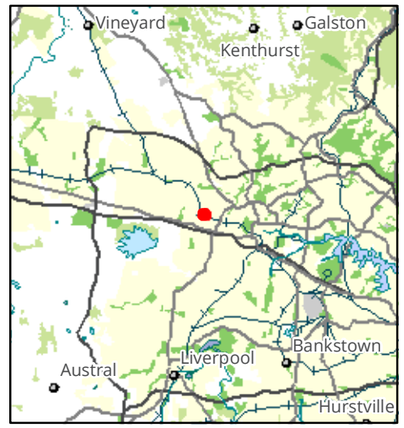


Legend

- Study area
- Trees
- Vegetation Patches

Figure 6: Vegetation types within Pendle Hill Station Study Area

0 10 20 30 40 50

Metres
Scale: 1:1,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56

N

Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Matter: 19160
Date: 10 November 2014,
Checked by: BW, Drawn by: JMS, Last edited by: jshepherd
Location:P:\19100s\19160\Mapping
19160_F6_Veg

Acknowledgements: Imagery (c) Nearmap 2014; Basemap (c) NSW LPI

3.2.3 Description of fauna habitat within the study area

A few large, mature trees with some fauna habitat value are present within the study area. These comprise the two large Forest Red Gums on the north side of the rail corridor and the large Tallowwoods on the south side, which may provide nectar resources, However the periodic lopping of all these trees, due to the close proximity of power lines, will over time disfigure the trees. The ramps, steps and concourses do not contain suitable cracks or holes that could be used by fauna species such as micro-bats or native birds.

A Noisy Miner *Manorina melanocephala* was the only fauna species observed within the study area during the site inspection in October 2014. However, a nest under the roof of the existing concourse was observed and this is expected to be from a Common Myna *Acridotheres tristis* or Common Starling *Sturnus vulgaris.*

Due to the limited habitat available and lack of connectivity to other areas of habitat, overall diversity is expected to be low. The threatened Grey-headed Flying-fox and Little Lorikeet may visit the study area periodically to forage on the Forest Red Gums and Tallowwoods when flowering and some threatened micro-bat species may forage while flying over the study area.

3.2.4 Condition of the vegetation and presence of weeds

The vegetation and fauna habitat throughout the majority of the study area has been modified by a long history of disturbances which have resulted in clearance of vegetation and invasion by exotic plants and by noxious and environmental weeds in the ground and shrub layer. Some parts of the study area have been treated as a garden or landscape area with regularly spaced plantings (northern roadside parking area and adjacent to the ramp on the south side) and various other parts of the study area.

Environmental weeds recorded within the study area, that are declared under the *Noxious Weeds Act 1993* in the Holroyd or Parramatta City Council Control Areas together with the legal requirements for their control are listed in Table 1.

Table 1: Declared noxious weeds within the study area and their control requirements

Scientific Name	Common Name	Class	Legal Requirements
Cestrum parqui	Green Cestrum	3	*The plant must be fully and continuously suppressed and destroyed and the plant must not be sold, propagated or knowingly distributed.*
Asparagus aethiopicus	Asparagus Fern	4	*The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed.*
Lantana montevidensis	Purple Lantana	4	*The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed.*
Ligustrum lucidum	Large-leaved Privet	4	*The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed.*

Notes

Further explanations of the relevant control classes and classifications are as follows:

Class 3 – Regionally Controlled Weeds: Plants that pose a potentially serious threat to primary production or the environment of a region to which the order applies, are not widely distributed in the area and are likely to spread in the area or to another area.

Class 4 – Locally Controlled Weeds: Plants that pose a potentially serious threat to primary production, the environment or human health, are widely distributed in an area to which the order applies and are likely to spread in the area or to another area. The local control authority is Holroyd City Council or Parramatta City Council.

Class 5 – Notifiable Weeds: Plants that are likely, by their sale or the sale of their seeds or movement within the State or an area of the State, to spread in the State or outside the State. There are no requirements to control existing plants of Class 5 weeds. However, the weeds are "notifiable" and a range of restrictions on their sale and movement exists.

WoNS – Weeds of National Significance

Apart from declared noxious species, a number of common environmental weed species were recorded within the subject site, but none were present at high abundance. Environmental weed species of note included: Cobbler's Pegs *Bidens pilosa*, Paddy's Lucerne *Sida rhombifolia,* African Olive *Olea europaea subsp. cuspidata*, Narrow-leaved Cotton Bush *Gomphocarpus fruticosus,* Fleabane *Conyza* sp. and a number of exotic herbs and perennial grasses.

3.3 Threatened species

3.3.1 EPBC Act and TSC Act listed species

Lists of threatened species recorded or predicted to occur within 5 kilometres of the study area are provided in Appendix 1 (flora) and Appendix 2 (fauna). An assessment of the likelihood of these species occurring in the study area and an indication of where they may occur within the site (i.e. which habitats or features of relevance to the species) is included. A summary of those species recorded or with a medium or higher likelihood of occurring in the study area is provided in Table 2.

Table 2: Summary of threatened species with potential to occur in the study area

Species name	Section of the study area providing habitat
EPBC Act listed species	
Grey-headed Flying-fox	Potential nocturnal foraging habitat during flowering period of large Forest Red Gums west of the ramp on the north side of rail corridor and large Tallowwoods adjacent to the ramp on south side of the rail corridor.
TSC Act listed species	
Grey-headed Flying-fox	Potential nocturnal foraging habitat during flowering period of large Forest Red Gums west of the ramp on the north side of rail corridor and large Tallowwoods adjacent to the ramp on south side of the rail corridor.
Eastern Bentwing Bat	May potentially forage while flying over the study area. May periodically roost in any culverts under the road or rail corridor near the study area.
Eastern Freetail-bat	May potentially forage while flying over the study area.
Little Lorikeet	Potential diurnal foraging habitat during flowering period of large Forest Red Gums west of the ramp on the north side of rail corridor and large Tallowwoods adjacent to the ramp on south side of the rail corridor.

3.4 Threatened ecological communities

- No threatened ecological communities, listed under either the NSW TSC Act or the Commonwealth EPBC Act, occur within the study area. While there is a narrow patch of vegetation containing a few remnant species of a TEC, the very small size of this area; its configuration with a very high edge to area ratio; and its isolation from other patches of natural vegetation, means that it is unlikely to ever regenerate to become a viable representation of a TEC, even with assisted natural regeneration.

3.5 Further survey recommendations

No additional flora or fauna surveys are recommended. The surveys carried out for this assessment are considered to be adequate for the purpose and sufficient to account for any threatened biota that occur or have potential to occur within the study area.

4. Biodiversity Legislation and Government Policy

This section provides an assessment of the proposal against key biodiversity legislation and government policy.

Where available, links to further information are provided. This section does not describe the legislation and policy in detail and guidance provided here does not constitute legal advice.

Figure 7 shows the layout of the Pendle Hill Railway Station Accessibility Upgrade Proposal.

4.1 Commonwealth

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act applies to developments and associated activities that have the potential to significantly impact on Matters of National Environmental Significance (NES) protected under the Act. The EPBC Act Protected Matters Report is provided in Appendix 5.

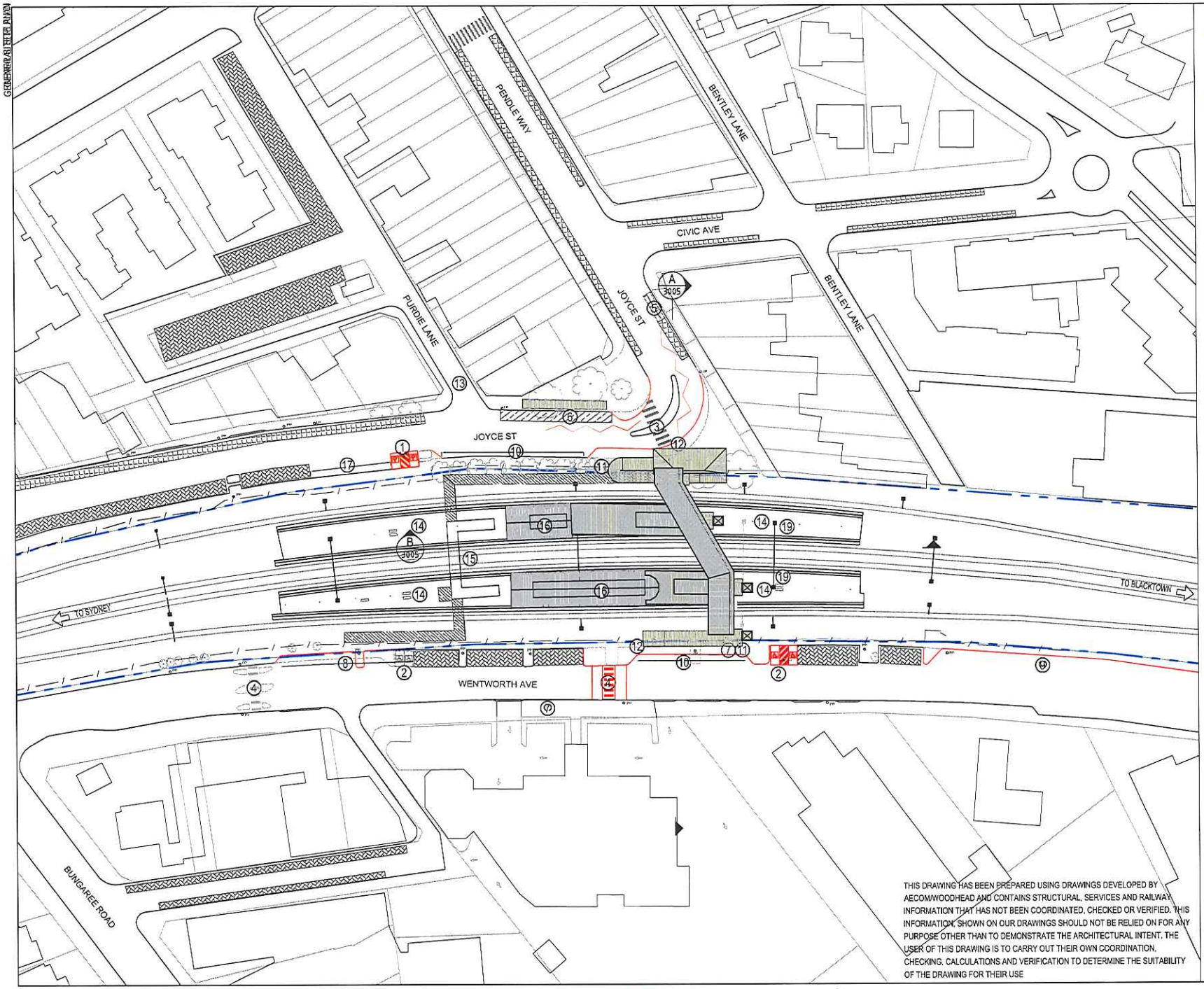
Matters of National Environmental Significance relevant to the proposal are summarised in Table 3. It includes an assessment against the EPBC Act policy statements published by the Australian Government which provide guidance on the practical application of EPBC Act including.

Table 3: Assessment of the proposal against the EPBC Act

Matter of NES	Project specifics	Assessment against Guidelines
Threatened species and ecological communities	28 threatened species (13 flora and 15 fauna) and 8 Threatened Ecological Communities have been recorded or predicted to occur in the project search area. The likelihood of these species occurring in the study area is assessed in Appendix 1 (flora) and Appendix 2 (fauna).	None of the Threatened Ecological Communities listed under the EPBC Act are present within the study area. Only one of these species, the Grey-headed Flying-fox is likely to occur. As part of the proposal, it is proposed to remove nine large planted Tallowwood trees providing potential foraging habitat. This is a minor amount of habitat removal. The proposal is unlikely to impact this species.
Migratory species	10 migratory species have been recorded or predicted to occur in the project search area (Appendix A2.2).	None of the species are expected to utilise the study area.
Wetlands of international importance (Ramsar sites)	The study area does not drain directly into a Ramsar site.	

On the basis of criteria outlined in the relevant *Significant Impact Guidelines* (DoE, 2013) it is considered unlikely that a significant impact on a Matter of NES would result from the proposed action. Therefore Biosis does not believe that referral of the proposal to the Commonwealth DoE pursuant to the EPBC Act is warranted in this case. However, TfNSW may choose to refer the proposed action to the Australian

Government Minister for the Environment to determine whether the action requires approval under the EPBC Act.



LEGEND

- PROPERTY BOUNDARY
- PROPOSED KERB ALIGNMENTS
- EXISTING FENCE LINE
- SIGNIFICANT NEW WORKS
- EXISTING SHORT TERM PARKING (UP TO 1P)
- EXISTING LONG TERM PARKING
- EXISTING BUS STOP
- EXISTING STRUCTURE TO BE DEMOLISHED
- TACTILE INDICATORS
- EXISTING DISABLED PARKING
- PROPOSED DISABLED PARKING
- PROPOSED LIFT
- LP EXISTING LIGHT POLE
- PP EXISTING POWER POLE

1. EXISTING JOYCE ST DISABLED PARKING RELOCATED AND PROVIDE AN ADDITIONAL SPACE
2. EXISTING WENTWORTH AVE DISABLED PARKING RELOCATED
3. EXISTING PEDESTRIAN CROSSING
4. EXISTING PEDESTRIAN CROSSING RELOCATED AND RAISED
5. RELOCATED TAXI RANK
6. EXTENDED BUS STOP WITH UPGRADED SHELTER & SEATING FACILITIES
7. RELOCATED WENTWORTH AVE NIGHT RIDE BUS STOPS (CO-LOCATE WITH KISS 'N' RIDE) ON SOUTHERN SIDE OF WENTWORTH AVE
8. PROPOSED ADDITIONAL 90 DEGREES COMMUTER PARKING FOR APPROX. 10 PARKING SPACES
9. EXTENDED COMMUTER PARKING ALONG WENTWORTH AVE WITH 28 PARKING SPACE (45 DEGREES)
10. PROPOSED KISS 'N' RIDE
11. PROPOSED BIKE RACK / STORAGE
12. PROVIDE WAY FINDING SIGNAGE
13. CONVERSION OF PURDIE LANE TO A 2-WAY ROAD (APPROVED AND TO BE IMPLEMENTED BY COUNCIL)
14. PLATFORM RESURFACE TO ACHIEVE 1:40 GRADING AS REQUIRED
15. EXISTING FOOTBRIDGE UPGRADE /REFURBISH IN ACCORDANCE WITH THE CONTRACT
16. EXISTING STATION BUILDING UPGRADE REFURBISH IN ACCORDANCE WITH THE CONTRACT
17. REMOVE 1P RESTRICTIONS TO PROVIDE ADDITIONAL 10 (90 DEGREES) COMMUTER PARKING SPACES
18. UPGRADED SEATING FACILITIES WITH PROPOSED WIND BARRIERS AS REQUIRED
19. RELOCATE OVERHEAD WIRING STRUCTURE AS REQUIRED

THIS DRAWING HAS BEEN PREPARED USING DRAWINGS DEVELOPED BY AECOM/WOODHEAD AND CONTAINS STRUCTURAL, SERVICES AND RAILWAY INFORMATION THAT HAS NOT BEEN COORDINATED, CHECKED OR VERIFIED. THIS INFORMATION SHOWN ON OUR DRAWINGS SHOULD NOT BE RELIED ON FOR ANY PURPOSE OTHER THAN TO DEMONSTRATE THE ARCHITECTURAL INTENT. THE USER OF THIS DRAWING IS TO CARRY OUT THEIR OWN COORDINATION, CHECKING, CALCULATIONS AND VERIFICATION TO DETERMINE THE SUITABILITY OF THE DRAWING FOR THEIR USE

NOTES

1. ALL PROPOSALS ARE SUBJECT TO SURVEY.
2. EXISTING LANDSCAPING WHERE SHOWN IS INDICATIVE ONLY.
3. PROPOSALS SHOWN ARE CONCEPTUAL IN NATURE AND SUBJECT TO FURTHER DEVELOPMENT.

PENDLE HILL PRECINCT ACCESSIBILITY UPGRADE CONCEPT PLAN
PREFERRED OPTION - GENERAL SITE PLAN

NSW GOVERNMENT Transport for NSW

Designinc

0 10 20 25m

1 : 500 (A3) 1 : 250 (A1)

DWG NO.
TAP-1856-WBD-0001 Rev B
24 October 2014

4.2 State

4.2.1 Threatened Species Conservation Act 1995

The TSC Act provides for the protection and conservation of biodiversity in NSW through the listing of threatened species, populations and communities; key threatening processes; and critical habitat for threatened species, populations and communities.

The only native vegetation within the study area comprises the group of Forest Red Gums and other plants located in a narrow corridor west of the ramp on the north side of the rail corridor. The other groups of trees within the study area, including the nine large Tallowwoods, are not indigenous to the area.

Habitat critical to the survival of an endangered or critically endangered species, population or ecological community can be identified under the TSC Act and listed on the Register of Critical Habitat kept by the OEH. The study area does not contain declared 'critical habitat'.

Potentially relevant Key Threatening processes also require consideration within the Assessment of Significance (refer to 4.2.2.1 below). There are currently 37 key threatening processes listed under the TSC Act. None is relevant to the site or proposal.

4.2.2 Environmental Planning and Assessment Act 1979

The EP&A Act was enacted to encourage the proper consideration and management of impacts of proposed development or land-use changes on the environment (both natural and built) and the community. The Act is administered by the NSW Department of Planning and Infrastructure

Sections of the EP&A Act of primary relevance to the natural environment are considered further below in relation to the current proposal.

4.2.2.1 Assessment of Significance (Section 5A)

Section 5A of the EP&A Act requires proponents and consent authorities to consider if a development will have a significant effect on threatened species, populations or communities listed under the TSC Act and FM Act. Section 5A (and Section 9A of the TSC Act) outlines seven factors that must be taken into account in an Assessment of Significance (formerly known as a "7-part test"). Where any Assessment of Significance determines that a development will result in a significant effect to a threatened species, population or community a Species Impact Statement (SIS) is required.

Table 4 summarises the potential for the proposed development to have a significant effect on the threatened flora and fauna species, populations or communities deemed to have a medium or greater likelihood of occurrence within the study area (refer to Section 3.3.1) and determines the need for an Assessment of Significance under Part 5A of the EP&A Act.

Table 4: Potential for impacts on threatened species listed on the TSC Act

Name	EPBC Act	TSC Act	FM Act	Habitat Values within study area	Potential Impacts on Threatened Species			Impact Assessment Required?
					Adversely affect stages of the lifecycle of the species?	Loss or disturbance of limiting foraging or breeding resources?	Fragmentation of limiting habitat?	
Flora species								
none								
Fauna species								
Eastern Bentwing Bat *Miniopterus schreibersii oceanensis*	-	V	-	May forage while flying over the site. Proposal unlikely to alter any foraging or roosting habitat	No	No	No	No
East Coast Freetail-bat *Mormopterus (Micronomus) norfolkensis*	-	V	-	May forage while flying over the site.	No	No	No	No
Grey-headed Flying-fox *Pteropus poliocephalus*	V	V	-	May forage on Forest Red Gums and Tallowwoods during flowering period. Proposal unlikely to alter any foraging habitat.	No	No	No	No
Little Lorikeet *Glossopsitta pusilla*	-	V	-	May forage on Forest Red Gums and Tallowwoods during	No	No	No	No

Name	EPBC Act	TSC Act	FM Act	Habitat Values within study area	Potential Impacts on Threatened Species			Impact Assessment Required?
					Adversely affect stages of the lifecycle of the species?	Loss or disturbance of limiting foraging or breeding resources?	Fragmentation of limiting habitat?	
				flowering period. Proposal unlikely to alter any foraging habitat.				
Populations	**None present**							
Communities	**None present**							

Notes to table:

EPBC Act: E - Endangered V - Vulnerable	**TSC Act:** E1 – Endangered (Part 1, Schedule 1) E4A – Critically Endangered (Part 4, Schedule 1a) V – Vulnerable (Part 1, Schedule 2)

4.2.2.2 State Environmental Planning Policies (Part 3 Division 2)

State Environmental Planning Policies (SEPPs) outline policy objectives relevant to state wide issues. SEPPs potentially relevant to the current development are:

SEPP No. 44 Koala Habitat Protection

SEPP 44 applies to areas of native vegetation greater than one hectare and in local government areas listed in Schedule 1 to the SEPP. Two Koala feed tree species, as listed under SEPP No. 44, occur within the study area. Two large trees and several saplings of Forest Red Gum occur inside the RailCorp fence on the north side of the rail corridor and a row of nine large Tallowwoods occurs adjacent to the existing ramp on the south side of the rail corridor. The Tallowwoods are planted native trees, but not indigenous to the Sydney area. These trees are proposed to be removed for the Pendle Hill Railway Station Accessibility Upgrade proposal. Since the vegetated area to be cleared is far less than one hectare in area, SEPP 44 does not apply in this case.

4.2.3 Noxious Weeds Act 1993

The Act was enacted to provide for the identification, classification and control of noxious weeds. Plants declared as noxious weeds are currently listed under Weed Control Order No. 28 Declaring Certain Plants to be Noxious Weeds published in the New South Wales Government Gazette No. 97 (Department of Premier and Cabinet 2011).

Four weed species listed as noxious within the Parramatta Local Government Area were identified within the study area comprising; Green Cestrum, Purple Lantana, Large-leaved Privet and Asparagus. These species are listed in Table 1 and should be managed in accordance with the Act.

An occupier (other than a public authority or a local control authority) must take all reasonable steps to eradicate state prohibited weeds and comply with the requirements in the Act for a notifiable weed for restricted plants.

It is expected that in line with best practice and the TfNSW commitment to environmental protection, due consideration will be given to the presence of noxious weeds within the clearing and disturbance areas. This means disposing of removed noxious weed material appropriately and taking precautions to ensure that the proposed works do not result in their spread into new habitats. See recommendations in Section 5.

5. Potential ecological impacts and recommendations

This section identifies the potential implications of proposed development on the ecological values of the study area and includes recommendations to assist TfNSW to minimise impacts on biodiversity.

Table 5: Potential implications of the proposal and recommendations to minimise ecological impact during construction and operation

Ecological feature	Implications of development	Recommendations
Native vegetation and other vegetation including trees	Native vegetation is present from the western end of the existing ramp to the westernmost large Forest Red Gum on the northern side of the rail corridor. This area is not proposed to be impacted.	Protection fencing will be required around this area during construction and it is recommended to seek advice from arborist if excavation near the two large Forest Red Gums exposes large roots. A permanent fence will be required to exclude public access during the operational phase of the project. The RailCorp fence may serve this purpose.
	The permanent removal of narrow strips of highly disturbed vegetation comprising environmental weeds and planted garden areas.	See recommendations in Weeds section below.
	Removal of two large Pepper trees, Murrayas, Bottlebrushes, three large Sheoaks and nine large Tallowwoods near the existing ramp on south side of rail corridor. Removal of exotic tree for new bus shelter on Joyce Street	Fifteen planted moderate sized trees require offsetting in accordance with TfNSW Vegetation Offset Guide.
Weeds	Degradation of habitat quality within and adjacent to the impact areas due to proliferation and spread of noxious and environmental weeds.	Prepare and adopt a weed management protocol as part of a general vegetation management strategy. Adhere to legal requirements or established procedures for removal and control of noxious or environmental weeds. The potential for spread of any of these species should be ameliorated by implementation of a weed management protocol that comprises the separate removal from the clearing area of vegetation containing weed species and the disposal of such vegetation at a waste management facility. Invasion of exotic perennial grasses, and exotic vines and scramblers into native communities are also key threatening processes under the NSW TSC Act.

References

DoE (2013). *Matters of National Environmental Significance. Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Australian Government, Canberra.

Keith, D. (2004). *Ocean Shores to desert dunes: the native vegetation of New South Wales and the ACT*. NSW Department of Environment & Conservation, Hurstville.

NSW Scientific Committee (2009). *Final Determination to list Cumberland Plain Woodland in the Sydney Basin Bioregion as a Critically Endangered Ecological Community.* Department of Environment & Conservation (NSW).

Royal Botanic Gardens and Domain Trust (2014). PlantNET - The Plant Information Network System of The Royal Botanic Gardens and Domain Trust, Sydney, Australia http://plantnet.rbgsyd.nsw.gov.au.

New South Wales National Parks and Wildlife Service (2002). Interpretation Guidelines for the Native Vegetation Maps of the Cumberland Plain, Western Sydney, Final Edition NSW NPWS, Hurstville.

Appendices

Appendix 1: Flora results

Notes to tables:

EPBC Act: E - Endangered V - Vulnerable	**TSC Act:** E1 – Endangered (Part 1, Schedule 1) V – Vulnerable (Part 1, Schedule 2)
	Noxious weed status: N3 Regionally controlled weeds (Class 3) N4 Locally controlled weeds (Class 4) N5 Notifiable weeds (Class 5) W Weed of National Significance (WoNS) *exotic species

A1.1 Threatened flora species

The following table includes a list of the significant flora species that have potential to occur within the study area. The list of species is sourced from the Atlas of NSW Wildlife and the Protected Matters Search Tool (DoE; accessed on 28.10.14 – Appendix 4).

The habitat descriptions are compiled primarily from OEH Threatened Species Information:

http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/

with additional information from Harden (1990, 1992, 1993, 2002); PlantNet http://plantnet.rbgsyd.nsw.gov.au; OEH Atlas of NSW Wildlife, Final Determinations for listed species and other sources as cited.

Notes to table:

EPBC Act:	**TSC Act:**
E - Endangered V - Vulnerable	E1 – Endangered (Part 1, Schedule 1) V – Vulnerable (Part 1, Schedule 2)

Table 6: Threatened flora species recorded or predicted to occur within 5 km of the study area

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
Acacia pubescens	Downy Wattle	VU	V	2013/#	unlikely	The species was not observed in the study area	*Acacia pubescens* is found in Sydney Metropolitan, and Hawkesbury/Nepean Catchment Management Region, with concentrated populations around the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. It occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravelly soils, often with ironstone. The species occurs in open woodland and forest, in a variety of plant communities, including Cooks River/ Castlereagh Ironbark Forest, Shale/ Gravel Transition Forest and Cumberland Plain Woodland. Flowers from August to October. The pods mature in October to December.
Allocasuarina glareicola		EN	E1	#	Unlikely	The species was not observed in the study area	Found in the Hawkesbury/Nepean and Sydney Metropolitan Catchment Authority Regions. Primarily restricted to the Richmond (NW Cumberland Plain) district, but with an outlier population found at Voyager Point, Liverpool. Grows in Castlereagh woodland on lateritic soil. Also found in Dry Sclerophyll forest/Woodland. Associated species include *Eucalyptus parramattensis, Eucalyptus fibrosa, Angophora bakeri, Eucalyptus sclerophylla* and *Melaleuca decora*. Common associated understorey species include *Melaleuca nodosa, Hakea dactyloides,*

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
							Hakea sericea, Dillwynia tenuifolia, Micromyrtus minutiflora, Acacia elongata, Acacia brownei, Themeda australis and *Xanthorrhoea minor*.
Asterolasia elegans		EN	E1	#	Unlikely	The species was not observed in the study area	Occurs north of Sydney, in the Baulkham Hills, Hawkesbury and Hornsby local government areas. Also likely to occur in the western part of Gosford LGA. Known from only six populations in the catchments of the Colo and Hawkesbury Rivers, only one of which is wholly within a conservation reserve. Found in sheltered forests on mid- to lower slopes and valleys which support sheltered forest on Hawkesbury Sandstone. The canopy at known sites includes *Syncarpia glomulifera, Angophora costata, Eucalyptus piperita, Allocasuarina torulosa* and *Ceratopetalum gummiferum*. The species is considered to be fire sensitive and reliant on seed germination after disturbance to maintain populations. A soil seedbank appears to be established by this species, so for a number of years following fire or other disturbance the species may not be apparent, but be present only as seed in the soil. The size of the seedbank depends not only on the amount of seed contributed by mature plants each season, but on the level of dormancy of the seed which can vary from year to year. The longevity of each crop of seed in the soil is perhaps 5 - 10 years.
Cryptostylis hunteriana	Leafless Tongue Orchid	VU	V	#	Unlikely	Level of disturbance is too high.	This species typically grows in swamp-heath on sandy soils chiefly in coastal districts but has also been

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
							recorded on steep bare hillsides. Within the Central Coast bioregion, this species has been recorded within Coastal Plains Smooth-barked Apple Woodland and Coastal Plains Scribbly Gum Woodland. This species does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by *Eucalyptus sclerophylla, E. sieberi, Corymbia gummifera* and *Allocasuarina littoralis*; appears to prefer open areas in the understorey of this community and is often found in association with the *Cryptostylus subulata.* It occurs in the following Catchment Management Regions Hawkesbury/Nepean, Hunter/Central Rivers, Northern Rivers and Southern Rivers. Inconsistent flowering times Dec-February; Jan-February (in Victoria)
Epacris purpurascens var. purpurascens			V	2005	Unlikely	The species was not observed in the study area	Located in the Hawkesbury/Nepean, Hunter/Central Rivers/and Sydney Metropolitan catchment authority region - from Gosford in the north, to Narrabeen in the east, Silverdale in the west and Avon Dam vicinity in the South.
Genoplesium baueri	Bauer's Midge Orchid		V	#	Unlikely	No suitable habitat	This terrestrial orchid species grows in open sclerophyll forest or moss gardens on sandstone. Typically the habitat is a drier heathy forest. The species has been recorded from locations between Nowra and Pit

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
***Pelargonium sp. Striatellum* (G.W.Carr 10345)**	Omeo Stork's Bill	EN		#	Unlikely	Habitat is not suitable	*Pelargonium sp. Striatellum* (G.W.Carr 10345) is a tufted perennial herb. It has a basal leaf rosette and leafy flowering stems which grow to 15 cm tall, with fleshy and often extensively branched rhizomes giving rise to individual plants (ramets) in clonal colonies. The species is known to occur in habitat usually located just above the high water level of irregularly inundated or ephemeral lakes. During dry periods, the species is known to colonise exposed lake beds. *Pelargonium sp. Striatellum* (G.W.Carr 10345) occurs within the South Eastern Highlands and South East Corner IBRA Bioregions and the Hawkesbury-Nepean, Murrumbidgee, Southern Rivers and North East Natural Resource Management Regions.
Persoonia nutans	Nodding Geebung	EN	E1	2008/#	Unlikely	The species was not observed in the study area	Occurs in Hawkesbury/Nepean and Sydney Metropolitan Catchment. Restricted to the Cumberland Plain between Richmond in the north and Macquarie Fields in the south. Core distribution occurs within the Penrith LGA, and to a lesser extent, Hawkesbury LGA. Small populations also occur in the Liverpool, Campbelltown, Bankstown and Blacktown LGAs. Confined to aeolian and alluvial sediments and occurs in a range of sclerophyll forest and woodland vegetation communities with the majority of individuals occurring within Agnes Banks Woodland or Castlereagh Scribbly Gum Woodlan. *P. nutans* also occurs on Shale/Gravel Transition Forest and Cooks River Castlereagh Ironbark Forest. In Castlereagh

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
							Scribbly Gum Woodlands it is found in open woodland with dominant overstorey species being *Angophora bakeri, Eucalyptus sclerophylla* and *Melaleuca decora*. The Agnes Banks Woodlands have a similar array of tree species, with the addition of *Banksia serrata* and B*anksia aemula. Persoonia nutans* is found on the Agnes Banks and Berkshire Park soil landscapes. Drainage appears to influence the distribution of *P. nutans* as the species is more common on the deeper sands at Agnes Banks. At other locations on the Cumberland Plain it occurs on low rises as opposed to swales or other low lying areas.
Pimelea curviflora var. curviflora		VU	V	2008/#	Unlikely	The species was not observed in the study area	Occurring in Hawkesbury/Nepean and Sydney Metropolitan Catchment Authority Areas. Confined to the coastal area of Sydney between northern Sydney in the south and Maroota in the north-west. Occurs on lateritic soils and shale-sandstone transition soils on ridge tops in woodland. Associated with Dry Sclerophyll forests and Coastal valley grassy woodlands. Has an inconspicuous cryptic habit as it is fine and scraggly and often grows amongst dense grasses and sedges. It may not always be visible at a site as it appears to survive for some time without any foliage after fire or grazing, relying on energy reserves in its tuberous roots. Flowers October to May.

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
Pimelea spicata	Spiked Rice-flower	EN	E1	2013/#	Unlikely	The species was not observed in the study area	Once widespread on the Cumberland Plain, *Pimelea spicata* occurs in two disjunct areas, the Cumberland Plain and the Illawarra. Catchment areas are Hawkesbury/Nepean, Southern Rivers, and Sydney Metropolitan Catchment. In western Sydney, *P. spicata* occurs on an undulating topography of substrates derived from Wianamatta Shale in areas supporting, or that previously supported, the Cumberland Plain Woodland Vegetation Community. Associated species include: *Eucalyptus moluccana, E. tereticornis, E.crebra, Bursaria spinosa*, and *Themeda australis*. In the Illawarra region, *P. spicata* is found in open woodland and also in coastal grassland communities with emergent shrubs. Dominant species within the woodland habitat include *Eucalyptus tereticornis, E. eugenioides, Themeda australis*, and *Lomandra longifolia*. In the coastal Illawarra it occurs commonly in Coast Banksia open woodland with a more well developed shrub and grass understorey. *Pimelea spicata* flowers sporadically throughout the year, with flowering likely to depend upon climatic conditions, particularly rainfall. Flowering times recorded for *P. spicata* vary. Rye (1990) noted flowering period as May - January; Benson and McDougall (2001) noted peak flowering period as March/ April.
Pomaderris prunifolia	Plum-leaf Pomaderris		E2	2008	Unlikely	The species was not observed in the study	Known from only three sites within the listed local government areas, at Rydalmere, within Rookwood

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
						area	Cemetery and at The Crest of Bankstown. At Rydalmere it occurs along a road reserve near a creek, among grass species on sandstone. At Rookwood Cemetery it occurs in a small gully of degraded Cooks River / Castlereagh Ironbark Forest on shale soil.
Pterostylis gibbosa	Illawarra Greenhood	EN	E1	#	Unlikely	Habitat is too disturbed	Known from a small number of populations in the Hunter region, the Illawarra region and the Shoalhaven region. It is apparently extinct in western Sydney which is the area where it was first collected (1803). All known populations grow in open forest or woodland, on flat or gently sloping land with poor drainage. In the Illawarra region, the species grows in woodland dominated by *Eucalyptus tereticornis, E. longifolia* and *Melaleuca decora*. Near Nowra, the species grows in an open forest of *Corymbia maculata, E.tereticornis and E. paniculata*. In the Hunter region, the species grows in open woodland dominated by *E. crebra*, Forest Red Gum and *Callitris endlicherii*. The Illawarra Greenhood is a deciduous orchid that is only visible above the ground between late summer and spring, and only when soil moisture levels can sustain its growth. The leaf rosette grows from an underground tuber in late summer, followed by the flower stem in winter. The Illawarra Greenhood can survive occasional burning and grazing because of its capacity to reshoot from an underground tuber.
Pterostylis	Sydney Plains	EN	E1	#	Unlikely	Habitat is not suitable	Restricted to western Sydney between Freemans

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
saxicola	Greenhood					and very disturbed	Reach in the north and Picton in the south (Hawkesbury/Nepean and Sydney Metropolitan Catchment). Most commonly found growing in small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines. The vegetation communities above the shelves where *Pterostylis saxicola* occurs are sclerophyll forest or woodland on shale/sandstone transition soils or shale soils. All species of *Pterostylis* are deciduous and die back to fleshy, rounded underground tuberoids. The time of emergence and withering has not been recorded for this species, however flowering occurs from October to December and may vary due to climatic conditions. The above ground parts of the plant whither and die following seed dispersal and the plant persists as a tuberoid until the next year.
Streblus pendulinus	Whalebone Tree	EN		#	Unlikely	Habitat is not suitable	The species is found in warmer rainforests, chiefly along watercourses. The altitudinal range is from near sea level to 800 m above sea level. The species grows in well developed rainforest, gallery forest and drier, more seasonal rainforest).
Syzygium paniculatum	Magenta Lilly Pilly	VU	E1	2003/#	Unlikely	The species was not observed in the study area	Subtropical and littoral rainforest on sandy soils or stabilised dunes near the sea. Found only in NSW, in a narrow, linear coastal strip from Bulahdelah to Conjola State Forest. On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
							to remnant stands of littoral (coastal) rainforest. On the central coast Magenta Lilly Pilly occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities. The species occurs in the following Catchment Authority Regions - Hunter/Central Rivers, Hawkesbury/Nepean, Sydney Metropolitan, and Southern Rivers.
Thesium australe	Austral Toadflax	VU	V	#	Unlikely	The species was not observed in the study area. Habitat unlikely to be suitable.	Found in very small to large populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. *Thesium australe* is a root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass. It is often found in damp sites in association with *Themeda australe*, but also found on other grass species at inland sites. Occurs on clay soils in grassy woodlands or coastal headlands.

Table 7: Threatened Ecological Communities recorded or predicted to occur within 5 km of the study area

Threatened Ecological Community Name	TSC Act	EPBC Act	Likelihood of Occurrence
Agnes Banks Woodland in the Sydney Basin Bioregion	E3	-	Low
Blue Gum High Forest in the Sydney Basin Bioregion	E4B	CE	Low
Blue Mountains Shale Cap Forest in the Sydney Basin Bioregion	E3	CE	Low
Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion	V2	-	Low
Cooks River/Castlereagh Ironbark Forest in the Sydney Basin Bioregion	E3	-	Low
Cumberland Plain Woodland in the Sydney Basin Bioregion	E4B	CE	Low/Moderate
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	-	Low
Moist Shale Woodland in the Sydney Basin Bioregion	E3	CE	Low
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	-	Low/Moderate
Shale Gravel Transition Forest in the Sydney Basin Bioregion	E3	CE	Low
Shale/Sandstone Transition Forest	E3	E	Low/Moderate
Southern Sydney sheltered forest on transitional sandstone soils in the Sydney Basin Bioregion	E3	-	Low

Threatened Ecological Community Name	TSC Act	EPBC Act	Likelihood of Occurrence
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	-	Low
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	-	Low
Sydney Turpentine-Ironbark Forest	E3	CE	Low
Western Sydney Dry Rainforest in the Sydney Basin Bioregion	E3	CE	Low

Appendix 2: Fauna results

Below is a list of fauna species recorded from the study area during the present assessment and a list of significant fauna species recorded or predicted to occur within 5 km of the study area.

Notes to tables:

EPBC Act:	**TSC Act:**
EX - Extinct CR - Critically Endangered EN - Endangered VU - Vulnerable CD - Conservation dependent	C1 – critically endangered E1 – endangered (Part 1, Schedule 1) E2 – endangered (Part 2, Schedule 1) E4 – presumed extinct (Part 4, Schedule 1) V1 – vulnerable (Part 1, Schedule 2)
* - introduced species	

Fauna species in these tables are listed in alphabetical order within their taxonomic group.

A2.1 Threatened fauna species

The following table includes a list of the significant fauna species that have potential to occur within the study area. The list of species is sourced from the Atlas of NSW Wildlife, and the Protected Matters Search Tool (DoE; accessed on 28.10.14 – Appendix 4).

The most recent record relates to:

#	species predicted to occur by the DoE database (not recorded on other databases)
##	species predicted to occur based on natural distributional range and suitable habitat despite lack of records in the databases searched
Year	recorded on databases listed above

The following references have been consulted to compile the habitat descriptions above: Australian Museum Fact Sheets; Barrett et al. 2003; Churchill, 1998; Clayton et al., 2006; Cogger, 1995; OEH Threatened Species Profiles; Morcombe, 2000; Strahan, 1995.

Table 8: Threatened fauna species recorded or predicted to occur within 5 km of the study area

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
Birds							
Botaurus poiciloptilus	Australasian Bittern	EN	E1	#	unlikely	Habitat not suitable	The Australasian Bittern is distributed across south-eastern Australia. Often found in terrestrial and estuarine wetlands, generally where there is permanent water with tall, dense vegetation including *Typha spp*. and *Eleoacharis spp.*. Typically this bird forages at night on frogs, fish and invertebrates, and remains inconspicuous during the day. The breeding season extends from October to January with nests being built amongst dense vegetation on a flattened platform of reeds.

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
Daphoenositta chrysoptera	Varied Sittella		V	2010	unlikely	Habitat not suitable	The Varied Sittella is a sedentary species which inhabits a wide variety of dry eucalypt forests and woodlands, usually with either shrubby understorey or grassy ground cover or both, in all climatic zones of Australia. Usually inhabit areas with rough-barked trees, such as stringybarks or ironbarks, but also in mallee and acacia woodlands, paperbarks or mature Eucalypts. The Varied Sittella feeds on arthropods gleaned from bark, small branches and twigs. It builds a cup-shaped nest of plant fibres and cobweb in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years.
Dasyornis brachypterus	Eastern Bristlebird	EN	E1	#	unlikely	Habitat not suitable	Found in coastal woodlands, dense scrub and heathlands, particularly where it borders taller woodlands.
Falco subniger	Black Falcon		V	1991	unlikely	Habitat not suitable	Mainly occur in woodlands and open country where can hunt. Often associated with swamps, rivers and wetlands. Nest in tall trees along watercourses.
Glossopsitta pusilla	Little Lorikeet		V	2011	moderate	No breeding habitat present and only a few trees and shrubs providing nectar for foraging	Distributed in forests and woodlands from the coast to the western slopes of the Great Dividing Range in NSW, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. Mostly occur in dry, open eucalypt forests and woodlands. They feed primarily on nectar and pollen in the tree canopy. Nest hollows are located at heights of between 2 m and 15 m, mostly in living, smooth-barked eucalypts. Most breeding records come from the western slopes.

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
Hieraaetus morphnoides	Little Eagle		V	2009	unlikely	Habitat not suitable	The Little Eagle is most abundant in lightly timbered areas with open areas nearby providing an abundance of prey species. It has often been recorded foraging in grasslands, crops, treeless dune fields, and recently logged areas. The Little Eagle nests in tall living trees within farmland, woodland and forests.
Lathamus discolor	Swift Parrot	EN	E1	2014/#	unlikely	Habitat not suitable	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Commonly used lerp infested trees include Grey Box *E. microcarpa*, Grey Box *E. moluccana* and Blackbutt *E. pilularis*. This species is migratory, breeding in Tasmania and also nomadic, moving about in response to changing food availability.
Ninox connivens	Barking Owl		V	1996	unlikely	Habitat not suitable	Generally found in open forests, woodlands, swamp woodlands and dense scrub. Can also be found in the foothills and timber along watercourses in otherwise open country. Territories are typically 2000 ha in NSW habitats.
Ninox strenua	Powerful Owl		V	2012	unlikely	Habitat not suitable	The Powerful Owl occupies wet and dry eucalypt forests and rainforests. It may inhabit both un-logged

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
							and lightly logged forests as well as undisturbed forests where it usually roosts on the limbs of dense trees in gully areas. Large mature trees with hollows at least 0.5 m deep are required for nesting. Tree hollows are particularly important for the Powerful Owl because a large proportion of the diet is made up of hollow-dependent arboreal marsupials. Nest trees for this species are usually emergent with a diameter at breast height of at least 100 cm. It has a large home range of between 450 and 1450 ha.
Petroica boodang	Scarlet Robin		V	2006	unlikely	Habitat not suitable	During the breeding season the Scarlet Robin is found in eucalypt forests and temperate woodlands, often on ridges and slopes. During autumn and winter it moves to more open and cleared areas. It has dispersive or locally migratory seasonal movements. The Scarlet Robin forages amongst logs and woody debris for insects which make up the majority of its diet. The nest is an open cup of plant fibres and cobwebs, sited in the fork of a tree (often a dead branch in a live tree, or in a dead tree or shrub) which is usually more than 2 m above the ground. It is conspicuous in open and suburban habitats.
Polytelis swainsonii	Superb Parrot	VU	V	1984	unlikely	Habitat not suitable	Found mainly in open, tall riparian River Red Gum forest or woodland. Often found in farmland including grazing land with patches of remnant vegetation. Breeds in hollow branches of tall Eucalypt trees within 9 km of feeding areas

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
Mammals							
Chalinolobus dwyeri	Large-eared Pied Bat	VU	V	2000/#	unlikely	Habitat not suitable	Occurs from the Queensland border to Ulladulla, with largest numbers from the sandstone escarpment country in the Sydney Basin and Hunter Valley. Primarily found in dry sclerophyll forests and woodlands, but also found in rainforest fringes and subalpine woodlands. Forages on small, flying insects below the forest canopy. Roosts in colonies of between three and 80 in caves, Fairy Martin nests and mines, and beneath rock overhangs, but usually less than 10 individuals. Likely that it hibernates during the cooler months. The only known existing maternity roost is in a sandstone cave near Coonabarabran.
Dasyurus maculatus maculatus (SE mainland population)	Spotted-tailed Quoll	EN	V	2012/#	unlikely	Habitat not suitable	Occurs along the east coast of Australia and the Great Dividing Range. Uses a range of habitats including sclerophyll forests and woodlands, coastal heathlands and rainforests. Occasional sightings have been made in open country, grazing lands, rocky outcrops and other treeless areas. Habitat requirements include suitable den sites, including hollow logs, rock crevices and caves, an abundance of food and an area of intact vegetation in which to forage. Seventy per cent of the diet is medium-sized mammals, and also feeds on invertebrates, reptiles and birds. Individuals require large areas of relatively intact vegetation through which to forage. The home range of a female is between 180 and 1000 ha, while males have larger home ranges of between 2000 and 5000 ha. Breeding

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
							occurs from May to August.
Falsistrellus tasmaniensis	Eastern False Pipistrelle		V	2012	unlikely	Habitat not suitable	Distribution extending east of the Great Dividing Range throughout the coastal regions of NSW, from the Queensland border to the Victorian border. Prefers wet high-altitude sclerophyll and coastal mallee habitat, preferring wet forests with a dense understorey but being found in open forests at lower altitudes. Apparently hibernates in winter. Roosts in tree hollows and sometimes in buildings in colonies of between 3 and 80 individuals. Often change roosts every night. Forages for beetles, bugs and moths below or near the canopy in forests with an open structure, or along trails. Has a large foraging range, up to 136 ha. Records show movements of up to 12 km between roosting and foraging sites.
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat		V	2012	moderate	May forage over the study area but roosting resources appear to absent.	Occurs from Victoria to Queensland, on both sides of the Great Dividing Range. Forms large maternity roosts (up to 100,000 individuals) in caves and mines in spring and summer. Individuals may fly several hundred kilometres to their wintering sites, where they roost in caves, culverts, buildings, and bridges. They occur in a broad range of habitats including rainforest, wet and dry sclerophyll forest, paperbark forest and open grasslands. Has a fast, direct flight and forages for flying insects (particularly moths) above the tree canopy and along waterways.
Mormopterus	Eastern Freetail-		V	2011	moderate	May forage in the	Distribution extends east of the Great Dividing Range

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
norfolkensis	bat					study area but roosting resources are very limited.	from southern Queensland to south of Sydney. Most records are from dry eucalypt forests and woodland. Individuals tend to forage in natural and artificial openings in forests, although it has also been caught foraging low over a rocky river within rainforest and wet sclerophyll forest habitats. The species generally roosts in hollow spouts of large mature eucalypts (including paddock trees), although individuals have been recorded roosting in the roof of a hut, in wall cavities, and under metal caps of telegraph poles. Foraging generally occurs within a few kilometres of roosting sites.
Myotis macropus	Southern Myotis		V	2011	unlikely	Habitat not suitable	Scattered, mainly coastal distribution extending to South Australia along the Murray River. Roosts in caves, mines or tunnels, under bridges, in buildings, tree hollows, and even in dense foliage. Colonies occur close to water bodies, ranging from rainforest streams to large lakes and reservoirs. They catch aquatic insects and small fish with their large hind claws, and also catch flying insects.
Perameles nasuta	Long-nosed Bandicoot		E2	1974	unlikely	Habitat not suitable	The Long-nosed Bandicoot (inner west population) is found within the LGAs of Marrickville and Canada Bay and may extend into the surrounding LGAs of Canterbury, Ashfield and Leichardt. Individuals mostly shelter under older houses and buildings, and forage for invertebrates, plant roots, and hypogeal fungi in parklands and back-yards. The population is threatened by collision with vehicles; predation by

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
							dogs, cats and foxes; renovation of old buildings preventing access to nest sites; removal of vegetation; and is at risk of extinction due to local fluctuations in mortality and fecundity.
Petrogale penicillata	Brush-tailed Rock-wallaby	VU	E1	#	unlikely	Habitat not suitable	Occurs along the Great Dividing Range south to the Shoalhaven, and also occurs in the Warrumbungles and Mt Kaputar. Habitats range from rainforest to open woodland. It is found in areas with numerous ledges, caves and crevices, particularly where these have a northerly aspect. Individuals defend a specific rock shelter, emerging in the evening to forage on grasses and forbs, as well as browse in drier months. Home sizes range from 2-30 ha.
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala	VU	V	#	unlikely	Although Forest Red Gums and Tallowwoods are preferred feed tree species for the Koala, the species is unlikely to use the study area due to the lack of connectivity with bushland.	Pittwater LGA and Hawks nest: In NSW the Koala mainly occurs on the central and north coasts with some populations in the western region. Koalas feed almost exclusively on eucalypt foliage, and their preferences vary regionally. Primary feed trees include *Eucalyptus robusta, E. tereticornis, E. punctata, E. haemostoma* and *E. signata*. They are solitary with varying home ranges. In high quality habitat home ranges may be 1-2 ha and overlap, while in semi-arid country they are usually discrete and around 100 ha.
Pseudomys novaehollandiae	New Holland Mouse	VU		#	unlikely	Habitat not suitable	The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Across the species' range the New Holland Mouse is known to inhabit

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
							open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes. The home range of the New Holland Mouse can range from 0.44 ha to 1.4 ha. The New Holland Mouse is a social animal, living predominantly in burrows shared with other individuals. The species is nocturnal and omnivorous, feeding on seeds, insects, leaves, flowers and fungi, and is therefore likely to play an important role in seed dispersal and fungal spore dispersal. It is likely that the species spends considerable time foraging above-ground for food, predisposing it to predation by native predators and introduced species. Breeding typically occurs between August and January, but can extend into autumn.
Pteropus poliocephalus	Grey-headed Flying-fox	VU	V	2012/#	moderate	Flying-foxes foraging in the local area may visit the larger Forest Red Gums and possibly the Tallowwoods during peak flowering times.	Occurs along the NSW coast, extending further inland in the north. This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Roosts in large colonies (camps), commonly in dense riparian vegetation. Bats commute daily to foraging areas, usually within 15 km of the day roost although some individuals may travel up to 70 km.
Scoteanax rueppellii	Greater Broad-nosed Bat		V	2012	unlikely	Habitat not suitable	Occurs along the Great Dividing Range, generally at 500 m but up to 1200 m, and in coastal areas. Occurs in woodland and rainforest, but prefers open habitats or natural or human-made openings in wetter forests. Often hunts along creeks or river corridors. Flies slowly

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
							and directly at a height of 30 m or so to catch beetles and other large, flying insects. Also known to eat other bats and spiders. Roosts in hollow tree trunks and branches.
Reptiles							
Hoplocephalus bungaroides	Broad-headed Snake	VU	E1	#	unlikely	Habitat not suitable	Mainly occurs in association with communities occurring on Triassic sandstone within the Sydney Basin. Typically found among exposed sandstone outcrops with vegetation types ranging from woodland to heath. Within these habitats they generally use rock crevices and exfoliating rock during the cooler months and tree hollows during summer.
Amphibians							
Heleioporus australiacus	Giant Burrowing Frog	VU	V	#	unlikely	Habitat not suitable	Prefers hanging swamps on sandstone shelves adjacent to perennial non-flooding creeks. Can also occur within shale outcrops within sandstone formations. Known from wet and dry forests and montane woodland in the southern part range. Individuals can be found around sandy creek banks or foraging along ridge-tops during or directly after heavy rain. Males often call from burrows located in sandy banks next to water. Spends the majority of its time in non-breeding habitat 20-250m from breeding sites.
Litoria aurea	Green and Golden Bell Frog	VU	E1	1999/#	unlikely	Habitat not suitable	Most existing locations for the species occur as small, coastal, or near coastal populations, with records occurring between south of Grafton and northern VIC.

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
							The species is found in marshes, dams and stream sides, particularly those containing bullrushes or spikerushes. Preferred habitat contains water bodies that are unshaded, are free of predatory fish, have a grassy area nearby and have diurnal sheltering sites nearby such as vegetation or rocks , although the species has also been recorded from highly disturbed areas including disused industrial sites, brick pits, landfill areas and cleared land. Breeding usually occurs in summer. Tadpoles, which take approximately 10-12 weeks to develop , feed on algae and other vegetative matter. Adults eat insects as well as other frogs, including juveniles of their own species.
Litoria raniformis	Southern Bell Frog	VU	E1	#	unlikely	Habitat not suitable	In NSW the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. Usually found in or around permanent or ephemeral swamps or billabongs with an abundance of bulrushes and other emergent vegetation along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat. Outside the breeding season animals disperse away from the water and take shelter beneath ground debris such as fallen timber and bark, rocks, grass clumps and in deep soil cracks.
Fish							
Macquaria	Macquarie perch	EN		#	unlikely	Habitat not suitable	Macquarie Perch are found in the Murray-Darling Basin

Scientific Name	Common Name	EPBC Act	TSC Act	Most Recent Record	Likelihood of Occurrence	Rationale for Likelihood	Habitat Description
australasica							(particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury and Shoalhaven catchments. Macquarie perch are found in both river and lake habitats, especially the upper reaches of rivers and their tributaries
Molluscs							
Meridolum corneovirens	Cumberland Plain Land Snail		E1	2004	unlikely	Habitat not suitable	Most likely restricted to Cumberland Plain, Castlereagh Woodlands and boundaries between River-flat Forest and Cumberland Plain Woodland. It is normally found beneath logs, debris and amongst accumulated leaf and bark particularly at the base of trees. May also use soil cracks for refuge.

A2.2 Migratory species (EPBC Act listed)

Includes records from the following sources:

- Atlas of NSW Wildlife (refer to Section 2.1)
- DoE Protected Matters Search (accessed on 28.10.14 - Appendix 4)
- Current survey

Table 9: Migratory fauna species recorded or predicted to occur within 5 km of the study area

Scientific Name	Common Name	Most Recent Record
Anthochaera phrygia	Regent Honeyeater	1968/#
Apus pacificus	Fork-tailed Swift	2006
Ardea ibis	Cattle Egret	2009
Ardea modesta	Eastern Great Egret	2010
Gallinago hardwickii	Latham's Snipe	2007
Haliaeetus leucogaster	White-bellied Sea-Eagle	2009
Hirundapus caudacutus	White-throated Needletail	2011
Monarcha melanopsis	Black-faced Monarch	2011
Rhipidura rufifrons	Rufous Fantail	2011
Rostratula australis	Australian Painted Snipe	#

# denotes species predicted to occur by the DoE database (not recorded on other databases)

Appendix 3: Photographs of ecological features

NORTHERN SIDE OF RAIL CORRIDOR

Plate 1: Looking east from bottom of ramp showing large wattle and planted lillypillies

Plate 2: Looking at Forest Red Gums and associated vegetation inside RailCorp fence west of ramp

Plate 3: View along Wentworth Avenue showing two Forest Red Gums within study area on right and two Forest Red Gums outside study area on left

SOUTHERN SIDE OF RAIL CORRIDOR

Plate 4: Two Pepper Trees and Murrayas outside RailCorp fence west of ramp

Plate 5: Row of Tallowwood trees outside RailCorp fence adjacent to ramp

Plate 6: Eastern end of row of Tallowwood trees adjacent to ramp plus Oleander

Plate 7: Three planted exotic trees opposite side of Joyce Street from ramp

Plate 8: Two Brush Box trees on footpath opposite ramp

Appendix 4: EPBC Act Protected Matters report

Australian Government

Department of the Environment

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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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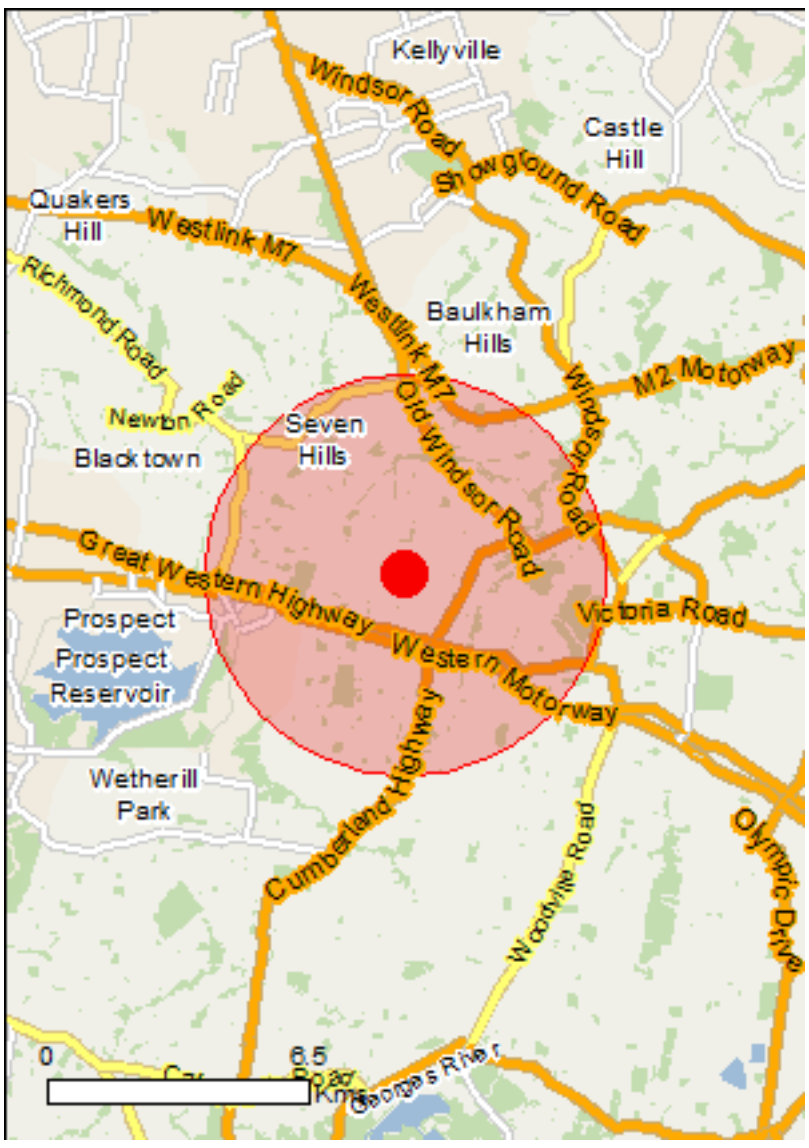

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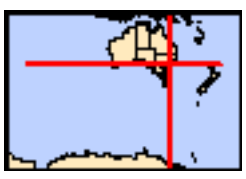
Coordinates

Buffer: 5.0Km



Summary

Matters of National Environmental 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:	2
National Heritage Places:	2
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	30
Listed Migratory Species:	12

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 and the heritage values of a place on the Register of the National Estate.

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.

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 Land:	10
Commonwealth Heritage Places:	None
Listed Marine Species:	14
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine	None

Extra Information

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

Place on the RNE:	55
State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	53
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Status
Australian Convict Sites (Old Government House and Domain Buffer Zone)	NSW	Declared property
Australian Convict Sites (Old Government House and Domain)	NSW	Declared property

National Heritage Properties [Resource Information]

Name	State	Status
Historic		
Old Government House and the Government Domain	NSW	Listed place
Former Female Factory Parramatta	NSW	Nominated place

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.

Name	Status	Type of Presence
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	Critically Endangered	Community likely to occur within area
Shale/Sandstone Transition Forest	Endangered	Community likely to occur within area
Turpentine-Ironbark Forest in the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Fish		
Macquaria australasica		
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Frogs		
Heleioporus australiacus		
Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area
Litoria aurea		
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area
Litoria raniformis		
Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri		
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat known to occur within area
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Petrogale penicillata		
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within 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]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys novaehollandiae		
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Plants		
Acacia pubescens		
Downy Wattle, Hairy Stemmed Wattle [18800]	Vulnerable	Species or species habitat likely to occur within area
Allocasuarina glareicola		
[21932]	Endangered	Species or species habitat may occur within area
Asterolasia elegans		
[56780]	Endangered	Species or species habitat may occur within area
Cryptostylis hunteriana		
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Genoplesium baueri		
Yellow Gnat-orchid [7528]	Endangered	Species or species habitat known to occur within area
Pelargonium sp. Striatellum (G.W.Carr 10345)		
Omeo Stork's-bill [84065]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Persoonia nutans Nodding Geebung [18119]	Endangered	Species or species habitat likely to occur within area
Pimelea curviflora var. curviflora [4182]	Vulnerable	Species or species habitat known to occur within area
Pimelea spicata Spiked Rice-flower [20834]	Endangered	Species or species habitat known to occur within area
Pterostylis gibbosa Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat may occur within area
Pterostylis saxicola Sydney Plains Greenhood [64537]	Endangered	Species or species habitat likely to occur within area
Streblus pendulinus Siah's Backbone, Sia's Backbone, Isaac Wood [21618]	Endangered	Species or species habitat likely to occur within area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Pocket-less Brush Cherry, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat likely to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato)		
Painted Snipe [889]	Endangered*	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [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.

Name
Commonwealth Land -
Commonwealth Land - Australian Postal Commission
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Australian Telecommunications Corporation
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation
Commonwealth Land - Defence Housing Authority
Commonwealth Land - Defence Service Homes Corporation
Commonwealth Land - Director of War Service Homes
Commonwealth Land - Telstra Corporation Limited
Defence - BLACKTOWN TRAINING DEPOT

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat likely to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area

Extra Information

Places on the RNE [Resource Information]

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Parramatta and Lane Cove Rivers Landscapes	NSW	Indicative Place
Historic		
Cumberland Hospital Landscape	NSW	Indicative Place
Former Engine Sheds	NSW	Indicative Place
Joyce Farmhouse	NSW	Indicative Place
Mt Dorothy Reservoir	NSW	Indicative Place
Pearce Family Graves	NSW	Indicative Place
Prospect Reservoir Area	NSW	Indicative Place
Railway Bridge Pier and Abutment	NSW	Indicative Place
Sydney Woollen Mills	NSW	Indicative Place
Wistaria Gardens	NSW	Indicative Place
Accommodation Block Spinal Range for Wards 2 and 3	NSW	Registered
Administration Building	NSW	Registered
Boer War Memorial	NSW	Registered
Boorbri and Grounds	NSW	Registered
Boundary Stone	NSW	Registered
CSIRO Division of Animal Production	NSW	Registered
Cottage	NSW	Registered
Cottage	NSW	Registered
Day Room for Wards 4 and 5 (former)	NSW	Registered
Girls Training School Precinct	NSW	Registered

Name	State	Status
Governor Brisbanes Observatory Remnants	NSW	Registered
Governors Bath House (former)	NSW	Registered
Governors Dairy Cottage (former)	NSW	Registered
Grantham Poultry Research Station (former)	NSW	Registered
Greystanes (Boothtown) Aqueduct	NSW	Registered
Kings School (former) Group	NSW	Registered
Kitchen Block	NSW	Registered
Macquarie Street Gatehouse	NSW	Registered
Mays Hill Cemetery	NSW	Registered
Obelisk	NSW	Registered
Old Government House	NSW	Registered
Old Windsor Road Section	NSW	Registered
Parramatta Gaol (former)	NSW	Registered
Parramatta Park	NSW	Registered
Parramatta Park Gatehouse	NSW	Registered
Parramatta Psychiatric Centre Precinct	NSW	Registered
River Terraces	NSW	Registered
Roseneath Cottage	NSW	Registered
Sandstone Buildings	NSW	Registered
Sandstone Walls and Ha Ha	NSW	Registered
Site of Veteran Hall	NSW	Registered
Southern Gatehouse	NSW	Registered
St Bartholomews Anglican Church (former)	NSW	Registered
St Johns Cemetery and Boundary Wall	NSW	Registered
Travellers Rest Inn	NSW	Registered
Travellers Rest Inn Group	NSW	Registered
Two Cannons	NSW	Registered
Ward 1	NSW	Registered
Ward 2 Courtyard Shelter Shed	NSW	Registered
Ward 2 North Range	NSW	Registered
Ward 4 North Range	NSW	Registered
Ward 4 West Range	NSW	Registered
Ward 5 North Range	NSW	Registered
Ward 5 South Range (former)	NSW	Registered
Western Gatehouse	NSW	Registered

State and Territory Reserves [Resource Information]

Name	State
Prospect	NSW

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Asparagus scandens Asparagus Fern, Climbing Asparagus Fern [23255]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Sage, Wild Sage [10892]		
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Coordinates

-33.80204 150.95721

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Department of Environment, Climate Change and Water, New South Wales
-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia
-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA 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, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-Geoscience Australia
-CSIRO
-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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