Transport for NSW

Brookvale Bus Depot Conversion

Minor works review of environmental factors

May 2024

NSW GOVERNMENT

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Acknowledgement of Country

Transport for NSW acknowledges the traditional custodians of the land on which the Brookvale Bus Depot Conversion is proposed.

We pay our respects to their Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.

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1. Introduction

The purpose of the minor works review of environmental factors (minor works REF) is to describe the proposal, to document the likely impacts of the proposal on the environment, to detail mitigation measures to be implemented and to determine whether or not the proposal can proceed. For the purposes of this work Transport for NSW (Transport) is the proponent and determining authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The description of the proposed work and assessment of associated environmental impacts has been undertaken in the context of section 171 of the Environmental Planning and Assessment Regulation 2021, Guidelines for Division 5.1 Assessments (DPE, 2022), the *Biodiversity Conservation Act 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act) and the *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* (EPBC Act).

In doing so the minor worksREF helps to fulfil the requirements of section 5.5 of the EP&A Act including that Transport examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity.

The findings of the minor works REF would be considered when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act.
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or a Biodiversity Development Assessment Report
- The potential for the proposal to significantly impact a matter of national environmental significance, including nationally listed threatened biodiversity matters, or the environment of Commonwealth land. Where a significant impact is considered likely on nationally listed biodiversity matters, either the proposal must be reconsidered or a project REF must be prepared.

2. The proposal

2.1 Description

2.1.1 Proposal location

Table 2-1: Proposal location details

Location details	
Title	Brookvale Bus Depot Conversion
Local government area	Northern Beaches Council
Transport for NSW region	Greater Sydney

2.1.2 Proposal description

Transport is proposing to convert the existing bus depot at 630-636 Pittwater Road Brookvale to zero emissions technology (Figure 2-1). The Brookvale Bus Depot Conversion will support the transition of around 229 existing diesel buses to an entire new fleet of battery electric buses. This is one of the first depot conversions being delivered as part of the Zero Emission Buses (ZEB) Program, a NSW Government initiative to transition the State's 8000 plus diesel and gas buses, to zero emissions technology by 2047.

Key features of the proposal include:

- 13 fast charging bus bays
- a new gantry and pantograph (fast charging) system installed across the north-end of the bus depot
- repurposing an existing bus parking row to install new technology including:
  - a battery energy storage system
  - a back-up generator
  - electric vehicle charging stations
- upgrading power supply and electrical infrastructure
- provision for a new solar photovoltaic (PV) system on the existing depot offices and/or maintenance workshop.

Bus operations will be maintained during construction with no expected disruption to existing bus services. Construction work will be completed during the day and planned outside of peak operation times such as mornings and afternoons, to maintain bus operations.

Subject to receiving planning approval, construction is expected to start from mid-2024 and take up to 12 months to complete. The new fleet of battery electric buses will be rolled out progressively from 2025 to around 2028.

The majority of the work required for the proposal would be undertaken during standard construction hours, which are as follows:

- 7.00 am to 6.00 pm Monday to Friday
- 8.00 am to 1.00 pm Saturdays.
- no work on Sundays or public holidays.

However, some activities are anticipated to be carried out outside these hours, such as:

- installation of the conrete plinths

- lifting of large infrastructure including the gantry structure into place
- activities that have the potential to disrupt local traffic including oversized deliveries and any work that may require a Road Occupancy Licences (ROLs).

The type of plant and equipment used during construction includes:

- concrete saw
- light vehicles
- vacuum trucks
- powered handtools
- excavator (up to 20 tonnes)
- rock hammer attachment
- vibratory roller
- wacker packer
- piling rig (bored)
- elevated work platforms
- welding equipment
- concrete truck
- vibrator – concrete
- truck and dog
- mobile crane
- lighting towers
- generators
- scaffolding.

The anticipated number of personnel on site is likely to comprise of up to 20 people.

No vegetation removal or trimming is required to facilitate the proposal. Due to the operational contraints of the depot, any stockpiling of materials or equipment would be temporary in nature and would be kept within the depot boundary. Construction personnel would park within the depot car park or on adjacent local streets.

Minor excavation would be required for underboring services and piling for gantry structure.

The depot conversion work would also require upgrades to the high voltage (HV) supply to meet the energy demands. The HV upgrades are subject to separate environmental assessment and approval through Ausgrid. The proposal does not include removal of existing above ground storage (fuel) tanks.

Figure 2-1: Location of the proposal (Brookvale Bus Depot)

2.1.3 Proposal objectives

The key objectives of this proposal are to:

- convert the existing bus depot at Brookvale to support the transition of diesel buses to zero emissions technology as part of the ZEB Program
- deliver a new fleet of battery electric buses for use by both the current and future bus operators in collaboration with Transport
- ensure bus operations are maintained during construction with minimal disruption to bus services.

Once complete, the Brookvale Bus Depot will operate battery electric buses which deliver a range of benefits to the local community including:

- reduced bus depot operational impacts on our neighbours
- quieter local streets
- cleaner air and greener operations
- an improved transport experience for passengers.

2.1.4 Ancillary facilities

Table 2-2: Ancillary facilities

Ancillary facilities		
Will the proposal require the use or installation of a compound site? The proposal would require the installation of a compound site. The compound would be located within the existing bus depot and may involve the use of the existing administration buildings in the southern portion of the site.	Yes ☒	No ☐
Will the proposal require the use or installation of a stockpile site? Minor stockpiles would be required throughout construction. Due to the operational limits of the depot, storage of materials including wastes would be kept to a minimum. Any waste or material stored on site, would have appropriate measures implemented to reduce potential impacts. The contractor, in consultation with the operator would select appropriate stockpile locations away from drainage areas or sensitive areas.	Yes ☒	No ☐
Are any other ancillary facilities required (e.g. temporary plants, parking areas, access tracks)? Construction personnel would park in the bus depot car parking area (in the southern portion of the site) or on local streets (examples include Orchard Road, Powells Road and Mitchell Road). No new access tracks or entry points into the depot would be required, all works would be completed on hardstand areas.	Yes ☒	No ☐

2.1.5 Proposed date of commencement

Subject to approval, construction is expected to commence in mid-2024.

2.1.6 Estimated length of construction period

Construction is expected to take around 12 months to complete. The delivery of battery electric buses will progressively occur from 2025 until around 2028.

2.2 Need and options

2.2.1 Options considered

The Brookvale Bus Depot is one of the first depots to be converted to zero emissions technology as part of the ZEB program.

The options considered for the proposal included:

- do nothing
- partial conversion of the depot to allow for both battery electric buses and diesel buses to operate from the depot
- full converision of the depot to transition the entire fleet of diesel buses to battery electric buses (preferred option).

The preferred option to convert the entire depot to battery electric buses best supports the objectives of the overall ZEB program and the NSW Government's commitment to achieve net zero emissions by 2050.

2.2.2 Justification for the proposal

The proposal supports the NSW Government's commitment to achieving net zero emission by 2050 and support Transport's investigations into reducing energy costs and increased electricity reliability at the depot. While the

proposal would involve impacts to the surrounding environment including construction noise, water quality impacts, visual impacts and operational impacts to visual amenity, the potential impacts have been identified as minor. On balance, the benefits derived from proceeding with the proposal are considered to outweigh the potential impacts.

2.3 Statutory and planning framework

This chapter provides the statutory and planning framework for the proposal and considers the provisions of relevant state environmental planning policies, local environmental plans and other legislation.

2.3.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes the framework for environmental planning and assessment in NSW.

This proposal is subject to the environmental impact assessment and planning approval requirements of Division 5.1 of the EP&A Act. Division 5.1 specifies the environmental impact assessment requirements for activities undertaken by public authorities, such as Transport, which do not require development consent under Part 4 of the EP&A Act. In accordance with Section 5.5 of the EP&A Act, Transport, as the proponent and determining authority, must examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposal.

Clause 171 of the Environment Planning and Assessment Regulation 2021 (EP&A Regulation) prescribes the minimum environmental factors which must be considered when determining if an activity assessed under Division 5.1 of the EP&A Act has or is likely to have a significant effect on the environment.

Section 3 of the Minor Works REF provides an environmental impact assessment of the proposal in accordance with the requirements of section 171 of the EP&A Regulation, and Appendix A of this Minor Works REF specifically responds to the factors for consideration under section 171 of the EP&A Regulation.

2.3.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP (Transport and Infrastructure)) aims to facilitate the effective delivery of infrastructure across the state.

Section 2.109 of the SEPP (Transport and Infrastructure) permits development on bus depots to be carried out by or on behalf of a public authority without consent.

As the proposal is within an existing bus depot which is within a prescribed land use zone and is to be carried out by or on behalf of Transport, it can be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not require development consent or approval under:

- State Environmental Planning Policy (Resilience and Hazards) 2021
- State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021
- State Environmental Planning Policy (Precincts – Central River City) 2021
- State Environmental Planning Policy (Precincts – Western Parkland City) 2021
- State Environmental Planning Policy (Precincts – Regional) 2021
- State Environmental Planning Policy (Planning Systems) 2021.

2.3.3 Warringah Local Environment Plan 2011

The Warringah Local Environment Plan 2011 (Warringah LEP) is the prevailing planning instrument for the Northern Beaches Council Local Government Area (LGA).

Under Part 2 of the Warringah LEP, the proposal is located within land that is zoned E3 Productivity Support. The land zoning is shown in Figure 2-3.

The Warringah LEP provide the objectives for these land use zones, which are set out in Table 2-3.

Table 2-3: Land use zone objectives

Land zone	Objective
E3 Productivity Support	• To provide a range of facilities and services, light industries, warehouses and offices. • To provide for land uses that are compatible with, but do not compete with, land uses in surrounding local and commercial centres. • To maintain the economic viability of local and commercial centres by limiting certain retail and commercial activity. • To provide for land uses that meet the needs of the community, businesses and industries but that are not suited to locations in other employment zones. • To provide opportunities for new and emerging light industries. • To enable other land uses that provide facilities and services to meet the day to day needs of workers, to sell goods of a large size, weight or quantity or to sell goods manufactured on-site. • To create a pedestrian environment that is safe, active and interesting. • To create employment environments of high visual quality that relate favourably in architectural and landscape treatment to neighbouring land uses and to the natural environment. • To minimise conflict between land uses in the zone and adjoining zones and ensure the amenity of adjoining or nearby residential land uses.

The proposal is generally consistent with the objectives of E3 zone. However, as the proposal is associated with a bus depot, Section 2.109 of the SEPP (Transport and Infrastructure) prevails over the LEP, and consent requirements of the LEP do not apply.

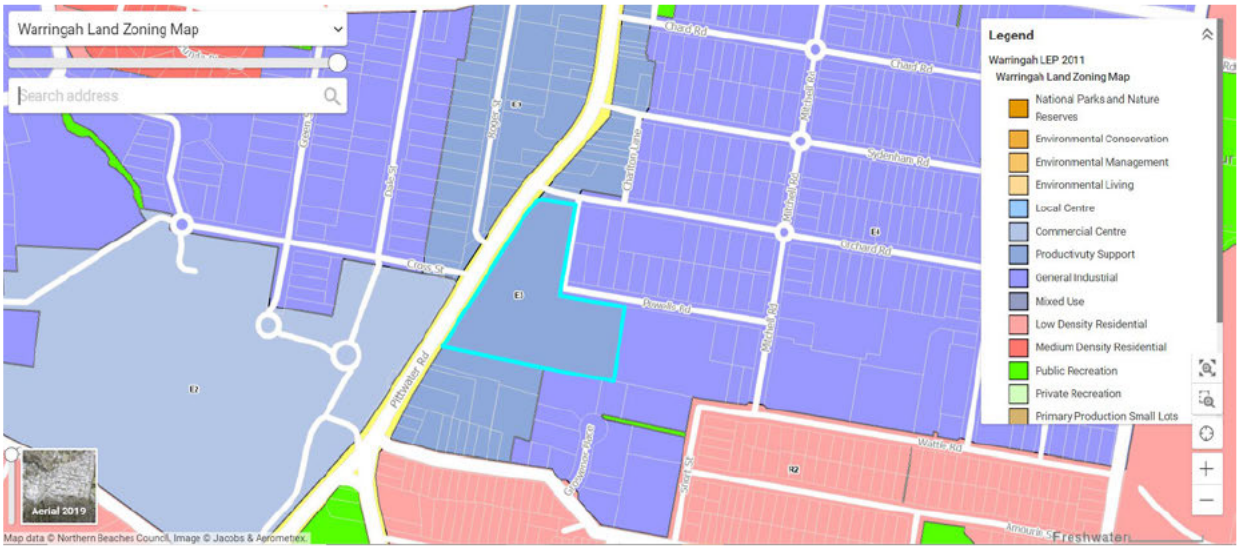


Figure 2-3: Land Use Zoning within and surrounding proposal

2.3.4 Other relevant legislation and environmental planning instruments

Contaminated Land Management Act 1997

The *Contaminated Land Management Act 1997* (CLM Act) establishes a process for investigating, managing and remediating contaminated land and outlines the circumstances in which landowners are required to notify the Environment Protection Authority (EPA), such as certain levels of soil contamination, potential to contaminate neighbouring land, presence of friable asbestos and potential surface and groundwater contamination.

The Preliminary Site Investigation (PSI) undertaken for the proposal identified the site was established as an operational bus depot in 1952 after previous usage for both industrial and non-industrial activities. The site inspection completed to inform the PSI identified storage and dispensing areas for fuels, oils and chemicals, hydrocarbon staining on the concrete ground surface within the workshop and refuelling area, above ground diesel storage tank and potential asbestos containing material within the workshop building.

Under Section 60(3)(b) of the CLM Act, notification of asbestos contamination is required where friable asbestos is present in or on soil or the land, where the levels of asbestos are equal to or above the health screening level of friable asbestos in soil, and a person has been, or foreseeably will be, exposed to elevated levels of asbestos fibres by breathing them into their lungs.

The remediation of sites contaminated with asbestos can be regulated under the CLM Act. Noting there are no proposed works to the workshop under this proposal, any asbestos found during the proposal, would be managed in accordance with the CLM Act.

Protection of the Environment Operations Act 1997

The EPA is the responsible agency for the administration of the *Protection of the Environment Operations Act 1997* (POEO Act) in relation to air, noise, water, pollution and waste management.

Section 120 of the POEO Act prohibits pollution of waters. In the absence of any environment protection licence, to avoid causing pollution and breaches of Section 120, any water discharged from the proposal must be of the same quality, or better, than the quality of the receiving waters (at the time of discharge). The potential impacts and relevant safeguards to ensure compliance with Section 120 of the POEO Act are discussed further in section 3 of this Minor Works REF.

Section 148 of the Act requires immediate notification of pollution incidents causing or threatening material harm to the environment to each relevant authority. Environmental incident procedures would be included as part of the Construction Environmental Management Plan (CEMP) for the proposal. This plan would outline measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities.

2.4 Community engagement and agency consultation

2.4.1 SEPP (Transport and Infrastructure) consultation

Part 2.2 of the SEPP (Transport and Infrastructure) contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. This is detailed below:

Table 2-4: Consultation required with Council

Is consultation with Council required under sections 2.10 - 2.12 and 2.14 of the SEPP (Transport and Infrastructure)?		
Are the works likely to have a substantial impact on the stormwater management services which are provided by council?	Yes ☐	No ☒
Are the works likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?	Yes ☐	No ☒
Will the works involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of the system?	Yes ☐	No ☒
Will the works involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?	Yes ☐	No ☒
Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?	Yes ☐	No ☒
Will the works involve more than a minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	Yes ☐	No ☒
Is there a local heritage item (that is not also a state heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment	Yes ☐	No ☒

indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential? There is a locally listed heritage item, Tramway Staff War Memorial (I1) within the Brookvale Bus Depot. There is no work proposed at this location that may impact this item.		
Is the proposal within the coastal vulnerability area and inconsistent with a certified coastal management program applying to that land? Note: See interactive map at Coastal management - (nsw.gov.au). Note the coastal vulnerability area has not yet been mapped. Note: a certified coastal zone management plan is taken to be a certified coastal management program.	Yes ☐	No ☒
Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent? Note: Flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the Floodplain Development Manual: the management of flood liable land (nsw.gov.au). The proposal is partially located on flood liable land, however, it would not change flooding patterns to more than a minor extent.	Yes ☐	No ☒

Table 2-5: Consultation with other public authorities

Is consultation with a public authority (other than Council) required under sections 2.13, 2.15 and 2.16 of the SEPP (Transport and Infrastructure)?		
Are the works located on flood liable land? (to any extent) The proposal is partially located on flood liable land. Consultation with NSW State Emergency Service (SES) was undertaken in accordance with section 2.13 of the SEPP (Transport and Infrastructure).	Yes ☒	No ☐
Are the works adjacent to a national park, nature reserve or other area reserved under the *National Parks and Wildlife Act 1974*, or on land acquired under that Act?	Yes ☐	No ☒
Are the works on land in Zone C1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	Yes ☐	No ☒
Do the works include a fixed or floating structure in or over navigable waters?	Yes ☐	No ☒
Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional facility or group home in bush fire prone land?	Yes ☐	No ☒
Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	Yes ☐	No ☒
Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhart LEP 2012, Narrandera LEP 2013 and Urana LEP 2011).	Yes ☐	No ☒
Are the works on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*?	Yes ☐	No ☒
Are the works on, or reasonably likely to have an impact on, a part of the Willandra Lakes Region Work Heritage Property?	Yes ☐	No ☒

Are the works within a Western City operational area specified in Schedule 2 of the *Western Parkland City Authority Act 2018* with a capital value of $30 million or more?	Yes ☐	No ☒

Table 2-6: Notification of council and occupiers of adjoining land

Do Council and occupiers of adjoining land need to be notified under section 2.111 of the SEPP (Transport and Infrastructure)?		
Does the proposal include a car park intended for the use by commuters using regular bus services?	Yes ☐	No ☒
Does the proposal include a bus depot? The occupiers of adjoining land and Northern Beaches Council were notified in accordance with section 2.111 of the SEPP (Transport and Infrastructure).	Yes ☒	No ☐
Does the proposal include a permanent road maintenance depot or associated infrastructure, such as garages, sheds, tool houses, storage yards, training facilities and workers amenities?	Yes ☐	No ☒

Consultation with the SES, Northern Beaches Council (Council) and occupiers of adjoining land was undertaken between 8 May and 29 May 2024. Responses were received from Council and the SES. The following summaries the feedback / advice received:

- Council - generally supportive of the proposal and highlighted potential constraints for the site (including acid sulfate soils and flooding). Environmental safeguards are included in this assessment to manage these constraints.
- The SES – implement appropriate safety measures and features to reduce potential risks associated with flash flooding; communicate the flood risks to all workers and people using the depot; develop an emergency management plan to prepare for, respond to and recover from flooding; and in the event of a flood event, consider closing the worksite and securing materials and equipment. Environmental safeguards are included in this assessment to account for the flood risk.

No feedback was received from the occupiers of adjoining land.

2.4.2 Other agency and community engagement

During detailed design, consultation will be undertaken with Fire and Rescue NSW and bus drivers. There would be ongoing engagement with Ausgrid as an adjacent work group. No other agencies are intended to be consulted on the proposal.

Community consultation has not been undertaken specifically for this proposal, as the work would be minor in nature. A community notification would be delivered prior to construction work commencing and would outline the expected impacts during construction. The community would be informed as the project progresses.

3. Environmental assessment

This chapter provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposal. All aspects of the environmental potentially impacted upon by the proposal are considered. This includes consideration of the factors specified in s171 of the Environmental Planning and Assessment Regulation 2021.

The matters of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) are also considered in Appendix A. Site-specific safeguards are provided to ameliorate the identified potential impacts.

3.1 Soil and Contamination

Table 3-1: Soil and Contamination

Description of existing environmental and potential impacts		
Are there any known occurrences of salinity or acid sulfate soils in the area? The NSW Planning and Environment acid sulfate soils (ASS) database reports the proposal area as being Soil Class 4 under the Warringah Local Environmental Plan (LEP) 2011. The mapping shows the affected area as being the southern portion of the depot. The Atlas of Australia Acid Sulfate Soils classify part of the depot as having a low probability of ASS occurrence (6-70% chance) greater than 3m below ground surface. See Figure 3-1 below. The proposal would involve excavations to a maximum approximate depth of 3 metres, however, the proposal would not involve excavation in the southern portion of the site. There is no salinity data available for the site.	Yes ☒	No ☐
Does the proposal involve the disturbance of large areas (e.g., >2ha) for earthworks?	Yes ☐	No ☒
Does the site have constraints for erosion and sedimentation controls such as steep gradients or narrow corridors?	Yes ☐	No ☒
Are there any sensitive receiving environments that are located in or nearby the likely proposal area or that would likely receive stormwater discharge from the proposal? Sensitive receiving environments include (but are not limited to) wetlands, state forests, national parks, nature reserves, rainforests, drinking water catchments).	Yes ☐	No ☒
Is there any evidence within or nearby the likely footprint of potential contamination? A Stage 1 Preliminary Site Investigation (PSI) (EMM, March 2022) evaluated the potential contamination risks associated with the proposal. The depot was established as an operational bus depot in 1952 after previous usage for both industrial and nonindustrial activities and has been used for the storage or maintenance of heavy vehicles requiring on-site storage of fuel, oil and chemicals. The site inspection identified: • parked heavy vehicles, light vehicles, plant and equipment storage and dispensing areas for fuels, oils and chemicals • hydrocarbon staining on the concrete ground surface in the workshop and refuelling area • location of a 110,000 L diesel above-ground storage tank (AST) and AdBlue AST; and • potential asbestos containing material (ACM) located within the workshop building. At the time of inspection, no gross contamination was observed at the ground surface. The preliminary conceptual site model (CSM) identified potentially complete contamination source, pathway and receptor linkages at the depot. Any contamination present on the depot would most likely be attributed to: • a known phase separated hydrocarbon/ light non-aqueous phase liquid plume in groundwater associated with a former diesel fuel sump located south of the refuelling bay. Previous	Yes ☒	No ☐

investigations conducted for contaminants of potential concern (CoPCs) returned concentrations of total petroleum hydrocarbons above the adopted site acceptance criteria in addition to polycyclic aromatic hydrocarbons analytes above the laboratory limits of reporting (LORs) within the vicinity of the refuelling bay; • the use of fill material which may include potential ACM or other CoPC; • spills or leaks from the parking, storage and maintenance of operating buses; • spill or leaks to soil from the storage or dispensing of oils and fuels; and • the possible presence of hazardous materials such as lead based paint, polychlorinated biphenyls or ACM in buildings (or underlying soils). Key pathways include the vertical migration of CoPC through the soil profile, migration of CoPC via groundwater transport, surface water run off to water ways and atmospheric dispersion of dust, fibres or lead based paint flakes. Potential receptors include current and future land users, intrusive maintenance workers, off-site land users and ecological receptors. The PSI concluded that for the purpose of assessing the overall potential impact of the environmental risk, a tier-one high level overall risk rating of high may be considered for the proposal area based on the preliminary CSM. In August 2023, ground water monitoring was undertaken and identified light non-aqueous phase liquid (LNAPL) present in three groundwater monitoring wells located near the bus refuelling bay. Due to the absence of LNAPL across other areas of the depot, it indicates that the extent is relatively stable and unlikely to be migrating to other areas of the depot. Brookvale Bus Depot was previously notified as contaminated to the NSW EPA, however, regulation under the CLM Act not required.		
Is the likely proposal footprint in or nearby highly sloping landform?	Yes ☐	No ☒
Is the proposal likely to result in more than 2.5ha (area) of exposed soil?	Yes ☐	No ☒
The proposal would result in limited exposed areas throughout construction; with minor trenching, underbore, piling and excavating for gantry plinths and electrical equipment .		

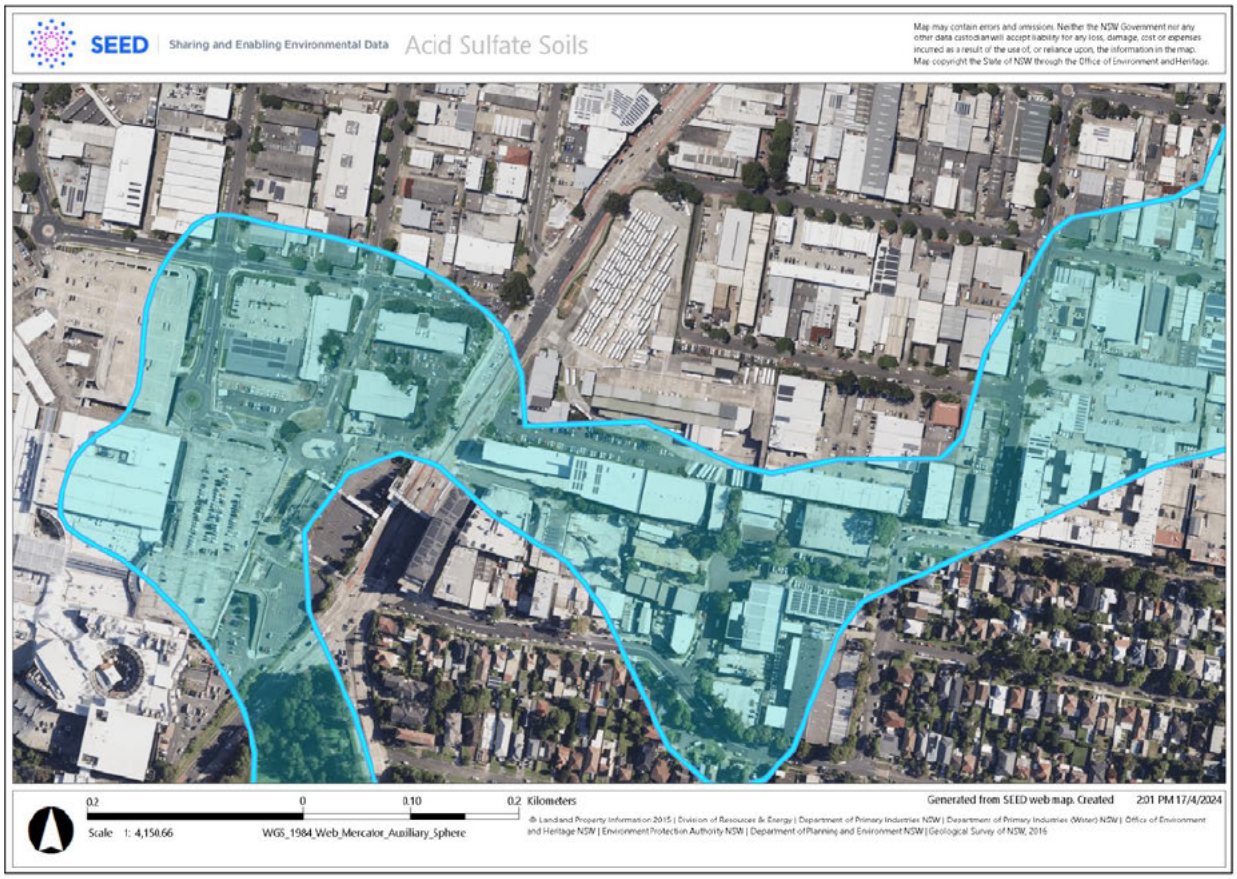


Figure 3-1. Acid Sulfate Soil Probability Risk map. Low probability of ASS occurrence (6-70% chance) shown in blue.

Safeguards

Safeguards to be implemented are:

No.	Safeguards
SC1	Should potential or actual acid sulfate soils be encountered during construction, they will be managed in accordance with the *Acid Sulfate Manual (1998)* and NSW EPA's *Waste Classification Guidelines (2014).*
SC2	Erosion and sediment control measures will be implemented and maintained to prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets *(in accordance with the Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book)).* The erosion and sediment controls will be included in the Construction Environmental Management Plan (CEMP) and Environmental Control Map (ECM).
SC3	Erosion and sedimentation controls will be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request.
SC4	All fuels, chemicals and liquids will be stored in an impervious bunded area a minimum of 50 metres away from: • rivers, creeks or any areas of concentrated water flow • flooded or poorly drained areas • slopes above 10%.
SC5	Refuelling of plant and equipment during construction will be in line with operational refuelling practices, including: • refuelling will occur in impervious bunded areas located a minimum of 50 metres from drainage lines or waterways

	• if refuelling occurs within 50m of drainage, appropriate management measures will be implemented to prevent a potential spill from leaving site via drainage
SC6	An emergency spill kit will be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site and personnel inducted in its use.
SC7	If an incident (e.g., spill) occurs during construction, the Transport *Environmental Incident Procedure* EMF-EM-PR-0001 will be followed and the Transport Project Manager and Senior Environment and Sustainability Manager will be notified immediately. The operator/contractor must report incidents using the nominated Transport incident management system.
SC8	Emergency contacts will be kept in an easily accessible location on vehicles. All workers will be advised of these contact details and procedures.
SC9	If there will be excavation that may intersect with potential medium or high risk areas of potential contamination identified in the preliminary CSM, completion of a targeted intrusive site investigation to provide a detailed assessment of the identified potentially complete contamination exposure pathways to receptors and to further understand the potential management actions required to facilitate construction works and liability to Transport. This may include preparation of a remedial action plan or equilivent for implementation prior to or during construction works
SC10	The CEMP and work health and safety (WHS) plan must both identify appropriate mitigations and control measures with respect to contamination present at the Site, and the implementation of these plans must be periodically audited.
SC11	Any excavated soil and fill material removed from the site will require characterisation and off-site disposal to an appropriately licensed waste facility or landfill in accordance with the POEO Act and *Protection of the Environment Operations (Waste) Regulation 2014.*
SC12	Subject to the contamination status of the bus depot on completion of the proposal construction works, a long term EMP may be required for the bus depot

3.2 Waterways and water quality

Table 3-2: Waterways and water quality

Description of existing environmental and potential impacts		
Is the proposal located within, adjacent to or near a waterway?	Yes ☐	No ☒
Is the location known to flood or be prone to water logging? The Northen Beaches Council's Flood Hazard Map indicated that the proposal is located on low to medium risk hazard precinct. As shown in Figure 3-2 below, the southern portion of the proposal area would experience a medium flood risk. The majority of the proposed work would take place on the northern proportion of the site.	Yes ☒	No ☐
Is the proposal located within a regulated catchments covered by chapter 6 of State Environmental Planning Policy (Biodiversity and Conservation) 2021 (SEPP (Biodiversity and Conservation))?	Yes ☐	No ☒
Would the proposal be undertaken on a bridge or ferry?	Yes ☐	No ☒
Is the proposal likely to require the extraction of water from a local water course (not mains)?	Yes ☐	No ☒

Figure 3-2: Northern Beaches Council Flood Hazard Map

Safeguards

Safeguards to be implemented are:

No.	Safeguards
W1	No sediment laden water will be released into drainage lines and/or waterways.
W2	Water quality control measures will be used to prevent any materials (e.g., concrete, grout, sediment etc.) entering drain inlets or waterways. Any concrete washout required on site will be done in accordance with Transport's *Concrete washout guideline EMF-EM-GD-0145.*
W3	An emergency response plan will be developed during construction and operation to manage potential flood risks. The depot workforce will be made aware of the flood risk.

3.3 Noise and vibration

Table 3-3: Noise and vibration

Description of existing environmental and potential impacts		
Are there any residential properties or other noise sensitive areas near the location of the proposal that may be affected by the work (i.e., church, school, hospital)? The proposal is surrounded by a mix of commercial and industrial premises, with the closest residential receiver being approximately 160m south from the proposal. Please refer to Figure 6 and Table 5-1 within Appendix C, Noise and Vibration Impact Assessment (NVIA) for location and description of noise catchment areas.	Yes ☒	No ☐
Is the proposal going to be undertaken only during standard working hours? Standard construction working hours are: • Monday-Friday: 7:00am to 6.00pm • Saturday: 8.00am to 1.00pm • Sunday and Public Holidays: no work Work would generally be carried out during standard construction hours. Any work outside these hours may be undertaken, subject to assessment and if approved by Transport and the community is notified prior to the work commencing. Transport's *out-of-hours work application form* EMF-EM-TT-0146 would need to be prepared by the	Yes ☐	No ☒

construction Contractor and submitted to the Transport's Environment Manager for review and approval prior to the work commencing. Some activities are expected to be carried out outside standard hours, such as: • installation of the conrete plinths • lifting of large infrastructure including the gantry structure into place • activities that have the potential to disrupt local traffic including oversized deliveries and any work that may require Road Occupancy Licences (ROLs).		
Is any explosive blasting required for the proposal?	Yes ☐	No ☒
Would construction noise or vibration from the proposal affect sensitive receivers? The proposed construction work on-site is expected to have a minor impact on nearby residential properties due to nearby industrial buildings providing acoustic shielding between the noise source and receivers. Given the large separation distances and the high existing background noise levels, it is anticipated that any potential impact on residential properties would be minimal. However, there may be potential noise and vibration impacts on the nearby commercial and industrial premises located on the eastern and southern side of the proposal. Given the proximity of these premises to the construction site, it is likely that they will experience some level of disturbance due to the proposed construction activities. As part of the NVIA, an assessment of the potential for vibration generated during the proposed construction activities has been undertaken based on the project safe working distances. Dependant on the location of the vibration intensive work and size of the equipment, exceedances of the vibration safe working distances are possible at adjacent industrial receivers. Compliance can be achieved by adhering to the management measures presented in Section 5.71 of the NVIA. Residential receivers are very unlikely to exceed the project vibration criteria. Refer to Appendix C – NVIA.	Yes ☒	No ☐
Would operation of the proposal alter the noise environment for sensitive receivers? As outlined in the NVIA, due to the existing high background noise levels in the area and limited noise proposed to be generated by the depot, no noise exceedances are anticipated at sensitive receivers during day, evening or night periods during operations.	Yes ☐	No ☒
Would the proposal result in vibration being experienced by any surrounding properties or infrastructure during operation?	Yes ☐	No ☒

Safeguards

Safeguards to be implemented are:

No.	Safeguards
N1	Work will generally be carried out during standard working hours (i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). Any work outside these hours may be undertaken if approved by Transport and the community is notified prior to the work commencing. Transport's *out-of-hours work application form* EMF-EM-TT-0146 would need to be prepared by the construction Contractor and submitted to Transport's Environment Manager for review and approval prior to the work commencing.
N2	Noise impacts will be minimised in accordance with Transport *Construction noise and vibration guideline (public transport infrastructure)* EMF-NV-GD-0060.
N3	Measures will be implemented to minimise or prevent vibration impacts, including: • complying with the minimum working distances from vibration intensive plant • using non-vibration-producing equipment; and • completing vibration monitoring where required.

N4	Noise and vibration management measures will be included in the CEMP implemented during construction. The CEMP will generally follow the approach in the Interim Construction Noise Guideline (ICNG) (DECC, 2009) and the Transport *Construction noise and vibration guideline (public transport infrastructure)* EMF-NV-GD-0060, including: • selecting quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks, where feasible and reasonable • operating plant and equipment in the quietest and most efficient manner • avoiding simultaneous operation of noisy plant, where feasible • plant used intermittently to be throttled down or shut down • maximising the offset distance between noisy plant and adjacent sensitive receivers • noise-emitting plant to be directed away from sensitive receivers • site-based vehicles and plant used on-site should be fitted with non-tonal reversing alarms to reduce tonal noise impacts.
NV5	All sensitive receivers (e.g. local business, residents and schools) likely to be affected will be notified at least five business days prior to commencement of any works where a notification is triggered in accordance with the Transport *Construction noise and vibration guideline (public transport infrastructure)* EMF-NV-GD-0060.The notification will provide details of: • the proposal • the construction period and construction hours • contact information • complaint reporting • how to obtain further information.

3.4 Air quality

Table 3-4: Air quality

Description of existing environmental and potential impacts		
Is the proposal likely to result in large areas (>2ha) of exposed soils?	Yes ☐	No ☒
Are there any dust-sensitive receivers located within the vicinity of the proposal during the construction period? The following residential and recreational/commercial dust-sensitive receivers are located within the vicinity of the proposal: • 7th Day Brewery, approximately 90m east of the depot • Gang of FOUR, approximately 160m east • Freshwater Brewing Company, approximately 170m east • Residents along William Street, approximately 160m south. The majority of surrounding receivers are industrial and commercial receivers.	Yes ☒	No ☐
Is there likely to be an emission to air during construction? Potential impacts associated with the proposal include emissions to air from construction plant and equipment and airborne dust generated during construction activities. Plant and equipment used to construct the proposal would emit exhaust fumes associated with the combustion with fossil fuels, releasing emissions which contribute to the local air quality. In the context of existing air pollution from other local and regional sources (including Pittwater Road and surrounding industrial area) and the limited number of plant and equipment required to deliver the proposal, the impacts would be localised and temporary in nature for the duration of the construction period. The impact is therefore considered to be minor and short-term. Airborne dust generated from construction activities may cause impacts when located close to sensitive receivers. Dust could be generated from a variety of construction activities associated with the proposal including minor excavations and temporary stockpiling of materials. As a result, short-term impacts resulting from airborne dust	Yes ☒	No ☐

could be experienced during dust-generating construction activities at nearby sensitive receivers. During the operation of the proposal, the number of diesel buses would be reduced as they are replaced with the battery electric buses, therefore reducing exhaust emissions over time.		

Safeguards

Safeguards to be implemented are:

No.	Safeguards
A1	Measures (including watering or covering exposed areas) will be used to minimise or prevent air pollution and dust.
A2	Work (including the spraying of paint and other materials) will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.
A3	Vehicles transporting waste or other materials that may produce odours or dust will be covered during transportation.

3.5 Aboriginal cultural heritage

Table 3-5: Aboriginal cultural heritage

Description of existing environmental and potential impacts		
Would the proposal involve disturbance in any area that has not been subject to previous ground disturbances?	Yes ☐	No ☒
Has an online Aboriginal Heritage Information Management System (AHIMS) search been completed? In February 2024, a search of the Aboriginal Heritage Information Management System was conducted and there were no listed Aboriginal objects or places identified within 200m of the proposed site. Please refer to Appendix D.	Yes ☒	No ☐
Is there potential for the proposal to impact on any items of Aboriginal cultural heritage?	Yes ☐	No ☒
Would the proposal involve the removal of mature native trees?	Yes ☐	No ☒
Is the proposal consistent with the requirements of Transport's *Procedure for Aboriginal cultural heritage consultation and investigation* (PACHCI)? A Stage 1 PACHCI checklist was completed in February 2024. The proposal was assessed as unlikely to have an impact on Aboriginal cultural heritage. Please refer to Appendix D.	Yes ☒	No ☐

Safeguards

Safeguards to be implemented are:

No.	Safeguards
B1	If Aboriginal heritage items are uncovered during construction, all construction activities in the vicinity of the find must cease and the Transport Senior Manager Environment and Sustainability contacted immediately. Refer to steps in the Transport *Unexpected heritage items procedure* (EMF-HE-PR-0076) which must be followed.

3.6 Non-Aboriginal heritage

Table 3-6: Non-Aboriginal heritage

Description of existing environmental and potential impacts		
Have online heritage database searches been completed? • Transport (including legacy Roads and Maritime) section 170 register • NSW Heritage database • Commonwealth Heritage List, established under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) • Maritime heritage database • Australian Heritage Places Inventory • Local Environmental Plan(s) heritage items. A desktop review of non-Aboriginal heritage databases was undertaken to understand the extent of existing recorded sites and places within the vicinity of the proposal. These included: • Commonwealth Heritage Database (DCCEEW, 2022), which includes items on the: – World Heritage List – National Heritage List – Commonwealth Heritage List established under the EPBC Act • NSW State Heritage Inventory (DPE, 2022d), which lists: – Items on the State Heritage Register, established under the Heritage Act 1977 – Local heritage items under the Warringah LEP – Items on the Transport Section 170 registers, The results concluded that there were three non-Aboriginal heritage items located within 300m of the proposal.	Yes ☒	No ☐
Are there any items of non-Aboriginal heritage or heritage conservation areas listed on relevant heritage databases/registers that are located within the vicinity of the proposal? There were three non-Aboriginal heritage items listed within 300m of the proposal, including: • Tramway Staff War Memorial, Warringah LEP (I1), within the bus depot • Palm Tree and Plaque, Warringah LEP (I6), approximately 50m west of the proposal • Brookvale Public School, Warringah (I4) approximately 292m north of the proposal Refer to Figure 3-6-1. The proposal will not impact any of the heritage items listed above.	Yes ☒	No ☐
Is the proposal likely to impact trees that form part of a heritage listing or have other heritage value?	Yes ☐	No ☒
Is the proposal likely to occur in or near features that indicate potential archaeological remains?	Yes ☐	No ☒

Figure 3-6-1: Location of Tramway Staff War Memorial (in brown) within depot and adjacent Palm Tree and Plaque (in blue)

Safeguards

Safeguards to be implemented are:

No.	Safeguards
H1	Measures to protect the Tramway Staff War Memorial will be included in the CEMP and implemented on-site, which would include: • protection measures in accordance with Transport's Fact sheet – *Temporary works and protection at heritage sites during construction* EMF-HE-FS-0166 • inclusion of this heritage item and appropriate measures in the site induction • compliance with the minimum working distances for vibration intensive activities as per Transport's *Construction noise and vibration guideline (public transport infrastructure)* EMF-NV-GD-0060
H2	If unexpected heritage items are uncovered during construction, all work must cease in the vicinity of the material/find and the steps in Transport's *Unexpected heritage items procedure* EMF-HE-PR-0076 must be followed.
H3	The relevant Returned Services League (RSL) NSW will be notified in advance of any work adjacent to the war memorial. Consideration will be given to schedule construction activities around potential services at the memorial, including any wreath laying ceremonies.

3.7 Biodiversity

Table 3-7: Biodiversity

Description of existing environmental and potential impacts		
Have relevant database searches been carried out? The following searches were conducted: • Bionet threatened species records within the locality (10km radius) • Commonwealth EPBC Act Protected Matters Search Tool (PMST) (10km radius) Given that the proposed work is limited to an existing bus depot, a highly disturbed area, no further searches were undertaken.	Yes ☒	No ☐
Did the database searches identify any endangered ecological communities, threatened flora and/or threatened or protected fauna, or migratory species in or within the vicinity of the proposed works? Both Commonwealth and State listed matters must be considered. The following threatened species were identified within a 500m radius of the proposal. Refer to biodiversity searches in Appendix E for the Bionet threatened species records within the locality (10km radius).	Yes ☒	No ☐
Does the proposal involve pruning, trimming or removal of any tree/s?	Yes ☐	No ☒
Is the proposal likely to impact nationally listed threatened species, ecological communities or migratory species?	Yes ☐	No ☒

Scientific and common name	Status *	Type of listing (BC Act or EPBC Act)	Distance from works	Potential impacts
Large Bent-winged Bat (*Miniopterus orianae oceanensis*)	V	BC Act	Six sightings, with the closest being approximately 180m away	No expected impacts. The proposal would not remove vegetation or structures with habitat potential.
Grey-headed Flying-fox (*Pteropus poliocephalus*)	V	EPBC Act	Six sightings, with the closest being approximately 200m away	The proposal would not impact any habitat or foraging potential for this species. Any reconfigurations to lighting will be done in a way to minimise off-site impacts of lighting.
Powerful Owl (*Ninox strenua*)	V	BC Act	One sighting approximately 280m away	The proposal would not impact any potential habitat for this species.

**V= vulnerable, E = endangered, CE = critically endangered, VEC = vulnerable ecological community EEC = endangered ecological community, CEEC = critically endangered ecological community M = Migratory*

Would the proposal require the removal of any other vegetation?	Yes ☐	No ☒
Would the proposal require the removal of any tree hollows?	Yes ☐	No ☒
Are there any known areas of outstanding biodiversity value or areas mapped as 'littoral rainforest' or 'coastal wetland' under chapter 2 of SEPP (Resilience and Hazards) in or within the vicinity of the proposed work?	Yes ☐	No ☒
Would the proposal provide any additional barriers to the movement of wildlife?	Yes ☐	No ☒
Would the proposal disturb any natural waterways or aquatic habitat?	Yes ☐	No ☒
Would the proposal impact (directly or indirectly) any potential microbat roosting or breeding habitat such as on bridges and culverts?	Yes ☐	No ☒

Safeguards

Safeguards to be implemented are:

No.	Safeguards
F1	Should any vegetation trimming and/or removal be required, it will be subject to further environmental assessment.
F2	Fauna handling must be carried out in accordance with Transport *Biodiversity Guidelines – Guide 9 (Fauna Handling)* EMF-BD-GD-0032.

3.8 Traffic and transport

Table 3-8: Traffic and transport

Description of existing environmental and potential impacts		
Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during construction? The proposal is limited to works within the bus depot. No changes to external traffic flow including vehicular, cycling or pedestrian would occur as a result of the proposal. There would be a small increase in the number of heavy and light vehicles associated with the work but any impact to the surrounding road network would be negligible. Construction vehicles, including deliveries, would enter and exit the depot via Pittwater Road.	Yes ☐	No ☒
Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation?	Yes ☐	No ☒
Is the proposal likely to affect any other transport nodes or transport infrastructure (e.g., bus stops, bus routes) in the surrounding area? Or result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation? There would be no interuptions or changes to bus services operating from Brookvale Bus Depot during construction or during operations.	Yes ☐	No ☒

Safeguards

Safeguards to be implemented are:

No.	Safeguards
T1	Where possible, traffic movements and property access will be maintained during the work.
T2	Road occupancy licence (ROL) or equivalent will be obtained prior to any temporary road closures or contraflow activities where required.

3.9 Socio-economic

Table 3-9: Socio-economic

Description of existing environmental and potential impacts		
Is the proposal likely to impact on local business?	Yes ☐	No ☒
Is the proposal likely to require any property acquisition?	Yes ☐	No ☒
Is the proposal likely to alter any access for properties (either temporarily or permanently)?	Yes ☐	No ☒
Is the proposal likely to alter any on-street parking arrangements (either temporarily or permanently)?	Yes ☐	No ☒
Is the proposal likely to change pedestrian movements or pedestrian access (either temporarily or permanently)?	Yes ☐	No ☒
Is the proposal likely to impact on any items or places of social value to the community (either temporarily or permanently)?	Yes ☐	No ☒
Is the proposal likely to reduce or change visibility of any businesses, farms, tourist attractions or the like (either temporarily or permanently)?	Yes ☐	No ☒
Is the proposal likely to impact trees planted by a community group, Landcare group or by council or a tree that is a memorial or part of a memorial group e.g., has a plaque?	Yes ☐	No ☒
Is the proposal likely to impact trees that form part of a streetscape, an avenue or roadside planting?	Yes ☐	No ☒

Safeguards

Nil safeguards required.

3.10 Landscape character and visual amenity

Table 3-10: Landscape character and visual amenity

Description of existing environmental and potential impacts		
Is the proposed work over or near an important physical or cultural element or landscape? (For example, heritage items and areas, distinctive or historic built form, National Parks, conservation areas, scenic highways etc.) The proposed work is adjacent to a locally listed heritage item.	Yes ☐	No ☒
Would the proposal obstruct or intrude upon the character or views of a valued landscape or urban area? (For example, locally significant topography, a rural landscape or a park, a river, lake or the ocean or a historic or distinctive townscape or landmark)	Yes ☐	No ☒
Would the proposal require the removal of mature trees or stands of vegetation, either native or introduced?	Yes ☐	No ☒
Would the proposal result in large areas of shotcrete visible from the road or adjacent properties?	Yes ☐	No ☒
Would the proposal involve new noise walls or visible changes to existing noise walls?	Yes ☐	No ☒
Would the proposal involve the removal or reuse of large areas of road corridor, landscape, either verges or medians?	Yes ☐	No ☒
Would the proposal involve substantial changes to the appearance of a bridge (including piers, girders, abutments and parapets) that are visible from the road or residential areas?	Yes ☐	No ☒
If involving lighting, would the proposal create unwanted light spillage on residential properties at night (in construction or operation)?	Yes ☐	No ☒
Would any new structures or features to be constructed, result in over shadowing to adjoining properties or areas?	Yes ☐	No ☒
The Brookvale Bus Depot has a perimeter garden on the northern and western sides of the depot, which helps provide visual screening. As part of the HV works assessed by Ausgrid (under a separate environmental assessment), there may be removal of some of this landscaped vegetation. To reduce cumulative visual impacts, any removed screening vegetation within the depot, would have a like for like replacement. The proposal would install a gantry (charging) system about 6.5m in height, that would be visible from surrounding businesses and the road network. The general height of the proposed gantry would be similar to the height of the depot workshop building and surrounding commercial/industrial buildings. The depot does not currently have any similar gantry structures. The addition of the gantry structures would result in a visual change for road users travelling along Pittwater Road. The gantries would be taller than any buses parked in the depot and currently visible from Pittwater Road above existing screening vegetation. The gantries would be most noticeable during times when no buses are stationary within the depot. Given the spacing and general openness of the structures, the resulting visual impact would be low. The gantry structures would be broadly consistent with the scale and urban form of the existing surrounding commerical and industrial premises, resulting in a negligible landscape character impact. During construction, plant and equipment will generally be partly screened by existing vegetation, and would be a similar height to the existing buses and infrastructure within the depot.		

Safeguards

Safeguards to be implemented are:

No.	Safeguards
LV1	If any of the screening vegetation within the depot is removed as part of the Ausgrid HV works, the project will replace the vegetation with a like for like replacement where possible.

3.11 Waste

Table 3-11: Waste

Description of existing environmental and potential impacts		
Is the proposal likely to generate >200 tonnes of waste material (contaminated and /or non-contaminated material)?	Yes ☐	No ☒
Is the proposal likely to require a licence from EPA?	Yes ☐	No ☒
Is the proposal likely to require the removal of asbestos? As identified in the PSI, the underlying soils across the depot may contain asbestos.	Yes ☒	No ☐
The proposal would likely generate the following waste streams: • construction and demolition waste (such as concrete or asphalt) • excavation spoil (including potential ACM) • general waste from construction staff • hazardous waste (see soil and contamination section above).		

Safeguards

Safeguards to be implemented are:

No.	Safeguards
M1	Resource management hierarchy principles will be followed: • avoid unnecessary resource consumption as a priority • avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) • disposal is undertaken as a last resort. (in accordance with the *Waste Avoidance and Resource Recovery Act 2001*).
M2	There is to be no disposal or re-use of construction waste to other land.
M3	Waste material, is not to be left on site once the work has been completed.
M4	Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.
M5	An appropriate Unexpected Finds Protocol, considering asbestos containing materials and other potential contaminants, will be included in the CEMP. Procedures for handling asbestos containing materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal, will be undertaken in accordance with SafeWork NSW requirements.
M6	All waste will be separated and classified in accordance with the NSW EPA *Waste Classification Guidelines 2014* and disposed of to a suitably licensed facility.

3.12 Climate change and greenhouse gas emissions

Table 3-12: Climate change and greenhouse gas emissions

Description of existing environmental and potential impacts		
Is the proposal located in an area likely to be permanently or tidally inundated in the future or subject to increased duration and intensity of flooding? The proposal is not located in an area likely to be permanently or tidally inundated in future, however would likely be subject to increased duration and intensity of flooding due to the depot being partially located on flood liable land.	Yes ☒	No ☐
Have opportunities for reduced energy consumption during construction and operation been considered. Opportunities to reduce energy consumption during construction have not been considered. Opportunities to reduce energy consumption have been considered in relation to operating electric buses rather than diesel buses. During operation, renewable energy will be purchased. A 230kw solar PV system is anticipated to be installed on the existing depot office and/or maintenance workshop to reduce electricity demands from the grid.	Yes ☐	No ☒
Greenhouse gas emissions sources during construction are likely to be largest from: • transporting materials to site; and. • operation of plant and equipment. Renewal energy will be purchased during operations to reduce reliance on fossil fuels.		

Safeguards

Safeguards to be implemented are:

No.	Safeguards
CC1	Location and installation of electrical equipment will be designed to consider climate change and increases in rainfall intensity and flooding duration.

3.13 Cumulative impact

Table 3-13: Cumulative impact

Description of existing environmental and potential impacts		
Are there other projects and developments in the study area which could add to potential impacts in both construction and operation? A search of the NSW Planning April 2024 and did not identify any major developments in close proximity to the proposal area. The proposal requires upgrades to the HV electrical supply to meet the energy demands. The HV upgrades are subject to separate environmental assessment and approval through Ausgrid. The HV upgrades are planned to occur at the same time as the proposal. Where feasible, coordination with the HV upgrade work will occur to make every effort to minimise cumulative impacts during construction.	Yes ☒	No ☐

Safeguards

Safeguards to be implemented are:

No.	Safeguards
CM1	Where feasible, community notifications will be combined for the proposal and the HV upgrade work.

4. Summary of environmental safeguards

4.1 Environmental safeguards

This section provides a list of the site-specific environmental safeguards. These safeguards will be implemented to reduce potential environmental impacts throughout construction and operation. For clarity, all safeguards are the responsibility of the operator/contractor, with the exception of safeguards SC12 and H3, which the responsibility will remain with Transport.

Table 4-1: Summary of site-specific safeguards for proposed work

Factor		Safeguards
General	G1	If the scope of the works changes at any time, review the changes against the Transport *Environmental assessment procedure – routine and minor works* EMF-PA-PR-0081 and complete any further environmental assessments prior to carrying out works associated with the changed scope.
	G2	A construction environmental management plan (CEMP) will be prepared in accordance with and submitted to Transport's Senior Manager Environment and Sustainability for endorsement prior to the commencement of works.
	G3	An Environment Control Map (ECM) will be prepared in accordance with Transport's environmental control map guideline EMF-EM-GD-0148 and submitted to Transport Senior Manager Environment and Sustainability for endorsement prior to commencement of works.
	G4	Parking of vehicles and storage of plant/equipment will only occur on existing paved areas.
	G5	As part of detailed design, management measures will be designed to ensure any potential contaminants identified during operations (e.g. waste water from fire suppression systems) will be captured and disposed of in accordance with applicable legislation and standards.
Soil and contamination	SC1	Should potential or actual acid sulfate soils be encountered during construction, they will be managed in accordance with the *Acid Sulfate Manual (1998)* and NSW EPA's *Waste Classification Guidelines (2014).*
	SC2	Erosion and sediment control measures will be implemented and maintained to prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets (in accordance with the Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book)). The erosion and sediment controls will be included in the Construction Environmental Management Plan (CEMP) and Environmental Control Map (ECM).
	SC3	Erosion and sedimentation controls will be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request.
	SC4	All fuels, chemicals and liquids will be stored in an impervious bunded area a minimum of 50 metres away from: • rivers, creeks or any areas of concentrated water flow • flooded or poorly drained areas • slopes above 10%.

	SC5	Refuelling of plant and equipment during construction will be in line with operational refuelling practices, including: • refuelling will occur in impervious bunded areas located a minimum of 50 metres from drainage lines or waterways • if refuelling occurs within 50m of drainage, appropriate management measures will be implemented to prevent a potential spill from leaving site via drainage
	SC6	An emergency spill kit will be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site and personnel inducted in its use.
	SC7	If an incident (e.g., spill) occurs during construction, the Transport *Environmental Incident Procedure* EMF-EM-PR-0001 will be followed, and the Transport Project Manager and Senior Environment and Sustainability Manager will be notified immediately. The operator/contractor must report incidents using the nominated Transport incident management system.
	SC8	Emergency contacts will be kept in an easily accessible location on vehicles. All workers will be advised of these contact details and procedures.
	SC9	If there will be excavation that may intersect with potential medium or high-risk areas of potential contamination identified in the preliminary CSM, completion of a targeted intrusive site investigation to provide a detailed assessment of the identified potentially complete contamination exposure pathways to receptors and to further understand the potential management actions required to facilitate construction works and liability to Transport. This may include preparation of a remedial action plan or equivalent for implementation prior to or during construction works
	SC10	The CEMP and work health and safety (WHS) plan must both identify appropriate mitigations and control measures with respect to contamination present at the site, and the implementation of these plans must be periodically audited.
	SC11	Any excavated soil and fill material removed from the site will require characterisation and off-site disposal to an appropriately licensed waste facility or landfill in accordance with the POEO Act and Protection of the Environment Operations (Waste) Regulation 2014.
	SC12	Subject to the contamination status of the bus depot on completion of the proposal construction works, a long term EMP may be required for the bus depot.
Waterways and water quality	W1	No sediment laden water will be released into drainage lines and/or waterways.
	W2	Water quality control measures will be used to prevent any materials (e.g., concrete, grout, sediment etc.) entering drain inlets or waterways. Any concrete washout required on site will be done in accordance with Transport's *Concrete washout guideline* EMF-EM-GD-0145.
	W3	An emergency response plan will be developed during construction and operation to manage potential flood risks. The depot workforce will be made aware of the flood risk.
Noise and vibration	NV1	Work will generally be carried out during standard working hours (i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). Any work

		outside these hours may be undertaken if approved by Transport and the community is notified prior to the work commencing. Transport's *out-of-hours work application form* EMF-EM-TT-0146 would need to be prepared by the construction Contractor and submitted to Transport's Environment Manager for review and approval prior to the work commencing.
	NV2	Noise impacts will be minimised in accordance with *Transport Construction noise and vibration guideline (public transport infrastructure)* EMF-NV-GD-0060.
	NV3	Measures will be implemented to minimise or prevent vibration impacts, including: • complying with the minimum working distances from vibration intensive plant • using non-vibration-producing equipment; and completing vibration monitoring where required.
	NV4	Noise and vibration management measure will be included in the CEMP implemented during construction. The CEMP will generally follow the approach in the Interim Construction Noise Guideline (ICNG) (DECC, 2009) and the Transport *Construction noise and vibration guideline (public transport infrastructure)* EMF-NV-GD-0060 including: • selecting quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks, where feasible and reasonable • operating plant and equipment in the quietest and most efficient manner • avoiding simultaneous operation of noisy plant, where feasible • plant used intermittently to be throttled down or shut down • maximising the offset distance between noisy plant and adjacent sensitive receivers • noise-emitting plant to be directed away from sensitive receivers • site-based vehicles and plant used on-site should be fitted with non-tonal reversing alarms to reduce tonal noise impacts
	NV5	All sensitive receivers (e.g. local business, residents and schools) likely to be affected will be notified at least five business days prior to commencement of any works where a notification is triggered in accordance with the Transport C*onstruction noise and vibration guideline (public transport infrastructure)* EMF-NV-GD-0060. .The notification will provide details of: • the proposal • the construction period and construction hours • contact information • complaint reporting • how to obtain further information.
Air quality	A1	Measures (including watering or covering exposed areas) will be used to minimise or prevent air pollution and dust.
	A2	Work (including the spraying of paint and other materials) will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.
	A3	Vehicles transporting waste or other materials that may produce odours or dust will be covered during transportation.
	B1	If Aboriginal heritage items are uncovered during construction, all construction activities in the vicinity of the find must cease and the

Aboriginal cultural heritage		Transport Senior Manager Environment and Sustainability contacted immediately. Refer to steps in the Transport *Unexpected heritage items procedure* EMF-HE-PR-0076 which must be followed.
Non-Aboriginal heritage	H1	Measures to protect the Tramway Staff War Memorial will be included in the CEMP and implemented on-site, which would include: • protection measures in accordance with Transport's Fact sheet – *Temporary works and protection at heritage sites during construction* EMF-HE-FS-0166 • inclusion of this heritage item and appropriate measures in the site induction • compliance with the minimum working distances for vibration intensive activities as per Transport's *Construction noise and vibration guideline (public transport infrastructure)* EMF-NV-GD-0060.
	H2	If unexpected heritage items are uncovered during construction, all works must cease in the vicinity of the material/find and the steps in the Transport *Unexpected heritage items procedure EMF-HE-PR-0076* must be followed.
	H3	The relevant Returned Services League (RSL) NSW will be notified in advance of any work adjacent to the war memorial. Consideration will be given to schedule construction activities around potential services at the memorial, including any wreath laying ceremonies.
Biodiversity	F1	Should any vegetation trimming and/or removal be required, it will be subject to further environmental assessment.
	F2	Fauna handling must be carried out in accordance with Transport *Biodiversity Guidelines - Guide 9 (Fauna Handling)* EMF-BD-GD-0032.
Traffic and transport	T1	Where possible, traffic movements and property access will be maintained during the works.
	T2	Road occupancy licence (ROL) or equivalent will be obtained prior to any temporary road closures or contraflow activities where required.
Socio-economic	N/A	Nil.
Landscape character and visual amenity	LV1	If any of the screening vegetation within the depot is removed as part of the Ausgrid HV works, the project will replace the vegetation with a like for like replacement where possible.
Waste	M1	Resource management hierarchy principles will be followed: • avoid unnecessary resource consumption as a priority • avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) • disposal is undertaken as a last resort. (in accordance with the Waste Avoidance and Resource Recovery Act 2001).
	M2	There is to be no disposal or re-use of construction waste to other land.
	M3	Waste material, is not to be left on site once the work has been completed.

	M4	Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.
	M5	An appropriate Unexpected Finds Protocol, considering asbestos containing materials and other potential contaminants, will be included in the CEMP. Procedures for handling asbestos containing materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal, will be undertaken in accordance with SafeWork NSW requirements.
	M6	All waste will be separated and classified in accordance with the NSW *EPA Waste Classification Guidelines 2014* and disposed of to a suitably licensed facility.
Climate change and greenhouse gas emissions	CC1	Location and installation of electrical equipment will be designed to consider climate change and increases in rainfall intensity and flooding duration.
Cumulative impacts	CM1	Where feasible, community notifications will be combined for the proposal and the HV upgrade work.

4.2 Licensing and approvals

Instrument	Requirement	Timing
Roads Act 1993 (Section 138)	Road occupancy licence to carry out works that would impact on the operational efficiency of the road network.	Prior to works on public roads.

5. Certification, review and determination

5.1 Certification

This minor works REF provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses, to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the proposal.

Prepared by:

Signature [redacted]

Name: [redacted]

Position: Senior Environment and Sustainability Officer

Date: 31/05/2024

Minor works REF reviewed by:

Signature [redacted]

Name: [redacted]

Position: Senior Manager Environment and Sustainability

Date: 31 May 2024

5.2 Environment and sustainability staff review

The minor works REF has been reviewed and considered against the requirements of sections 5.5 and 5.7 of the EP&A Act.

In considering the proposal this assessment has examined and taken into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of that activity as addressed in the minor works REF and associated information. This assessment is considered to be in accordance with the factors required to be considered under section 171 of the Environmental Planning and Assessment Regulation 2021.

The proposal described in this minor works REF will have some environmental impacts which can be ameliorated satisfactorily. Having regard to the safeguards and management measures proposed, this assessment has considered that these impacts are unlikely to be significant and therefore an approval for the proposal does not need to be sought under Division 5.2 of the EP&A Act.

The assessment has considered the potential impacts of the activity on areas of outstanding value and on threatened species, ecological communities or their habitats for both terrestrial and aquatic species as defined by the *Biodiversity Conservation Act 2016* and the *Fisheries Management Act 1994*.

The proposal described in the minor works REF will not affect areas of outstanding value. The activity described in the minor works REF will not significantly affect threatened species ecological communities or their habitats. Therefore, a species impact statement is not required.

The assessment has also addressed the potential impacts of the activity on matters of national environmental significance and any impacts on the environment of Commonwealth land and concluded that there will be no significant impacts. Therefore, there is no need for a referral to be made to the Australian Government Department of Climate Change, Energy, the Environment and Water for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the *Environment Protection and Biodiversity Conservation Act 1999*.

The minor works REF is considered to meet all relevant requirements.

5.3 Environment and Sustainability staff recommendation

It is recommended that the proposal to undertake the Zero Emission Bus Brookvale Bus Depot conversionas described in this minor works REF proceed subject to the implementation of all safeguards identified in the minor works REF and compliance with all other relevant statutory approvals, licences, permits and authorisations.

The minor works REF has examined and taken into account to the fullest extent possible all matters likely to affect the environment by reason of the activity in accordance with the EP&A Act, EP&A Regulation and the Guidelines approved under clause 170 of the EP&A Regulation. The minor works REF has established that the activity is not likely to significantly affect the environment or threatened species, ecological communities or their habitats.

The minor works REF has concluded that there will be no significant impacts on matters of national environmental significance or any impacts on the environment of Commonwealth land.

If the proposal has not commenced within two years of the determination date the SMES must be consulted to identify any new or updated assessment or approval requirements.

Recommended by:		**Noted by:**	
Signature	[redacted]	Signature	[redacted]
Name:	[redacted]	Name:	[redacted]
Position:	Senior Manager Environment and Sustainability	Position:	Project Manager
Date:	31 May 2024	Date:	3rd June 2024

5.4 Decision statement

In accordance with the above recommendation, I certify that I have reviewed and endorsed the contents of this minor works REF, and to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under Section 170 of the EP&A Regulation, and the information is neither false nor misleading.

I determine that Transport for NSW may proceed with the activity.

Signature	[redacted]
Name:	[redacted]
Position:	Senior Manager GS Network Programs
Date:	6 June 2024

5.5 EP&A Regulation publication requirement

Table 5-1: EP&A Regulation publication requirement

Requirement		
Does this minor works REF need to be published under section 171(4) of the EP&A Regulation?	Yes ☒	No ☐

Appendix A: Consideration of State and Commonwealth environmental factors

Environmental Planning and Assessment Regulation 2021 section 171(2) factors

The following factors, listed in section 171(2) of the Environmental Planning and Assessment Regulation 2021, have been considered to assess the likely impacts of the proposal on the natural and built environment. This consideration is required to comply with sections 5.5 and 5.7 of the EP&A Act.

Table A1: Consideration of section 171 of the EP&A Regulation factors

Factor	Description of impact	Duration and extent
a) Environmental impact on the community.	• There would be some temporary impacts to the community during construction, particularly in relation to noise and visual amenity. The proposed safeguards in this document would be implemented to manage and minimise potential adverse impacts to the community. • There would be some positive minor impacts to the community during operation in relation to noise and air quality, with operation of an electric fleet rather than internal combustion engines.	Negative, short-term, minor Positive, long-term
b) The transformation of the locality.	• During construction there would be some minor visual impacts associated with the presence of construction equipment and activities. • Operational visual impacts are expected with the installation of the gantry structure. The impacts will be minor given the current nature of the locality mostly being commercial/industrial.	Negative, short-term and long-term minor
c) Any environmental impact on the ecosystems of the locality.	• Construction of the proposal has the potential to result in temporary environmental impacts on the ecosystem of the locality such as noise, air quality and contamination however, this would be managed in accordance with the implementation of the safeguards. The proposal is not expected to result in any long-term environmental impacts on the ecosystem of the locality.	Negative, short-term, minor
d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality.	• The proposal is located within an existing bus depot. The proposal has the potential to result in short-term negative impacts due to construction related activities. The impacts would be minimised with the implementation of the safeguards as detailed in the Minor Works REF. • The proposal would not result in any substantial reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	Negative, short-term, minor

Factor	Description of impact	Duration and extent
e) Any effect on any locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations.	• The proposal would not affect a known Aboriginal or non-Aboriginal heritage item, place or object.	Nil
f) Any impact on the habitat of protected fauna (within the meaning of the Biodiversity and Conservation Act 2016).	• The proposal is located within an existing bus depot, a highly disturbed area and is unlikely to have any impact on the habitat of protected fauna.	Nil
g) Any endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air.	• The proposal is located within an existing bus depot, a highly disturbed area. The proposal would not require any vegetation removal or trimming. The proposal is is unlikely to endanger any species of animal, plant or other form of life, whether living on land, in water or in the air.	Nil
h) Any long-term effects on the environment	• The proposal is unlikely to have any long-term effects on the environment given the nature and extent of the works, and safeguards to be implemented.	Nil
i) Any degradation of the quality of the environment.	• The proposal is unlikely to result in degradation of the quality of the environment. During construction there would be minor and temporary impacts to the environment, primarily from noise and during operations a reduction in visual amenity. These potential impacts would be managed in accordance with the safeguards within the Minor Works REF. With the replacement of the diesel buses with electric buses, there would be postive benefits for the local community in terms of improved transport experience for passengers and greener operations.	Negative, short-term, minor, positive long-term
j) Any risk to the safety of the environment.	• The proposal is unlikely to cause any pollution or safety risks to the environment provided the safeguards are implemented.	Nil
k) Any reduction in the range of beneficial uses of the environment.	• The proposal is unlikely to result in the reduction in the range of beneficial uses of the environment.	Nil

Factor	Description of impact	Duration and extent
l) Any pollution of the environment.	• Minor, short-term risks to water quality would be present in the event of spill or release of material from the work site during construction. Safeguards have been proposed to address the risk of water pollution. • The reduction and replacement of diesel buses at the depot would reduce potential risks associated with spills.	Negative, short-term, minor Positive long-term
m) Any environmental problems associated with the disposal of waste	• Given the historical use of the bus depot, there is potential for contaminants to be present within the soils. Hazardous waste (including asbestos and acid sulfate soils) may be generated by the proposal. All spoil to be removed from site would be tested to confirm the presence of any contamination. Any contaminated spoil would be disposed of at an appropriately licensed facility, and in accordance with SafeWork NSW requirements. • During operation of the proposal, water used during fire supression will be captured and disposed of appropriately. Bus batteries would be disposed of appropriately.	Negative, short-term and long-term, minor
n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply.	• The proposal is not likely to put an increased demand on resources that are, or are likely to become, in short supply. Renewable energy will be purchased during operations to support the electric fleet.	Nil
o) The cumulative environmental effect with other existing or likely future activities.	• Cumulative impacts have been assessed earlier in this assessment. To minimise any cumulative construction impacts with other work occurring at the same time in the surrounding area, environmental safeguards would be coordinated with these projects where feasible.	Negative, short-term, minor
p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions.	• The proposal would not affect or be affected by any coastal processes or coastal hazards.	Nil
q) Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	• The applicable local strategic plan is the Northern Beaches Council's *Towards 2040, Local Stategic Planning Statement,* which guides land use planning for the Northern Beaches over the next 20 years. The proposal supports priority 20 in this plan, regarding sustainable local transport networks. This priority area includes improving the local bus network and innovative and emerging technology.	Positive, long-term

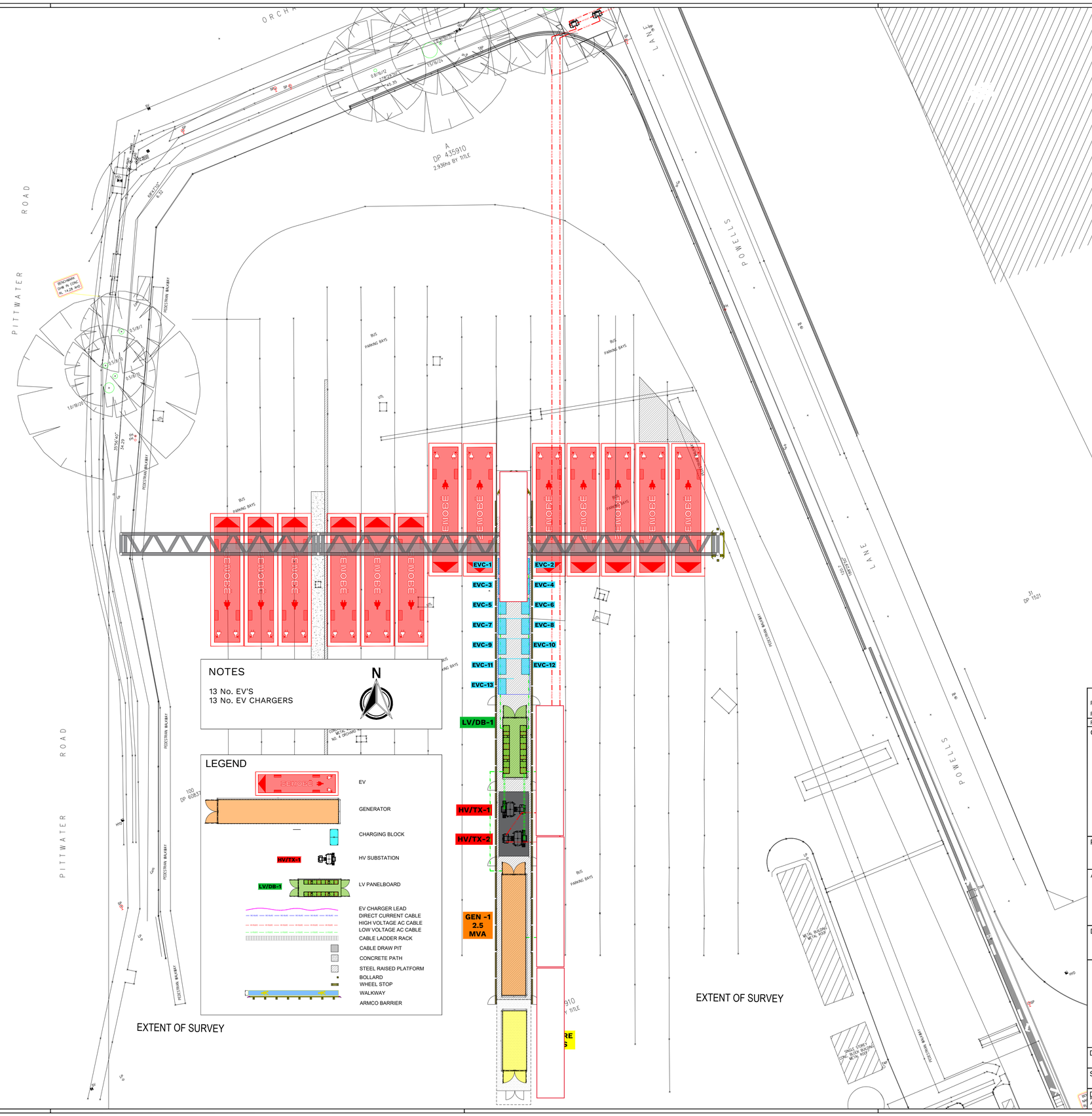
Factor	Description of impact	Duration and extent
r) Other relevant environmental factors	• In considering the potential impacts of this proposal all relevant environmental factors have been considered, refer to Chapter 3 of this assessment.	Nil

Matters of National Environmental Significance

Table A2: Matters of national environmental significance

Environmental factor	Impact
a) Any impact on a World Heritage property?	Nil
b) Any impact on a National Heritage place?	Nil
c) Any impact on a wetland of international importance (often called 'Ramsar' wetlands)?	Nil
d) Any impact on nationally threatened species, ecological communities or migratory species?	Nil
e) Any impact on a Commonwealth marine area?	Nil
f) Does the proposal involve a nuclear action (including uranium mining)?	Nil
Additionally, any impact (direct or indirect) on the environment of Commonwealth land?	Nil

Appendix B: Indicative design



REV B	Chargers moved below gantry	27/10/2022
REV A	Initial version	27/10/2022
Revision	Description	Date

Client

Keolis Downer

Project Name
Keolis Downer Region 8

Address
630-636
Pittwater Rd
Brookvale
NSW 2100
Australia

Drawing Title
General Arrangement

ZENOBĒ
Zenobē Energy Limited
Level 26, 1 Bligh Street
Sydney, NSW, 2000

Drawn TM	Checked MO	Approved MO
Scale Custom	Size A1	Date 27/10/2022

Drawing Name
KEOLIS DOWNER REGION 8 - DETAILED GENERAL ARRANGEMENT REV A_RECOVER_RECOVER

Appendix C: Noise and Vibration Impact Assessment

Transport for NSW

ZEB Brookvale Depot Noise and Vibration Impact Assessment

June 2024

NSW GOVERNMENT

transport.nsw.gov.au

Acknowledgement of Country

Transport for NSW acknowledges the traditional custodians of the land on which we work and live.

We pay our respects to Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.

Prepared by Pulse White Noise Acoustics.

Report controls

Approval and authorisation

Title of report	Brookvale ZEB Depot Construction Noise and Vibration Impact Assessment		
Report document number			
Signed:		Date	5/6/2024
Name of approver	Michael Allan		
Title of approver	Technical Director		

Document status

Document status	Date	Prepared by	Reviewed by
Revision 1	19/04/2024	Jack Lang	Matthew Harrison
Revision 2	7/05/2024	Jack Lang	Michael Allan
Revision 3	5/06/2024	Nikolaj Drydale-Cech	Michael Allan

Table of contents

1. Introduction

Transport for NSW is proposing to convert the existing bus depot at 630 to 636 Pittwater Road, Brookvale to service Zero Emission Buses (ZEB) from one that currently only services internal combustion engines (the Proposal). The Proposal is located on Lot A, deposited plan (DP) 435910 within the Northern Beaches Local Government Area (Northern Beaches LGA).

The Proposal is approximately three hectares and is located on land zoned as E3 Productivity Support Warringah Local Environmental Plan 2011 (Warringah LEP).

The Study Area comprises the Proposal with a 300 metre buffer. The site locality and the Study Area are shown in Figure 1.

1.1 Existing Brookvale bus depot layout and aspects

The existing Brookvale depot has a nominal operating capacity of around 226 vehicles. The current depot layout and aspects are shown in Figure 1.

The depot has the following aspects:

- office and amenity building
- refuelling area with three bays
- bus wash area with two bays
- maintenance area with 20 bays
- suspension maintenance area with two bays for suspension tests
- decommissioned bus storage area for storage prior to disposal
- access and circulation of the depot involves:
  - site access from Pittwater Road from a signalised junction
  - buses are forced left and circulate the depot around the perimeter
  - the circulation forks after the refuelling bay area, where buses can either turn right to exit the depot or they can turn left to go to an additional parking area or the specific maintenance testing area to the southern end of the depot
  - circulation loops back around to the depot exit
- car parking includes:
  - access through a right-in right-out junction with Pittwater Road
  - vehicles are prohibited from driving from the staff parking area into the depot. Staff access is via pedestrian access
  - 120 car spaces
- bus parking includes:
  - grid arrangement in the centre of the depot
  - 17 rows that can accommodate between two and nine buses
  - additional parking around the circulation routes, particularly to the north of the depot and in the south east corner
  - buses also park in maintenance bays if available.

The Proposal is fed by a low voltage (LV) three phase and neutral 400 volt supply from an Ausgrid kiosk substation through a buried route. The location of the substation is not known; however, it is not located within the depot boundary. LV distribution is provided via the main switchboard, which is located within the Main Switch room.

There are several distribution boards supplying electrical equipment within the depot that are located within the depot yard, the office building, an ancillary building and the maintenance shed.

Figure 1 Study Area

1.2 Proposed Brookvale bus depot layout and key infrastructure features

As part of NSW Government commitment to Net Zero Emissions by 2050, Transport is proposing to deliver the Zero Emission Buses (ZEB) Program to transition the state's public transport buses to zero emissions technology by 2047. Under the ZEB Transition Plan, buses in Greater Sydney will be transitioned by 2035, with Outer Metropolitan regions to follow by 2040 and regional and rural areas by 2047.

The first stage of the transition in Greater Sydney will see 11 existing bus depots converted to battery electric technology and a new electric bus depot built in Macquarie Park to support a new 1,219 electric bus fleet by 2028. There will be power grid and power supply upgrades to support the electric bus depots as part of the program.

Transport proposes to convert the existing bus depot at 630-636 Pittwater Road Brookvale to support the new electric bus fleet. The location of the Brookvale Bus Depot is shown in Figure 1.

Additionally, Transport is investigating the use of batteries as part of Transport's energy procurement strategy.

Key features of the proposal include:

- installation of switch gear and cabling – high and low voltage
- installation of transformers and other electrical infrastructure
- civil works for depot configuration change and charger mounting (gantry system)
- installation of charger and charging infrastructure
- installation of battery energy storage systems
- provision for photovoltaic (PV) system
- installation of a back-up generator
- testing and commissioning activities.

Refer to indicative design in Figure 2. The gantry system would run across the bus parking bays, with pantograph charging heads that drop down to affect charging. One of the bus parking rows would house electrical infrastructure, including a backup generator and allow provision for a battery energy storage system.

The depot currently houses around 226 buses and the proposal would include a like for like replacement from diesel to battery electric buses. The buses will be rolled out progressively from 2025 to around 2028. The proposal would include an internal reconfiguration to maintain current capacity.

Figure 2 Proposed depot layout

1.3 Scope of this report

This report provides a Noise and Vibration Impact Assessment (NVIA) for the proposal. This NVIA is required to address noise and vibration impacts that have the potential to be generated by the proposal.

This report:

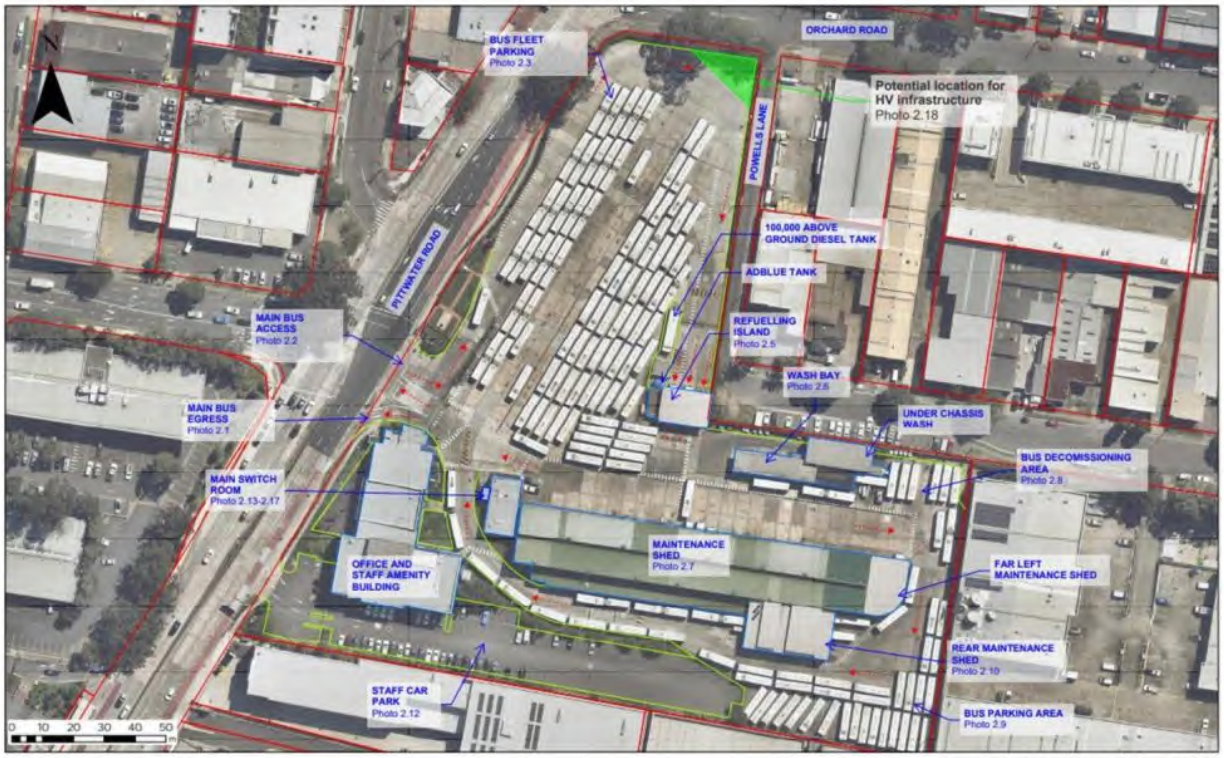
- Identifies the existing noise sensitive receivers
- Presents details about existing noise environment
- Identifies the applicable NSW noise and vibration policies and applicable construction and operational design criteria
- Assesses the construction and operational noise and vibration impacts in accordance with the applicable NSW policies
- Provides construction and operational noise and vibration mitigation and management measures to comply with the applicable design criteria.

2. Location

The Brookvale depot site is located at address 630-636 Pittwater Road, Brookvale NSW 2100.

The proposal is located on Lot A deposited plan (DP) 435910 within the Northern Beaches Local Government Area (LGA). The total area of the site is 29,403m^2. The existing layout of the Brookvale depot is depicted in Figure 3 below.

Figure 3 Site Diagram



Existing layout and facilities at Brookvale depot

The site is located adjacent to the Pittwater Road to the east and the Brookvale commercial/Industrial zone to the north, south, and west. Presented below in Figure 4 is an illustration of the site location in relation to the nearest sensitive receivers.

Figure 4 Sensitive receiver locations

The nearest residential sensitive receivers are located to the south of the project site on Willam Street. This group of residential receivers is located in close proximity to Pittwater Road. Two medical receivers were also identified to be in close proximity to the Proposal. The Vale Evening Medical Centre is located to the west of proposed development site on Pittwater Road and Brookvale Community Health centre is located on the south side of the project site.

The noise environment for all sensitive receivers is controlled by significant amounts of road traffic noise from Pittwater Road. The noise environment throughout the assessment is considered to be Urban due to the high traffic volumes controlling the ambient noise levels in the environment.

3. Existing ambient noise environment

3.1 Noise monitoring and analysis

Background noise logging was undertaken at one location from 12 to 21 February 2024. The noise logging data has been measured, analysed and reported in accordance with Australian Standard 1055:2018 "Acoustics - Description and measurement of environmental noise" and the EPAs Noise Policy for Industry (NPfI).

The noise logger location is identified in Appendix A and was selected to measure the existing noise environment representative of the nearby residential receivers.

The Rating Background Noise Level (RBL) is the background noise level used for assessment purposes at the nearest potentially affected receiver. It is the 90th percentile of the daily background noise levels during each assessment period, being day, evening and night. The $L_{Aeq,period}$ is the Ambient noise level (logarithmically averaged) over the defined period.

The standard measurement periods used in NSW for assessment of noise impacts are:

- Daytime – 7 am to 6 pm
- Evening – 6 pm to 10 pm
- Night-time – 10 pm to 7 am

Presented in Table 3-1 is a summary of the Ambient and RBL noise levels measured over the entire measurement period. Noise logging charts are presented in Appendix B. These noise levels are used throughout the assessment to determine the existing noise environment and establish appropriate site-specific noise criteria.

Table 3-1: Measured ambient noise levels, dB(A)

ID	Address	Rating background level (RBL)			Ambient noise level, ($L_{Aeq,15min}$)		
		Daytime	Evening	Night-time	Daytime	Evening	Night-time
L01	15 William Street, North Manly	47	42	39	60	57	52

4. Operational noise assessment

4.1 Noise criteria

4.1.1 Operational facility noise criteria

Noise Policy for Industry

Responsibility for the control of noise emissions in New South Wales is vested in Local Government and the NSW Environment Protection Authority (EPA).

The EPA's NSW Noise Policy for Industry (NPfI) provides guidance on appropriate noise levels for external noise emissions from fixed facilities on surrounding sensitive receivers. The NPfI criteria for industrial noise sources have two components:

- Controlling the intrusive noise impacts for residents and other sensitive receivers in the short term; and
- Maintaining noise level amenity of defined land uses for residents and sensitive receivers in other land uses.

The intrusiveness noise level protects against significant changes in noise, while the amenity noise level seeks to protect against cumulative noise impacts from industry. Together, these levels are used to assess the potential impact of noise and assess reasonable and feasible noise mitigation measures. Project noise trigger levels are developed through this process. They are not used directly as regulatory limits.

The NPfI requires a project to take consideration of other industrial noise sources in setting amenity noise objectives. In cases of a new development where there are no existing industrial sources, the NPfI accepts a default of the amenity noise level minus 5 dB to take account of future industrial sources.

For this project, the default amenity noise level minus 5 dB adjustment will be used to account for cumulative noise sources.

Intrusive noise impacts – residential receivers

The intrusiveness noise level protects against significant changes in noise levels and is applicable to residential receivers only. The criterion is defined by the formula:

$$L_{Aeq,15min} = rating\ background\ noise\ level + 5\ dB$$

The RBL is the average background noise level over a measurement period of at least one week. Using the RBL results in the intrusiveness criterion being met for 90% of the time. Adjustments are to be applied to the level of noise produced by the source that is received at the assessment point where the noise source contains annoying characteristics such as tonality or impulsiveness.

Presented below in Table 4-1 is a summary of the measured RBL and corresponding intrusiveness level for each time period.

Table 4-1: Intrusive noise criteria, dB(A)

ID	Rating background level			Intrusive noise level, $L_{Aeq,15min}$		
	Daytime	Evening	Night-time	Daytime	Evening	Night-time
L01	47	42	39	52	47	43

Protecting noise amenity

The amenity noise level seeks to protect against cumulative noise impacts from industry.

The NPfI uses project noise trigger levels measured over a 15-minute time period, assessed as an $L_{Aeq,15min}$. To account for converting $L_{Aeq,period}$ to $L_{Aeq,15min}$, the NPfI accepts a default conversion factor of $L_{Aeq,15min} = L_{Aeq,period}$ + 3dB.

To ensure industrial noise levels do not gradually increase with new developments, a minus 5 dB correction is applied to the amenity noise level. The amenity noise levels have been presented in Table 4-2.

Table 4-2: Noise Policy for Industry amenity noise levels, dB(A)

Receiver	Noise amenity area	**Time of day**	Recommended amenity noise level
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks	5 dB(A) above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day		
School classroom	All	Noisiest 1-hour period	35 internal
Hospital ward	All	Noisiest 1-hour period	35 internal
50 external			
Place of worship	All	When in use	40
Passive recreation	All	When in use	50
Active recreation	All	When in use	55
Commercial	All	When in use	65
Industrial	All	When in use	70
Industrial interface	Add 5 dB(A) to recommended noise amenity area		

Presented in Table 2.3 of the NPfI is a more detailed description of receiver categories.

The residential receivers are zoned within a R4 High Density Residential land zoning category. The NPfI considers R4 to be Urban, which is an area with an acoustical environment that:

- is dominated by 'urban hum' or industrial source noise, where urban hum means the aggregate sound of many unidentifiable, mostly traffic and/or industrial related sound sources
- has through-traffic with characteristically heavy and continuous traffic flows during peak periods
- is near commercial districts or industrial districts; and
- has any combination of the above.

Project amenity noise criteria

The applicable amenity noise criteria for each zone are presented below in Table 4-3.

The NPfI uses project noise trigger levels measured over a 15-minute time period, assessed as an $L_{Aeq,15min}$. To account for converting the amenity $L_{Aeq,period}$ to an $L_{Aeq,15min}$, the NPfI accepts a default conversion factor of $L_{Aeq,15min} = L_{Aeq,period} + 3dB$. To ensure industrial noise levels do not gradually increase with new developments, a minus 5 dB correction is applied to the amenity noise level. Both these corrections have been included in the amenity noise levels below.

Table 4-3: Noise Policy for Industry Amenity noise levels, dB(A)

NPfI Category	Daytime	**Evening**	Night-time
Urban residential	58	48	43
Hospital/Medical External (Noisiest 1-hour period when in use)	50	-	-
Passive recreation	48 (when in use)		
Commercial	63 (when in use)		
Industrial	68 (when in use)		

Corrections for annoying noise characteristics

Table C1 of the NPfI provides corrections for tonality, intermittency, irregularity or dominant low-frequency content. These corrections are to be added to the measured or predicted noise levels at the receiver before comparison with the project noise trigger levels. NPfI also provides adjustments for duration that can increase the project noise criterion for unusual or one-off high-noise level events.

Low frequency noise correction

A difference of 15 dB or more between the C- and A-weighted noise measurements, identifies the potential for an unbalanced spectrum and an increased likelihood of low frequency noise annoyance.

The difference between C- and A-weighted noise levels is typically used as a screening tool to determine if further investigation is required. Where further investigation confirms significant low frequency content, a low frequency noise correction is applied to the predicted or measured noise levels.

The NPfI identifies that the corrections should “reflect external assessment locations”, or sensitive receiver locations so the existing noise environment should be considered.

Project specific noise trigger levels

The project specific noise trigger levels (PSNTLs) for residential receivers is the more stringent of the intrusiveness and amenity noise criteria. For other receivers the PSNTLs are the amenity noise criteria.

Presented below in Table 4-4 is a summary of this assessments PSNTLs.

Table 4-4: Project specific noise trigger levels, dB(A)

Receiver type	Time period	RBL	Intrusiveness	Amenity[1]	Overall[2]
Residential	Daytime	47	52	53	52
	Evening	42	47	43	43
	Night-time	39	43	38	38
Medical	Noisiest 1-hour	Not applicable	Not applicable	50	50
Commercial	When in use	Not applicable	Not applicable	63	63
Industrial	When in use	Not applicable	Not applicable	68	68

Note 1 The amenity noise level has been reduced by 5 dB(A) to account for other industrial noise sources and increased by 3 dB(A) to convert from $L_{Aeq,period}$ to $L_{Aeq,15minute}$

Note 2 The overall noise level is the more stringent of the intrusiveness and amenity criteria

4.1.2 Road generating development – road traffic noise

Industrial developments have the potential to generate additional road traffic and associated noise impacts from the vehicles accessing the site. The NSW Road Noise Policy provides guidance on appropriate noise criteria which should be considered.

Presented below are the applicable noise criteria for road traffic on arterial roads.

Table 4-5: Road generating development noise criteria, dB(A)

Road category	Type of project / land use	Assessment criteria, dB(A)	
		Daytime (7am to 10pm)	Night-time (10pm to 7am)
Freeway /arterial / sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq\ (15\ hour)}$ 60 (external)	$L_{Aeq\ (9\ hour)}$ 55 (external)
Local roads	Existing residences affected by additional traffic on existing local roads generated by land use developments	$L_{Aeq\ (1\ hour)}$ 55 (external)	$L_{Aeq\ (1\ hour)}$ 50 (external)

Where the predicted noise levels with the proposal indicate likelihood to exceed the noise criteria presented in Table 4-5, it is considered not reasonable and feasible to provide noise mitigation measures if the proposal does not increase noise by greater than 2.0 dB. A change of 2 dB in road traffic noise is often considered to be indiscernible.

4.1.3 Maximum noise level assessment

During night-time periods, increased night-time noise levels have the potential to create sleep disturbance noise impacts.

The NPfI identifies the amenity noise level, discussed in Section 4.1.1, '*will protect against noise impacts such as speech interference, community annoyance and some sleep disturbance'*. However further guidance is provided in Section 2.5 of the NPfI, which requires consideration of maximum noise level events. This approach provides a screening criterion. The NPfI identifies that where the screening criterion is exceeded, a detailed maximum noise level event assessment should be undertaken.

The sleep disturbance screening noise criteria are:

- $L_{Aeq,15min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or
- L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater.

These screening criteria were developed based on a review of research provided by the EPA's NSW Road Noise Policy. The detailed assessment should consider all feasible and reasonable noise mitigation measures with a goal of achieving the above trigger levels.

4.2 Operational noise assessment

4.2.1 Modelling methodology

Site operational noise emissions have been calculated using the CONCAWE algorithm. The CONCAWE algorithm has been selected to ensure that noise enhancing weather conditions including temperature inversions and downwind conditions have been appropriately considered in the noise assessment. These effects are particularly important for this site. The nearest sensitive receivers will be shielded from most impacts by the adjacent industrial buildings, however with temperature inversions the shielding effects may be reduced for receivers further away from the site.

A worst-case assessment has been completed assessing the adverse weather conditions in all directions. The following weather conditions have been included in the assessment, in accordance with the requirements of the NPfI.

Standard meteorological conditions:

- 0.5 m/s wind speeds; and
- Stability category D.

This is equivalent to CONCAWE Meteorological Category 4

Daytime and evening noise enhancing properties:

- 3 m/s wind speeds; and
- Stability category D.

This is equivalent to CONCAWE Meteorological Category 5

Night-time noise enhancing properties:

- 2 m/s wind speeds; and
- Stability category F.

This is equivalent to CONCAWE Meteorological Category 6 (the highest category)

4.2.2 Operational site noise emissions

Noise generating features of the Project include:

- Future space for a total of 226 buses on the depot site, including:
  - maintenance workshop would provide space for 20 buses, comprising spaces for spray booth, and inspection pits
  - Refuelling area with 3 bays
- bus wash bay
- Rectifier transformers from 1.2 MVA to 3.3 MVA
- Office and facilities for 30 workers with key noise emitting plant including:
  - Air conditioning for buildings
  - Carpark exhaust

  - Electrical and plant room ventilation
- on-site parking for 120 cars (TBC)

The greatest noise source would generally be generated from buses entering and leaving the site. The traffic and transport assessment has identified the future peak movements:

- AM peak max = 81 buses/hr out (6.00-7.00am) and 93 buses/hr in (9.00-10.00am)
- PM peak max = 85 buses/hr movement (2.00-3.00pm) and 54 buses/hr in (6.00–7.00 pm)

Light vehicle movements

- AM peak max = 40 cars/hr out (9-10am), 63 cars/hr in (7-8am)
- PM peak max = 42 cars/hr out (3.45-4.45pm), 54 cars/hr in (2.15-3.15pm).

Source noise emission levels

Presented below is a summary of the source noise levels incorporated in this assessment. Electric bus idling and passby noise measurements were undertaken at Leichardt bus depot. The noise measurements noted there was an audible hum associated with the acceleration of the vehicles, and air-conditioning dominated the stationary noise. The measured noise levels were consistent with the Acoustic Vehicle Alerting System (AVAS) maximum sound power levels provided by UN Regulation No. 138, *Uniform provisions concerning the approval of Quiet Road Transport Vehicles with regard to their reduced audibility.*

Table 4-6: Noise Source Sound Power Levels, dB(A)

Source	Description	Sound Power Levels (SWL)	
		15-minute noise level, L_{Aeq} dB(A)	Maximum noise level, L_{AFmax}
Rectifier transformer	Noise level for conservatively large rectifier transformers	74	75
2.5 MVA Generator (Acoustic Enclosed)	Proposed backup power generator during power outage.	92	92
AC Condenser Units	Typical noise generated by commercial condenser units	85	87
Ventilation fans	Ventilation fans would be required on undercover carparks and the maintenance workshop	100	102
Light Vehicles	Typical light vehicle noise level operating within the carpark	94	101
Electric buses idling	Measured idling electric bus, including AC unit noise	90	92
Electric buses moving	Measured moving electric bus, including noise generated by AC unit and Acoustic Vehicle Alerting System (AVAS)	95	104
Spray booth	Assumed to be operating during the daytime period only	83	95
Maintenance workshop	Operational 24/7	90	108
Bus wash	Operational 24/7	86	94

The noise model has assessed the total number of vehicle movements leaving and exiting the site (i.e. arrival and departure movements) to complete a full lap of the site within a 15-minute period. This is a conservative assumption made to ensure

that the greatest noise impacts are considered. The workshop, bus wash, and all mechanical services equipment have also been assumed to be operating during all assessment periods.

4.2.3 Annoying characteristics of noise

The NPfI requires annoying characteristics of noise to be taken into consideration in the assessment of noise. Annoying characteristics include:

- Tonal noise – noise containing a prominent frequency and characterised by a defined pitch.
- Low frequency noise – where a source has a significant component of noise in the 10 – 160 Hz range
- Intermittent noise – where the noise source at the receiver varies by more than 5 dB(A)

For the characteristics to be relevant, they must be assessed at the receiver location, so the propagation characteristics of noise and existing ambient noise level should be taken into consideration.

The site has been arranged so that the buses will not need to reverse and engage the reversing alarm. Site emissions are not considered to generated annoying characteristics. Penalties have not been included in the assessment to account for annoying characteristics.

Assessment scenarios

Three separate assessment scenarios have been considered, daytime, evening, and night-time. During each assessment all mechanical plant, including the maintenance workshop and wash bay have been assumed to be operating. During the night-time period it has been assumed that AC units would operate in night mode. Vehicle movements have been based on the vehicle movement timetable provided by the Transport of NSW for the existing bus movement at the Brookvale site. Half the number of movements in an hour period have been assumed to occur in a 15-minute period.

The assessed scenario considers the following movements in a 15-minute period:

- Daytime – 47 buses arriving, 32 light vehicles arriving / departing
- Evening – 27 buses arriving, 10 light vehicles arriving / departing
- Night-time – 41 buses departing, 10 light vehicles arriving / departing

4.2.4 Predicted noise impacts

Presented below is a summary of the worst-case daytime, evening, and night-time noise impacts during each period. Noise contours are presented in Appendix B.

Table 4-7: Daytime predicted noise levels, $L_{Aeq,15min}$ dB(A)

ID	Address	Criteria	$L_{Aeq,15min}$ noise level	Exceedance
R1	21 William Street	52	47	-
R2	9 Short Street	52	45	-
R3	31 William Street	52	23	-
R4	29 William Street	52	46	-
R5	19 William Street	52	44	-
R6	7 Short Street	52	46	-
R7	21 William Street	52	43	-
R8	3 William Street	52	27	-
R9	Vale Medical Centre	50	44	-
R10	Northern Beaches OTP Clinic	50	47	-

Table 4-8: Evening predicted noise levels, $L_{Aeq,15min}$ dB(A)

ID	Address	Criteria	$L_{Aeq,15min}$ noise level	Exceedance
R1	21 William Street	43	42	-
R2	9 Short Street	43	42	-
R3	31 William Street	43	21	-
R4	29 William Street	43	41	-
R5	19 William Street	43	40	-
R6	7 Short Street	43	38	-
R7	21 William Street	43	37	-
R8	3 William Street	43	26	-
R9	Vale Medical Centre	50	43	-
R10	Northern Beaches OTP Clinic	50	40	-

Table 4-9: Night-time predicted noise levels, $L_{Aeq,15min}$ dB(A)

ID	Address	Criteria	$L_{Aeq,15min}$ noise level	Exceedance
R1	21 William Street	38	38	-
R2	9 Short Street	38	34	-
R3	31 William Street	38	20	-
R4	29 William Street	38	35	-
R5	19 William Street	38	34	-
R6	7 Short Street	38	37	-
R7	21 William Street	38	33	-
R8	3 William Street	38	23	-
R9	Vale Medical Centre	50	41	-
R10	Northern Beaches OTP Clinic	50	39	-

The predicted noise levels presented in Table 4-7, Table 4-8, and Table 4-9 indicates that compliance with the applicable noise criteria would be achieved during all time periods. Further consideration of noise mitigation measures is not required.

4.2.5 Maximum noise level assessment

Maximum noise levels have been predicted for the night-time period based on the source noise levels in Section 4.2.2. Presented below in Table 4-10 is a summary of the predicted L_{AFmax} noise levels, and the receiver specific screening criterion. An exceedance of the screening criterion indicates the potential for sleep disturbance to be a potential issue which requires further investigation.

Table 4-10: Night-time predicted maximum noise levels, L_{AFmax} dB(A)

ID	Address	Screening criterion	L_{AFmax} noise level	Exceedance
R1	21 William Street	54	49	-

ID	Address	Screening criterion	L_{AFmax} noise level	Exceedance
R2	9 Short Street	54	46	-
R3	31 William Street	54	32	-
R4	29 William Street	54	43	-
R5	19 William Street	54	43	-
R6	7 Short Street	54	44	-
R7	21 William Street	54	36	-
R8	3 William Street	54	38	-

The results in Table 4-10 indicate that due to the existing high levels of background noise in the area and the limited noise generated by the site, sleep disturbance noise impacts are unlikely to be a concern for this project. Further consideration of noise mitigation measures is not required.

4.2.6 Operational road traffic

The purpose of this project is to store and charge buses while they are not in use. The nature of the proposal is to add vehicles to the road network which has the potential to increase road traffic noise. The site is in close proximity to major arterial roads, and away from noise sensitive receivers. Arterial roads such as Pittwater Road have existing high traffic volumes which exceed the Road Noise Policy for the nearest residential receivers. However, the additional volumes this project will add to the network are comparatively small which typically results in very small changes in noise. The existing capacity of the bus depot is 229 buses (including 19 spare buses) while the proposed number of buses is 226. Traffic generated by the Project will be limited to light vehicles due to the development of the proposed 2 storey carpark.

Buses would only access from Pittwater Road via a signalised intersection, an arterial State classified road. In both instances the buses do not pass residential receivers until they have joined the arterial roads. Presented below is an illustration of the bus and light vehicle access routes. State roads are managed and financed by Transport for NSW and Regional and Local roads are managed and financed by councils.

Pittwater Road is a heavily utilised three lane dual carriageway. The road features bus lanes on either side. The southbound bus lane is from 6am to 10 am Mondays to Fridays while the northbound bus lane is from 3pm to 7pm Mondays to Fridays. Light vehicles would access from Pittwater Road.

Figure 5 Bus and light vehicle access routes

The existing site has a volume of 496 bus movements during the daytime, and 98 movements during the night-time. The site currently provides 120 staff car parking spaces with no anticipated significant increase in this number. Pittwater Road have traffic volumes of over 40,000 vehicles a day. The change in noise from the additional movements be less than 0.1 dB. While the existing traffic noise on Pittwater Road exceeds the arterial road noise criteria, the change in noise is well below 2 dB. It is not considered reasonable, nor feasible to provide noise mitigation to reduce road traffic noise impacts as part of this proposal.

5. Construction noise and vibration assessment

5.1 Existing noise levels

5.1.1 Sensitive land use

A survey of land use in the area surrounding the Proposal was conducted to identify the types of receivers and verify the presence of sensitive land users (including critical working areas such as operating theatres and precision laboratories) that might be susceptible to potential noise disturbances from the proposed construction work.

The existing noise environment across the proposal is dominated by road traffic noise from the Pittwater Road. The local road network also contributes to background noise levels, though to a smaller extent than major roads.

The majority of sensitive receivers surrounding the site are industrial and commercial, however residential receivers are located to the south on William Road.

5.1.2 Noise catchment areas (NCA)

To assist the assessment process of the noise impact from construction noise, noise catchment areas are identified to reflect land uses and types of receivers within each area. A description of the NCAs relevant to the works being undertaken is provided in Table 5-1. The description includes the primary characteristics of each area. The maps for the noise catchment areas are provided in Figure 6.

Figure 6 Noise Catchment Areas

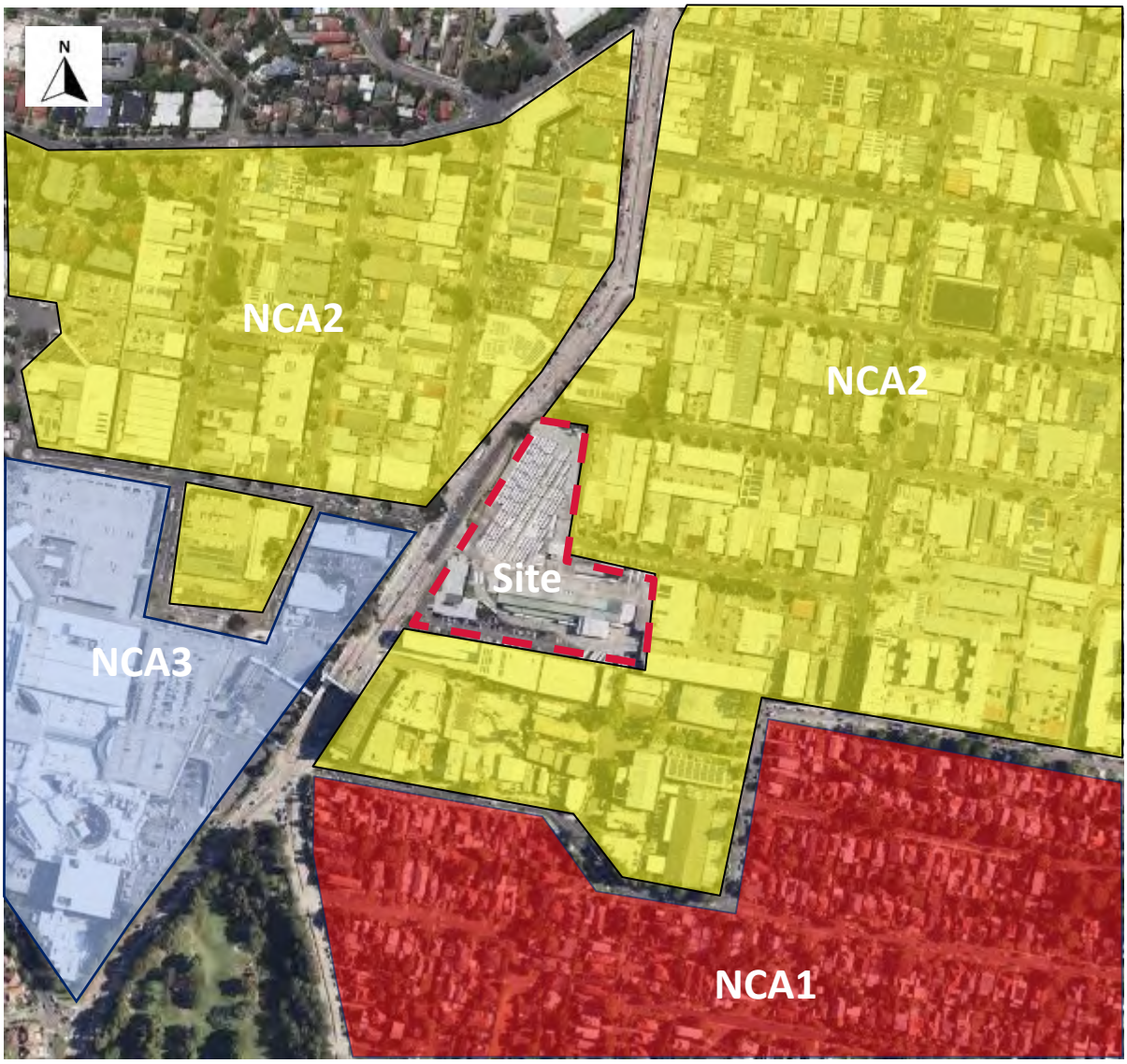


Table 5-1: NCAs applicable to construction works

NCA	Area Description
NCA1	The North Manly noise catchment areas consists of medium density residential receivers. Noise sensitive receivers within this NCA potentially affected by the proposed construction work.
NCA2	The Brookvale noise catchment area consists of a combination of commercial, general industrial and other business-related development. The background noise level within NCA2 is mostly controlled by traffic (Pittwater Road) and local industry. In addition, one medical receiver Vale Medical & Dental Practice is located at 1A Cross Street, Brookvale adjacent to Pittwater Road.
NCA3	Noise catchment area consists of Commercial receivers. Vale Medical Practice is located within this area and noise sensitive receive criteria for medical centre have been applied.

5.2 Relevant noise criteria

5.2.1 EPA Interim Construction Noise Guidelines (ICNG)

The assessment of noise impacts from construction work associated with the Zero Emission Buses Brookvale Depot proposal have been undertaken in accordance with the assessment and management approach outlined in the Interim Construction Noise Guidelines (ICNG). Table 2 within the ICNG sets out the noise management level at residences and restrictions apply to activities which generate noise at residence above the 'highly noise affected' noise management level.

The rating background level (RBL) is used when determining the management level. The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). The term RBL is described in detail in the NSW Industrial Noise Policy (EPA 2000).

As a guide, the difference between the internal noise level and the external noise level is typically 10 dB with windows open for adequate ventilation.

Table 5-2: ICNG Noise Criteria

Time of Day	Management Level $L_{Aeq(15\ min)}$	How to apply
Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted or measured $L_{Aeq\ (15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. • The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. • Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences 2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5 dB	• A strong justification would typically be required for works outside the recommended standard hours. • The proponent should apply all feasible and reasonable work practices to meet the noise affected level. • Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community. For guidance on negotiating agreements see section 7.2.2.
Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence. Noise levels may be higher at upper floors of the noise affected residence.		

Airborne noise management levels (ANML) have been established for the sensitive land uses including commercial and industrial receivers. The unattended noise monitoring was undertaken at the nearest residential boundary that will be most exposed to the proposed construction area.

Table 5-3: Airborne Noise Management Levels (NMLs)

Time of Day	Management level L_{Aeq}(15min) dB(A)	Airborne Noise Management Levels (ANML) L_{Aeq}(15min) dB(A)
Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL + 10 dB	47 + 10 = 57 dB(A)
	Highly noise affected 75 dB(A)	75 dB(A)
	Noise affected RBL + 5 dB	43 + 5 = 48 dB(A) **Evening OoHW**
		38 + 5 = 43 dB(A) **Night-time OoHW**
Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 metres above ground level. If the property boundary is more than 30 metres from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 metres of the residence. Noise levels may be higher at upper floors of the noise affected residence.		

Specific NMLs have been established for the proposed work based on the methodology outlined in Table 5-3.

Non-mandatory management levels for nearby property which are sensitive to noise impacts are presented in Table 5-4. The values are set to ensure that characteristic activities in each of these land uses would not be impacted by noise. The noise management levels are only applicable when the property is in use, such as classrooms or offices during working hours. When assessing noise levels, measurements are taken at the centre of occupied rooms for internal noise and at the most affected point within 50 metres of the area boundary for external noise.

Table 5-4: Noise Management Levels for other sensitive receivers

Land Use	Management Level, L_{Aeq} (15min) Applies when in use
Classrooms at schools and other educational institutions	Internal noise level 45 dBA
Hospital wards and operating theatres	Internal noise level 45 dBA
Office, retail outlets	External noise level 70 dBA
Industrial premises	External noise level 75 dBA
Active recreation areas (such as parks and sports grounds or playgrounds)	External noise level 65 dBA
Passive recreation areas (such as outdoor grounds used for teaching, outdoor cafes or restaurants)	External noise level 65 dBA

Other noise-sensitive businesses require separate specific noise goals. It is suggested in the ICNG that the internal construction noise levels at these premises are to be referenced to the 'maximum' internal levels presented in AS 2107. Recommended 'maximum' internal noise levels from AS 2107 are reproduced in Table 5-5 for other sensitive receiver types.

Transport for NSW's "Construction Noise and Vibration Guideline" (CNVG 2023) and AS 2107 provide management levels and recommended design sound levels for spaces related to medical practice. Upon review of the CNVG 2023, medical practices have an internal sound level criteria of 45 dB(A). For these medical receivers, where feasible and reasonable the objective should be to achieve levels consistent with hospital wards/places of worship and the external noise level objective to be set at 55 dB(A) based on a conservative assumption of 10 dB(A) reduction from inside to outside.

Table 5-5: AS 2107 Recommended Maximum Internal Noise Levels

Land Use	Time Period	AS 2107 Classification	Recommended "Maximum" Internal L_{Aeq} (dBA)
Medical	Daytime & Evening	Medical rooms	45 dB(A) Internal / 55 dB(A) External
Passive recreation	When in use	-	60 dB(A)

5.3 Noise modelling methodology

Noise levels resulting from the proposed construction work have been predicted based on the review of the documentation provided by Transport for NSW, with discussion from the construction arrangement. For each noise modelling scenario, the worst-case noise impacts have been assessed using the CONCAWE noise propagation algorithm and modelled in SoundPLAN v8.2 software. The algorithm calculates worst case downwind noise propagation and is considered appropriate for construction noise impacts in NSW.

Noise modelling scenarios have incorporated the proposed construction staging that is stated in Table 5-6 below.

Table 5-6: Proposed construction staging

Stage	Activities
Site establishment	
1	• Decommissioning of existing fuelling infrastructure (gas and diesel) • General site establishment works • Civil works for depot configuration change and charger mounting (ground / gantry) and install / removal of additional at-grade car parking
Ground works (trenching and piling) & building works	
2	• Ground disturbances for trenching (cabling and cabling terminations) and structures (auxiliary building relocation, demolition or construction) • Piling works related to gantry installation
Installation of electrical Infrastructure	
3	• installation of transformers and other electrical infrastructure • installation of battery energy storage systems and PV systems • installation of switch gear (LV & HV)
Miscellaneous out of hours works (nighttime)	
4	• Concrete pours for plinths • Delivery of any oversized items that may require ROLs • Installation of any oversized / heavy items (e.g. gantry structure), may include the use of a piling rig (bored) • Any required isolations or cutovers etc.

Each of the noise modelling scenarios is based on the construction staging presented above. The construction noise impact assessment has been prepared in accordance with the *Construction Noise and Vibration Guideline – Public Transport Infrastructure 2023* guideline (CNVG 2023). Airborne noise level has been predicted at noise sensitive receivers and compared with the specified NMLs.

Where noise levels are predicted to exceed the NMLs, reasonable and feasible mitigation and work practices need to be investigated and implemented to minimise noise impacts.

Some plant and equipment emit high noise levels, known as highly noise-intensive plant. Examples include hydraulic rock breakers, concrete saws, and ballast tampers. The use of these highly noise-intensive items of plant can lead to noise levels

exceeding the relevant assessment criteria, even if they are used for only short period of time. Following the methodology outlined in the ICNG, all construction plant and equipment are assumed to be operating at full power simultaneously, resulting in worst-case noise level predictions as documented later in this report. However, in practice, these levels are unlikely to be representative of the noise levels experienced by the majority of the community or over the majority of the construction period.

5.3.1 Construction noise sources levels

Presented below in Table 5-7 is a summary of Sound Power Levels (Lw) of construction equipment which has been including in the noise modelling process. Each noise modelling scenario in Table 5-7 is presented with a total Sound Power Level with typical worst-case assumptions.

Table 5-7: Construction noise modelling scenarios and equipment sound power level

Scenario	Equipment	Sound Power Level, SWL dB(A)[1]
Site establishment	Excavator (up to 20 tonne), Truck and dog, Concrete saw, Light vehicle, Powered hand tools, Rock hammer attachment, Roller (vibratory), Wacker packer, Concrete truck, Vibrator – concrete, Generators, Mobile crane, and Welding equipment	125
Ground works (trenching and piling) & building works	Concrete saw, Light vehicle, Powered hand tools, Excavator (up to 20 tonne), Piling rig (bored), EWP, Welding equipment, Concrete truck, Vibrator – concrete, Truck and dog, Mobile crane, Generators, and Scaffolding	122
Installation of electrical Infrastructure	Light vehicle, Powered hand tools, EWP, Welding equipment, Truck and dog, Mobile crane, Generators, and Scaffolding	118
Miscellaneous out of hours works (nighttime)	Light vehicle, Vacuum truck, Powered hand tools, Piling rig (bored), EWP, Truck and dog, Mobile crane, Daymakers, Generators, and Scaffolding	119
Note 1 The overall sound power level is based on the equipment SWLs in Appendix C CNVG 2023, and equipment duty cycles based on typical worst-case 15 minute period operation.		

The CNVG 2023 requires all plant and equipment used for construction to have an operating Sound Power or Sound Pressure Levels below or equal to the allowable noise levels in Table 19 of CNVIG 2023 Appendix C.

Equipment not listed in Table 19 of the CNVG 2023, shall achieve compliance to the most applicable equipment listed in Australian Standard *AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites*, British Standard *BS 5228-1 Code of practice for noise and vibration control on construction and open sites* or DEFRA noise database14 (2006). The list of construction plant and associated sound power levels used in noise modelling is provided in Table 5-8 below.

Table 5-8: Construction plant and associated works and sound power levels

Plant	Site establishment	Ground works (trenching and piling) & building works	Installation of electrical Infrastructure	Miscellaneous out of hours works (nighttime)	**Sound power level – SWL dB(A)**
Concrete saw	X	X			118
Light vehicle	X	X	X	X	103
Vacuum truck				X	109

Plant	Site establishment	Ground works (trenching and piling) & building works	Installation of electrical Infrastructure	Miscellaneous out of hours works (nighttime)	**Sound power level – SWL dB(A)**
Powered handtools	X	X	X	X	112
Handtools	X	X	X	X	99
Excavator (up to 20 tonne)	X	X			105
Rock hammer attachment	X				122
Roller (vibratory)	X				109
Wacker packer	X				106
Piling rig (bored)		X		X	112
EWP		X	X	X	98
Welding equipment	X	X	X		110
Concrete truck	X	X			109
Vibrator - concrete	X	X			113
Truck and dog	X	X	X	X	108
Mobile crane	X	X	X	X	113
Daymakers				X	98
Generators	X	X	X	X	103
Scaffolding		X	X	X	-
Activity sound power level	**125**	**122**	**118**	**119**	**-**

The nearest residential and non-residential sensitive receives identified are those that are closest to the point at which the noisiest piece of plant or equipment will be operated. The predicted level is then compared against the NMLs and an exceedance is calculated. The receiver where the exceedance has been identified determines the level of Additional Mitigation Measures which is considered. These additional mitigation measures are based on those specified in Section 7.2.2 of the CNVG 2023.

The installation timeframes would be in the order of approximately 24 months. This is dependent on the ZEB procurement rate and diesel bus disposal rate.

5.4 Construction noise modelling results

An assessment of the proposed construction noise impacts has been calculated using the CONCAWE noise propagation algorithm in SoundPLAN 8.2. The assessment has been based on the equipment which would be used during the proposed works identified in Section 5.3.

Presented below in Table 5-9 is a summary of the worst-case predicted noise impacts. Noise contours are also presented in Appendix C.

Table 5-9: Construction works and predicted construction noise levels

Noise catchment area	Noise management level (NML) / Out of Hours (OoHW)	Site establishment dB(A)	Ground Works (trenching and piling) & building works dB(A)	Installation of electrical Infrastructure dB(A)	Miscellaneous out of hours works (nighttime) dB(A)
NCA 1	57 (Residential) 43 (Residential – Out of Hours)	Up to 64	Up to 62	Up to 51	Up to 58
NCA 2	75 (Industrial – when in use)	Up to 95	Up to 88	Up to 85	Up to 89
NCA 3	70 (Commercial – When in use) 55 (Medical – When in use)	Up to 80	Up to 73	Up to 71	Up to 74

The predicted construction noise impacts provided in Table 5-9 identify that exceedance of the noise management levels are likely for receivers at NCA 1 which consist of noise sensitive residential dwellings during standard construction hours. No sensitive receivers have been identified to be highly noise affected by the works, particularly at the nearest sensitive receiver on William Street. The out of hours (night-time works) are expected to exceed the noise management levels for the residential receivers within NCA 1. Provided in Section 5.7 is a summary of the recommended management of mitigation measures for the proposed out of hours works.

Provided in Section 5.7 is a summary of recommended management and mitigation measures which should be followed to reduce the impacts on the nearby commercial land use.

A detailed noise contours have been prepared for each construction states for visual reference shown in Appendix C: Construction noise contours.

A summary of highly noise affected catchment areas is provided in Table 5-10.

Table 5-10: Highly noise affected (residential receivers)

Noise catchment area	Highly noise affected level (NML)	Site establishment	Ground Works (trenching and piling) & building works	Installation of electrical Infrastructure	Miscellaneous out of hours works (nighttime)
NCA 1	75	No	No	No	No

Given the distance to the nearest sensitive receivers, there are no sensitive receivers which are predicted to be highly noise affected by this project.

5.4.1 Out of hours work

Out of hours work is likely to be required for the pouring of concrete for various plinths, lifting and positioning the gantry structure into place / other heavy lifting works, and activities that may result in a disruption in nearby traffic flows (delivery of oversized items and other activities that may require ROLs etc.) In addition, piling activities may be conducted for the foundation of the gantry. Where agreement is reached with affected receivers work may also be undertaken where explicitly approved through an Environment Protection Licence.

The noise modelling scenario for the proposed out of hours works has been undertaken. By reviewing the indicative construction activities, the out of hours works would have potential noise impacts on the nearby residential receivers (NCA 1). The modelling results for the proposed out of hours works has been assessed, with the results presented in Table 5-11 below.

Table 5-11: Modelling result for out of hours work – Upgrade of high voltage electrical feeder (Evening and Night-time)

Receiver	Out of Hours (OoHW) Noise Management Level (night-time)	Predicted Level	Exceedance	Highly Noise Affected
NCA 1 (Residential)	43	58	Yes	No

Note 1: The results presented here incorporate the noise blanket when earth works are undertaken.
Note 2: The noise Management Level for other sensitive receiver such as hotel is based on the AS2107 – Recommended design sound levels and reverberation times for building interiors.

The applicable sleep disturbance noise level (Section 4.2.5) is the RBL + 15 dB(A), or 54 dB(A). A 4 dB exceedance of the sleep disturbance criteria is predicted for the worst affected residential receivers located within NCA 1. Noise management measures are considered in Section 5.7.1.

5.5 Construction traffic assessment

For construction traffic to generate an increase in noise levels of greater than 2 dB, existing traffic levels along construction traffic routes would need to increase by around 60%. Noise level increases due to proposal-related construction traffic on arterial roads are expected to be less than 2 dB during both daytime, given existing high levels of traffic on the Pittwater Road. The potential noise impact is considered barely perceptible, and no further assessment is required, in accordance with the RNP. The majority of truck movements would be associated with demolition and earth work stage of the proposed work, such as excavation trenching. Truck movements would occur at any time throughout the proposed work shift but would not be continuous.

5.6 Vibration

5.6.1 Construction vibration criteria

Effects of ground borne vibration on buildings may be segregated into two major categories:

- Human comfort – vibration in which the occupants or users of the building are inconvenienced or possibly disturbed.
- Effects on building structures – where vibration can compromise the integrity of the building or structure itself

Vibration criteria – human comfort

Vibration effects relating specifically to the human comfort aspects of the proposal are taken from the guideline titled "Assessing Vibration – A Technical Guideline" (AVATG). Vibration impacts can be defined based on the nature of the construction works and vibration generated, specifically:

- Continuous vibration – from uninterrupted sources (refer to Table 6).
- Impulsive vibration – up to three instances of sudden impact e.g. dropping heavy items, per monitoring period (refer to Table 7).
- Intermittent vibration – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously (refer to Table 8).

Presented below in Table 5-12: Continuous vibration acceleration criteria (m/s^2) 1 Hz-80 Hz, Table 5-13 and Table 5-14 is a summary of the applicable human comfort vibration criteria, for continuous, impulsive, and intermittent vibration respectively.

Table 5-12: Continuous vibration acceleration criteria (m/s^2) 1 Hz-80 Hz

Location	Assessment Period	Preferred Values		**Maximum Values**	
		z-axis	**x- and y-axis**	**z-axis**	**x- and y-axis**
Residence	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
Workshops	Day or night-time	0.04	0.029	0.080	0.058

Table 5-13: Continuous vibration acceleration criteria (m/s^2) 1 Hz-80 Hz

Location	Assessment Period	Preferred Values		**Maximum Values**	
		z-axis	**x- and y-axis**	**z-axis**	**x- and y-axis**
Residence	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92

Table 5-14: Intermittent vibration impacts criteria ($m/s^{1.75}$) 1 Hz-80 Hz

Location	Daytime		Night-time	
	Preferred	Maximum	Preferred	Maximum
Residences	0.20	0.40	0.13	0.26
Offices, Schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
workshops	0.80	1.60	0.80	1.60

Vibration criteria – building contents and structures

The vibration effects on the building are provided by British Standard BS 7385: Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration" (BSI 1993)

The criteria are based on peak particle velocity (mm/s) which is to be measured at the base of the building. These are summarised in Table 5-15 and illustrated in Figure 7.

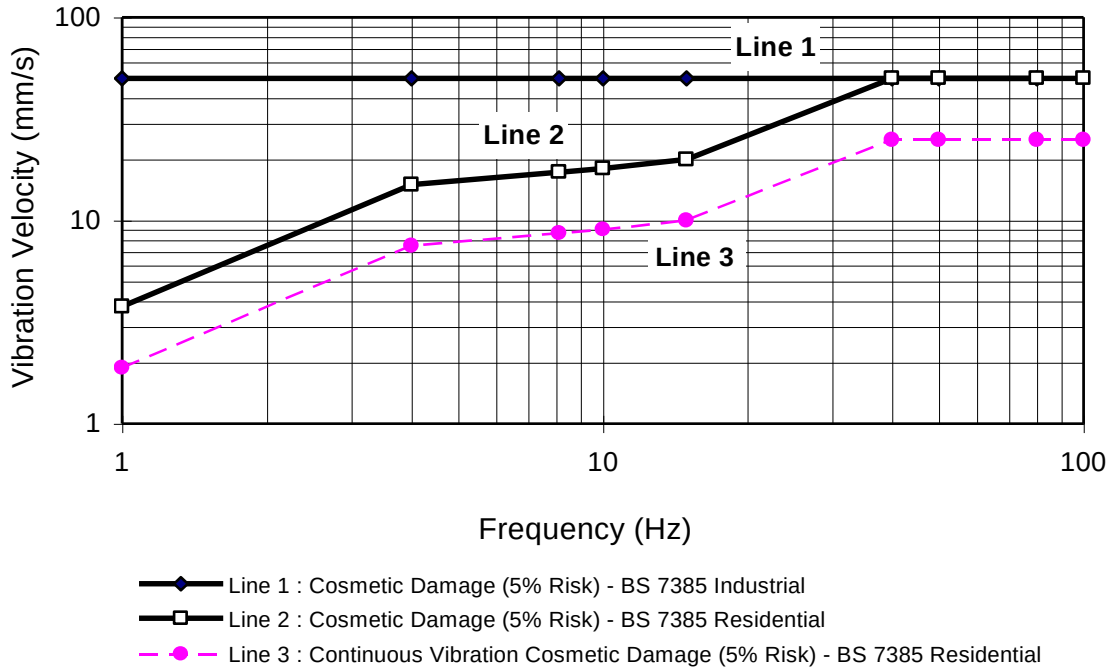
Table 5-15: Transient vibration criteria as per standard BS 7385 Part 2 – 1993

Line in standard	Type of Building	Peak component particle velocity in frequency range of predominant pulse	
		4 Hz to 15 Hz	**15 Hz and Above**
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

The vibration standard BS 7385 Part 2 – 1993 states that the values in Table 5-15 relate to transient vibration which does not cause resonant responses in buildings.

Where the dynamic loading caused by continuous vibration events is such as that results in dynamic magnification due to resonance (especially at the lower frequencies where lower guide values apply), then the values in Table 5-15 may need to be reduced by up to 50% (refer to Line 3 in Figure 7).

Figure 7 BS 7385 Part 2 – 1993, graph of transient vibration values for cosmetic damage



In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the recommended values corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

The standard also states that minor damage is possible at vibration magnitudes which are greater than twice those given in Table 5-15, and major damage to a building structure may occur at values greater than four times the tabulated values.

Fatigue considerations are also addressed in the Standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the values in Table 5-15 should not be reduced for fatigue considerations.

Project vibration criteria

Based on the details included in the sections above the project specific vibration criteria to protect the surrounding residential receivers from structural or architectural damage includes the following:

- Proposed construction vibration management level at all surrounding building structures – **7.5 mm/s**.

In the event that this vibration criterion is exceeded, further investigation is required, including an assessment of the nature of the vibration and frequency characteristics to determine if the vibration criterion can be relaxed for the specific nature of the works.

5.6.2 Construction vibration assessment

To maintain compliance with the human comfort vibration criteria identified in Section 5.6.1, it is recommended that the indicative safe distances listed in Table 5-16 should be maintained. These indicative safe distances should be validated prior to the start of construction works by undertaking operator-attended measurements of vibration levels generated by construction equipment to be used on site.

If applicable, the criteria for scientific or medical equipment (should any of these exist close to the site) can be more stringent than those required for human comfort. Vibration validating measurements should be conducted at each site to determine the vibration level and potential impact onto this sensitive equipment.

Recommended safe working distances for various typical items of plant are included in the following table.

Table 5-16: Recommended indicative safe working distances for vibration intensive plant

Plant	Rating / Description	Safe Working Distances (m)	
		Cosmetic Damage	Human Comfort
Vibratory roller	< 50 kN (Typically 1 – 2 tonnes)	5	15 – 20
	< 100 kN (Typically 2 – 4 tonnes)	6	20
Small hydraulic hammer	300 kg, typically 5 – 12 tonnes excavator	2	7
Medium hydraulic hammer	900 kg, typically 12 – 18 tonnes excavator	7	23
Large hydraulic hammer	1600 kg, typically 18 – 34 tonnes excavator	22	73
Vibratory pile driver	Sheet piles	2 – 20	20
CFA Piling	≤ 800 mm	2	<1m
Jackhammer	Hand held	1	Avoid contact with structure and steel reinforcements

An assessment of the potential for vibration generated as part of the required construction activities on the project (including excavation) has been undertaken based on the project safe working distances. Dependant on the location of the vibration intensive work and size of the equipment, exceedances of the vibration safe working distances are possible at adjacent industrial receivers. Compliance can be achieved by adhering to the management measures presented in Section 5.7.1. Residential receivers are very unlikely to exceed the project vibration criteria.

5.7 Management and mitigation

5.7.1 Construction management measures

The construction predicted noise levels identified in Section 5.4 indicate that the noise impacts have the potential occur from the proposed works. These impacts are typical for a construction such as this and highlight the importance for appropriate noise management and mitigation measures.

Presented in Table 26 is a summary of site-specific management procedures recommended to manage the predicted airborne noise and vibration impacts based on Table 8 of CNVG 2023.

Table 5-17: Summary of mitigation procedures

Procedure	Abbreviation	Description	Further reference
Project Notification	PN	For each Transport project, a notification is produced and distributed to stakeholders via letterbox drop or distributed to the project postal and/or email mailing lists. The same information will be published on the Transport corporate website (Transport Projects) or equivalent. Periodic notifications provide an overview of current and upcoming work across the project and other topics of interest. The objective is to engage, inform and provide project-specific messages. Advanced warning of potential disruptions (e.g., traffic changes or noisy works) can assist in reducing the impact on stakeholders. The approval conditions for projects specify requirements for notification to sensitive receivers where work may impact them. Content and length are determined on a project-by-project basis and must be approved by Transport prior to distribution.	Refer to Section 5.7.5

Procedure	Abbreviation	Description	Further reference
		Most projects distribute notifications monthly. Each notification is graphically designed within a branded template. In certain circumstances media advertising may also be used to supplement Periodic Notifications, where considered effective. Periodic Notification may be advised by the Transport Community Engagement Team in cases where AMMM are not triggered, for example where community impacts extend beyond noise and vibration (traffic, light spill, parking, etc.). In these circumstances the Transport Community Engagement Team will determine the community engagement strategy on a case-by-case basis.	
Verification Monitoring	V	Verification monitoring of noise and/or vibration during construction may be conducted at the affected receiver(s) or a nominated representative location (typically the nearest receiver where more than one receiver has been identified). Monitoring can be in the form of either unattended logging (i.e., for vibration provided there is an immediate feedback mechanism such as SMS capabilities) or operator attended surveys (i.e., for specific periods of construction noise). Verification must be undertaken by suitably qualified, trained and experienced personnel using appropriate equipment and methodology, with reference to AS1055. Refer to EPA's guideline 'Approved methods for the measurement and analysis of environmental noise in NSW' for additional guidance on personnel, methodology and equipment requirements. The purpose of monitoring is to confirm that: • Construction noise and vibration from the project are consistent with the predictions in the noise assessment. • Mitigation and management of construction noise and vibration is appropriate for receivers affected by the work. Where noise monitoring finds the actual noise levels exceed those predicted in the noise assessment then immediate refinement of mitigation measures may be required and the CNVIS amended.	For noise impact, refer to Section 5.7.4. For vibration impact, refer to Section 5.6.2
Specific Notification	SN	Specific notifications are in the form of a personalised letter or phone call to identified stakeholders no later than seven calendar days ahead of construction activities that are likely to exceed the noise objectives. In addition to Specific Notifications and letters communications representatives from the contractor would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities and provide an individual briefing. • Letters may be letterbox dropped, hand distributed or emailed. • Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and their specific needs. • Individual briefings are used to inform stakeholders about the impacts of noisy activities and mitigation measures that will be implemented. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project. • Specific notifications are used to support periodic notifications, or to advertise unscheduled or high impact	Refer to Section 5.7.5

Procedure	Abbreviation	Description	Further reference
		work and must be approved by Transport prior to implementation/distribution. Where impacts have already been captured in a Periodic Notification, a Specific Notification may not be required	
Respite Offer	RO	The purpose of a project specific respite offer is to provide residents subjected to lengthy periods of noise or vibration respite from an ongoing impact. The offer could comprise pre-purchased movie tickets, bowling activities, meal vouchers or similar offers designed to provide residents with a short break from impact of construction activity outside of their home. This measure is determined on a case-by-case basis and may not be applicable to all Transport projects	-
Alternative accommodation	AA	Alternative accommodation options may be provided for residents living near construction activities likely to incur unreasonably high impacts. Alternative accommodation will be determined on a case-by-case basis and should provide a like-for-like replacement for permanent residents, including provisions for pets, where reasonable and feasible.	
Alternative Construction Methodology	AC	Where the vibration assessment identifies that the proposed construction method has a high risk of causing structural damage to buildings near the work, the proponent needs to consider alternative construction options to achieve compliance with the VMLs for building damage. For example, replace large rock breaker with smaller rock breakers or rock saws	-
Respite period	RP	OoHW during evening and night periods will be restricted so receivers are impacted for no more than three consecutive evenings and no more than two consecutive nights in the same NCA in any one week, except where there is Duration Reduction. A minimum respite period of four evenings/five nights shall be implemented between periods of consecutive evening and/or night work. Strong justification must be provided where it is not reasonable and feasible to implement these period restrictions (e.g. to minimise impacts to rail operations), and approval must be given by Transport through the OoHW Approval Protocol (Section 5). Note: this management measure does not apply to OoHW Period 1 – Days	Refer to Section 5.7 For vibration impact, also refer to section 5.6.2
Duration reduction	DR	Where Respite Periods (see management measure above) are counterproductive to reducing noise and vibration impacts to the community, it may be beneficial to increase the number of consecutive evenings and/or nights through Duration Reduction to minimise the duration of the activity. This measure is determined on a project-by project basis and may not be applicable to all Transport projects. Impacted receivers must be consulted and evidence of community support for the Duration Reduction must be provided as justification for the Duration Reduction. A community engagement strategy must be agreed with and implemented in consultation with Transport Community and Stakeholder Engagement Representatives.	

The application of these procedures is in relation to the exceedances over the relevant criteria. For airborne noise, the criteria are based on NMLs. The allocation of these procedures is discussed in Section 5.7.2.

For vibration, the criteria either correspond to human comfort, building damage or scientific and medical equipment. The application of these procedures is discussed in Section 5.6.1.

5.7.2 Allocation of noise management procedures

For residences, the management procedures have been allocated based on noise level exceedances at the affected properties, which occur over the designated NMLs (refer to section 5.2.1). The allocation of these procedures is summarised in Table 5-18 below (from Table 9 of CNVG 2023).

Table 5-18: Allocation of noise management procedures

Construction Hours	Receiver perception	dB(A) above RBL	dB(A) above ANML	Management procedures
Standard Hours Mon – Fri: 7:00 am to 6:00 pm Sat: 8:00 am – 1:00 pm	Noticeable	5 to 10	0	-
	Clearly audible	>10 to 20	≤ 10	-
	Moderately intrusive	> 20 to 30	> 10 to 20	PN, V
	Highly intrusive	> 30	> 20	PN, V
	75 dB(A) of greater	N/A	N/A	PN, V, SN
OoHW Period 1 **Monday-Friday 6pm-10pm** **Saturday 7am-8am** **1pm-10pm** Sunday/PH 8am-6pm	Noticeable	5 to 10	≤ 5	-
	Clearly audible	>10 to 20	> 5 to 15	PN, RP#, DR#
	Moderately intrusive	> 20 to 30	> 15 to 25	PN, V, SN, RO, RP#, DR#
	Highly intrusive	> 30	> 25	PN, V, SN, RO, RP#, DR#
OoHW Period 2 Monday-Saturday 12am – 7am **10pm - 12am** Sunday / PH 12am – 8am 6pm – 12pm	Noticeable	5 to 10	≤ 5	-
	Clearly audible	>10 to 20	> 5 to 15	PN, RP#, DR#
	Moderately intrusive	> 20 to 30	> 15 to 25	PN, V, SN, RO, RP#, DR#
	Highly intrusive	> 30	> 25	PN, V, SN, RO, RP#, DR#

Respite periods and duration reduction are not applicable when works are carried out during OoHW Period 1 Day only (i.e. Saturday 7am-8am & 1pm-6pm, Sundays / Public Holidays 8am-6pm)

^Respite offers during OoHW Period 2 are only applicable for evening periods on Sundays and Public Holidays 6pm-10pm, and may not be required if a respite offer has already been made for the immediately preceding OoHW Period 1

Please note the following regarding the allocation of these procedures:

- The exceedances have been predicted as part of the acoustic assessment, and these are summarised in Section 5.4.
- The allocation of procedures is based on the assumptions used for noise level predictions (refer to Section 5.4).

5.7.3 Allocation of vibration management procedures

Summarises the vibration management procedures to be adopted based on exceedance scenarios (i.e., whether the exceedance occurs over human comfort criteria, building damage criteria, or criteria for scientific and medical equipment). Please note these management procedures apply for any type of affected receiver.

Table 5-19: Allocation of vibration management procedures

Construction Hours	Receiver perception	dB(A) above ANML	Management procedures
Standard Hours Mon – Fri: 7:00 am to 6:00 pm Sat: 8:00 am – 1:00 pm	Human disturbance	> HVML	PN, V, RO
	Building damage	> DVML	V, AC
OoHW Period 1 **Monday-Friday 6pm-10pm** **Saturday 7am-8am, 1pm-10pm** Sunday/PH 8am-6pm	Human disturbance	> HVML	PN, V, SN, RO, RP, DR
	Building damage	> DVML	V, AC
OoHW Period 2 **Monday-Saturday 12am – 7am, 10pm - 12am** Sunday / PH 2am – 8am, 6pm – 12pm	Human disturbance	> HVML	PN, V, SN, RO, RP, DR, AA
	Building damage	> DVML	V, AC

Notes – HVML – human disturbance vibration management level, DVML - cosmetic damage to buildings or structures vibration management level

The contractor will, where reasonable and feasible, apply best practice noise mitigation measures. These measures shall include the following:

- Maximising the offset distance between plant items and nearby noise sensitive receivers.
- Preventing noisy plant working simultaneously and adjacent to sensitive receivers.
- Minimising consecutive works in the same site area.
- Orienting equipment away from noise sensitive areas.
- Carrying out loading and unloading away from noise sensitive areas.

To minimise noise impacts during the works, the contractor will take all reasonable and feasible measures to mitigate noise effects.

The contractor will also take reasonable steps to control noise from all plant and equipment. Examples of appropriate noise control include efficient silencers and low noise mufflers.

The contractor should apply all feasible and reasonable work practices to meet the NMLs and inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels, duration of noise generating construction works, and the contact details for the proposal.

Presented below in Table 5-20 is a summary of the noise management measures and approximate noise reductions. Further information is provided in the proceeding section.

Table 5-20: Standard Noise and Vibration Mitigation Measures

Term	Definition	Noise Reduction
Management Measures		
Implement community consultation measures	Providing the community ongoing updates about potential noise impacts can reduce the impacts and annoyance from the project	Reduced annoyance
Site inductions	All employees, contractors and subcontractors are to receive an environmental induction which would include consideration of noise and vibration impacts.	
Behavioural practices	No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors.	

Term	Definition	Noise Reduction
Monitoring	See Section 5.7.5	
Work scheduling	Includes scheduling noise intensive works and respite periods	Annoyance reduction
Source controls		
Alternative equipment or process	Use quieter and less vibration emitting construction methods where feasible and reasonable.	5 to 15 dB
Plan worksites and activities to minimise noise and vibration	Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site	1 to 3 dB
Minimise the movement of materials	Reduces noise generated through reduced plant operations	1 dB to 3 dB
Broadband reversing alarm	Site based vehicles should be fitted with broadband reversing alarms to reduce tonal noise impacts.	5 dB
Siting of equipment	Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be avoided. The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers	3 to 15 dB
Silencers on mobile plant	Where possible reduce noise from mobile plant through additional fittings	5 dB to 8 dB
Maximise hammer penetration	Reduces the time required and associated noise impacts	Reduced duration
Path controls		
Acoustic enclosure or screening	Stationary noise sources should be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained.	5 dB to 10 dB

Acoustic enclosures/screening

Typically, on a construction site there are three different types of plant that will be used: mobile plant (i.e., excavators, skid steers, etc.), semi mobile plant (i.e., hand tools generally) or static plant i.e. (diesel generators).

For plant items which are static it is recommended that, in the event exceedances are being measured due to operation of the plant item, an acoustic enclosure/screen is constructed to reduce impacts. These systems can be constructed from Fibre Cement (FC) sheeting or, if airflow is required, acoustic attenuators or louvres.

For semi mobile plant, relocation of plant should be investigated to either be operated in an enclosed space or at locations away from a receiver.

With mobile plant it is generally not possible to treat these sources. However, investigations into the machine itself may result in a reduction of noise (i.e., mufflers/attenuators etc).

General mitigation measures (Australia Standard 2436-2010)

As well as the above project specific noise mitigation controls, AS 2436-2010 *"Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites"* sets out numerous practical recommendations to assist in mitigating construction noise emissions. Examples of strategies that could be implemented on the proposal are listed below, including the typical noise reduction achieved, where applicable.

Adoption of universal work practices

- Regular reinforcement (such as at toolbox talks) of the need to minimise noise and vibration.
- Regular identification of noisy activities and adoption of improvement techniques.
- Avoiding the use of portable radios, public address systems or other methods of site communication that may unnecessarily impact upon nearby sensitive receivers.
- Where possible, avoiding the use of equipment that generates impulsive noise.
- Minimising the need for vehicle reversing for example (particularly at night), by arranging for one-way site traffic routes.
- Use of broadband audible alarms on vehicles and elevating work platforms used on site.
- Minimising the movement of materials and plant and unnecessary metal-on-metal contact.
- Minimising truck movements.

Plant and equipment

The operation of plant and equipment on the site should be undertaken, including the following:

- Choosing quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks.
- Selecting plant and equipment with low vibration generation characteristics.
- Operating plant and equipment in the quietest and most efficient manner.

Work scheduling

- Providing respite periods which could include restricting very noisy activities to time periods that least affect the nearby noise sensitive locations, restricting the number of nights that after-hours work is conducted near residences or by determining any specific requirements.
- Scheduling work to coincide with non-sensitive periods.
- Planning deliveries and access to the site to occur quietly and efficiently and organising parking only within designated areas located away from the sensitive receivers.
- Optimising the number of deliveries to the site by amalgamating loads where possible and scheduling arrivals within designated hours.

Source noise control strategies

Some ways of controlling noise at the source are:

- Where reasonably practical, noisy plant or processes should be replaced by less noisy alternatives.
- Modify existing equipment: Engines and exhausts are typically the dominant noise sources on mobile plant such as cranes, graders, excavators, trucks, etc. To minimise noise emissions, residential grade mufflers should be fitted on all mobile plant utilised on site.
- Siting of equipment: locating noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise.
- Regular and effective maintenance.

Miscellaneous comments

Deliveries should be undertaken, where possible, during standard construction hours.

Maximise hammer penetration (and reduce blows) by using sharp hammer tips. Keep stocks of sharp profiles at site and monitor the profiles in use.

It is advised that mobile plant and trucks operating on site for a significant portion of the project are to have reversing alarm noise emissions minimised. This is to be implemented subject to recognising the need to maintain occupational safety standards.

No public address system should be used on site.

5.7.4 Construction vibration mitigation measures

The following vibration mitigation measures should be implemented:

- Any vibration generating plant and equipment is to be in areas within the site to lower the vibration impacts.
- Investigate the feasibility of rescheduling the hours of operation of major vibration generating plant and equipment.
- Use lower vibration generating items of construction plant and equipment; that is, smaller capacity plant.
- Minimise conducting vibration generating works consecutively in the same area (if applicable).
- Undertake the removal of concrete within the building using saw cutting or pulverising where possible.

To ensure the vibration impact criteria detailed in this report are complied with the following safe working mitigations and/or working distances should be implemented as detailed in the table below.

Table 5-21: Vibration mitigation requirements

Construction Activity	Activity	Vibration Mitigation
Excavation	Removal of Rock	Prior to the use of hydraulic hammering within 20 m of neighbouring buildings a saw cut to the rock to be excavated is required to the undertaken.

5.7.5 Noise and vibration monitoring

Construction noise and vibration should be managed by the implementation of a detailed Construction Noise and Vibration Management Plan (CNVMP) to be prepared by the construction contractor prior to commencement of works on site. This will utilise updated information in relation to the proposed construction methodology, location of works sites, activities, durations and equipment type and numbers.

The required noise monitoring is to be performed by an acoustical consultant directly engaged by the contractor. The acoustical consultant is required to be a suitably qualified acoustic consultant who possesses the qualifications to render them eligible for membership of the Australian Acoustics Society, Institution of Engineers Australia or the Association of Australian Acoustic Consultants at the grade of member.

Noise monitoring is recommended to be undertaken by attended noise measurements at the start of any new phase of works identified in section 5.4. Attended noise monitoring is required to follow the requirement set out within section 7.4 of Construction Noise and Vibration Guideline (Public Transport Infrastructure) 2023 (CNVG-PTI).

Attended noise monitoring need to be conducted at the nearest sensitive receivers. Compliance with the approved construction noise and vibration objectives is to be audited at the commencement of works and at least every three months, where this is reasonable and feasible. The statistical parameters to be measured should include the following noise descriptors: L_{Amin}, L_{A90}, L_{A10}, L_{A1}, L_{Amax} and L_{Aeq}. Attended noise measurements should be conducted over consecutive 15-minute periods.

In accordance with the CNVG-PTI 2023, the following monitoring procedures are required to be carried out to determine the influence of construction noise:

Timing of Measurements: Measurements should be conducted within 14 days from the start of construction activities or as agreed with the relevant authority (EMR/Transport). This is to confirm that noise and vibration levels at receiver locations align with predictions and approval/licensing conditions.

Location of Measurements: Measurements should be carried out at the potentially most impacted receiver locations.

Noise Measurement Standards: Noise measurements should follow the procedures outlined in AS1055.1-1997 for the description and measurement of environmental noise.

Vibration Measurement Standards: Vibration measurements should adhere to procedures documented in the EPA's guideline "Assessing Vibration" (2006) and BS7385 Part 2-1993 for the evaluation and measurement of vibration in buildings.

Frequency of Measurements: For projects lasting more than three months, attended measurements should be repeated every three months, if reasonable and feasible, to ensure consistency with predicted levels. Additional measurements may be required for out-of-hours works as per the CNVIS, out-of-hours assessment, approval, and/or licensing conditions.

Noise Monitoring Implementation: Noise monitoring should be implemented as specified in Additional Management Measures (Section 7.2) or as an ongoing management measure during critical periods, such as during piling and hammering activities when noise emissions are expected to be high.

5.7.6 Community consultation

Active community consultation and the maintenance of positive relations with nearby local residents, and businesses would assist in alleviating concerns and thereby minimising complaint.

This form of notification should provide specific notification of the duration and timing of the required ground works activities so that residents are informed about the works ahead of time. The letter should also provide the community with a hotline number for a community liaison officer available to adequately respond to all project related enquiries.

Ideally the hotline number should provide concerned locals an opportunity to raise any concerns with the project proponent and provide an opportunity to determine the best method to satisfy all requirements.

Prior to the works onsite being undertaken, community consultation with the neighbouring affected parties be undertaken. Community engagement and consultation should not be limited to the beginning of the onsite works but throughout, providing the community with constant updates on the progress and upcoming works. In our experience these could include:

- Site noticeboard,
- Email notifications; and
- Letterbox drops.

Complaints management system

Should complaints arise they must be dealt with in a responsible and uniform manner, therefore, a management system to deal with complaints is detailed below:

Local residents and landowners should be informed by direct mail of a direct 24-hour telephone line where any noise complaints related to the required ground works will be recorded. The 24-hour telephone line number will be made available on the construction site signage.

All complaints should be investigated by the Contractor in accordance with the procedures outlined in Australia Standard 2436-2010. Consequently, a complaint response procedure should be implemented. Information to be gathered as part of this process should include:

- location of complainant
- time/s of occurrence of alleged noise or vibration impacts
- nature of impact particularly with respect to vibration
- Perceived source
- Prevailing weather conditions and similar details that could be utilised to assist in the investigation of the complaint.

All resident complaints will be responded to in the required timeframe and action taken recorded.

Post receiving a noise and or vibration complaint, the process outlined in the Contingency Plans below should be undertaken.

Contingency plans

Contingency plans are required to address noise or vibration problems if excessive levels are measured at surrounding sensitive receivers and/or if justified complaints occur. Such plans include:

- Stop the onsite works.
- Identify the source of the main equipment within specific areas of the site which is producing the most required ground works noise and vibration at the sensitive receivers; and
- Review the identified equipment and determine if an alternate piece of equipment can be used or the process can be altered.

- In the event an alternate piece of equipment or process can be used, works can re-commence.
- In the event an alternate piece of equipment or process cannot be determined implement a construction assessment to be performed by a suitably qualified acoustic consultant.
- Respite periods to be scheduled during potentially noise sensitive periods of the surrounding receivers.

The Superintendent shall have access to view the Contractor's noise measurement records on request. The Superintendent may undertake noise monitoring if and when required.

6. Conclusion

Transport for NSW is proposing to upgrade the Bus Depot at Brookvale for the Zero Emission Bus project. This depot would store, charge and maintain Zero Emission buses while they are active on the local bus network. This report provides a Noise and Vibration Impact Assessment (NVIA) for the proposed development. This NVIA is required to address noise and vibration impacts that have the potential to be generated by the proposal.

Existing environment

The Brookvale Bus Deport is located adjacent to and east of Pittwater Road with the Brookvale commercial/industrial precinct being north, south, and west of the site. The noise environment for all sensitive receivers is controlled by significant amounts of road traffic noise from the Pittwater Road. The noise environment throughout the assessment area is considered to be Urban due to the high traffic volumes controlling the ambient noise levels.

Background noise logging was undertaken at one location from 12 to 21 February 2024 to determine the existing noise environment at nearby sensitive residential receivers. The measurements identified that residential receivers are controlled by road traffic noise from nearby arterial roads and existing industrial sources.

Construction noise and vibration assessment

To facilitate the assessment, noise and vibration sensitive receivers and NCAs were identified. Noise and vibration sensitive receivers include residential properties, commercial and industrial properties. In addition, medical centers are located on both sides of Pittwater Road and have been assessed for the construction noise impacts. NMLs have been established for each identified NCA based on the unattended noise monitoring results to characterize the existing noise environment.

The construction noise assessment was conducted in accordance with the Interim Construction Noise Guideline (ICNG). The construction scenarios in this assessment have been considered, these are considered to be the noisiest activities likely to occur.

The proposed construction work on-site is expected to have a moderate impact on nearby residential properties due to nearby industrial buildings providing acoustic shielding between the noise source and receivers. Given the large separation distances and the moderate existing background noise levels, we anticipate that any potential impact on residential properties would be minimal to moderate. However, it is anticipated that there may be potential noise and vibration impacts on the nearby commercial and general industrial premises surrounding the proposal site and to the south-west respectively. Given the proximity of these premises to the construction site, it is likely that they will experience some level of disturbance due to the anticipated construction activities.

Noise mitigation measures have been recommended to reduce the construction noise impact at surrounding receivers. These measures are outlined in section 5.7 of this report. It is important to note that management and mitigation measures stated in Section 5.7 are to be carried out to minimize the noise and vibration impact of the proposed construction work on identified sensitive receivers.

To mitigate the impact from vibration-intensive activities, we recommend that minimum working distances be established for both human comfort and structural protection. This includes the use of rock breakers, piling rigs, and jackhammers during trenching, excavation, and joint bay work. These activities are expected to affect nearby receivers for approximately one week.

For vibration-intensive activities within the recommended distances, the following measures are suggested:

1. Vibration Assessment: Conduct vibration assessments during the initial stages of vibration-intensive activities to establish site-specific minimum working distances.
2. Work Scheduling and Breaks: Plan work schedules to incorporate breaks, allowing for reduced impact on nearby locations.
3. Equipment Selection and Maintenance: Ensure appropriate selection and maintenance of equipment to minimize vibration levels.
4. Building Integrity Surveys: Perform surveys to assess and monitor potential structural impacts resulting from vibration-intensive activities.

Additionally, it should be noted that several noise mitigation measures stated in section 5.7.2 may also assist in mitigating construction-related vibrations.

Operational Noise

Operational noise emission criteria have been derived from the background noise logging in accordance with the EPA's Noise Policy for Industry and background noise logging undertaken for this proposal.

An operational noise model has been developed using SoundPLAN v8.2. The noise model assessed the dominant noise sources generated from the operation of the site. The predicted noise levels identified compliance with the applicable noise criteria at all sensitive receiver locations. Additional noise mitigation measures are not required.

Sleep disturbance noise impacts have been assessed against the NPfI screening criterion. Compliance is achieved at all locations and further consideration of impacts and noise mitigation is not required.

Operational road noise criteria have been derived from the NSW Road Noise Policy. The predicted operational road traffic noise levels identify that road traffic noise levels currently exceed the RNP noise criteria and will continue to do so in the future. Road traffic noise levels will increase by less than 0.1 dB, which is considered to be an indiscernible change in noise. Further considerations of road traffic noise impacts are not required.

7. Definitions

Term	Definition
Ambient Sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
Audible Range	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
Character, acoustic	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.
Decibel [dB]	The level of noise is measured objectively using a Sound Level Meter.
dBA	A-weighted decibels
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on
Lmax	The maximum sound pressure level measured over a given period.
Lmin	The minimum sound pressure level measured over a given period.
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L10	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L90	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dBA.
Leq	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Sound Pressure Level, LP dB	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.
Sound Power Level, Lw dB	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt.
RNCG	*Road Noise Criteria Guideline* (Transport for NSW)
RNMG	*Road Noise Mitigation Guideline* (Transport for NSW)
REF	Review of Environmental Factors
EIS	Environmental Impact Statement

Appendix A: Ambient noise logging

15 William Street, North Manly

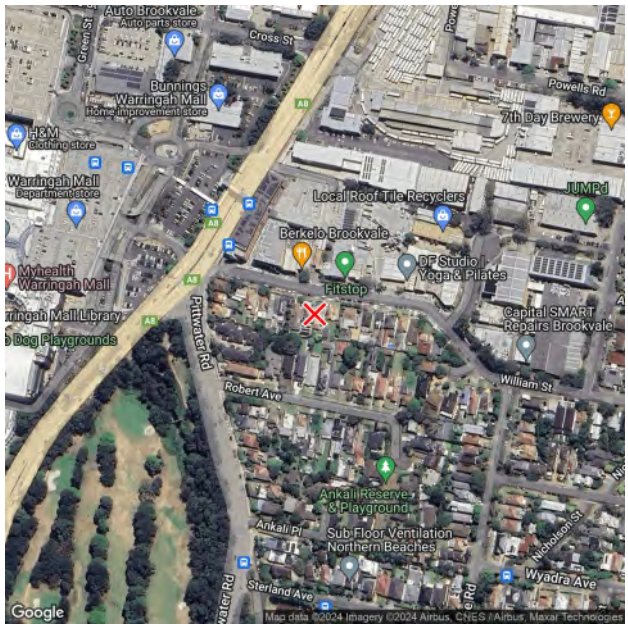
Ambient noise monitoring report

Item	Information
Logger Type	NL-42
Serial number	396932
Address	15 William Street, North Manly
Location	,
Facade / free field	Free field
Environment	

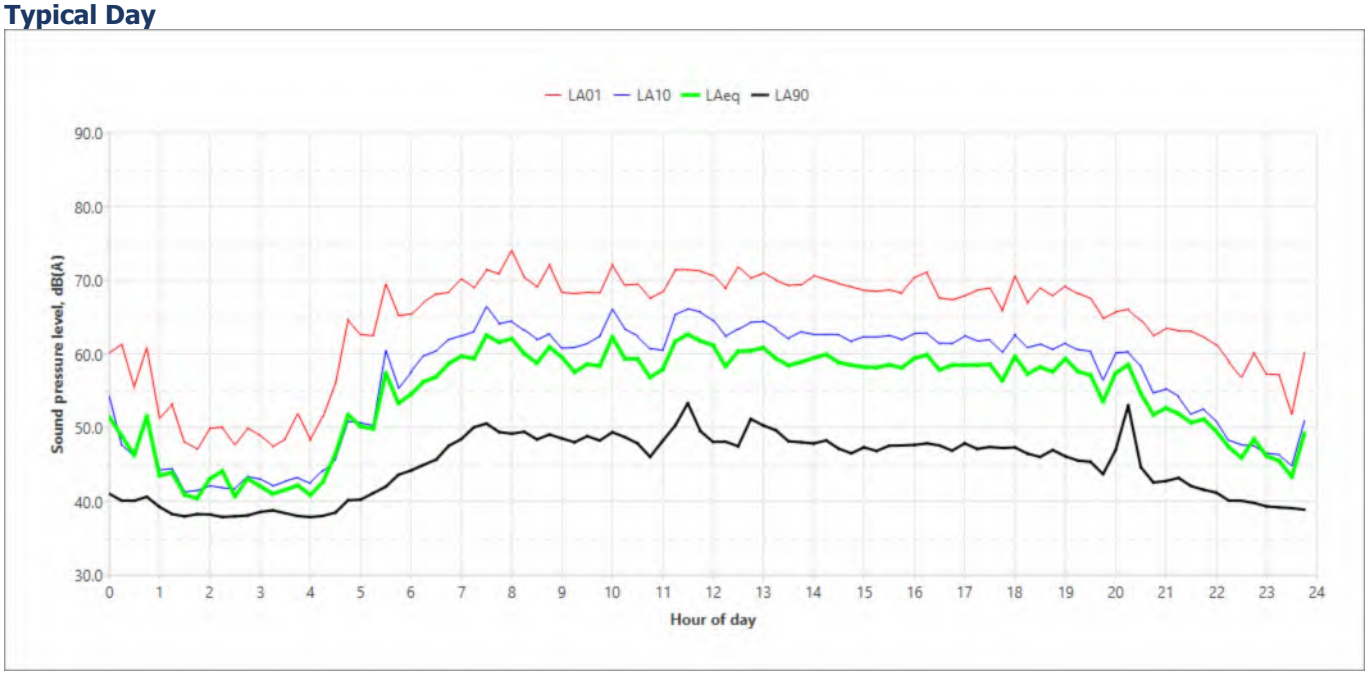
Measured noise levels

Logging date	Rating Background Level			$L_{Aeq,period}$		
	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Mon 12 Feb 2024	-	-	-	60	58	50
Tue 13 Feb 2024	49	46	39	59	57	52
Wed 14 Feb 2024	48	42	39	59	57	51
Thu 15 Feb 2024	48	43	37	60	57	51
Fri 16 Feb 2024	47	-	40	59	56	54
Sat 17 Feb 2024	46	-	41	58	54	49
Sun 18 Feb 2024	42	-	38	55	56	46
Mon 19 Feb 2024	48	42	37	64	56	49
Tue 20 Feb 2024	46	41	38	61	58	54
Wed 21 Feb 2024	-	-	-	61	-	53
Summary	**47**	**42**	**39**	**60**	**57**	**52**

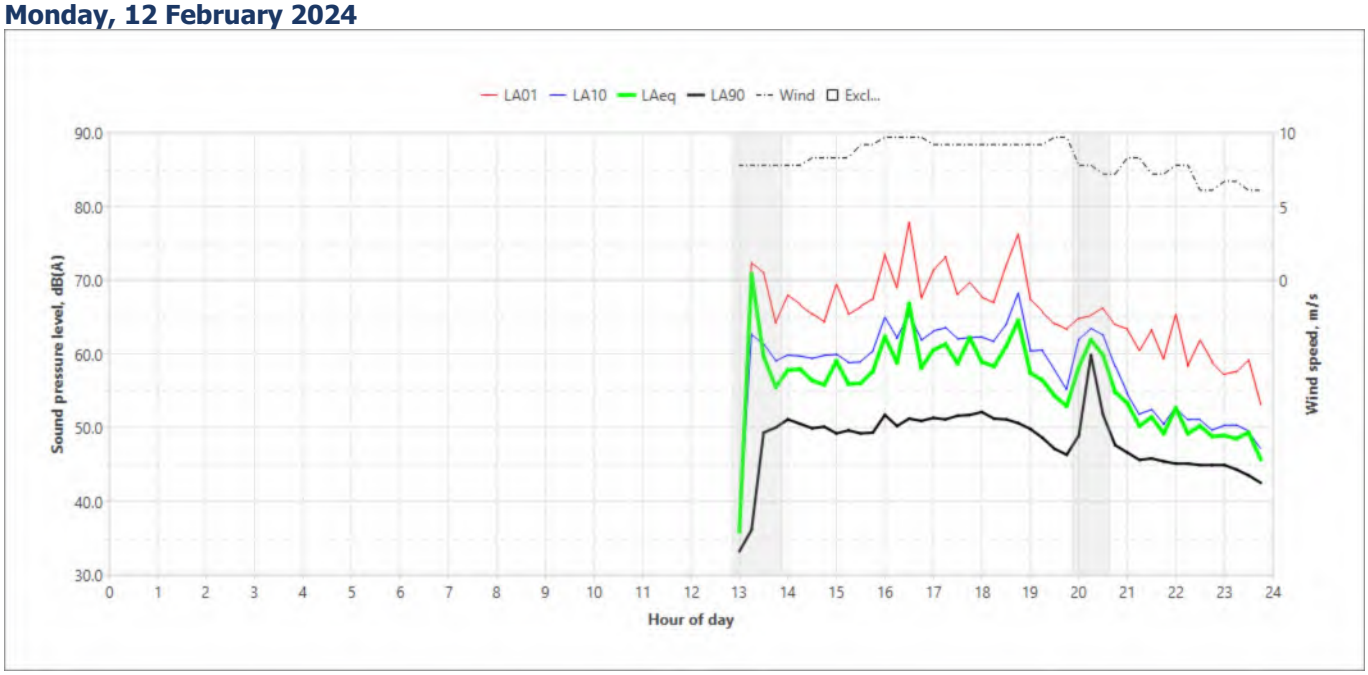
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location	Logger deployment photo
	

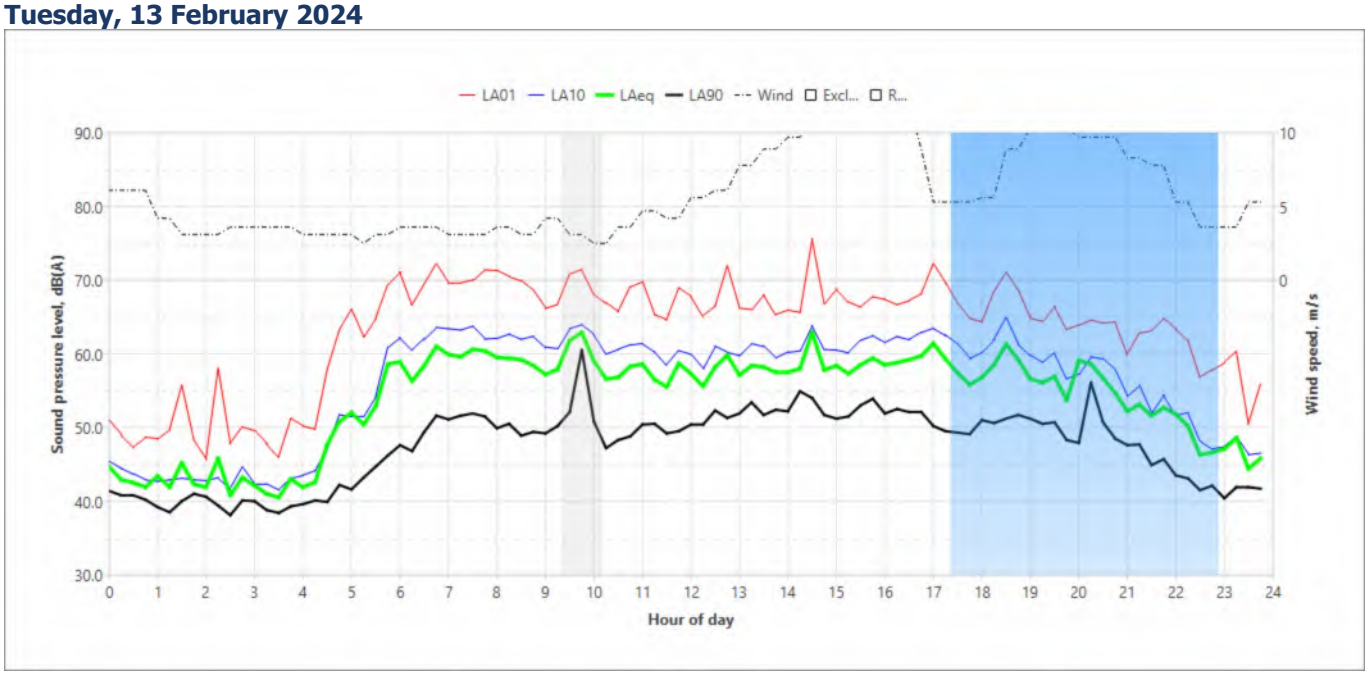
Typical Day



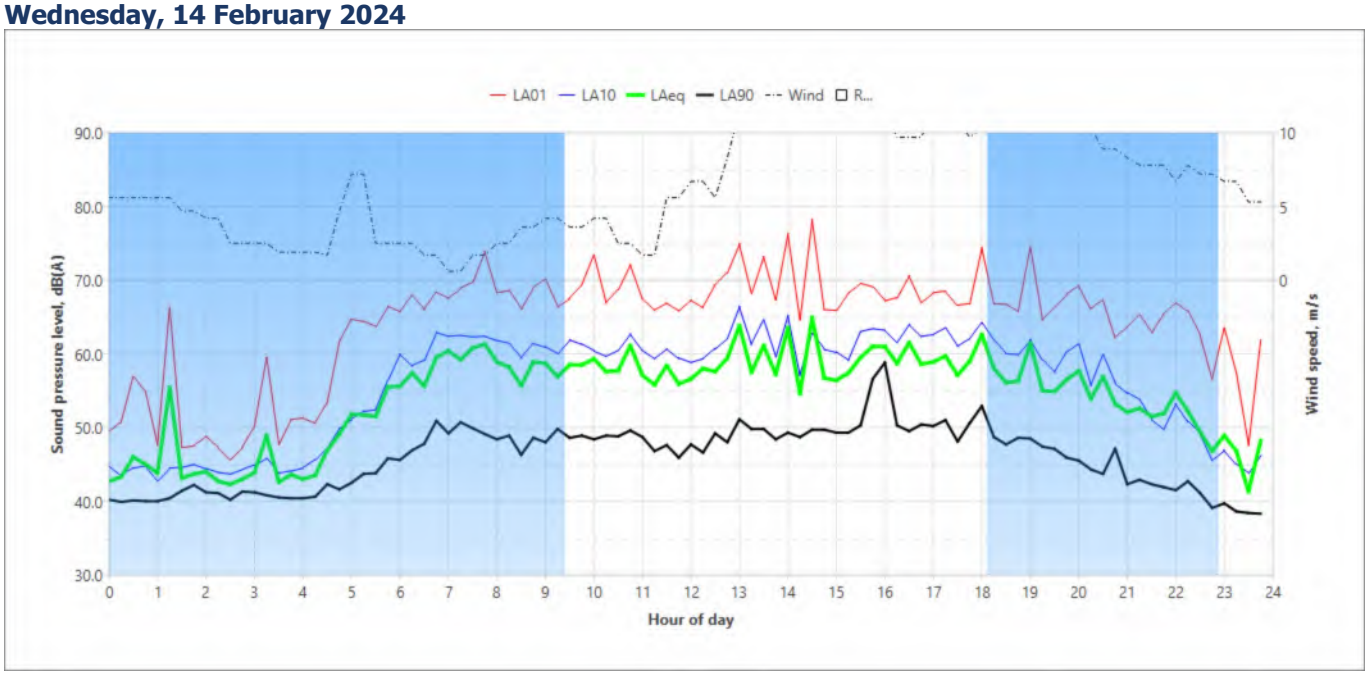
Monday, 12 February 2024



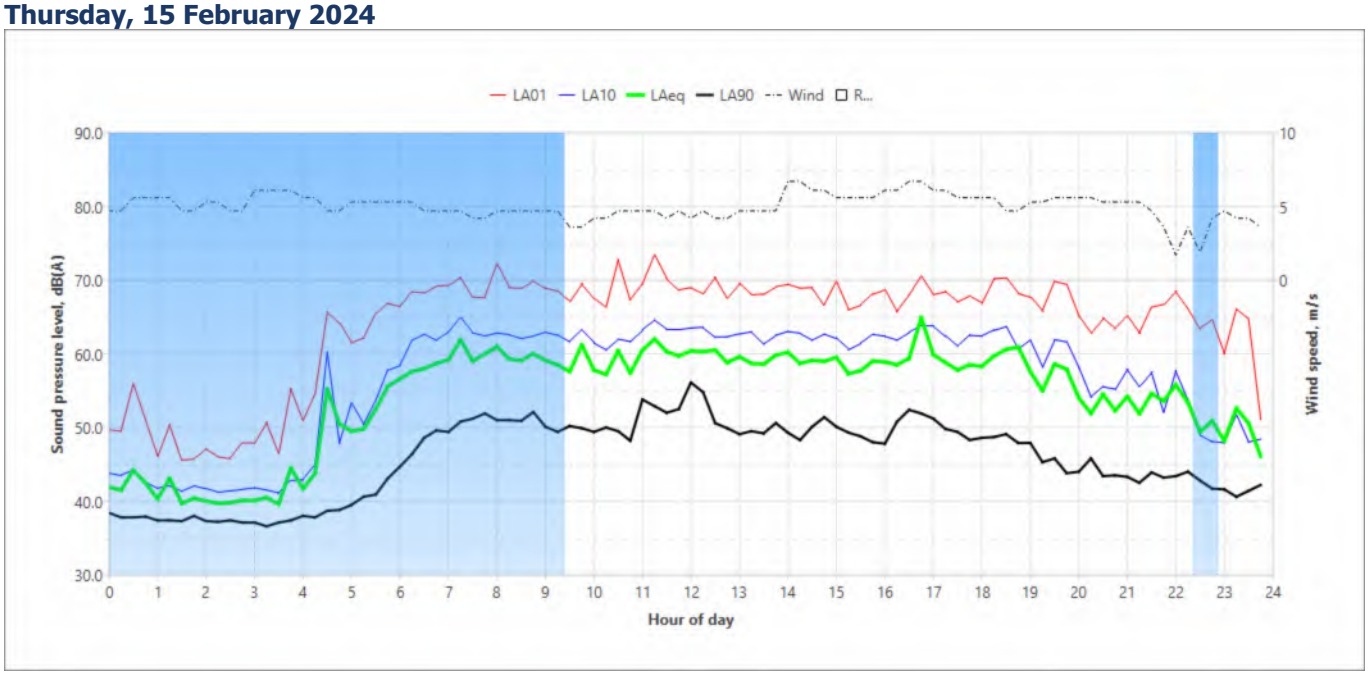
Tuesday, 13 February 2024



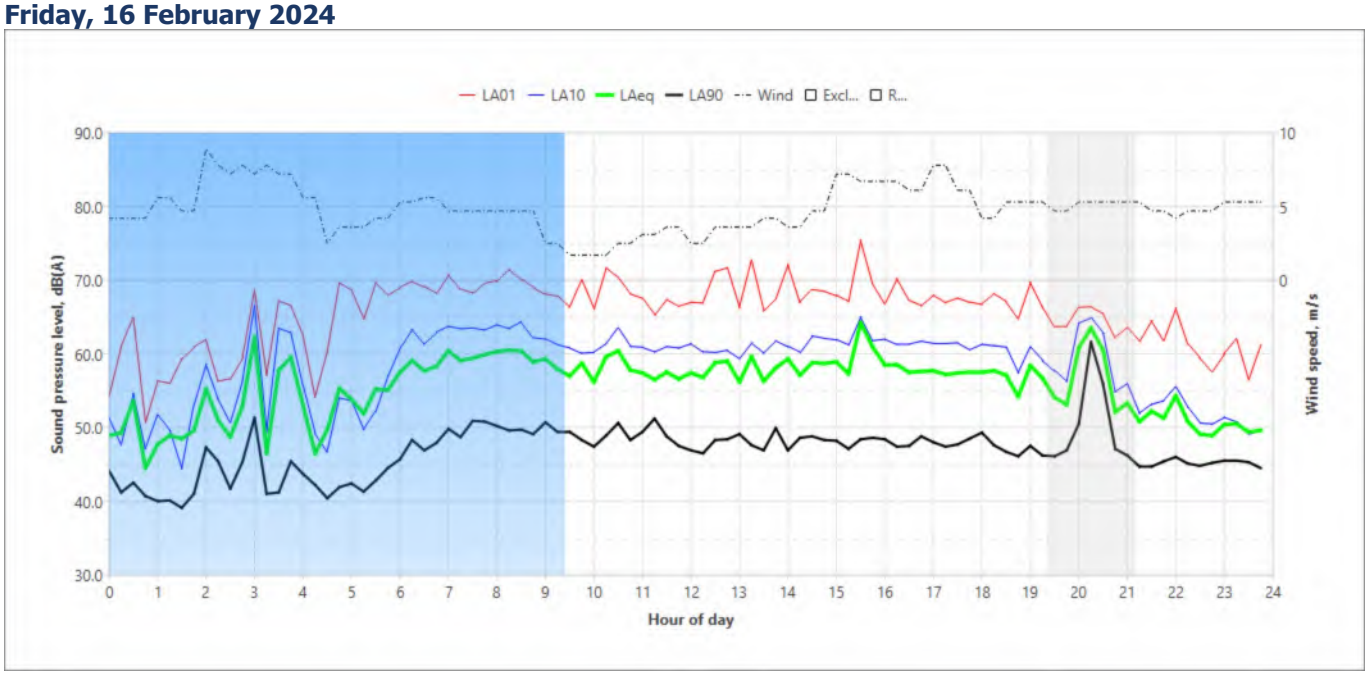
Wednesday, 14 February 2024



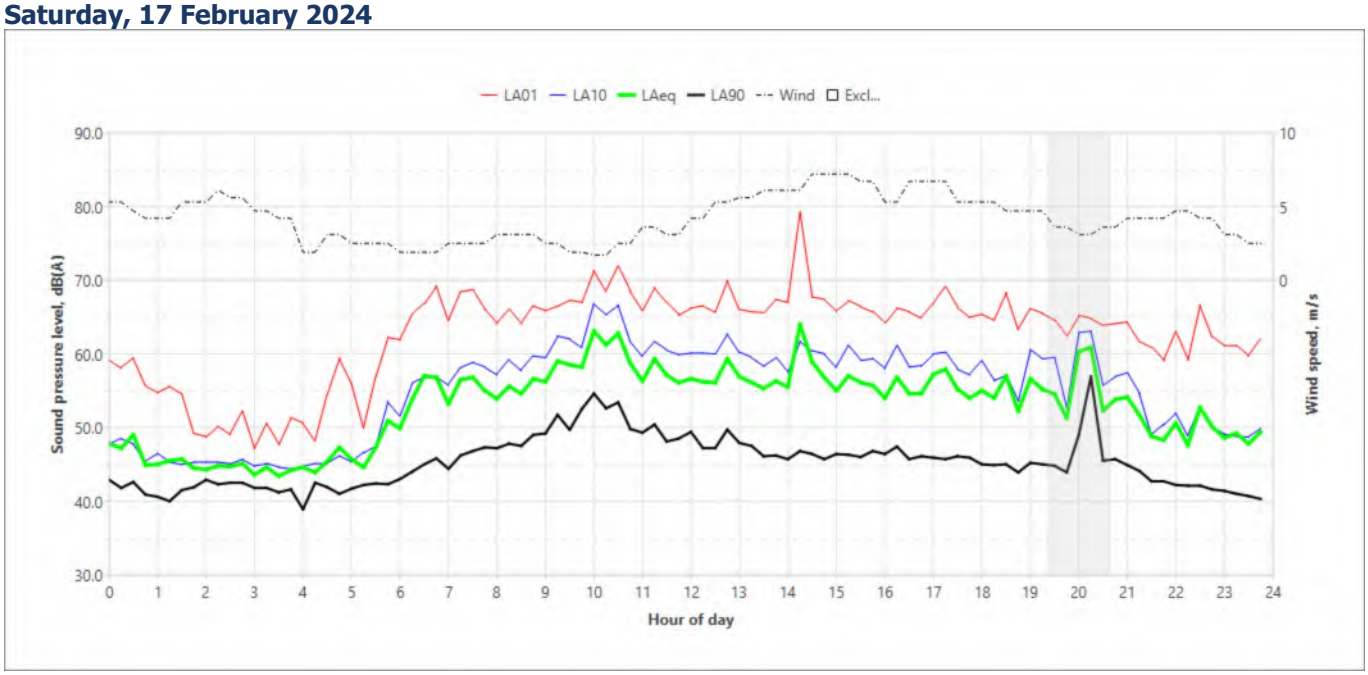
Thursday, 15 February 2024



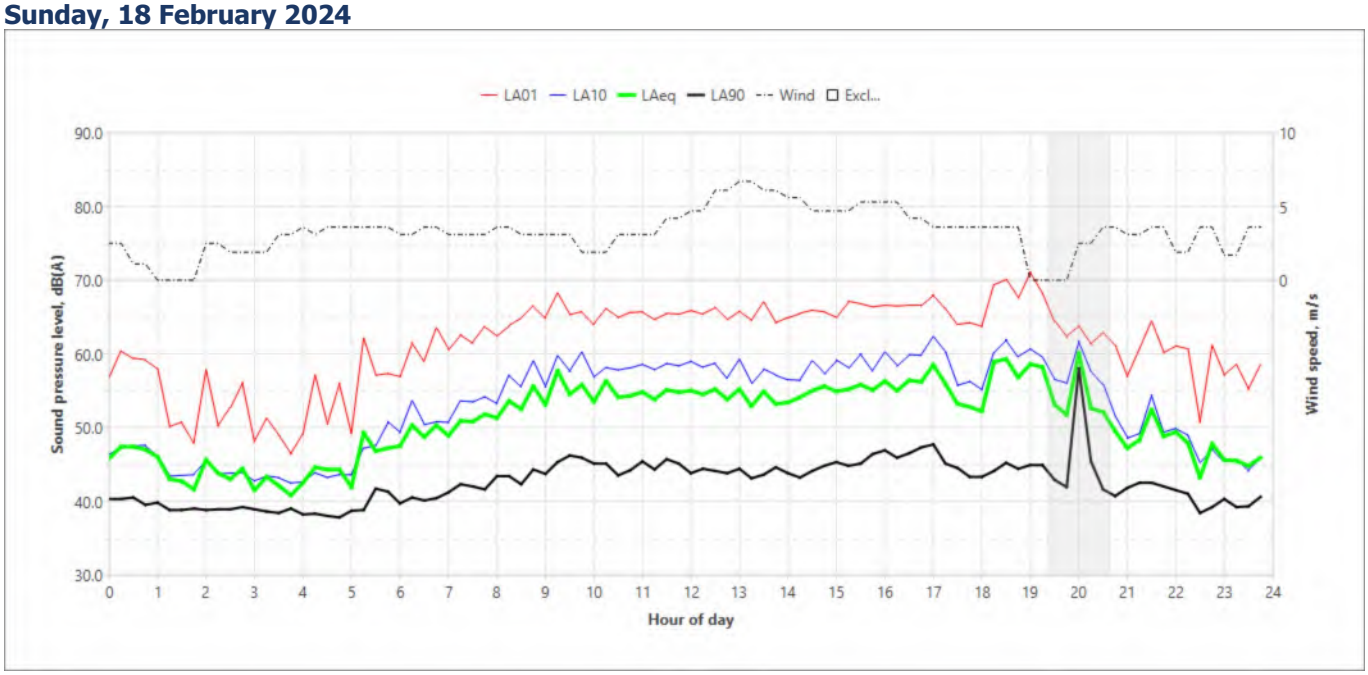
Friday, 16 February 2024



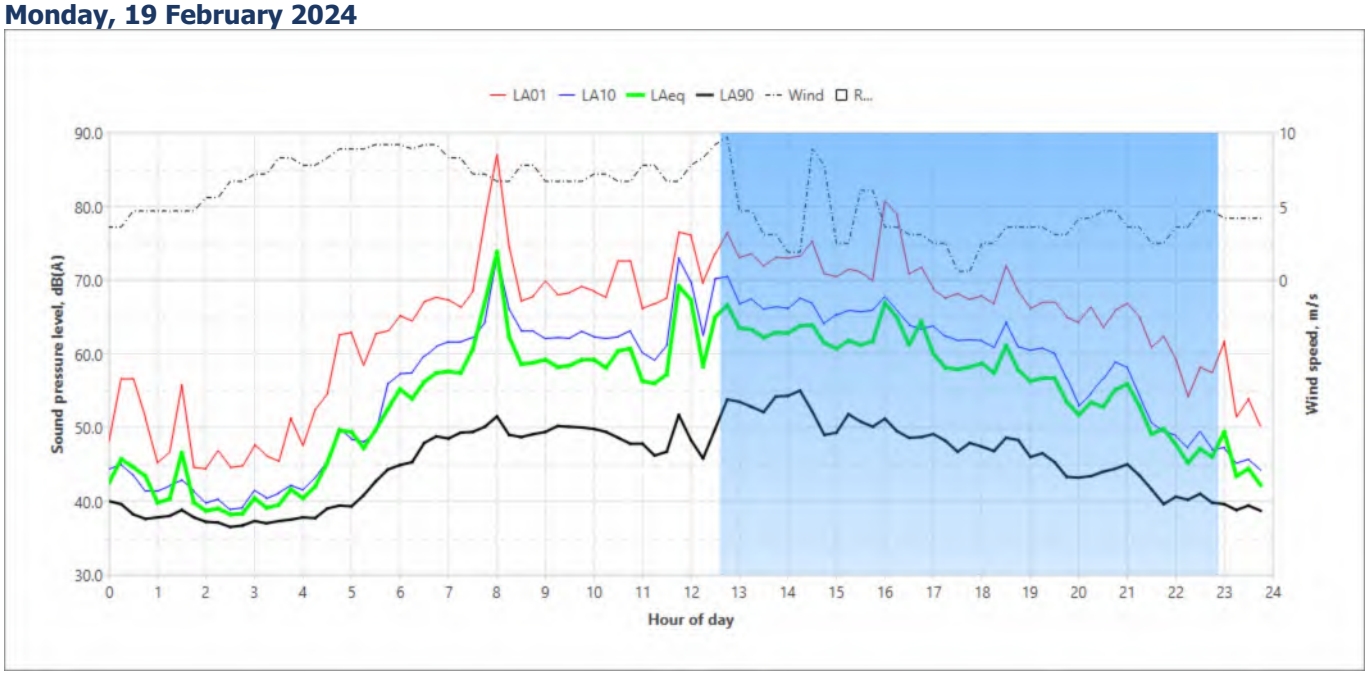
Saturday, 17 February 2024



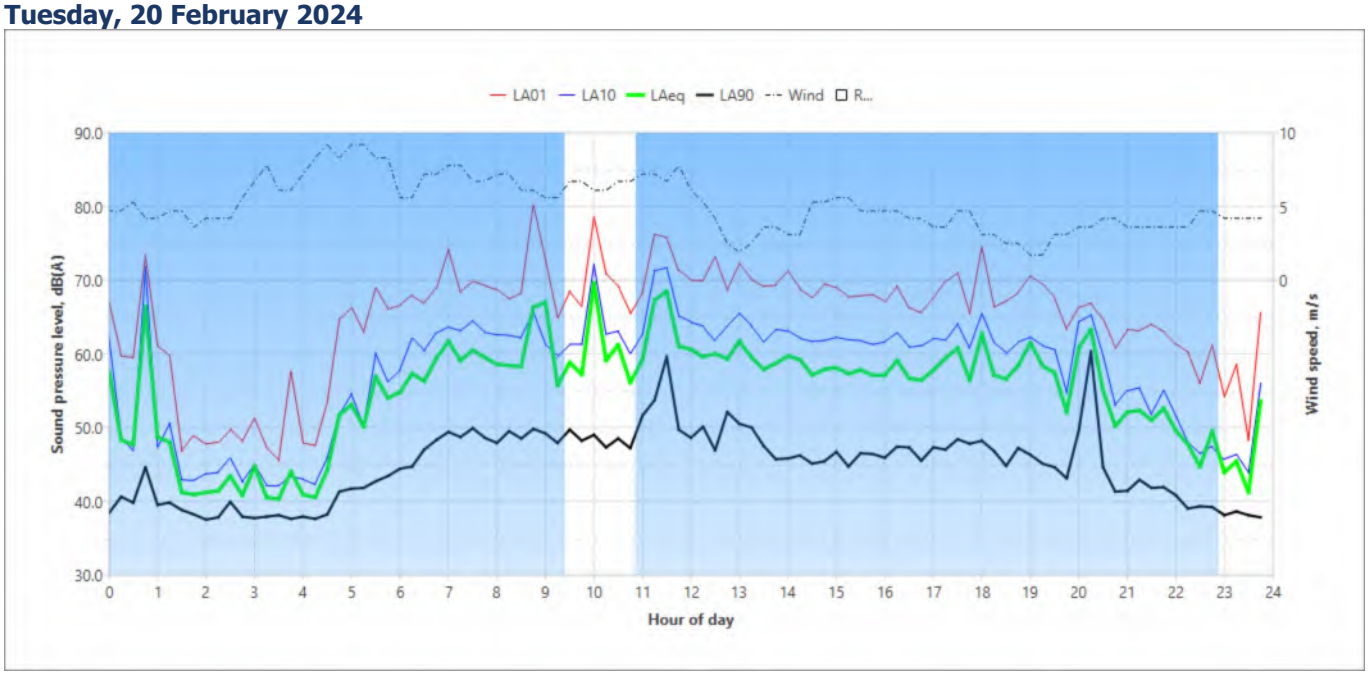
Sunday, 18 February 2024



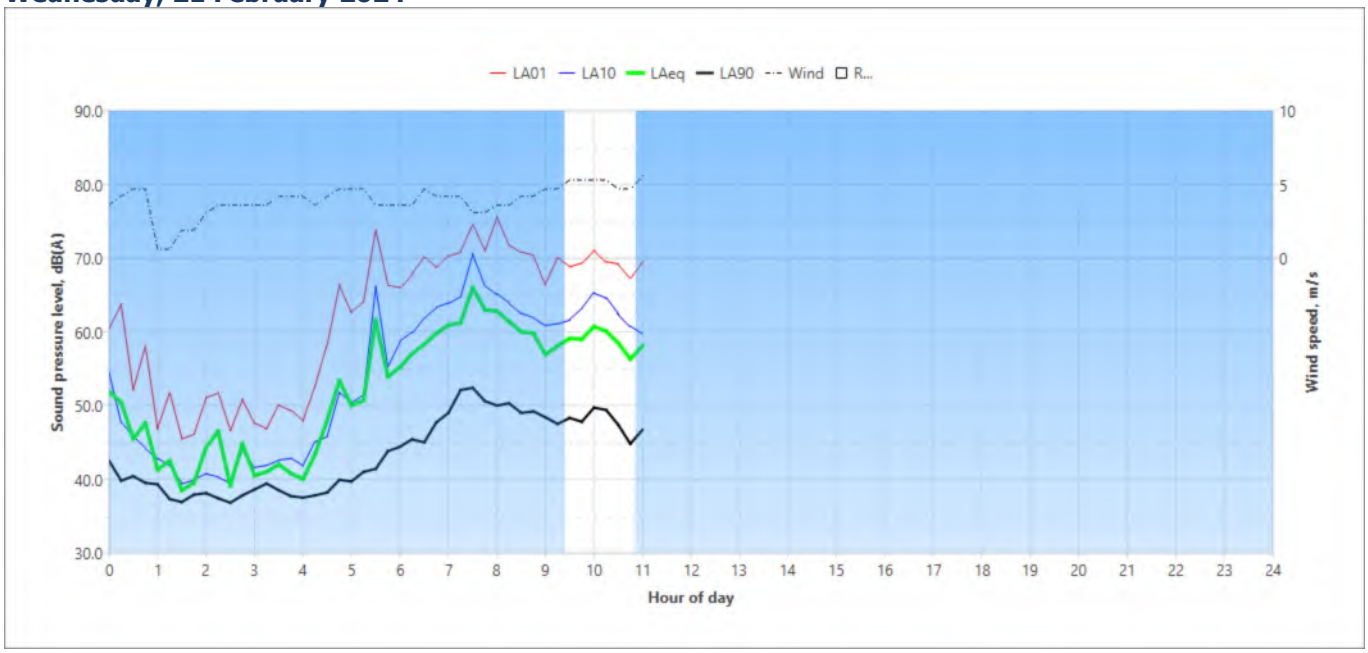
Monday, 19 February 2024



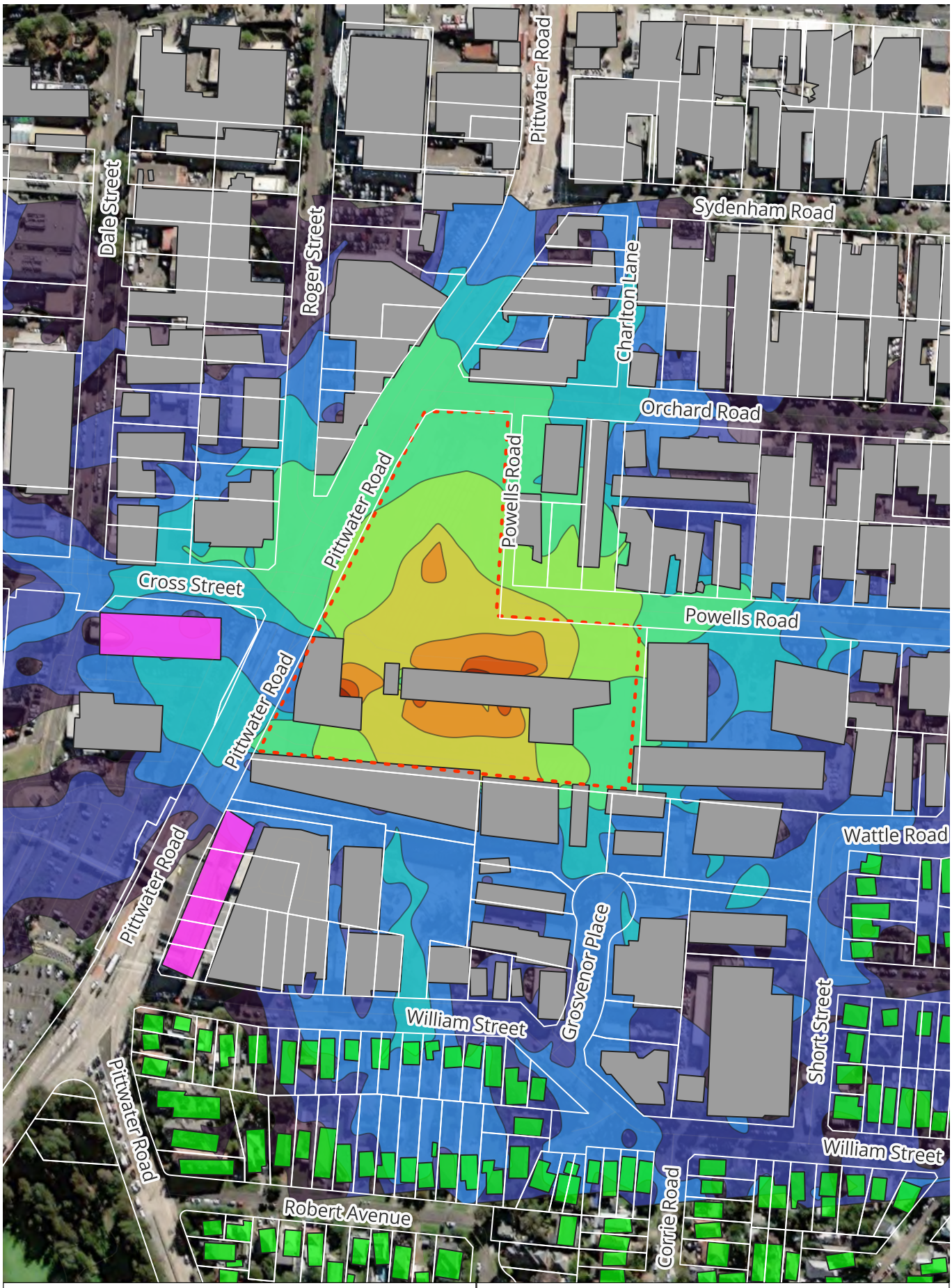
Tuesday, 20 February 2024



Wednesday, 21 February 2024



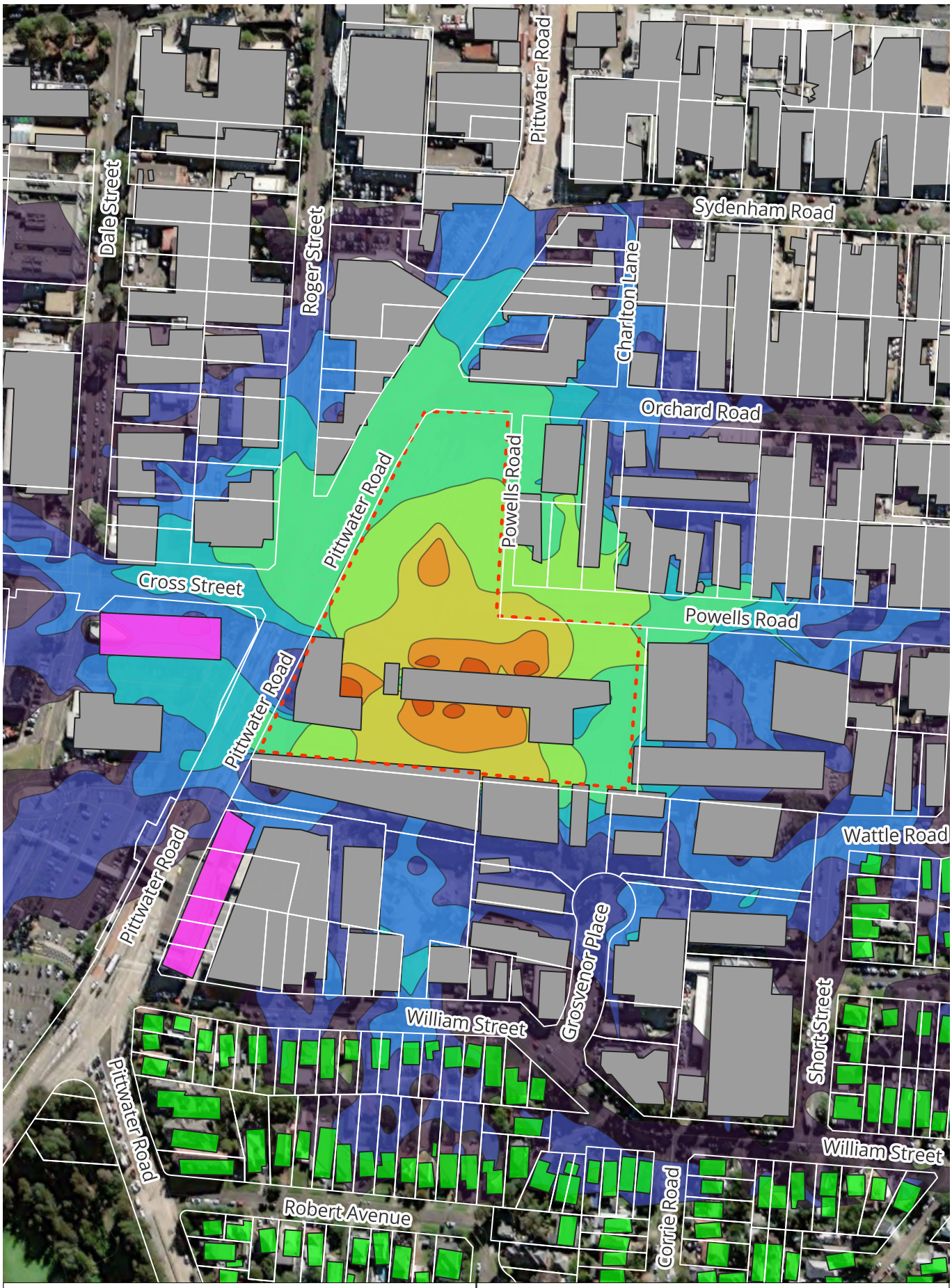
Appendix B: Operational noise contours



LAeq,15min noise levels, dB(A)

30	45	60
35	50	65
40	55	70

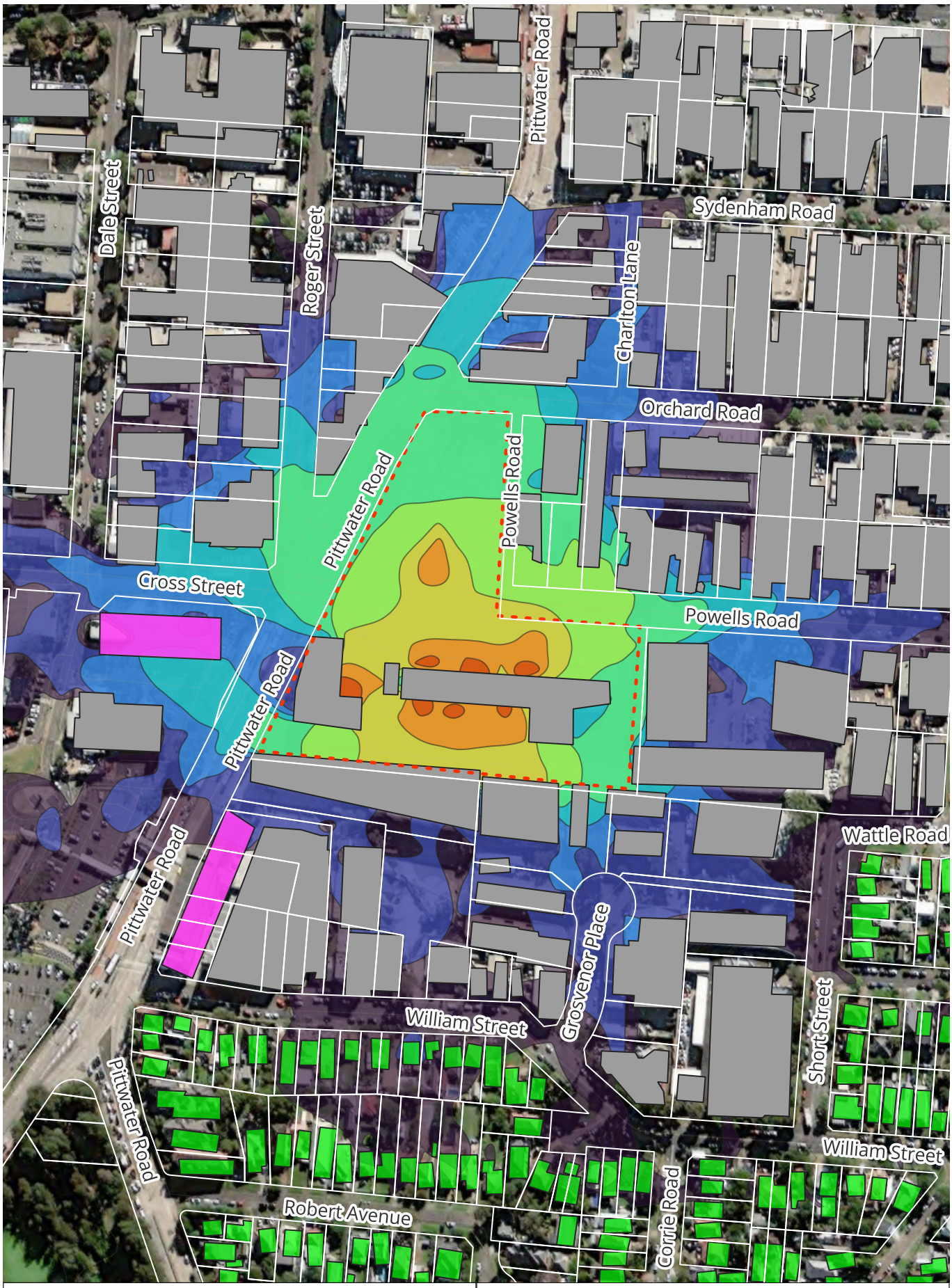
ZEB Brookvale Depot
Noise and Vibration Impact Assessment
Day Time Worst-Case Noise Contours



LAeq,15min noise levels, dB(A)

30	45	60
35	50	65
40	55	70

ZEB Brookvale Depot
Noise and Vibration Impact Assessment
Evening Time Worst-Case Noise Contours

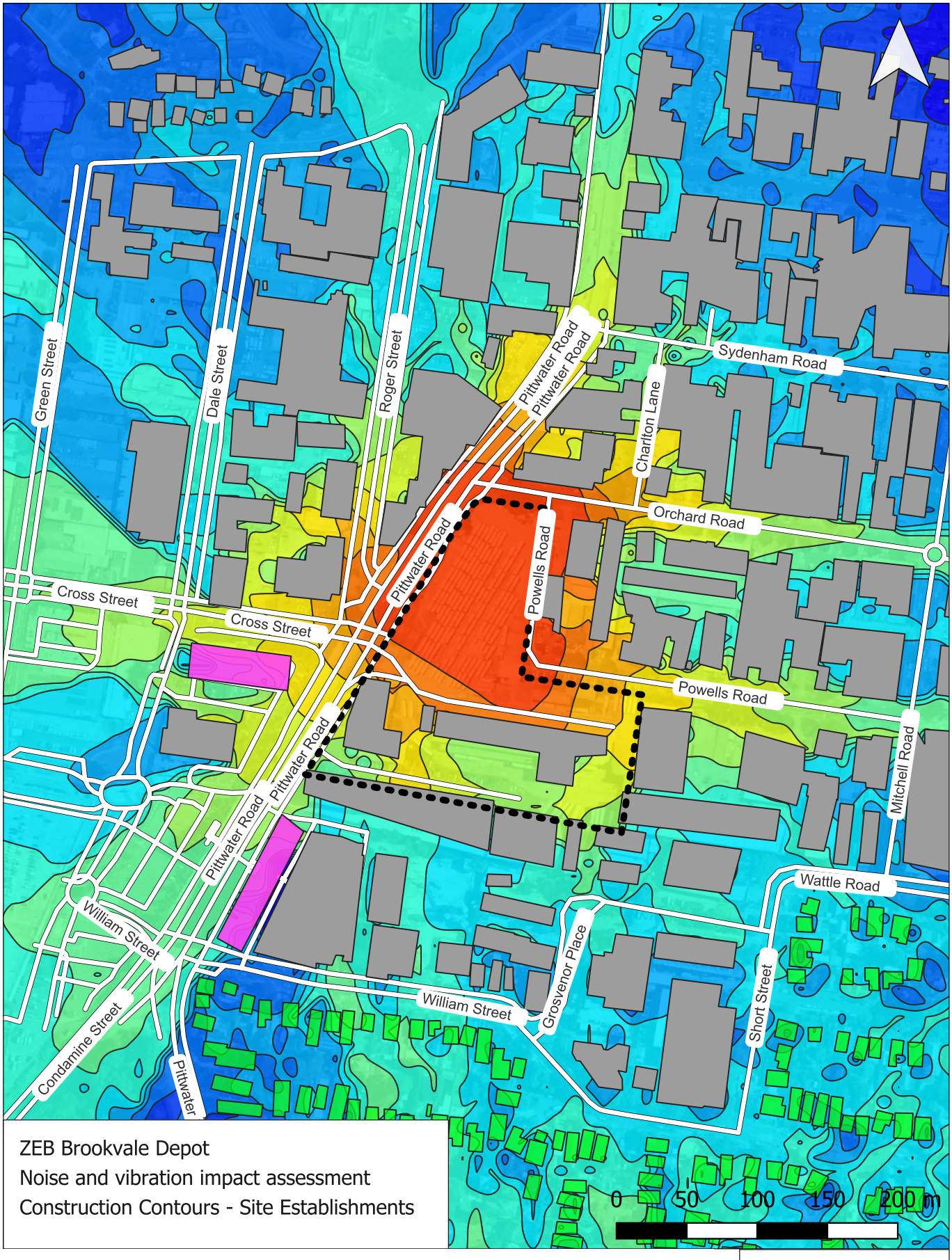


LAeq,15min noise levels, dB(A)

30	45	60
35	50	65
40	55	70

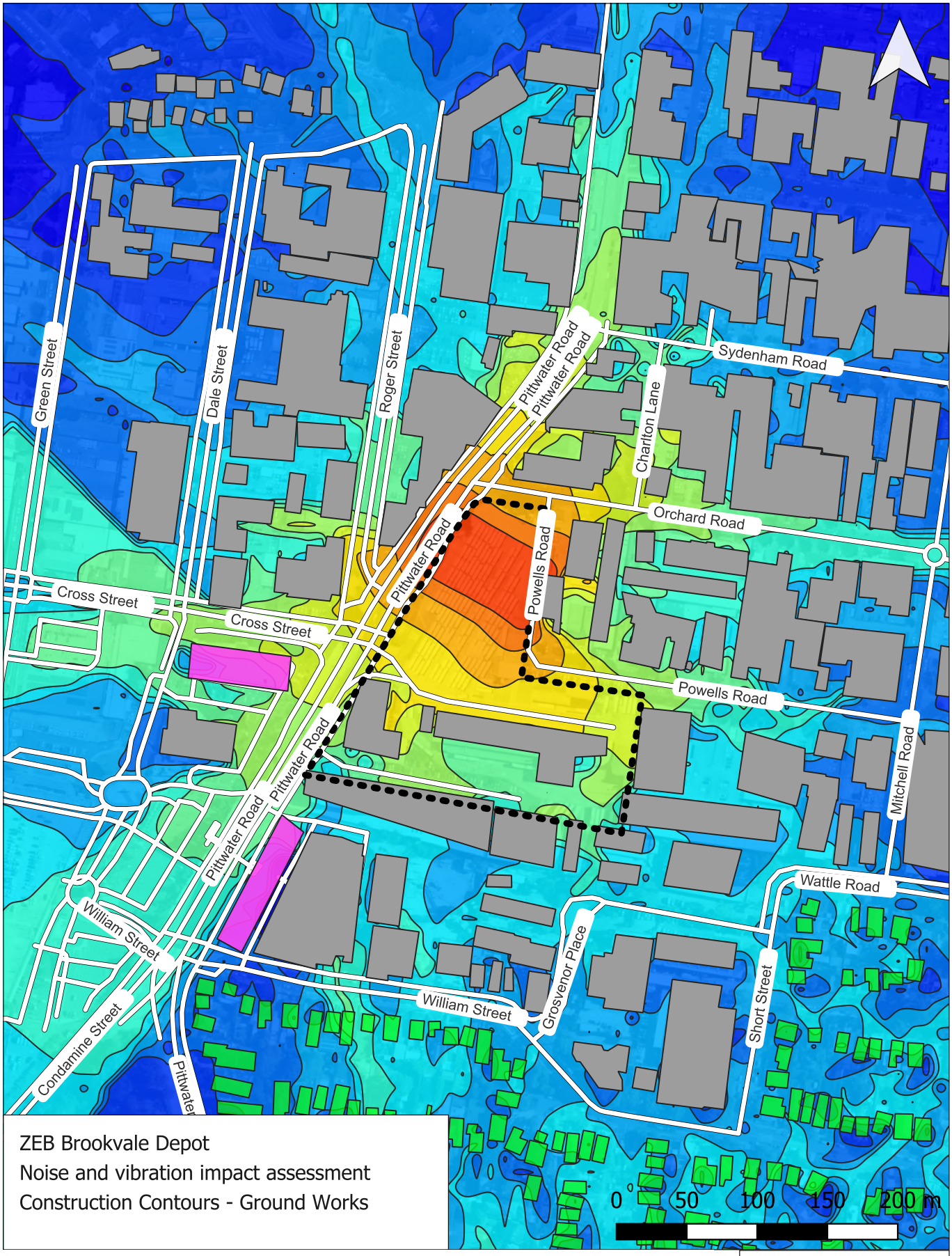
ZEB Brookvale Depot
Noise and Vibration Impact Assessment
Night Time Worst-Case Noise Contours

Appendix C: Construction noise contours



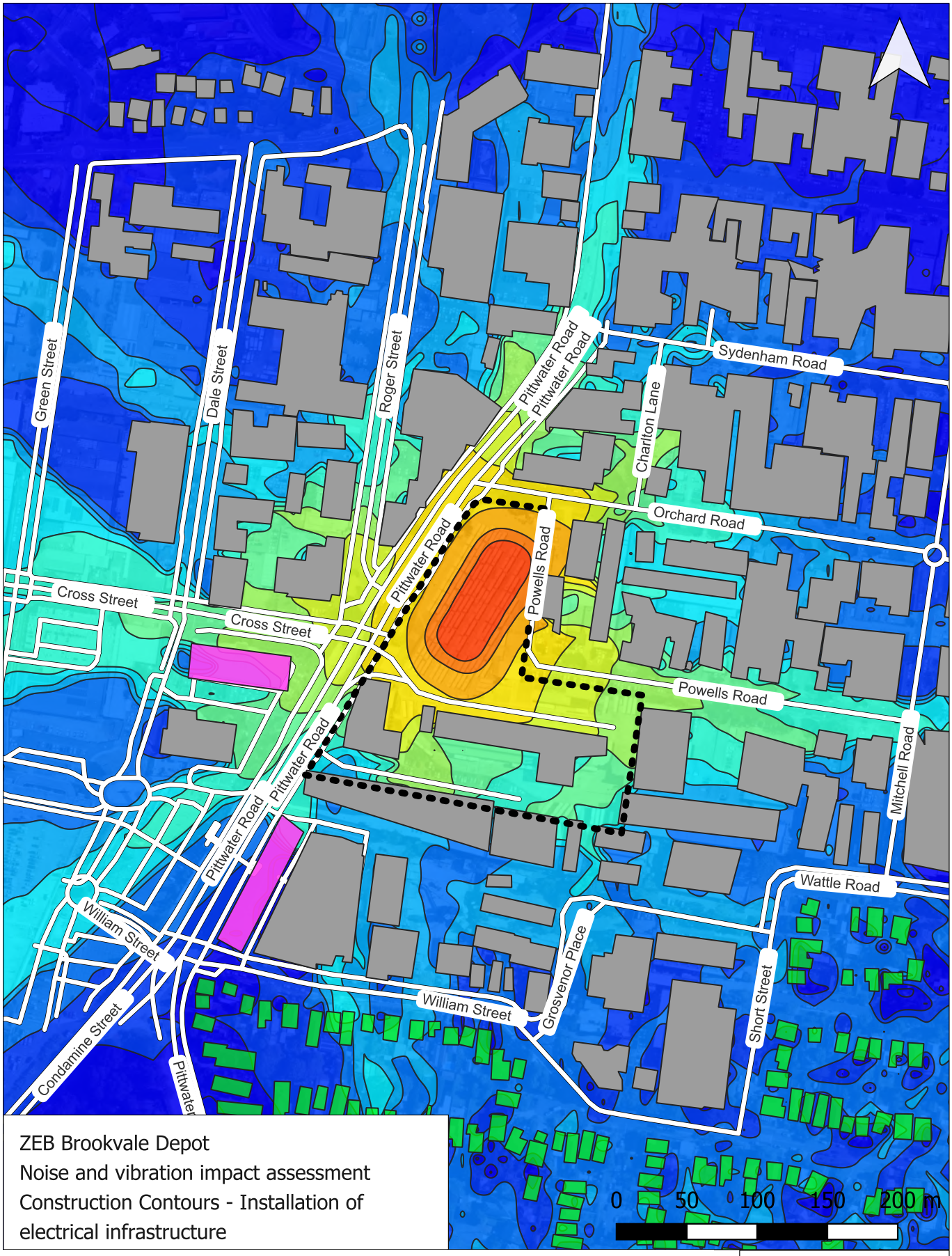
LAeq,15 min nosie levels dB(A)

- 30 to 35
- 35 to 40
- 40 to 45
- 45 to 50
- 50 to 55
- 55 to 60
- 60 to 65
- 65 to 70
- 70 to 75
- 75 to 80
- 80 to 85
- 85 to 90
- 90 to 95
- >95



LAeq,15 min nosie levels dB(A)

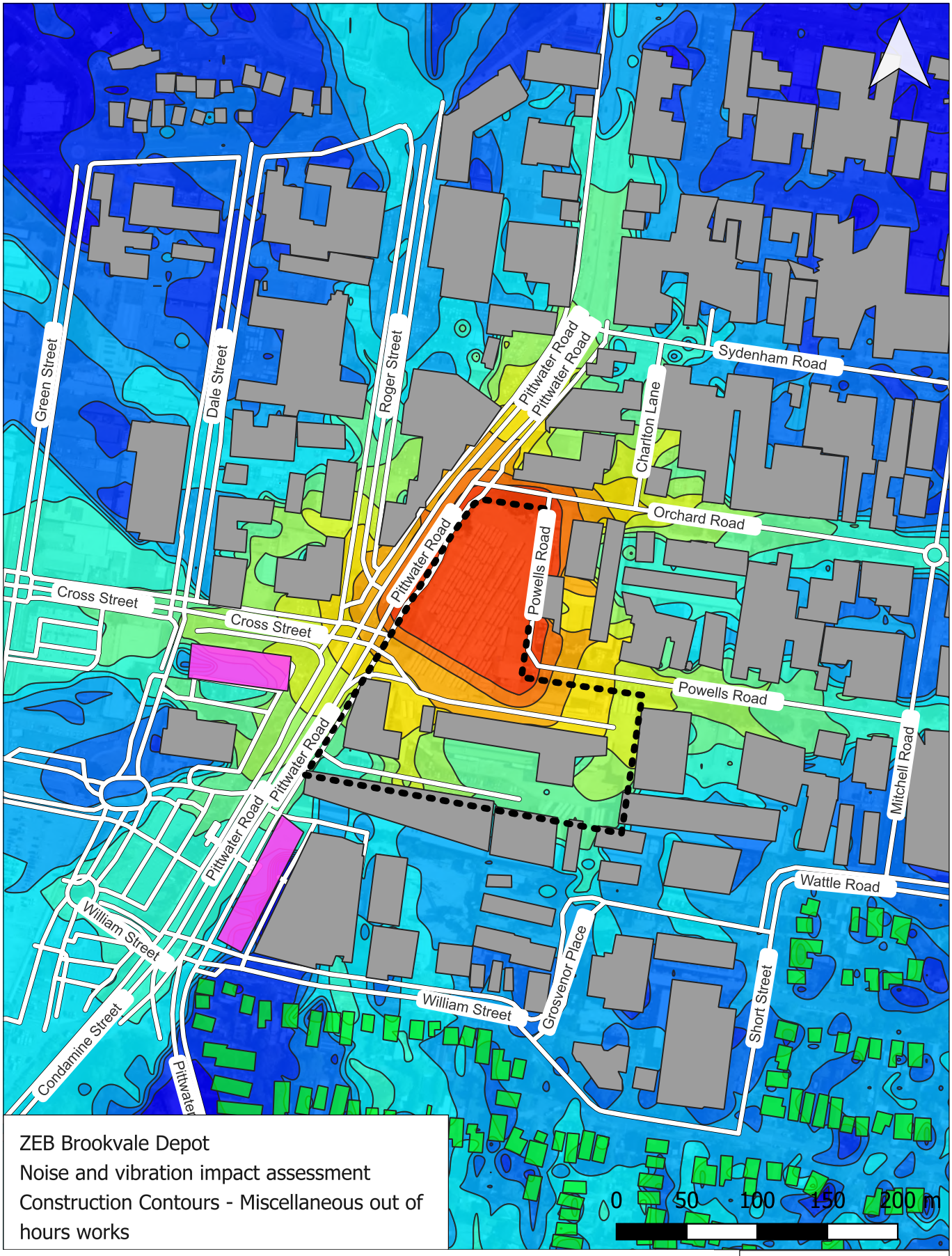
- 30 to 35
- 35 to 40
- 40 to 45
- 45 to 50
- 50 to 55
- 55 to 60
- 60 to 65
- 65 to 70
- 70 to 75
- 75 to 80
- 80 to 85
- 85 to 90
- 90 to 95
- >95



ZEB Brookvale Depot
Noise and vibration impact assessment
Construction Contours - Installation of electrical infrastructure

LAeq,15 min nosie levels dB(A)

- 30 to 35
- 35 to 40
- 40 to 45
- 45 to 50
- 50 to 55
- 55 to 60
- 60 to 65
- 65 to 70
- 70 to 75
- 75 to 80
- 80 to 85
- 85 to 90
- 90 to 95
- >95



LAeq,15 min nosie levels dB(A)

- 30 to 35
- 35 to 40
- 40 to 45
- 45 to 50
- 50 to 55
- 55 to 60
- 60 to 65
- 65 to 70
- 70 to 75
- 75 to 80
- 80 to 85
- 85 to 90
- 90 to 95
- >95

NSW GOVERNMENT

Appendix D: Non-Aboriginal heritage searches and PACHCI outcome

Stage 1 Roads and Maritime Services assessment

Procedure for Aboriginal cultural heritage consultation and investigation: Resource 3

Aim

The project manager (or their representative) must provide the information requested in this checklist to the regional Aboriginal cultural heritage adviser. This information will assist them in determining whether the project may affect Aboriginal cultural heritage in accordance with Stage 1 of the procedure.

Please **provide** this completed cover sheet, along with the required information, to your regional Aboriginal cultural heritage adviser.

Contact details for this project

Name of project:
Brookvale Bus Depot Upgrade – Zero Emissions Bus Program

Project manager
[redacted]

Environmental officer undertaking/managing the environmental impact assessment
[redacted]

Corporate communications officer, if any
[redacted]

Date:
28/02/2024

Action	Status ☑
Item 1 Attach an overview of the project. The overview must include the known scope and extent of the proposed works; compound site requirements; access and movement of plant; re-location and/or provision of utilities; the location of noise walls, sedimentation basins, shared pathways, cycle ways, etc… Refer to Attachment 1 for an overview of the proposed ZEB upgrade at Brookvale Bus Depot.	☑
Item 2 Attach a map/plan of the study area that clearly outlines the extent and scope of the project. The map/plan should also include topographical information where available.	☑

Refer at Attachment 2.	
Item 3 If land acquisition is required, provide details about this. Nil land acquisition required; Transport for NSW is landowner.	☑
Item 4 Attach a brief description of current and past land use, where known. For example, the study area land is currently used as a car park/road reserve/farming/etc. and was formally used for a car park/road reserve/farming/etc… The study area has been used as a bus depot since 1952; a highly disturbed area.	☑
Item 5 Describe the timeframe for the project along with key milestones and deliverables. The Brookvale Bus Depot Upgrade project is subject to an Environmental Impact Assessment in accordance with Division 5.1 of the Environmental Planning and Assessment Act 1979. The project is in the early stages of preparing the Minor Works Review of Environmental Factors (MWREF). Subject to decision being made on the MWREF, design and construction works are anticipated to commence on site in early-mid 2024, With construction works complete early 2025. The works are to include construction of a 13 bay overhead Gantry housing pantograph bus charging infrastructure, as well as HV electrical support infrastructure such as transformers, and switch gear. Works will also include future proofing for the installation of a BESS and solar system, as well as decommissioning of existing diesel infrastructure	☑
Item 6 Please attach the results of the Office of Environment and Heritage's Aboriginal Heritage Information Management System **(AHIMS) Basic Search** - http://www.environment.nsw.gov.au/licences/WhatInformationCanYouObtainFromAHIMS.htm If required, please include the results of an **AHIMS Extensive Search**. These results should be plotted on a map/plan covering the study area. Refer to Attachment 3 for AHIMS results. No listed Aboriginal objects or places identified within 200m of the Brookvale Bus Depot.	☑
Item 7 Attach the results of the following heritage searches relevant to the study area: • Native Title Register search • State Heritage Inventory search • Australian Heritage Database search A search was conducted in February 2024. No known native title claims, state heritage items or Australian Heritage items within the vicinity of the works. Refer to Attachment 4 for results.	☑
Item 8 Attach a copy of any heritage assessment (Aboriginal or non-Aboriginal) previously prepared for the study area/project? N/A	☑
Item 9 Attach a copy of any environmental impact assessment previously prepared for the study area/project?	☑

N/A	

Attachment 1 – Proposal overview

As part of the Zero Emissions Buses (ZEB) Program, Transport for NSW is proposing to convert the existing bus depot at 630 to 636 Pittwater Road, Brookvale to service ZEB from one that currently only services internal combustion engines (the Proposal). The Proposal is located on Lot A deposited plan (DP) 435910 within the Northern Beaches Local Government Area (LGA).

The key infrastructure requirements for converting to ZEB at the existing Brookvale depot would include:

- provision of charging infrastructure
- upgrade or replacement of existing electrical infrastructure
- reconfiguration of depot layout
- decommissioning of diesel storage facilities

Attachment 2 – Site map

Attachment 3 – AHIMS results
AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Brookvale Bus Depot

Client Service ID : 861875

Date: 06 February 2024

[redacted]

[redacted]

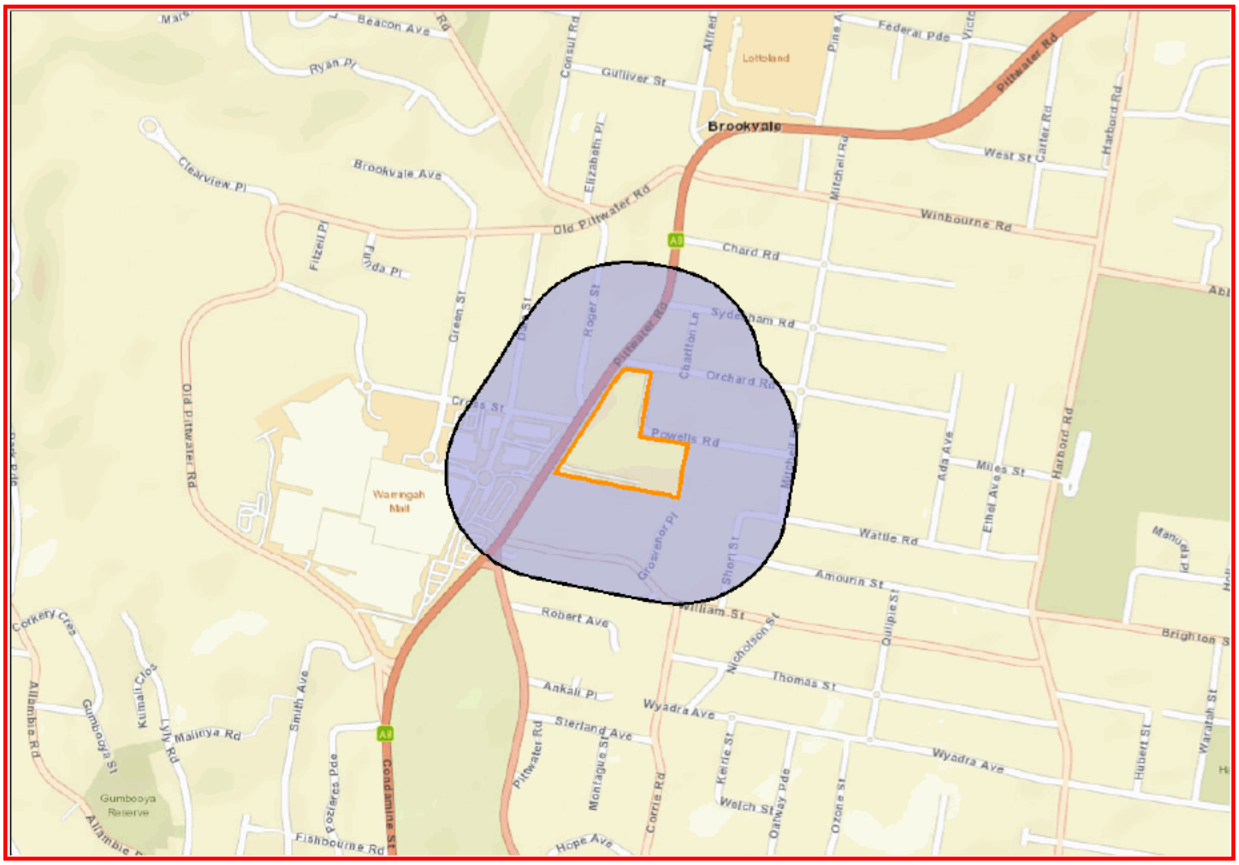
Attention: [redacted]

Email: sh[redacted]

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : A, DP:DP435910, Section : - with a Buffer of 200 meters, conducted by [redacted] on 06 February 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

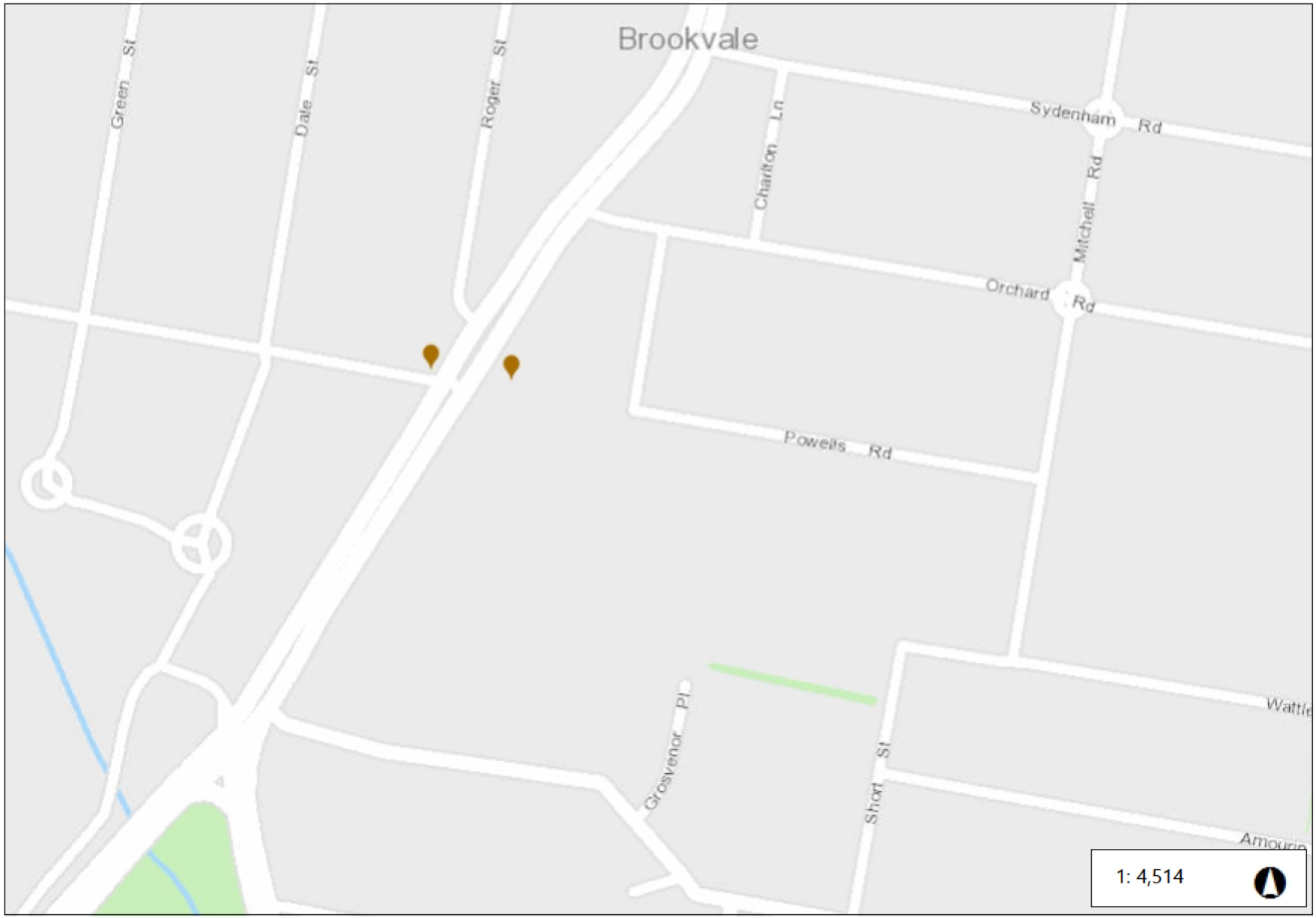
Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

NSW GOVERNMENT | Heritage NSW

Attachment 4 - Searches

Brookvale Bus Depot



Legend

- World Heritage Areas NSW
- SEPP
- State Heritage Register
- Aboriginal Place
- Local Environmental Plan
  - Cluster (label denotes number)
- Aboriginal Place
  - Cluster (label denotes number)
- State Heritage Register
  - Cluster (label denotes number)
- Interim Heritage Order
  - Cluster (label denotes number)

Notes

229.3 0 114.66 229.3 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from the Heritage Management System and is for reference only. Information that appears on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

National Native Title Tribunal

Search Register of Native Title Claims

The Register of Native Title Claims (RNTC) contains information about all claimant applications that have been registered. The Registrar is responsible for maintaining the RNTC.

Further information about the RNTC is available.

Tribunal file no.

Federal Court file no.

Application name

State or Territory

New South Wales

Representative A/TSI body area

Local government area

Northern Beaches Council

Date filed between and

Sort by Date filed

Search

No results for current search criteria

Search Results

No results found.

Enter at least one search criterion.

Search Hints

Search Reset form

Place name

Street name

Town or suburb: Brookvale

State: --All--

Country

Advanced search options

List: All Lists

Different lists will provide different status and class options

Local Government Area

Place ID number

Legal status: --All--

Class: --All--

Keyword Search

Description Statement of Significance Place history

Latitude/Longitude

N

Latitude 1

Longitude 1 S Longitude 2

W E Latitude 2 E

S

Wholly within region

Wholly or partially within region

Longitude coordinates should be entered as ddd.mm.ss

Latitude coordinates should be entered as dd.mm.ss

Map Ref No

1:100,000 eg 2357

1:250,000 eg SF-50-01

Search Hints

- Not all fields need to be filled in. The fewer you fill in the more results you will get.
- If you cannot find a place, check spelling and try alternative names. Reduce the number of words that you include and use fewer fields.

- The Local Government field used on its own will provide a comprehensive list of places in an area.

Report Produced: Wed Feb 7 11:00:12 2024

5th of March 2024

[redacted]

Dear [redacted],

Preliminary assessment results for Brookvale Bus Depot Upgrade – Zero Emissions Bus Program based on Stage 1 of the *Procedure for Aboriginal cultural heritage consultation and investigation* (the procedure).

The project, as described in the Stage 1 assessment checklist was assessed as being unlikely to have an impact on Aboriginal cultural heritage.

The assessment is based on the following due diligence considerations:

- The project is unlikely to harm known Aboriginal objects or places.
- The AHIMS search did not indicate moderate to high concentrations of Aboriginal objects or places in the study area.
- The study area does not contain landscape features that indicate the presence of Aboriginal objects, based on the Office of Environment and Heritage's *Due diligence Code of Practice for the Protection of Aboriginal objects in NSW* and the Transport for NSW procedure.
- The cultural heritage potential of the study area appears to be reduced due to past disturbance.
- There is an absence of sandstone rock outcrops likely to contain Aboriginal art.

Your project may proceed in accordance with the environmental impact assessment process, as relevant, and all other relevant approvals.

If the scope of your project changes, you must contact me and your regional environmental staff to reassess any potential impacts on Aboriginal cultural heritage.

If any potential Aboriginal objects (including skeletal remains) are discovered during the course of the project, all works in the vicinity of the find must cease. Follow the steps outlined in the Transport for NSW *Unexpected Archaeological Finds Procedure*.

Transport for NSW

4 Parramatta square, Parramatta NSW 2150
E corrine.quinlan@transport.nsw.gov.au | M 0447 978 380

13 22 13

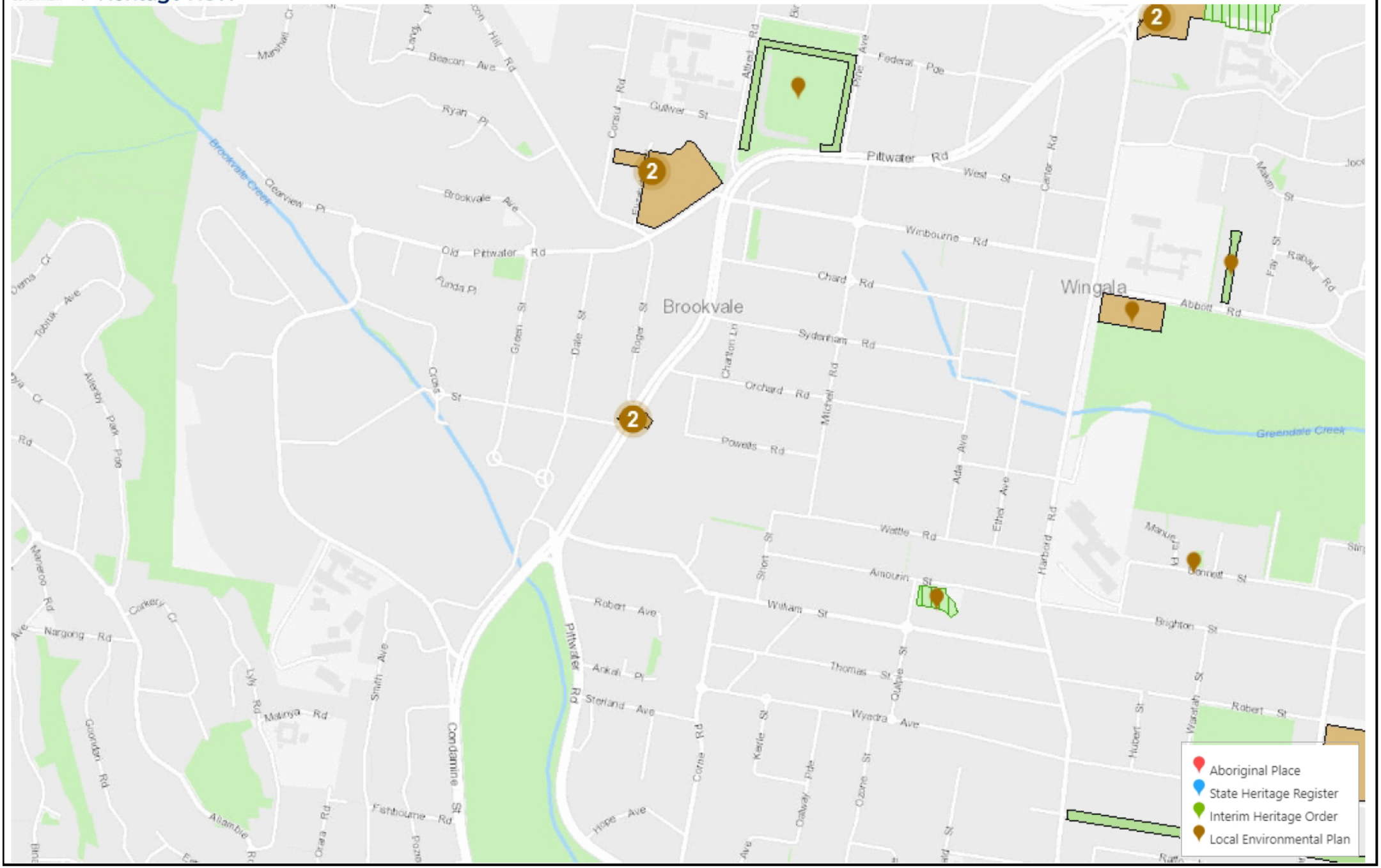
For further assistance in this matter do not hesitate to contact me.

Yours sincerely

[redacted]

[redacted]
Aboriginal Cultural Heritage Advisor – Greater Sydney

NSW GOVERNMENT | Heritage NSW



Search Results

No results found.

Enter at least one search criterion.

Search Hints

Search | Reset form

Place name

Street name

Town or suburb: Brookvale

State: --All--

Country

Advanced search options

List: All Lists

Different lists will provide different status and class options

Local Government Area

Place ID number

Legal status: --All--

Class: --All--

Keyword Search

☑ Description ☑ Statement of Significance ☑ Place history

Latitude/Longitude

N

Latitude 1

Longitude 1 | S | Longitude 2

W | E | Latitude 2 | E | E

S

○ Wholly within region

◉ Wholly or partially within region

Longitude coordinates should be entered as ddd.mm.ss

Latitude coordinates should be entered as dd.mm.ss

Map Ref No

1:100,000 eg 2357

1:250,000 eg SF-50-01

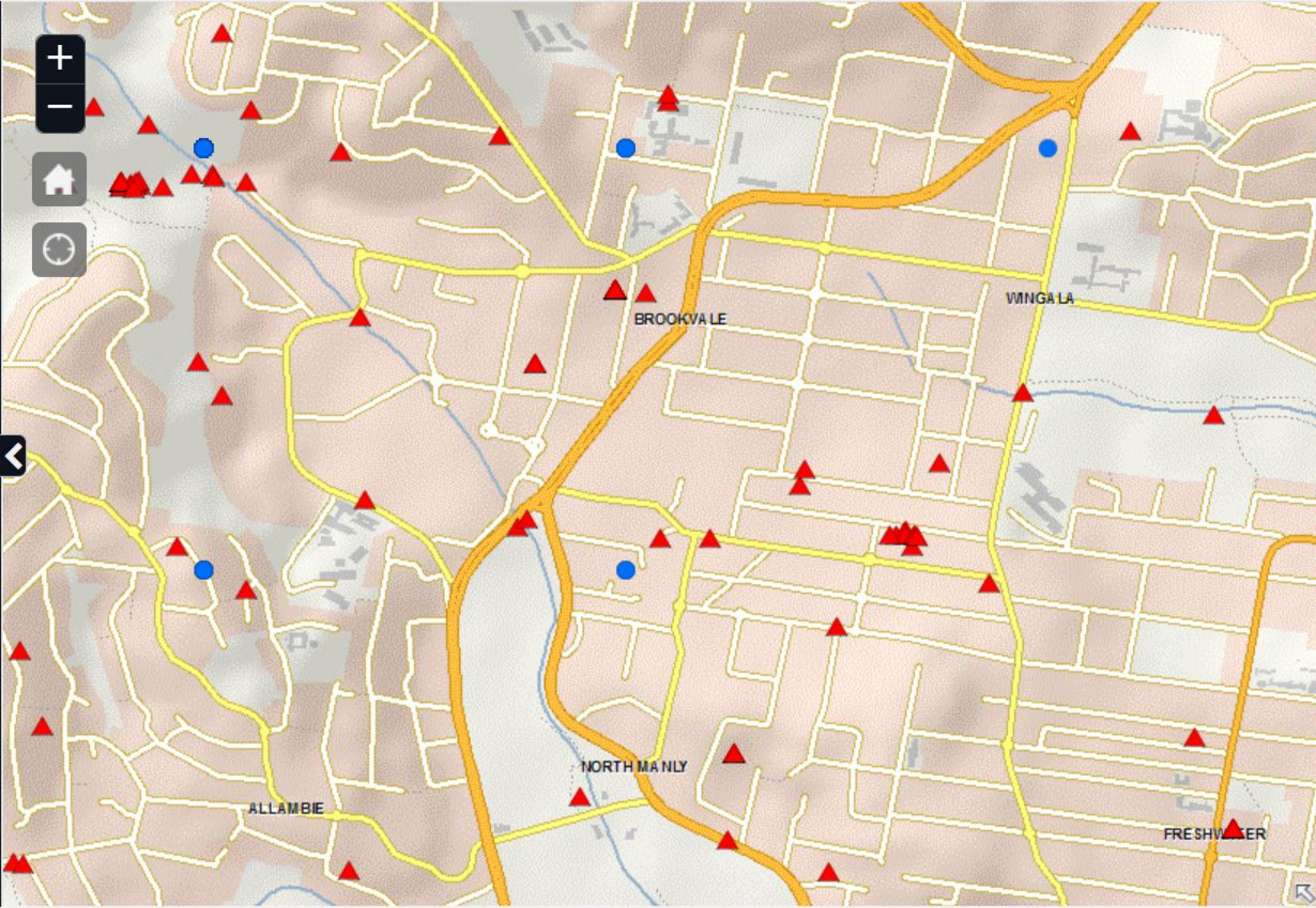
Search Hints

- Not all fields need to be filled in. The fewer you fill in the more results you will get.
- If you cannot find a place, check spelling and try alternative names. Reduce the number of words that you include and use fewer fields.

- The Local Government field used on its own will provide a comprehensive list of places in an area.

Report Produced: Tue May 28 14:48:11 2024

Appendix E: Biodiversity searches


BROOKVALE
WINGALA
NORTH MANLY
ALLAMBIE
FRESHWATER

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Search criteria : Public Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Entities in selected area [North: -33.72 West: 151.23 East: 151.33 South: -33.82] returned a total of 11,904 records of 93 species.

Report generated on 26/04/2024 9:48 AM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Amphibia	Myobatrachidae	3116	*Pseudophryne australis*		Red-crowned Toadlet	V,P		430	Species Description PDF file
Animalia	Amphibia	Limnodynastidae	3042	*Heleioporus australiacus*		Giant Burrowing Frog	V,P	V	12	Species Description PDF file
Animalia	Amphibia	Hylidae	3166	*Litoria aurea*		Green and Golden Bell Frog	E1,P	V	2	Species Description PDF file
Animalia	Reptilia	Cheloniidae	2004	*Caretta caretta*		Loggerhead Turtle	E1,P	E	9	Species Description PDF file
Animalia	Reptilia	Cheloniidae	2007	*Chelonia mydas*		Green Turtle	V,P	V	20	Species Description PDF file
Animalia	Reptilia	Cheloniidae	2008	*Eretmochelys imbricata*		Hawksbill Turtle	P	V	4	Species Description PDF file
Animalia	Reptilia	Dermochelyidae	2013	*Dermochelys coriacea*		Leatherback Turtle	E1,P	E	4	Species Description PDF file
Animalia	Reptilia	Varanidae	2287	*Varanus rosenbergi*		Rosenberg's Goanna	V,P		58	Species Description PDF file
Animalia	Aves	Columbidae	0025	*Ptilinopus magnificus*		Wompoo Fruit-Dove	V,P		2	Species Description PDF file
Animalia	Aves	Columbidae	0021	*Ptilinopus regina*		Rose-crowned Fruit-Dove	V,P		2	Species Description PDF file
Animalia	Aves	Columbidae	0023	*Ptilinopus superbus*		Superb Fruit-Dove	V,P		4	Species Description PDF file
Animalia	Aves	Apodidae	0334	*Hirundapus caudacutus*		White-throated Needletail	V,P	V,C,J,K	9	Species Description PDF file
Animalia	Aves	Diomedeidae	0086	*Diomedea exulans*		Wandering Albatross	E1,P	V	5	Species Description PDF file
Animalia	Aves	Diomedeidae	0091	*Thalassarche cauta*		Shy Albatross	E1,P	E	2	Species Description PDF file
Animalia	Aves	Diomedeidae	0088	*Thalassarche melanophris*		Black-browed Albatross	V,P	V	5	Species Description PDF file
Animalia	Aves	Procellariidae	0072	*Ardenna carneipes*		Flesh-footed Shearwater	V,P	J,K	3	Species Description PDF file
Animalia	Aves	Procellariidae	0929	*Macronectes giganteus*		Southern Giant Petrel	E1,P	E	3	Species Description PDF file
Animalia	Aves	Procellariidae	0937	*Macronectes halli*		Northern Giant-Petrel	V,P	V	1	Species Description PDF file
Animalia	Aves	Procellariidae	8684	*Pterodroma leucoptera leucoptera*		Gould's Petrel	V,P	E	2	Species Description PDF file
Animalia	Aves	Procellariidae	0067	*Puffinus assimilis*		Little Shearwater	V,P		2	Species Description PDF file
Animalia	Aves	Spheniscidae	0005	*Eudyptula minor*		Little Penguin in the Manly Point Area (being the area on and near the shoreline from Cannae Point generally northward to the point near the intersection of Stuart Street and Oyama Cove Avenue, and extending 100 metres offshore from that shoreline)	E2,P		79	Species Description PDF file

Animalia	Aves	Ardeidae	0196	*Ixobrychus flavicollis*	Black Bittern	V,P		9	Species Description PDF file
Animalia	Aves	Accipitridae	0226	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V,P		21	Species Description PDF file
Animalia	Aves	Accipitridae	0225	*Hieraaetus morphnoides*	Little Eagle	V,P		1	Species Description PDF file
Animalia	Aves	Accipitridae	0230	*^^Lophoictinia isura*	Square-tailed Kite	V,P,3		3	Species Description PDF file
Animalia	Aves	Accipitridae	8739	*^^Pandion cristatus*	Eastern Osprey	V,P,3		17	Species Description PDF file
Animalia	Aves	Burhinidae	0174	*Burhinus grallarius*	Bush Stone-curlew	E1,P		9	Species Description PDF file
Animalia	Aves	Burhinidae	0175	*Esacus magnirostris*	Beach Stone-curlew	E4A,P		2	Species Description PDF file
Animalia	Aves	Haematopodidae	0131	*Haematopus fuliginosus*	Sooty Oystercatcher	V,P		19	Species Description PDF file
Animalia	Aves	Haematopodidae	0130	*Haematopus longirostris*	Pied Oystercatcher	E1,P		8	Species Description PDF file
Animalia	Aves	Charadriidae	0141	*Charadrius leschenaultii*	Greater Sand-plover	V,P	V,C,J,K	3	Species Description PDF file
Animalia	Aves	Charadriidae	0139	*Charadrius mongolus*	Lesser Sand-plover	V,P	E,C,J,K	2	Species Description PDF file
Animalia	Aves	Scolopacidae	0166	*Calidris alba*	Sanderling	V,P	C,J,K	8	Species Description PDF file
Animalia	Aves	Scolopacidae	0164	*Calidris canutus*	Red Knot	P	E,C,J,K	2	Species Description PDF file
Animalia	Aves	Scolopacidae	0161	*Calidris ferruginea*	Curlew Sandpiper	E1,P	CE,C,J,K	3	Species Description PDF file
Animalia	Aves	Scolopacidae	0165	*Calidris tenuirostris*	Great Knot	V,P	V,C,J,K	4	Species Description PDF file
Animalia	Aves	Scolopacidae	0149	*Numenius madagascariensis*	Eastern Curlew	P	CE,C,J,K	2	Species Description PDF file
Animalia	Aves	Laridae	0972	*Gygis alba*	White Tern	V,P		1	Species Description PDF file
Animalia	Aves	Laridae	0120	*Onychoprion fuscata*	Sooty Tern	V,P		5	Species Description PDF file
Animalia	Aves	Laridae	0117	*Sternula albifrons*	Little Tern	E1,P	C,J,K	2	Species Description PDF file
Animalia	Aves	Cacatuidae	0268	*^^Callocephalon fimbriatum*	Gang-gang Cockatoo	E1,P,3	E	1	Species Description PDF file
Animalia	Aves	Cacatuidae	8862	*^Calyptorhynchus lathami lathami*	South-eastern Glossy Black-Cockatoo	V,P,2	V	39	Species Description PDF file
Animalia	Aves	Psittacidae	0260	*Glossopsitta pusilla*	Little Lorikeet	V,P		7	Species Description PDF file
Animalia	Aves	Psittacidae	0309	*Lathamus discolor*	Swift Parrot	E1,P	CE	12	Species Description PDF file
Animalia	Aves	Psittacidae	0302	*^^Neophema pulchella*	Turquoise Parrot	V,P,3		1	Species Description PDF file
Animalia	Aves	Strigidae	0246	*^^Ninox connivens*	Barking Owl	V,P,3		5	Species Description PDF file
Animalia	Aves	Strigidae	0248	*^^Ninox strenua*	Powerful Owl	V,P,3		265	Species Description PDF file
Animalia	Aves	Tytonidae	0250	*^^Tyto novaehollandiae*	Masked Owl	V,P,3		3	Species Description PDF file
Animalia	Aves	Tytonidae	9924	*^^Tyto tenebricosa*	Sooty Owl	V,P,3		2	Species Description PDF file
Animalia	Aves	Climacteridae	8127	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	V,P	V	1	Species Description PDF file
Animalia	Aves	Meliphagidae	0603	*^Anthochaera phrygia*	Regent Honeyeater	E4A,P,2	CE	2	Species Description PDF file
Animalia	Aves	Neosittidae	0549	*Daphoenositta chrysoptera*	Varied Sittella	V,P		2	Species Description PDF file
Animalia	Aves	Artamidae	8519	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	V,P		5	Species Description PDF file
Animalia	Aves	Petroicidae	0380	*Petroica boodang*	Scarlet Robin	V,P		2	Species Description PDF file
Animalia	Mammalia	Dasyuridae	1008	*Dasyurus maculatus*	Spotted-tailed Quoll	V,P	E	4	Species Description PDF file

Animalia	Mammalia	Peramelidae	1710	*Isoodon obesulus obesulus*	Southern Brown Bandicoot (eastern)	E1,P	E	6	Species Description PDF file
Animalia	Mammalia	Peramelidae	1097	*Perameles nasuta*	Long-nosed Bandicoot, North Head	E2,P		5810	Species Description PDF file
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*	Koala	E1,P	E	7	Species Description PDF file
Animalia	Mammalia	Burramyidae	1150	*Cercartetus nanus*	Eastern Pygmy-possum	V,P		825	Species Description PDF file
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	358	Species Description PDF file
Animalia	Mammalia	Emballonuridae	1321	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V,P		5	Species Description PDF file
Animalia	Mammalia	Molossidae	1329	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat	V,P		2	Species Description PDF file
Animalia	Mammalia	Vespertilionidae	1353	*Chalinolobus dwyeri*	Large-eared Pied Bat	V,P	E	297	Species Description PDF file
Animalia	Mammalia	Vespertilionidae	1357	*Myotis macropus*	Southern Myotis	V,P		29	Species Description PDF file
Animalia	Mammalia	Vespertilionidae	1361	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V,P		1	Species Description PDF file
Animalia	Mammalia	Miniopteridae	1346	*Miniopterus australis*	Little Bent-winged Bat	V,P		195	Species Description PDF file
Animalia	Mammalia	Miniopteridae	3330	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V,P		1438	Species Description PDF file
Animalia	Mammalia	Muridae	1455	*Pseudomys novaehollandiae*	New Holland Mouse	P	V	1	Species Description PDF file
Animalia	Mammalia	Dugongidae	1558	*Dugong dugon*	Dugong	E1,P		1	Species Description PDF file
Animalia	Mammalia	Otariidae	1543	*Arctocephalus forsteri*	New Zealand Fur-seal	V,P		17	Species Description PDF file
Animalia	Mammalia	Otariidae	1882	*Arctocephalus pusillus doriferus*	Australian Fur-seal	V,P		14	Species Description PDF file
Animalia	Mammalia	Balaenidae	1561	*Eubalaena australis*	Southern Right Whale	E1,P	E	5	Species Description PDF file
Animalia	Mammalia	Physeteridae	1578	*Physeter macrocephalus*	Sperm Whale	V,P		3	Species Description PDF file
Plantae	Flora	Asteraceae	9458	*Senecio spathulatus*	Coast Groundsel	E1		1	Species Description PDF file
Plantae	Flora	Dilleniaceae	11250	*Hibbertia superans*		E1		1	Species Description PDF file
Plantae	Flora	Elaeocarpaceae	6205	*Tetratheca glandulosa*		V		99	Species Description PDF file
Plantae	Flora	Ericaceae	7752	*Epacris purpurascens var. purpurascens*		V		4	Species Description PDF file
Plantae	Flora	Euphorbiaceae	9851	*Chamaesyce psammogeton*	Sand Spurge	E1		4	Species Description PDF file
Plantae	Flora	Fabaceae (Mimosoideae)	3728	*Acacia bynoeana*	Bynoe's Wattle	E1	V	8	Species Description PDF file
Plantae	Flora	Fabaceae (Mimosoideae)	15210	*Acacia terminalis subsp. Eastern Sydney*	Sunshine wattle	E1	E	533	Species Description PDF file
Plantae	Flora	Lamiaceae	3418	*^^Prostanthera marifolia*	Seaforth Mintbush	E4A,3	CE	870	Species Description PDF file
Plantae	Flora	Myrtaceae	4007	*^^Callistemon linearifolius*	Netted Bottle Brush	V,3		6	Species Description PDF file
Plantae	Flora	Myrtaceae	4067	*Eucalyptus camfieldii*	Camfield's Stringybark	V	V	113	Species Description PDF file
Plantae	Flora	Myrtaceae	4134	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	V	V	4	Species Description PDF file
Plantae	Flora	Myrtaceae	6809	*Melaleuca biconvexa*	Biconvex Paperbark	V	V	1	Species Description PDF file
Plantae	Flora	Myrtaceae	4283	*Rhodamnia rubescens*	Scrub Turpentine	E4A	CE	1	Species Description PDF file

Plantae	Flora	Myrtaceae	4293	*Syzygium paniculatum*	Magenta Lilly Pilly	E1	V	36	Species Description PDF file
Plantae	Flora	Orchidaceae	4464	*^Genoplesium baueri*	Bauer's Midge Orchid	E1,P,2	E	1	Species Description PDF file
Plantae	Flora	Orchidaceae	9616	*^Microtis angusii*	Angus's Onion Orchid	E1,P,2	E	1	Species Description PDF file
Plantae	Flora	Proteaceae	5365	*^^Grevillea caleyi*	Caley's Grevillea	E4A,3	CE	6	Species Description PDF file
Plantae	Flora	Proteaceae	9680	*Macadamia integrifolia*	Macadamia Nut		V	6	Species Description PDF file
Plantae	Flora	Proteaceae	5458	*^^Persoonia hirsuta*	Hairy Geebung	E1,P,3	E	26	Species Description PDF file
Plantae	Flora	Thymelaeaceae	6965	*Pimelea curviflora var. curviflora*		V	V	39	Species Description PDF file

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 28-May-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	3
National Heritage Places:	12
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	14
Listed Threatened Species:	128
Listed Migratory Species:	75

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	323
Commonwealth Heritage Places:	70
Listed Marine Species:	97
Whales and Other Cetaceans:	31
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	12
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	82
Key Ecological Features (Marine):	None
Biologically Important Areas:	10
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties			[Resource Information]
Name	State	Legal Status	Buffer Status
Australian Convict Sites (Cockatoo Island Convict Site)	NSW	Declared property	In buffer area only
Australian Convict Sites (Hyde Park Barracks)	NSW	Declared property	In buffer area only
Sydney Opera House	NSW	Declared property	In buffer area only

National Heritage Places			[Resource Information]
Name	State	Legal Status	Buffer Status
Historic			
Bondi Beach	NSW	Listed place	In buffer area only
Bondi Surf Pavilion	NSW	Within listed place	In buffer area only
Centennial Park	NSW	Listed place	In buffer area only
Cockatoo Island	NSW	Listed place	In buffer area only
First Government House Site	NSW	Listed place	In buffer area only
Governors' Domain and Civic Precinct	NSW	Listed place	In buffer area only
Hyde Park Barracks	NSW	Listed place	In buffer area only
North Head - Sydney	NSW	Listed place	In buffer area only
Sydney Harbour Bridge	NSW	Listed place	In buffer area only
Sydney Opera House	NSW	Listed place	In buffer area only
Indigenous			
Cyprus Hellene Club - Australian Hall	NSW	Listed place	In buffer area only
Natural			
Ku-ring-gai Chase National Park, Lion, Long and Spectacle Island Nature Reserves	NSW	Listed place	In buffer area only

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name	Buffer Status

Feature Name	Buffer Status
Commonwealth Marine Areas (EPBC Act)	In buffer area only

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Blue Gum High Forest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area	In buffer area only
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	Endangered	Community may occur within area	In buffer area only
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In feature area
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	Community likely to occur within area	In feature area
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	Critically Endangered	Community may occur within area	In buffer area only
Eastern Suburbs Banksia Scrub of the Sydney Region	Critically Endangered	Community likely to occur within area	In feature area
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area	In buffer area only
Posidonia australis seagrass meadows of the Manning-Hawkesbury ecoregion	Endangered	Community likely to occur within area	In feature area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area	In feature area
Shale Sandstone Transition Forest of the Sydney Basin Bioregion	Critically Endangered	Community may occur within area	In buffer area only
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In feature area
Turpentine-Ironbark Forest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area	In buffer area only
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In feature area
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche bulleri platei			
Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita			
Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			
Epinephelus daemelii			
Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hippocampus whitei			
White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat known to occur within area	In feature area
Macquaria australasica			
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
Prototroctes maraena			
Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Rexea solandri (eastern Australian population)			
Eastern Gemfish [76339]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Seriolella brama			
Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
Thunnus maccoyii			
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
FROG			
Heleioporus australiacus			
Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat known to occur within area	In feature area
Litoria aurea			
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Mixophyes balbus			
Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Balaenoptera borealis			
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Balaenoptera physalus			
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Isoodon obesulus obesulus			
Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat known to occur within area	In feature area
Notamacropus parma			
Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pseudomys novaehollandiae](#) New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
OTHER			
[Dendronephthya australis](#) Cauliflower Soft Coral [90325]	Endangered	Species or species habitat known to occur within area	In feature area
PLANT			
[Acacia bynoeana](#) Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Acacia pubescens](#) Downy Wattle, Hairy Stemmed Wattle [18800]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Acacia terminalis subsp. Eastern Sydney (G.P.Phillips 126) listed as Acacia terminalis subsp. terminalis MS](#) Sunshine Wattle (Sydney region) [91564]	Endangered	Species or species habitat known to occur within area	In feature area
[Allocasuarina glareicola](#) [21932]	Endangered	Species or species habitat may occur within area	In buffer area only
[Allocasuarina portuensis](#) Nielsen Park She-oak [21937]	Endangered	Species or species habitat known to occur within area	In buffer area only
[Asterolasia elegans](#) [56780]	Endangered	Species or species habitat known to occur within area	In feature area
[Caladenia tessellata](#) Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Cryptostylis hunteriana](#) Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area	In feature area
Darwinia biflora [14619]	Vulnerable	Species or species habitat known to occur within area	In feature area
Deyeuxia appressa [7438]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Eucalyptus camfieldii Camfield's Stringybark [15460]	Vulnerable	Species or species habitat known to occur within area	In feature area
Genoplesium baueri Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat known to occur within area	In feature area
Grevillea caleyi Caley's Grevillea [9683]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Grevillea shiressii [19186]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Haloragis exalata subsp. exalata Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Haloragodendron lucasii Hal [6480]	Endangered	Species or species habitat known to occur within area	In feature area
Kunzea rupestris [8798]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lasiopetalum joyceae [20311]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Leptospermum deanei Deane's Tea-tree [21777]	Vulnerable	Species or species habitat known to occur within area	In feature area
Leucopogon exolasius Woronora Beard-heath [14251]	Vulnerable	Species or species habitat may occur within area	In feature area
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat may occur within area	In feature area
Melaleuca deanei Deane's Melaleuca [5818]	Vulnerable	Species or species habitat known to occur within area	In feature area
Micromyrtus blakelyi [6870]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Microtis angusii Angus's Onion Orchid [64530]	Endangered	Species or species habitat known to occur within area	In buffer area only
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area
Persoonia hirsuta Hairy Geebung, Hairy Persoonia [19006]	Endangered	Species or species habitat known to occur within area	In feature area
Persoonia mollis subsp. maxima [56075]	Endangered	Species or species habitat known to occur within area	In buffer area only
Pimelea curviflora var. curviflora [4182]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pimelea spicata Spiked Rice-flower [20834]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Prostanthera densa Villous Mintbush [12233]	Vulnerable	Species or species habitat known to occur within area	In feature area
Prostanthera junonis Somersby Mintbush [64960]	Endangered	Species or species habitat known to occur within area	In feature area
Prostanthera marifolia Seaforth Mintbush [7555]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat known to occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hoplocephalus bungaroides Broad-headed Snake [1182]	Endangered	Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
SHARK			
Carcharias taurus (east coast population) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Migration route known to occur within area	In feature area
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
SNAIL			
Meridolum maryae Maroubra Woodland Snail, Maroubra Land Snail [89884]	Endangered	Species or species habitat known to occur within area	In feature area
Pommerhelix duralensis Dural Land Snail [85268]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Anous stolidus](#) Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
[Ardenna carneipes](#) Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
[Ardenna grisea](#) Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
[Diomedea antipodensis](#) Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea epomophora](#) Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea exulans](#) Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea sanfordi](#) Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche salvini](#) Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Migration route known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area	In feature area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area
[Physeter macrocephalus](#) Sperm Whale [59]		Species or species habitat may occur within area	In buffer area only
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat known to occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Species or species habitat known to occur within area	In buffer area only
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Australian National University		
Commonwealth Land - Australian National University [13156]	NSW	In buffer area only
Commonwealth Bank of Australia		
Commonwealth Land - Commonwealth Bank of Australia [13909]	NSW	In buffer area only
Commonwealth Land - Commonwealth Bank of Australia [13158]	NSW	In buffer area only
Commonwealth Land - Commonwealth Bank of Australia [14331]	NSW	In buffer area only
Commonwealth Trading Bank of Australia		
Commonwealth Land - Commonwealth Trading Bank of Australia [13209]	NSW	In feature area
Commonwealth Land - Commonwealth Trading Bank of Australia [14337]	NSW	In buffer area only
Communications, Information Technology and the Arts - Australian Broadcasting Corporation		
Commonwealth Land - Australian Broadcasting Commission [15605]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [13113]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [13112]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [13116]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [13109]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [13106]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [13107]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [13108]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [15607]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [15606]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [13117]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [13111]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [13110]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [13114]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Australian Broadcasting Corporation [13115]	NSW	In buffer area only
Commonwealth Land - Australian Broadcasting Corporation [15511]	NSW	In buffer area only
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [13104]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13094]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13910]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13099]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13153]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13192]	NSW	In feature area
Commonwealth Land - Australian Postal Commission [13131]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [14284]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13215]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13137]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13134]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13164]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [14280]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13121]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13195]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13193]	NSW	In feature area
Commonwealth Land - Australian Postal Commission [13055]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13118]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [14338]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13239]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13228]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [16164]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [13152]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [13214]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Australian Postal Corporation [16174]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [15603]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [16021]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [16525]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [14343]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian & Overseas Telecommunications Corporation [13155]	NSW	In buffer area only
Commonwealth Land - Australian & Overseas Telecommunications Corporation [16072]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14279]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13095]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13093]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13241]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13154]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13157]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13132]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13119]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14281]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13216]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13136]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13162]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13129]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Australian Telecommunications Commission [13128]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13293]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13225]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13194]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13057]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13231]	NSW	In feature area
Commonwealth Land - Australian Telecommunications Commission [13226]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13890]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13240]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Corporation [13130]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [13911]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [13187]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [13100]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [14282]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [13892]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [14283]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [16426]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [16423]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [14332]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [14333]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [16424]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [16422]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [13894]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Telstra Corporation Limited [13213]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [13893]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [13891]	NSW	In buffer area only
Defence		
Commonwealth Land - Defence Service Homes Corporation [13066]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [13065]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [13064]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [13211]	NSW	In feature area
Commonwealth Land - Defence Service Homes Corporation [13210]	NSW	In feature area
Commonwealth Land - Defence Service Homes Corporation [13220]	NSW	In buffer area only
Commonwealth Land - Director of Defence Service Homes [13208]	NSW	In feature area
Defence - COCKATOO ISLAND DOCKYARD [10018]	NSW	In buffer area only
Defence - DEE WHY DEPOT [11095]	NSW	In feature area
Defence - DEFENCE PLAZA SYDNEY [11179]	NSW	In buffer area only
Defence - DEGAUSSING RANGE [10039]	NSW	In buffer area only
Defence - DSTO PYRMONT - (SEE SITE 1177) [10015]	NSW	In buffer area only
Defence - DSTO PYRMONT - (SEE SITE 1177) [10016]	NSW	In buffer area only
Defence - DSTO PYRMONT - (SEE SITE 1177) [10017]	NSW	In buffer area only
Defence - FLEET BASE WHARVES [10021]	NSW	In buffer area only
Defence - FLEET BASE WHARVES [10024]	NSW	In buffer area only
Defence - FLEET BASE WHARVES [10023]	NSW	In buffer area only
Defence - FLEET BASE WHARVES [10022]	NSW	In buffer area only
Defence - GARDEN ISLAND [10014]	NSW	In buffer area only
Defence - HMAS KUTTABUL (AC 30/5 Lot4 DP218946) [11074]	NSW	In buffer area only
Defence - HMAS PENGUIN [11071]	NSW	In buffer area only
Defence - HMAS PLATYPUS - SPDU FOR DISPOSAL [10042]	NSW	In buffer area only
Defence - HMAS PLATYPUS - SPDU FOR DISPOSAL [10041]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - HMAS PLATYPUS - SPDU FOR DISPOSAL [10040]	NSW	In buffer area only
Defence - HMAS WATERHEN [10025]	NSW	In buffer area only
Defence - HMAS WATSON [10029]	NSW	In buffer area only
Defence - JENNER BUILDING [10034]	NSW	In buffer area only
Defence - KISMET/HMAS KUTTABUL-POTTS PT [11173]	NSW	In buffer area only
Defence - LADY GOWRIE HOUSE [10047]	NSW	In buffer area only
Defence - LADY GOWRIE HOUSE [10046]	NSW	In buffer area only
Defence - LADY GOWRIE HOUSE [10045]	NSW	In buffer area only
Defence - MARITIME COMD CTRE-POTTS POINT ; BOMERAH/TARANA [10033]	NSW	In buffer area only
Defence - MARITIME COMD CTRE-POTTS POINT ; BOMERAH/TARANA [10032]	NSW	In buffer area only
Defence - MARITIME HEADQUARTERS [11178]	NSW	In buffer area only
Defence - MILLER'S POINT TRAINING DEPOT [11118]	NSW	In buffer area only
Defence - NFI CHOWDER BAY (fuel depot) [10043]	NSW	In buffer area only
Defence - NORTH SYDNEY - HYDRO OFFICE [11161]	NSW	In buffer area only
Defence - OXFORD ST SYDNEY [11169]	NSW	In buffer area only
Defence - OXFORD ST SYDNEY [11167]	NSW	In buffer area only
Defence - OXFORD ST SYDNEY [11164]	NSW	In buffer area only
Defence - OXFORD ST SYDNEY [11165]	NSW	In buffer area only
Defence - OXFORD ST SYDNEY [11166]	NSW	In buffer area only
Defence - OXFORD ST SYDNEY [11168]	NSW	In buffer area only
Defence - PARKVIEW BUILDING - SYDNEY [11170]	NSW	In buffer area only
Defence - PYMBLE MULTI-USER DEPOT [11123]	NSW	In buffer area only
Defence - SPECTACLE ISLAND [10037]	NSW	In buffer area only
Defence - SPECTACLE ISLAND [10036]	NSW	In buffer area only
Defence - SPECTACLE ISLAND [10038]	NSW	In buffer area only
Defence - SPECTACLE ISLAND [10035]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - TRAINING SHIP CONDAMINE [11072]	NSW	In feature area
Defence - TRAINING SHIP CONDAMINE [11073]	NSW	In feature area
Defence - TRESCO [10044]	NSW	In buffer area only
Defence - VAUCLUSE TRAINING DEPOT [11137]	NSW	In buffer area only
Defence - VICTORIA BARRACKS - PADDINGTON [11120]	NSW	In buffer area only
Defence - VICTORIA BARRACKS - PADDINGTON [11119]	NSW	In buffer area only
Defence - VICTORIA BARRACKS - PADDINGTON [11121]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11146]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11145]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11143]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11148]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11147]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11142]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11144]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11140]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11138]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11155]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11156]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11153]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11149]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11159]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11158]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11141]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11150]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11152]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11157]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11151]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - WILLOUGHBY TRG DEP [11139]	NSW	In buffer area only
Defence - WILLOUGHBY TRG DEP [11154]	NSW	In buffer area only
Defence - WOOLLOOMOOLOO CARPARK [11176]	NSW	In buffer area only
Defence - WOOLLOOMOOLOO CARPARK [11175]	NSW	In buffer area only
Defence - WOOLLOOMOOLOO CARPARK [11174]	NSW	In buffer area only
Defence - WOOLLOOMOOLOO CARPARK [11177]	NSW	In buffer area only
Defence - Defence Housing Authority		
Commonwealth Land - Defence Housing Authority [13105]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13182]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13185]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15974]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15977]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13183]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16029]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13181]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15590]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15975]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13901]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13903]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13900]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13905]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13907]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13904]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13906]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15718]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13212]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13169]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [16163]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13180]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13133]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13207]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13200]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13203]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13206]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13201]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13184]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13186]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13202]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13235]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13204]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13233]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13205]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [15608]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13174]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13175]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13198]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13199]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13176]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13170]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13166]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13167]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13171]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13172]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13178]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [13179]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13084]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16357]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13127]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13126]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13191]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13125]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13124]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13190]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13238]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13196]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13197]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [15973]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15972]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13188]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13189]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13234]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [15976]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13232]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [16062]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16061]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13236]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13895]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13896]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13089]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13897]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13177]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [13902]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13898]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13899]	NSW	In feature area
Commonwealth Land - Defence Housing Authority [13168]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13135]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13079]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13076]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13077]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13237]	NSW	In feature area
Commonwealth Land - Director of War Service Homes [13075]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13082]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13230]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13061]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13060]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13073]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13062]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13063]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13074]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13090]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13083]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13058]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13056]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13059]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13081]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13080]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [13085]	NSW	In buffer area only
Education, Science and Training - CSIRO		

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation [16536]	NSW	In buffer area only
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation [16154]	NSW	In buffer area only
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation [13070]	NSW	In buffer area only
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation [16156]	NSW	In buffer area only
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation [13069]	NSW	In buffer area only
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation [16152]	NSW	In buffer area only
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation [16153]	NSW	In buffer area only
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation [15954]	NSW	In buffer area only
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation [16535]	NSW	In buffer area only
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation [16155]	NSW	In buffer area only
Treasury - Reserve Bank of Australia		
Commonwealth Land - Reserve Bank of Australia [13159]	NSW	In buffer area only
Commonwealth Land - Reserve Bank of Australia [13160]	NSW	In buffer area only
Commonwealth Land - Reserve Bank of Australia [13138]	NSW	In buffer area only
Commonwealth Land - Reserve Bank of Australia [13151]	NSW	In buffer area only
Commonwealth Land - Reserve Bank of Australia [13149]	NSW	In buffer area only
Commonwealth Land - Reserve Bank of Australia [13148]	NSW	In buffer area only
Commonwealth Land - Reserve Bank of Australia [13150]	NSW	In buffer area only
Commonwealth Land - Reserve Bank of Australia [16499]	NSW	In buffer area only
Unknown		
Commonwealth Land - [13078]	NSW	In buffer area only
Commonwealth Land - [13141]	NSW	In buffer area only
Commonwealth Land - [13120]	NSW	In buffer area only
Commonwealth Land - [13987]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [13218]	NSW	In buffer area only
Commonwealth Land - [13101]	NSW	In buffer area only
Commonwealth Land - [13217]	NSW	In buffer area only
Commonwealth Land - [13165]	NSW	In buffer area only
Commonwealth Land - [13163]	NSW	In buffer area only
Commonwealth Land - [13161]	NSW	In buffer area only
Commonwealth Land - [13173]	NSW	In buffer area only
Commonwealth Land - [13145]	NSW	In buffer area only
Commonwealth Land - [13144]	NSW	In buffer area only
Commonwealth Land - [13147]	NSW	In buffer area only
Commonwealth Land - [13146]	NSW	In buffer area only
Commonwealth Land - [13143]	NSW	In buffer area only
Commonwealth Land - [13142]	NSW	In buffer area only
Commonwealth Land - [16425]	NSW	In buffer area only
Commonwealth Land - [13122]	NSW	In buffer area only
Commonwealth Land - [13123]	NSW	In buffer area only
Commonwealth Land - [13227]	NSW	In buffer area only
Commonwealth Land - [13219]	NSW	In buffer area only
Commonwealth Land - [15410]	NSW	In buffer area only
Commonwealth Land - [14334]	NSW	In buffer area only
Commonwealth Land - [14336]	NSW	In buffer area only
Commonwealth Land - [14335]	NSW	In buffer area only
Commonwealth Land - [13139]	NSW	In buffer area only
Commonwealth Land - [15670]	NSW	In buffer area only
Commonwealth Land - [13140]	NSW	In buffer area only
Commonwealth Land - [13229]	NSW	In buffer area only
Commonwealth Land - [16476]	NSW	In buffer area only

Commonwealth Heritage Places			[Resource Information]
Name	State	Status	Buffer Status
Historic			
Admiralty House and Lodge	NSW	Listed place	In buffer area only
Admiralty House Garden and Fortifications	NSW	Listed place	In buffer area only
Army Cottage with return verandah	NSW	Listed place	In buffer area only
Barracks Block	NSW	Listed place	In buffer area only
Barracks Group HMAS Watson	NSW	Listed place	In buffer area only
Batteries A83 and C9A	NSW	Listed place	In buffer area only
Battery B42	NSW	Listed place	In buffer area only
Battery for Five Guns	NSW	Listed place	In buffer area only
Biloela Group	NSW	Listed place	In buffer area only
Buildings 31 and 32	NSW	Listed place	In buffer area only
Buildings MQVB16 and VB56	NSW	Listed place	In buffer area only
Buildings VB13, 15, 16 & 17	NSW	Listed place	In buffer area only
Buildings VB41, 45 & 53	NSW	Listed place	In buffer area only
Buildings VB60 and VB62	NSW	Listed place	In buffer area only
Buildings VB69, 75 & 76 including Garden	NSW	Listed place	In buffer area only
Buildings VB83, 84, 85, 87 & 89	NSW	Listed place	In buffer area only
Buildings VB90, 91, 91A & 92	NSW	Listed place	In buffer area only
Building VB1 and Parade Ground	NSW	Listed place	In buffer area only
Building VB2 Guard House	NSW	Listed place	In buffer area only
Chain and Anchor Store (former)	NSW	Listed place	In buffer area only
Chowder Bay Barracks Group	NSW	Listed place	In buffer area only
Cliff House	NSW	Listed place	In buffer area only
Cockatoo Island Industrial Conservation Area	NSW	Listed place	In buffer area only
Commonwealth Avenue Defence Housing	NSW	Listed place	In buffer area only
Cottage at Macquarie Lighthouse	NSW	Listed place	In buffer area only

Name	State	Status	Buffer Status
Customs Marine Centre	NSW	Listed place	In buffer area only
Defence site - Georges Heights and Middle Head	NSW	Listed place	In buffer area only
Factory	NSW	Listed place	In buffer area only
Fitzroy Dock	NSW	Listed place	In buffer area only
Garden Island Precinct	NSW	Listed place	In buffer area only
Gazebo	NSW	Listed place	In buffer area only
General Post Office	NSW	Listed place	In buffer area only
Golf Clubhouse (former)	NSW	Listed place	In buffer area only
Headquarters 8th Brigade Precinct	NSW	Listed place	In buffer area only
Headquarters Training Command Precinct	NSW	Listed place	In buffer area only
HMAS Penguin	NSW	Listed place	In buffer area only
Kirribilli House	NSW	Listed place	In buffer area only
Kirribilli House Garden & Grounds	NSW	Listed place	In buffer area only
Macquarie Lighthouse	NSW	Listed place	In buffer area only
Macquarie Lighthouse Group	NSW	Listed place	In buffer area only
Macquarie Lighthouse Surrounding Wall	NSW	Listed place	In buffer area only
Marine Biological Station (former)	NSW	Listed place	In buffer area only
Mess Hall (former)	NSW	Listed place	In buffer area only
Military Guard Room	NSW	Listed place	In buffer area only
Military Road Framework - Defence Land	NSW	Listed place	In buffer area only
Naval Store	NSW	Listed place	In buffer area only
Navy Refuelling Depot and Caretakers House	NSW	Listed place	In buffer area only
North Head Artillery Barracks	NSW	Listed place	In buffer area only
North Sydney Post Office	NSW	Listed place	In buffer area only
Office Building	NSW	Listed place	In buffer area only
Officers Mess, HQ Training Command	NSW	Listed place	In buffer area only

Name	State	Status	Buffer Status
Paddington Post Office	NSW	Listed place	In buffer area only
Power House / Pump House	NSW	Listed place	In buffer area only
Prison Barracks Precinct	NSW	Listed place	In buffer area only
Pyrmont Post Office	NSW	Listed place	In buffer area only
Reserve Bank	NSW	Listed place	In buffer area only
Residences Group	NSW	Listed place	In buffer area only
Rigging Shed and Chapel	NSW	Listed place	In buffer area only
Shark Point Battery	NSW	Listed place	In buffer area only
Snapper Island	NSW	Listed place	In buffer area only
Spectacle Island Explosives Complex	NSW	Listed place	In buffer area only
Sutherland Dock	NSW	Listed place	In buffer area only
Sydney Customs House (former)	NSW	Listed place	In buffer area only
Ten Terminal Regiment Headquarters and AusAid Training Centre	NSW	Listed place	In buffer area only
Thirty Terminal Squadron Precinct	NSW	Listed place	In buffer area only
Underground Grain Silos	NSW	Listed place	In buffer area only
Victoria Barracks Perimeter Wall and Gates	NSW	Listed place	In buffer area only
Victoria Barracks Precinct	NSW	Listed place	In buffer area only
Victoria Barracks Squash Courts	NSW	Listed place	In buffer area only
Woolwich Dock	NSW	Listed place	In buffer area only

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Species or species habitat known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Diomedea exulans](#) Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea sanfordi](#) Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In feature area
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
[Himantopus himantopus](#) Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area overfly marine area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pachyptila turtur](#) Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
[Pandion haliaetus](#) Osprey [952]		Species or species habitat known to occur within area	In feature area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat known to occur within area	In feature area
[Phoebetria fusca](#) Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
[Pluvialis fulva](#) Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
[Pterodroma cervicalis](#) White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
[Recurvirostra novaehollandiae](#) Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area	In buffer area only
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
[Rostratula australis as Rostratula benghalensis (sensu lato)](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
[Stercorarius antarcticus as Catharacta skua](#) Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Fish			
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area	In feature area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area	In feature area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area	In feature area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In feature area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat known to occur within area	In feature area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In feature area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In feature area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In feature area
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Stigmatopora nigra](#) Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In feature area
[Urocampus carinirostris](#) Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
[Vanacampus margaritifer](#) Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Mammal			
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
[Arctocephalus pusillus](#) Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In feature area
[Dugong dugon](#) Dugong [28]		Species or species habitat may occur within area	In feature area
Reptile			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area	In feature area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area	In buffer area only
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area	In buffer area only
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area	In buffer area only
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area	In buffer area only
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area	In buffer area only
[Lagenorhynchus obscurus](#) Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
[Lissodelphis peronii](#) Southern Right Whale Dolphin [44]		Species or species habitat may occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area	In buffer area only
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area	In buffer area only
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area	In buffer area only
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area	In buffer area only
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area	In buffer area only
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area	In buffer area only
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area	In buffer area only
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
102 Rosedale Road	NRS Addition - Gazettal in Progress	NSW	In buffer area only
Cabbage Tree Bay	Aquatic Reserve	NSW	In buffer area only
Dalrymple-Hay	Nature Reserve	NSW	In buffer area only
Garigal	National Park	NSW	In feature area
Ku-ring-gai Chase	National Park	NSW	In buffer area only
Lane Cove	National Park	NSW	In buffer area only
Long Reef	Aquatic Reserve	NSW	In feature area
Narrabeen	Aquatic Reserve	NSW	In buffer area only
North Head	Private Nature Reserve	NSW	In buffer area only
North Sydney Harbour	Aquatic Reserve	NSW	In buffer area only
Sydney Harbour	National Park	NSW	In buffer area only
Wallumatta	Nature Reserve	NSW	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Circular Quay Renewal	2023/09727		Assessment	In buffer area only
Development of a Residential Care Facility, Middle Head, NSW	2014/7194		Post-Approval	In buffer area only
Greenway Wall - Macquarie Lightstation Conservation	2023/09650		Completed	In buffer area only
Controlled action				
Australian Institute of Police Management Facilities Upgrade	2006/2746	Controlled Action	Post-Approval	In buffer area only
Concept Plan Proposal for residential and commercial development of UTS Kuring-	2008/4083	Controlled Action	Post-Approval	In buffer area only
Garden Island Hammerhead Crane Proposed Removal, NSW	2012/6430	Controlled Action	Post-Approval	In buffer area only
Pilot Offshore Artificial Reefs	2008/4176	Controlled Action	Post-Approval	In buffer area only
Proposed Residential Development and Demolition of Existing Dwelling	2008/4155	Controlled Action	Completed	In buffer area only
Relocation of Grey-Headed Flying-Fox Colony	2008/4646	Controlled Action	Post-Approval	In buffer area only
Residential development of Lot 12, DP 17431	2007/3455	Controlled Action	Completed	In buffer area only
Residential Subdivision Lot 446	2003/990	Controlled Action	Completed	In buffer area only
Rural residential subdivision of Lot 447, Joalah Rd, Duffys Forest	2002/698	Controlled Action	Completed	In buffer area only
Sydney Opera House Building Renewal Program, NSW	2016/7825	Controlled Action	Post-Approval	In buffer area only
Sydney Opera House Building Renewal Program - Concert Hall and associated works	2017/7955	Controlled Action	Post-Approval	In buffer area only
Upgrade of Floodlighting for Night Sports Training	2009/4798	Controlled Action	Completed	In buffer area only
Not controlled action				
ABC Gore Hill, Lanceley Place Site Redevelopment	2002/908	Not Controlled Action	Completed	In buffer area only
ABC Proposed Sale of Property Commonwealth Land	2020/8855	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Admiralty House, Kirribilli, foreshore works, NSW	2014/7357	Not Controlled Action	Completed	In buffer area only
Artarmon Helipad Relocation	2001/186	Not Controlled Action	Completed	In buffer area only
Change of use of existing room in research laboratory	2002/665	Not Controlled Action	Completed	In buffer area only
Conservation and Adaptive Use of Quarantine Station	2002/556	Not Controlled Action	Completed	In buffer area only
Construct and operate an aerial adventure park	2012/6239	Not Controlled Action	Completed	In buffer area only
Construction and Operation of the Parramatta Rail Link - between Parramatta and	2002/673	Not Controlled Action	Completed	In buffer area only
Construction of a high-capacity fibre optic submarine cable	2006/2914	Not Controlled Action	Completed	In feature area
construction of four dwellings and associated facilities	2005/2396	Not Controlled Action	Completed	In buffer area only
Demolition and Removal of Two Naval Cottages	2008/4373	Not Controlled Action	Completed	In buffer area only
Demolition of Ablutions Block, Snapper Island, NSW	2018/8303	Not Controlled Action	Completed	In feature area
Demolition of the existing club house and construction of a new club house	2009/4932	Not Controlled Action	Completed	In buffer area only
Fitout works, 4th Floor, Sydney Customs House, 31 Alfred Street	2004/1449	Not Controlled Action	Completed	In buffer area only
Fuel Reduction Proposal Redfield Road, East Killara	2003/1238	Not Controlled Action	Completed	In feature area
Garden Island ADI Warehouse	2000/69	Not Controlled Action	Completed	In buffer area only
Gore Hill Conservation Management Plan	2000/109	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In buffer area only
Installation of Sydney-Guam Submarine Cable	2007/3848	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Internal Modifications to Reserve Bank of Australia	2008/4431	Not Controlled Action	Completed	In buffer area only
Japan-Guam-Australia Sunshine Coast Branch Marine Cable Route Survey (JGA) QLD	2018/8373	Not Controlled Action	Completed	In buffer area only
Kimbriki resource recovery project	2010/5761	Not Controlled Action	Completed	In buffer area only
Kimbriki Resource Recovery Project	2011/6150	Not Controlled Action	Completed	In buffer area only
M2 Motorway Upgrade	2010/5329	Not Controlled Action	Completed	In buffer area only
Noxious weed removal and controlled burn	2003/1272	Not Controlled Action	Completed	In buffer area only
Operation Of A Heliport	2010/5433	Not Controlled Action	Completed	In buffer area only
Pymble Ladies College Proposed Senior's Learning Centre and Carparking Area	2009/5168	Not Controlled Action	Completed	In buffer area only
Rabbit Control Anzac Rifle Range	2005/1940	Not Controlled Action	Completed	In buffer area only
RBA HOWP 65 Martin Place, NSW	2020/8870	Not Controlled Action	Completed	In buffer area only
Redevelopment 60 Martin Place, Sydney, NSW	2015/7490	Not Controlled Action	Completed	In buffer area only
Rehabilitation works of the Coogee Sewer Diversion Submain - Maxwell Avenue, Mar	2004/1683	Not Controlled Action	Completed	In buffer area only
Remediation of contaminated aesbestos site	2002/608	Not Controlled Action	Completed	In buffer area only
Remediation of Contaminated Buildings	2005/1983	Not Controlled Action	Completed	In buffer area only
Remediation of Contaminated Soil	2005/1985	Not Controlled Action	Completed	In buffer area only
Remediation of contaminated soil around the Macquarie Lighthouse	2004/1836	Not Controlled Action	Completed	In buffer area only
Residential subdivision and development of Lot 446 DP 48650	2007/3766	Not Controlled Action	Completed	In buffer area only
Residential subdivision and stormwater management facilities	2003/1141	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Residential subdivision of 62 Hillside Road, Newport, NSW	2017/8044	Not Controlled Action	Completed	In buffer area only
Sale of Lot 1 DP858405 Turramurra NSW	2001/454	Not Controlled Action	Completed	In buffer area only
Sale of New South Head Road, Edgecliff	2001/302	Not Controlled Action	Completed	In buffer area only
sewage treatmemt plant process and reliability renewals project	2005/2186	Not Controlled Action	Completed	In feature area
subdivision and development on the Rhodes Peninsula for residential and commerci	2003/1249	Not Controlled Action	Completed	In buffer area only
Subdivision and sale of Commonwealth land in Pymble to Ku-ring-gai City Council	2004/1368	Not Controlled Action	Completed	In feature area
Subdivision of Lot 447 Joalah Road	2007/3700	Not Controlled Action	Completed	In buffer area only
Subdivision of Precincts 3 and 12, St Patricks Estate	2004/1925	Not Controlled Action	Completed	In feature area
Supply of a gigabit ethernet connection with associated trenching, boring and ha	2007/3637	Not Controlled Action	Completed	In buffer area only
Sydney Desalination Plant	2005/2331	Not Controlled Action	Completed	In buffer area only
Sydney Metro Network Stage 2	2010/5307	Not Controlled Action	Completed	In buffer area only
Torpedo Factory Renewal Project	2020/8847	Not Controlled Action	Completed	In buffer area only
Turramurra Retirement Village	2001/413	Not Controlled Action	Completed	In buffer area only
Undertake a controlled burn of the Eastern Suburbs Banksia Scrub at Byrne Cresce	2004/1728	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
2D marine seismic survey in PEP-11 permit area, NSW	2002/879	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Construction and operation of a subsea telecommunications cable, between Sydney and New Zealand	2015/7480	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Construction works on SE corner of the grounds of Admiralty House	2012/6278	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Hyde Park Barracks Proposed New Passenger Lift	2017/7933	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Japan-Guam-Australia (JGA) Fibre Optic Cable project	2016/7795	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Moriah Primary School, Centennial Park, Sydney	2004/1676	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Tasman Global Access submarine cable marine route survey, Narrabeen, NSW	2015/7442	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Walking Track connecting Middle Head Rd & Balmoral Park	2002/572	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Alterations and Additions	2006/3081	Referral Decision	Completed	In buffer area only
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed	In feature area
Demolition and Removal of Five Naval Cottages	2008/4322	Referral Decision	Completed	In buffer area only
Demolition of Naval Cottages & Revegetation as Part of SHFT's Headland Park	2005/2128	Referral Decision	Completed	In buffer area only
Relocation of Grey-Headed Flying-Fox Colony	2008/4568	Referral Decision	Completed	In buffer area only
Renovation and Landscape Rehabilitation of the Championship Course at Royal Sydney Golf Club	2022/9167	Referral Decision	Referral Publication	In buffer area only

Biologically Important Areas			[Resource Information]
Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In feature area
Seabirds			
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging	Known to occur	In buffer area only
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Likely to occur	In buffer area only
Diomedea exulans antipodensis Antipodean Albatross [82269]	Foraging	Known to occur	In buffer area only
Procellaria parkinsoni Black Petrel [1048]	Foraging	Likely to occur	In buffer area only
Sharks			
Carcharias taurus Grey Nurse Shark [64469]	Foraging	Known to occur	In feature area
Carcharias taurus Grey Nurse Shark [64469]	Migration	Known to occur	In buffer area only
Carcharodon carcharias White Shark [64470]	Distribution	Likely to occur	In buffer area only
Carcharodon carcharias White Shark [64470]	Distribution	Known to occur	In buffer area only
Whales			
Megaptera novaeangliae Humpback Whale [38]	Foraging	Known to occur	In feature area

Bioregional Assessments			[Resource Information]
SubRegion	BioRegion	Website	Buffer Status
Sydney	Sydney Basin	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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