

ARCADIA VALE 1 AND MORISSET 2 RESERVOIR REFURBISHMENT PROJECT

NOVEMBER 2023

MINOR WORKS REVIEW OF
ENVIRONMENTAL FACTORS

HUNTER WATER



TABLE OF CONTENTS

1	Introduction	1
2	Proposal details.....	5
2.1	Proposal identification	5
2.2	Existing environment.....	5
2.3	Proposal description.....	7
3	Statutory context	10
3.1	Environmental Planning and Assessment Act 1979.....	10
3.2	Environmental planning instruments	10
	Lake Macquarie Local Environmental Plan 2014.....	10
	State Environmental Planning Policy (Transport and Infrastructure) 2021	10
	State Environmental Planning Policy (Biodiversity and Conservation) 2021	11
3.3	NSW legislation.....	11
	Protection of the Environment Operations Act 1997 (POEO Act)	11
	Biodiversity Conservation Act 2016 (BC Act).....	12
	National Parks and Wildlife Act 1974	12
	Heritage Act 1977 (Heritage Act)	12
	Rural Fires Act 1997	12
	Biosecurity Act 2015 (Biosecurity Act)	12
	Fisheries Management Act 1994	13
	Water Management Act 2000 (WM Act)	13
	Waste Avoidance and Resource Recovery Act 2001 (WARR Act).....	13
	Coal Mine Subsidence Compensation Act 2017 (CMSC Act).....	13
	Dangerous Goods (Road and Rail Transport) Act 2008 (Dangerous Goods Act)	14
3.4	Commonwealth legislation	14
	Environment Protection and Biodiversity Conservation Act 1999	14
	Native Title Act 1993 (NT Act)	14
3.5	Licences and approvals	15
4	Consultation	16
4.1	Community consultation.....	16
4.2	T&ISEPP consultation.....	16
5	Environmental issues identification	19
5.1	Topography, soils and geology	19
5.2	Hydrology and water quality	20
5.3	Biodiversity.....	21
5.4	Noise and vibration	23
5.5	Non-Aboriginal heritage	26

5.6	Aboriginal heritage	27
5.7	Traffic and access	27
5.8	Visual environment	28
5.9	Socioeconomic, land use and services	29
5.10	Energy and air quality	30
5.11	Waste and resource use	30
5.12	Hazards and risks	31
5.13	Cumulative impacts.....	32
6	Environmental safeguards and other requirements.....	33
6.1	Mitigation measures	33
7	Certification	40
8	References	41
	Appendix A Design drawings	42
	Appendix B Section 171(2) Factors.....	43
	Appendix C MNES Checklist.....	44
	Appendix D Consultation	45
	Appendix E Database Search Results	46

1 INTRODUCTION

Hunter Water Corporation (Hunter Water) proposes to carry out refurbishment works at the Arcadia Vale 1 and Morisset 2 Potable Water Reservoirs to address structural integrity and longevity concerns (the proposal).

Hunter Water owns and operates a large and complex potable water distribution network including pumping stations, service reservoirs and chlorination installations. Hunter Water has expressed concerns pertaining to the structural integrity and longevity of the reservoirs. Originally built in the 1960s, the reservoirs have a history of concrete delamination and spalling. The current water storage level has been reduced to 60 per cent (%) at Arcadia Vale and 80% at Morisset, due to structural integrity concerns.

Key elements of the proposal include:

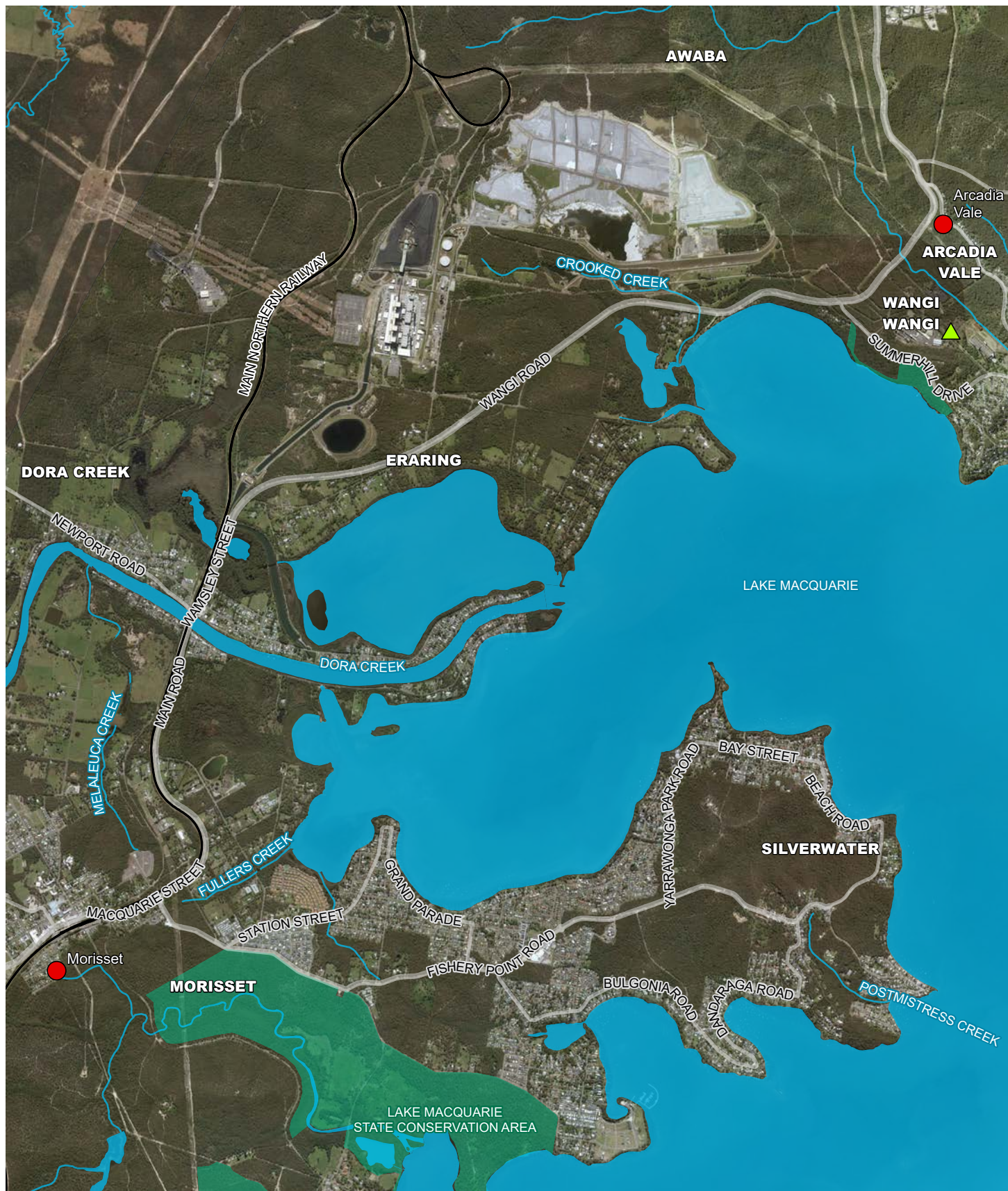
- Reservoir repairs
- Replacement of existing external roof access ladder with stairs
- Seismic strengthening of the reservoirs
- Internal and external strengthening of the reservoirs.

The construction of the proposal would be expected to start in mid 2024 and take up to nine months to complete in a staged approach (four and half months per reservoir), with Arcadia Vale 1 reservoir first followed by Morisset 2 reservoir.

The location of the proposal area is shown in **Figure 1-1** and the proposal context is provided in **Figure 1-2** and **Figure 1-3**. **Section 2.3** describes the proposal in more detail.

The potential environmental impacts of the proposal have been assessed in accordance with the environmental impact assessment requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Hunter Water Corporation (Hunter Water) is the proponent and the determining authority of the proposal in accordance with Division 5.1 of the EP&A Act.

The purpose of this Minor Works Review of Environmental Factors (MWREF) is to describe the proposed works and assess the potential construction and operation environmental impacts with consideration of the factors listed in Section 171 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation). The MWREF identifies safeguards to mitigate identified impacts.



- Proposal locations
- Railway
- Watercourse
- ▲ Wangi Power Station Complex
- Water body
- State Conservation Area



1:45,000 at A4

GDA 1994 MGA Zone 56

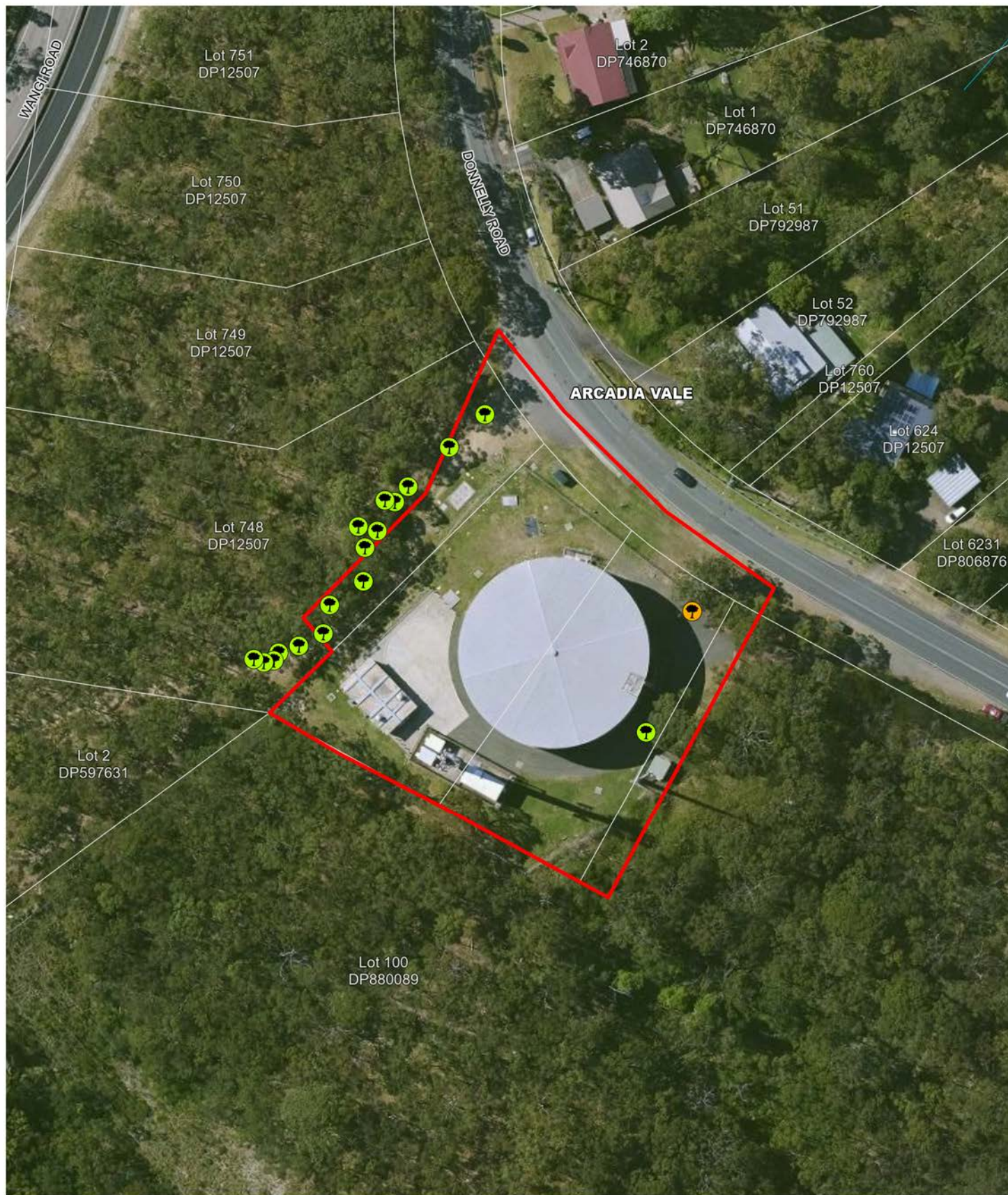


Data sources

Jacobs 2023
 Aerometrix 2023
 OEH 2023, DCS 2023,
 Department Finance,
 Services and Innovation 2023
 © Department of Customer Service 2020



Figure 1-1 Locality



Proposal area
 Protected tree
 Cadastre

 Tree trimming



1:1,000 at A4
GDA 1994 MGA Zone 56

Data sources
 Jacobs 2023
 Aerometrix 2023
 OEH 2023, DCSSS 2023,
 Department Finance,
 Services and Innovation 2023



Figure 1-2 Proposal overview

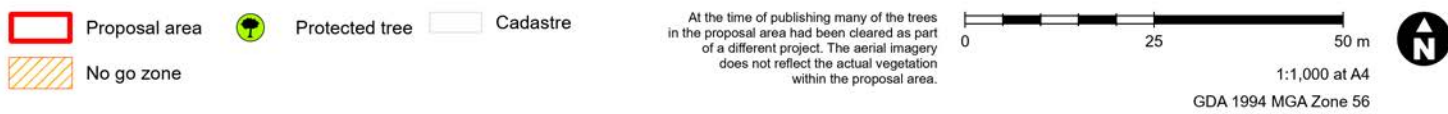
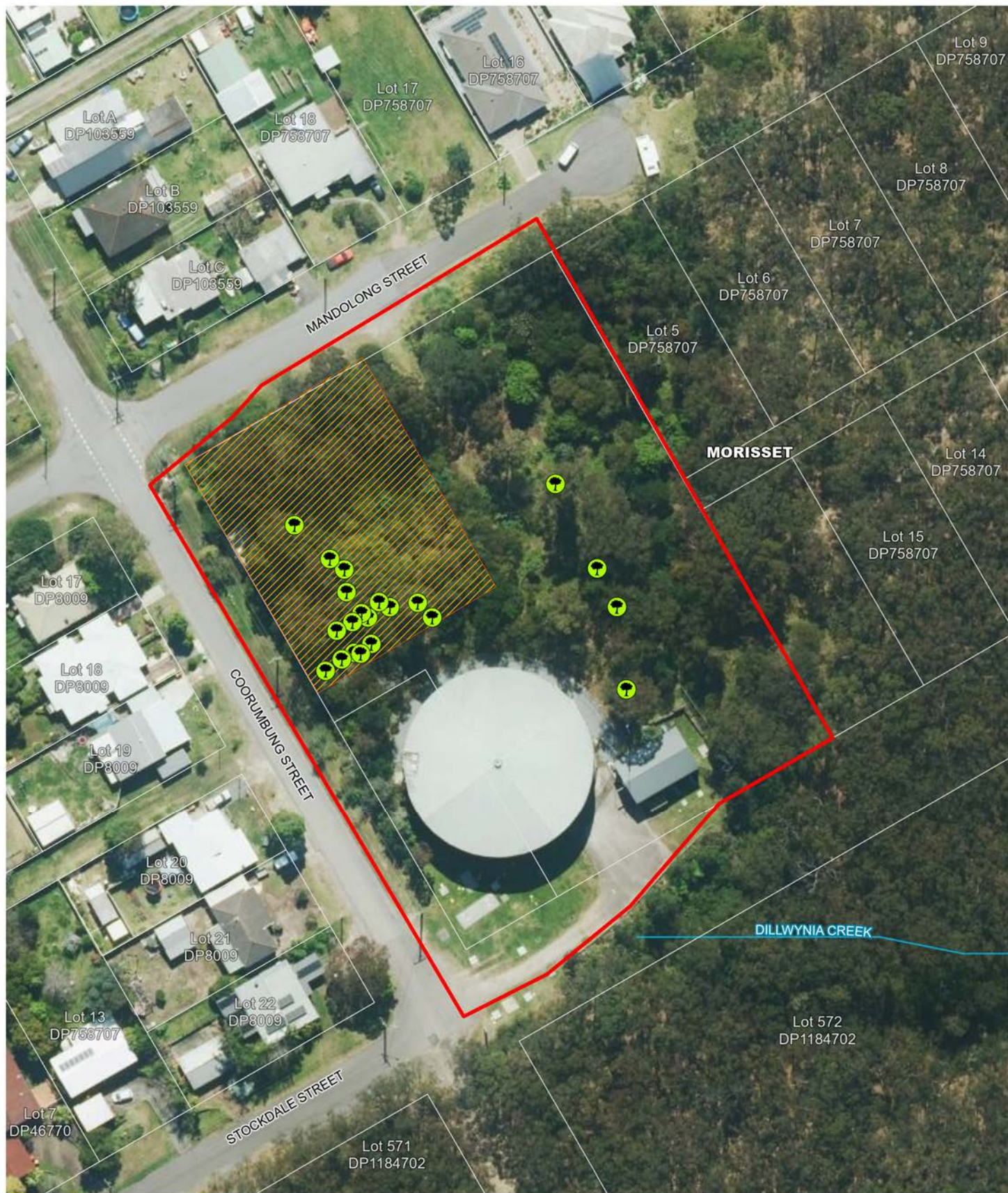


Figure 1-3 Proposal overview

2 PROPOSAL DETAILS

2.1 Proposal identification

Proposal name	Arcadia Vale 1 and Morisset 2 Potable Water Reservoir Refurbishment
Reference number	CP3617
Proposal location	<p>The proposal is predominately located at the Hunter Water owned Arcadia Vale 1 Reservoir site (Arcadia Vale site) and the Morisset 2 Reservoir site (Morisset site) with a small portion of the proposal area located on Lake Macquarie City Council managed land at each site.</p> <p>The Arcadia Vale site is located at 124 Donnelly Road. The site is made up of Lot 746 DP12507 and Lot 747 DP12507. The Morisset site is located at 17 and 17A Stockdale Street, at the intersection of Coorumbung and Mandolong Streets, Morisset. The site is made up of Lot 1 DP 1106669 and Lot 20 DP 758707.</p>
Local Government Area (LGA)	Lake Macquarie LGA
Land zoning	The Arcadia Vale proposal area is located on land zoned SP2 Water Reticulation System and C2 Environmental Conservation/ C2, Environmental Management under Lake Macquarie Local Environmental Plan 2014 (Lake Macquarie LEP 2014). While the Morisset proposal area is located on land zoned R3 Medium under the Lake Macquarie LEP 2014.

2.2 Existing environment

The proposal is predominantly located within the Hunter Water owned and operated Arcadia Vale and Morisset sites, with a small portion location on Lake Macquarie City Council managed land within the Lake Macquarie LGA, refer to **Figure 1-1**.

Both reservoirs are circular tanks, founded at ground level, containing a maximum potable supply of around nine megalitres (ML) each at full capacity. The reservoirs were constructed in the 1960s and are wire-wound, reinforced concrete structures with closely spaced tensioned wires in the horizontal direction. The reservoirs are shown on **Photo 2-1** and **Photo 2-2**.



Photo 2-1 Arcadia Vale site looking south east (source: Google Streetview)



Photo 2-2 Morisset site looking north from Coorumbung Street (source: Google Streetview)

Both sites are located within the West Lake Mine Subsidence District and on bushfire prone land. Further details on the existing environment are provided in **Table 2-1**.

Table 2-1 Existing environment

Site details	Morisset	Arcadia Vale
Site access	Access is via Coorumbung Street or Mandolong Street, Morisset.	Access is via Donnelly Road and an easement to the north of the site
Nearest sensitive receiver	A number of residences are located around the site along Coorumbung Street and Mandolong Street, the closest of which is about 10 metres (m) west of the proposal.	A small number of residences are located opposite the site including along Donnelly Road, the closest of which is about 40 m north east of the proposal.
Sensitive receiving locations	Dillwynia Bushland Reserve is adjacent to the eastern boundary of the site.	Environmental conservation area surrounding the site to the north, west and south.
Native vegetation on site	Native trees, both mature and juvenile, occur across the proposal area. The native trees species at the site include many Eucalyptus (<i>Eucalyptus robusta</i> (Swamp Mahogany), <i>Eucalyptus tereticornis</i> (Forest Red Gum), <i>Eucalyptus microcorys</i> (tallowwood), <i>Eucalyptus crebra</i> (Narrow-leaved Ironbark), <i>Angophora costata</i> (Smooth-barked Apple), <i>Eucalyptus capitellata</i> (Brown Stringybark), and <i>Eucalyptus fibrosa</i> (Red Ironbark). Other tree species include <i>Casuarina glauca</i> (Swamp Oak), <i>Melaleuca ericifolia</i> (Swamp Paperbark) Callistemons (<i>Callistemon linearis</i> (Narrow-leaved Bottlebrush) and <i>Callistemon citrinus</i> (Crimson Bottlebrush) and <i>Pittosporum undulatum</i> (Sweet Pittosporum).	The site is cleared and only contains one tree only <i>Angophora costata</i> (Smooth-barked apple) on site. The other native tree species within the proposal area are located on council land and include <i>Eucalyptus umbra</i> (Broad-leaved White Mahogany) and <i>Corymbia gummifera</i> (Red Bloodwood). Other tree species included <i>Allocasuarina littoralis</i> (Black She-oak) and <i>Acacia longifolia</i> .
Significant weed species	One Weed of National Significance (WoNS), <i>Lantana camara</i> listed under the National Weed Strategy was identified at	Two regional priority weeds, <i>Cinnamomum camphora</i> (Camphor Laurel) and <i>Hyparrhenia hirta</i> (Coolatai

Site details	Morisset	Arcadia Vale
	during the site inspection. <i>Lantana camara</i> is also listed as a state and regional priority weed.	Grass) were identified during the site inspection at Arcadia Vale.
Nearest water way	Dillwynia Creek approximately 40 m to the south east of the site.	Sawmill Creek located approximately 100 m to the east.

2.3 Proposal description

The scope of the refurbishment works is detailed in the design drawings provided in **Appendix A** and summarised as follows:

Description of works	<ul style="list-style-type: none"> Reservoir repairs: <ul style="list-style-type: none"> Removing existing joint sealant at slab construction joints and replacing Repairing / remediating localised spalling, delaminated and cracks on the internal and external walls Repairing localised protective coating breakdown and substrate corrosion to the mild steel roof beams, fixings and holding down bolts and deteriorated / missing roof beam grout plinths at top of the reservoir wall Repairing localised protective coating breakdown and substrate corrosion of the roof sheeting fixings Repairing corroding inlet/outlet, overflow and scour pipes Replacing galvanic anodes attached to the roof support columns as well as the internal access platform Replacing the existing vermin proof mesh at the top of the reservoirs for the full circumference Replacing existing external roof access ladder with new freestanding external roof access stairs for improved safe roof access
	<ul style="list-style-type: none"> Internal strengthening: <ul style="list-style-type: none"> Installing stainless steel brackets around base of reservoir connecting the reservoir footing to the wall Application of carbon fibre laminates on internal wall to 5 m height from the base Application of 10 millimetre (mm) mortar on the internal wall following laminate application, to 5 m height from the base Application of additional 25 mm mortar on the internal wall to 2.5 m height from base Application of 10 mm mortar above 4 m height as required where softened concrete is identified Removal and patching of softened concrete on the internal wall and application of final coating to full height of wall. External strengthening: <ul style="list-style-type: none"> Removal and replacement of spalling and delaminated concrete render to external wall Installing external tensioned monostrand cables around circumference of wall and application of protective mortar coating Extending width of existing concrete footing by 300 mm Application of paint coating to external wall with colour to match existing painted finish.
Construction methodology	The majority of the proposal would be within the cleared area contained within the Arcadia Vale and Morisset sites, refer to Section 5.3, Figure 1-2 and Figure 1-3 . The design drawings are provided in Appendix A and a

	<p>detailed proposal scope is provided in the <i>Arcadia Vale 1 & Morisset 2 Reservoir Refurbishment Project – Design Report</i> (Jacobs, 2023).</p> <p>The works associated with the proposal would comprise:</p> <ul style="list-style-type: none"> • Site establishment including installation of site sheds, temporary fencing, stockpile areas, erosion and sediment controls and vegetation removal • Protection and existing infrastructure, private property, and public property • Draining the reservoir in accordance with Hunter Water standard procedures • Carrying out reservoir repairs and strengthening works • Installing the new external staircases • Leakage testing of each of the reservoirs • Reservoir re-filling activities at project completion to bring the reservoirs back in to service • Reinstatement of disturbed areas and demobilisation from site.
Ancillary facilities	An equipment laydown area would be required for each site. This would be within a cleared area within the site boundary.
Operational requirements	At the completion of the works, the reservoirs will operate 24 hours per day, seven days per week.
Equipment and plant	<ul style="list-style-type: none"> • Small excavator • Trucks (concrete, flatbed, dump etc.) • Hand tools (non-mechanical and non-electrical) • Jackhammer, concrete saw and hammer drill • Jet blast and shotcreting equipment • Small backhoe/excavator • Pumps and generators • Scaffolding system and/or knuckle booms • Service vehicles.
Land tenure	The majority of the works would be within Hunter Water owned land with a small portion of the works occurring on council managed land.
Commencement and expected duration of construction work	The proposal is anticipated to commence mid-2024 and take up to nine months to complete in a staged approach (four and half months per reservoir), with Arcadia Vale 1 reservoir first followed by Morisset 2 reservoir.
Hours of construction work	<p>Hours of construction for the proposal would be in accordance with the <i>Interim Construction Noise Guideline</i> (ICNG) (Department of Environment and Climate Change (DECC), 2009).</p> <p>The majority of the works would be undertaken during standard construction working hours as follows:</p> <ul style="list-style-type: none"> • Between 7am and 6pm Monday to Friday • Between 8am and 1pm Saturdays with no work on Sunday or public holidays. <p>However, construction may need to be expedited to avoid having the reservoirs off line for an extended period. It therefore may be necessary to carry out some construction activities outside these standard working hours, including at night.</p> <p>If works are required outside of standard working hours, the works would need to be clearly justified, appropriate control measures identified and approval from Hunter Water would be required prior to works commencing.</p>
Proposal objectives	The proposal objectives are to repair and strengthen the reservoirs to reinstate them to full capacity for an additional service life of 30+ years.

Options considered and justification

The options considered were as follows:

- Option 1 - Repair (internal and external):
- Option 2 - Repair and strengthening
- Option 3 - New reservoirs
- Option 4 - Do nothing.

Option 1 would be limited to maintaining the reservoir structures in their present structural condition and preventing further deterioration. The repairs would be limited to replacing or correcting only portions of the structure necessary to provide water containment or provide structural support to maintain the current lowered water levels. Option 1 does not meet the requirement for 30-50 years additional design life and nor does it not meet seismic loading requirements.

Option 2 would involve repair and strengthening of the reservoirs. This would include structural and seismic strengthening of the walls, wall footings, and wall to floor connections. This option meets the requirement for 30-50 years additional design life as well as the seismic loading requirements.

Option 3 would be the construction of new reservoir at each site. This option would meet the design life and seismic loading requirements. However this is not a cost effective option and may require addition land acquisitions at Arcadia Vale.

Option 4, the do nothing option, would continue each site's operation in its current condition. This option would not meet the requirement for 30-50 years additional design life and nor would it meet seismic loading requirements.

Option 1 and Option 4 do not meet the proposal objectives as they would not meet design life or seismic loading requirements and were therefore not considered further.

Option 2 is the preferred option as it would meet the requirement for 30-50 years additional design life and seismic loading requirements. This option represents the best value, while still meeting design requirements.

3 STATUTORY CONTEXT

3.1 Environmental Planning and Assessment Act 1979

The EP&A Act is the principal legislation for environmental planning and assessment in NSW. The EP&A Act provides for creation and implementation of State Environment Planning Policies (SEPPs) and Local Environment Plans (LEPs), collectively referred to as Environmental Planning Instruments (EPIs). Relevant EPIs for the proposal are listed in the following sections. Also discussed below are other legislative requirements relevant to the proposal.

The description of the proposal and associated environmental impacts has been carried out with consideration of Section 171 of the EP&A Regulation (summarised in **Appendix B**), the *Biodiversity Conservation Act 2016* (BC Act) the *Fisheries Management Act 1994* (FM Act), and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (summarised in **Appendix C**). In doing so, the MWREF helps to fulfil the requirements of section 5.5 of the EP&A Act that Hunter Water 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 MWREF 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 (EIS) 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 (SIS) or a Biodiversity Development Assessment Report (BDAR).

Potential environmental impacts associated with the proposal are discussed in **Chapter 5**.

3.2 Environmental planning instruments

Lake Macquarie Local Environmental Plan 2014

The proposal area is located within the Lake Macquarie LGA. The relevant local planning instrument for the proposal area is the Lake Macquarie LEP.

The Arcadia Vale site is located on land zoned SP2 Water Reticulation System and land adjoining to north, west and south of the site is zone C2 Environmental Conservation/ C2, Environmental Management. The land to the east of the site is zoned R2 Low Density Residential.

The Morisset site is located on land zoned R3 Medium Density and the land adjoining to the north, east and west is also zoned R3 Medium Density Residential. To the south and south east, land is zoned RU6 Transition, while to the south west, land is zoned RE1 Public Recreation. Clause 5.12 of Lake Macquarie LEP 2014 does not restrict or prohibit the carrying out of development by a public authority that is permissible without consent under the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&ISEPP). Despite any provision of the Lake Macquarie LEP 2014, the T&ISEPP prevails over Lake Macquarie LEP 2014 to the extent of any inconsistencies. Therefore, the proposal is permissible without consent due to the provisions of the T&ISEPP without the need for any further consideration of the Lake Macquarie LEP 2014.

State Environmental Planning Policy (Transport and Infrastructure) 2021

The T&ISEPP describes certain developments that may be carried out without consent in order to facilitate the delivery of infrastructure in NSW.

Chapter 2, Division 24, Section 2.159 (2) of T&ISEPP enables development for the purpose of water supply system to be carried out without consent. As the proposal would form part of a water supply system and Hunter Water is a public authority, it is considered permissible without consent pursuant to the provisions of T&ISEPP and can be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required.

The proposal area is not located on land reserved under the *National Parks and Wildlife Act 1974* (NPW Act) and does not affect land or development regulated by the *State Environmental Planning Policy (Planning Systems) 2021*.

This REF includes confirmation of any consultation requirements under Chapter 2, Division 1 (refer to **Section 4.2**).

State Environmental Planning Policy (Biodiversity and Conservation) 2021

The *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (Biodiversity and Conservation SEPP) incorporates and repeals 11 SEPPs including the SEPP (Vegetation in Non-rural areas) 2017 (Vegetation SEPP) and the SEPP (Koala Habitat Protection) 2021 (Koala SEPP 2021).

Chapter 3 (Koala habitat protection 2020) and Chapter 4 (Koala habitat protection 2021) aim to encourage conservation and management of areas of natural vegetation that form koala habitats. Lake Macquarie LGA is subject to the provisions of Chapter 3 (Koala habitat protection 2020) and Chapter 4 (Koala habitat protection 2021) of the Biodiversity and Conservation SEPP. However, these chapters only apply to developments where council are the consent authority. In addition, the proposal area does not include any mapped “potential” or “core” koala habitat. As such, no further assessment in accordance with Biodiversity and Conservation SEPP is required.

The proposal is on land to which Chapter 2 (Vegetation in non-rural areas) of the Biodiversity and Conservation SEPP applies, requiring approval from Council for vegetation clearing (Section 2.10). However, the proposal is permissible under the T&ISEPP, and pursuant to Section 2.7 of T&ISEPP, T&ISEPP prevails to the extent of the inconsistency. Therefore, a Council permit to clear vegetation under the Biodiversity and Conservation SEPP is not required.

Section 5.3 provides further discussion in relation to biodiversity.

3.3 NSW legislation

Protection of the Environment Operations Act 1997 (POEO Act)

The POEO Act is the primary piece of legislation regulating pollution control and waste disposal in NSW and is administered by the Environmental Protection Authority (EPA). It provides an integrated system of licences to set out protection of the environment policies and to adopt more innovative approaches to reduce pollution in the environment, having regard to the need to maintain ecologically sustainable development (ESD). Measures to address potential pollution as a result of the proposal have been identified in this REF and are included in **Section 6.1**.

Where an activity is deemed a scheduled activity an Environmental Protection Licence (EPL) is required. The proposal is not considered a scheduled development work or scheduled activity under the POEO Act and therefore does not require an EPL under this Act. However, under section 148 of the Act, the EPA must be notified of any pollution incidents that cause or threaten material harm to the environment.

Biodiversity Conservation Act 2016 (BC Act)

The BC Act lists out the legislative requirements needed to maintain a healthy, productive and resilient environment in NSW, consistent with the principle of ESD. If any of the listed threatened species or ecological communities under the BC Act could be impacted by the proposal, the proponent may either apply the Biodiversity Offset Scheme or prepare a SIS.

Due to the minor nature of the proposal, the Biodiversity Offsets Scheme would not be triggered under the NSW BC Act. Therefore, a Biodiversity Development Assessment Report (BDAR) is not required. The proposal is not expected to have a significant impact on any threatened species or ecological communities (refer to **Section 5.3**), as such a SIS is not required.

National Parks and Wildlife Act 1974

The NP&W Act governs the establishment, preservation and management of national parks, historic sites and certain other areas, and Aboriginal relics. Items of Aboriginal cultural heritage (Aboriginal objects) or Aboriginal places (declared under Section 84) are protected and regulated under the NPW Act. Aboriginal objects are protected under Section 86 of the Act. Under Section 90(1) of the NPW Act, the Chief Executive may issue an Aboriginal heritage impact permit for an activity which would harm an Aboriginal object.

Under Sections 86, 87 and 90 of the NP&W Act require an Aboriginal Heritage Impact Permit (AHIP) to harm or desecrate Aboriginal objects or Aboriginal places. No known Aboriginal heritage constraints were mapped within the vicinity of the proposal. Therefore, there is no expected impact on known Aboriginal heritage and an AHIP is not required.

Aboriginal heritage is discussed further in **Section 5.6**.

Heritage Act 1977 (Heritage Act)

The Heritage Act aims to protect and conserve non-Aboriginal cultural heritage, including scheduled heritage items, sites and relics.

The Heritage Act makes provision for a place, building, work, relic, moveable object, precinct, or land to be listed on the State Heritage Register. If an item is the subject of an interim listing, or is listed on the State Heritage Register, a person must obtain approval under section 58 of the Heritage Act for works or activities that may impact on these items.

There are no heritage items within or near the proposal, refer to **Section 5.5**.

Rural Fires Act 1997

Under Section 63 of the *Rural Fires Act 1997*, public authorities must take all practicable steps to prevent the occurrence and spread of bush fires on or from land vested in or under its control or management.

The proposal at both sites is located within bushfire prone land. Bushfire risk is discussed within **Section 5.12**.

Biosecurity Act 2015 (Biosecurity Act)

The Biosecurity Act provides a framework for the prevention, elimination and minimisation of biosecurity risks. The Biosecurity Act and supporting *Biosecurity Regulation 2017* provide for the establishment and functions of Local Control Authorities for weeds (a county council or a joint organisation, as defined under the *Local Government Act 1993*) and weed control obligations on public and private land.

One WoNS was identified at the Morisset site during the site inspection, including *Lantana camara*. *Lantana camara* is also listed as both a state and regional priority weed under the Hunter Region Strategic Weed Management Plan 2017-22.

Additionally, two regional priority weeds listed under the Hunter Region Strategic Weed Management Plan 2017-22 were identified during site inspections at Arcadia Vale including *Cinnamomum camphora* (Camphor Laurel) and *Hyparrhenia hirta* (Coolatai Grass).

Fisheries Management Act 1994

The FM Act includes provisions to list threatened species of fish and marine vegetation, including endangered populations, ecological communities and key threatening processes (KTPs). If the proposal is likely to significantly impact on the threatened species, populations or ecological communities, then a SIS is required. Under Section 199 of the FM Act, the Minister for Agriculture must be notified before dredging work or reclamation work is authorised by Hunter Water.

The closest waterway is about 40 m from the proposal. The proposal would not impact a natural waterway, aquatic habitat or block the passage of fish. Therefore, the FM Act does not apply to the proposal and consultation is not required.

Water Management Act 2000 (WM Act)

The WM Act provides that certain types of development and activities that have the potential to impact on a water resource are controlled activities which require approval from the Department of Planning and Environment – Water (DPE-Water).

The proposal is not located on waterfront land. As a public authority, Hunter Water does not need to obtain a controlled activity approval (s91E (1)) for any controlled activity that is carried out in, on or under waterfront land (see the *Water Management (General) Regulation 2011* for further detail on exemptions).

No groundwater is expected to be extracted for the proposal. However, if construction activities require extraction of greater than 3 ML of groundwater, then a Water Supply Work Approval must be sought from Department of Planning and Environment – Water.

Waste Avoidance and Resource Recovery Act 2001 (WARR Act)

The WARR Act aims to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ESD.

The proposal would involve efficient use of resources, including utilising resources from local sources where practicable.

Waste generation and management is discussed in **Section 5.11**.

Coal Mine Subsidence Compensation Act 2017 (CMSC Act)

The CMSC Act requires that certain development within mine subsidence districts must obtain approval from the Subsidence Advisory, to ensure new structures are built to an appropriate standard that reduces the risk of damage should subsidence occur.

The proposal at both sites is within land mapped as the West Lake Mine Subsidence District. As such consultation was carried out with Subsidence Advisory NSW and is summarised in **Section 4.1** and provided in **Appendix D**.

Dangerous Goods (Road and Rail Transport) Act 2008 (Dangerous Goods Act)

The Dangerous Goods Act regulates the transport of dangerous goods by road and rail and aims to promote public safety and protect property and the environment. The EPA regulates the on-road transport of dangerous goods, while SafeWork NSW regulates activities prior to transport, including correct classification, packaging and labelling.

Dangerous goods are classified under the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail. Different levels of controls apply to the types of dangerous goods, depending on the size of the receptacle and the total quantity of goods transported.

The transportation of dangerous goods and hazardous chemicals (if required) would be undertaken by a licensed contractor in accordance with legislative requirements and controls (AS 3780 The storage and handling of corrosive substances).

Environmentally Hazardous Chemicals Act 1985 (EHC Act)

The EHC Act controls the use and handling of specific chemicals and chemical wastes. The EPA regulates chemicals of environmental concern and can issue chemical control orders to regulate particular chemicals and / or chemical wastes. Chemical control orders may require a licence or prohibit certain activities such as storing, transporting, or treating chemicals and / or their wastes.

The transportation and delivery of chemicals and chemical waste (if required) would be undertaken by a licensed contractor in accordance with legislative requirements.

3.4 Commonwealth legislation

Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act a referral is required to the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) for proposed actions that have the potential to significant impact on matters of national environmental significance (MNES) or the environment of Commonwealth land.

The EPBC Act lists the MNES that are to be considered when determining whether an activity is a controlled action which requires referral to the Commonwealth Minister for the Environment and Water.

The likelihood of an impact from the proposal on any MNES matters, as listed under the EPBC Act, is discussed in **Section 5.3** and **Appendix C**.

The proposal would not have a significant impact on MNES or the environment of Commonwealth land. Accordingly, the proposal has not been referred to DCCEEW.

Native Title Act 1993 (NT Act)

The NT Act provides a framework for the determination of native title claims within Australia, and for negotiations and decision making regarding the use and management of native title lands and waters. Exclusive rights to land are only available on certain unallocated or vacant Crown lands.

A Native Title Registrar is responsible for maintaining three Registers under the NT Act: the National Native Title Register, the Register of Native Title Claims, and the Register of Indigenous Land Use Agreements (ILUAs).

The proposal would not affect land subject to native title or to which an Indigenous Land Use Agreement applies.

3.5 Licences and approvals

Hunter Water is required to determine the proposal under Division 5.1 of the EP&A Act. A review of relevant legislation has been undertaken in preparation of this REF.

The following approvals may be required for the proposal:

- Subsidence Advisory approval for work within a mine subsidence district under Section 22 of the CMSC Act.

4 CONSULTATION

4.1 Community consultation

During construction, consultation would occur with the community as part of the Construction Community Liaison Plan (CCLP). The CCLP would likely include:

- A letter notifying adjoining landholders and neighbours at the start of works
- A letter notifying adjoining landholders, directly/indirectly impacted neighbours about change of work, proposal delays

Door knocking, meetings, phone calls, emails for directly impacted neighbours as required. The Section 171(4) of the EP&A Regulation 2021 requires that an REF must be published on the determining authority's website or the NSW Planning Portal if:

- The proposal has a capital investment value of more than \$5 million
- The proposal requires an approval or permit under:
 - Sections 144, 201, 205 or 219 of the FM Act
 - Section 57 of the Heritage Act
 - Section 90 of the NPW Act
 - Sections 47-49 of the POEO Act.

While the proposal does not require an approval or permit as listed above, it would exceed the capital investment value of \$5 million. Therefore this REF would be published on the Hunter Water website.

4.2 T&ISEPP consultation

Part 2.2 General, Division 1 of the T&ISEPP prescribes consultation to be undertaken by a public authority prior to the commencement of certain activities. A review of the T&ISEPP consultation requirements for the proposal is provided in **Table 4-1**.

Table 4-1 T&ISEPP consultation requirements

Is consultation with Council required under sections 2.10 -2.12 and -2.14 of T&ISEPP?	Yes/No
Is the proposal likely to have a substantial impact on stormwater management services which are provided by council?	No
Is the proposal likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?	No
Will the proposal involve a connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a council?	No
Will the proposal involve a connection to, and use of a substantial volume of water from, any part of a water supply system owned by a council?	No
Will the proposal involve the installation of a temporary structure on, or the enclosing of, a public place that is under a council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential?	Yes
Will the proposal involve an excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a council is the roads authority under the <i>Roads Act 1993</i> (if the public authority that is carrying out the development, or on whose behalf it is being carried out, is not responsible for the maintenance of the road or footpath).	No

Is consultation with Council required under sections 2.10 -2.12 and -2.14 of T&ISEPP?	Yes/No
Is the proposal likely to affect the heritage significance of a local heritage item, or of a heritage conservation area, that is not also a State heritage item, in a way that is more than minor or inconsequential, and is development that this Chapter 2 of the T&ISEPP provides may be carried out without consent?	No
Is the proposal located on flood liable land? If so, will the works change flood patterns to more than a minor extent?	No
Is the proposal within the coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land? Note: See interactive map here: https://www.planning.nsw.gov.au/policy-and-legislation/coastal-management . 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	No
Is consultation with a public authority other than Council required under sections 2.15 and 2.16 of T&ISEPP?	Yes/No
Is the proposal located on flood liable land and permissible without development consent under the following provision of Part 2.3 of the T&ISEPP?: (a) Division 1 (Air transport facilities), (b) Division 2 (Correctional centres and correctional complexes) (c) Division 6 (Emergency services facilities and bush fire hazard reduction) (d) Division 10 (Health services facilities) (e) Division 14 (Public administration buildings and buildings of the Crown) (f) Division 15 (Railways) (g) Division 16 (Research and monitoring stations) (h) Division 17 (Roads and traffic) (i) Division 20 (Stormwater management systems).	No
Is the proposal adjacent to a national park or nature reserve, or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under Part 11 of that Act?	No
Is the proposal on land in Zone C1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	No
Does the proposal consist of a fixed or floating structure in or over navigable waters?	No
Will the proposal increase the amount of artificial light in the night sky and that is on land within the dark sky region map?	No
Will the proposal be located on defence communications facility buffer land within the meaning of clause 5.15 of the Standard Instrument?	No
Is the proposal on land in a mine subsidence district within the meaning of the <i>Coal Mine Subsidence Compensation Act 2017</i> ?	Yes
Is the proposal on, or reasonably likely to have an impact on, a part of the Willandra Lakes Region World Heritage Property?	No
Is the proposal within a Western City operational area specified in the <i>Western Parkland City Authority Act 2018</i> , Schedule 2 with a capital investment value of \$30 million or more?	No
Is the proposal located on bush fire prone land and for the purpose of a health services facilities, correctional centres, or residential accommodation?	No

Consultation was carried out with Lake Macquarie City Council and Subsidence Advisory as the proposal area overlaps with land under a council's management or control and is within the West Lake Mine Subsidence District. Letters were sent to Lake Macquarie City Council and Subsidence Advisory NSW in November 2023 (refer to **Appendix D**). The letters provided information on the proposal and invited responses with any issues or concerns.

Lake Macquarie City Council issued an approved Hunter Water Minor Public Works Application on the 9 November 2030. The approved application stated that Council has no objections to the works occurring at the above sites as described in the T&ISEPP letter. The application also advises that if Hunter Water wish to occupy Council land for a site depot or for the storage of material then permission would be required and fees applicable.

Subsidence Advisory responded on the 14 November to advise that that neither of the existing reservoirs are directly undermined by coal mineworkings and both locations overlie leases held by Centennial Coal.

5 ENVIRONMENTAL ISSUES IDENTIFICATION

This section provides a description of potential impacts associated with the proposal and specifies measures to mitigate identified impacts. All aspects of the environment potentially impacted by the proposal are considered. A summary of the consideration of factors specified in Section 171(2) of the EP&A Regulation is provided in **Appendix B**. A summary of the MNES under the EPBC Act provided in **Appendix C**.

5.1 Topography, soils and geology

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work require excavations or other ground disturbing activities?	Yes	Excavation works are other ground disturbing activities would be required as part of the proposal. These works may: <ul style="list-style-type: none"> • Trenching for utilities • Local grading and filling as required • Inlet and outlet pipe repair and or removal • Excavation around the base of the reservoirs for the external and seismic strengthening. 	Design drawings are provided in Appendix A and the detailed proposal scope is provided in the <i>Arcadia Vale 1 & Morisset 2 Reservoir Refurbishment Project – Design Report</i> (Jacobs, 2023).
Would the work require plant/vehicular movements on unsealed areas?	Yes	Plant and vehicular movements would occur over unsealed areas. However the impacts are expected to be minor with the implementation of mitigation measures provide in Section 6.1 and the duration of the proposal.	Design drawings are provided in Appendix A and the detailed proposal scope is provided in the <i>Arcadia Vale 1 & Morisset 2 Reservoir Refurbishment Project – Design Report</i> (Jacobs, 2023).
Could the work occur in an area of high erosion risk (e.g., due to nature of soils, topography)?	No	Neither site is within a landslip area, or an area of high erosion risk. The proposal would require minimal excavation and ground disturbance and mitigation measures would be implemented to control erosion risk in Section 6.1 .	eSPADE reviewed 14 June 2023.
Could the work impact on or have the potential to impact on Acid Sulphate Soils (ASS)?	No	Neither site is mapped in areas having a moderate to high risk of any acid sulfate soils (ASS).	Search of ePlanning Spatial Viewer on 14 June 2023.
Could the work impact on areas of known salinity risk?	No	Neither site is not located on land within a salinity mapped area.	Search of ePlanning Spatial Viewer on 14 June 2023.
Could the work result in disturbance of contaminated land?	Yes	There is a small risk that soils historically contaminated as a result of chemical spills (e.g. chlorine) could be exposed. The site is not known to contain asbestos in buildings, structures or soil, and the site is not identified in the EPA contaminated sites register.	NSW EPA Contaminated land record database searched on 14 June 2023.

5.2 Hydrology and water quality

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could the work impact a water catchment area? Do any of the work areas drain directly to Hunter Water special areas?	No	There are no waterways within the proposal area. The nearest waterways do not drain directly to Hunter Water special areas. The nearest Hunter Water drinking water catchment is located more than 20 km north of the proposal in the Port Stephens LGA. The proposal would not impact on a drinking water catchment area or any waterway that drains directly to Hunter Water special areas.	Reviewed 14 June 2023: <ul style="list-style-type: none"> <i>Hunter Water Protecting our Drinking Water Catchments Guideline 2017</i> <i>Hunter Water Regulation 2015.</i>
Could the work impact directly or indirectly on a waterway? (including creek crossings and underboring a waterway)	No	The nearest waterway to the Arcadia Vale site is Sawmill Creek located about 100 m to the east. The nearest waterway to the Morisset site is Dillwynia Creek, which is located approximately 40 m to the south east. No waterways would be impacted by the proposal.	Search of SIX Maps and ePlanning Spatial Viewer on 14 June 2023.
Is the work located on flood prone land? Could the work result in impacts to flooding regimes and flows? Could the work be impacted by flooding?	No	Neither site is located within a floodplain or a flood planning zone.	Search of ePlanning Spatial Viewer on 14 June 2023.
Would the work be likely to encounter groundwater or require discharge of accumulated water?	No	The trenching works may extend to a maximum depth of approximately 2 m. Should groundwater be encountered during the excavations and trenching works, the site would be appropriately managed in accordance with mitigation measures in Section 6.1 .	-
Would the works result in permanent changes to existing surface drainage patterns?	No	The proposal would not impact existing surface water drainage patterns.	Design drawings are provided in Appendix A and the detailed proposal scope is provided in the <i>Arcadia Vale 1 & Morisset 2 Reservoir Refurbishment Project – Design Report</i> (Jacobs, 2023).

5.3 Biodiversity

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work require vegetation removal?	No	<p>The Arcadia Vale site is predominantly cleared. The proposal at this location would require trimming of a tree (<i>Eucalyptus umbra</i> (Broad-leaved White Mahogany)) that overhangs into the site and weeds removed. The tree that would be trimmed is shown on Figure 1-3.</p> <p>The Morisset site has recently been subject to vegetation removal as part of the Dosing Optimisation Strategy Stage 1B Project. This project would utilise the cleared areas at the site and no further vegetation removal would be required.</p>	Design drawings are provided in Appendix A and the detailed proposal scope is provided in the <i>Arcadia Vale 1 & Morisset 2 Reservoir Refurbishment Project – Design Report</i> (Jacobs, 2023).
Would the work occur within the Tree Protection Zone (TPZ) of any trees? (Defined as: 12 x diameter of the trunk at 1.4m high)	Yes	<p>Some of the trenching and excavation activities would be located under the trees' driplines and within the TPZs of the trees. The excavations and trenching works would have the potential to impact tree roots. Where feasible the excavation or trenching works would be undertaken outside of the TPZ.</p> <p>Within the Arcadia Vale site the <i>Angophora costata</i> (Smooth-barked apple) which has a TPZ of 8.4 m would be protected. The <i>Eucalyptus umbra</i> (Broad-leaved White Mahogany) with a TPZ of 5.4 m is proposed to be trimmed as it overhangs into the site, refer to Figure 1-2.</p>	Design drawings are provided in Appendix A and the detailed proposal scope is provided in the <i>Arcadia Vale 1 & Morisset 2 Reservoir Refurbishment Project – Design Report</i> (Jacobs, 2023).
Could the work impact directly or indirectly on BC Act or FM Act listed species or threatened ecological community or areas of outstanding biodiversity value under the BC Act or critical habitat under the FM Act?	No	<p>A search of the NSW BioNet Atlas Database was undertaken to identify the potential for threatened species listed under the BC Act to be present within the proposal area, refer to Appendix E.</p> <p>No threatened ecological communities or flora and fauna species listed under the BC Act were recorded in the proposal area during the site inspection.</p> <p>It was noted that the native vegetation to the east and north of the proposal area at the Morisset site is part of the Narrow-leaved Apple - Parramatta Red Gum - Persoonia oblongata heathy woodland of the Howes Valley area plant community type (PCT) (PCT 1635). This PCT forms part of the BC Act listed Endangered Ecological Community (EEC), Kurri Sand Swamp Woodland in the Sydney Basin Bioregion. However, the site visit confirmed that the vegetation within the proposal area does not meet the criteria for Kurri Sand Swamp</p>	<ul style="list-style-type: none"> • Site inspection undertaken by a qualified ecologist on 15 June 2023 • A search of Bionet Atlas on 14 June 2023, refer to Appendix E.

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
		Woodland in the Sydney Basin Bioregion EEC as it does not meet condition requirements. The proposal would not impact on any threatened listed species or community or areas of outstanding biodiversity value under the BC Act or critical habitat under the FM Act.	
Could the work impact directly or indirectly on an <i>EPBC Act</i> listed species, ecological community or migratory species?	No	A search of the Protected Matters Search Tool (PMST) database was undertaken for a 10 km radius of the proposal area to identify the potential for threatened species listed under the EPBC Act that may be present at the site and list of recorded weeds. No threatened species are expected to occur within the proposal area, and none were recorded at the site during the site inspection. The proposal is not expected to impact on threatened species, ecological communities or migratory species listed under the EPBC Act.	Protected Matters database reviewed 14 June 2023 and provided in Appendix E and Site inspection carried out on the 15 June 2023.
Could the work impact (directly or indirectly) on areas mapped in the Coastal Management SEPP, littoral rainforests, marine parks, national parks estate, biodiversity stewardship sites or wilderness areas?	No	There are no coastal management areas which are listed under the <i>State Environmental Planning Policy (Resilience and Hazards) 2021</i> mapped within the proposal area. The closest coastal management areas mapped is the Lake Macquarie shoreline located about 1.7 km north west of the proposal. Therefore, the proposal is not expected to impact on coastal management areas.	A review of ePlanning Spatial Viewer on 12 June 2023.
Could the work impact (directly or indirectly) on aquatic or riparian vegetation including seagrasses, mangroves or saltmarshes?	No	There are no aquatic features or riparian vegetation located within the proposal area. Given that Lake Macquarie is located about over 1 km from the proposal area, the proposal is not expected to directly or indirectly impact on any aquatic environments or riparian vegetation.	A review of Google on 14 June 2023.
Would the work require the disturbance or removal of any priority or environmental weeds listed in the <i>Hunter Regional Strategic Weed Management Plan 2017-2022</i> ?	Yes	Weeds of National Significance (WoNS) are listed under the National Weeds Strategy. One WoNS was identified at the Morisset site during the site inspection, including <i>Lantana camara</i> . <i>Lantana camara</i> is also listed as both a state and regional priority weed under the <i>Hunter Region Strategic Weed Management Plan 2017-22</i> . Additionally, two regional priority weeds listed under the <i>Hunter Region Strategic Weed Management Plan 2017-22</i> were identified during site inspections at Arcadia Vale including <i>Cinnamomum camphora</i> (Camphor Laurel) and <i>Hyparrhenia hirta</i> (Coolatai Grass).	<ul style="list-style-type: none"> Site inspection carried out on the 15 June 2023 Hunter Region Strategic Weed Management Plan 2017-22 reviewed 22 June 2023.

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
		Appropriate management and disposal of these weeds within the proposal area would be carried out to prevent spread and proliferation.	
Would the work impact on fish passage?	No	The proposal is not located within the vicinity of any aquatic environments. Therefore, the proposal would not impact on fish passage.	-
Would the work have potential to displace fauna or create a barrier to fauna movements?	No	The proposal would be located predominately within cleared areas with limited habitat and is not expected to have potential to displace fauna or create a barrier to fauna movements. Functional connectivity would not be impacted by the proposal and impacts are proposed along existing edges of intact habitat.	Site inspection carried out on the 15 June 2023

5.4 Noise and vibration

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Are there any sensitive receivers in the vicinity of the proposal? (e.g. residential, schools, church, important native fauna populations)	Yes	<p>The closest sensitive receivers to the Arcadia Vale site are the residents located along Donnelly Road. The closest is about 40 north east of the proposal.</p> <p>The closest sensitive receivers to the Morisset site are the residents located along Coorumbung Street. The closest receiver is along Mandolong Street about 20 m north of the proposal.</p> <p>No other sensitive receivers such as schools or churches are located in close proximity to the proposal and therefore would not be impacted by the proposal.</p>	A review of Google aerial imagery on 14 June 2023.
Could the proposal result in construction noise impacts for longer than three weeks, or outside of standard working hours? Was a quantitative noise assessment undertaken?	No	<p>The proposal is expected to be phased over a nine month period <i>Interim Construction Noise Guidelines</i> (ICNG) (DECC, 2009) prescribes that a quantitative assessment be undertaken for proposal that is likely to affect an individual or sensitive land use for more than three weeks. Therefore, a quantitative noise assessment has been conducted using Transport for New South Wales (TfNSW) Construction Noise Estimator Tool (CNE).</p> <p>From the CNE tool, as the proposal areas noise environment can be represented as R1 (i.e. background noise levels are influenced by nearby road traffic noise) which gives a standard hours noise</p>	ICNG (DECC, 2009) and CNE

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)																				
		<p>management level (NML) of 50 dB(A), 40 dB(A), and 35 dB(A) for day, evening and nightworks works for residential receivers.</p> <p>During standard hours additional mitigation measures, such as notification, begin when a receiver experiences noise levels greater than 10 dB(A) above the NML. Receivers where the noise levels exceed 75 dB(A) are considered 'highly noise affected'. 'Highly noise affected' receivers should additionally receive phone calls and a respite offer.</p> <p>A scenario-based assessment of potential noise impacts is provided in Table 5-1. It has been assumed that the dominant noise sources at the proposal area will occur simultaneously, namely jet blasting (abrasive blasting) and hand-held tools. Other plant and equipment may be used, although this combination was identified as being what would be simultaneously in-use at the proposal area most often. It is noted that the assessment methodology applied is inherently conservative.</p> <p>Table 5-1 Quantitative noise assessment</p> <table><tr><th>Noise source</th><th>Max equipment Sound Power level (SWL) (dB(A))</th><th>Distance where NML is exceeded</th><th>Distance where resident notification is required (> 65 dB(A))</th><th>Distance where highly noise affected (> 75 dB(A))</th></tr><tr><td colspan="5">Arcadia Vale</td></tr><tr><td>Compound site establishment (Standard hours only)</td><td>119</td><td>460 m</td><td>130 m</td><td>40 m</td></tr><tr><td>Nightworks (Cranes, generators, hand tools)</td><td>105</td><td>140 m</td><td>25 m</td><td>5 m</td></tr></table>	Noise source	Max equipment Sound Power level (SWL) (dB(A))	Distance where NML is exceeded	Distance where resident notification is required (> 65 dB(A))	Distance where highly noise affected (> 75 dB(A))	Arcadia Vale					Compound site establishment (Standard hours only)	119	460 m	130 m	40 m	Nightworks (Cranes, generators, hand tools)	105	140 m	25 m	5 m	
Noise source	Max equipment Sound Power level (SWL) (dB(A))	Distance where NML is exceeded	Distance where resident notification is required (> 65 dB(A))	Distance where highly noise affected (> 75 dB(A))																			
Arcadia Vale																							
Compound site establishment (Standard hours only)	119	460 m	130 m	40 m																			
Nightworks (Cranes, generators, hand tools)	105	140 m	25 m	5 m																			

Risk identification	Yes/No	Description of potential impact				Source and date (if relevant)															
		<table><tr><th colspan="5">Morisset</th></tr><tr><td>Compound site establishment (Standard hours only)</td><td>119</td><td>460 m</td><td>130 m</td><td>40m</td></tr><tr><td>Nightworks (Cranes, generators etc)</td><td>110</td><td>215 m</td><td>45 m</td><td>15 m</td></tr></table>				Morisset					Compound site establishment (Standard hours only)	119	460 m	130 m	40m	Nightworks (Cranes, generators etc)	110	215 m	45 m	15 m	
Morisset																					
Compound site establishment (Standard hours only)	119	460 m	130 m	40m																	
Nightworks (Cranes, generators etc)	110	215 m	45 m	15 m																	
		Noise mitigation measures are provided in Section 6.1 .																			
Could the proposal result in noise impacts on receivers during construction?	Yes	<p>From the noise assessment, NMLs during standard construction activities are exceeded within 450 m from the construction area. These noise levels are not expected to continue for the duration of works and much of night works if any would be within the actual reservoirs.</p> <p>For standard hour works, additional mitigation measures, such as notification, verification, phone calls and respite office are triggered at 20 m.</p> <p>The proposal would be phased over an estimated nine month period (four and half months per reservoir). Therefore, respite periods would inherently be provided between construction activities. In addition, noisy works generated by the proposal would be intermittent and short-term in nature.</p> <p>A summary of the noise generating scenarios and their duration is as follows:</p> <ul style="list-style-type: none">• Site establishment – four weeks• Excavations and jack hammering/ concrete sawing – four weeks• Internal strengthening/ refurbishment works inside the reservoirs – eight weeks• Jet blasting of external reservoir coating – six weeks• Shotcreting and external strengthening/ refurbishment work – fourteen weeks				-															

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
		<ul style="list-style-type: none"> Site disestablishment – two weeks. Some of these work scenarios would overlap such as the internal and external strengthening and repairs. <p>Wherever possible and safe, works, particularly activities such as jet blasting, jackhammering and concrete cutting, will be limited to standard hours of construction. Mitigation measures are provided in Section 6.1.</p>	
Could the proposal result in noise impacts on receivers during operation?	No	The proposal is not expected to result in noise impacts on receivers during operation.	-
Could the proposal result in vibration impacts on nearby properties or infrastructure?	No	Vibration generating equipment would be used including, small excavators, backhoe, hand tools, and concrete trucks. However, the proposal is unlikely to have vibration impacts on nearby properties or on site infrastructure due minor nature of the works and proximity to properties.	-

5.5 Non-Aboriginal heritage

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Were all relevant heritage database searches carried out?	Yes	Searches identified that the proposal area at Acadia Vale is adjacent to the Wangi Power Station Complex which is listed on both the State Heritage Register (listing: 01014) and under the Lake Macquarie LEP (listing: 191). A search of the heritage databases did not identify any heritage listed items within the vicinity of the proposal area at Morisset.	<p>A search of the following databases on 14 June 2023:</p> <ul style="list-style-type: none"> NSW State Heritage Register National Heritage Register Commonwealth Heritage Register Register of the National Estate Lake Macquarie LEP 2014.
Could the works impact on an item of heritage significance or a heritage conservation area?	No	<p>No items of heritage significance, or heritage conservation areas, are located in the proposal area.</p> <p>Therefore, the proposal is not expected to impact on items of heritage significance or heritage conservation areas.</p>	-

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could the works impact on areas of archaeological potential?	No	The site has previously been disturbed with infrastructure and reservoir operation. Due to limited excavations and minor nature of the proposal it is not expected to impact areas of archaeological potential.	-

5.6 Aboriginal heritage

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work require ground disturbance?	Yes	The proposal would require minor ground disturbance for trenching and excavation activities for the proposal elements.	-
Has an Aboriginal Heritage Information Management System (AHIMS) search been completed and were any known Aboriginal items or places identified within or in the vicinity of the proposal site?	Yes	A search of the DPIE EES Aboriginal Heritage Information Management System (AHIMS) database was undertaken for the proposal with a 200 m buffer. This search did not show any Aboriginal site records and did not identify any registered or known Aboriginal places in or near the proposal area. As the proposal would be contained within an existing disturbed area of the site, the presence of items of Aboriginal heritage in the proposal area is unlikely.	DPE – AHIMS Web Services searched 23 June 2023. Refer to Appendix E for the AHIMS search results.
Would the work occur in or near sensitive landscape features as defined in the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (2010)?	No	While the proposal does involve a small amount of ground disturbance, the sites have been previously disturbed and are not considered nearby or in a sensitive landscape.	-
Could harm to AHIMS listed sites or places or landscape features be avoided?	No	There are no AHIMS sites, places or landscape features near the proposal.	-

5.7 Traffic and access

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the works occur on a public road and could the proposal disrupt traffic flow or access during construction?	No	The proposal at the Arcadia Vale site would be accessed via Donnelly Road, Arcadia Vale. The proposal at the Morisset site would be accessed from Coorumbung Street and Mandolong Street, Morisset. Vehicles would be able to park within the proposal area. Given the low numbers of vehicles required and the low traffic volume on surrounding streets, it is considered that the local streets have	Google Earth reviewed 14 June 2023.

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
		<p>sufficient capacity to adequately cater for the minimal and temporary traffic increase during construction. Queuing of construction vehicles would not occur on the local road network and the proposal vehicles would not obstruct property access.</p> <p>No road closures would be required for the proposal, however there may be minor disruptions along Mandolong Street during the installation of the new driveway.</p>	
Could the proposal disrupt pedestrian or cycle access during construction?	No	<p>There are no formal footpaths along Mandolong Street, Coorumbung Street or Donnelly Road.</p> <p>No disruptions to pedestrian or cycle access would be expected along Coorumbung Street.</p>	Google Earth reviewed 14 June 2023.
Could the proposal result in permanent changes to traffic flow or access during operation?	No	<p>Due to the low number of vehicles accessing the sites and the available of space to park within the site, there would be no difficulties associated with the continued operation of the site.</p>	-
Could the proposal result in impacts on available parking during construction or operation?	No	<p>Construction vehicles (including workers' vehicles) would be able to park within at the site. Street parking would not be required and no impacts to private property access would occur during construction works.</p> <p>No impacts to private property access would be expected to occur during the proposal.</p> <p>No operation impacts are expected.</p>	Google Earth reviewed 14 June 2023.

5.8 Visual environment

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could the proposal be visible by residential or other sensitive receivers?	Yes	<p>There would be limited view of the Arcadia Vale proposal for the residences located in the vicinity as the residence are below road level on the eastern side of the low side of Donnelly Road. However, the Arcadia Vale site would be clearly visible for road users along Donnelly Road, refer to Photo 2-1.</p> <p>Limited views of the Morisset site are available to a few residences located along Coorumbung Street and Mandolong Street. Trees along the borders of the site currently help to screen the site and therefore the proposal.</p>	Google Earth reviewed 14 June 2023.

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the proposal result in permanent changes to the visual environment through installation of any above ground infrastructure or removal of vegetation?	Yes	The proposal is not expected to change the character of either site as no new elements of significance would be added at either site, other than replacing the existing external roof access ladders with stairs. The new stairs are proposed to improve safe access to the reservoir roof and would have limited views by residents. The new exterior coating system would be of a similar green colour to the existing coating and in accordance with Hunter Water's Potable Water Reservoir Specification STS409.	-
Would the work be located in an area of high scenic value?	No	The proposal is not in areas of high scenic value.	-
Would the work require additional lighting during construction or operation?	Yes	Out of hours evening and nightworks may be necessary to expedite the proposal. Therefore, lighting would be required during these construction works for safety reasons but would be managed appropriately to minimise potential light spill. Appropriate notification would be provided to local residences in accordance with Hunter Water's procedure for out of hours works.	-

5.9 Socioeconomic, land use and services

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could the work impact private property including access?	No	No access to private property would be required and access to surrounding private properties would be maintained during construction. Therefore, the proposal would not impact private property.	-
Could the work impact busy commercial areas or local businesses?	No	The proposal is not located within busy commercial areas.	-
Could the work result in a loss of an existing land use either during construction or operation?	No	There would be no loss of land use.	-
Would the proposal result in the installation of a structure or facility that could be considered objectionable or a nuisance?	No	The proposal would not result in any installation of a new structure or facility that would be considered objectionable or a nuisance.	-

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work require disruption to water or sewerage services?	No	The proposal would require temporary disruption to the operation of the reservoirs as they would need to be emptied to facilitate the internal strengthening and refurbishment works. However, this would not cause a disruption to water or sewer services.	-

5.10 Energy and air quality

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could the work result in air quality impacts on sensitive receivers during construction or operation? (e.g. dust, odours)	Yes	Minor earthworks such as trenching are required for the proposal and therefore ground disturbance is expected. During earthworks, exposed soils have the potential to generate dust during adverse weather conditions. Some vehicle and plant emissions may also be generated due to construction activities. Given the proposal requires a small equipment fleet resulting in a relatively small level of vehicle movements, air emissions from combustion are expected to be minimal.	Design drawings are provided in Appendix A and the detailed proposal scope is provided in the <i>Arcadia Vale 1 & Morisset 2 Reservoir Refurbishment Project – Design Report</i> (Jacobs, 2023).
Would the work involve the use of fuel-driven machinery or equipment (other than from vehicles transporting personnel to site)?	Yes	Light and heavy vehicles including service vehicles and trucks would be required for daily use. The use of an excavator, concrete truck and backhoe would also be required during the proposal. There would be no changes to the current operational access requirements.	-
Would the operation of the proposal result in high energy use and was energy use considered in the design development?	No	The proposal is not sufficiently large to warrant energy use to be calculated and the energy use during operation is not expected to increase.	-

5.11 Waste and resource use

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work result in generation of 'non-hazardous' waste? If so, how would this be managed?	Yes	<p>Apart from regular or emergency maintenance works which may result in the generation of used parts or packing material for new reservoir related infrastructure, there is currently no other significant wastes produced.</p> <p>All waste including excess spoil and jet blast water/sediment would be classified and disposed of in accordance with Waste Classification Guidelines (NSW EPA, 2014) and disposed of at a registered waste</p>	-

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
		management facility or reused for maintenance activities where there is suitable classification.	
Would the work result in the generation of 'wastewater' (e.g. process wastewater, chlorinated water, sediment-laden water, drilling fluid, groundwater generated by drilling)?	Yes	The proposal would generate jet blast water/sediment and potential concrete washout water which would be contained, classified and disposed in accordance with Waste Classification Guidelines (NSW EPA, 2014).	-
Would the work result in asbestos, contaminated soils or other hazardous waste?	Yes	Both sites are not identified in the EPA contaminated sites. The Hunter Water Asbestos register indicates that asbestos may be present at the Arcadia Vale Reservoir. The Morisset reservoir is not listed on the register. There is also the possibility that lead was used in the old coating system and as part of the some of the reservoirs' components. The proposal design has assumed that there is the potential for asbestos and lead to be present and prior to the works commencing the contract would carry out testing for asbestos and / or lead. Should either lead or asbestos be found to be present then the contractor will prepare a lead and/or asbestos management plan which will be implemented during construction.	Reviewed 21 June 2023: <ul style="list-style-type: none"> Hunter Water Asbestos register NSW EPA Contaminated land record database.
Have opportunities for waste reduction and/or reuse been considered?	No	Given the minimal resources required and minor potential for waste generation, waste reduction opportunities were not considered.	-

5.12 Hazards and risks

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the proposal be located in a bushfire risk area or have potential to result in a bushfire risk?	Yes	The site is within the Bushfire Vegetation Buffer zone on the Lake Macquarie City Council Bushfire Prone Land Map. A Hot Work Permit system, or similar system, is to be used where there is potential for a spark being generated or a naked flame in use to minimise risks of starting a fire.	Reviewed 26 June 2023: <ul style="list-style-type: none"> ePlanning spatial viewer Lake Macquarie LEP 2014.
Would the work include handling hazardous chemicals or dangerous goods?	Yes	The proposal would include the use of paints and epoxy resins and other chemicals that may be considered hazardous materials. The storage, and management and transport of dangerous goods and	-

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
		hazardous materials (if required) will occur in a safe, secure location consistent with the requirements of applicable Australian Standards and the Dangerous Goods Act (if applicable).	
Would the proposal be located in a coastal area that could be subject to coastal hazards?	No	The proposal is not located within a mapped coastal area as such it is unlikely for the proposal to be subject to coastal hazards.	Google Earth reviewed 08 June 2023.
Would the work result in any other hazards or risks to the environment?	No	The proposal would not result in other hazards or risks to the environment.	-

5.13 Cumulative impacts

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could impacts from other projects interact with the proposal?	No	<p>Due to the minor nature of the work and because most of the works would be contained with the existing Arcadia Vale and Morisset and sites, the proposal is not expected to be impacted by or to impact on other projects.</p> <p>The works currently being carried out at the Morisset site as part of a different project would be completed by the time the proposal is expected to commence.</p>	-

6 ENVIRONMENTAL SAFEGUARDS AND OTHER REQUIREMENTS

6.1 Mitigation measures

This section provides a list of environmental mitigation measures to be implemented to reduce the potential for environmental impacts during the construction and operation of the proposal. The measures must be incorporated as conditions of contract in any contract or work specification for the proposal and a Construction Environmental Management Plan (CEMP) for the proposal.

Aspect	Ref no.	Mitigation measure
Topography soils and geology	G1	A CEMP will be prepared prior to commencement of work.
	G2	Induct all workers on the sensitivities of the work site and relevant mitigation measures.
	G3	If Hunter Water and / or the Contractor wish to occupy Council land during construction of the proposal for a site depot or for the storage of material then permission will be required and fees applicable.
	TSG1	The CEMP prepared for the works is to include an erosion and sediment control plan (ESCP) which must include as a minimum the type and location of sediment/erosion controls to be used.
	TSG2	All services in the vicinity of the works will be located in the field and noted in the work plans prior to excavation works - Before You Dig.
	TSG3	Erosion and sediment controls are to be implemented and maintained consistent with <i>Managing Urban Stormwater: Soils and Construction. Fourth Edition ed. Sydney (NSW) (Landcom, 2004)</i> (the Blue Book). Controls must: <ul style="list-style-type: none"> • Be installed prior to disturbance commencing • Prevent sediment moving off-site and sediment laden water entering any watercourse, drainage line, or drain inlets • Divert clean surface flow around exposed areas and stockpiles • Reduce water velocity and capture sediment • Minimise the amount of material tracked onto paved surfaces • Be cleaned out before 30% capacity of controls is reached.
	TSG4	The existing groundcover in the footprint of the work will be maintained as far as possible to assist in erosion and sediment control.
	TSG5	Topsoil will be stripped from areas to be excavated, stored separately to subsoil and then used to rehabilitate disturbed areas.
	TSG6	Disturbed areas will be stabilised as soon as practical after completion of works. Erosion and sediment controls will not be removed until suitable ground cover is achieved in accordance with the Blue Book.

Aspect	Ref no.	Mitigation measure
	TSG7	All excavated material will be reinstated upon completion of the proposed works where possible. Where not possible, spoil material would be tested and disposed of at a suitable waste facility.
	TSG8	Weather forecasts will be checked prior to commencing works and scheduled to avoid heavy rain and flood events.
	TSG09	If during construction activities, contaminated soils are uncovered or are suspected to have been uncovered due to odour or discolouration of soils works will cease immediately, the Hunter Water Project Manager will be contacted and the appropriate management requirements determined.
Hydrology and water quality	HWQ1	An Incident Management Plan (IMP) will be prepared as part of the Contractor's CEMP and will include a contingency plan and emergency procedures for dealing with the potential spillage of fuel or other environmental incidents that may occur on the work site. The IMP should also contain procedures dealing with the unexpected onset of rainfall during the work period.
	HWQ2	The storage and handling of fuels and chemicals will comply with Australian Standard AS1940. This includes the provision of a 'spill kit' to be kept on site at all times for potential chemical or fuel spills. All staff are to be made aware of the location of the spill kit and trained in its use. No chemicals, fuels, and/or waste will be stored or collected for disposal within or adjacent to drainage lines or unsealed surfaces.
	HWQ3	Refuelling, fuel decanting and vehicle maintenance work will take place in a designated area on an impermeable surface.
	HWQ4	Should groundwater extraction be required during construction, a Water Supply Work Approval will be sought from DPE - Water. Where greater than 3 ML in a financial year, Water Access Licence (WAL) would also be required. Any dewatering of groundwater should be undertaken in accordance with an approved dewatering management plan (DMP), which may include water quality requirements and discharge locations.
	HWQ5	The final ground level of the restored sites will ensure no depressions or areas of concentrated surface flow to avoid channelling, waterlogging and erosion.
	HWQ6	Daily checks of vehicles working on the construction works will be conducted to ensure that no oils or fuels are leaking.
	HWQ7	Jet blast water/sediment and concrete washout will be captured and contain for classified and disposed in accordance with Waste Classification Guidelines (NSW EPA, 2014).
Biodiversity	B1	Detailed design will seek limit disturbance of vegetation to the minimum necessary to construct the proposal.
	B2	The full extent of approved vegetation clearance will be clearly documented and mapped in site CEMP(s). All construction activities, including but not limited to vegetation clearing, are to be strictly confined to the proposal area assessed in this MWREF.
	B3	Vegetation clearing limits will be clearly established and communicated to personnel, as detailed in Figure 1-2 and Figure 1-3 . No disturbance, removal or trimming of any native vegetation is to occur outside the proposal area.

Aspect	Ref no.	Mitigation measure
	B4	Where trees (including roots) are required to be pruned, an arborist would be required to assess the trees and recommend pruning that would not jeopardise the health of the tree.
	B5	Materials/equipment lay-down areas will be shown in the CEMP(s) and located in cleared or degraded areas to prevent any damage to the surrounding vegetation or habitat.
	B6	Materials, plant, equipment and stockpiles will not be stored within the drip-lines of any trees at the site(s) or near the site(s).
	B7	Excavations not back-filled at the end of the day are to be covered prior to nightfall to avoid presenting an obstacle or trap to fauna. If this is not possible, provide a means by which fauna can escape e.g., branch extending out of trench.
	B8	Check trenches / pits / excavations each morning for trapped fauna.
	B9	If any threatened species are discovered before or during the work that may be at direct risk from the proposed works, stop work immediately and contact the Project Manager and Hunter Water Environmental Planner.
	B10	The sites will be restored in a manner consistent with the surrounding area where required (e.g., turf, native vegetation plantings). The appropriate method of site restoration will be confirmed with the Hunter Water Environmental Planner and included in the CEMP.
Noise and vibration	N1	Provide at least seven days notice to the potentially affected residential receivers prior to starting work. Seven days prior to works commencing Hunter Water.
	N2	<ul style="list-style-type: none"> • Wherever possible, works will be carried out during standard work hours (i.e. 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm Saturday) • Wherever possible and safe, limit works, particularly activities such as jet blasting, jackhammering and concrete cutting, to standard hours of construction • Where noisy activities cannot be scheduled to standard construction hours, noisy activities should be scheduled to take place earlier in the night, during less sensitive time periods.
	N3	<p>The following measures will be implemented during construction to reduce noise impacts:</p> <ul style="list-style-type: none"> • Personnel will be inducted and trained in noise control measures to reduce impacts on receivers during inductions and toolbox talks • All vehicles and plant will be turned off when not in use • Select low-noise plant and equipment • Use only the necessary size and powered equipment for tasks • All stationary and mobile equipment will be fitted mufflers and in serviceable condition. Generators, if used are to have sound proof enclosures • Where possible, concentrate noisy activities at one location and move to another as quickly as possible

Aspect	Ref no.	Mitigation measure
		<ul style="list-style-type: none"> • Construction vehicles including trucks will not be allowed to queue on local roads or if it is required for safety reasons, engines will be switched off • Where possible, all plant are to utilise a broad band reverse alarm and the need to reversing manoeuvres will be minimised • Deliveries will be scheduled during standard work hours only • No dropping of materials from height where practicable and no throwing of metal items • Switching off any equipment not in use for extended periods e.g. heavy vehicle engines would be switched off whilst being unloaded • Avoiding any unnecessary noise when carrying out manual operations and when operating plant • Consider the installation of temporary construction noise barriers for concentrated, noise-intensive activities • Where practicable, install enclosures around noisy mobile and stationary equipment as necessary • Where possible, avoid simultaneous operation of two or more noisy plant close to receivers • The offset distance between noisy plant and sensitive receivers should be maximised • Plan traffic flow, parking and loading/unloading areas to minimise reversing movements • Complete routine monitoring to evaluate construction noise levels and evaluate whether the mitigation measures in place are adequate or require revision • Implement 'additional noise measures' commensurate to the measured level of exceedance and period of the day as listed in Appendix B of the CNVG.
	N4	<p>The following measures will be implemented during construction to reduce vibration impacts:</p> <ul style="list-style-type: none"> • Choosing alternative, quieter lower-impact equipment or methods wherever possible • Scheduling the use of vibration-causing equipment at the least sensitive times of the day (wherever possible) • Locating high vibration sources as far away from sensitive receiver areas as possible • Sequencing operations so that vibration-causing activities do not occur simultaneously • Keeping equipment well maintained.
	N5	<p>A complaint management procedure will be developed. Community complaints will be allocated to a responsible contractor representative immediately to facilitate investigation, respond to the complainant, review noise mitigation measures and to implement any corrective actions. The details of the complaint will also be circulated to the applicable construction personnel for action, where required.</p>
Non—Aboriginal heritage	H1	<p>If non-Aboriginal heritage items are discovered during the course of the proposal, all work will cease in the area and the Contractor will inform the Hunter Water Project Manager and Archaeologist as soon as possible. Hunter Water will determine the preferred management approach and the local council and/or Heritage NSW will be notified via the Hunter Water Project Manager if required.</p>
Traffic and access	T1	<p>The Contractor will prepare a Traffic Management Plan. Should work on public roads be required then consultation with the relevant traffic authority(s) should be undertaken.</p>

Aspect	Ref no.	Mitigation measure
	T2	Current traffic movements and property accesses will be maintained during the works.
	T3	Appropriate exclusion barriers, signage and site supervision will be employed at all times to ensure that the work site is controlled and that unauthorised vehicles and pedestrians are excluded from the works area.
	T4	Parking of vehicles and storage of plant/equipment is to occur in clearly designated existing cleared areas. Vehicles and machinery must not be parked on vegetated areas.
	T5	Current traffic movements and property accesses will be maintained during the works.
	T6	Movements of heavy vehicles would be restricted to standard work hours (i.e., 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm Saturday).
Visual environment	V1	The new coating system will be of a similar green to the existing coating and in accordance with Hunter Wates' Potable Water Reservoir Specification STS409 (Hunter Water, 2009).
	V2	Restore work sites as close to their original condition as possible at completion of the works.
	V3	On completion of the works, all vehicles, construction equipment, materials, and refuse relating to the works will be removed from the work site(s) and any adjacent affected areas.
	V4	Work areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.
	V5	Where lighting is required, it will be orientated to minimise glare and light spill impacts on adjacent receivers.
Socio economic, land use and services	SLS1	Maintain a complaints register, respond to any complaints and notify the Hunter Water Project Manager as soon as possible within 24 hours.
	SLS2	Erect signage containing proposal information and contact details in a prominent location.
	SLS3	Work sites will be restored as close to their original condition as possible following the completion of the proposed works.
	SLS4	Hunter Water will continue to consult with Lake Macquarie City Council regarding the proposal and site access.
Air quality and energy	A1	Machinery and vehicles will not be left running or idling when not in use.
	A2	Operate the site in accordance with existing Hunter Water Operating Procedures.
Waste and resource use	WR1	<p>The Contractor's recycling and reuse will be detailed in the CEMP will follow the resource management hierarchy principles (in accordance with the WARR Act 2001):</p> <ul style="list-style-type: none"> • Avoid unnecessary resource consumption as a priority • Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery)

Aspect	Ref no.	Mitigation measure
		<ul style="list-style-type: none"> Disposal is undertaken as a last resort.
	WR2	Dispose of all excess material (that cannot be reused or recycled) as soon as practicable, to a facility licensed to accept the waste as per the waste classification results (tested by a suitably qualified person in accordance with the <i>NSW Waste Classification Guidelines (2014)</i>). Retain disposal receipts and provide to Hunter Water contract manager on request.
	WR3	Any fuel, lubricant or hydraulic fluid spillages will be collected using absorbent material and the contaminated material disposed of at a licensed waste facility.
	WR4	Contractors are required to report in the 'Contract Environmental Management Report' monthly waste streams/volumes to Hunter Water.
	WR5	All vessels used for contaminated or hazardous waste should be sealed, labelled according to their contents, and stored within bunded areas until their removal from the work site.
Hazards and risk	HR1	The proposal design has assumed that there is the potential for asbestos and lead containing materials to be present. Prior to the works commencing the contract will carry out testing for asbestos and / or lead. Should either lead or asbestos be found to present then the contractor will prepare a lead and/or asbestos management plan which will be implemented during construction.
	HR2	Emergency contacts will be kept in an easily accessible location. All workers will be advised of these contact details and procedures.
	HR3	Works generating sparks etc are to be undertaken utilising a 'Hot Work Permit' or similar process that outlines measures to mitigate potential fire risks. Fire extinguishers should be located within the work sites and/or on machinery/vehicles.
	HR4	The recommendation in the <i>Bushfire Assessment Report - Hunter Water Corporation Morisset Reservoir</i> (Bushfire Environmental management Consultancy, 2021) will be considered during details design.
	HR5	Vegetation within the site will be managed to minimise bushfire risks. It is recommended that Hunter Water continue to regularly manage and maintain the site to ensure the survivability of the structures onsite in the event of a bushfire.
	HR6	The storage, and management of dangerous goods and hazardous materials (if required) will occur in a safe, secure location consistent with the requirements of applicable Australian Standards.
	HR7	The transportation of dangerous goods and hazardous chemicals would be undertaken by a licensed contractor in accordance with legislative requirements and controls (<i>AS 3780 The storage and handling of corrosive substances</i>).
	HR8	<ul style="list-style-type: none"> Prior to the works commencing the contract will carry out testing for Asbestos and / or lead Should either lead or asbestos be found to present then the contractor will prepare a lead and/or Asbestos management plan.

Aspect	Ref no.	Mitigation measure
	HR9	If during construction activities, unexpected contamination (including lead or asbestos) is suspected to be present the works will cease immediately, the Hunter Water Project Manager will be contacted and the appropriate management requirements determined.
Cumulative impacts	N/A	N/A

7 CERTIFICATION

This MWREF provides a true and fair review of the proposal and its potential impacts on the environment in accordance with the environmental impact assessment requirements of the EP&A Act.

Prepared by



Tina Donovan

Senior Associate Environmental Planner

Date: 22/11/2023

Reviewed by



Vivira Samuel

Associate Environmental Planner

Date: 22/11/2023

8 REFERENCES

DECC, 2006. *Assessing Vibration: a technical guideline*

DECC, 2009. *Interim Construction Noise Guideline*

DECCW, 2010. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*. Sydney: NSW Government

DoE, 2013. *EPBC Act Policy Statement 1.1 Significant Impact Guidelines*

DPI, 2023. *Weeds of National Significance*

Hunter Water, 2009. *Potable Water Reservoir Specification STS409*

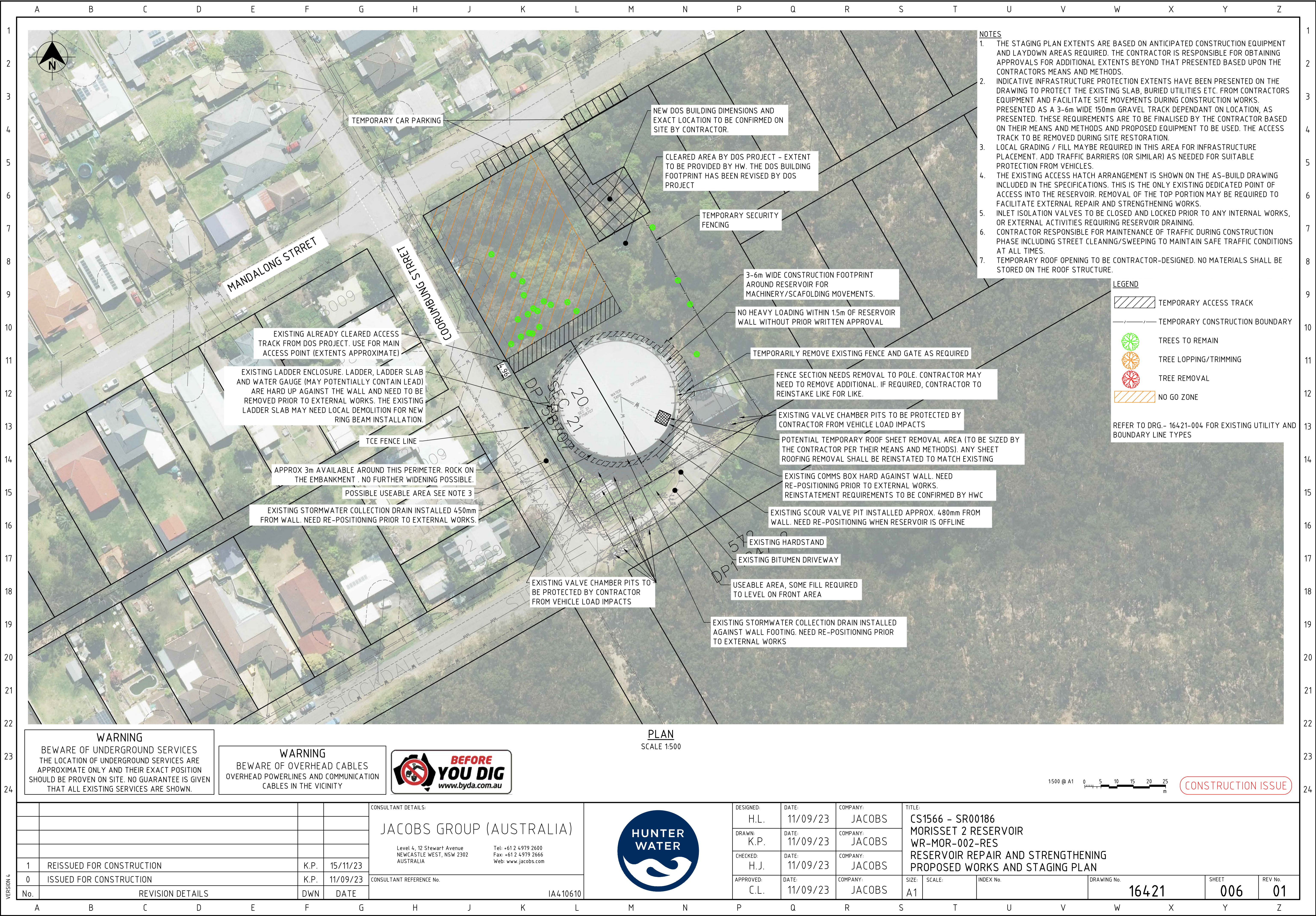
Jacobs, 2023. *Arcadia Vale 1 & Morisset 2 Reservoir Refurbishment Project – Design Report*.

NSW EPA, 2014. *Waste Classification Guidelines*

NSW RFS, 2019. *Planning for Bushfire Protection: A guide for councils, planners, fire authorities and developers*

RMS, 2016. *Construction Noise and Vibration Guideline*

APPENDIX A DESIGN DRAWINGS



APPENDIX B SECTION 171(2) FACTORS

The following factors listed in Section 171(2) of the EP&A Regulation have been considered to assess the likely impacts of the proposal on the environment.

Factor	Impact
Any environmental impact on a community?	Positive long term impact / Negative minor short term impact
Any transformation of a locality?	Negative minor short term impact
Any environmental impact on the ecosystems of a locality?	Negative minor
Any reduction of the aesthetic, recreational, scientific, or other environmental quality or value of a locality?	Negative short term minor impact
Any effect on a locality, place or building that has, aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?	Negligible impact
Any impact on habitat of any protected animals, within the meaning of the <i>BC Act</i> ?	Negative short term minor impact
Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	Negative short term minor impact
Any long-term effects on the environment?	Positive long term impact
Any degradation of the quality of the environment?	Negative minor short term impact
Any risk to the safety of the environment?	Positive long term impact
Any reduction in the range of beneficial uses of the environment?	Positive long term impact
Any pollution of the environment?	Negative short term minor impact
Any environmental problems associated with the disposal of waste?	Negative short term minor impact
Any increased demands on resources, natural or otherwise which are, or are likely to become, in short supply?	Nil
Any cumulative environmental effect with other existing or likely future activities?	Nil
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	Nil
Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	Positive long term impact
Other relevant environmental factors	Nil

APPENDIX C MNES CHECKLIST

The following MNES have been considered as required by the environmental assessment provisions of the EPBC Act. This review assists in determining whether the proposal should be referred to DCCEEW.

Environmental factor	Impact
Any impact on a World Heritage property?	Nil
Any impact on a National Heritage place?	Nil
Any impact on a wetland of international importance (often called 'Ramsar' wetlands)?	Nil
Any impact on nationally threatened species, ecological communities or migratory species?	Nil
Any impact on a Commonwealth marine area?	Nil
Does the proposal involve a nuclear action (including uranium mining)?	Nil
Any impact on the Great Barrier Reef Marine Park?	Nil
Any impact on a water resource, in relation to coal seam gas development and large coal mining development?	Nil
Additionally, any impact (direct or indirect) on the environment of Commonwealth land?	Nil

APPENDIX D CONSULTATION



Hunter Water Corporation
ABN 46 228 513 446

PO Box 5171
HRMC NSW 2310
36 Honeysuckle Drive
NEWCASTLE NSW 2300
1300 657 657
enquiries@hunterwater.com.au
hunterwater.com.au

2 November 2023

Our Ref: HW2020-1210/3/3.002

The Manager
Lake Macquarie City Council
Box 1906, Hunter Regional Mail Centre
NSW 2310

By email: council@lakemac.nsw.gov.au

Hello from Hunter Water

Consultation on the proposed Arcadia Vale 1 and Morisset 2 Potable Water Reservoir Refurbishment

Hunter Water owns and operates a large and complex potable water and wastewater network, including pumping stations, service reservoirs and chlorination installations.

We are proposing to carry out refurbishment works at the Arcadia Vale 1 and Morisset 2 Potable Water Reservoirs to address structural integrity and longevity concerns (the proposal).

The proposal will repair and strengthen the reservoirs to reinstate full storage capacity to help improve operational performance of the network.

Attachment A, Attachment B and Attachment C have been provided for further information on this proposal.

A Minor Works Review of Environmental Factors (MWREF) is currently being prepared by Jacobs on behalf of Hunter Water. The purpose of the MWREF is to assess the likely impacts associated with the proposal under Division 5.1 of the *Environmental Planning and Assessment Act 1979*.

The proposal encroaches onto land which is under local council management or control at both sites. Under the *State Environmental Planning Policy (Transport and Infrastructure) 2021*, Hunter Water is required to consult with Lake Macquarie City Council under Division 1, clause 2.10 due to the potential impacts of the proposal on Council land. Hunter Water invites your organisation to provide comment and advise of any interests, concerns or statutory requirements relating to the proposed works. Comments received will be considered in finalising the MWREF.

Please provide any comments about this proposal within 21 calendar days from the date of this letter. Hunter Water will consider any response received from Lake Macquarie City Council within this period in its assessment of the proposal.

If you require further information, please contact me on 0422 223 502 or Jeremy.oliver@hunterwater.com.au.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Jer", written over a light blue circular stamp.

Jeremy Oliver
Project Manager
Hunter Water

Attachment A: Proposal description

Background

Hunter Water proposes to carry out refurbishment works at the Arcadia Vale 1 and Morisset 2 Potable Water Reservoirs to address structural integrity and longevity concerns (the proposal).

Hunter Water has identified structural integrity and longevity concerns of the reservoirs:

The reservoirs were originally built in the 1960s and have a history of concrete delamination and spalling. The current water storage level of the reservoirs has been reduced to 60 per cent (%) at Arcadia Vale and 80% at Morisset, due to concerns regarding their structural integrity.

The proposal will repair and strengthen the reservoirs to reinstate full storage capacity for an additional service life of 30+ years.

Key elements of the proposal include:

- Reservoir repairs:
 - Remove existing joint sealant at slab construction joints and replace
 - Repair / remediate localised cracks on the internal and external walls
 - Remove and replace of spalling and delaminated concrete render to external wall
 - Repair localised protective coating breakdown, and substrate corrosion
 - Replace the existing vermin proof mesh at the top of the reservoir
 - Replace existing external roof access ladder with new freestanding external roof access stairs for improved safe roof access.
- Internal strengthening:
 - Install steel brackets connecting reservoir footing to the wall
 - Apply carbon fibre laminates and concrete mortars on the internal wall
 - Remove and patch softened concrete.
- External strengthening:
 - Install external tensioned monostrand cables around circumference of wall and application of protective mortar coating
 - Extend width of existing concrete footing by 300 mm
 - Apply paint coating to external wall with colour to match existing painted finish.

Location

The proposal is within the Lake Macquarie City Local Government Area (LGA) as shown in **Attachment B**. The majority of the proposal would be within the Arcadia Vale 1 reservoir site at 124 Donnelly Road, Arcadia Vale and within the Morisset 2 Reservoir site located at 17 and 17A Stockdale Street, Morisset.

The proposal overview is shown in **Attachment C** (C-1 and C-2). The proposal area includes ancillary and laydown areas which may be used for the temporary storage of plant, materials, stockpiling and site facilities.

Construction methodology

A Construction Environmental Management Plan would be prepared by the construction contractor and endorsed by Hunter Water prior to construction to guide the approach to environmental issues during construction.

The proposal would include the following construction activities:

- Site establishment including installation of site sheds, temporary fencing, stockpile areas, erosion and sediment controls and vegetation removal
- Protection and existing infrastructure, private property, and public property
- Draining the reservoirs in accordance with Hunter Water standard procedures
- Carrying out reservoir repairs and strengthening works
- Installing new external staircase at each reservoir
- Leakage testing of each reservoir on completion of works

- Reservoir re-filling activities at project completion to bring the reservoirs back into service
- Reinstatement of disturbed areas and demobilisation from site.

The proposal is minor in nature and not expected to have any significant environmental impacts. The proposal is expected to result in a positive outcome and improve operational performance of the network.

Timing

The proposal is anticipated to commence in mid-2024 and take about nine months to complete in a staged approach (four and half months per reservoir), with Arcadia Vale 1 reservoir first followed by Morisset 2 reservoir.

Work would be generally carried out during standard construction working hours. However, in order to expedite the proposal in order to avoid having the reservoirs off line for an extended period, it may be necessary to carry out some construction activities outside these standard working hours, including at night. If works are required outside of standard working hours, the works would need to be clearly justified, appropriate control measures identified and approval from Hunter Water would be required prior to works commencing. Appropriate notification would be provided to local residents in accordance with Hunter Water's procedure for out of hours works.

Attachment B: Locality figure



Attachment C-1: Proposal overview – Arcadia Vale



Attachment C-2: Proposal overview – Morisset



At the time of publishing many of the trees in the proposal area had been cleared as part of a different project. The aerial imagery does not reflect the actual vegetation within the proposal area.



1:1,000 at A4
GDA 1994 MGA Zone 56



Attachment C-2 Morisset Proposal overview

Jacobs | 100m Square | Working in the bush | Creating a better future | www.jacobs.com

The information and materials contained within this document are the intellectual property of Jacobs and are intended to be used for the purposes of the project. The information and materials contained within this document are not to be used for any other purpose without the prior written consent of Jacobs. The information and materials contained within this document are not to be used for any other purpose without the prior written consent of Jacobs.



Hunter Water Minor Public Works Application

Thursday, 9 November 2023

Company : Hunter Water

Utility : Hunter Water

Notice of Determination

Issued under section 138 of the Roads Act 1993

Approval : AM8711
Description : Arcadia Vale 1 (124 Donnelly Road, Arcadia Vale) and
Morisset 2 Potable Water Reservoir Refurbishment (17-17A
Stockdale Street Morisset

Determination : Approved
Consent to operate from Saturday, 01 June 2024
Consent to lapse on Tuesday, 24 June 2025

Council has no objections to the works occurring at the above sites as described in Hunter Water Ref HW2020-1210/3/3.002.

Please advise if you wish to occupy Council land for a site depot or for the storage of materials. If so, Council permission is required and fees, as shown in Council's Pricing Policy, are applicable

A handwritten signature in blue ink, appearing to read "M. Ellis".

M.Ellis
Infrastructure Assets Delivery
Asset Maintenance

126-138 Main Road
Speers Point NSW 2284
Box 1906 HRMC NSW 2310
T 02 4921 0333
E council@lakemac.nsw.gov.au
W lakemac.com.au

[lakemac](#) [lakemaccity](#) [ourlakemac](#)

Our Ref: **Error! No document variable supplied.** Your Ref: **Error! No document variable supplied.**

ABN: 81 065 027 868



Hunter Water Corporation
ABN 46 228 513 446

PO Box 5171
HRMC NSW 2310
36 Honeysuckle Drive
NEWCASTLE NSW 2300
1300 657 657
enquiries@hunterwater.com.au
hunterwater.com.au

2 November 2023

Our Ref: HW2020-1210/3/3.001

The Manager
Subsidence Advisory NSW
117 Bull Street
Newcastle West NSW 2300

Hello from Hunter Water

Consultation on the proposed Arcadia Vale 1 and Morisset 2 Potable Water Reservoir Refurbishment

Hunter Water owns and operates a large and complex potable water and wastewater network, including pumping stations, service reservoirs and chlorination installations.

We are proposing to carry out refurbishment works at the Arcadia Vale 1 and Morisset 2 Potable Water Reservoirs to address structural integrity and longevity concerns (the proposal).

The proposal will repair and strengthen the reservoirs to reinstate full storage capacity to help improve operational performance of the network.

Attachment A, Attachment B and Attachment C have been provided for further information on this proposal.

A Minor Works Review of Environmental Factors (MWREF) is currently being prepared by Jacobs on behalf of Hunter Water. The purpose of the MWREF is to assess the likely impacts associated with the proposal under Division 5.1 of the *Environmental Planning and Assessment Act 1979*.

Under the *State Environmental Planning Policy (Transport and Infrastructure) 2021*, Hunter Water is required to consult with Subsidence Advisory NSW under Division 1, Section 2.15, as the proposal would be located on land within West Lake Subsidence District.

Please provide any comments about this proposal within 21 calendar days from the date of this letter. Hunter Water will consider any response received from Subsidence Advisory NSW within this period in its assessment of the proposal.

If you require further information, please contact me on 0422 223 502 or Jeremy.oliver@hunterwater.com.au.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Jer Oliver".

Jeremy Oliver
Project Manager
Hunter Water

Attachment A: Proposal description

Background

Hunter Water proposes to carry out refurbishment works at the Arcadia Vale 1 and Morisset 2 Potable Water Reservoirs to address structural integrity and longevity concerns (the proposal).

Hunter Water structural integrity and longevity concerns of the reservoirs: The reservoirs were originally built in the 1960s and have a history of concrete delamination and spalling. The current water storage level of the reservoirs has been reduced to 60 per cent (%) at Arcadia Vale and 80% at Morisset, due to concerns regarding their structural integrity.

The proposal will repair and strengthen the reservoirs to reinstate full storage capacity for an additional service life of 30+ years.

Key elements of the proposal include:

- Reservoir repairs:
 - Remove existing joint sealant at slab construction joints and replace
 - Repair / remediate localised cracks on the internal and external walls
 - Remove and replace spalling and delaminated concrete render to external wall
 - Repair localised protective coating breakdown, and substrate corrosion
 - Replace the existing vermin proof mesh at the top of the reservoir
 - Replace existing external roof access ladder with new freestanding external roof access stairs for improved safe roof access
- Internal strengthening:
 - Install steel brackets connecting reservoir footing to the wall
 - Apply carbon fibre laminates and concrete mortars on the internal wall
 - Remove and patch softened concrete.
- External strengthening:
 - Remove and replace spalling and delaminated concrete render to external wall
 - Install external tensioned monostrand cables around circumference of wall and application of protective mortar coating
 - Extend width of existing concrete footing by 300 mm
 - Apply paint coating to external wall with colour to match existing painted finish.

Location

The proposal is within the Lake Macquarie City Local Government Area (LGA) as shown in **Attachment B**. The majority of the proposal would be within the Arcadia Vale 1 reservoir site at 124 Donnelly Road, Arcadia Vale and within the Morisset 2 Reservoir site located at 17 and 17A Stockdale Street, Morisset.

The proposal overview is shown in **Attachment C** (C-1 and C-2). The proposal area includes ancillary and laydown areas which may be used for the temporary storage of plant, materials, stockpiling and site facilities.

Construction methodology

A Construction Environmental Management Plan would be prepared by the construction contractor and endorsed by Hunter Water prior to construction to guide the approach to environmental issues during construction.

The proposal would include the following construction activities:

- Site establishment including installation of site sheds, temporary fencing, stockpile areas, erosion and sediment controls and vegetation removal
- Protection and existing infrastructure, private property, and public property
- Draining the reservoirs in accordance with Hunter Water standard procedures
- Carrying out reservoir repairs and strengthening works

- Installing new external staircase at each reservoir
- Leakage testing of each reservoir on completion of works
- Reservoir re-filling activities at project completion to bring the reservoirs back into service
- Reinstatement of disturbed areas and demobilisation from site.

The proposal is minor in nature and not expected to have any significant environmental impacts. The proposal is expected to result in a positive outcome and improve operational performance of the network.

Timing

The proposal is anticipated to commence in mid-2024 and take about nine months to complete in a staged approach (four and half months per reservoir), with Arcadia Vale 1 reservoir first followed by Morisset 2 reservoir.

Work would be generally carried out during standard construction working hours. However, in order to expedite the proposal in order to avoid having the reservoirs off line for an extended period, it may be necessary to carry out some construction activities outside these standard working hours, including at night. If works are required outside of standard working hours, the works would need to be clearly justified, appropriate control measures identified and approval from Hunter Water would be required prior to works commencing. Appropriate notification would be provided to local residents in accordance with Hunter Water's procedure for out of hours works.

Attachment B: Locality figure



Attachment C-1: Proposal overview – Arcadia Vale



Proposal area
 Protected tree
 Cadastre

 Tree trimming

0 25 50 m
 1:1,000 at A4
 GDA 1984 MGA Zone 56

Data sources
 Jacobs 2020
 Aerialphoto 2020
 ODH 2020, DCSS 2020,
 Department of Justice,
 Service and Innovation 2023



Attachment C-1 Arcadia Vale Proposal overview

Jacobs | 1300 Jacobs | 08 8234 4444 | 08 8234 4444 | www.jacobs.com.au

This information and all other content within this document is the intellectual property of Jacobs and is subject to confidentiality and copyright laws. It is not to be used for any other purpose without the prior written consent of Jacobs. The information is provided as a guide only and is not intended to be used for any other purpose. The information is provided as a guide only and is not intended to be used for any other purpose.

Attachment C-2: Proposal overview – Morisset



 Proposal area
  Protected tree
  Cadastre

 No go zone

At the time of publishing many of the trees in the proposal area had been claimed as part of a different project. The aerial imagery does not reflect the actual vegetation within the proposal area.

0 25 50 m
1:1,000 at A4
GDA 1994 MGA Zone 56

Data sources
 Jacobs 2023
 Aspinall 2023
 OEH 2023, DCSS 2023,
 Department of Finance,
 Services and Innovation 2023



Attachment C-2 Morisset Proposal overview

Jacobs 11000 Spawton | Buildings & Infrastructure | Environmental & Planning | www.jacobs.com

The information and research contained herein is provided for informational purposes only and is not intended to be used for any other purpose. The information is not intended to be used for any other purpose. The information is not intended to be used for any other purpose.

Our Ref: EOTH23-00498

14 November 2023

Attention: Jeremy Oliver
Via email: jeremy.oliver@hunterwater.com.au

Location: Arcadia Vale and Morisset Potable Water Reservoirs

Dear Jeremy Oliver

Thank you for your letter dated 2 November 2023 consulting with Subsidence Advisory regarding the refurbishment of existing water reservoirs at Arcadia Vale and Morisset.

Our records indicate neither of the existing reservoirs are directly undermined by coal mine workings and both locations overlie leases held by Centennial Coal.

As the works are minor in nature and the reservoirs are pre-existing, Subsidence Advisory has no further comments on the proposal.

If you have any questions or wish to discuss, please contact our office on 4908 4300.

Kind Regards

A handwritten signature in black ink, appearing to read "Shane McDonald".

Shane McDonald
Senior Risk Engineer

APPENDIX E DATABASE SEARCH RESULTS

Jacobs Group (Australia) Pty Ltd - Newcastle

Date: 23 June 2023

710 Hunter Street

Newcastle West New South Wales 2302

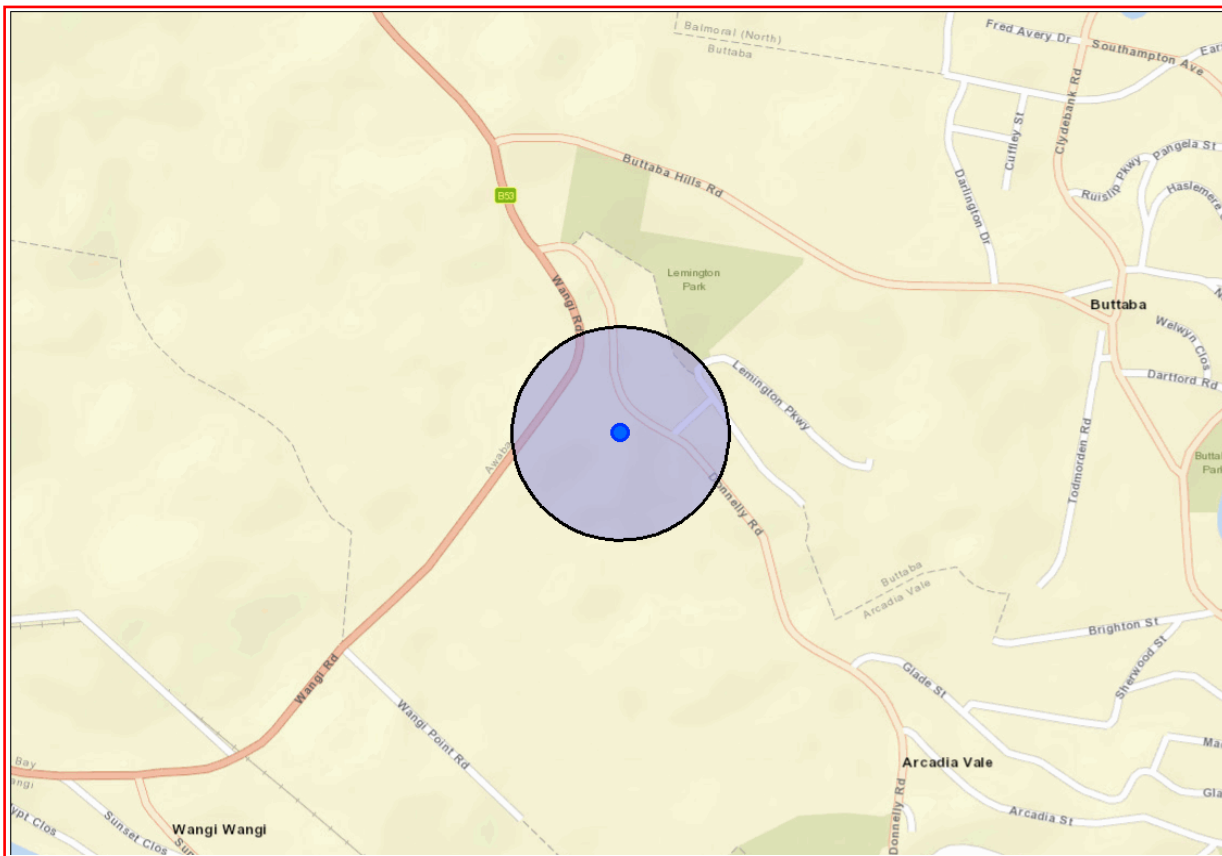
Attention: Tina Donovan

Email: tina-maria.donovan@jacobs.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Address : 124 DONNELLY ROAD ARCADIA VALE 2283 with a Buffer of 200 meters, conducted by Tina Donovan on 23 June 2023.

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 \(https://www.legislation.nsw.gov.au/gazette\)](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 to 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.

Jacobs Group (Australia) Pty Ltd - Newcastle

Date: 23 June 2023

710 Hunter Street

Newcastle West New South Wales 2302

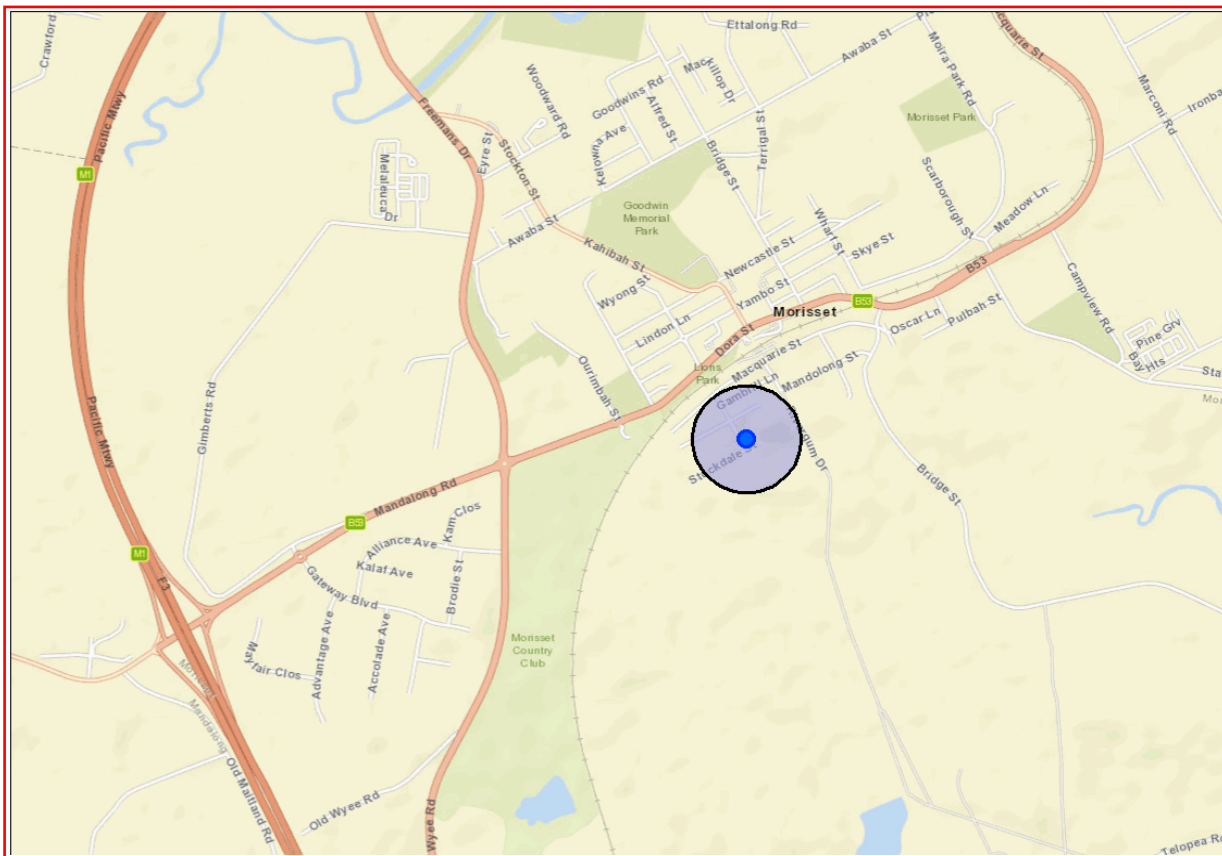
Attention: Tina Donovan

Email: tina-maria.donovan@jacobs.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Address : 17 STOCKDALE STREET MORISSET 2264 with a Buffer of 200 meters, conducted by Tina Donovan on 23 June 2023.

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 \(https://www.legislation.nsw.gov.au/gazette\)](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 to 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.



Australian Government

Department of Climate Change, Energy,
the Environment and Water

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: 14-Jun-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

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:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	88
Listed Migratory Species:	60

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:	7
Commonwealth Heritage Places:	None
Listed Marine Species:	68
Whales and Other Cetaceans:	None
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:	5
Regional Forest Agreements:	1
Nationally Important Wetlands:	1
EPBC Act Referrals:	28
Key Ecological Features (Marine):	None
Biologically Important Areas:	3
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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
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
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
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only

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
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	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
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely 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
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

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 buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Erythroriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely 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]	Vulnerable	Species or species habitat known to 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 buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
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 may 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 buffer area only
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat known to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
FISH			
Epinephelus daemeli Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only
FROG			
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area	In feature area
Litoria littlejohni Littlejohn's Tree Frog, Heath Frog [64733]	Endangered	Species or species habitat may occur within area	In buffer area only
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Uperoleia mahonyi Mahony's Toadlet [89189]	Endangered	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	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
Notamacropus parma Parma Wallaby [89289]	Vulnerable	Species or species habitat known to 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 known to occur within area	In feature area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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 feature area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting 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
Angophora inopina Charmhaven Apple [64832]	Vulnerable	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 known to occur within area	In feature area
Corunastylis insignis Wyong Midge Orchid 1, Variable Midge Orchid 1 [84692]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat known to occur within area	In feature area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area	In feature area
Diuris praecox Newcastle Doubletail [55086]	Vulnerable	Species or species habitat known 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
Eucalyptus parramattensis subsp. decadens Earp's Gum, Earp's Dirty Gum [56148]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Genoplesium baueri Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat may occur within area	In buffer area only
Genoplesium branwhiteorum listed as Corunastylis sp. Charmhaven (NSW 896673) [93200]	Critically Endangered (listed as Corunastylis sp. Charmhaven	Species or species habitat known to occur within area	In buffer area only
Grevillea parviflora subsp. parviflora Small-flower Grevillea [64910]	Vulnerable	Species or species habitat known to occur within area	In feature area
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat known to occur within area	In feature area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pterostylis gibbosa Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat may occur within area	In buffer area only
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 known to occur within area	In feature area
Rutidosis heterogama Heath Wrinklewort [13132]	Vulnerable	Species or species habitat known 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tetradthea juncea Black-eyed Susan [21407]	Vulnerable	Species or species habitat known to occur within area	In feature area
Thelymitra adorata Wyong Sun Orchid [84724]	Critically Endangered	Species or species habitat likely 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	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
SHARK			
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	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			
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardeenna grisea Sooty Shearwater [82651]		Species or species habitat likely to occur within area	In buffer area only
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Migratory Marine Species

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 likely 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			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
Calidris tenuirostris Great Knot [862]	Critically Endangered	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 likely 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
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		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]		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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Breeding 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
Pluvialis squatarola Grey Plover [865]		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]		Species or species habitat known to occur within area	In buffer area only
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands		[Resource Information]
<p>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.</p>		
Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [11755]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [11731]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Australian Telecommunications Commission [11756]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11716]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11717]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11757]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11718]	NSW	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 buffer area only
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]		Species or species habitat likely to occur within area	In buffer area only
Arenaria interpres Ruddy Turnstone [872]		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]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris alba Sanderling [875]		Species or species habitat known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area	In buffer area only
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 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]	Critically Endangered	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 buffer area only
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 likely 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 buffer area only
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
Limosa limosa Black-tailed Godwit [845]		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 buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
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 likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Myiagra cyanoleuca Satin Flycatcher [612]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat may 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
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine 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 buffer area only
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Mammal			
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In buffer area only
Reptile			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

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 buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Jilliby	State Conservation Area	NSW	In buffer area only
Lake Macquarie	State Conservation Area	NSW	In buffer area only
Pulbah Island	Nature Reserve	NSW	In buffer area only
The Hunter Lakes	Flora Reserve	NSW	In buffer area only
Watagans	National Park	NSW	In buffer area only

Regional Forest Agreements			[Resource Information]
Note that all areas with completed RFAs have been included.			
RFA Name		State	Buffer Status
North East NSW RFA		New South Wales	In feature area

Nationally Important Wetlands			[Resource Information]
Wetland Name		State	Buffer Status
Tuggerah Lake		NSW	In buffer area only

EPBC Act Referrals			[Resource Information]	
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Caravan Park & Lifestyle Living	2022/09220		Post-Approval	In buffer area only
Hunter Central-Coast Offshore Energy Project	2023/09478		Assessment	In buffer area only
Controlled action				
Additions to Awaba Waste Disposal Facility	2011/5973	Controlled Action	Post-Approval	In buffer area only
Newstan Mine Extension Project	2019/8528	Controlled Action	Assessment Approach	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Open cut coal mine and extension to underground mine.	2006/2542	Controlled Action	Completed	In buffer area only
Residential Development in Cooranbong, NSW	2007/3828	Controlled Action	Post-Approval	In buffer area only
Residential subdivision	2007/3411	Controlled Action	Post-Approval	In buffer area only
Subdivide and Develop	2008/4419	Controlled Action	Post-Approval	In buffer area only
Subdivision and Urban Development at Gwandalan and Catherine Hill Bay	2012/6382	Controlled Action	Post-Approval	In buffer area only
Upgrade existing coal preparation, infrastructure & transport as part of Coal Logistics Project, NS	2013/6906	Controlled Action	Post-Approval	In buffer area only
Wallarrah 2 Coal Project	2012/6388	Controlled Action	Post-Approval	In buffer area only
Wallarrah 2 Coal Project	2007/3881	Controlled Action	Completed	In buffer area only
Not controlled action				
construction of additional coal handling facilities at the Wyee Rail Unloader	2004/1364	Not Controlled Action	Completed	In buffer area only
Cooranbong residential subdivision and Local Water Centre development, NSW	2014/7315	Not Controlled Action	Completed	In buffer area only
Expansion of Coal Combustion Product Storage Area, Eraring Power Station	2009/5188	Not Controlled Action	Completed	In buffer area only
Haul Road to connect the Cooranbong Colliery to Newstan and Eraring Haul Road	2009/4722	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
Mandalong Mine Power Line, Mandalong, NSW	2018/8321	Not Controlled Action	Completed	In buffer area only
Myuna Colliery extension of underground mining	2011/5956	Not Controlled Action	Completed	In buffer area only
Residential Subdivision	2002/589	Not Controlled Action	Completed	In buffer area only
Wallarrah Peninsula Residential development	2004/1490	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Not controlled action (particular manner)				
Eraring Battery Energy Storage System, NSW	2021/8956	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Multipurpose Centre Dora St Lot 122 DP 881828 Morisset	2003/1084	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Residential Development Subdivision	2011/5953	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Expansion of Coal Combustion Product Storage Facility	2009/4952	Referral Decision	Completed	In buffer area only
Mine Modification	2010/5442	Referral Decision	Completed	In buffer area only
Morisset Event Space BDAR	2022/9173	Referral Decision	Referral Publication	In feature area
Residential Subdivision Dickson Road Lots 231 & 233 DP755271	2003/1105	Referral Decision	Completed	In buffer area only
Biologically Important Areas				
Scientific Name		Behaviour	Presence	Buffer Status
Seabirds				
Ardenna grisea				
Sooty Shearwater [82651]		Foraging	Likely to occur	In buffer area only
Ardenna pacifica				
Wedge-tailed Shearwater [84292]		Foraging	Likely to occur	In buffer area only
Ardenna tenuirostris				
Short-tailed Shearwater [82652]		Foraging	Likely to occur	In buffer area only
Bioregional Assessments				
SubRegion	BioRegion	Website		Buffer Status
Hunter	Northern 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

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

- [-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.

[© Commonwealth of Australia](#)

Department of Climate Change, Energy, the Environment and Water

GPO Box 3090

Canberra ACT 2601 Australia

+61 2 6274 1111



Australian Government

Department of Climate Change, Energy,
the Environment and Water

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: 14-Jun-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

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:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	7
Listed Threatened Species:	98
Listed Migratory Species:	70

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:	21
Commonwealth Heritage Places:	None
Listed Marine Species:	94
Whales and Other Cetaceans:	13
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:	6
Regional Forest Agreements:	1
Nationally Important Wetlands:	1
EPBC Act Referrals:	31
Key Ecological Features (Marine):	None
Biologically Important Areas:	6
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Hunter estuary wetlands	10 - 20km upstream from Ramsar site	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
Central Hunter Valley eucalypt forest and woodland	Critically 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
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 buffer area only
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
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only

Listed Threatened Species			[<u>Resource Information</u>]
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			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	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
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
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely 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
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Erythroriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
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 buffer area only
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]	Vulnerable	Species or species habitat known to 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 buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
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
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may 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 buffer area only
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In buffer area only
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In buffer area only
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat known to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	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 buffer area only
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Epinephelus daemeli Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Seriolella brama Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In buffer area only
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only
FROG			
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known 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
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Uperoleia mahonyi Mahony's Toadlet [89189]	Endangered	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 likely to occur within area	In buffer area only
Notamacropus parma Parma Wallaby [89289]	Vulnerable	Species or species habitat likely to 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 known to occur within area	In feature area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
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 feature area
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
PLANT			
Acacia bynoeana Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Angophora inopina Charmhaven Apple [64832]	Vulnerable	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 known to occur within area	In feature area
Corunastylis insignis Wyong Midge Orchid 1, Variable Midge Orchid 1 [84692]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat known to occur within area	In feature area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat known to occur within area	In feature area
Diuris praecox Newcastle Doubletail [55086]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eucalyptus camfieldii Camfield's Stringybark [15460]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eucalyptus parramattensis subsp. decadens Earp's Gum, Earp's Dirty Gum [56148]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
Genoplesium branwhiteorum listed as Corunastylis sp. Charmhaven (NSW 896673) [93200]	Critically Endangered (listed as Corunastylis sp. Charmhaven)	Species or species habitat likely to occur within area	In buffer area only
Grevillea parviflora subsp. parviflora Small-flower Grevillea [64910]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat known to occur within area	In feature area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pterostylis gibbosa Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat may occur within area	In buffer area only
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 known to occur within area	In feature area
Rutidosis heterogama Heath Wrinklewort [13132]	Vulnerable	Species or species habitat known 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
Tetratheca juncea Black-eyed Susan [21407]	Vulnerable	Species or species habitat known to occur within area	In feature area
Thelymitra adorata Wyong Sun Orchid [84724]	Critically Endangered	Species or species habitat may 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
SHARK			
Carcharias taurus (east coast population) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	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 buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	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			
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area	In buffer area only
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]		Species or species habitat likely to occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat likely to occur within area	In buffer area only
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely 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 buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sternula albifrons Little Tern [82849]		Breeding likely to occur within area	In buffer area only
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Orcinus orca Killer Whale, Orca [46]		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 buffer area only
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may 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 likely 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			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	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 ruficollis Red-necked Stint [860]		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 likely 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
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area	In feature area
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat known to occur within area	In buffer area only
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
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]		Breeding 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]		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
Commonwealth Trading Bank of Australia		
Commonwealth Land - Commonwealth Trading Bank of Australia [11726]	NSW	In buffer area only
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [11728]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [11729]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [11724]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [11730]	NSW	In buffer area only

Commonwealth Land Name		State	Buffer Status
Commonwealth Land - Australian Postal Commission [11733]		NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [11755]		NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited			
Commonwealth Land - Australian Telecommunications Commission [11715]		NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11731]		NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11732]		NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11727]		NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [16557]		NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11714]		NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [16558]		NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11713]		NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11723]		NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11722]		NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [15536]		NSW	In buffer area only
Defence			
Commonwealth Land - Defence Service Homes Corporation [11734]		NSW	In buffer area only
Defence - Defence Housing Authority			
Commonwealth Land - Director of War Service Homes [11725]		NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [11720]		NSW	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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anous stolidus Common Noddy [825]	Endangered	Species or species habitat may occur within area	In buffer area only
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]		Species or species habitat likely to occur within area	In buffer area only
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]		Species or species habitat likely to occur within area	In buffer area only
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Breeding likely to occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]		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

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
Calonectris leucomelas Streaked Shearwater [1077]		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 overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely 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 buffer area only
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		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
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat known to occur within area overfly marine area	In buffer area only
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
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
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 likely 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 may 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
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pandion haliaetus Osprey [952]	Vulnerable	Breeding known to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]		Species or species habitat may occur within area	In buffer area only
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]	Endangered	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]		Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius skua as Catharacta skua Great Skua [823]		Species or species habitat may occur within area	In buffer area only
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding likely to occur within area	In buffer area only
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia Common Greenshank, Greenshank [832]		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 buffer area only
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area	In buffer area only
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area	In buffer area only
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In buffer area only
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In buffer area only
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In buffer area only
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In buffer area only
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In buffer area only
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In buffer area only
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In buffer area only
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In buffer area only
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In buffer area only
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In buffer area only
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In buffer area only
Reptile			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area	In buffer area only
Whales and Other Cetaceans		[Resource Information]	

Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata Minke Whale [33]	Endangered	Species or species habitat may occur within area	In buffer area only
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]		Species or species habitat may occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Grampus griseus Risso's Dolphin, Grampus [64]	Endangered	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 buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		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 buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		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
Lake Macquarie	State Conservation Area	NSW	In buffer area only
Munmorah	State Conservation Area	NSW	In buffer area only
Pulbah Island	Nature Reserve	NSW	In buffer area only
Sugarloaf	State Conservation Area	NSW	In buffer area only
Tingira Heights	Nature Reserve	NSW	In buffer area only
Wallarah	National Park	NSW	In buffer area only

Regional Forest Agreements			[Resource Information]
Note that all areas with completed RFAs have been included.			
RFA Name		State	Buffer Status
North East NSW RFA		New South Wales	In feature area

Nationally Important Wetlands			[Resource Information]
Wetland Name		State	Buffer Status
Lake Macquarie		NSW	In buffer area only

EPBC Act Referrals					[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status	
Controlled action					
Additions to Awaba Waste Disposal Facility	2011/5973	Controlled Action	Post-Approval	In buffer area only	
Awaba Alternative Waste Treatment Facility, NSW	2012/6432	Controlled Action	Post-Approval	In buffer area only	
Newstan Mine Extension Project	2019/8528	Controlled Action	Assessment Approach	In buffer area only	

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Open cut coal mine and extension to underground mine.	2006/2542	Controlled Action	Completed	In feature area
Residential Development in Cooranbong, NSW	2007/3828	Controlled Action	Post-Approval	In buffer area only
Residential subdivision	2007/3411	Controlled Action	Post-Approval	In buffer area only
Subdivide and Develop	2008/4419	Controlled Action	Post-Approval	In buffer area only
Subdivision and Urban Development at Gwandalan and Catherine Hill Bay	2012/6382	Controlled Action	Post-Approval	In buffer area only
Upgrade existing coal preparation, infrastructure & transport as part of Coal Logistics Project, NS	2013/6906	Controlled Action	Post-Approval	In buffer area only
Wyndham Way Eleebana Residential Subdivision	2017/7931	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Expansion of Coal Combustion Product Storage Area, Eraring Power Station	2009/5188	Not Controlled Action	Completed	In buffer area only
Expansion of Marmong Point Marina	2008/4277	Not Controlled Action	Completed	In buffer area only
Haul Road to connect the Cooranbong Colliery to Newstan and Eraring Haul Road	2009/4722	Not Controlled Action	Completed	In buffer area only
Hunter Natural Gas Pipeline	2004/1902	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
Myuna Colliery extension of underground mining	2011/5956	Not Controlled Action	Completed	In feature area
Northern Precinct residential development	2007/3412	Not Controlled Action	Completed	In buffer area only
Residential Subdivision	2002/589	Not Controlled Action	Completed	In feature area
Revised alignment Hunter Natural Gas Pipeline	2005/2470	Not Controlled Action	Completed	In buffer area only
Road interchange	2002/592	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
RTA Five Islands Road Upgrade	2000/44	Not Controlled Action	Completed	In buffer area only
Wallarah Peninsula Residential development	2004/1490	Not Controlled Action	Completed	In feature area
Wallarah Peninsula residential development - coastal sector	2006/2810	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Eraring Battery Energy Storage System, NSW	2021/8956	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Extensions to the north and south of an existing quarry and proposed transmission lines	2011/5988	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Multipurpose Centre Dora St Lot 122 DP 881828 Morisset	2003/1084	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Rehabilitation of Hexham Swamp	2003/1244	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Residential Development Subdivision	2011/5953	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed	In buffer area only
Expansion of Coal Combustion Product Storage Facility	2009/4952	Referral Decision	Completed	In buffer area only
Morisset Event Space BDAR	2022/9173	Referral Decision	Referral Publication	In buffer area only
Biologically Important Areas				
Scientific Name		Behaviour	Presence	Buffer Status
Dolphins				
Tursiops aduncus				
Indo-Pacific/Spotted Bottlenose Dolphin [68418]		Breeding	Likely to occur	In buffer area only
Seabirds				
Ardenna grisea				
Sooty Shearwater [82651]		Foraging	Likely to occur	In buffer area only

Scientific Name	Behaviour	Presence	Buffer Status
Ardenna pacifica			
Wedge-tailed Shearwater [84292]	Foraging	Likely to occur	In buffer area only
Ardenna tenuirostris			
Short-tailed Shearwater [82652]	Foraging	Likely to occur	In buffer area only

Sharks
Carcharias taurus
Grey Nurse Shark [64469]
Foraging
Known to occur
In buffer area only

Whales
Megaptera novaeangliae
Humpback Whale [38]
Foraging
Known to occur
In buffer area only

Bioregional Assessments			
SubRegion	BioRegion	Website	Buffer Status
Hunter	Northern 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

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

- [-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.

[© Commonwealth of Australia](#)

Department of Climate Change, Energy, the Environment and Water

GPO Box 3090

Canberra ACT 2601 Australia

+61 2 6274 1111