasuarina littoralis* | Native | 22 | Medium | 4 | $500.00 |
| 371 | -33.78409473 | 151.133221600000013 | *Allocasuarina littoralis* | Native | 24 | Medium | 4 | $500.00 |
| 372 | -33.78475711 | 151.133243899999997 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 373 | -33.78447045 | 151.133216099999999 | *Allocasuarina littoralis* | Native | 24 | Medium | 4 | $500.00 |
| 374 | -33.78438629 | 151.133244688945183 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 375 | -33.78414343 | 151.133236900000014 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 376 | -33.7841824 | 151.133238299999988 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 377 | -33.78411421 | 151.133234200000004 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| 378 | -33.78399175 | 151.133227199999993 | *Allocasuarina littoralis* | Native | 20 | Medium | 4 | $500.00 |
| | | | | | | | | |

| ID | Latitude | Longitude | Species | Native or Amenity Tree | DBH (cm) | Tree Size Category | Trees to be replanted | Amount into conservation fund |
|---|---|---|---|---|---|---|---|---|
| | | | | | | **total trees** | 1140 trees | $124,250.00 |
| | | | | | | **83 hollows** | 50 hollows | $25,000 |
| | | | | | | **TOTAL** | | $149,250 |

# Appendix C: Photographic record

| | |
|---|---|
|  | Character of disturbed nature of site. |
|  | Character of exotic vegetation on site. |
|  | Character of native and exotic trees on site |

# Appendix D: Species recorded

## Recorded flora

KEY

# - WONS

* - weed

| FAMILY | Scientific Name | Common Name |
|---|---|---|
| **FILICOPSIDA** | | |
| Davalliaceae | *Nephrolepis cordifolia* * | Fishbone Fern |
| **PINOPSIDA** | | |
| Araucariaceae | *Araucaria heterophylla* | Norfolk Island Pine |
| Pinaceae | *Pinus radiata* * | Radiata Pine |
| **Magnoliopsida - Dicotyledons** | | |
| Apocynaceae | *Nerium oleander* | Oleander |
| | *Araujia sericifera** | Moth vine |
| Araliaceae | *Hedera helix* * | English Ivy |
| | *Heptapleurum actinophyllum* | Umbrella Tree |
| Asteraceae | *Ageratina adenophora* * | Crofton Weed |
| | *Bidens pilosa* * | Farmers Friend |
| | *Cirsium vulgare* * | Scotch Thistle |
| | *Conyza bonariensis* * | Fleabane |
| | *Hypochaeris radicata* * | Catsear |
| Bignoniaceae | *Jacaranda mimosifolia* * | Jacaranda |
| Casuarinaceae | *Allocasuarina littoralis* | Black She-Oak |
| Cunoniaceae | *Callicoma serratifolia* | Black Wattle |
| Convolvulaceae | *Dichondra repens* | Kidney Weed |
| | *Ipomoea indica* * | Morning Glory |
| Euphorbiaceae | *Euphorbia sp.* * | Spurge |
| Fabaceae: Caesalpiniaceae | *Senna pendula* var. *glabrata* * | Cassia |
| Fabaceae: Faboideae | *Trifolium repens* * | White Clover |
| Fabaceae: Mimosoideae | *Acacia decurrens* | Sydney Green Wattle |

| | | |
|---|---|---|
| | *Acacia linearifolia* | Narrow-leaved Wattle |
| | *Acacia longifolia var. sophorae* | Coastal Wattle |
| | *Acacia parramettensis* | Parramatta Green Wattle |
| Geraniaceae | *Geranium sp.* | |
| Malvaceae | *Abutilon grandifolium** | Hairy Indian Mallow |
| | *Brachychiton acerifolius* | Illawarra Flame Tree |
| | *Sida rhombifolia* * | Paddy's Lucerne |
| Myrtaceae | *Angophora costata* | Smooth-barked Apple |
| | *Angophora floribunda* | Rough-barked Apple |
| | *Angophora hispida* | Dwarf Apple |
| | *Callistemon citrinus* | Crimson Bottlebrush |
| | *Callistemon linearis* | |
| | *Eucalyptus acmenoides* | White Mahogany |
| | *Eucalyptus fibrosa* | Broad-leaved Ironbark |
| | *Eucalyptus haemastoma* | Broad-leaved Scribbly Gum |
| | *Eucalyptus paniculata* subsp. *paniculata* | Grey Ironbark |
| | *Eucalyptus pilularis* | Blackbutt |
| | *Eucalyptus piperita* | Sydney Peppermint |
| | *Eucalyptus punctata* | Grey Gum |
| | *Eucalyptus resinifera* | Red Mahogany |
| | *Eucalyptus robusta* | Swamp Mahogany |
| | *Melaleuca decora* | White Feather Honeymyrtle |
| | *Syncarpia glomulifera* | Turpentine |
| Oleaceae | *Ligustrum lucidum* * | Large-leaved Privet |
| | *Ligustrum sinense* * | Small-leaved Privet |
| Pittosporaceae | *Pittosporum undulatum* | Sweet Pittosporum |
| | *Acetosa sagittata* * | Turkey Rhubarb |
| Polygonaceae | *Persicaria decipiens* | Slender Knotweed |
| Proteaceae | *Banksia integrifolia* | Coastal Banksia |
| | *Grevillea robusta* | Silky Oak |
| Rosaceae | *# Rubus fruticosus* agg. spp. * | Blackberry |
| Salicaceae | *Populus alba* * | White Poplar |
| | *Salix cinerea* * | Weeping Willow |

| | | |
|---|---|---|
| Sapindaceae | *Acer negundo* | Boxelder Maple |
| Ulmaceae | *Ulmus parvifolia* * | Chinese Elm |
| | *Parietaria judaica* * | Asthma Weed |
| Verbenaceae | *# Lantana camara* * | Lantana |
| | *Verbena bonariensis* * | Purpletop |
| **Magnoliopsida - Monocotyledons** | | |
| Agapanthaceae | *Agapanthus praecox* subsp. *orientalis* * | Agapanthus |
| Aracaceae | *Archontophoenix alexandrae* | Alexandra Palm |
| | *Phoenix canariensis* * | Canary Island Date Palm |
| Asparagaceae | *# Asparagus aethiopicus* * | Asparagus Fern |
| | *Yucca sp.* * | |
| Lomandraceae | *Lomandra longifolia* | Mat Rush |
| Phormiaceae | *Dianella sp.* | Blue Flax Lily |
| Poaceae | *Andropogon virginicus* | Whisky Grass |
| | *Cenchrus clandestinus* * | Kikuyu Grass |
| | *Chloris gayana* * | Rhodes grass |
| | *Cortaderia selloana* * | Pampas Grass |
| | *Echinochloa crus-galli* * | Cockspur |
| | *Ehrharta erecta* * | Panic Veldt Grass |
| | *Oplismenus imbecillis* | Basket Grass |
| | *Paspalum dilatatum* * | Paspalum |
| | *Sporobolus africanus* * | Parramatta Grass |
| Strelitziaceae | *Strelitzia juncea* | Narrow-leaved Bird of Paradise |
| Zingiberaceae | *Alpinia sp.* | Ginger Lily |

## Recorded fauna

| Common name | Family and Scientific name |
|---|---|
| **BIRDS** | |
| | Megapodiidae |
| Australian Brush Turkey | *Alectura lathami* |
| | Columbidae |
| * Rock Dove | *Columba livia* |
| | Threskiornidae |
| Australian White Ibis | *Threskiornis molucca* |
| | Cacatuidae |
| Long-billed Corella | *Cacatua tenuirostris* |
| Sulphur-crested Cockatoo | *Cacatua galerita* |
| | Psittacidae |
| Rainbow Lorikeet | *Trichoglossus haematodus* |
| | Halcyonidae |
| Laughing Kookaburra | *Dacelo novaeguineae* |
| | Maluridae |
| Superb Fairy-wren | *Malurus cyaneus* |
| | Acanthizidae |
| White-browed Scrubwren | *Sericornis frontalis* |
| | Pardalotidae |
| Spotted Pardalote | *Pardalotus punctatus* |
| | Meliphagidae |
| Noisy Miner | *Manorina melanocephala* |
| | Psophodidae |
| Eastern Whipbird | *Psophodes olivaceus* |
| | Artamidae |
| Pied Butcherbird | *Cracticus nigrogularis* |
| Australian Magpie | *Cracticus tibicen* |
| Pied Currawong | *Strepera graculina* |

| | |
|---|---|
| | Corvidae |
| Australian Raven | *Corvus coronoides* |
| | Monarchidae |
| Magpie-lark | *Grallina cyanoleuca* |
| | |
| **REPTILES** | |
| | Scincidae |
| Eastern Water Skink | *Eulamprus quoyii* |
| Dark-flecked Garden Sun-skink | *Lampropholis delicata* |
| Eastern Blue-tongued Lizard | *Tiliqua scincoides* |
| | Agamidae |
| Eastern Water Dragon | *Intellagama lesueurii* |
| | Elapidae |
| Red-bellied Black Snake | *Pseudechis porphyriacus* |

# Appendix E: Ecological Assessment

Though considered, no threatened species were recorded within or near to the area investigated.

## 1. Commonwealth – EPBC Act

As trees, including ones that are hollow-bearing, are present, a number of which would be cleared, it was considered appropriate to adopt a precautionary approach to the presence of the following species as they utilise these features:

- Gang-gang Cockatoo – endangered species
- Grey-headed Flying-fox – vulnerable species.

The Significant Impact Guidelines prepared under the EPBC Act are used to determine whether the action (i.e. the proposed work) has, will have, or is likely to have a significant impact on these MNES and, as such, whether the conducting of the proposal would be a controlled action requiring referral of the matter to the Federal Minister for the Environment.



### 1.1 Gang-gang Cockatoo – Endangered

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

A 'population of a species' is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- a geographically distinct regional population, or collection of local populations, or
- a population, or collection of local populations, that occurs within a particular bioregion.

The removal of vegetation from the proposed bus depot would not cause a long-term decrease in the size of this species population. The suitable habitat present in the surrounding bushland (including the proximate conservation areas), would provide the necessary resources for this species.

- *reduce the area of occupancy of the species*

With reference to the conservation advice provided for this species, the area of occupancy is estimated to be 30,000 $km^2$.The works proposed would not reduce the area of occupancy of this species. Post-work the Gang-gang Cockatoo would still be able to access the vegetation adjacent to the works and those resources present, in proximity and beyond this.

- *fragment an existing population into two or more populations*

The works proposed would not fragment an existing population into two or more populations. The Gang-gang Cockatoo is known to traverse open spaces, bushland environments and urban/rural infrastructure.

- *adversely affect habitat critical to the survival of a species*

The proposal will not affect habitat critical to the survival of this species. As per the conservation advice "Habitat critical to the survival of the Gang-gang Cockatoo includes all foraging habitat during both the breeding and non-breeding season. For the purpose of this document, this does not include exotic feeding grounds such as ornamental trees, shrubs, and hedges within urban and suburban areas. Gang-gang Cockatoos rely on stands of suitable hollow-bearing trees (NSW OEH 2017; Davey & Mulvaney 2020), which are a key component of their breeding habitat. Habitat critical to the survival (of the species) includes hollow-bearing trees with known or potential Gang-gang Cockatoo hollow chambers that are generally around 20 cm in floor diameter, around 50.5 cm deep (range 22–90 cm) and occur between around 7.5 m (range 5–9.4 m) above the ground (Davey & Mulvaney)."

- *disrupt the breeding cycle of a population*

Hollow-bearing trees suitable for this species breeding needs are being retained within both the proposed new bus depot and surrounding bushland (including the proximate conservation reserve and other protected lands). As such, the proposal will not disrupt the breeding cycle of the species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The proposal is not considered to modify, destroy, remove or isolate a significant amount of Gang-gang Cockatoo habitat such that the long-term survival of this species would be jeopardised. Given the extent of similar resources beyond the boundaries of the proposal area, it is not considered that the proposed work would have an impact on the Gang-gang Cockatoo such that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Given the urban nature of the proposed bus depot beyond what is actually, or potentially extant, the proposed work will not result in the establishment of any invasive species that are harmful to the presence of the Gang-gang Cockatoo or its habitat.

- *introduce disease that may cause the species to decline, or*

Dieback caused by the root-rot fungus (*Phytophthora cinnamomi*) is listed as a KTP on the EPBC Act. The proposed activity has the potential to introduce this pathogen that lives in soils and plant roots and is the key organism associated with the dieback of native plant species in Australia. Work must therefore avoid the potential spread of this organism as far as possible. Contractors will need to adhere to the following hygiene protocols:

  - Before entering and leaving the work site, workers are to remove excess soil and mud and then spray boots, tools, gloves and small equipment with recommended disinfectant supplied by the contractor (70% Methylated spirits / 30% Water) until runoff is clear.
  - Avoid unnecessary soil disturbance.

- *interfere with the recovery of the species.*

There is no adopted or made Recovery Plan for this species under the EPBC Act.

**Conclusion**

The construction of a bus depot is not considered to have a significant impact on the Gang-gang Cockatoo or its habitat. As such, it is not considered necessary that the matter be referred to the Federal Minister for the Environment for further consideration or approval.

**1.1 Grey-headed Flying-fox – Vulnerable**

*An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:*

- *lead to a long-term decrease in the size of an important population of a species,*

An 'important population' is a population that is necessary for a species' long-term survival and recovery (Department of the Environment 2013). This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

Reference to the National Flying-fox viewer (DCCEEW 2023d) does not indicate the presence of a 'nationally important' Flying-fox camp within or close to the proposed bus depot. The closest 'nationally important' camp is located at Gordon, about 4.2 km to the north.

No evidence to suggest the area inspected is used as a permanent or transient camp by the Grey-headed Flying-fox was obtained.

The removal of some native and exotic vegetation would not limit the extent of foraging resources available to the Grey-headed Flying-fox. Within the proximate Lane Cove National Park, this covering area of 670 hectares, extensive areas of flowering native plans are present.an important population of this species.

The redevelopment of the proposed bus site will not lead to the long-term decrease in the size of an important population of this species.

- *reduce the area of occupancy of an important population,*

No important Grey-headed Flying-fox populations occur within, or near to, the project area. No evidence of the site being used as a roosting resource by this species was obtained during the field survey. The proposal would not reduce the area of occupancy available to an important population of this species.

- *fragment an existing important population into two or more populations,*

No important Grey-headed Flying-fox populations occur within, or near to, the study area. Furthermore, the Grey-headed Flying-foxes ability to fly and negotiate open spaces and urban infrastructure would ensure that the proposal does not fragment an existing population into two or more populations.

- *adversely affect habitat critical to the survival of a species,*

No evidence to suggest the area inspected is used as a permanent or transient camp by the Grey-headed Flying-fox was obtained. No habitat critical to the survival of this species was recorded within the study area.

- *disrupt the breeding cycle of an important population,*

No important Grey-headed Flying-fox populations occur within, or near to, the study area. As such, the breeding cycle of an important population would not be disrupted.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline,*

The proposal will require the removal of about 2.2 ha of native and exotic vegetation, this including 332 trees. The removal of the vegetation to achieve the objectives of the proposal will not modify, destroy, remove, isolate or decrease the availability or quality of habitat to an extent that the potentially occurring Grey-headed Flying-fox would decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat,*

Beyond the current situation, the proposal is not expected to result in the establishment of any further invasive species that may be harmful to the presence of the Grey-headed Flying-fox or its habitat.

- *introduce disease that may cause the species to decline,*

The proposal is unlikely to introduce diseases that may cause the Grey-headed Flying-fox to decline.

- *or interfere substantially with the recovery of the species*

A Draft National Recovery Plan for the Grey-headed Flying-fox has been prepared (DEE 2017). The overall objectives of this recovery plan are:

- to improve the Grey-headed Flying-foxes national population trend by reducing the impact of threatening processes on Grey-headed Flying-foxes through habitat identification, protection, restoration and monitoring
- to assist communities and Grey-headed Flying-foxes to coexist through better education, stakeholder engagement, research, policy and continued support to fruit growers.

The scope of proposed work would not affect any known roosting camps. The scope of work proposed would not be inconsistent with the objectives specified in this species' recovery plan, specifically the following two objectives of the plan:

- **Objective 1**. Identify, protect and enhance native foraging habitat critical to the survival of the Grey-headed Flying-fox.

No foraging habitat critical to the survival of the Grey-headed Flying-fox is present within the area proposed to be disturbed.

- **Objective 2**. Identify, protect and enhance roosting habitat of Grey-headed Flying-fox camps.

  No Grey-headed Flying-fox roosting sites are present within, or in close proximity to, the area proposed to be disturbed.

**Conclusion**

The proposal is not considered to have a significant impact on the potentially occurring Grey-headed Flying-fox, its population or its habitat. As such, it is not considered necessary that the matter be referred to the Federal Minister for the Environment and Water for further consideration or approval.

## 2. State – BC Act

As flowering trees, insect attracting plant and hollow-bearing trees are present, a number of which would be cleared, and as they have been previously recorded in the surrounding region and targeted surveys were not conducted, it was considered appropriate to adopt a precautionary approach to the presence of the:

- Powerful Owl (*Ninox strenua*) – listed as Vulnerable under the BC Act
- Gang-gang Cockatoo (*Callocephalon fimbriatum*) – listed as Vulnerable under the BC Act
- Little Lorikeet (*Glossopsitta pusilla*) – listed as Vulnerable under the BC Act
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – listed as Vulnerable under the BC Act
- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) – listed as Vulnerable under the BC Act
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) – listed as Vulnerable under the BC Act
- Southern Myotis (*Myotis macropus*) – listed as Vulnerable under the BC Act
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*) – listed as Vulnerable under the BC Act
- Greater Broad-nosed Bat (*Scoteanax rueppellii*) – listed as Vulnerable under the BC Act.

The potential impacts associated with the proposed new bus depot on the potentially occurring birds, Grey-headed Flying-fox and microbats, and their local populations, is considered with reference to the assessment criteria provided under Section 7.3 of the BC Act (these known as the Assessment of Significance). These criteria are designed to determine whether there is likely to be a significant effect on these threatened species, or their habitats, and consequently whether a SIS is required.

In line with the guidelines provided by DPE (then DECC) on the Assessment of Significance, due to the similarity of their habitat requirements (i.e., all are hollow-dependent species that could occupy the 31 trees present due to the size of the entrance cavities and all forage on either plant matter or insects attracted to the plants present), the threatened hollow-dependent species have been grouped together as opposed to individual assessments being conducted on each animal.

### 2.1 Powerful Owl – Assessment of Significance

*(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

The proposal will require the removal of about 2.2 ha of native and exotic vegetation, this including 332 trees. The removal of this vegetation will not adversely affect the life cycle of a viable local population of Powerful Owls. The local population is considered to be 'confined' to Lane Cove National Park, the scope of works proposed not directly or indirectly affecting this conservation reserve.

*(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:*

*i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*

*ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

Not applicable to threatened species.

*(c) in relation to the habitat of a threatened species or ecological community:*

*i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity,*

The proposal will require the removal of about 2.2 ha of native and exotic vegetation, this including 332 trees.

*ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity,*

The proposal, will not fragment or further isolate areas of Powerful Owl habitat.

The Powerful Owl is known to negotiate open spaces such as railway corridors, transmission line easements, roadways, urban developments and so forth.

If currently accessing the trees associated with the proposed bus depot, the Powerful Owl would have to negotiate urban features such as the M2 Motorway. The works will not alter the current urban landscape.

*iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,*

The proposal is not considered to remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of the Powerful Owl would be jeopardised. Whilst 332 native and exotic trees would require removal, the habitats within the study area are not considered important to the foraging or roosting needs of this species. The Powerful Owl would not be breeding in the subject site.

Given that no major components of this species' habitat is to be further isolated or fragmented, it is not considered that the proposal would have an impact on the Powerful Owl such that the long-term survival of this nocturnal raptor in the locality would be adversely affected.

*(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),*

No declared areas of outstanding biodiversity value would be directly or indirectly affected by the proposal. The proposal area is not listed as a declared area of outstanding biodiversity value under Part 3 of the BC Regulation 2017.

*(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process*

Currently 35 KTP for mainland NSW are listed under Schedule 4 of the BC Act. Of these, the 'clearing of native vegetation' would be applicable to the proposal. While it is acknowledged that the proposal will result in the removal of some native vegetation, this including 332 trees, it is not considered that this clearance would significantly contribute to this KTP such that the life cycle requirements of the Powerful Owl would be compromised.

**Expected impact on the Powerful Owl**

The undertaking of the proposal, this affecting 2.2 ha of native and exotic vegetation (including 332 trees) would not disturb, remove, modify or fragment any habitats critical to the life cycle requirements of the Powerful Owl. Given the extent of suitable habitat present in the surrounding bushland (including the proximate conservation reserve), the removal of some vegetation is considered unlikely to significant affect the previously recorded Powerful Owl, or its habitat. As such, the preparation of a Species Impact Statement that further considers the impact of the proposal on this species is not required.

**2.2 Hollow utilising birds**

*(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

Two hollow utilising birds, the Gang-gang Cockatoo and Little Lorikeet, have been previously recorded within the study region. Each of these uses tree cavities for their breeding requirements. In addition, each forages on plant material such as nectar producing inflorescences.

The proposal will clear an estimated area of 2.2 ha of native and exotic vegetation, this including 332 trees, 31 of which are hollow-bearing.

Consultation of aerial photography that encompasses the project area indicates that, near the works, there is extensive areas of similar vegetation present, a large percentage of this located in a conservation reserve or other protected lands.

At a local scale, vegetation is to be retained beyond the limits of the works, this consistent with the character of the fauna habitats that would be modified.

Given the extent of suitable habitat being retained within both the proposed new bus depot and surrounding bushland (including the proximate conservation reserve and other protected lands) and the nature of the existing site, it is not considered that the proposal would have an adverse effect on the lifecycle of these species such that viable local populations of these animals are likely to be placed at risk of extinction.

*(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:*

*i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*

*ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

Not applicable to threatened species.

*(c) in relation to the habitat of a threatened species or ecological community:*

*i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity,*

The proposal will require the removal of about 2.2 ha of native and exotic vegetation, this including nectar/seed producing plants and 31 hollow-bearing trees; however, similar habitat will be retained in the surrounding area.

*ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity,*

The proposal, will not fragment or further isolate areas of habitat for those hollow utilising birds previously recorded in this locality.

During the field surveys, though considered, neither the Little Lorikeet nor the Gang-gang Cockatoo were observed within the study area and neither was heard calling.

Beyond the existing site, the woodland canopy is relatively continuous, with breaks due to existing infrastructure and land uses (e.g. roads, fire trails and walking tracks). The proposal will not have an adverse cumulative impact when associated with these existing influences. Beyond the works area, canopy connectivity will be maintained, this providing opportunities for the movement of above highlighted bird species.

If present, both the Little Lorikeet and the Gang-gang Cockatoo, are expected to be tolerant of, and adaptable to, the existing road network. The works will not further fragment or isolated habitat for these species when combined with the existing road network and surrounding land use patterns. Post remediation, natural regeneration would occur, and these species will be able to traverse and move (fly) unrestricted across the site.

*iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,*

The proposal is not considered to remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of the Little Lorikeet nor the Gang-gang Cockatoo would be jeopardised. Whilst 31 hollow-bearing trees do require removal, the habitats within the study area extend well beyond the limits of the proposal, including within the adjacent conservation reserve and other protected lands, where similar resources are present. Given that no major components of these species' habitat are to be further isolated or fragmented, it is not considered that the proposal would

have an impact on the previously recorded hollow utilising bird species such that the long-term survival of these species in the locality would be adversely affected.

*(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),*

No declared areas of outstanding biodiversity value would be directly or indirectly affected by the proposal. The proposal area is not listed as a declared area of outstanding biodiversity value under Part 3 of the BC Regulation 2017.

*(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process*

Currently 35 KTP for mainland NSW are listed under Schedule 4 of the BC Act. Of these, the 'clearing of native vegetation' and 'loss of hollow-bearing trees' would be applicable to the proposal. While it is acknowledged that the proposal will result in the removal of some native vegetation, this including pollen/seed producing plants and 31 hollow-bearing trees, it is not considered that this clearance would significantly contribute to this KTP such that the life cycle requirements of the Little Lorikeet nor the Gang-gang Cockatoo would be compromised.

**Expected impact on hollow utilising birds**

The undertaking of the proposal, this affecting 2.2 ha of native and exotic vegetation (including 332 trees 31 of which are hollow-bearing) would not disturb, remove, modify or fragment any habitats critical to the life cycle requirements of the Little Lorikeet nor the Gang-gang Cockatoo. Given the extent of suitable habitat present in the surrounding bushland (including the proximate conservation areas), the removal of some vegetation, this including seed/pollen/nectar producing plants and 31 hollow-bearing trees, is considered unlikely to significant affect the previously recorded Little Lorikeet and the Gang-gang Cockatoo, or their habitat. As such, the preparation of a Species Impact Statement that further considers the impact of the proposal on hollow utilising birds is not required.

**2.3 Grey-headed Flying-fox – Assessment of Significance**

*(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

The proposal will require the removal of about 2.2 ha of native and exotic vegetation, this including 332 trees. The removal of this vegetation will not adversely affect the life cycle of a viable local population of the Grey-headed Flying-fox. The local population is considered to be 'confined' to the Ku-ring-gai Chase Flying-fox colony, the scope of works proposed not directly or indirectly affecting this site.

*(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:*

*i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*

*ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

Not applicable to threatened species.

*(c) in relation to the habitat of a threatened species or ecological community:*

*i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity,*

The proposal will require the removal of about 2.2 ha of native and exotic vegetation, this including 332 trees.

*ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity,*

The proposal, will not fragment or further isolate areas of Grey-headed Flying-fox habitat.

The Grey-headed Flying-fox is known to negotiate open spaces such as railway corridors, transmission line easements, roadways, urban developments and so forth.

If currently accessing the trees associated with the proposed bus depot, the Grey-headed Flying-fox would have to negotiate urban features such as the M2 Motorway. The works will not alter the current urban landscape.

*iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,*

The proposal is not considered to remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of the Grey-headed Flying-fox would be jeopardised. Whilst 332 native and exotic trees would require removal, the habitats within the study area are not considered important to the foraging or roosting needs of this species. The Grey-headed Flying-fox would not be breeding in the subject site.

Given that no major components of this species' habitat are to be further isolated or fragmented, it is not considered that the proposal would have an impact on the Grey-headed Flying-fox such that the long-term survival of this species in the locality would be adversely affected.

*(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),*

No declared areas of outstanding biodiversity value would be directly or indirectly affected by the proposal. The proposal area is not listed as a declared area of outstanding biodiversity value under Part 3 of the BC Regulation 2017.

*(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process*

Currently 35 KTP for mainland NSW are listed under Schedule 4 of the BC Act. Of these, the 'clearing of native vegetation' would be applicable to the proposal. While it is acknowledged that the proposal will result in the removal of some native vegetation, this including 332 trees, it is not considered that this clearance would significantly contribute to this KTP such that the life cycle requirements of the Grey-headed Flying-fox would be compromised.

**Expected impact on the Grey-headed Flying-fox**

The undertaking of the proposal, this affecting 2.2 ha of native and exotic vegetation (including 332 trees) would not disturb, remove, modify or fragment any habitats critical to the life cycle requirements of the Grey-headed Flying-fox. Given the extent of suitable habitat present in the surrounding bushland (including the proximate conservation reserve and regularly utilised flying-fox camp), the removal of some vegetation is considered unlikely to significant affect the previously recorded Grey-headed Flying-fox, or its habitat. As such, the preparation of a Species Impact Statement that further considers the impact of the proposal on this species is not required.

**2.4 Hollow-dependent microbats**

*(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

5 hollow-dependant microbats have been previously recorded within the study region. Each of these using tree cavities for either their breeding and/or sheltering requirements. In addition, each forages on those insects that are attracted to flowering plants that are present within the proposal area, or the exudates/pollen/nectar produced by these species.

The proposal will clear an estimated area of 2.2 ha of native and exotic vegetation, this including 332 trees, 31 of which are hollow-bearing.

Consultation of aerial photography that encompasses the project area indicates that, near the works, there is extensive areas of similar vegetation present, a large percentage of this located in a conservation reserve or other protected lands.

At a local scale, vegetation is to be retained beyond the limits of the works, this consistent with the character of the fauna habitats that would be modified.

Given the extent of suitable habitat being retained within both the proposed new bus depot and surrounding bushland (including the proximate conservation reserve and other protected lands) and the nature of the existing site, it is not considered that the proposal would have an adverse effect on the lifecycle of these species such that viable local populations of these animals are likely to be placed at risk of extinction.

*(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:*

*i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*

*ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

Not applicable to threatened species.

*(c) in relation to the habitat of a threatened species or ecological community:*

*i.the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity,*

The proposal will require the removal of about 2.2 ha of native and exotic vegetation, this including insect attracting and pollen/nectar producing plants and 31 hollow-bearing trees; however, similar habitat will be retained in the surrounding area.

*ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity,*

Given their ability to fly and negotiate urban infrastructure (including roads and buildings [authors field notes]), the proposal, will not fragment or further isolate areas of habitat for those hollow-dependent microbats previously recorded in this locality.

Beyond the existing site, the woodland canopy is relatively continuous, with breaks due to existing infrastructure and land uses (e.g. roads, fire trails and walking tracks). Given their ability to fly, those microbats previously recorded in the surrounding region are expected to easily negotiate these landscape features. The proposal will not have an adverse cumulative impact when associated with these existing influences. Beyond the works area, canopy connectivity will be maintained, this providing opportunities for the movement of above highlighted microbat species.

If present, the microbats are expected to be tolerant of, and adaptable to, the existing road network. The works will not further fragment or isolated habitat for these species when combined with the existing road network and surrounding land use patterns. Post remediation, natural regeneration would occur, and these species will be able to traverse and move (fly) unrestricted across the site.

*iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,*

The proposal is not considered to remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of those hollow-dependent species previously recorded in the study region would be jeopardised. Whilst 31 hollow-bearing trees do require removal, the habitats within the study area extend well beyond the limits of the proposal, including within the adjacent conservation reserve and other protected lands, where similar resources are present. Given that no major components of these species' habitat are to be further isolated or fragmented, it is not considered that the proposal would have an impact on the previously recorded hollow-dependant species such that the long-term survival of these species in the locality would be adversely affected.

*(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),*

No declared areas of outstanding biodiversity value would be directly or indirectly affected by the proposal. The proposal area is not listed as a declared area of outstanding biodiversity value under Part 3 of the BC Regulation 2017.

*(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process*

Currently 35 KTP for mainland NSW are listed under Schedule 4 of the BC Act. Of these, the 'clearing of native vegetation' and 'loss of hollow-bearing trees' would be applicable to the proposal. While it is acknowledged that the proposal will result in the removal of some native vegetation, this including insect attracting plants and 31 hollow-bearing trees, it is not considered that this clearance would significantly contribute to this KTP such that the life cycle requirements of the previously recorded hollow-dependant species would be compromised.

**Expected impact on hollow-dependent microbats**

The undertaking of the proposal, this affecting 2.2 ha of native and exotic vegetation (including 332 trees 31 of which are hollow-bearing) would not disturb, remove, modify or fragment any habitats critical to the life cycle requirements of any of hollow-dependent microbats previously recorded in the surrounding region. Given the extent of suitable habitat present in the surrounding bushland (including the proximate conservation areas), the removal of some vegetation, this including insect attracting and pollen/nectar producing plants and 31 hollow-bearing trees, is considered unlikely to significant affect

the previously recorded hollow-dependant microbats, or their habitat. As such, the preparation of a Species Impact Statement that further considers the impact of the proposal on hollow-dependent microbats is not required.

NSW GOVERNMENT