Transport
for NSW

Central West Orana Renewable Energy Zone – Port to REZ Road Upgrade Program

Minor works review of environmental factors – Package 3

March 2024

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NSW GOVERNMENT

Acknowledgement of Country

Transport for NSW acknowledges the Wonnarua people, the traditional custodians of the land on which the Port to Renewable Energy Zone Upgrade Program (Package 3) is proposed.

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

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

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

Connecting with Country Statement

Note: This statement is to only be applied when the intent and philosophies of the project are aligned with Connecting with Country and the Connecting with Country Government Architect Framework and Transport Aboriginal Culture and Heritage Framework.

This section refers to the goals of the project in relation to Connecting with Country and how the project is proposing to Connect with Country. This statement should be developed in conjunction with the Aboriginal Engagement Team.

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Approval and authorisation

Approved by	Dimitri Perdikaris – Senior Manager Renewables Transportation
Signed	D Perdikaris
Date	09/04/2024

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1. Introduction

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

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

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

The findings of the REF would be considered when assessing:

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

2. The proposal

2.1 Strategic background

The NSW Government is leading the development of Renewable Energy Zones (REZ) to deliver renewable energy generation and storage, supported by high voltage transmission infrastructure across NSW. REZs will play a vital role in delivering clean, affordable and reliable electricity for homes, businesses and industry in NSW to help replace the State's existing coal power stations as they come to their scheduled end of operational life.

REZs will group new renewable energy generation infrastructure into locations where it can be efficiently stored and transmitted across NSW. Five regions have been identified for the development of REZs; the Central-West Orana, South-West, New England, Hunter-Central Coast and Illawarra regions of NSW. With some of the best renewable energy resources in the world, NSW is in a unique position to benefit from emerging low-cost technologies like wind, solar, batters and pumped hydro.

The Central West Orana Renewable Energy Zone (CWO REZ) will unlock at least three gigawatts (GW) of new network capacity by the mid-2020s and the NSW Government is proposing to increase the intended network capacity to six gigawatts. Construction of the transmission infrastructure and generation projects in the CWO REZ will require delivery of large and heavy components, most notably wind turbine components, high-voltage transformers, and synchronous condensers.

The proposed generators will use common routes to transport over-sized and/or over-mass (OSOM) components from the Port of Newcastle to the CWO REZ. Accordingly, the NSW Government has requested that Energy Corporation (EnergyCo) identify and carry out required upgrades to a number of intersections along the State Road Network to facilitate the transportation of OSOM components (Figure 2-1) to the REZ.

The Denman Road and Bengalla Road, and Wybong Road and Golden Highway intersections form part of a detour route between Port of Newcastle to the CWO REZ. This detour, shown in yellow in Figure 2-1, is required due to the limited vertical clearance of 5.7 metres across Denman Bridge which would clash with OSOM tower vehicles that could be as tall as 6.2 metres. The proposed detour leaves the Golden Highway onto Denman Road and leads via Bengalla Road near Muswellbrook and Wybong Road back to Golden Highway.

The proposed modifications to these intersections will be assessed and delivered as five different packages generally divided by local government area where practicable. This Minor Works Review of Environmental Factors (MWREF) is the third package (Package 3) to be delivered and would assess three intersections in the Muswellbrook local government area (LGA).

The proposal assessed in this report is for the modification of intersections only. The operation of the necessary OSOM vehicle movements will be assessed as part of the planning approval for individual generation projects.

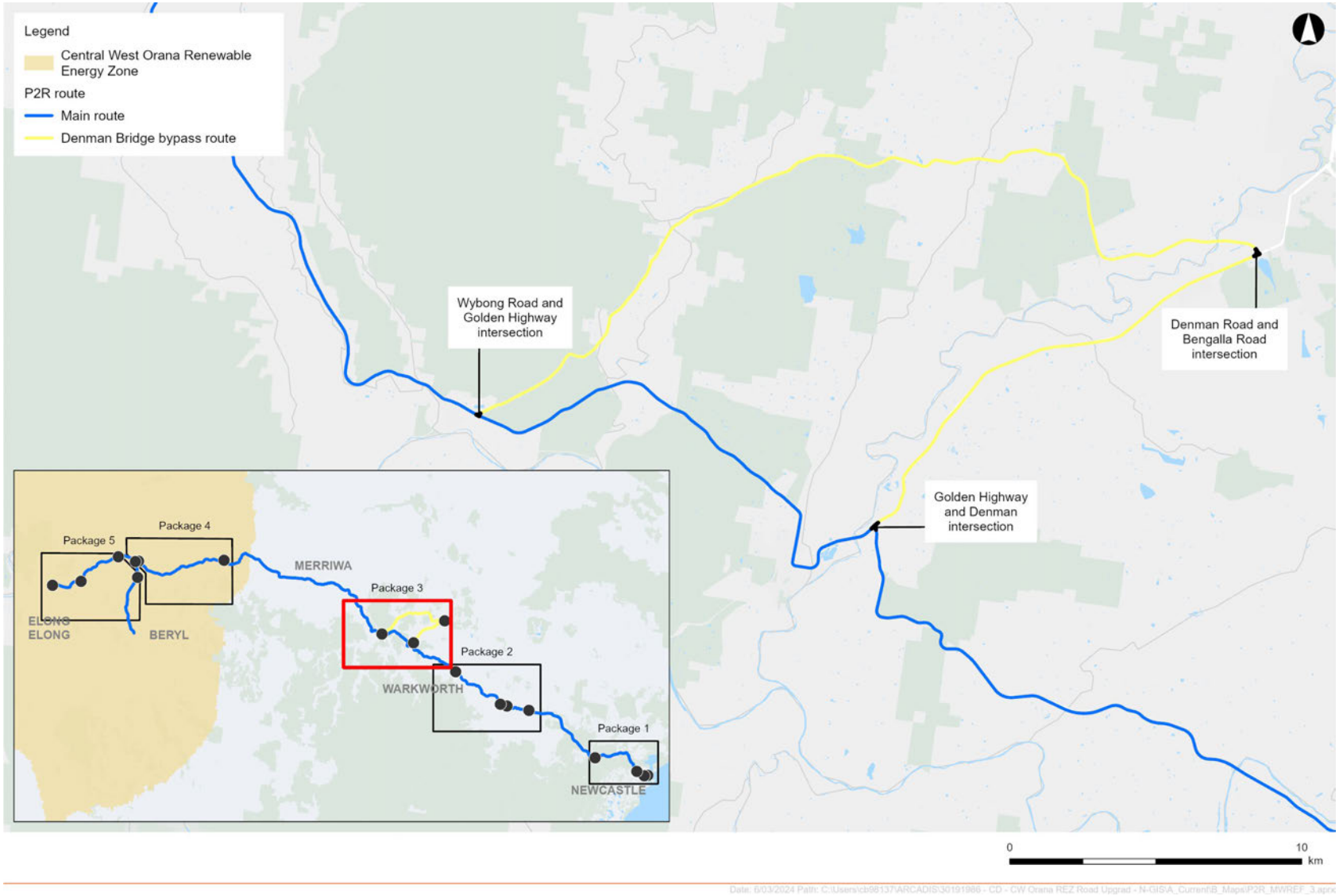


Figure 2-1: Proposed work and program of intersection upgrades

2.2 Description

2.2.1 Proposal location

Table 2-1 details the proposal road location and Transport for New South Wales (Transport) information.

Table 2-1: Proposal location details

Location details	
Title	Central West Orana Renewable Energy Zone – Port to REZ Road Upgrade Program. Minor Works Review of Environmental Factors – Package 3
Road name and number	Golden Highway (HW27), Denman Road (MR209), Bengalla Road, Wybong Road
Closest crossroad(s)	Golden Highway, Denman Road, Bengalla Road, Wybong Road
Local government area	Muswellbrook Local Government Area
Transport for NSW region	North

2.2.2 Proposal description

Transport for NSW (Transport), on behalf of EnergyCo, proposes to carry out minor modifications to three intersections in the Muswellbrook LGA. The modifications are necessary to facilitate the transportation of OSOM components consisting of trailers carrying wind turbine blades and transformers from the Port of Newcastle to the CWO REZ.

Key features of the proposal are described below and shown in Figure 2-2 (Golden Highway and Denman Road intersection), Figure 2-3 (Denman Road and Bengalla Road intersection) and Figure 2-4 (Wybong Road and Golden Highway intersection).

Golden Highway and Denman Road intersection, Denman (I-008)

- provision of asphalt hardstand along the eastbound verge of Denman Road, south-west of the Golden Highway and Denman road intersection, to accommodate the swept path of the design vehicles
- provision of asphalt hardstand along the eastbound verge of Denman Road, northwest of the Golden Highway and Denman Road intersection, to accommodate the swept paths of the design vehicles
- provision of asphalt hardstand on the north-eastern corner of the Golden Highway and Denman Road intersection to accommodate the swept paths of the design vehicles
- installation of a drainage channel at toe of hardstand fill constructed on the north eastern corner of the Golden Highway and Denman Road intersection
- relocation of one 'Hollydene Estate Wines' tourist sign from the eastern corner of the Golden Highway and Denman Road intersection to the north-eastern side of the intersection
- relocation of back to back wayfinding signs from the eastern corner of the Golden Highway and Denman Road intersection, with the 'Right turn' sign relocated to the east on Denman Road and the 'Left turn' sign northeast of its existing location
- two 'Give way' signs on concrete splitter island to be made removable
- relocation of four tourist signs (positioned in a v-shape angle towards traffic) located in the adjacent property northeast of its existing location
- realignment of the existing property fence to accommodate the hardstand proposed on the north eastern corner of the Golden Highway and Denman Road intersection

- removal of five Olive trees and pruning of an additional one Olive tree in the adjacent property to accommodate the swept path of the design vehicles
- relocation of one light pole northeast to accommodate the proposed hardstand on the eastern corner of the Golden Highway and Denman Road intersection
- realign surface water connection to property boundary for one private property.

Denman Road and Bengalla Road intersection, Muswellbrook (I-026)

- provision of asphalt hardstand on the northwestern corner of the Denman Road and Bengalla Road intersection to accommodate the swept paths of the design vehicles
- replacement of existing kerbed median on Bengalla Road and replacement with painted median, requiring about 80 square metres of asphalt after concrete median removal
- provision of new earthbund on the northwestern corner of the Denman Road and Bengalla Road intersection to reinstate the existing flow regime
- relocation of 'Overhead powerline warning' sign north of its existing location to accommodate the proposed hardstand on the northwestern corner of the intersection
- relocation of four wayfinding signs for local mines (two stacked signs back to back) west of its existing location to accommodate the proposed hardstand on the northwestern corner of the intersection
- realignment of the existing property fence to accommodate the hardstand proposed on the northwestern corner of the intersection
- removal of one native tree on the western verge of Denman Road to accommodate the swept path of design vehicles
- relocation of a Telstra pit beyond extent of hardstand area.

Wybong Road and Golden Highway intersection, Sandy Hollow (I-027)

- provision of asphalt hardstand at the northwestern corner of the Wybong Road and Golden Highway intersection to accommodate the swept paths of design vehicles
- temporary removal and then reinstatement of one 'Give way' sign on the new asphalt hardstand area.

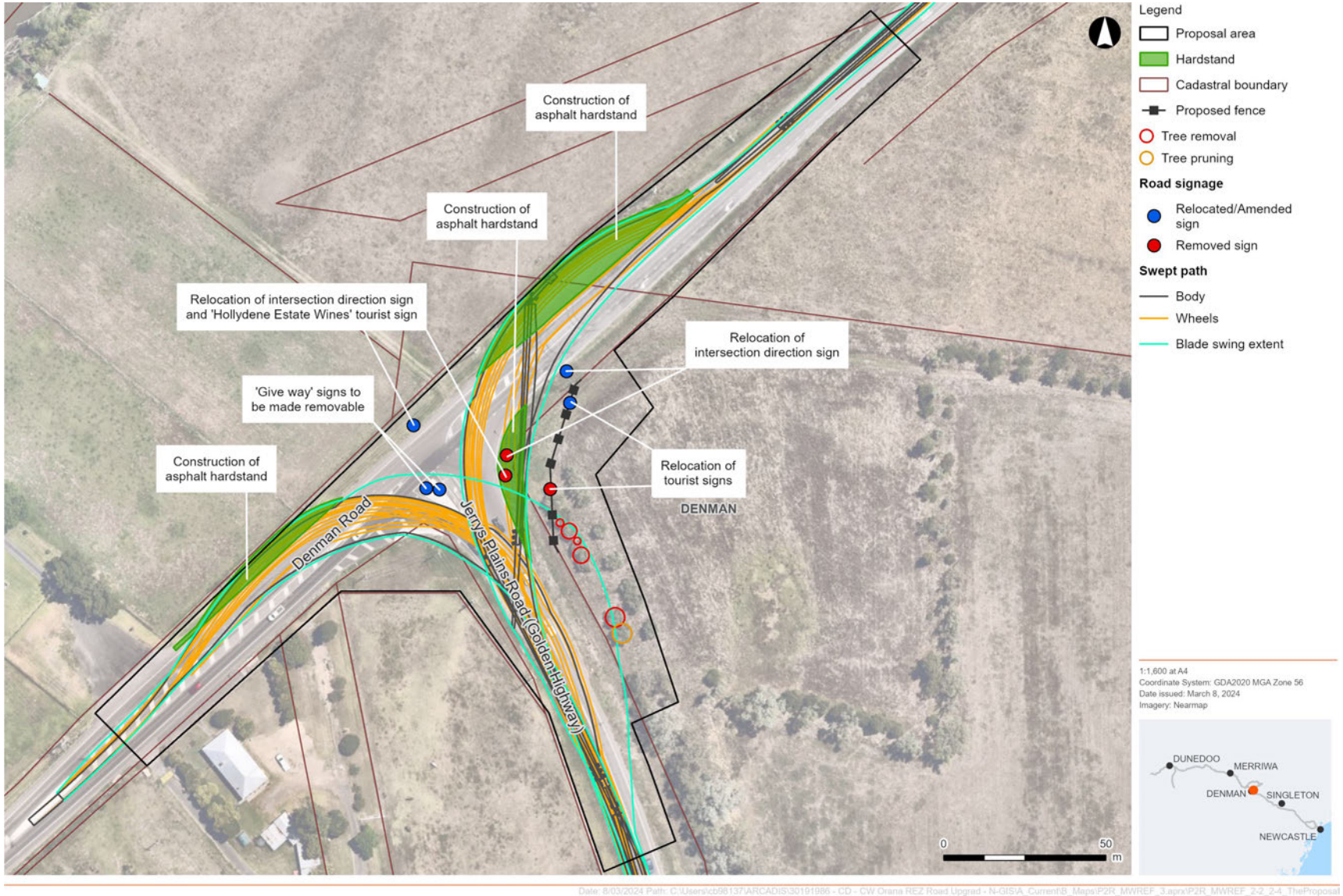


Figure 2-2: The proposal – Golden Highway and Denman Road intersection, Denman (I-008)

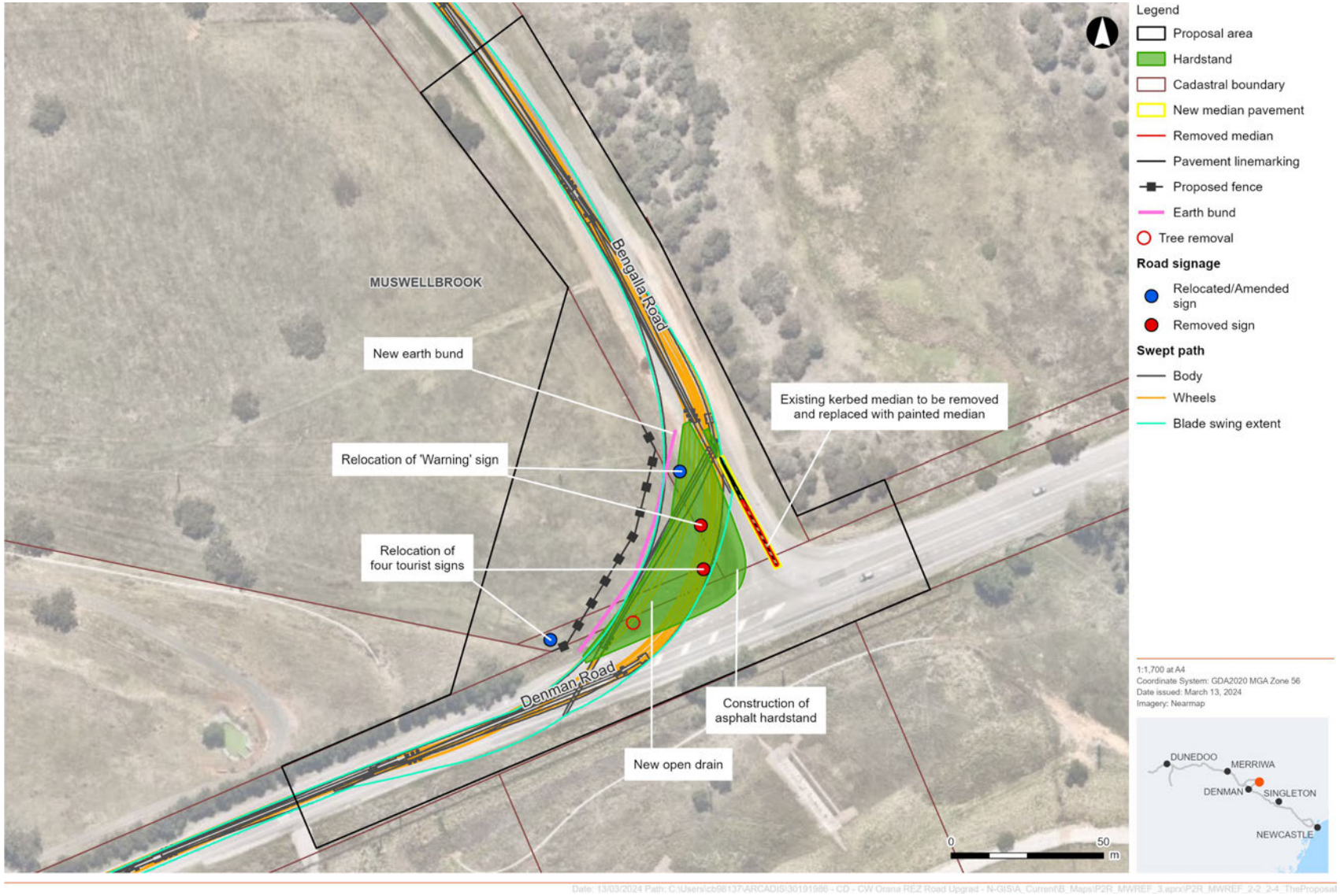


Figure 2-3: The proposal – Denman Road and Bengalla Road intersection, Muswellbrook (I-026)

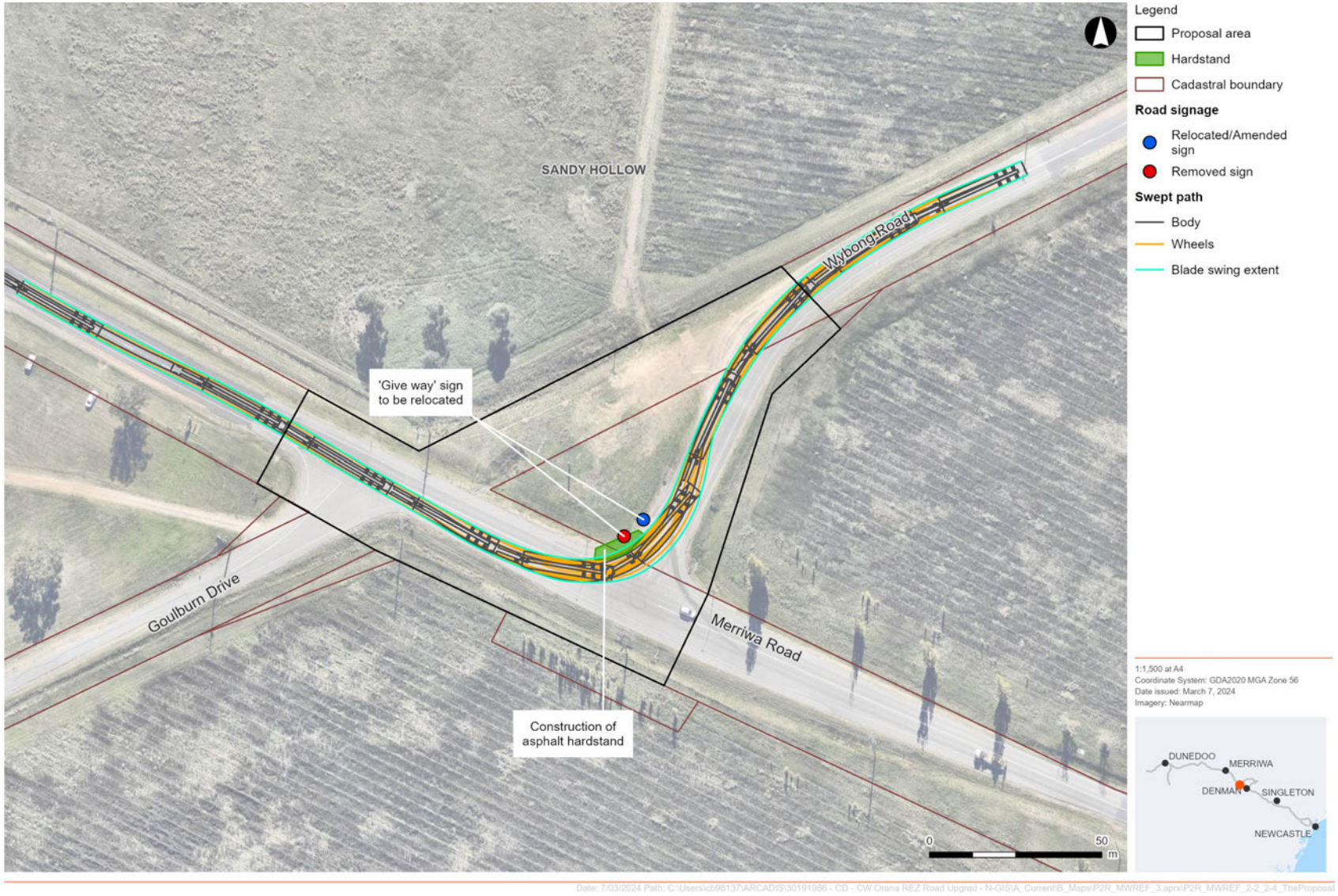


Figure 2-4: The proposal - Wybong Road and Golden Highway intersection, Sandy Hollow (I-027)

Utility adjustments

Several services would be impacted by the proposed work. Impacted utilities within each proposal area, including the proposed actions are detailed in Table 2-2 and shown in Figure 2-5 and Figure 2-6.

Utility relocations will be designed to meet service provider specifications and be certified as required. Any adjustments will be done in consultation with utility providers, wholly within the assessed study area.

Relocation of Ausgrid assets is to be carried out in accordance with their internal environmental approvals process, and not subject of this MWREF.

Table 2-2: Utility adjustments

Location	Owner	Asset	Proposed treatment
Golden Highway and Denman Road intersection (I-008)	Ausgrid	Minor Transmission overhead single cable streetlight	No impact
	Ausgrid	Light pole	Relocated northeast to accommodate the proposed hardstand on the eastern corner of the intersection
	Telstra	Denman Road northbound verge conduits	No impact
	Private	Water service connection	Relocate to align with adjusted property boundary
Denman Road and Bengalla Road intersection (I-026)	Telstra	Direct buried cable and P50 pit	Relocation of P50 pit outside of proposed hardstand
	Ausgrid	The existing street lights are supplied from the underground network from south verge of Denman Road	No impact

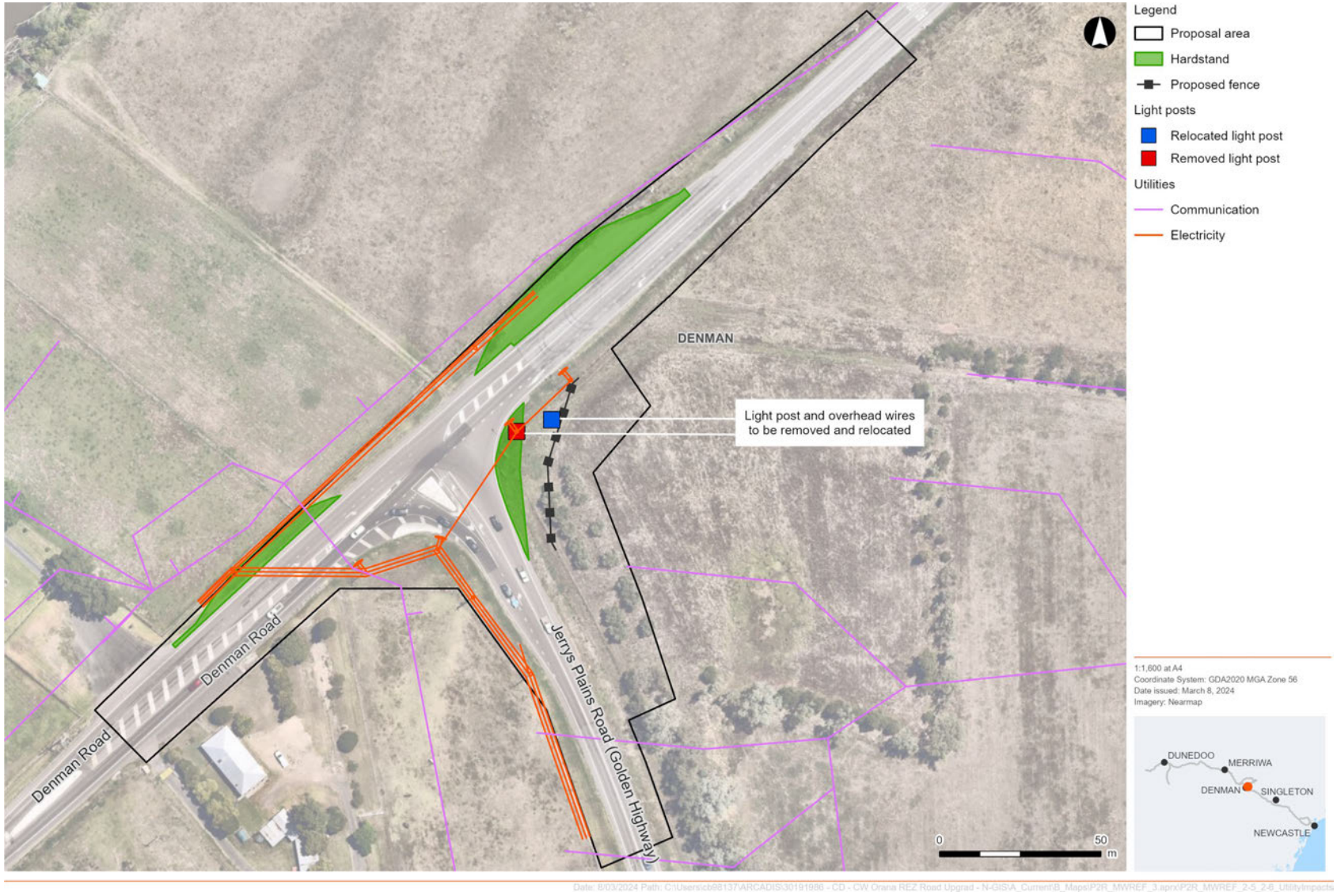


Figure 2-5: Utility impacts – Golden Highway and Denman Road intersection (I-008)

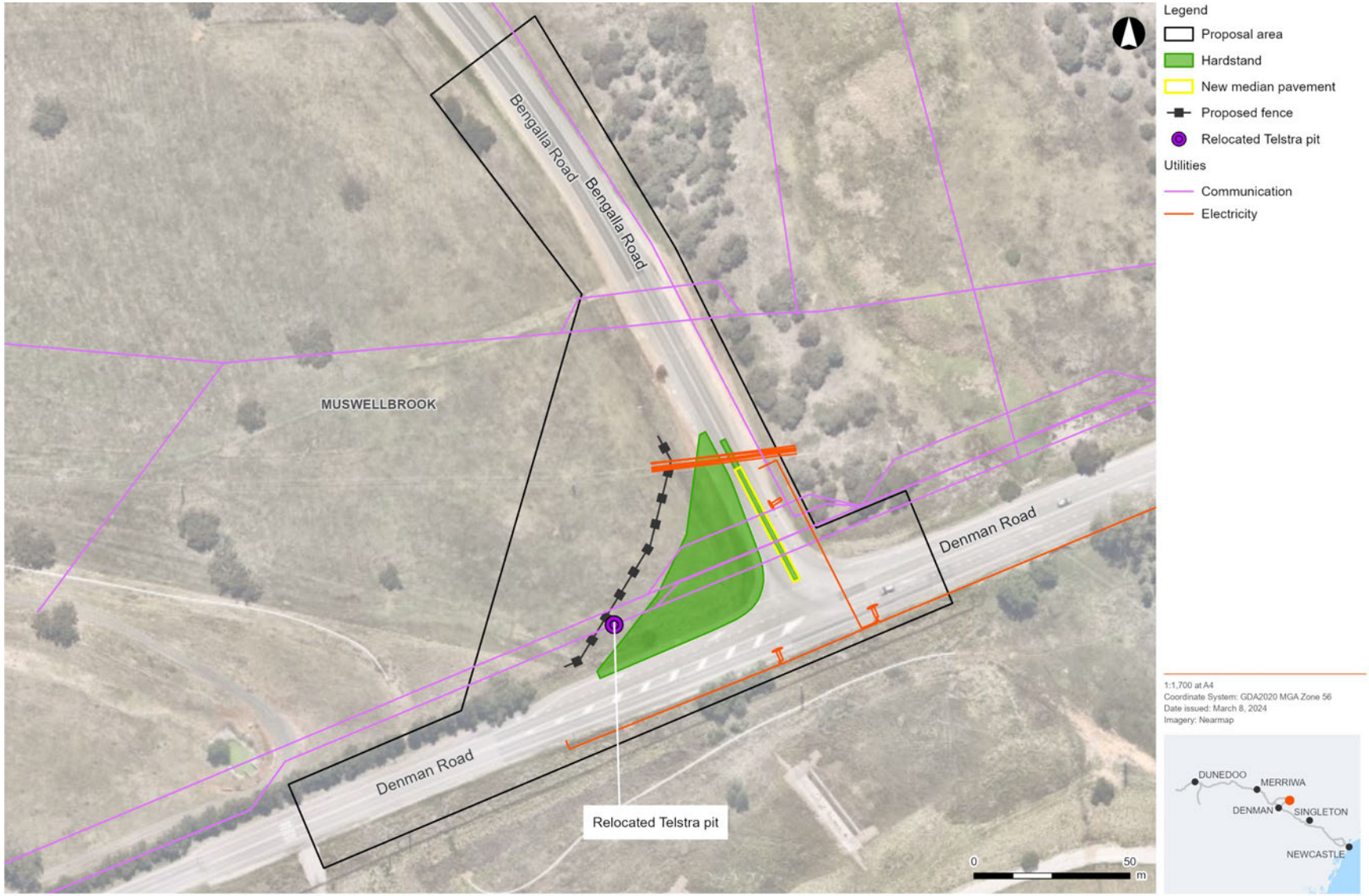


Figure 2-6: Utility impacts – Denham Road and Bengalla Road intersection (I-026)

Construction staging and methodology

An indicative construction staging and scope is outlined in Table 2-3.

Table 2-3: Indicative construction staging and scope

Construction stage	Scope
Enabling works	• Traffic redirection, control and management during works • Establish environmental controls including exclusion zones, tree protection and erosion and sediment control measures (where required) • Designation of parking, storage and laydown areas • Tree removal and pruning at golden highway and denman road intersection (-i008) and denman road and bengalla road intersection (i-026).
Intersection works	• Utilities protection or adjustments (where required). • Relocation of existing signage and installation of removable signage • Saw cutting and removal of sections of existing asphalt pavement and concrete kerbing (where required) • Earthworks for hardstand areas (where required) • Placement of engineered fill, compaction and seal of hardstand areas (where required) • Complete any linemarking adjustments, traffic or wayfinding requirements • Installation of drainage lines and boundary fencing reinstatement (where required) • Topsoil placement and rehabilitation of exposed areas with grasses consistent with surrounding area (where required).
Finishing works	• Remove temporary construction equipment and any temporary stockpiles • Site cleanup including removal of environmental controls • Remove any traffic controls..

Construction traffic access and management

Construction vehicles would access the proposal areas, including the Golden Highway and Denman Road intersection (I-008), Denman Road and Bengalla Road intersection (I-026) and Wybong Road and the Golden Highway intersection (I-027) via the highway and main roads. Parking and temporary storage of plant and materials to facilitate the upgrade works would occur within the road corridor in the vicinity of each intersection.

Construction equipment

A range of plant and equipment would be used during construction. The final equipment and plant requirements would be determined by the construction contractor. An indicative list of plant and equipment is provided below:

- hand tools
- excavators
- concrete vibrator
- road trucks
- vacuum truck
- dump truck
- concrete truck
- jackhammer
- pneumatic hammer
- concrete saw
- plate compactor
- light vehicles
- asphalt paver
- kerb machine
- power generator
- truck compressor
- vibratory roller
- asphalt truck and sprayer
- smooth drum roller
- backhoe

Construction hours

Construction work for the proposal would be carried out during standard construction hours as follows:

- Monday to Friday: 7:00 am to 6:00 pm
- Saturday: 8:00 am to 1:00 pm

- Sunday and public holidays: No work.

Any work with impulsive or tonal noise emissions will be carried out in accordance with the Construction Noise and Vibration Guideline (Roads) (Transport for NSW, 2023) and EPA Interim Construction Noise Guideline (ICNG) (NSW DECC, 2009).

The community would be kept informed of proposed upcoming work and contact information. Any impacted residents or businesses would be consulted regarding the proposed construction hours at least five working days prior to commencement of work.

Property acquisition

The proposal requires the partial acquisition of land at two properties under private ownership. No crown land would be impacted by property acquisition. The owners of the affected properties would be consulted with, and ongoing consultation would occur during detailed design and construction stages.

All land acquisition would be carried out in accordance with the provisions of the *Land Acquisition (Just Terms) Compensation Act 1991*.

A summary of property acquisition required is provided in Table 2-4 and shown in Figure 2-7 and Figure 2-8.

Table 2-4: Property acquisition and adjustment

Intersection	Acquisition type	Approximate area (m^2)	Current owner	Lot and DP	Proposed work
Golden Highway and Denman Road intersection (I-008)	Partial acquisition	355	Private	Lot 7, DP1244305	• Replacement of existing property fence • Relocation of existing tourist and business signs within property • Adjust water service connection within property
Golden Highway and Denman Road intersection (I-008)	Temporary easement	520	Private	Lot 7, DP1244305	• Temporary easement required to accommodate blade swing during OSOM movements • No permanent property boundary adjustment required
Denman Road and Bengalla Road intersection (I-026)	Partial acquisition	845	Private	Lot 290, DP1141655 Lot 291, DP1141655	• Replacement of existing property fence • Relocation of existing 'Bengalla Mine' and 'Mangoola Open Cut' signs within property to accommodate the asphalt hardstand

Golden Highway and Denman Road Intersection (I-008)

The removal of five, and pruning of one, European Olive tree (*Olea europaea subsp. europaea*) and the relocation of the existing 'Small Forest Winery and Cellar Door' tourist sign would likely be required within the private property (Lot 7, DP1244305) to accommodate the swept paths of OSOM vehicles. Property boundary adjustments would not be required to accommodate this activity; however, formal agreement will be required from the landowner for the proposed work within the property (Lot 7, DP1244305) and the temporary use of the land (about 520 square metres) for blade swing during OSOM movements (refer to Figure 2-7). EnergyCo will liaise with the affected landowner regarding the work required within the property (Lot 7, DP1244305) and to determine the possibility of transplanting impacted trees.

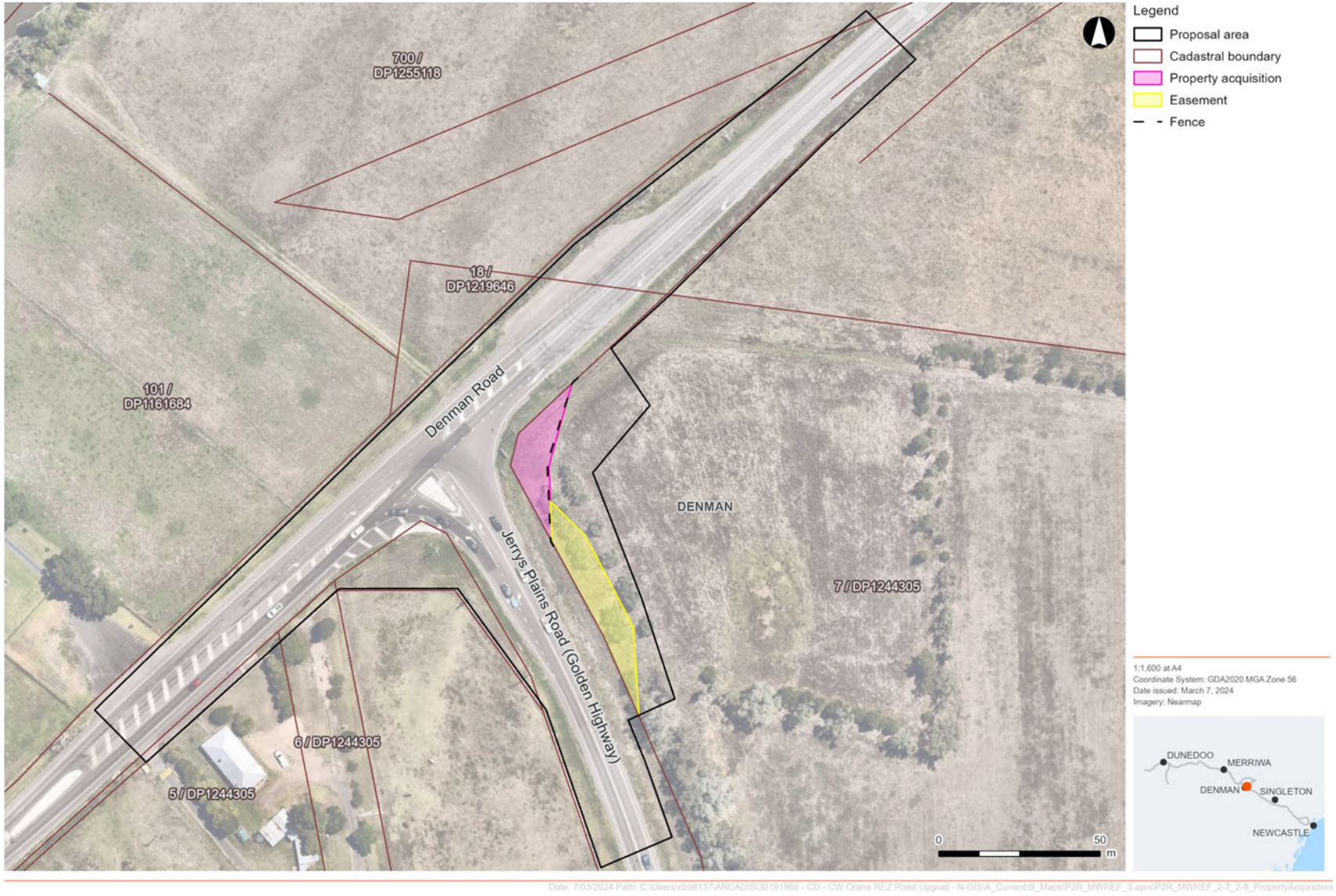


Figure 2-7: Property acquisition – Golden Highway and Denman Road intersection (I-008)

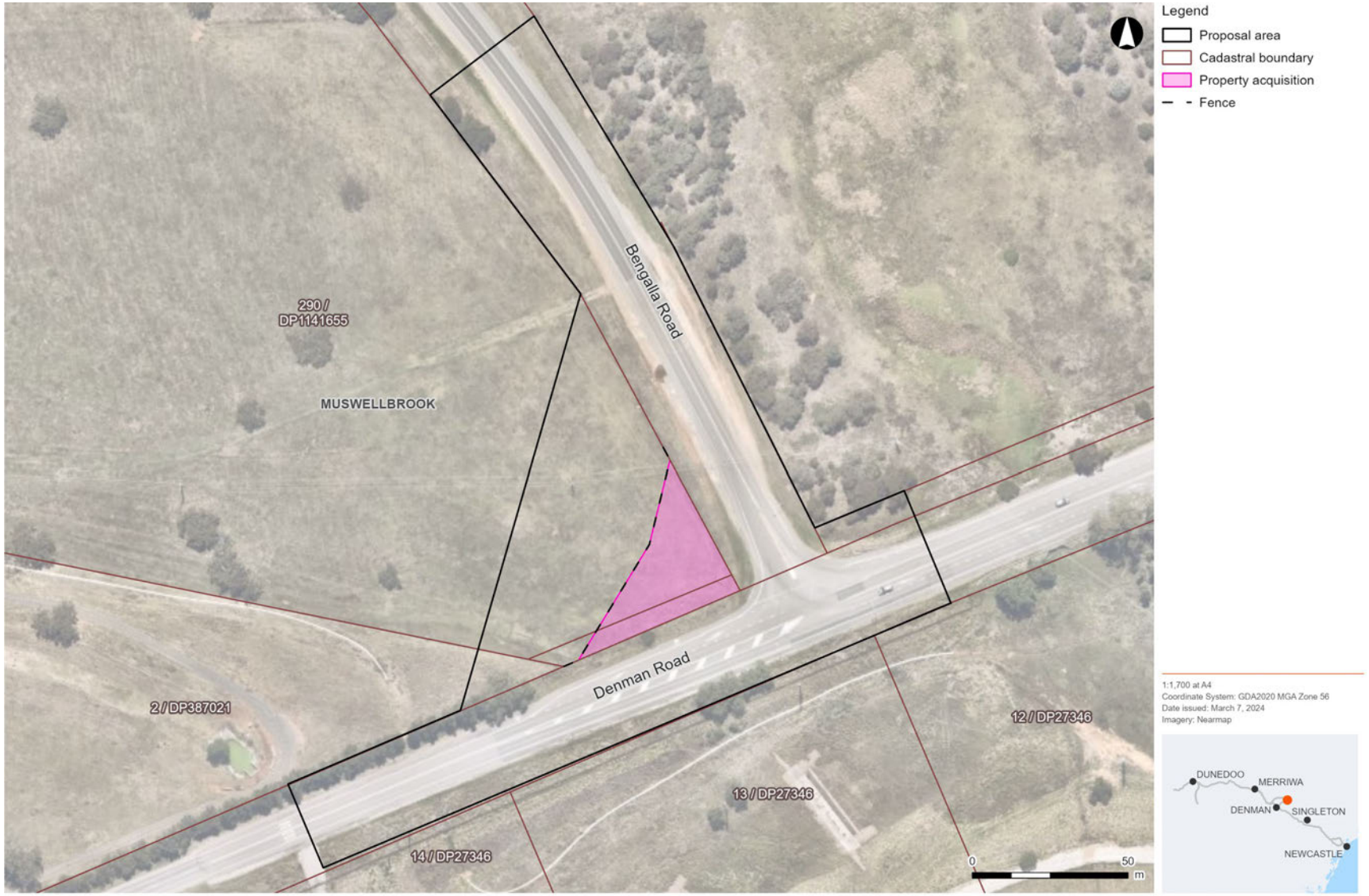


Figure 2-8: Property acquisition – Denman Road and Bengalla Road intersection (I-026)

2.2.3 Proposal objectives and design criteria

The objective of the proposal is to facilitate the safe delivery of OSOM components for individual generation projects from the Port of Newcastle to the Central West Orana Renewable Energy Zone.

The design criteria for the proposal include:

- minimise constructability impacts including utilities and services
- minimise property acquisition
- minimise environmental and social impacts.

2.2.4 Ancillary facilities

Table 2-5: Ancillary facilities

Ancillary facilities		
Will the proposal require the use or installation of a compound site? Given the minor works proposed, installation of a compound site would not be required for the proposal. Temporary equipment laydown, materials, stockpiling and workforce parking would be carried out adjacent to the proposed intersection works, in areas of cleared land within the construction boundary and typically within the road reserve. The general locations of these laydown areas include: • Golden Highway and Denman Road intersection (I-008): grassed area on the east side of Golden Highway, adjacent to the intersection • Denman Road and Bengalla Road intersection (I-026): grassed area on the east and west side of Bengalla Road, north of the intersection • Wybong Road and the Golden Highway (I-027): grassed area northwest side of Wybong Road, northwest of the intersection. The areas above are indicative only and would be confirmed by the construction contractor.	Yes ☐	No ☒
Will the proposal require the use or installation of a stockpile site? Any stockpiling required for the proposal would be carried out on the road verge, adjacent to the proposed works. Given the nature of the proposed works, any stockpiles will be relatively small and short-lived.	Yes ☒	No ☐
Are any other ancillary facilities required (e.g. temporary plants, parking areas, access tracks)? Where possible, equipment laydown and workforce parking would be located within road reserve areas adjacent to each of the proposed intersection works. Construction compound and stockpile areas would be confirmed prior to construction, but would be required to demonstrate compliance with the following criteria: • located in the road corridor • no vegetation removal • obvious previous disturbance • no ground disturbance required • 50 metres from a permanent watercourse • within existing clearance PACHCI letter footprint (about 50 metres from the proposal area) • away from sensitive receivers. If compliance with these criteria cannot be demonstrated, further assessment may be required.	Yes ☐	No ☒

2.2.5 Proposed date of commencement

Subject to approval, construction is expected to commence in quarter 3 of 2024.

2.2.6 Estimated length of construction period

Construction at each intersection, weather permitting, is expected to take about:

- The Golden Highway and Denman Road intersection (I-008) – six months
- Denman Road and Bengalla Road intersection (I-026) – two months
- Wybong Road and the Golden Highway intersection (I-027) – one month.

2.3 Need and options

2.3.1 Strategic need

The following intersections along the state road network between the Port of Newcastle and the CWO REZ have space constraints on the safe manoeuvring of the OSOM vehicles including potential conflict with signage and roadside vegetation:

- The Golden Highway and Denman Road intersection (I-008)
- Denman Road and Bengalla Road intersection (I-026)
- Wybong Road and the Golden Highway intersection (I-027).

The proposal would provide additional hardstand, relocate signage and utilities, and remove and trim trees to facilitate the safe delivery of OSOM components from the Port of Newcastle to the CWO REZ.

The proposal would also align with the objectives of the Muswellbrook Local Strategic Planning Statement 2020-2040 (Muswellbrook Shire Council, 2020) through its support for jobs and investment in the renewable energy sector. An objective of the Muswellbrook Local Strategic Planning Statement 2020-2040 (Muswellbrook Shire Council, 2020) is to deliver investment through the themes of opportunities for creativity, jobs and investment, improved wellbeing, safety and belonging, and enhanced environmental, natural assets and scenic qualities.

2.3.2 Assessment background

A Traffic Impact Study and route assessment was carried out by AECOM (2023), on behalf of EnergyCo, to determine the preferred route to transport components to the wind farm development sites. The report concluded that the most efficient and minimal environmental impact route for the transportation of components from Port of Newcastle to CWO REZ would be via the State Highway network, specifically the route shown in Figure 2-1. The study also identified intersections likely to require modification works and provide recommendations for further design development.

The three intersections assessed in this report (Package 3) were identified as requiring modification works.

2.3.3 Options considered

Options considered, and the advantages and disadvantages associated with each, are identified below and summarised in Table 2-6.

- **Option 1 'Do nothing':** Undertake no modifications at intersections between the Port of Newcastle and CWO REZ
- **Option 2 'The proposal':** Undertake intersection upgrades as outlined in Section 2.2.2.

Table 2-6: Analysis of options

Objectives	Option 1 'Do-nothing'	Option 2 'The proposal'
To facilitate safe delivery of over-sized and/or over-massed components from the Port of Newcastle to the CWO REZ	Option 1 would involve not undertaking any modifications to the intersections along the proposed transport route.	Option 2 would provide additional space for OSOM vehicles to manoeuvre through the three intersections while minimising disruption to the general traffic network and broader community.

Objectives	Option 1 'Do-nothing'	Option 2 'The proposal'
	By not undertaking intersection modifications for the transport of components required for the development of renewable projects, would be delayed or cancelled. This option would not facilitate the safe delivery of OSOM components from the Port of Newcastle to the CWO REZ. Does not meet objective.	Upgrading of intersections along the existing State Highway network is the most efficient and cost-effective way to meet timeframes for transportation of components for renewable energy projects in CWO. This option meets the objective to facilitate safe delivery of OSOM components from the Port of Newcastle to the CWO REZ. Meets objective.

2.3.4 Design refinements

Consideration was given to minimising impacts to property, existing infrastructure (including road, bridges, rail), utilities, and native vegetation.

This process resulted in the following reduction in impacts:

- Golden Highway and Denman Road intersection (I-008) – reduction in swept path footprint and reduced need for hardstand along the Golden Highway left and right turn
- Denman Road and Bengalla Road intersection (I-026) – reduction in swept path footprint and hardstand divided into hardstand required for transformer and hardstand required for blade trailer
- Wybong Road and Golden Highway intersection (I-027) – reduction in swept path footprint and relocation of hardstand to the inside curve where terrain is favourable to the original location.

2.3.5 Preferred option

Option 2 is the preferred option as it meets the proposal objective while Option 1 does not.

The preferred option has also been considered against the following design criteria provided in Table 2-7.

Table 2-7: Assessment against design criteria

Design criteria	Option 2 'The proposal'
Minimise constructability impacts including to utilities and services	Disruptions and or permanent relocation to communication and electrical services are anticipated for the proposal, though impact on the function of these services is temporary and would be reinstated during construction. Impacts to utilities have been minimised through the design refinement process, including reduction in swept path footprints for all intersections and hardstand reductions at the Golden Highway and Denman Road intersection (I-008) and Wybong Road and Golden Highway intersection (I-027). Meets criterion.
Minimise land use and community impacts	The proposal would be carried out within the road reserve for the Wybong Road and Golden Highway intersection (I-027). The proposal would encroach upon private property for works carried out at the Golden Highway and

Design criteria	Option 2 'The proposal'
	Denman Road intersection (I-008), as well as the Denman Road and Bengalla Road intersection (I-026). No road closures would be required given the minor works proposed. Traffic diversion around construction works would potentially be required, particularly at Bengalla Road for the removal of an existing median, however detours and full lane closures are not proposed. Access to properties within the vicinity would be maintained throughout construction. Meets criterion.
Minimise property acquisition	Partial property acquisition is proposed at the Golden Highway and Denman Road intersection (I-008) and Denman Road and Bengalla Road intersection (I-026). The partial acquisition of the two affected properties would be carried out in accordance with the provisions of the *Land Acquisition (Just Terms) Compensation Act 1991*. The proposal also involves obtaining formal interests in parts of adjacent properties that would be affected by blade swings outside of the road reserve. While partial property acquisition is proposed, impacts to the properties have been minimised through the design refinement process. This includes the reduction of additional hardstand at Golden Highway and Denman Road intersection (I-008), Denman Road and Bengalla Road intersection (I-026), and Wybong Road and Golden Highway intersection (I-027). Meets criterion.
Minimise environmental and social impacts	Environmental impacts are expected from the proposal, such as traffic, noise, air quality, tree removal and pruning, and erosion and runoff. With implementation of safeguards listed in Table 4-1, the environmental impacts would be minor. The proposal would be carried out primarily within the road reserve. No road closures are proposed, and lane occupancy would be managed to minimise traffic disruption. Access to properties within the vicinity would be maintained throughout construction. Five Olive trees would be removed and one pruned at the Golden Highway and Denman Road intersection (I-008) and an additional tree removed at the Denman Road and Bengalla Road intersection (I-026) to allow for the swept path of oversize vehicles manoeuvring around bends. The affected landowner would be consulted with to determine the possibility of transplanting these impacted trees. Further reduction to tree removal and pruning requirements will be considered and adopted where feasible through design development. Social impacts would support the development of renewable energy projects by facilitating movement of OSOM vehicles through the proposed intersections upgrades from Port of Newcastle to REZ projects.

Design criteria	Option 2 'The proposal'
	Meets criterion.

2.3.6 Justification for the proposal

The proposal is required to facilitate the transportation of OSOM components from Port of Newcastle to the CWO REZ. The existing intersections along the project route are not designed for the transport of these components, hence the need for the proposed intersection works to support the development of renewable energy projects. The proposal would minimise disruption to traffic and the general community by providing sufficient space for the safe passage of these OSOM vehicles through the intersections.

Design of the proposal has considered minimisation of impacts to existing infrastructure, utilities, property, and native vegetation. Residual impacts can be managed through the implementation of nominated safeguards.

2.4 Statutory and planning framework

2.4.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

The State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP) aims to facilitate the effective delivery of infrastructure across the state. This includes roads and road infrastructure facilities, and port, wharf or boating facilities.

Section 2.109 of the Transport and Infrastructure SEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent. As the proposal is development for the purposes of a road or road infrastructure facilities and is to be carried out by or on behalf of Transport, it can be assessed under Division 5.1 of the EP&A Act. Development consent from Council is not required.

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

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

2.4.2 Other relevant legislation and environmental planning instruments

Muswellbrook Local Environmental Plan 2009

The proposal is located within the Muswellbrook Local Government Area (LGA) which is subject to the *Muswellbrook Local Environmental Plan 2009* (Muswellbrook LEP). While the Transport and Infrastructure SEPP provides that the proposal is development permitted without consent on any land, a discussion of zoning and planning provisions from the Muswellbrook LEP is provided below.

Under this LEP, the land occupied by the proposal is zoned as:

- RU1 Primary Production
- RU5 Village
- C3 Environmental Management.

As described above, Section 2.109 of the Transport and Infrastructure SEPP permits Transport to carry out development for the purpose of road without consent. As a result, while development for roads would be permissable in the above land zones, consent from Muswellbrook Shire Council is not required for the proposal.

Notwithstanding this, the objectives of the land use zones and the proposal's consistency with these objectives is described in Table 2-8.

Table 2-8: Muswellbrook LEP 2012 zoning applicable to the proposal

LEP zoning	Proposal area location	LEP objectives	Proposal consistency with objectives
RU1 Primary Production	Golden Highway and Denman Road intersection (I-008) Denman Road and Bengalla Road intersection (I-026) Wybong Road and Golden Highway intersection (I-027)	• to encourage sustainable primary industry production by maintaining and enhancing the natural resource base. • to encourage diversity in primary industry enterprises and systems appropriate for the area. • to minimise the fragmentation and alienation of resource lands. • to minimise conflict between land uses within this zone and land uses within adjoining zones. • to protect the agricultural potential of rural land not identified for alternative land use, and to minimise the cost to the community of providing, extending and maintaining public amenities and services. • to maintain the rural landscape character of the land in the long term. • to ensure that development for the purpose of extractive industries, underground mines (other than surface works associated with underground mines) or open cut mines (other than open cut mines from the surface of the flood plain), will not— • destroy or impair the agricultural production potential of the land or, in the case of underground mining, unreasonably restrict or otherwise affect any other development on the surface, or • detrimentally affect in any way the quantity, flow and quality of water in either subterranean or surface water systems, or • visually intrude into its surroundings, except by way of suitable screening. • to protect or conserve (or both)— • soil stability by controlling development in accordance with land capability, and • trees and other vegetation, and • water resources, water quality and wetland areas, and their catchments and buffer areas, and • valuable deposits of minerals and extractive materials by restricting development that would compromise the efficient extraction of those deposits.	The proposal will not impact upon the function of the zoning area and will remain consistent with the objectives of RU1 Primary production.
RU5 Village	Wybong Road and Golden Highway intersection (I-027)	• to provide for a range of land uses, services and facilities that are associated with a rural village. • to allow more flexibility in the development of the town of Denman and village of Sandy Hollow.	The zoning is partly located within the road corridor at Wybong Road and Golden Highway intersection. The proposal will remain consistent

LEP zoning	Proposal area location	LEP objectives	Proposal consistency with objectives
		• to allow for future development of residential, commercial or low-impact land use within the town of Denman and village of Sandy Hollow. • to ensure that non-residential uses do not result in adverse amenity impacts on residential premises. • to minimise the impact of non-residential uses and ensure these are in character and compatible with surrounding development.	with the objectives of land zoned RU5.
C3 Environmental Management	Wybong Road and Golden Highway intersection (I-027)	• to protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values. • to provide for a limited range of development that does not have an adverse effect on those values. • to maintain, or improve in the long term, the ecological values of existing remnant vegetation of significance including wooded hilltops, river valley systems, major scenic corridors and other local features of scenic attraction. • to limit development that is visually intrusive and ensure compatibility with the existing landscape character. • to allow agricultural activities that will not have an adverse impact on the environmental and scenic quality of the existing landscape. • to promote ecologically sustainable development. • to ensure that development in this zone on land that adjoins land in the land zoned C1 National Parks and Nature Reserves is compatible with the objectives for that zone.	The proposal would facilitate the movement of OSOM vehicles from Port of Newcastle to the CWO REZ. The proposed scope of work is minor in scale and would not have an adverse impact on the environment. This aligns with the first two objectives of land zoned C3.

The application of Muswellbrook LEP, and other relevant legislation and environmental planning instruments is considered in Table 2-9.

Table 2-9: Review of other legislation and environmental planning instruments

Legislation	Overview	Approval required?
NSW Legislation		
Roads Act 1993	Under this Act, state authorities such as Transport for NSW are given the ability to carry out activities such as construction and upgrades on roads in NSW. Section 138 provides that consent from the appropriate roads authority is required for road work and other work within a road corridor. Consent is typically provided in the form of a Road Occupancy Licence obtained by the construction contractor prior to work beginning. This may include temporary closures of roads and regulation of traffic to ensure construction can be completed. As well, this Act permits Transport for NSW to acquire land for the purposes of road work, in line with the Land Acquisition (Just Terms Compensation) Act 1991.	**Yes** A Road Occupancy Licence (ROL) would need to be obtained by the construction contractor before beginning any work that requires road possession and closures. Transport for NSW is the relevant road authority for works on Golden Highway and Denman Road, whereas Muswellbrook Council is the authority for all works on Bengalla Road and Wybong Road.
Protection of the Environment Operations Act 1997 (POEO Act)	Under this Act, activities specified in 'scheduled activities' under Schedule 1 of the POEO Act require consent from the Environmental Protection Authority (EPA).	**No** The Proposal does not involve a 'scheduled activity' under Schedule 1 of the POEO Act. Accordingly, an Environment Protection Licence (EPL) is not required for the proposal.
National Parks and Wildlife Act 1974 (NPW Act)	This Act provides for the conservation and management of nature and objects, places and features of cultural value. It is the primary legislation for the protection of Aboriginal cultural heritage in NSW. Part 6 of the NPW Act provides protection for all Aboriginal objects and Aboriginal places in NSW. Under Section 90 of the Act, where harm to an Aboriginal object or Aboriginal place cannot be avoided, an Aboriginal Heritage Impact Permit is required before the disturbance of Aboriginal objects or places.	**No** The proposal is unlikely to disturb any objects of Aboriginal cultural heritage significance (refer to Section 3.5 (Aboriginal cultural heritage)). The Transport Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI) (Transport for NSW, 2011) was followed. A Stage 1 PACHCI assessment was carried out for the proposal by a Transport Aboriginal cultural heritage advisor and is provided in Appendix C. The assessment concludes that the proposal is unlikely to have an impact on Aboriginal cultural heritage and may proceed in accordance with the environmental assessment.
Heritage Act 1977 (Heritage Act)	This Act provides for the conservation of buildings, work, relics and places that are of historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance to the state. Matters protected under the Heritage Act include items subject to an Interim Heritage Order and items listed on the State Heritage Register, the heritage schedules of local council	**No** The proposal is unlikely to impact any Non-Aboriginal heritage items (refer to Section 3.6 (Non-Aboriginal heritage)). There is one local heritage item, Merton Cemetery Denman, adjacent to the Golden Highway and Denman Road intersection. The

Legislation	Overview	Approval required?
	LEPs, and the heritage and conservation registers established under Section 170 of the Heritage Act by NSW state government agencies (Section 170 Registers). The Heritage Act also provides for the protection of archaeological 'relics', being any deposit, object or material evidence that relates to the non-Aboriginal settlement of NSW and is of State or local heritage significance.	proposal is not anticipated to impact the item due to the distance from excavation (about 20 metres southwest and 30 metres southeast of the Golden Highway and Denman Road intersection), limited scope of work, and lack of vibration intensive activities.
Environmental planning instruments		
Muswellbrook Local Environmental Plan 2009	The relevant land zones and objectives apply to the proposal: • RU1 – Primary Production • RU5 – Village • C3 – Environmental Management.	**No** Road development by public authorities does not require development consent (refer to Section 2.4.1).

2.5 Community engagement and agency consultation

2.5.1 State Environmental Planning and Policy (Transport and Infrastructure) consultation

Part 2.2 of the Transport and Infrastructure SEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. The Part 2.2 of the Transport and Infrastructure SEPP requirements and assessment on whether the proposal is required to consult is provided in Table 2-10 and Table 2-11 below.

An outcome of this assessment has determined that consultation with local councils and other public authorities would not be required for this proposal given the minor scale of work proposed. Nonetheless, Muswellbrook Council has been advised of the proposed works and consultation is ongoing.

Table 2-10: Council consultation requirements

Is consultation with Council required under sections 2.10 - 2.12 and 2.14 of the SEPP (Transport and Infrastructure)?		
Are the works likely to have a substantial impact on the stormwater management services which are provided by council? Drainage works proposed include the provision of a new earth bund at the Denman Road and Bengalla Road intersection (I-026), realignment of an existing drainage line at Wybong Road and Golden Highway intersection (I-027), as well as the reinstatement of the open drain along the toe of batter supporting the proposed hardstand on the north side of Golden Highway at Golden Highway and Denman Road intersection (I-008).	Yes ☐	No ☒
Are the works likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area? The intersection upgrades proposed are minor in scale and as such, substantial traffic impacts during construction are not anticipated. The traffic capacity of the existing road network would remain as existing during operation of the proposal.	Yes ☐	No ☒
Will the works involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of the system?	Yes ☐	No ☒
Will the works involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?	Yes ☐	No ☒

Is consultation with Council required under sections 2.10 - 2.12 and 2.14 of the SEPP (Transport and Infrastructure)?		
Water usage would be required on site during construction activities such as the construction of asphalt hardstand, temporary bathrooms, and spray downs of the proposal areas. Water utilised for construction would be transported to the proposal areas when required. All water required for the proposal including but not limited to dust suppression and fill compaction would be sourced from potable town water.		
Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow? Temporary structures would not be required for the proposal. All construction works would be carried out primarily within the road reserve or existing cleared areas, not within land under local council management or control. Where appropriate, ancillary activities including car parking and equipment laydown would be carried out adjacent to, or within, the road reserve. This is unlikely to cause more than a minor or inconsequential disruption to pedestrian or vehicular flow.	Yes ☐	No ☒
Will the works involve more than a minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance? Bengalla Road is a local road located in the Muswellbrook LGA. The proposal includes the replacement of an existing kerbed median on Bengalla Road with a painted median (refer to Figure 2-3), requiring about 80 square metres of asphalt after the concrete median removal. Excavation proposed to carry out this replacement is minor in nature.	Yes ☐	No ☒
Is there a local heritage item (that is not also a state heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential? There are no items within the proposal footprint. The nearest local heritage-listed item is Merton Cemetery Denman, located directly south and east of the Golden Highway and Denman Road intersection (I-008). The heritage assessment carried out in Section 3.6 (Non-Aboriginal heritage) has indicated that impacts to this heritage item are not anticipated.	Yes ☐	No ☒
Is the proposal within the coastal vulnerability area and inconsistent with a certified coastal management program applying to that land? Note: See interactive map at Coastal management - (nsw.gov.au). Note the coastal vulnerability area has not yet been mapped. Note: a certified coastal zone management plan is taken to be a certified coastal management program.	Yes ☐	No ☒
Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent? **Note: Flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the Floodplain Development Manual: the management of flood liable land (nsw.gov.au).** The assessment carried out in Section 3.2 (Waterways and water quality) has indicated that the Denman Road and Bengalla Road intersection (I-026) (refer to Figure 3-5), and Golden Highway and Denman Road intersection (I-008) (refer to Figure 3-6) are below the 1 per cent annual exceedance probability (AEP) flood levels. Wybong Road and Golden Highway intersection (I-027) is also in a flood prone area.	Yes ☐	No ☒

Is consultation with Council required under sections 2.10 - 2.12 and 2.14 of the SEPP (Transport and Infrastructure)?		
However, the scope of work is limited to asphalt hardstands, utility and signage relocations, and minor tree removal and pruning. The proposal is unlikely to alter floodplain storage at each location due to the minor work proposed and, therefore, is not anticipated to impact future flooding events. Given that the works would not change flooding patterns, no consultation is required with Muswellbrook Council regarding works on flood liable land in accordance with the Transport and Infrastructure SEPP.		

Table 2-11: Consultation with other public authorities

Is consultation with a public authority (other than Council) required under sections 2.13, 2.15 and 2.16 of the SEPP (Transport and Infrastructure)?		
Are the works located on flood liable land? (to any extent) **If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance?** **Note: Flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the Floodplain Development Manual: the management of flood liable land (nsw.gov.au).** The assessment carried out in Section 3.2 (Waterways and water quality) has indicated that the proposal areas are located within flood liable land. However, the proposed work does not comprise more than minor alterations to the existing road reserve. Given that the proposal would not alter floodplain storage or change flooding patterns, no consultation is required with other public authorities regarding works on flood liable land per the Transport and Infrastructure SEPP.	Yes ☐	No ☒
Are the works adjacent to a national park, nature reserve or other area reserved under the *National Parks and Wildlife Act 1974*, or on land acquired under that Act?	Yes ☐	No ☒
Are the works on land in Zone C1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	Yes ☐	No ☒
Do the works include a fixed or floating structure in or over navigable waters?	Yes ☐	No ☒
Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional facility or group home in bush fire prone land?	Yes ☐	No ☒
Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	Yes ☐	No ☒
Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhart LEP 2012, Narrandera LEP 2013 and Urana LEP 2011).	Yes ☐	No ☒
Are the works on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*?	Yes ☐	No ☒
Are the works on, or reasonably likely to have an impact on, a part of the Willandra Lakes Region Work Heritage Property?	Yes ☐	No ☒
Are the works within a Western City operational area specified in Schedule 2 of the *Western Parkland City Authority Act 2018* with a capital value of $30 million or more?	Yes ☐	No ☒

Table 2-12: Notification of council and occupiers of adjoining land

Do Council and occupiers of adjoining land need to be notified under section 2.111 of the SEPP (Transport and Infrastructure)?		
Does the proposal include a car park intended for the use by commuters using regular bus services?	Yes ☐	No ☒
Does the proposal include a bus depot?	Yes ☐	No ☒
Does the proposal include a permanent road maintenance depot or associated infrastructure, such as garages, sheds, tool houses, storage yards, training facilities and workers amenities? Ancillary activities would be limited to temporary workforce parking and laydown areas on the road verge adjacent to each intersection.	Yes ☐	No ☒

2.5.2 Other agency and community engagement

Property acquisition

The owners of properties (Lot 7, DP1244305 and Lot 290, DP1141655) affected by the proposal would be consulted with, and ongoing consultation would occur during detailed design and construction stages.

Formal agreement will be required from the landowner of Lot 7, DP1244305 for the proposed work within the property and the temporary use of the land (about 520 square metres) for blade swing during OSOM movements. EnergyCo will liaise with the affected landowner regarding the work required within the property and to determine the possibility of transplanting the impacted Olive trees.

Ongoing or future consultation

Broad community engagement activities were not carried out with the local community due to the minor scope of work and short duration of activities. However, prior to the commencement of works, Transport would communicate potential traffic and noise impacts to the local community within the area surrounding the proposal. Suitable signage would be installed to inform road users of any changes to traffic conditions prior to, and during, construction.

Prior to the commencement of works, Transport would communicate with the community via the following communication methods:

- Transport's website
- Update to Livetraffic NSW
- Subscribers to regular emails on upcoming road closures.

3. Environmental assessment

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

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

3.1 Soil

Table 3-1: Soil

Description of existing environmental and potential impacts		
Are there any known occurrences of salinity or acid sulfate soils in the area? A review of the Australian Soil Resource Information System's (ASRIS, 2018) online Acid Sulfate Soil risk map was carried out on 3 November 2023. The search indicates that the proposal areas are located within areas of low acid sulfate soil probability, with the surrounding Muswellbrook Council LGA ranging between low and extremely low probability of occurrence. Nevertheless, any potential or actual acid sulfate soils would be managed in accordance with Transport's *Guidelines for the Management of Acid Sulphate Materials 2005.* A search of the eSPADE website (Office of Environment and Heritage, 2023), conducted on the 3 November 2023 identified that the Golden Highway and Denman Road intersection (I-008) and Wybong Road and Golden Highway intersection (I-027) are located within areas mapped as low overall salinity hazard. The Denman Road and Bengalla Road intersection (I-026) is located on the edge of an area mapped as high salinity hazard. These areas are identified in Figure 3-1. Soil salinity management will be carried out in accordance with the NSW Department of Primary Industries (2014) Salinity Training Handbook.	Yes ☒	No ☐

Description of existing environmental and potential impacts

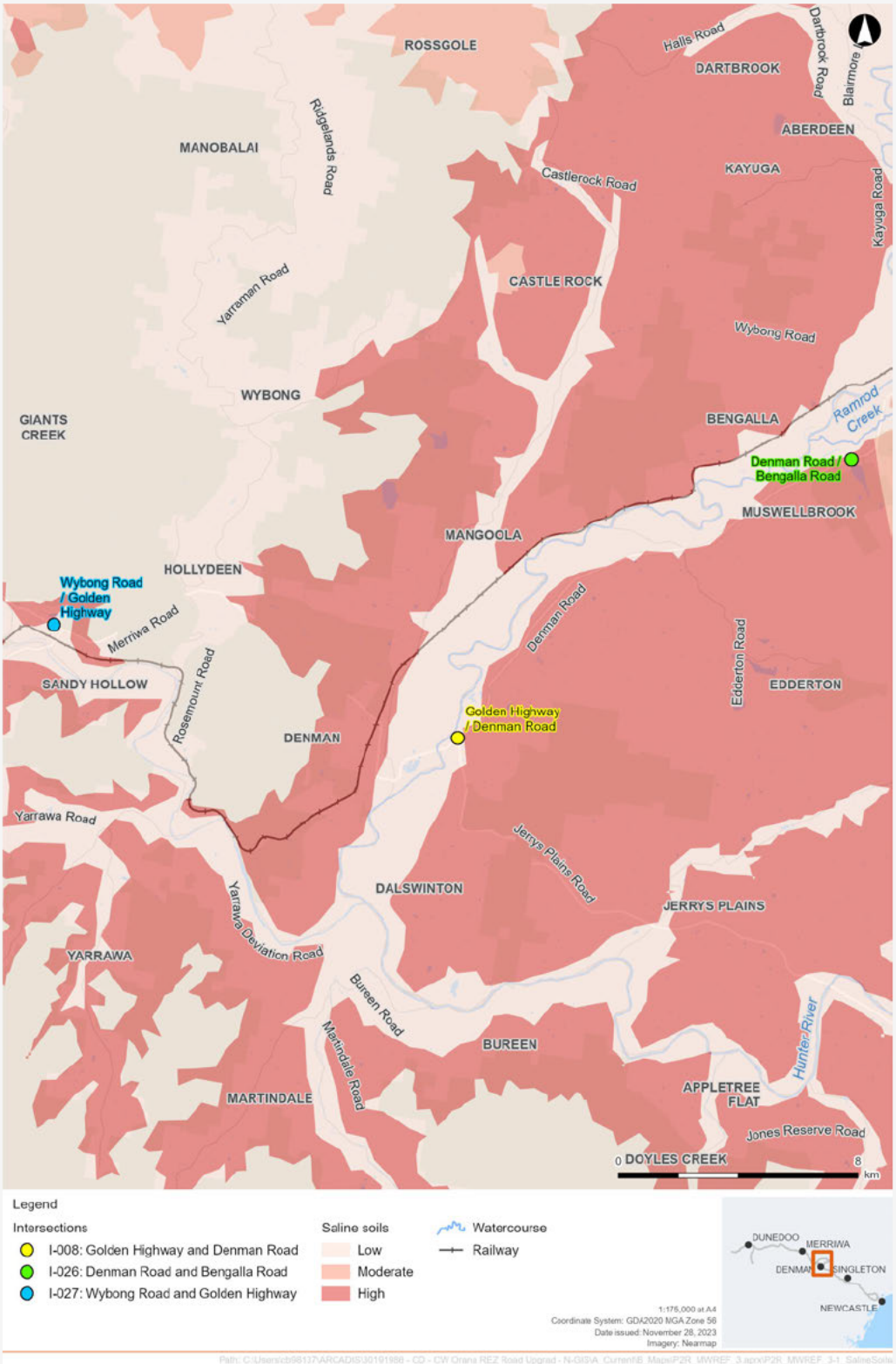


Figure 3-1: Saline soils

Does the proposal involve the disturbance of large areas (e.g., >2ha) for earthworks? The proposal would require excavation of about 0.28 hectares across the three intersections to accommodate the asphalt pavement widening, utility adjustments and drainage works.	Yes ☐	No ☒

Description of existing environmental and potential impacts		
Does the site have constraints for erosion and sedimentation controls such as steep gradients or narrow corridors? The proposed intersection works would be carried out on a generally flat to gently undulating topography within an existing road and verge in locations on or adjacent to the flood plains of the Hunter River and Goulburn River. Works would pose negligible erosion and sediment constraints. The site elevation ranges between about: • 112 and 114 metres Australian Height Datum (AHD) at the Golden Highway and Denman Road intersection (I-008) • 143 to 146 metres AHD at the Denman Road and Bengalla Road intersection (I-026) • 131 to 134 metres AHD at the Wybong Road and Golden Highway intersection (I-027). While the work locations are within narrow corridors, the small extent of exposed soils at each of the three site poses no substantial impediment for the installation of appropriate erosion and sediment controls to adequately manage any risk.	Yes ☐	No ☒
Are there any sensitive receiving environments that are located in or nearby the likely proposal area or that would likely receive stormwater discharge from the proposal? **Sensitive receiving environments include (but are not limited to) wetlands, state forests, national parks, nature reserves, rainforests, drinking water catchments).** The nearest sensitive receiving environment in the vicinity of the Golden Highway and Denman Road intersection (I-008) is the Hunter River, located about 165 metres northwest of the proposal across flat floodplain. The nearest sensitive receiving environment in the vicinity of the Denman Road and Bengalla Road intersection (I-026) is the Hunter River, located over one kilometre north and west of the proposal across flat to gently undulating floodplain. The nearest sensitive receiving environment in the vicinity of the Golden highway and Wybong Road intersection (I-027) is the Goulburn River, located about 570 metres to the southwest across a flat to gently undulating floodplain. Construction of the intersection widening works at the three intersections would include the additional asphalt hardstand at all three intersections. However, the increased pavement areas would be minor in the context of the overall hydrology and as such, would be unlikely to have any substantial impact on surface water flows within the catchments. Further, the small extent and temporary and short-lived nature of any ground disturbance likely at each site means that there is negligible risk of impacts to water quality in the receiving waters due to the proposal. Erosion and sediment control measures, as outlined in safeguard E1, would be implemented during construction to minimise sediment moving off the construction site and entering water bodies within the vicinity.	Yes ☐	No ☒
Is there any evidence within or nearby the likely footprint of potential contamination? A review of the NSW Environment Protection Authority (EPA) Contaminated Land Register (NSW EPA, 2023a) was carried out on 16 November 2023 for contaminated sites regulated by the EPA under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985*. Based on the search result, no records were found within the Muswellbrook LGA. Excavation works would be conducted to a maximum depth of about one metre. Safeguard E10, included in this minor works REF, requires unexpected finds of potential or actual contaminated soils are to be managed in accordance with Transport's *QA Specification G36 Section 4.2 2022*. With the implementation of this safeguard, potential human health risk to construction and maintenance staff from a contamination perspective is considered low.	Yes ☐	No ☒
Is the likely proposal footprint in or nearby highly sloping landform? The proposal and nearby areas are associated with floodplains with flat to gently undulating topography generally.	Yes ☐	No ☒
Is the proposal likely to result in more than 2.5ha (area) of exposed soil? The proposal would require exposure of about 0.28 hectares of soils across three intersections to accommodate the asphalt pavement widening, utility adjustments and drainage works. Safeguards are	Yes ☐	No ☒

Description of existing environmental and potential impacts
provided below which would be used to manage potential erosion and sediment impacts (E1) near the proposed works area.
Additional information pertaining to soil and contamination risk. A desktop database search and review of publicly available information was undertaken to identify the potential for soil impacts. The sources consulted included: • The Australian Soil Resource Information System (ASRIS) maps (2023) • eSPADE (Office of Environment and Heritage, 2023). Construction activities would involve movement and use of vehicles across exposed earth, and transport of materials to and from the proposal areas. There is potential for soil erosion to occur across the proposal footprint. Safeguards would be in place to minimise the potential for soil erosion impacts.

Safeguards

Table 3-2: Soils safeguards and management measures

Numbering	Impact	Environmental safeguards	Responsibility	Timing
E1	Soils	Erosion and sediment control measures are to be implemented (in accordance with the Landcom/Department of Housing *Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book)) and maintained to: • minimise sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets • reduce water velocity and capture sediment on site • minimise the amount of material transported from site to surrounding pavement surfaces • divert clean water around the site.	Contractor	Construction
E2	Soils	Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request.	Contractor	Construction
E3	Soils	Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised.	Contractor	Construction
E4	Soils	Work areas are to be stabilised progressively during the works.	Contractor	Construction
E5	Soils	A progressive erosion and sediment control plan is to be prepared for the works.	Contractor	Pre-construction and Construction
E6	Soils	The maintenance of established stockpile sites is to be in accordance with Transport's *Stockpile Site Management Guideline* (EMS-TG-10).	Contractor	Pre-construction and Construction
E7	Soils	Potential or actual acid sulfate soils are to be managed in accordance with Transport's *Guidelines*	Contractor	Construction

Numbering	Impact	Environmental safeguards	Responsibility	Timing
		for the Management of Acid Sulphate Materials 2005.		
E8	Soils	Saline soils are to be managed in accordance with NSW Department of Primary Industries (2014) Salinity Training Handbook.	Contractor	Construction
E9	Contamination	An unexpected finds procedure for potential or actual contaminated soils will be included in the construction environmental management documentation.	Contractor	Construction

3.2 Waterways and water quality

Table 3-3: Waterways and water quality

Description of existing environmental and potential impacts

Is the proposal located within, adjacent to or near a waterway? Yes ☒ No ☐

The proposal is located in the Hunter Catchment and is within the vicinity of several water bodies. These water bodies and their location from the proposal areas are summarised in Table 3-4 and shown in Figure 3-2 to Figure 3-4.

Table 3-4: Water bodies within the vicinity of the proposal

Proposal area	Name of water body	Location from the proposal (approximate)
Golden Highway and Denman Road intersection (I-008)	Hunter River	165 metres northwest
Denman Road and Bengalla Road intersection (I-026)	Unnamed artificial water body (dam associated with adjacent mining activities)	100 metres south (upslope from intersection)
	Outflow of unnamed lake	Flows parallel to Bengalla Road and intersects the Denman Road around 80 metres east and Bengalla Road about 360 metres northeast of the intersection
Wybong Road and Golden Highway intersection (I-027)	Pheeneys Creek	Intersects Golden Highway about 245 metres east of the intersection
	Goulburn River	580 metres southwest

Minor drainage lines across flat to gently undulating farmland on floodplain separate the intersections from the Hunter River and Goulburn River. Due to the small extent of ground disturbance at the intersections, the flat topography and the vegetated nature of the minor drainage lines, the potential for any substantial sediment transport to the rivers, and sedimentation and associated water quality impacts, is negligible.

To minimise any potential impacts, erosion and sediment measures listed in Section 3.1 (Soil) would be implemented during construction.

Performance of the open drains would potentially be impacted temporarily during this work. However, the function of drainage infrastructure would be restored after construction is finalised.

Given the minor work proposed at the intersections, risk of water quality impacts receiving environments is low to negligible.

Description of existing environmental and potential impacts

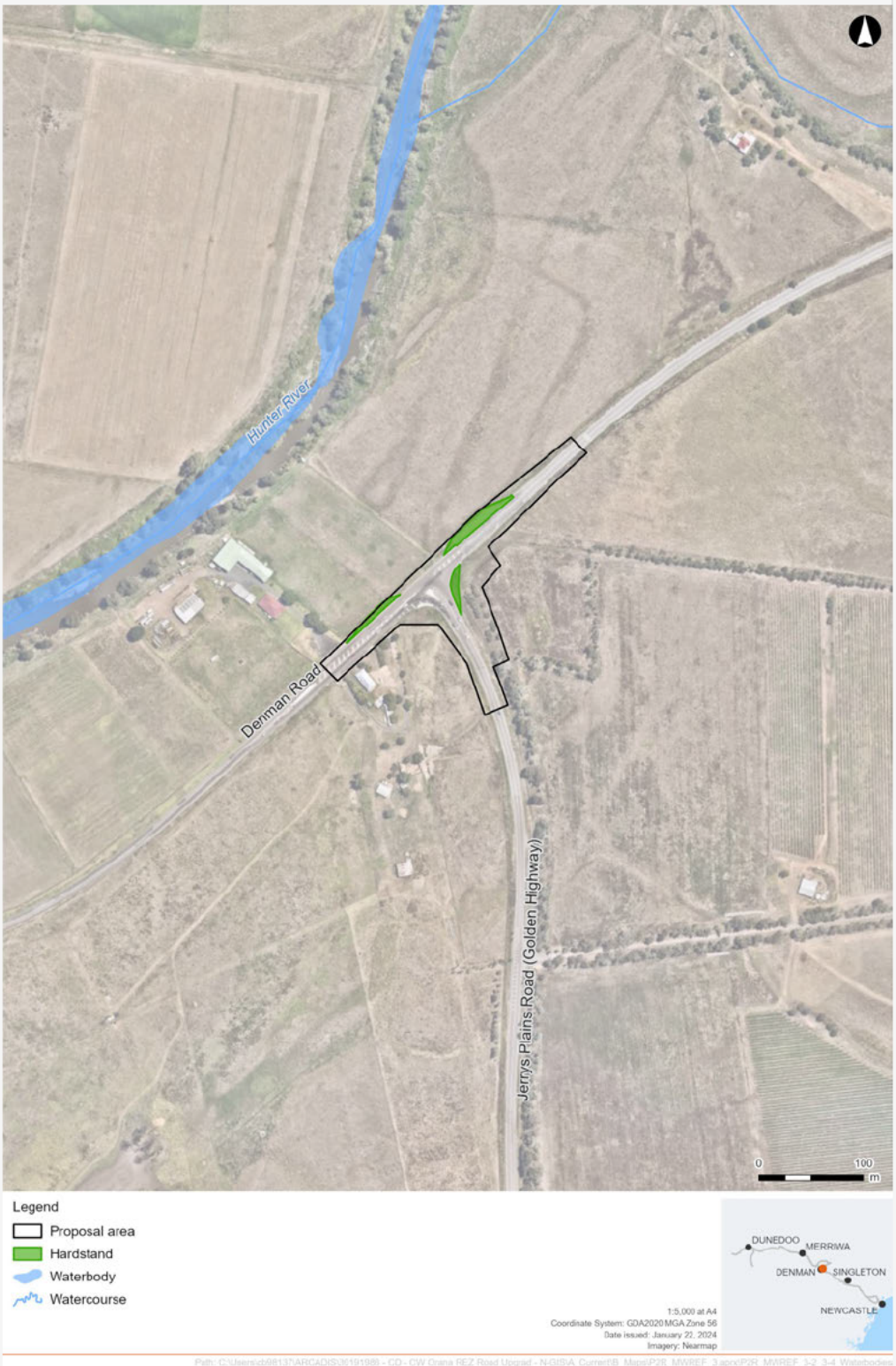


Figure 3-2: Water bodies in the vicinity of the proposal - Golden Highway and Denman Road intersection (I-008)

Description of existing environmental and potential impacts

Figure 3-3: Water bodies in the vicinity of the proposal – Denman Road and Bengalla Road intersection (I-026)

Description of existing environmental and potential impacts		

Figure 3-4: Water bodies in the vicinity of the proposal – Wybong Road and Golden Highway intersection (I-027)

Is the location known to flood or be prone to water logging?	Yes ☒	No ☐

Description of existing environmental and potential impacts		
The Golden Highway and Denman Road (I-008), and Denman Road and Bengalla Road (I-026) intersections are located within the Hunter River Floodplain whilst the Wybong Road and Golden Highway intersection (I-027) is located within the Goulburn River Floodplain. Muswellbrook is situated at the confluence of the Hunter River and Muscle Creek, while Denman is located on the western edge of the Hunter River Floodplain. The *Hunter River Flood Study* (Muswellbrook Shire Council, 2017) indicates that Denman Road and Bengalla Road intersection (I-026) and Golden Highway and Denman Road intersection (I-008) are below the Hunter River 1 per cent annual exceedance probability (AEP) flood level. Wybong Road and Golden Highway intersection (I-027) is not included in the *Hunter River Flood Study* (Muswellbrook Shire Council, 2017). However, the *Muswellbrook Shire Local Flood Plan* suggests that the intersection is in a flood prone area as it is located near a tributary of the Goulburn River. The *Muswellbrook Shire Local Flood Plan* also indicates that Wybong Road (from Muswellbrook to Sandy Hollow) has been subject to road closures by low-level flooding at various locations. Weather forecasts would be monitored prior to and throughout the works.		
Is the proposal located within a regulated catchment covered by chapter 6 of State Environmental Planning Policy (Biodiversity and Conservation) 2021 (SEPP (Biodiversity and Conservation))? The proposal areas are not located within any regulated catchments. https://www.planningportal.nsw.gov.au/publications/environmental-planning-instruments/state-environmental-planning-policy-biodiversity-and-conservation-2021. The nearest regulated catchment to the proposal areas is Hawkesbury-Nepean Catchment, located about 70 kilometres south of the Golden Highway and Denman Road intersection (I-008).	Yes ☐	No ☒
Would the proposal be undertaken on a bridge or ferry?	Yes ☐	No ☒
Is the proposal likely to require the extraction of water from a local water course (not mains)? All water required for the proposal including but not limited to dust suppression and fill compaction would be sourced from potable town water.	Yes ☐	No ☒

Safeguards

Table 3-5: Water quality safeguards and management measures

Numbering	Impact	Environmental safeguards	Responsibility	Timing
W1	Water quality	Weather forecasts (probability and amount of rain) will be considered when programming works.	Contractor	Construction
W2	Water quality	An emergency spill kit will be kept on-site at all times during works. All staff are to be made aware of the location of the spill kit and trained in its use.	Contractor	Construction
W3	Water quality	If a spill occurs, Transport's Environmental Incident Procedure 2021 will be followed and the Transport Project Manager notified as soon as practicable.	Contractor	Construction
W4	Flooding	The Bureau of Meteorology flood forecasting and warning service is to be monitored for the duration of works for possible flooding to either the Hunter River or Goulburn River. In the event a flood warning is issued where flooding could occur at the work site(s), then the site(s) would be stabilised to minimise erosion extent and sediment runoff, plant and mobile equipment moved to higher ground where possible, and any remaining equipment on site stabilised to mitigate risk of floating offsite. Measures to remain until flooding has subsided and warnings cancelled.	Contractor	Construction

3.3 Noise and vibration

Table 3-6: Noise and vibration

Description of existing environmental and potential impacts		
Are there any residential properties or other noise sensitive areas near the location of the proposal that may be affected by the work (i.e., church, school, hospital)? The location of existing noise sensitive receivers is shown in Figure 3-5 to Figure 3-7. The proposal is surrounded by the following sensitive receivers that may be impacted during construction including: • Golden Highway and Denman Road intersection (I-008): The surrounding land is zoned as Primary Production (RU1). Two residential properties are located about 10 metres south, and 135 metres west, of the proposal area. Denman Anglican Parishes and St Bernard of Clairvaux Denman Church are the closest churches to the proposal, located about 3.4 kilometres southwest and 3.1 kilometres southwest respectively from the proposal area. These churches are at a sufficient distance from the proposal area that they would not be noise-affected during the work. • Denman Road and Bengalla Road intersection (I-026): The surrounding land is zoned as Primary Production (RU1). Two residential receivers are located about 370 metres east, and 460 metres west, of the proposal area. The nearest hospitals are Denman Hospital, located about three kilometres southeast of the proposal area, and Muswellbrook Hospital, located about 4.9 kilometres northeast of the proposal area. These hospitals are far enough away from the proposal area that they would not be noise-affected during the work. • Wybong Road and the Golden Highway intersection (I-027): The surrounding land is zoned as Environmental Management (C3), Primary Production (RU1), and Village (RU5). Two residential receivers are located about 240 metres west, and 315 metres northwest, of the Goulburn Drive and Golden Highway intersection. The nearest school is Sandy Hollow Public School, located about 750 metres northwest of the Wybong Road and Golden Highway intersection (I-027). The school is at a sufficient distrance from the proposal area that it would not be noise-affected during the work. No other residential properties or other noise sensitive receivers are in proximity to the proposal that may be affected by the works.	Yes ☒	No ☐

Description of existing environmental and potential impacts

Figure 3-5: Noise sensitive receivers in proximity to the Golden Highway and Denman Road intersection (I-008)

Description of existing environmental and potential impacts

Figure 3-6: Noise sensitive receivers in proximity to the Denman Road and Bengalla Road intersection (I-026)

Description of existing environmental and potential impacts

Figure 3-7: Noise sensitive receivers in proximity of the Wybong Road and Golden Highway intersection (I-027)

Is the proposal going to be undertaken only during standard working hours? Standard working hours • Monday-Friday: 7:00am to 6.00pm • Saturday: 8.00am to 1.00pm	Yes ☒	No ☐

Description of existing environmental and potential impacts

- Sunday and Public Holidays: no work.

Construction works would be prioritised during standard working hours (daytime) as identified above. Where required, works outside of standard hours will be permitted where required by a road occupancy licences (ROLs) in response to possible traffic and or safety impacts.

Any work with impulsive or tonal noise emissions will be carried out in accordance with the Construction Noise and Vibration Guideline (Roads) (Transport for NSW, 2023) and EPA Interim Construction Noise Guideline (ICNG) (NSW DECC, 2009).

Is any explosive blasting required for the proposal? Yes ☐ No ☒

Would construction noise or vibration from the proposal affect sensitive receivers? Yes ☒ No ☐

The Transport Construction Noise Estimator tool (Transport noise tool) has been used to assess construction noise and vibration impacts for the proposal. This assessment has been carried out to consider the impacts from asphalting work. The results of the assessment are shown in Appendix C.

The proposal sites were categorised and assessed based on noise area types (i.e.: number of noise sensitive receivers in proximity) as per the Transport Construction Noise Estimate tool (Transport noise tool). The noise area categories selected for each of the proposal areas are detailed below:

- **Golden Highway and Denman Road intersection (I-008) and Wybong Road and Golden Highway intersection (I-027)**: The R2 category has been selected as the representative noise area category for this intersection. The R2 category is representative of an area with isolated residences within a vicinity of a highway with a speed limit of 100 kilometres per hour. There is line of sight to the proposal area from the nearest residential receiver for both intersections.
- **Denman Road and Bengalla Road intersection (I-026):** The R1 category was selected for this intersection. The R1 category is representative of a location within a rural area, with the background noise environment influenced by distant road traffic noise. There is no line of sight to the proposal area from the nearest residential receiver.

Construction noise assessment

A distance based (noisiest plant) assessment was selected for all three intersections, with 'concrete saw' selected as the applicable construction scenarios for the intersections:

- Golden Highway and Denman Road intersection (I-008): Concrete saw (Standard hours)
- Denman Road and Bengalla Road intersection (I-026): Concrete saw (Standard hours)
- Wybong Road and Golden Highway intersection (I-027): Concrete saw (Standard hours).

Construction noise impacts have been assessed for pavement/asphalting works carried within standard construction hours. The predicted noise levels at each receiver are conservative, as they are based on modelling the noise source at the edge of the proposal area at the closest point to the receiver. In reality, the noise source would be further away in most cases, at the location where the pavement works are actually occurring within the proposal area.

Golden Highway and Denman Road intersection (I-008) and Wybong Road and Golden Highway intersection (I-027) (R2 category)

Table 3-7 is based on the predicted construction noise impacts during the day-time period for undeveloped green fields and rural areas with isolated dwellings. The mitigation measures proposed by the Transport noise tool has been included in Table 3-10 and a description of these measures is included in Appendix C. Figure 3-8 and Figure 3-9 shows the impact distances for each perception level of the intersections.

Table 3-7: Predicted noise impact during the day-time period for the distance-based assessment (with line of sight) – R2 category

Perception	Noise management level, $L_{Aeq(15\ min)}$ dBA			
	NML, dBA	Predicted noise level, dBA	Impact distance (metres)	Recommended additional mitigation measure
Noticeable	55	-	-	-

Description of existing environmental and potential impacts

Clearly audible		-	-	-
Moderately intrusive		65	95	N
Highly intrusive		75	30	N, PC, RO
Highly noise affected		75	30	N, PC, RO

N=Notification, PC=Phone calls, RO=Respite offer

Several residential receivers in the vicinity of the Golden Highway and Denman Road intersection (I-008) are likely to be noise-affected during the proposed works (refer to Figure 3-8). The nearest residential receiver to the Golden Highway and Denman Road intersection (I-008) is located about 10 metres south of the proposal area, which is within the highly noise affected impact distance of 30 metres. This receiver is therefore likely to be noise-affected due to the proposed construction work during daytime hours. This receiver would only be highly noise affected when the modelled pavement/asphalting work are occurring immediately adjacent to the residence. Construction noise levels would vary with work location within the proposal area and would more likely be moderately intrusive or clearly audible based on the proposed pavement works locations (refer to Figure 2-2). Elevated construction noise levels at this intersection would be temporary and short-lived.

The residence to the north is located further away from the proposal area and in a worst-case scenario, is predicted to experience noise levels that are audible but not intrusive.

All sensitive receivers likely to be affected by noise impacts from the proposal would be notified at least five business days prior to commencement of any work associated with the activity that may have an adverse noise or vibration impact. Potential noise impacts at these receivers would be managed per the *Construction Noise and Vibration Guideline* (Transport for NSW, 2023), including respite (if required).

The nearest residential receiver to the proposed works at Wybong Road and Golden Highway intersection (I-027) is about 240 metres west of the proposal footprint and beyond the sensitive area distances shown in Figure 3-9. Therefore, the receiver is outside the maximum impact distance of 95 metres and is unlikely to be noise affected by the proposed construction work.

Description of existing environmental and potential impacts

Figure 3-8: Construction noise impact distances during the day-time period (with line of sight) – Golden Highway and Denman Road intersection (I-008)

Description of existing environmental and potential impacts

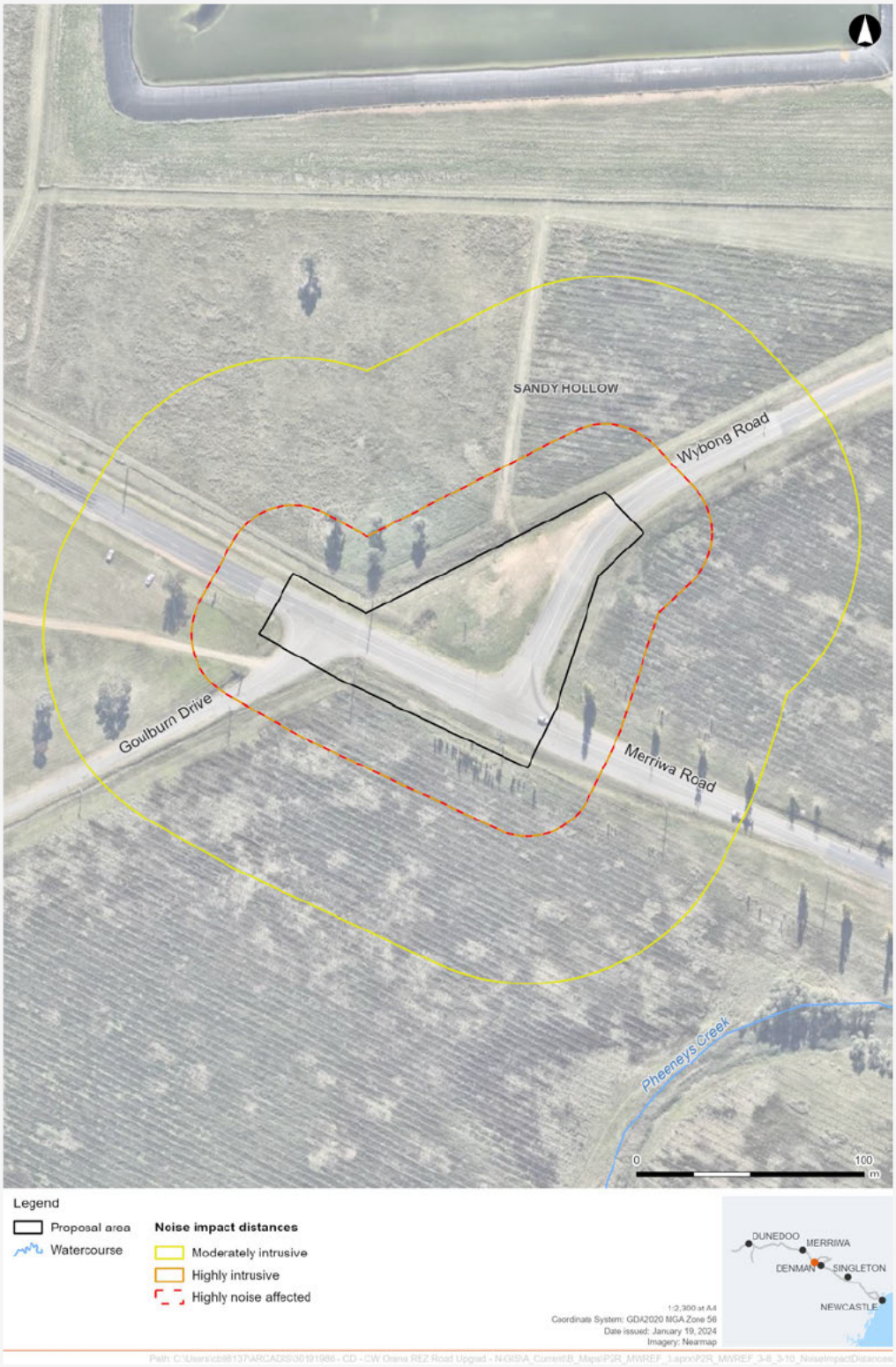


Figure 3-9: Construction noise impact distances during the day-time period (with line of sight) – Wybong Road and Golden Highway intersection (I-027)

Denman Road and Bengalla Road intersection (I-026) (R1 category)

The nearest residential receiver to the proposed works at Denman Road and Bengalla Road intersection (I-026) is about 370 metres east of the proposal footprint and beyond the sensitive area distances

Description of existing environmental and potential impacts

shown in Figure 3-10. Therefore, the nearest receiver is outside the maximum impact distance of 95 metres and is unlikely to be noise affected by the proposed construction work.

Table 3-8 are based on the predicted construction noise impacts during the day-time period for undeveloped green fields and rural areas with isolated dwellings.

Table 3-8: Predicted noise impact during the day-time period for the distance-based assessment (with line of sight) – R1 category

Perception	Noise management level, $L_{Aeq(15\ min)}$ dBA			
	NML, dBA	Predicted noise level, dBA	Impact distance (night) (metres)	Recommended additional mitigation measure
Noticeable	50	-	-	-
Clearly audible		-	-	-
Moderately intrusive		60	95	N
Highly intrusive		70	30	N
Highly noise affected		75	25	N, PC, RO

N=Notification, PC=Phone calls, RO=Respite offer

Description of existing environmental and potential impacts

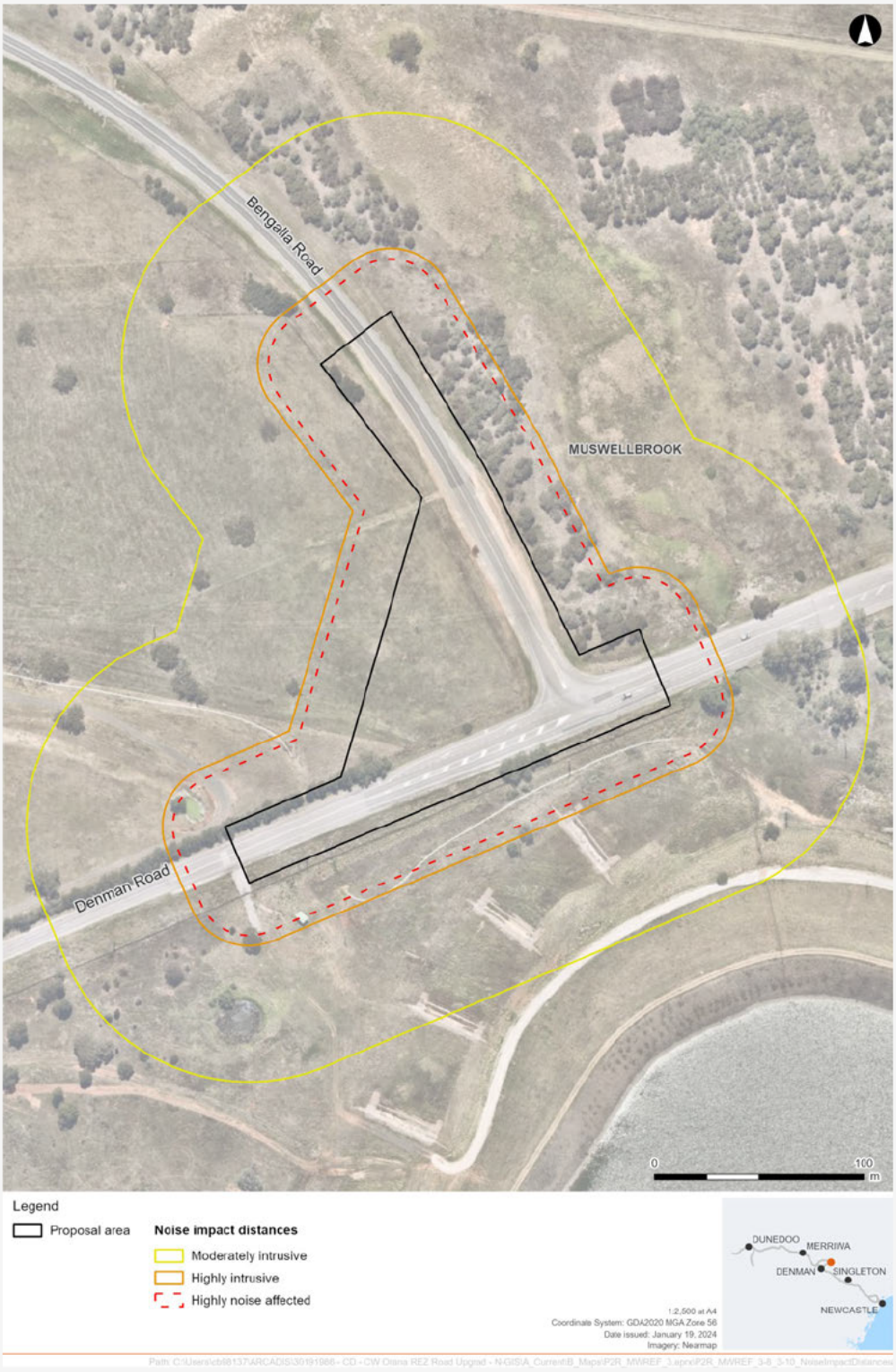


Figure 3-10: Noise impact distances during the day-time period (without line of sight) – Denman Road and Bengalla Road intersection (I-026)

Construction vibration assessment

Recommended minimum working distances for vibration intensive equipment from sensitive receivers have been sourced from the Transport noise tool for the proposal. Vibration intensive equipment, including jackhammers, vibratory roller, and asphalt paver, would likely be utilised during construction.

Description of existing environmental and potential impacts		
Table 3-9 below identifies the minimum working distances expected for the cosmetic damage of light-framed structures and annoyance for human comfort. Table 3-9: Recommended minimum working distances for vibration intensive equipment **Plant item / Rating / Description / Minimum working distance (Cosmetic damage: Light-framed structure (BS 7385); Heritage and other sensitive structures (DIN 4150); Human Response: EPA's Vibration Guideline)** Vibratory Roller; < 50 kN (Typically 1-2 tonnes); 5 m; 14 m; 15 m to 20 m Vibratory Roller; < 100 kN (Typically 2-4 tonnes); 6 m; 16 m; 20 m Vibratory Roller; < 200 kN (Typically 4-6 tonnes); 12 m; 33 m; 40 m Vibratory Roller; < 300 kN (Typically 7-13 tonnes); 15 m; 41 m; 100 m Vibratory Roller; > 300 kN (Typically 13-18 tonnes); 20 m; 54 m; 100 m Vibratory Roller; > 300 kN (> 18 tonnes); 25 m; 68 m; 100 m Jackhammer; Hand held; 1 m (nominal); 2 m; 3 m Asphalt Paver; Vogele Super 1800-3; 1 m; -; - Based on Table 3-9, the residential receiver located 10 metres south of the Golden Highway and Denman Road intersection (I-008) is unlikely to be impacted by vibration, as it is around 25 metres from the closest proposed pavement works. Merton Cemetery Denman, a heritage-listed item, is located on either side of Golden Highway about 20 metres southwest and 30 metres southeast of the proposal area (refer to Figure 3-11). The Merton Cemetery Denman is located about 17 metres from the nearest proposed asphalt, which falls within the minimum working distances for both cosmetic damage and human response. Reasonable and feasible safeguards and management measures, in accordance with the CNVG, would be in place throughout construction to minimise noise and vibration impacts anticipated from the proposal. Construction would be carried out within a short duration of a few weeks for each intersection and within daytime hours only. As such, sleep disturbance impacts would not occur as result of the proposed construction work.		
Would operation of the proposal alter the noise environment for sensitive receivers? This might include, but not be limited to, altering the line or level of an existing carriageway, changing traffic flow, adding extra lanes, increasing traffic volume, increasing the number of heavy vehicles, removing obstacles that provide shielding including changing the angle of view of the traffic, changing the type of pavement, increasing traffic speeds by more than 10 kilometres per hour or installing audio-tactile line markings. The scope of work primarily involves the construction and paving of asphalt hardstand at each intersection, and the relocation of utilities and signage. Traffic movement and volumes on the Golden Highway, Denman Road, Bengalla Road, and Wybong Road and in turn, the noise environment for sensitive receivers, would remain unaffected by the operation of the proposal. OSOM movements associated with the generator projects are under the sole control of the individual generators and are subject to the conditions of consent for those projects. Any noise impacts from	Yes ☐	No ☒

Description of existing environmental and potential impacts		
OSOM movements for individual generator projects using the proposed upgrades will be assessed and approved as part of the development consents for each individual generation project.		
Would the proposal result in vibration being experienced by any surrounding properties or infrastructure during operation? The proposal would not result in operational vibration impacts as it would not result in changes to the day-to-day operation of the road network.	Yes ☐	No ☒

Safeguards

Table 3-10: Noise and vibration safeguards and management measures

Numbering	Impact	Environmental safeguards	Responsibility	Timing
NV1	Noise and vibration	Construction noise and vibration will be managed in accordance with the *Construction Noise and Vibration Guideline* (CNVG) (Transport for NSW, 2023) and *Interim Construction Noise Guideline* (ICNG) (DECC, 2009).	Contractor	Construction
NV2	Noise and vibration	All sensitive receivers (e.g., schools and local residents) likely to be affected will be notified at least five business days prior to commencement of any work associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of: • the project • the construction period and construction hours • contact information for project management staff • complaint and incident reporting • how to obtain further information.	Contractor	Pre-construction/ Construction
NV3	Noise and vibration	Any work with impulsive or tonal noise emissions will be carried out in accordance with the Construction Noise and Vibration Guideline (Roads) (Transport for NSW, 2023) and EPA Interim Construction Noise Guideline (ICNG) (NSW DECC, 2009).	Contractor	Construction
NV4	Noise and vibration	Recommended mitigation measures, as listed in Tables 3-7 to 3-8, are to be implemented where appropriate.	Contractor	Pre-construction Construction
NV5	Noise and vibration	Construction methods must consider safe working distances for rollers and other vibration producing equipment when working adjacent to structures, including heritage structures.	Contractor	Construction

3.4 Air quality

Table 3-11: Air quality

Description of existing environmental and potential impacts		
Is the proposal likely to result in large areas (>2ha) of exposed soils? The proposal would require excavation of about 0.28 hectares of soils across three locations to accommodate the asphalt pavement widening, utility adjustments and drainage works.	Yes ☐	No ☒
Are there any dust-sensitive receivers located within the vicinity of the proposal during the construction period? The intersections are all located within a rural area, primarily adjacent to cleared and grassed land. The nearest receivers of potential dust emissions to each of the intersections are outlined below: • Golden Highway and Denman Road intersection (I-008): residential receiver located about 10 metres south of the proposal area • Denman Road and Bengalla Road intersection (I-026): residential receiver located about 300 metres west of the proposal area • Wybong Road and Golden Highway (I-027): residential receiver located about 240 metres west of the proposal area. The main activities that may generate dust during construction include: • Vehicles during earthworks associated with construction: – Excavators – Front end loaders – Dump trucks • Wind erosion from exposed earth areas • Vehicle movements on unsealed sections of road may cause dust. The proposed works at the Golden Highway and Denman Road intersection (I-008) are limited to the construction of asphalt hardstand, signage relocation and tree removal and pruning. Though the nearest residential property is located about 10 metres south of the construction boundary, the actual construction work carried out is located about 85 metres northeast of the property. Minimal dust impacts would be expected from the proposal due to the limited scale and nature of excavation works proposed. Minor impacts are also expected from works proposed at other intersections, given the scale and nature of excavation works. Potential dust emissions would be managed through the implementation of environmental management measures during construction. These include, but are not limited to, covering vehicles transporting waste or other materials, avoiding works that could generate dust during strong winds or unfavourable weather conditions.	Yes ☒	No ☐
Is there likely to be an emission to air during construction? Emissions from plant and equipment would be generated during construction. This is not expected to be discernible from the existing vehicle emissions on the roads.	Yes ☒	No ☐

Safeguards

Table 3-12: Air quality safeguards and management measures

Numbering	Impact	Environmental safeguards	Responsibility	Timing
A1	Air quality	Vehicles transporting waste or other materials that have a potential to produce odours or dust will be covered during transportation.	Contractor	Construction
A2	Air quality	Plant, vehicles and equipment will be maintained in good condition and in accordance with manufacturer's specifications.	Contractor	Construction
A3	Air quality	Plant and machinery will be turned off when not in use.	Contractor	Construction

Numbering	Impact	Environmental safeguards	Responsibility	Timing
A4	Air quality	Visual monitoring of air quality will be undertaken to verify the effectiveness of controls and enable early intervention.	Contractor	Construction
A5	Air quality	Work activities that generate dust with an impact on sensitive receivers, motorist visibility and or worker safety, will cease and reprogrammed until implementation of revised management measures to control dust and or improved weather conditions.	Contractor	Construction

3.5 Aboriginal cultural heritage

Table 3-13: Aboriginal cultural heritage

Description of existing environmental and potential impacts		
Would the proposal involve disturbance in any area that has not been subject to previous ground disturbances? The proposal is located on existing developed land used as a roadway, and works would primarily be limited to the existing road corridor.	Yes ☐	No ☒
Has an online Aboriginal Heritage Information Management System (AHIMS) search been completed? Extensive AHIMS searches were carried out on 23 November 2023 (refer to Appendix D). These searches confirmed that there are no registered Aboriginal sites in the vicinity of the Wybong Road and Golden Highway intersection (I-027). The AHIMS search did identify three Aboriginal heritage items located southeast of the vicinity of the Golden Highway and Denman Road intersection (I-008). The nearest item is located about 50 metres southeast of the intersection within the boundaries of a private property. One Aboriginal heritage item has been identified about 350 metres northeast of the Denman Road and Bengalla Road intersection (I-026), within cleared land. None of these items were within the proposal area.	Yes ☒	No ☐
Is there potential for the proposal to impact on any items of Aboriginal cultural heritage? None of the items identified in the AHIMS searches carried out on 23 November 2023 would be impacted by the proposal. Further, results from the Stage 1 assessment process in the Procedure for Aboriginal cultural heritage consultation and investigation (PACHCI), contained In Appendix B, found the proposed sites as being unlikely have an impact on Aboriginal cultural heritage. The outcome of the PACHCI assessment was based on the following due diligence considerations: • The project is unlikely to harm known Aoriginal objects or places. • The AHIMS search did not indicate moderate to high concentrations of Aboriginal objects or places in the study area. • The study area does not contain landscape features that indicate the presence of Aboriginal objects, based on the Heritage NSW's *Due diligence Code of Practice for the Protection of Aboriginal objects in NSW* and the Transport for NSW's procedure. • The cultural heritage potential of the study area appears to be reduced due to past disturbance. • There is an absence of sandstone rock outcrops likely to contain Aboriginal art. Therefore, the potential for encountering any intact and previously unknown objects or features of Aboriginal archaeological of cultural heritage significance is considered low.	Yes ☐	No ☒

Description of existing environmental and potential impacts		
Would the proposal involve the removal of mature native trees? No mature native trees would be removed, though the proposal would involve the removal of five, and pruning of one, Olive trees (refer to Figure 3-12). The impacted trees are an exotic species and are located within a private property on the eastern side of Golden Highway, at the Golden Highway and Denman Road intersection (I-008). The proposal would also require removal of one native juvenile tree located about 30 metres west of Denman Road and Bengalla Road intersection (I-026) (refer to Figure 3-14). None of the impacted trees form part of a heritage listing or have other heritage value. Further assessment of potential impacts to trees is provided in Section 3.7 (Biodiversity).	Yes ☐	No ☒
Is the proposal consistent with the requirements of Transport's *Procedure for Aboriginal cultural heritage consultation and investigation* (PACHCI)? A Procedure for Aboriginal Cultural Heritage Investigation (PACHCI) was carried out in January 2024 and contained in Appendix B. The proposal was assessed as being unlikely to have an impact on Aboriginal cultural heritage based on the following considerations: • the project is unlikely to harm known Aboriginal objects or places. • the AHIMS search did not indicate moderate to high concentrations of Aboriginal objects or places in the study area. • the study area does not contain landscape features that indicate the presence of Aboriginal objects, based on the Office of Environment and Heritage's Due diligence Code of Practice for the Protection of Aboriginal objects in NSW and the Roads and Maritime Services' procedure. • the cultural heritage potential of the study area appears to be reduced due to past disturbance. • there is an absence of sandstone rock outcrops likley to contain Aboriginal art.	Yes ☒	No ☐
Additional information pertaining to Aboriginal cultural heritage risk. A review of the National Native Title Tribunal was carried out on 6 March 2024. The search identified that Wybong Road and Golden Highway intersection (I-027) is located in a Native Title Claim area (NC2011/006-2). However, Native Title claim does not prevent the use of land covered by the claim for other activities subject to the valid laws of the Commonwealth and the State of New South Wales. Further, there is no associated Indigenous Land Use Agreement. It was confirmed that the Golden Highway and Denman Road intersection (I-008) and Denman Road and Bengalla Road intersection (I-026) are not located within a Native Title Claim area. Further, preliminary results in the PACHCI assessment contained in Appendix B indicated that cultural heritage potential within the propsoal area appeared to be reduced due to past disturbance.		

Safeguards

Table 3-14: Aboriginal heritage safeguards and management measures

Numbering	Impact	Environmental safeguards	Responsibility	Timing
AH1	Aboriginal heritage	If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Transport for NSW Aboriginal cultural heritage officer and regional environment manager contacted immediately. Steps in Transport's *Standard Management Procedure: Unexpected Heritage Items* must be followed.	Contractor	Construction
AH2	Aboriginal heritage	Due to the proximity of some of the proposed works to areas identified by AHIMS as being 'Aboriginal sites recorded in or near the location', caution must be taken to ensure there is no impact to these sites.	Contractor	Construction

3.6 Non-Aboriginal heritage

Table 3-15: Non-Aboriginal heritage

Description of existing environmental and potential impacts		
Have online heritage database searches been completed? • Transport (including legacy Roads and Maritime) section 170 register • NSW Heritage database • Commonwealth Heritage List, established under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) • Maritime heritage database • Australian Heritage Places Inventory • Muswellbrook LEP 2009. The above searches were completed on 14 November 2023 and included in Appendix E.	Yes ☒	No ☐
Are there any items of non-Aboriginal heritage or heritage conservation areas listed on relevant heritage databases/registers that are located within the vicinity of the proposal? The results of the database searches indicate that there are four local non-Aboriginal heritage items in the vicinity of the proposal. These sites are summarised in Table 3-16 and the location of the Merton Cemetery Denman is shown in Figure 3-11.	Yes ☒	No ☐

Table 3-16: Non-Aboriginal heritage items within the vicinity of the proposal area

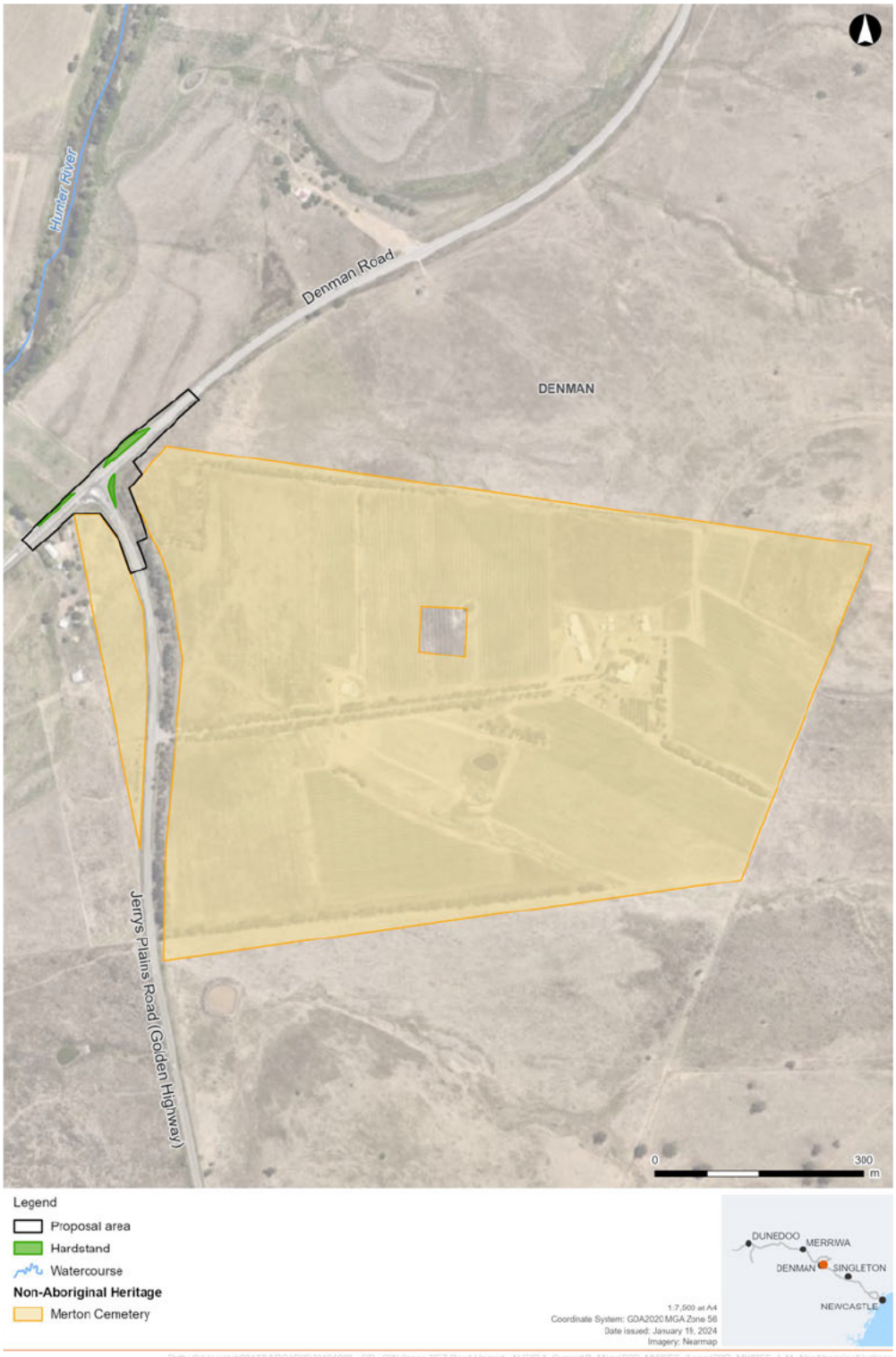
Item	Heritage significance	Description	Address	Listing	Location (approximate)
Merton Cemetery Denman	Local	There were burials at Merton from 1825 onwards, first in what is referred to as the original burial ground, then in Merton Churchyard	5052 Jerrys Plains Road, Denman 2328	Muswellbrook LEP listing I18	About 20 metres southwest and 30 metres southeast of the Golden Highway and Denman Road intersection (I-008)
Yammanie (Formerly the Hut)	Local	The home was built in 1900 on Balmoral for William Pearce Bowman when he married. It was known as 'The Hut' as it was not the principal residence on the estate.	307 Denman Road, Muswellbrook 2333	Muswellbrook LEP listing I82	About 930 metres east of the Denman Road and Bengalla Road intersection (I-026)
Balmoral Homestead	Local	Balmoral homestead was built in about 1857 by Bringeman and Dewar.	310 Denman Road, Muswellbrook 2333	Muswellbrook LEP listing I83	About 755 metres northeast of the Denman Road and Bengalla Road intersection (I-026)

Description of existing environmental and potential impacts							
Shale Oil Retort Site – Sandy Hollow	Local	During World War II when fuel was scarce, forty commercial size retorts were installed at Sandy Hollow (from 1940 to 1944).	1590 Merriwa Road, Sandy Hollow 2333	Muswellbrook LEP listing I127	About 900 metres northwest of the Wybong Road and Golden Highway (I-027)		

The nearest item of heritage value is Merton Cemetery Denman, which is located on either side of the Golden Highway adjacent to the Golden Highway and Denman Road intersection (I-008) (refer to Figure 3-11) This is about 20 metres southwest and 30 metres southeast of the Golden Highway and Denman Road intersection (I-008), and consists of a residential property and an existing vineyard (Merton Vineyard).

The proposed work at Golden Highway and Denman Road intersection (I-008) is primarily limited to the existing road reserve that was previously disturbed during construction of the current intersection and is minor in nature. Excavation and construction of asphalt hardstand is proposed at this intersection, with one asphalt hardstand located on the eastern corner about 17 metres northeast of the mapped Merton Cemetery Denman. Land adjacent to the proposed hardstand appears cleared of any surface structures with the closest being 410 metres southeast and any features of this heritage item would be sub surface, however, given limited excavations beyond existing road reserve and still outside the current curtilage of the heritage site, the proposal is not anticipated to impact the heritage-listed Merton Cemetery in Denman.

Similarly, the other heritage items listed in Table 3-16 are unlikely to be impacted by the proposal due to the distance and the limited scope of work.

Description of existing environmental and potential impacts		
 Figure 3-11: Non-Aboriginal heritage items within the vicinity of the proposal – Golden Highway and Denman Road intersection (I-008)		
Is the proposal likely to impact trees that form part of a heritage listing or have other heritage value? Within the vicinity of the Golden Highway and Denman Road intersection (I-008), five Olive trees would require removal and one Olive tree would require pruning (refer to Figure 3-12). These trees	Yes ☐	No ☒

Description of existing environmental and potential impacts		
are located within the adjacent private property but outside the boundary of the Merton Cemetery and as such, do not form part of a heritage listing. The trees do not have other heritage value. The proposal would also require pruning of one native tree located about 30 metres west of Denman Road and Bengalla Road intersection (I-026) (refer to Figure 3-14). This tree also does not have heritage value. Further assessment of potential impacts to trees is provided in Section 3.7 (Biodiversity).		
Is the proposal likely to occur in or near features that indicate potential archaeological remains? The proposal is located within a rural area, adjacent to cleared and grassed land. There is the potential for archaeological remains to be found, though this is considered low. Nevertheless, an unexpected heritage finds protocol would be included in the construction environmental management documentation in the event that a heritage item is discovered.	Yes ☐	No ☒

Safeguards

Table 3-17: Non-Aboriginal heritage safeguards and management measures

Numbering	Impact	Environmental safeguards	Responsibility	Timing
H1	Non-Aboriginal heritage	If unexpected archaeological remains are uncovered during the works, all works are to cease in the vicinity of the material/find and the steps in Transport's *Standard Management Procedure: Unexpected Heritage Items* must be followed. Transport for NSW Senior Environment Specialist – Heritage is to be contacted immediately.	Contractor	Construction
H2	Non-Aboriginal heritage	If any items defined as relics under the *NSW Heritage Act 1977* are uncovered during the works, all works are to cease in the vicinity of the find and the Transport for NSW Senior Environment Specialist – Heritage contacted immediately.	Contractor	Construction

3.7 Biodiversity

Table 3-18: Biodiversity

Description of existing environmental and potential impacts		
Have relevant database searches been carried out? • BioNet threatened species records within the locality (e.g. 10km radius) • Regional vegetation mapping and BioNet Vegetation Classificiation database (including a search by the relevant CMA/s to identify potential TECs present) • NSW WeedWise (DPI) website. • Commonwealth EPBC Act Protected Matters Search Tool (PMST) • NSW DPI Fisheries Spatial Data Portal. The above searches were carried out in November 2023 and are included in Appendix F. Field surveys were carried out by an ecologist on 20 and 21 November 2023, and 31 January to 2 February 2024.	Yes ☒	No ☐
Did the database searches identify any endangered ecological communities, threatened flora and/or threatened or protected fauna, or migratory species in or within the vicinity of the proposed works? Both Commonwealth and State listed matters must be considered. The NSW OEH BioNet Wildlife Atlas search did not identify endangered ecological communities, threatened flora and/or threatened or protected fauna, or migratory bird species in or within 100 metres of the proposal areas.	Yes ☒	No ☐

Description of existing environmental and potential impacts

A review of the threatened species database records within 10 kilometres of the proposal area using NSW OEH BioNet Wildlife search identified threatened fauna species as occurring or having the potential to occur within 10 kilometres of the proposal area. This included:

- Golden Highway and Denman Road intersection (I-008) – 18 potential threatened fauna species persent under the BC Act and eight threatened fauna species under the EPBC Act
- Denman Road and Bengalla Road intersection (I-026) – 35 potential threatened fauna species persent under the BC Act and 10 threatened fauna species under the EPBC Act
- Wybong Road and Golden Highway intersection (I-027) – 26 potential threatened fauna species persent under the BC Act and 11 threatened fauna species under the EPBC Act.

The nearest recorded sightings of fauna species within one kilometre of the proposal areas are summarised in Table 3-19.

Table 3-19: Recorded sightings of species listed under the BC Act or EPBC Act within one kilometre of the proposal areas

Scientific and common name	Status *	Type of listing (BC Act or EPBC Act)	Approximate distance from works	Potential impacts
Spotted-tailed Quoll (*Dasyurus maculatus*)	Vulnerable (BC Act) and Endangered (EPBC Act)	BC Act and EPBC Act	0.8 kilometres from the Golden Highway and Denman Road intersection	None anticipated

The proposed intersection works are limited to the road corridor, five Olive trees would be removed and one pruned at the Golden Highway and Denman Road intersection (I-008) and an additional native tree removed at the Denman Road and Bengalla Road intersection (I-026) to allow for the swept path of heavy vehicles manoeuvring around bends. As a result, impacts to nationally listed species, ecological communities and migratory species are unlikely.

The EPBC PMST identified the following matters of National Environmental Significance within a one-kilometre radius of the proposal areas, as shown in Table 3-20.

Table 3-20: Matters of National Environmental Significance

Intersection	Wetlands of international importance (Ramsar)	Threatened ecological community	Threatened species	Migratory species
Golden Highway and Denman Road intersection (I-008)	None	4	36	11
Denman Road and Bengalla Road intersection (I-026)	None	4	34	11
Wybong Road and Golden Highway intersection (I-027)	None	4	38	10

The NSW DPI Fisheries Spatial Data Portal identified the Darling River Hardyhead fish species as being distributed within the Hunter River catchment, with the Hunter River catchment population listed as endangered within NSW. No individuals have been detected from the Hunter catchment since 2003.

The TECs, listed migratory species and threatened fish population within a one-kilometre radius of the proposal areas are unlikely to be affected due to the highly constrained proposal boundary, limited duration and extent of works, and the restriction of most activities to the road reserve.

In the unlikely event that unexpected threatened fauna or flora species are discovered during construction, works would be stopped and Transport's *Unexpected Threatened Species Find Procedure* would be followed.

Description of existing environmental and potential impacts		
Weeds A review of the DPI Weedwise website was undertaken for the Hunter region. A list of 'priority weeds' present within the Hunter region is provided in Appendix F.		
Does the proposal involve pruning, trimming or removal of any tree/s? Native vegetation has been mapped under the NSW State Vegetation Type Map (SVTM) (DPE, 2023) and shows the plant community types (PCTs) surrounding the proposal areas. Ground truthing carried out during the ecology surveys confirmed the presence of PCTs as shown in Figure 3-12, Figure 3-14 and Figure 3-16. A description of PCTs within the vicinity of the proposal areas is provided below. <u>Golden Highway and Denman Road intersection (I-008)</u> The removal of five European Olive trees (*Olea europaea subsp. Europaea*), and likely pruning of an additional one European Olive tree, would be required to accommodate the swept paths of heavy vehicles turning left onto Denman Road from the Golden Highway (I-008). The trees are located on the eastern side of the Golden Highway, south of the Golden Highway and Denman Road intersection (I-008) (refer to Figure 3-12 and Figure 3-13) and within a private property (Lot 7, DP1244305). Tree pruning would be limited to only the necessary extent required to accommodate the swept path of heavy vehicles. The removed trees and their trimmings would be disposed of at an appropriately licensed waste facility to avoid the spread of this weed. PCT 4089 (Namoi-Upper Hunter River Red Gum Forest) was confirmed to be within the proposal area, and in the vicinity, of the Golden Highway and Denman Road intersection (I-008). As shown in Figure 3-12, the proposal would not impact upon this vegetation.	Yes ☒	No ☐

Description of existing environmental and potential impacts

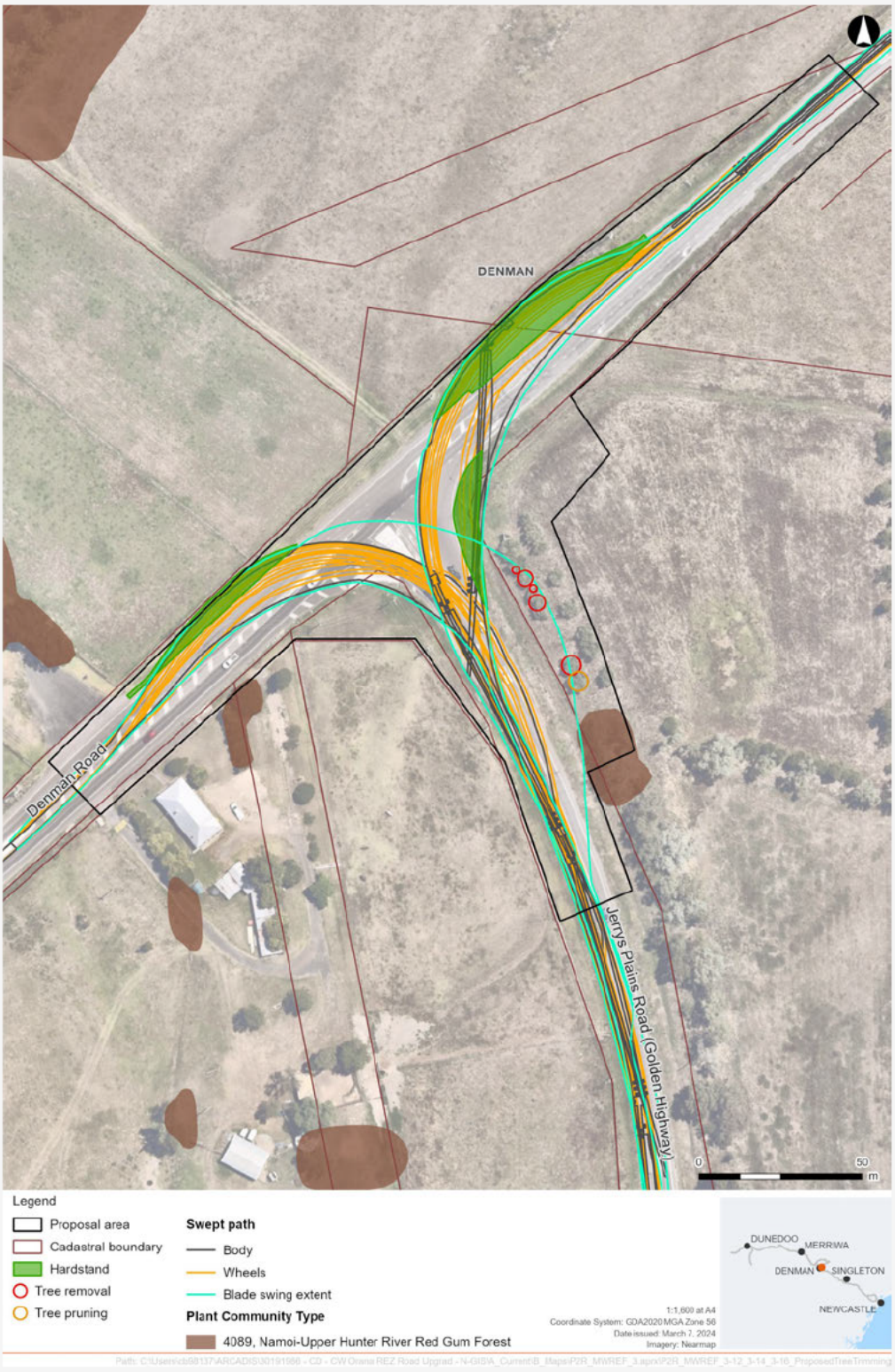


Figure 3-12: Tree removal, pruning and PCTs – Golden Highway and Denman Road intersection (I-008)

Description of existing environmental and potential impacts

Figure 3-13: Site photograph of impacted trees – Golden Highway and Denman intersection (I-008)

Denman Road and Bengalla Road intersection (I-026)

The removal of one native pine tree *(Allocasuarina luehmannii)* would be required to accommodate the swept path of heavy vehicles turning from Denman Road onto Bengalla Road. The tree is located on eastbound verge of Denman Road, west of Bengalla Road (refer to Figure 3-14 and Figure 3-15). No other trees would require removal or pruning.

The following PCTs are mapped as being within the vicinity of the Denman Road and Bengalla Road intersection (I-026):

- PCT 3485 – Central Hunter Slaty Gum Grassy Forest
- PCT 4015 – Central Hunter Riparian Forest
- PCT 4089 – Namoi-Upper Hunter River Red Gum Forest

As shown in Figure 3-14, the proposal would not impact these PCTs.

Description of existing environmental and potential impacts

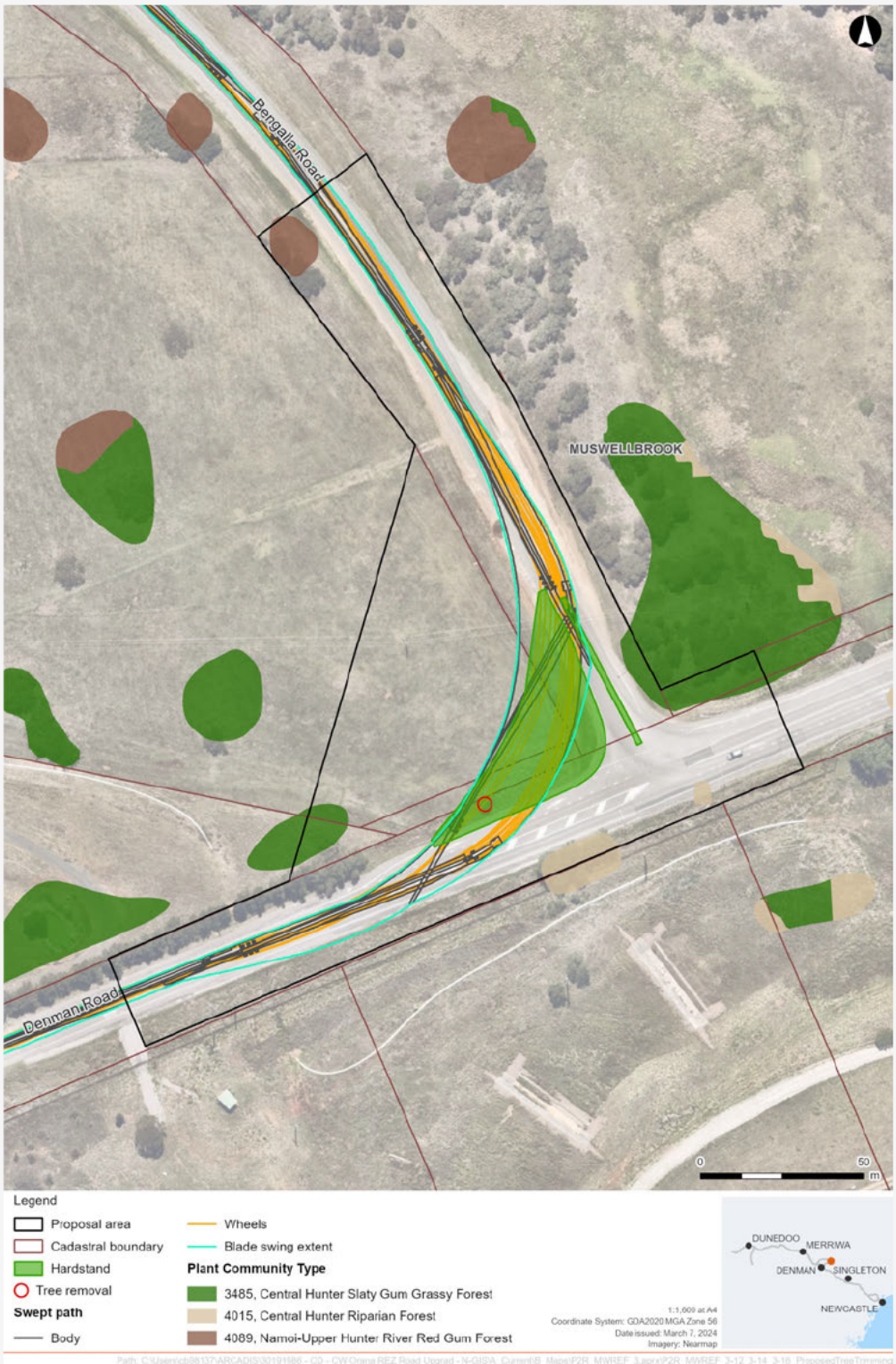


Figure 3-14: Tree removal and PCTs – Denman Road and Bengalla Road intersection (I-026)

Description of existing environmental and potential impacts

Figure 3-15: Site photograph of impacted tree *(Allocasuarina luehmannii)* – Denman Road and Bengalla Road intersection (I-026)

Wybong Road and Golden Highway intersection (I-027)

No tree removal or pruning is proposed at this intersection.

The following PCTs are mapped as being within the vicinity of the Wybong Road and Golden Highway intersection (I-027):

- PCT 3388 – Central West Valleys White Box Forest
- PCT 4089 – Namoi-Upper Hunter River Red Gum Forest.

As shown on Figure 3-16, the proposal would not impact these PCTs.

Description of existing environmental and potential impacts

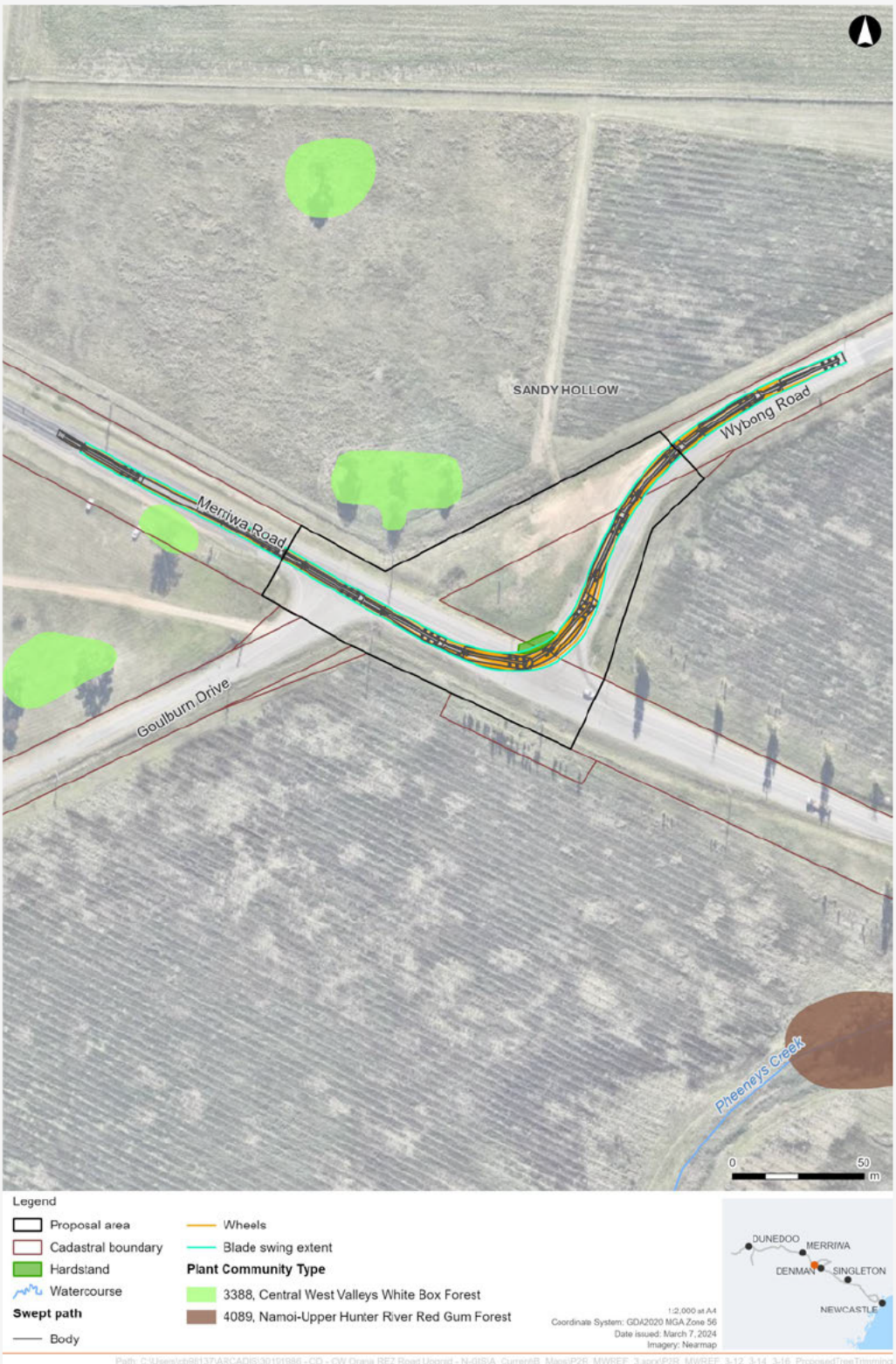


Figure 3-16: PCTs – Wybong Road and Golden Highway intersection (I-027)

Description of existing environmental and potential impacts		
 Figure 3-17: Site photograph of exotic grass – Wybong Road and Golden Highway intersection (I-027)		
Is the proposal likely to impact nationally listed threatened species, ecological communities or migratory species?	Yes ☐	No ☒
Would the proposal require the removal of any other vegetation? Except for the removal of five trees and pruning of one tree at the Golden Highway and Denman Road intersection (I-008) (refer to Figure 3-12), and the removal of one native tree at the Denman Road and Bengalla Road intersection (I-026) (refer to Figure 3-14), no other tree removal is proposed. Removal of exotic grassland would be required at all intersections to accommodate the inclusion of asphalt hardstand. Figure 3-17 shows the exotic grass that would be removed at the northwestern corner of the Wybong Road and Golden Highway intersection (I-027).	Yes ☐	No ☒

Description of existing environmental and potential impacts		
Would the proposal require the removal of any tree hollows? The ecology survey did not indicate the presence of any tree hollows in the impacted trees.	Yes ☐	No ☒
Are there any known areas of outstanding biodiversity value or areas mapped as 'littoral rainforest' or 'coastal wetland' under chapter 2 of SEPP (Resilience and Hazards) in or within the vicinity of the proposed work? The proposal areas are not located within areas mapped as 'littoral rainforest' or 'coastal wetland', with the nearest coastline over 150 kilometres from the proposal areas.	Yes ☐	No ☒
Would the proposal provide any additional barriers to the movement of wildlife? Construction of the proposed works would not provide additional barriers to wildlife movement.	Yes ☐	No ☒
Would the proposal disturb any natural waterways or aquatic habitat? As outlined in Section 3.1 (Soil), the proposed intersection works would be carried out on a generally flat to gently undulating topography within an existing road and verge in locations on or adjacent to flood plains from the Hunter River and Goulburn River, and would pose low to negligible erosion and sediment risks or constraints. The increased pavement areas at the three intersections would be minor in the context of the overall hydrology and as such, would be unlikely to have any substantial impact on surface water flows within the catchments. Further, the small extent and temporary and short-lived nature of any ground disturbance likely at each site means that there is minimal risk of any substantial changes in water quality in the receiving waters due to the proposal. As outlined in Section 3.2 (Waterways and water quality), there is low to negligible potential for any sedimentation and associated water quality impacts to the Hunter River and Goulburn River located within the vicinity of the intersections. With the implementation of erosion and sediment management measures (refer to Section 3.2 (Waterways and water quality)), these impacts would be minimised and there would be little to no impact to the surrounding waterways. No other waterways or aquatic habitat are expected to be impacted due to the minor scope of works proposed.	Yes ☐	No ☒
Would the proposal impact (directly or indirectly) any potential microbat roosting or breeding habitat such as on bridges and culverts? The scope of works is limited to minor upgrades to existing intersections. Though there is the potential for culverts to serve as microbat roosting or breeding habitats, the ecologist survey has confirmed that the existing culvert located on the Golden Highway, at the Wybong Road and Golden Highway intersection, shows no indication of being a habitat for microbats.	Yes ☐	No ☒

Safeguards

Table 3-21: Biodiversity safeguards and management measures

Numbering	Impact	Environmental safeguards	Responsibility	Timing
B1	Biodiversity	If unexpected threatened fauna or flora species are discovered, works will be stopped immediately and follow Transport's *Unexpected Threatened Species Find Procedure* in Transport's *Biodiversity Guidelines 2011 – Guide 1* (Pre-clearing process).	Contractor	Construction
B2	Biodiversity	All construction work will be undertaken in accordance with Transport's Biodiversity Guidelines, Protecting and Managing Biodiversity on RMS Projects, 2011.	Contractor	Construction
B3	Biodiversity	The location and extent of all works will be clearly demarcated and communicated to all staff and contractors working within the area during site inductions and daily toolbox talks.	Contractor	Construction

Numbering	Impact	Environmental safeguards	Responsibility	Timing
B4	Biodiversity	Vegetation to be retained will be protected in accordance with AS 4970-2009 – *Protection of trees on development sites* and may require exclusion fencing of the Tree Protection Zones.	Contractor	Pre construction and construction
B5	Trees	Any tree trimming will be no more than 20% of the canopy cover for each tree	Contractor	Construction
B6	Trees	Any additional construction activities not identified in this MWREF within the tree protection zone of the subject trees will be assessed and approved by the project arborist and must comply with *AS 4970-2009 – Protection of trees* on development sites.	Contractor	Pre construction and construction
B7	Trees	Tree removal and pruning will be undertaken by a suitably qualified arborist.	Contractor	Pre-construction and construction
B8	Trees	Cuttings from the European Olive trees (*Olea europaea subsp. Europaea*) will be disposed of at an appropriately licenced licensed waste facility after removal to prevent the spread of this weed.	Contractor	Pre-construction and construction
B9	Trees	The opportunity to transplant the Olive trees elsewhere on the property will be consulted on with the landowner and subject to agreement, carried out provided it is feasible to do with a reasonable chance of success at the time of transplanting.	Contractor	Construction

3.8 Traffic and transport

Table 3-22: Traffic and transport

Description of existing environmental and potential impacts		
Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during construction? Construction activities proposed at the Golden Highway and Denman Road intersection (I-008), Denman Road and Bengalla Road intersection (I-026), and the Wybong Road and Golden Highway intersection (I-027) would be carried out during standard construction time period (daytime). Where required, these hours would be in line with the window of time permitted under road occupancy licences (ROLs). The scope of work is primarily limited to paving/asphalting, utility adjustments and signage relocation, and minor tree removal and pruning. Given that the scope of work is minor and that, as observations suggest, intersections are in rural areas without substantial existing traffic, out of hours work is not proposed. Detours and substantial disruptions to traffic flow are not proposed at any of the intersections. Traffic would be diverted around the road works as necessary and reduced temporary speed limits applied, particularly for the median removal and replacement on Bengalla Road. Minor delays may be anticipated for traffic travelling through construction areas. However, access to local residences within the vicinity of the proposal areas would be maintained throughout construction. There are no cyclist or pedestrian infrastructure within, or in the vicinity of, the proposal areas.	Yes ☐	No ☒
Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation?	Yes ☐	No ☒

Description of existing environmental and potential impacts		
There would be no changes to operational traffic patterns.		
Is the proposal likely to affect any other transport nodes or transport infrastructure (e.g., bus stops, bus routes) in the surrounding area? Or result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation? One existing bus route travels through the proposal area, as summarised in Table 3-23. Existing bus stops and route would not be impacted by the proposal, and operation of the proposal would not result in detours or disruptions to traffic flow.	Yes ☐	No ☒

Table 3-23: Bus routes travelling through the proposal areas

Bus route number	Route	Bus stop closest to the intersection	Potential impacts
415	Muswellbrook to Denman (Loop Service). Travels through the Golden Highway and Denman Road intersection, and the Denman Road and Bengalla Road intersection.	2.5 kilometres northeast of the Golden Highway and Denman Road intersection. Located at 1890 Denman Road.	None identified

Safeguards

Table 3-24: Traffic and transport safeguards and management measures

Numbering	Impact	Environmental safeguards	Responsibility	Timing
T1	Traffic and transport	Current traffic movements and property accesses will be maintained during the works. Any short-term lane closures would require notifications to the community.	Contractor	Pre-construction Construction
T2	Traffic and transport	Where works affect the free flow of traffic, a ROL will be obtained, and a Traffic Control Plan will be prepared in accordance with Transport's *Traffic Control at Worksites Manual (2003).*	Contractor	Pre-construction
T3	Traffic and transport	Appropriate signage (such as variable message signs) and supervision will be provided at all times to ensure that all construction work areas are controlled and that unauthorised personnel (e.g. pedestrians) are excluded from work areas.	Contractor	Construction
T4	Traffic and transport	Vehicle movement arrangements will be developed to limit impacts on other road users (including pedestrians, vehicles and cyclists) and the environment, with specific regard to other road works in the area, local traffic movement requirements and peak traffic volumes. A Traffic Management Plan shall be prepared by the Contractor and approved by Transport for NSW prior to any changes to road user movements and access.	Contractor	Pre-construction Construction
T5	Traffic and transport	Designated work areas within any road reserve will be delineated prior to the work commencing. This area would be the minimum required for safely undertaking the activity.	Contractor	Pre-construction

Numbering	Impact	Environmental safeguards	Responsibility	Timing
T6	Traffic and transport	Pedestrian access around the intersection works zone will be maintained at all times. Where this cannot be achieved a safe diversion for pedestrians should be provided.	Contractor	Construction

3.9 Socio-economic

Table 3-25: Socio-economic

Description of existing environmental and potential impacts		
Is the proposal likely to impact on local business? The nearest businesses at each proposal area include: • Golden Highway and Denman Road intersection (I-008): Small Forest winery is accessed from the Golden Highway, about 375 metres south of the intersection with Denman Road. • Denman Road and Bengalla Road intersection (I-026): Mount Arthur Coal Mine is located about 15 metres south of the intersection, however access to this mine is located about 3.2 kilometres west of Denman Road and Bengalla Road intersection, and about two kilometres south of the Thomas Mitchell Drive and Denman Road intersection. • Wybong Road and Golden Highway intersection (I-027): Hollydeen Motors, a car repair shop accessed from Goulburn Road about 20 metres south of the intersection. The proposed work would be on the northwestern corner of the Wybong Road and Golden Highway intersection (I-027), with no work proposed on Goulburn Road. Daytime construction works are planned for all intersections, which may align with the business hours of Hollydeen Motors, Small Forest and Mount Authur Coal Mine. Nevertheless, the proposal would not require any road closures or detours, maintaining access to all businesses throughout the construction period. Minor delays may be anticipated due to traffic control measures.	Yes ☒	No ☐
Is the proposal likely to require any property acquisition? As detailed in Section 2.2.2 (Proposal description), the proposal would require the partial acquisition of land at two properties under private ownership: • Lot 7, DP1244305 (within the vicinity of Golden Highway and Denman Road intersection) • Lot 290, DP1141655 (within the vicinity of Denman Road and Bengalla Road intersection) • Lot 291, DP1141655 (within the vicinity of Denman Road and Bengalla Road intersection) No crown land would be impacted by property acquisition. The owners of the affected properties would be consulted with, and ongoing consultation would occur during detailed design and construction stages. The removal of five, and pruning of one, European Olive trees and the relocation of the existing 'Small Forest Winery and Cellar Door' tourist sign would likely be required within the private property (Lot 7, DP1244305) to accommodate the swept paths of OSOM vehicles. Property boundary adjustments would not be required to accommodate this activity; however, formal agreement will be required from the landowner for the proposed hardstand within the property at Lot 7, DP1244305 and the temporary use of the land for blade swing during OSOM movements. EnergyCo will liaise with the affected landowner regarding the work required within the property (Lot 7, DP1244305).	Yes ☒	No ☐
Is the proposal likely to alter any access for properties (either temporarily or permanently)? Access to businesses and residential properties in the vicinity of the proposal would be maintained throughout construction and would not change in operation.	Yes ☐	No ☒
Is the proposal likely to alter any on-street parking arrangements (either temporarily or permanently)? There are no existing parking facilities within or adjacent to the proposal areas.	Yes ☐	No ☒

Description of existing environmental and potential impacts		
Is the proposal likely to change pedestrian movements or pedestrian access (either temporarily or permanently)? There is no existing infrastructure at the proposal areas that facilitate pedestrian movement and access (e.g. pedestrian crossings). The proposal does not include any provisions for pedestrian infrastructure.	Yes ☐	No ☒
Is the proposal likely to impact on any items or places of social value to the community (either temporarily or permanently)? The proposal is not located within the vicinity of items and places of social value to the community. As outlined in Section 3.3 (Noise and vibration), Denman Anglican Parishes and St Bernard of Clairvaux Denman Church are the closest churches to the proposal, located about 3.4 kilometres southwest and 3.1 kilometres southwest respectively from the Golden Highway and Denman Road intersection.	Yes ☐	No ☒
Is the proposal likely to reduce or change visibility of any businesses, farms, tourist attractions or the like (either temporarily or permanently)? The proposal would require the permanent relocation of one 'Holleydene Estate Wines' tourist sign from the eastern corner of the Golden Highway and Denman Road intersection (I-008) to the northwest side of the intersection. Four tourist signs (positioned in a v-shape angle towards traffic) located within the private property (Lot 7, DP1244305) would also require permanent relocation, northeast of its existing location. Figure 2-2 shows the locations of relocated signage at the Golden Highway and Denman Road intersection (I-008). The permanent relocation of four wayfinding signs to local mines (two stacked signs back to back) would be required at the Denman Road and Bengalla Road intersection (I-026) to accommodate the proposed hardstand on the northwest corner of the intersection. As shown on Figure 2-3, these signs would be relocated west of their existing location. Permanent visual impacts to these tourist attractions are minor and limited to signage relocations only. Affected property owners and businesses would be consulted with, and ongoing consultation would occur during the detailed design and construction stages. Construction activities would be a temporary visual disruption in the form of equipment and heavy vehicles at all proposal areas. However, due to the limited scope of work and minimal equipment required, these impacts would be minor. Construction activities would primarily be carried out within the existing road reserve and the associated impacts would be temporary, occurring during the construction period only.	Yes ☒	No ☐
Is the proposal likely to impact trees planted by a community group, Landcare group or by council or a tree that is a memorial or part of a memorial group e.g., has a plaque? None of the trees that would be impacted are likely to have been planted by any of these groups.	Yes ☐	No ☒
Is the proposal likely to impact trees that form part of a streetscape, an avenue or roadside planting? None of the trees that would be impacted by the proposal would be regarded as forming part of a streetscape, avenue or roadside planting.	Yes ☐	No ☒

Safeguards

Table 3-26: Socio-economic safeguards and management measures

Numbering	Impact	Environmental safeguards	Responsibility	Timing
C1	Socio-economic	Local residents, businesses and stakeholders will be notified at least five working days prior to works commencing and would be kept regularly informed of construction activities during the construction process. The notification is to include:	Contractor	Pre-construction Construction

Numbering	Impact	Environmental safeguards	Responsibility	Timing
		• Details of the proposal, including temporary compound site • The duration of works and working hours • Any changed traffic or access arrangements • How to lodge a complaint or obtain more information • Contact name and details.		
C2	Socio-economic	Complaints received will be recorded and attended to promptly in accordance with the *Community Involvement Practice Notes and Resource Manual* (RTA, 1998).	Contractor	Construction
C3	Socio-economic	All property acquisition will be carried out in accordance with the *Land Acquisition Information Guide* (Transport, 2014) and the *Land Acquisition (Just Terms Compensation) Act 1991.*	Contractor	Pre-construction

3.10 Landscape character and visual amenity

Table 3-27: Landscape character and visual amenity

Description of existing environmental and potential impacts		
Is the proposed work over or near an important physical or cultural element or landscape? (For example, heritage items and areas, distinctive or historic built form, National Parks, conservation areas, scenic highways etc.) As outlined in Section 3.6 (Non-Aboriginal heritage), the nearest heritage listed item is Merton Cemetery Denman which is located on either side of the Golden Highway adjacent to the Golden Highway and Denman Road intersection. The western side of Golden Highway is currently cleared land (purpose unknown), whilst the eastern side is currently being used as a vineyard by Small Forest Pty. This heritage item would not be impacted by the proposal due to the distance between the intersection and heritage item, limited works and lack of vibration intensive activities proposed.	Yes ☐	No ☒
Would the proposal obstruct or intrude upon the character or views of a valued landscape or urban area? (For example, locally significant topography, a rural landscape or a park, a river, lake or the ocean or a historic or distinctive townscape or landmark) The majority of visual impacts would be caused by equipment associated with the utility adjustment and asphalting, including signage and construction machinery. This would have the potential to result in visual clutter in the rural landscape during construction. Such impacts would be temporary and short-lived. The proposed work is minor in scope and would only occur during the construction phase. The permanent visual alterations to the intersections would primarily be confined to the existing road reserve. As such, though the intersections are located within a rural landscape, the works would not substantially alter the existing visual character and any impact on the existing environment would be minimal.	Yes ☐	No ☒
Would the proposal require the removal of mature trees or stands of vegetation, either native or introduced? No mature native trees would be removed, though the proposal would involve the removal of five, and pruning of one, Olive trees (Figure 3-12). The impacted trees are an exotic species and are located on the eastern side of Golden Highway, within the adjacent private property at the Golden Highway and Denman Road intersection (I-008). The proposal would also require removal of one native tree located about 30 metres west of Denman Road and Bengalla Road intersection (I-026) (refer to Figure 3-14). Although this tree is a native species, it has been assessed as being a juvenile tree.	Yes ☒	No ☐

Description of existing environmental and potential impacts		
Further assessment of potential impacts to trees is provided in Section 3.7 (Biodiversity).		
Would the proposal result in large areas of shotcrete visible from the road or adjacent properties?	Yes ☐	No ☒
Would the proposal involve new noise walls or visible changes to existing noise walls?	Yes ☐	No ☒
Would the proposal involve the removal or reuse of large areas of road corridor, landscape, either verges or medians? The proposal would involve the construction of about 0.28 hectares of asphalt hardstand in total. This is divided as follows: • Golden Highway and Denman Road intersection (I-008): construction of about 1050 square metres of asphalt hardstand southwest and northeast of the intersection • Denman Road and Bengalla Road intersection (I-026): construction of about 750 square metres of asphalt hardstand on the northwestern corner of the intersection • Wybong Road and Golden Highway intersection (I-027): construction of about 970 square metres of asphalt hardstand on the northwestern corner of the intersection. The proposed works are relatively minor and would not impact large areas of the existing road corridor or landscape.	Yes ☐	No ☒
Would the proposal involve substantial changes to the appearance of a bridge (including piers, girders, abutments and parapets) that are visible from the road or residential areas? No work on existing bridges is proposed.	Yes ☐	No ☒
If involving lighting, would the proposal create unwanted light spillage on residential properties at night (in construction or operation)? No lighting would be required as construction of the proposal would occur during daytime hours. There would no operational lighting impacts.	Yes ☐	No ☒
Would any new structures or features to be constructed, result in over shadowing to adjoining properties or areas? The most substantial works proposed include the construction of asphalt hardstand and utilities relocation. These activities are not anticipated to cause overshadowing.	Yes ☐	No ☒
Additional information pertaining to landscape character and visual amenity risk. None identified.		

Safeguards

No safeguards related to landscape character and visual amenity are proposed.

3.11 Waste

Table 3-28: Waste

Description of existing environmental and potential impacts		
Is the proposal likely to generate >200 tonnes of waste material (contaminated and /or non-contaminated material)? Limited quantities of concrete, asphalt, green waste, domestic waste (from staff) and other waste types would be generated from the proposal. Waste generated is not expected to be over 200 tonnes or contaminated.	Yes ☐	No ☒
Is the proposal likely to require a licence from EPA?	Yes ☐	No ☒

The proposal does not include any activities listed under Schedule 1 of the Protection of the Environment Operations Act 1997. An EPL is not required for this proposal.		
Is the proposal likely to require the removal of asbestos?	Yes ☐	No ☒

Safeguards

Table 3-29: Waste safeguards and management measures

Numbering	Impact	Environmental safeguards	Responsibility	Timing
M1	Waste	Waste management measures will follow Transport's Technical Guide: Management of road construction and maintenance waste.	Contractor	Pre-construction
M2	Waste	The resource management hierarchy detailed by the *Waste Avoidance Resource Recovery Act 2001* will be adopted, namely avoid unnecessary consumption; resource recovery; disposal as a last resort.	Contractor	Pre-construction Construction
M3	Waste	All waste will be treated in accordance with Transport's Waste *Minimisation and Management Guidelines* (RTA, 1998).	Contractor	Construction
M4	Waste	Waste material, other than vegetation and tree mulch, will not to be left on site once the works have been completed.	Contractor	Construction
M5	Waste	Working areas will be maintained, kept free of rubbish and cleaned up at the end of each working day.	Contractor	Construction

3.12 Climate change and greenhouse gas emissions

Table 3-30: Climate change and greenhouse gas emissions

Description of existing environmental and potential impacts		
Is the proposal located in an area likely to be permanently or tidally inundated in the future or subject to increased duration and intensity of flooding? As detailed in Section 3.2 (Waterways and water quality), the proposal areas are located within a flood prone area due to their proximity to Hunter River, Goulburn River and its tributaries. It is unlikely that the area would be permanently or tidally inundated in the future. However, it may be subject to increased duration and intensity of flooding.	Yes ☒	No ☐
Have opportunities for reduced energy consumption during construction and operation been considered. **If yes, summarise actions taken e.g., material selection, local suppliers and construction staff, etc.** The source and quantity of materials would be determined during the detailed design phase of the proposal and would consider the requirements of the Transport for NSW Sustainable Design Guidelines – Version 4.0. Materials would be sourced from local suppliers where practicable.	Yes ☒	No ☐
Greenhouse gas emissions sources during construction are likely to be largest from: • transporting materials to site • electricity usage for street furniture including lighting, electronic signage and variable message signs. During operation sources would include: • maintenance of the proposal which includes infrastructure and pavement repairs, and fuel use for the operation of the plant and equipment to perform the maintenance activities • use of the proposal by vehicles.		

Safeguards

No safeguards related to climate change and greenhouse gas emissions are proposed.

3.13 Cumulative impact

Table 3-31: Cumulative impact

Description of existing environmental and potential impacts		
Are there other projects and developments in the study area which could add to potential impacts in both construction and operation? There are a number of projects currently underway within the vicinity of the proposal. The closest projects within the vicinity are detailed in Table 3-32. Table 3-32: Past, present and future projects **Project** / **Description** Dolwendee Quarry, 'Dolwendee' Property, Golden Highway Denman NSW 2328 — This project involves the establishment of a new sandstone and conglomerate quarry, and the construction of a private haul road from the quarry to the Golden Highway. The project was approved in 2018 and construction has commenced. Located about 7.5 kilometres northwest of the Golden Highway and Denman Road intersection (I-008). Muswellbrook Bypass – New England Highway, Muswellbrook NSW 2333 — This project involves the construction of a New England Highway bypass of Muswellbrook. The project is still in the approvals stage and the completion date is still be determined. Located about 6.4 kilometres west of the Denman Road and Bengalla Road intersection (I-026). CWO REZ — As outlined in Section 2.2.2, the proposal would facilitate the transport of large and heavy components from the Port of Newcastle to the CWO REZ. The CWO REZ consists of a series of solar and wind farm developments. The route selection, planning and operation of OSOM vehicle movements would be assessed and approved as part of each individual developer's respective environmental assessment and subject to the conditions of each relevant approval. As the proposal is required to facilitate the OSOM movements to the REZ, there would be no overlap. It is unlikely the above projects would add to the potential construction impacts due to the isolated and short-term impacts associated with this proposal. There are no anticipated operation cumulative impacts associated with the proposal.	Yes ☐	No ☒

Safeguards

No safeguards related to cumulative impacts are proposed.

4. Summary of safeguards and environmental management measures

4.1 Safeguards and environmental management measures

This section provides a summary of the site-specific environmental safeguards and management measures identified in described in chapter 3 of this minor works REF. These safeguards will be implemented to reduce potential environmental impacts throughout construction and operation. A framework for managing the potential impacts is provided with reference to environmental management plans and relevant Transport QA specifications. Any potential licence and/or approval requirements required prior to construction are also listed.

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

Factor	Safeguards
Soil	E1. Erosion and sediment control measures are to be implemented (in accordance with the Landcom/Department of Housing *Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book)) and maintained to: • Minimise sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets • Reduce water velocity and capture sediment on site • Minimise the amount of material transported from site to surrounding pavement surfaces • Divert clean water around the site. E2. Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request. E3. Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised. E4. Work areas are to be stabilised progressively during the works. E5. A progressive erosion and sediment control plan is to be prepared for the works. E6. The maintenance of established stockpile sites is to be in accordance with Transport's *Stockpile Site Management Guideline* (EMS-TG-10). E7. Potential or actual acid sulphate soils are to be managed in accordance with Transport's *Guidelines for the Management of Acid Sulphate Materials* 2005. E8. Saline soils are to be managed in accordance with NSW Department of Primary Industries (2014) Salinity Training Handbook. E9. An unexpected find procedure for potential or actual contaminated soils will be included in the construction environmental management documentation.
Waterways and water quality	W1. Weather forecasts (probability and amount of rain) will be considered when programming works. W2. An emergency spill kit will be kept onsite at all times during works. All staff are to be made aware of the location of the spill kit and trained in its use. W3. If a spill occurs, Transport's Environmental Incident Procedure 2021 will be followed and the Transport Project Manager notified as soon as practicable. W4. The Bureau of Meteorology flood forecasting and warning service is to be monitored for the duration of works for possible flooding to either the Hunter River or Goulburn River.

Factor	Safeguards
	In the event a flood warning is issued where flooding could occur at the work site(s), then the site(s) would be stabilised to minimise erosion extent and sediment runoff, plant and mobile equipment moved to higher ground where possible, and any remaining equipment on site stabilised to mitigate risk of floating offsite. Measures to remain until flooding has subsided and warnings cancelled.
Noise and vibration	NV1. Construction noise and vobration will be managed in accordance with the *Construction Noise and Vibration Guideline* (CNVG) (Transport for NSW, 2023) and *Interim Construction Noise Guideline* (ICNG) (DECC, 2009). NV2. All sensitive receivers (e.g., schools and local residents) likely to be affected will be notified at least five business days prior to commencement of any work associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of: • the project • the construction period and construction hours • contact information for project management staff • complaint and incident reporting • how to obtain further information. NV3. Any work with impulsive or tonal noise emissions will be carried out in accordance with the Construction Noise and Vibration Guideline (Roads) (Transport for NSW, 2023) and EPA Interim Construction Noise Guideline (ICNG) (NSW DECC, 2009). NV4. Recommended mitigation measures, as listed in Tables 3-7 to 3-8, are to be implemented where appropriate. NV5. Construction methods must consider safe working distances for rollers and other vibration producing equipment when working adjacent to structures, including heritage structures.
Air quality	A1. Vehicles transporting waste or other materials that have a potential to produce odours or dust will be covered during transportation. A2. Plant, vehicles and equipment will be maintained in good condition and in accordance with manufacturer's specifications. A3. Plant and machinery will be turned off when not in use. A4. Visual monitoring of air quality will be undertaken to verify the effectiveness of controls and enable early intervention. A5. Work activities that generate dust with an impact on sensitive receivers, motorist visibility and or worker safety, will cease and reprogrammed until implementation of revised management measures to control dust and or improved weather conditions.
Aboriginal heritage	AH1. If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Transport for NSW Aboriginal cultural heritage officer and regional environment manager contacted immediately. Steps in Transport's *Standard Management Procedure: Unexpected Heritage Items* must be followed. AH2. Due to the proximity of some of the proposed works to areas identified by AHIMS as being 'Aboriginal sites recorded in or near the location', caution must be taken to ensure there is no impact to these sites.
Non-Aboriginal cultural heritage	H1. If unexpected archaeological remains are uncovered during the works, all works are to cease in the vicinity of the material/find and the steps in Transport's *Standard Management Procedure: Unexpected Heritage Items* must be followed. Transport for NSW Senior Environment Specialist - Heritage is to be contacted immediately. H2. If any items defined as relics under the *NSW Heritage Act 1977* are uncovered during the works, all works are to cease in the vicinity of the find and the Transport for NSW Senior Environment Specialist - Heritage contacted immediately.

Factor	Safeguards
Biodiversity	B1. If unexpected, threatened fauna or flora species are discovered, works will be stopped immediately and follow Transport's *Unexpected Threatened Species Find Procedure* in Transport's *Biodiversity Guidelines 2011 – Guide 1* (Pre-clearing process). B2. All construction work will be undertaken in accordance with Transport's Biodiversity Guidelines, Protecting and Managing Biodiversity on RMS Projects, 2011. B3. The location and extent of all works will be clearly demarcated, including exclusion zones, and communicated to all staff and contractors working within the area during site inductions and daily toolbox talks. B4. Vegetation to be retained will be protected in accordance with AS 4970-2009 – *Protection of trees on development sites* and may require exclusion fencing of the Tree Protection Zones. B5. Any tree trimming will be no more than 20% of the canopy cover for each tree. B6. Any additional construction activities not identified in this MWREF within the tree protection zone of the subject trees will be assessed and approved by the project arborist and must comply with *AS 4970-2009 – Protection of trees* on development sites. B7. Tree removal and pruning will be undertaken by a suitably qualified arborist. B8. Cuttings from the European Olive trees (*Olea europaea subsp. Europaea*) will be disposed of at an appropriately licenced waste facility after removal to prevent the spread of this weed. B9. The opportunity to transplant the Olive trees elsewhere on the property will be consulted on with the landowner and subject to agreement, carried out provided it is feasible to do with a reasonable chance of success at the time of transplanting.
Traffic and transport	T1. Current traffic movements and property accesses will be maintained during the works. Any short-term lane closures would require notifications to the community. T2. Where works would affect the free flow of traffic, a ROL will be obtained, and a Traffic Control Plan would be prepared in accordance with Transport's *Traffic Control at Worksites Manual (2003).* T3. Appropriate signage (such as variable message signs) and supervision will be provided at all times to ensure that all construction work areas are controlled and that unauthorised personnel (e.g. pedestrians) are excluded from work areas. T4. Vehicle movement arrangements will be developed to limit impacts on other road users (including pedestrians, vehicles and cyclists) and the environment, with specific regard to other road works in the area, local traffic movement requirements and peak traffic volumes. A Traffic Management Plan shall be prepared by the Contractor and approved by Transport for NSW prior to any changes to road user movements and access. T5. Designated work areas within any road reserve will be delineated prior to the work commencing. This area would be the minimum required for safely undertaking the activity. T6. Pedestrian access around the intersection works zone will be maintained at all times. Where this cannot be achieved a safe diversion for pedestrians should be provided.
Socio-economic	C1. Local residents, businesses and stakeholders will be notified at least five working days prior to works commencing, and would be kept regularly informed of construction activities during the construction process. The notification is to include: • Details of the proposal, including temporary compound site • The duration of works and working hours • Any changed traffic or access arrangements • How to lodge a complaint or obtain more information • Contact name and details. C2. Complaints received will be recorded and attended to promptly in accordance with the Community Involvement Practice Notes and Resource Manual. C3. All property acquisition will be carried out in accordance with the *Land Acquisition Information Guide* (Transport, 2014) and the *Land Acquisition (Just Terms Compensation) Act 1991.*

Factor	Safeguards
Landscape character and visual amenity	None identified.
Waste	M1. Waste management measures will follow Transport's Technical Guide: Management of road construction and maintenance waste. M2. The resource management hierarchy detailed by the *Waste Avoidance Resource Recovery Act 2001* will be adopted, namely avoid unnecessary consumption; resource recovery; disposal as a last resort. M3. All waste will be treated in accordance with Transport's Waste *Minimisation and Management Guidelines* (RTA, 1998). M4. Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed. M5. Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.
Climate change and greenhouse gas emissions	None identified.
Cumulative impacts	None identified.

4.2 Licensing and approvals

Table 4-2: Summary of licensing and approvals required

Instrument	Requirement	Timing
Road Occupancy Licence from Transport for NSW	For any lane closures regulated by Transport for NSW	Prior to start of construction
Road Occupancy Licence from Council	For any lane closures regulated by Council. Further confirmation required during detailed design.	Prior to start of construction

4.3 Other requirements

Table 4-3: Other requirements

Requirement		
Environmental management plan sent to SMES or their delegate (ESL) for review. Not applicable.	Yes ☐	No ☒

5. Certification, review and determination

5.1 Certification

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

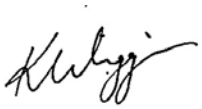
Prepared by:

Signature

Name:	Tracy Lam
Position:	Graduate Environmental Consultant
Company name:	Arcadis
Date:	20/03/2024

Minor works REF reviewed by:

Signature



Name:	Kate Wiggins
Position:	Environmental Lead
Company name:	Arcadis
Date:	20/03/2024

5.2 Environment and sustainability staff review

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

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

The impacts of the proposal described in the minor works REF requires further assessment and consideration to ensure that environmental impacts are not significant.

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

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

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

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

5.3 Environment and Sustainability staff recommendation

It is recommended that the proposal to upgrade several intersections along the State Road Network from the Port of Newcastle to the CWO REZ as described in this minor works REF proceed subject to the implementation of all safeguards identified in the minor works REF and compliance with all other relevant statutory approvals, licences, permits and authorisations.

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

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

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

Recommended by:		**Noted by:**	
Signature		Signature	D Perdikaris
Name:	Jonathon Blizzard	Name:	Dimitri Perdikaris
Position:	Senior Manager Environment and Sustainability	Position:	Senior Manager Renewables Transportation
Date:	25/03/2024	Date:	09/04/2024

5.4 Decision statement

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

Name: Alistair Lunn

Position: Regional Director West

Date: 09/04/2024

Signature 

Name: Anna Zycki

Position: Regional Director North

Date: 8 April 2024

5.5 EP&A Regulation publication requirement

Table 5-1: EP&A Regulation publication requirement

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

6. Definitions

Table 6-1: Definitions

Term	Definition
AHIMS	Aboriginal Heritage Information Management System
ARTC	Australian Rail Track Corporation
BC Act	Biodiversity Conservation Act 2016
Cessnock LEP 2011	Cessnock Local Environmental Plan 2011
CWO REZ	Central West Orana Renewable Energy Zone
DPI	Department of Industries
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environmental Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
EPL	Environmental Protection Licence
EnergyCo	Energy Corporation of NSW
ICNG	Interim Construction Noise Guideline
LEP	Local Environmental Plan
LGA	Local Government Area
Minor works REF	Minor Works Review of Environmental Factors
Newcastle LEP 2012	Newcastle Local Environmental Plan 2012
NML	Noise management level
NSW OEH	New South Wales Office of Environment and Heritage, now currently known as the New South Wales Environment and Heritage department of the state government
NVMP	Noise and Vibration Management Plan
OSOM	Over-sized and/or over-massed
PACHCI	TfNSW Procedure for Aboriginal cultural heritage consultation and investigation
PMST	Protected Matters Search Tool
POEO Act	Protection of the Environment Operations Act 1997
REF	Review of Environmental Factors
ROL	Road occupancy licenses
SEPP (Biodiversity and Conservation)	State Environmental Planning Policy (Biodiversity and Conservation) 2021
Transport and Infrastructure SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021
TEC	Threatened ecological communities
TMP	Traffic Management Plan
TMC	Traffic Management Centre
Transport	Transport for NSW

7. References

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Appendix A: Consideration of State and Commonwealth environmental factors

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

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

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

Factor	Description of impact	Duration and extent
a) Environmental impact on the community.	Construction of the proposal would potentially introduce short term noise impacts. These impacts would be minimised through the implementation of the safeguards and environmental management measures outlined in Section 4.1 of this minor works REF. In the long term, the proposal would facilitate the safe delivery of OSOM components from the Port of Newcastle to the CWO REZ.	Short-term negative (minor) Long-term positive
b) The transformation of the locality.	The proposed works would be primarily limited to intersection upgrades within the existing road reserve. Accordingly, there would be no transformation of the locality.	Nil
c) Any environmental impact on the ecosystems of the locality.	The proposal would likely result in the removal of five planted Olive trees, and likely pruning of an additional one planted Olive tree, within the vicinity of the Golden Highway and Denman Road intersection (I-008). Pruning is also likely required for one native tree within the vicinity of the Denman Road and Bengalla Road intersection (I-026). Any tree pruning required would be limited to only the necessary extent required to accommodate the swept path of heavy vehicles. Safeguards and environmental management measures outlined in Section 4.1 of this minor works REF would be in place to protect other trees within the vicinity of the proposal.	Moderate-term negative (minor)
d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality.	The proposal would result in a reduction in the aesthetic quality of the locality as a result of noise and visual impacts during construction. These impacts would be minimised through the implementation of the safeguards and environmental management measures outlined in Section 4.1 of this minor works REF. Tree removal proposed has been determined to be minor in scope. Any tree pruning required would be limited to only the necessary extent required to accommodate the swept path of heavy vehicles.	Short-term negative (minor) Moderate-term negative (minor)
e) Any effect on any locality, place or building having aesthetic,	The proposal would not impact cultural heritage or places of heritage value given that limited scope of work within the existing road reserve.	Nil

Factor		Description of impact	Duration and extent
	anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations.		
f)	Any impact on the habitat of protected fauna (within the meaning of the Biodiversity and Conservation Act 2016).	There would be no impact on the habitat of protected fauna (within the meaning of the Biodiversity and Conservation Act 2016).	Nil
g)	Any endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air.	It is unlikely that the proposal would endanger any species of animal, plant or other form of life, whether living on land, in water or in the air.	Nil
h)	Any long-term effects on the environment	In the long term, the proposal would facilitate the safe delivery of OSOM components from the Port of Newcastle to the CWO REZ.	Long-term positive
i)	Any degradation of the quality of the environment.	Construction of the proposal would potentially introduce short term noise impacts. These impacts would be minimised through the implementation of the safeguards and environmental management measures outlined in Section 4.1 of this minor works REF. Tree removal proposed has been determined to be minor in scope. Any tree pruning required would be limited to only the necessary extent required to accommodate the swept path of heavy vehicles.	Short-term negative (minor) Moderate-term negative (minor)
j)	Any risk to the safety of the environment.	The proposal would not pose any safety risks to the environment.	Nil
k)	Any reduction in the range of beneficial uses of the environment.	The proposal would not reduce the range of beneficial uses of the environment.	Nil
l)	Any pollution of the environment.	The proposal has the potential to produce air pollution during construction. These impacts would be minimised through the implementation of the safeguards and environmental management measures outlined in Section 4.1 this minor works REF.	Short-term negative
m)	Any environmental problems associated with the disposal of waste	The proposal would not result in any environmental problems associated with the disposal of waste. All waste material will be disposed of at appropriately licensed waste facilities. Reuse of other waste materials is not proposed as part of this proposal, however recycling	Nil

Factor	Description of impact	Duration and extent
	facilities may accept concrete for crushing and reuse as aggregate in other civil applications.	
n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply.	The proposal is unlikely to increase demands on resources (natural or otherwise) that are, or likely to become, in short supply.	Nil
o) The cumulative environmental effect with other existing or likely future activities.	The proposal is unlikely to have cumulative environmental effects with other existing or likely future activities. Subject to approval, construction is expected to commence in quarter 3 of 2024.	Nil
p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions.	The proposal would not impact coastal processes and coastal hazards, including those projected climate change conditions.	Nil
q) Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	The proposal aligns with SEPP (Transport and Infrastructure) by facilitating the safe delivery of OSOM components from Port of Newcastle to the CWO REZ. The proposal aligns with the objective to enable to efficient handling and distribution of freight from port areas through the provision of transport infrastructure. The proposal also aligns with Muswellbrook Local Strategic Planning Statement 2020-2040 by maintaining or improving the integrity of the State road network.	Long-term positive
r) Other relevant environmental factors		In considering the potential impacts of this proposal all relevant environmental factors have been considered, refer to Chapter 3 of this assessment.

Matters of National Environmental Significance

Table A2: Matters of national environmental significance

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

Additionally, any impact (direct or indirect) on the environment of Commonwealth land?	Nil

Appendix B: PACHCI

18/ 03/ 2024

Dimitri Perdikaris
76 Victoria Street
Grafton NSW 2460

Dear Dimitri,

Preliminary assessment results for Central West Orana Renewable Energy Zones based on Stage 1 of the *Procedure for Aboriginal cultural heritage consultation and investigation* (the procedure).

The project sites I-001, I-002, I-003, I-004, I-005, I-006, I-007, I-008, H-009, H-010, I-026 and I-027 as described in the Stage 1 assessment, were assessed as being unlikely to have an impact on Aboriginal cultural heritage. The assessment is based on the following due diligence considerations:

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

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

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

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

Safeguard- Due to the proximity of some of the proposed works to areas identified by AHIMS as being 'Aboriginal sites recorded in or near the location', caution must be taken to ensure there is no impact to these sites.

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

Yours Sincerely,

Merredy Quinn- Bates
Aboriginal Cultural Heritage Officer

Transport for NSW
Level 5, 6 Stewart Ave, Newcastle West 2302 NSW | Locked Bag 2030, Newcastle West, 2302 NSW
M [redacted] | **E** [redacted]

Appendix C: Construction noise assessment

Transport for NSW

Distanced Based Assessment (Noisiest Plant)

Please pick from drop-down list in orange cells

Noise area category		R2
RBL or L_{A90} Background level (dB(A))	Day	45
	Evening	40
	Night	35
$L_{Aeq(15minute)}$ Noise Mangement Level (dB(A))	Day	55
	Day (OOHW)	50
	Evening	45
	Night	40
Noisiest plant		Concrete Saw
Is there line of sight to receiver?		Yes

Steps for Assessment:

1. Schedule noisy works to occur in standard hours where possible or before 11pm and implement Standard Measures.
2. Select the representative noise area category. The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
3. Select the noisiest plant. If not found in drop-down list, refer to 'Source List' and select a representative plant with equivalent sound power level.
4. Is there line of sight to receiver? Select the appropriate scenario from the drop down list .

Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sightoiaw to receiver' drop-down list. Solid barriers can be in the form of road cutting, timber lapped and capped fence, shipping container, site office, etc. Substantial solid barriers are barriers greater than 5 metres in height or multiple rows of houses or a sound barrier specifically designed to mitigate construction noise. Please note that vegetation and trees are not considered to be a form of solid barrier and any gaps would compromise the acoustic integrity of the solid barrier.

5. Determine if there are any receivers (both residential and non-residential receivers) within the affected distance for each relevant time period . Consider background LA90 noise measurements to check assumption in Step #2 if:

(a) there are many affected receivers and the impact duration at any one receiver is more than 3 weeks; or

(b) there are a few affected receivers and the impact duration at any one receiver is more than 6 weeks.

Note that consideration need to be given to the construction staging plan when determining impact duration.

7. Identify if there are any receivers within the additional mitigation measures distances and identify feasible and reasonable measures at each receiver.
8. Where night works are involved, identify sleep disturbance affected distance.
9. Document the outcomes of these steps.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction and Maintenance Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Abbreviation	Measure
N	Notification
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Note that spot check verification of noise levels and individual briefings are not required for projects with less than 3 weeks impact duration

Residential receiver

			$L_{Aeq(15minute)}$ noise level above background (L_{A90})												$L_{Aeq(15minute)}$ 75 dB(A) or greater (Highly affected)			Sleep disutrbance L_{Amax} 65 dB(A)
			5 to 10 dB(A)			10 to 20 dB(A)			20 to 30 dB(A)			> 30 dB(A)						
			Noticeable			Clearly audible			Moderately intrusive			Highly intrusive						
		Affected distance (m)	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	200							N	95	65	N, PC, RO	30	75	N, PC, RO	30	75	
	Day (OOHW)	290				N, R1, DR	200	55	N, R1, DR	95	65	N, R1, DR, PC, SN	30	75	N, PC, RO	30	75	
	Evening	420				N, R1, DR	290	50	N, R1, DR	140	60	N, R1, DR, PC, SN	55	70	N, PC, RO	30	75	
	Night	610	N	610	40	N, R2, DR	420	45	N, PC, SN, R2, DR	200	55	AA, N, PC, SN, R2, DR	95	65	N, PC, RO	30	75	160
	Highly Affected	30													N, PC, RO	30	75	
Developed settlements (urban and suburban)	Day	240							N	105	65	N, PC, RO	35	75	N, PC, RO	35	75	
	Day (OOHW)	360				N, R1, DR	240	55	N, R1, DR	105	65	N, R1, DR, PC, SN	35	75	N, PC, RO	35	75	
	Evening	545				N, R1, DR	360	50	N, R1, DR	155	60	N, R1, DR, PC, SN	60	70	N, PC, RO	35	75	
	Night	805	N	805	40	N, R2, DR	545	45	N, PC, SN, R2, DR	240	55	AA, N, PC, SN, R2, DR	105	65	N, PC, RO	35	75	185
	Highly Affected	35													N, PC, RO	35	75	
Propagation across a valley / over water	Day	310							N	115	65	N, PC, RO	45	75	N, PC, RO	45	75	
	Day (OOHW)	485				N, R1, DR	310	55	N, R1, DR	115	65	N, R1, DR, PC, SN	45	75	N, PC, RO	45	75	
	Evening	750				N, R1, DR	485	50	N, R1, DR	190	60	N, R1, DR, PC, SN	70	70	N, PC, RO	45	75	
	Night	1125	N	1125	40	N, R2, DR	750	45	N, PC, SN, R2, DR	310	55	AA, N, PC, SN, R2, DR	115	65	N, PC, RO	45	75	230
	Highly Affected	45													N, PC, RO	45	75	

Transport for NSW

Distanced Based Assessment (Noisiest Plant)

NSW GOVERNMENT

Please pick from drop-down list in orange cells

Noise area category		R1
RBL or LA90 Background level (dB(A))	Day	40
	Evening	35
	Night	30
LAeq(15minute) Noise Mangement Level (dB(A))	Day	50
	Day (OOHW)	45
	Evening	40
	Night	35
Noisiest plant		Concrete Saw
Is there line of sight to receiver?		No (behind solid barrier)

Steps for Assessment:

1. Schedule noisy works to occur in standard hours where possible or before 11pm and implement Standard Measures.
2. Select the representative noise area category. The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
3. Select the noisiest plant. If not found in drop-down list, refer to 'Source List' and select a representative plant with equivalent sound power level.
4. Is there line of sight to receiver? Select the appropriate scenario from the drop down list .

Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sightoiaw to receiver' drop-down list. Solid barriers can be in the form of road cutting, timber lapped and capped fence, shipping container, site office, etc. Substantial solid barriers are barriers greater than 5 metres in height or multiple rows of houses or a sound barrier specifically designed to mitigate construction noise. Please note that vegetation and trees are not considered to be a form of solid barrier and any gaps would compromise the acoustic integrity of the solid barrier.

5. Determine if there are any receivers (both residential and non-residential receivers) within the affected distance for each relevant time period . Consider background LA90 noise measurements to check assumption in Step #2 if:

(a) there are many affected receivers and the impact duration at any one receiver is more than 3 weeks; or

(b) there are a few affected receivers and the impact duration at any one receiver is more than 6 weeks.

Note that consideration need to be given to the construction staging plan when determining impact duration.

7. Identify if there are any receivers within the additional mitigation measures distances and identify feasible and reasonable measures at each receiver.
8. Where night works are involved, identify sleep disturbance affected distance.
9. Document the outcomes of these steps.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction and Maintenance Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Abbreviation	Measure
N	Notification
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Note that spot check verification of noise levels and individual briefings are not required for projects with less than 3 weeks impact duration

Residential receiver

			LAeq(15minute) noise level above background (LA90)												LAeq(15minute) 75 dB(A) or greater (Highly affected)			Sleep disutrbance LAmax 65 dB(A)
			5 to 10 dB(A)			10 to 20 dB(A)			20 to 30 dB(A)			> 30 dB(A)						
			Noticeable			Clearly audible			Moderately intrusive			Highly intrusive						
		Affected distance (m)	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	200							N	95	60	N	30	70	N, PC, RO	25	75	
	Day (OOHW)	290				N, R1, DR	200	50	N, R1, DR	95	60	N, R1, DR, PC, SN	30	70	N, PC, RO	25	75	
	Evening	420				N, R1, DR	290	45	N, R1, DR	140	55	N, R1, DR, PC, SN	55	65	N, PC, RO	25	75	
	Night	610	N	610	35	N, R2, DR	420	40	N, PC, SN, R2, DR	200	50	AA, N, PC, SN, R2, DR	95	60	N, PC, RO	25	75	110
	Highly Affected	25													N, PC, RO	25	75	
Developed settlements (urban and suburban)	Day	240							N	105	60	N	35	70	N, PC, RO	25	75	
	Day (OOHW)	360				N, R1, DR	240	50	N, R1, DR	105	60	N, R1, DR, PC, SN	35	70	N, PC, RO	25	75	
	Evening	545				N, R1, DR	360	45	N, R1, DR	155	55	N, R1, DR, PC, SN	60	65	N, PC, RO	25	75	
	Night	805	N	805	35	N, R2, DR	545	40	N, PC, SN, R2, DR	240	50	AA, N, PC, SN, R2, DR	105	60	N, PC, RO	25	75	120
	Highly Affected	25													N, PC, RO	25	75	
Propagation across a valley / over water	Day	310							N	115	60	N	45	70	N, PC, RO	25	75	
	Day (OOHW)	485				N, R1, DR	310	50	N, R1, DR	115	60	N, R1, DR, PC, SN	45	70	N, PC, RO	25	75	
	Evening	750				N, R1, DR	485	45	N, R1, DR	190	55	N, R1, DR, PC, SN	70	65	N, PC, RO	25	75	
	Night	1125	N	1125	35	N, R2, DR	750	40	N, PC, SN, R2, DR	310	50	AA, N, PC, SN, R2, DR	115	60	N, PC, RO	25	75	145
	Highly Affected	25													N, PC, RO	25	75	

Overview of additional mitigation measures

After standard noise mitigation measures have been applied noise levels may still exceed noise management levels. The Construction and Maintenance Noise Estimator will indicate which additional measures apply. Note that assistance from Roads and Maritime Communication and Stakeholder Engagement is available to coordinate and deliver community consultation and notification. The team also has the latest noise fact sheets and letter templates.

The range of additional measures are described below. Note in instances where there are many receivers above the NML it may not be practical to discuss the project with every receiver recommended below. Instead the community should be proactively engaged so they have an incentive to participate in discussion. Support from the community may be demonstrated from surveys, online feedback, contact phone numbers and community events.

Longer term impacts

During long term works or at fixed sites the additional mitigation measures above may become less effective. In these situations at-receiver noise mitigation may be considered where feasible and reasonable if options for at source noise mitigation and management measures have been exhausted.

At receiver mitigation may include temporary window and door screens, temporary localised shielding or permanent forms of mitigation.
Feasible and reasonable considerations for providing at-receiver treatments should include:

Abbreviation	Measure	Description
N	Notification (letterbox drop or equivalent)	Advance warning of works and potential disruptions can assist in reducing the impact on the community. The notification may consist of using variable message sign, letterbox drop (or equivalent), web site / social media or a combination to distribute information detailing work activities, time periods over which these will occur, impacts and mitigation measures. Notification should be a minimum of 5 working days prior to the start of works. The approval conditions for projects may also specify requirements for notification to the community about works that may impact on them.
SN	Specific notifications	Specific notifications are letterbox dropped (or equivalent) to identified stakeholders no later than 5 working days ahead of construction activities that are likely to exceed the noise objectives. The specific notification provides additional information when relevant and informative to more highly affected receivers than covered in general letterbox drops. This form of communication is used to support periodic notifications, or to advertise unscheduled works.
PC	Phone calls	Phone calls detailing relevant information made to identified/affected stakeholders, who have provided their contact details, within seven calendar days of proposed work. Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs. Where the resident cannot be telephoned then an alternative form of engagement should be used.
IB	Individual briefings	Individual briefings are used to inform stakeholders about the impacts of high noise activities and mitigation measures that will be implemented. Project representatives would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project. Where the resident cannot be met with individually then an alternative form of engagement should be used.
RO	Respite offer	Respite Offers should be considered where there are high noise and vibration generating activities near receivers. As a guide work should be carried out in continuous blocks that do not exceed 3 hours each, with a minimum respite period of one hour between each block. The actual duration of each block of work and respite should be flexible to accommodate the usage of and amenity at nearby receivers. The purpose of such an offer is to provide residents with respite from an ongoing impact. This measure is evaluated on a project-by-project basis, and may not be applicable to all projects, or or when duration respite has been agreed (see below)
R1	Respite Period 1	Out of hours construction noise in out of hours period 1 shall be limited to no more than three consecutive evenings per week except where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and no more than 6 evenings per month
R2	Respite Period 2	Night time construction noise in out of hours period 2 shall be limited to two consecutive nights except for where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and 6 nights per month. Where possible, high noise generating works shall be completed before 11pm.
DR	Duration respite	Respite offers and respite periods 1 and 2 may be counterproductive in reducing the impact on the community for longer duration projects. In this instance and where it can be strongly justified it may be beneficial to increase the work duration, number of evenings or nights worked through Duration Respite so that the project can be completed more quickly. Transport staff should engage with the community where noise levels are expected to exceed the NML to demonstrate support for Duration Respite.
AA	Alternative accommodation	Alternative accommodation options may be offered (as a last resort) to residents living in close proximity to construction works that are likely to experience highly intrusive noise levels. The specifics of the offer will be identified on a project-by-project basis, however an AA offer is unlikely to be made for maintenance works. Additional aspects for consideration shall include whether the highly intrusive activities occur throughout the night or before midnight.
V	Verification	Verification may be required for building or asset condition where works are likely to cause vibration impact or for noise levels following reasonable complaints. See Appendix F of the Construction Noise and Vibration Guideline for more details.

Predicted airborne $L_{Aeq(15min)}$ noise level at receiver			Additional mitigation measures	
Perception	dB(A) above RBL	dB(A) above NML	Type[1]	Mitigations levels[2]
All hours				
75dBA or greater			N, V, PC, RO	HA
Standard hours: Mon–Fri (7am–6pm), Sat (8am–1pm), Sun/Public Holiday (Nil)				
Noticeable	5 to 10	0	-	NML
Clearly audible	10 to 20	< 10	-	NML
Moderately intrusive	20 to 30	10 to 20	N, V	NML+10
Highly intrusive	> 30	> 20	N, V	NML+20
OOHW Period 1: Mon–Fri (6pm–10pm), Sat (7am–8am & 1pm–10pm), Sun/Pub Holidays (8am–6pm)				
Noticeable	5 to 10	< 5	-	NML
Clearly audible	10 to 20	5 to 15	N, R1, DR	NML+5
Moderately intrusive	20 to 30	15 to 25	V, N, R1, DR	NML+15
Highly intrusive	> 30	> 25	V, IB, N, R1, DR, PC, SN	NML+25
OOHW Period 2: Mon–Fri (10pm–7am), Sat (10pm–8am), Sun/Public Holiday (6pm–7am)				
Noticeable	5 to 10	< 5	N	NML
Clearly Audible	10 to 20	5 to 15	V, N, R2, DR	NML+5
Moderately intrusive	20 to 30	15 to 25	V, IB, N, PC, SN, R2, DR	NML+15
Highly intrusive	> 30	> 25	AA, V, IB, N, PC, SN, R2, DR	NML+25

Notes [1](refer to detailed descriptions in Table C1 above):

1. AA = Alternative accommodation
   V = Validation of predicted noise levels
   IB = Individual briefings
   N = Notification box drops
   PC = Phone calls
   SN = Specific notifications
   R1 = Respite period 1
   R2 = Respite period 2
   DR = Duration respite
2. All affected receivers

Ground vibration - minimum working distances from sensitive receivers

As a guide, minimum working distances from sensitive receivers for typical items of vibration intensive plant are listed in the table below. The minimum distances are quoted for both cosmetic damage (refer to BS 7385:2-1993 for light-framed residential type structures and DIN 4150-3:2016 for fragile or heritage type structures) and human comfort (refer to EPA's Assessing Vibration - a technical guideline). The minimum working distances for cosmetic damage must be complied with at all times, unless otherwise approved by Roads and Maritime or under the environmental license as relevant.

Recommended minimum working distances for vibration intensive plant from sensitive receiver

Plant item	Rating / Description	Minimum working distance		
		Cosmetic damage		Human Response
		Light-framed structure (BS 7385)	Heritage and other sensitive structures (DIN 4150)	EPA's Vibration Guideline
Vibratory Roller	< 50 kN (Typically 1-2 tonnes)	5 m	14 m	15 m to 20 m
	< 100 kN (Typically 2-4 tonnes)	6 m	16 m	20 m
	< 200 kN (Typically 4-6 tonnes)	12 m	33 m	40 m
	< 300 kN (Typically 7-13 tonnes)	15 m	41 m	100 m
	> 300 kN (Typically 13-18 tonnes)	20 m	54 m	100 m
	> 300 kN (> 18 tonnes)	25 m	68 m	100 m
Small Hydraulic Hammer	(300 kg - 5 to 12t excavator)	2 m	5 m	7 m
Medium Hydraulic Hammer	(900 kg – 12 to 18t excavator)	7 m	19 m	23 m
Large Hydraulic Hammer	(1600 kg – 18 to 34t excavator)	22 m	60 m	73 m
Vibratory Pile Driver	Sheet piles	20 m	50 m	100 m
Pile Boring	≤ 800 mm	2 m (nominal)	5 m	7 m
Jackhammer	Hand held	1 m (nominal)	2 m	3 m
Profiler	Wirtgen W210	4 m	-	-
Asphalt Paver	Vogele Super 1800-3	1 m	-	-
Steel Drum Roller	Hamm HD70 (Oscillating Mode)	2 m	-	-
Steel Drum Roller	Hamm HD70 (Static Mode)	1 m	-	-

The minimum working distances are indicative and will vary depending on the particular item of plant, local geotechnical conditions and the dominant frequency of the construction vibration levels. They apply to cosmetic damage of typical light-framed residential buildings and heritage/fragile buildings and assume that construction vibration could include low frequency content associated with the increased risk of cosmetic damage. Vibration monitoring is recommended to confirm the minimum working distances at specific sites. Additionally, detailed analysis based on the frequency dependent guideline vibration levels in BS 7385:2-1993 and DIN 4150-3:2016 may be utilised in conjunction with site specific measurements to derive alternative cosmetic damage objectives and minimum working distances. For heritage listed / fragile structures, specialist advice from an appropriately qualified structural engineer who is familiar with heritage structures is required to support any proposed relaxation of the initial cosmetic damage screening criterion. Any such relaxation shall be approved by Roads and Maritime or under the environmental license as relevant.

Operational aspects of some receivers may be highly sensitive to noise and vibration over and above typical noise and vibration allowances based on annoyance and human comfort. For highly sensitive receivers (eg, high technology facilities with sensitive equipment, recording studios and cinemas), specific assessment is required to ensure satisfactory operation of the facility and determine if any mitigation or management measures are required to minimise the potential impacts. Some guidance where building contents contain sensitive equipment may be found in these additional references:

* Australian Standard 2834-1995 Computer Accommodation, Chapter 2.9 Vibration, p16
* Gordon CG Generic Vibration Criteria for Vibration Sensitive Equipment Proceedings of International Society for Optical Engineering (SPIE), Vol. 1619, San Jose, CA, November 4-6, 1991, pp. 71-85
* ASHRAE Applications Handbook (SI) 2003, Chapter 47 Sound and Vibration Control, pp47.39-47.40
* ISO 8569 1996 Measurement & Evaluation of Shock & Vibration Effects on Sensitive Equipment in buildings

In relation to human comfort (response), the minimum working distances in the above table relate to continuous vibration. For most construction activities, vibration emissions are intermittent in nature and for this reason, higher vibration levels, occurring over shorter periods are allowed (see EPA's Assessing Vibration: a technical guideline). Where the predicted vibration levels for construction activities exceed the human comfort objectives, the procedures in Appendix C of the Construction Noise and Vibration Guideline are to be followed in order to mitigate the potential impacts at sensitive receivers.

Appendix D: Aboriginal cultural heritage searches

Appendix E: Non-Aboriginal cultural heritage searches


muswellbrook shire council
Muswellbrook Local Environmental Plan 2009
Heritage Map - Sheet HER_009
Heritage
Conservation area - General
Item - General
Item - Landscape
Cadastre
Cadastre 20/09/2010 © Land and Property Information (LPI)
WYBONG
CASTLE ROCK
BENGALLA
MUSCLE CREEK
MANGOOLA
MUSWELLBROOK
EDDERTON
DENMAN
DALSWINTON
JERRYS PLAINS
SINGLETON LGA
MARTINDALE
N
0 800 1,600 2,400 3,200 Metres
Scale:1:80,000 @ A3
Projection: GDA 1994 MGA Zone 56
Map identification number: 5650_COM_HER_009_080_20130820

Muswellbrook Local Environmental Plan 2009

muswellbrook shire council

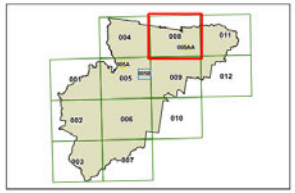
Heritage Map - Sheet HER_008

Heritage

- Conservation Area - General
- Item - General
- Item - Landscape

Cadastre

05/02/2024 © Spatial Services



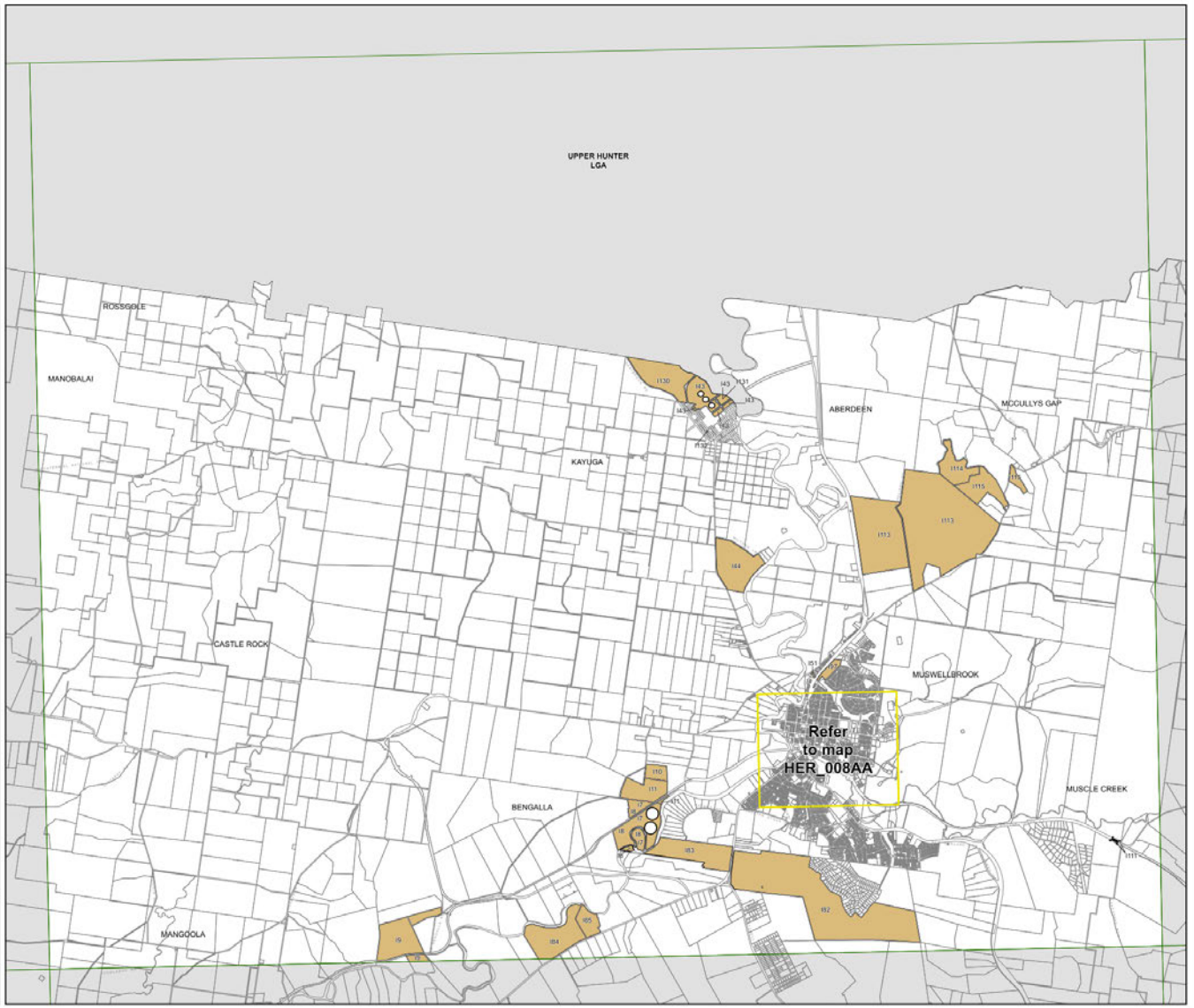
N

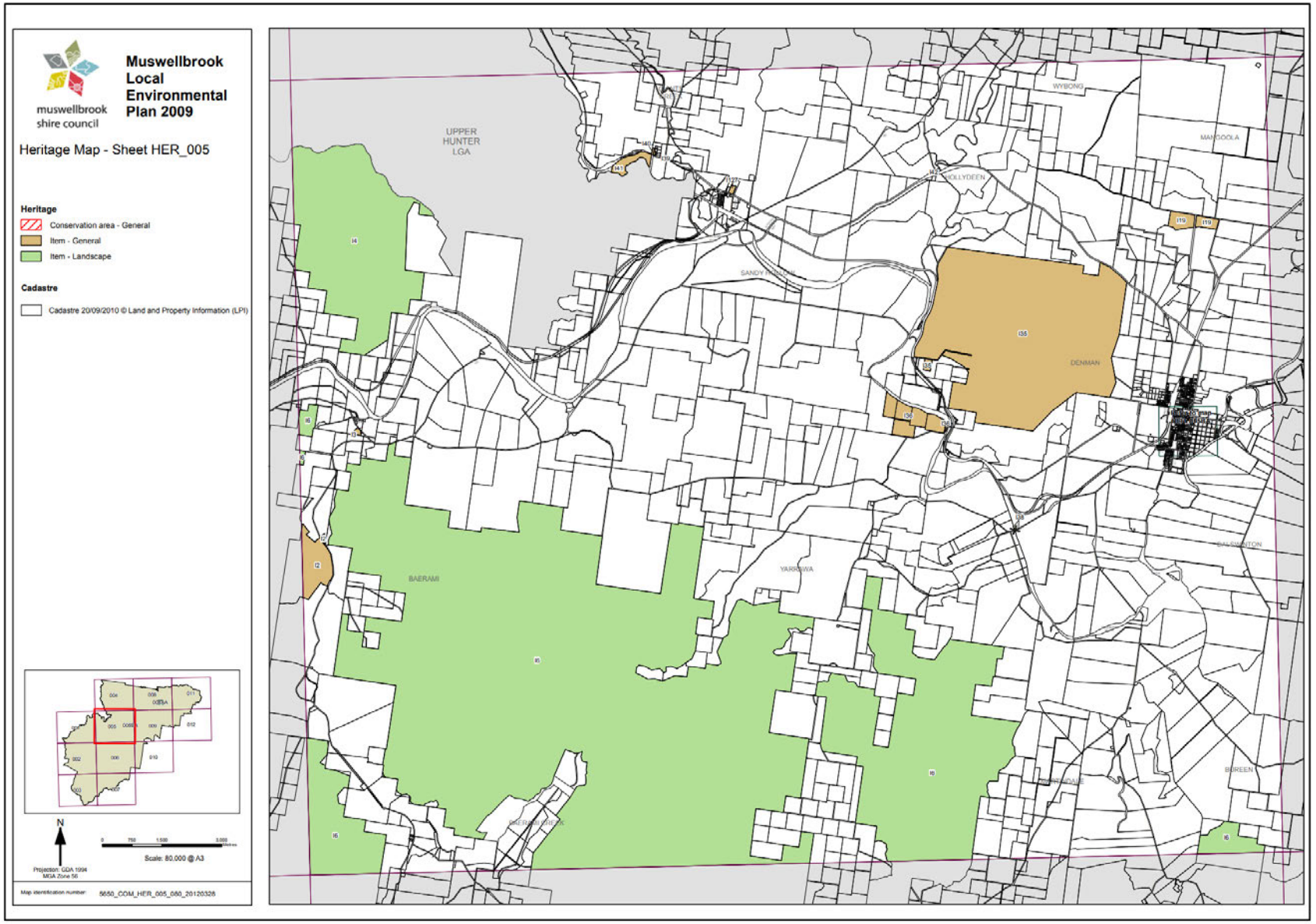
0 1,000 2,000 3,000 4,000 m

Scale 1:80,000 @ A3

Projection GDA 2020
MGA Zone 56

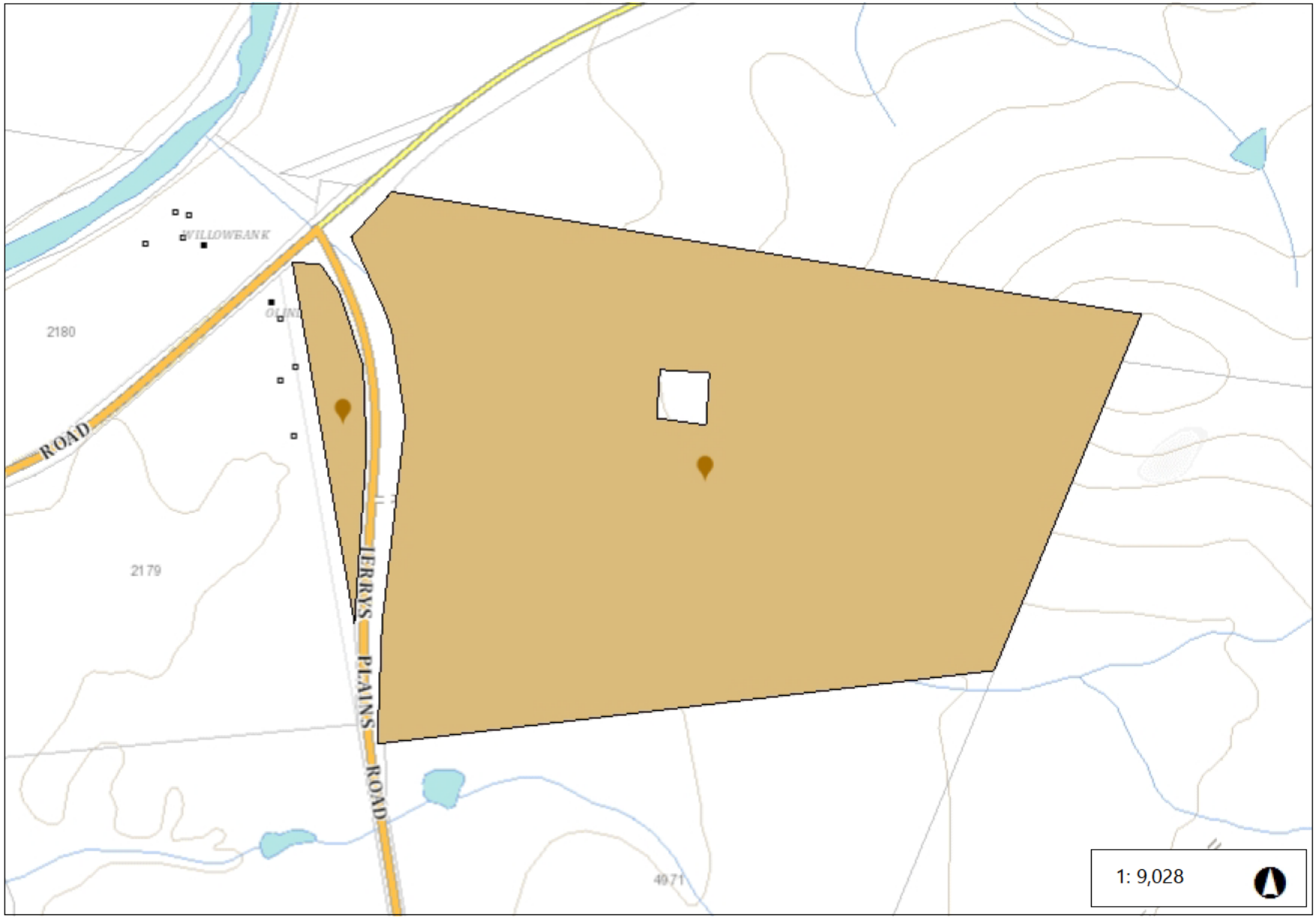
Map Identification Number : 5650_COM_HER_008_080_20240205




muswellbrook shire council
Muswellbrook Local Environmental Plan 2009
Heritage Map - Sheet HER_005
Heritage
Conservation area - General
Item - General
Item - Landscape
Cadastre
Cadastre 20/09/2010 © Land and Property Information (LPI)
UPPER HUNTER LGA
WYBONG
MAROOLA
HOLLYDEEN
SANDY HOLLOW
DENMAN
BAERAMI
YARRAWA
BAERAMI
BOREEN
N
Scale: 80,000 @ A3
Projection: GDA 1994 MGA Zone 56
Map identification number:
5650_COM_HER_005_060_20120328

NSW GOVERNMENT | Heritage NSW

I008



Legend

- World Heritage Areas NSW
- SEPP
- State Heritage Register
- Local Environmental Plan
  - Aboriginal Place
  - Conservation Area - General
  - Conservation Area - Landscape
  - Heritage Conservation Area
  - Item - Aboriginal
  - Item - Archaeological
  - Item - General
  - Item - Landscape
- Local Environmental Plan
  - Cluster (label denotes number)
- State Heritage Register
  - Cluster (label denotes number)
- Aboriginal Place
  - Cluster (label denotes number)
- Interim Heritage Order
  - Cluster (label denotes number)

1: 9,028

Notes

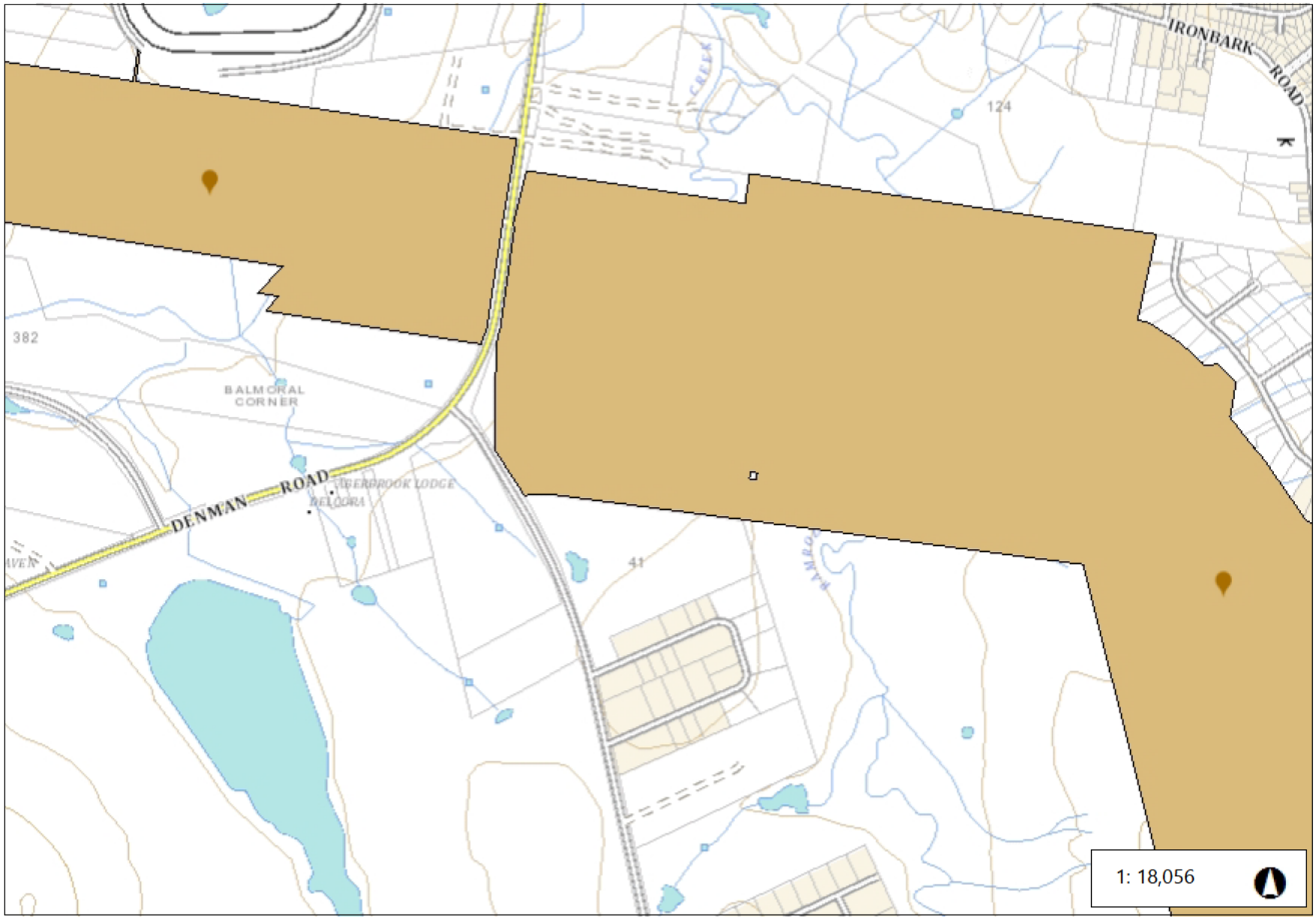
Notes

458.6 0 229.31 458.6 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

NSW GOVERNMENT | Heritage NSW

Title



Legend

- World Heritage Areas NSW
- SEPP
- State Heritage Register
- Aboriginal Place
- Local Environmental Plan
  - Aboriginal Place
  - Conservation Area - General
  - Conservation Area - Landscape
  - Heritage Conservation Area
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  - Item - Archaeological
  - Item - General
  - Item - Landscape
- Local Environmental Plan
  - Cluster (label denotes number)
- State Heritage Register
  - Cluster (label denotes number)
- Aboriginal Place
  - Cluster (label denotes number)
- Interim Heritage Order
  - Cluster (label denotes number)

1: 18,056

Notes

Notes

917.2 0 458.62 917.2 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

NSW GOVERNMENT | Heritage NSW

Title

Legend

- World Heritage Areas NSW
- SEPP
- State Heritage Register
- Aboriginal Place
- Local Environmental Plan
  - Aboriginal Place
  - Conservation Area - General
  - Conservation Area - Landscape
  - Heritage Conservation Area
  - Item - Aboriginal
  - Item - Archaeological
  - Item - General
  - Item - Landscape
- Local Environmental Plan
  - Cluster (label denotes number)
- Aboriginal Place
  - Cluster (label denotes number)
- State Heritage Register
  - Cluster (label denotes number)
- Interim Heritage Order
  - Cluster (label denotes number)

1: 9,028

458.6 0 229.31 458.6 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

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

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

Notes

Search Results

34 results found.

Balmoral 310 Denman Rd	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Barber Shop (former) 7 Sydney St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Birralee 33 Brentwood St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Brighton Villa 12 Hunters Tce	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Eatons Hotel 180-188 Bridge St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Eatons Hotel Group 164-188 Bridge St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Edinglassie 710 Denman Rd	Muswellbrook, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
Hennor and Garden 3 Lorne St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
House 178 Bridge St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
House - St Vincent De Paul Shop 174-176 Bridge St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)

House and Former Shop 164-166 Bridge St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Hunter River Road Bridge Kayuga Rd	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Loxton House 142-144 Bridge St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Masonic Hall 75 Bridge St	Muswellbrook, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
Muswellbrook Post Office 7 Bridge St	Muswellbrook, NSW, Australia	(Listed place) Commonwealth Heritage List
Overdene 79 Bengalla Rd	Bengalla via Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Police Station William St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Presbyterian Church (original building) Hill St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Presbyterian Manse (former) 106 Hill St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Railway Cottage and Adjacent Fig Tree 27 Brook St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Railway Hotel 10-14 Market St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)

Railway Station Market St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Royal Hotel (former) 1 Sydney St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Shop (former) 172 Bridge St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Skellatar Tindale St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
St Albans Anglican Church & Grounds Brook St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
St Albans Precinct Brook St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
St Albans Rectory Brook St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
St Albans Sunday School 15 HuntersTce	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
St James Catholic Church 4 Brook St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
St Johns Presbyterian Church Hill St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
St Johns Presbyterian Church Precinct Hill St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)

Trinity Uniting Church 110 Bridge St	Muswellbrook, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
Weidmann Cottage (former) 132-134 Bridge St	Muswellbrook, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)

Report Produced: Thu Mar 21 15:27:13 2024

Place Details

Send Feedback

Overdene, 79 Bengalla Rd, Bengalla via Muswellbrook, NSW, Australia

Photographs	
List	Register of the National Estate (Non-statutory archive)
Class	Historic
Legal Status	Registered (25/03/1986)
Place ID	1394
Place File No	1/09/071/0010

Statement of Significance

One of the earliest buildings in the Muswellbrook, which is an excellent example of a vernacular rural homestead of the early Victorian period. The homestead has historic associations with the early settlement of the Hunter Valley, being erected on a grant made in 1825.

Official Values Not Available

Description

A single storey five bay early Victorian vernacular homestead of coursed random dressed sandstone. There is a hipped iron roof and the remains of the original bellcast verandah roof although only one of the original timber columns survives. There are twelve paned windows and panelled French windows. The interior features cedar joinery and four matching chimney pieces. On the chimney pots are interesting heart shaped cutouts.

History Not Available

Condition and Integrity

Poor to fair condition although capable of restoration. Its hilltop siting is marred by the proximity of a c 1960 house, though this is not visible from the road.

Location

79 Bengalla Road, 3.5km west of Muswellbrook.

Bibliography

GRIFFITHS, G.N., SOME NORTHERN HOMES OF NEW SOUTH WALES

Report Produced Thu Mar 21 15:31:27 2024

Place Details

Send Feedback

Balmoral, 310 Denman Rd, Muswellbrook, NSW, Australia

Photographs	None
List	Register of the National Estate (Non-statutory archive)
Class	Historic
Legal Status	Registered (21/03/1978)
Place ID	1375
Place File No	1/09/071/0009

Statement of Significance

An imposing house of the 1850s. In excellent condition with only minor alterations. House has added significance as the continuous home of members of the well known Bowman family since it was built, William Bowman took an active part in public affairs and was a magistrate, first Mayor of Muswellbrook and a member of the Legislative Assembly.

(The Commission is in the process of developing and/or upgrading official statements for places listed prior to 1991. The above data was mainly provided by the nominator and has not yet been revised by the Commission.)

Official Values Not Available

Description

Two storey brick house plus attics, with two storey verandah front and both sides. It has twelve pane windows downstairs, French windows onto balconies upstairs, stone quoins, cedar joinery, six panel doors. William Bowman moved to Muswellbrook in about 1850 and began to build Balmoral in about 1857.

History Not Available

Condition and Integrity Not Available

Location

310 Denman Road, about 2.5km south-west of Muswellbrook.

Bibliography

WOMEN'S COMMITTEE LEAFLET NO 117. 16-17/10/71 (NATIONAL TRUST) JUNIOR GROUP LEAFLET NO 232. 30/9/73.(NATIONAL TRUST)

Report Produced Thu Mar 21 15:30:09 2024

Place Details

Send Feedback

Edinglassie, 710 Denman Rd, Muswellbrook, NSW, Australia

Photographs	None
List	Register of the National Estate (Non-statutory archive)
Class	Historic
Legal Status	Indicative Place
Place ID	1344
Place File No	1/09/071/0008

Statement of Significance Not Available

Official Values Not Available

Description Not Available

History Not Available

Condition and Integrity Not Available

Location

710 Denman Road, 7km south-west of Muswellbrook.

Bibliography Not Available

Report Produced Thu Mar 21 15:31:57 2024

Search Results

5 results found.

Baerami Homestead 300 Baerami Creek Rd	Baerami via Sandy Hollow, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Goulburn River National Park Kerrabee Rd	Sandy Hollow, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Indigenous Place	Sandy Hollow, NSW, Australia	(Removed from Register or IL) Register of the National Estate (Non-statutory archive)
Manobalai Nature Reserve (1978 boundary) Dry Creek Rd	Wybong, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Wollemi National Park (1980 boundary) The Putty Rd	Singleton, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)

Report Produced: Thu Mar 21 15:41:57 2024

Australian Government
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Search results

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Title: Barber Shop (former)
Location: 7 Sydney St, Muswellbrook
Barcode No: rt54135
Place ID: 14347

Click image for more details

Title: Birralee
Location: 33 Brentwood St, Muswellbrook
Barcode No: rt07617
Place ID: 14355

Click image for more details

Title: Brighton Villa
Location: 12 Hunters Tce, Muswellbrook
Barcode No: rt07614
Place ID: 14350

Click image for more details

Title: Eatons Hotel
Location: 164-188 Bridge St, Muswellbrook
Barcode No: rt07588
Place ID: 1377, 1376

Photographic resources

- Begin a new search

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heritage@dcceew.gov.au

Key

Links to another web site
Opens a pop-up window

Click image for more details

Title: Eatons Hotel Group

Location: 164-188 Bridge St, Muswellbrook

Barcode No: rt07592

Place ID: 1377

Click image for more details

Title: Hennor and Garden

Location: 3 Lorne St, Muswellbrook

Barcode No: rt07612

Place ID: 14349

Click image for more details

Title: House

Location: 178 Bridge St, Muswellbrook

Barcode No: rt07599

Place ID: 1382

Click image for more details

Title: House - St Vincent De Paul Shop

Location: 174-176 Bridge St, Muswellbrook

Barcode No: rt07598

Place ID: 1380

Click image for more details

Title: House and Former Shop

Location: 164-166 Bridge St, Muswellbrook

Barcode No: rt07595

Place ID: 1378

Click image for more details

Title: Hunter River Road Bridge

Location: Kayuga Rd, Muswellbrook

Barcode No: rt07618

Place ID: 15955

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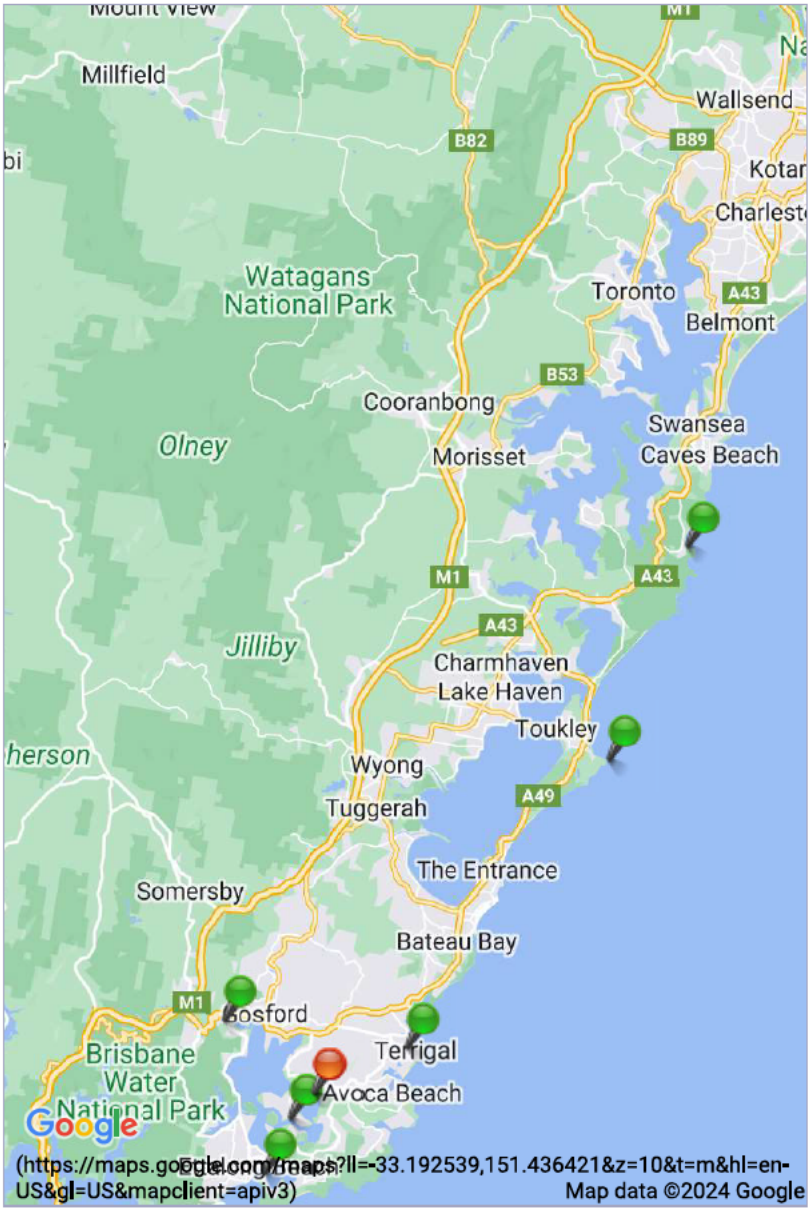

Region

- ○ All regions
- ○ Northern Rivers
- ○ Mid north coast
- ○ Hunter Valley
- ◉ Central Coast
- ○ Sydney
- ○ Illawarra
- ○ South East
- ○ NSW - Other
- ○ Lord Howe Island and Middleton & Elizabeth Reefs
- ○ Darling
- ○ Murray river

Maritime category

Maritime Her

Maritime type

All type

Site search results

Site title	Description	Category	Region
Catherine Hill Bay (ViewSiteDetail.aspx?siteid=2344)	Catherine Hill Bay, located between Norah Head and Newcastle, was used from the early days of the colony as a	Maritime Heritage Site	Central Coast

	safe haven for vessels travelling on the coast and caught in bad weather. ...		
Davistown (ViewSiteDetail.aspx?siteid=2345)	Brisbane water located in Broken Bay, was located from the earliest days of the settlement at Sydney. ...	Maritime Heritage Site	Central Coast
Ettalong Wharf (ViewSiteDetail.aspx?siteid=2430)		Maritime Heritage Site	Central Coast
Henry Kendall Cottage and Historical Museum (ViewSiteDetail.aspx?siteid=2366)	Henry Kendall Cottage and Historical Society maintains a local history collection. ...	Maritime Heritage Site	Central Coast
Jonathan Pipers Shipyard (ViewSiteDetail.aspx?siteid=2784)	From 1844 to 1879, Jonathan Piper built 24 known ships at his yards, the first being the ketch Peacock and the last, a ketch called Jonathan. ...	Maritime Heritage Site	Central Coast
Norah Head Lighthouse (ViewSiteDetail.aspx?siteid=2066)	Norah Head Lighthouse Norah Head Operation	Maritime Heritage Site	Central Coast

Contact us

Heritage NSW

02 9873 8500

Email

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Appendix F: Biodiversity searches

DPI Weedwise Search – Hunter region 'priority weeds'

Definitions

Prohibition on certain dealings: Must not be imported into the state, sold, bartered, exchanged or offered for sale.

Regional recommended measure: Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.

Exclusion zone: An exclusion zone is established for all land in the region, except the core infestation which includes all urban centres of the Hunter region.

Prohibited Matter: A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries

Control Order: Owners and occupiers of land on which there is species must notify the local control authority for the area if the species is part of a new infestation on the land, destroy all species on the land ensuring that subsequent generations of species are destroyed; and keep the land free of species. A person who deals with a carrier of species must ensure the plant (and any seed and propagules) is not moved from the land; and immediately notify the local control authority of the presence of the plant on the land, or on or in a carrier.

Scientific Name	Common name	Biosecurity duty
Opuntia leucotricha	Aaron's bear prickly pear	**Prohibition on certain dealings** **Regional recommended measure**
Lycium ferocissimum	African boxthorn	**Prohibition on certain dealings** **Regional recommended measure**
Eragrostis curvula	African lovegrass	**Regional recommended measure**
Olea europaea subsp. cuspidata	African olive	**Exclusion zone**
Alternanthera philoxeroides	Alligator weed	**Prohibition on certain dealings**
Eichhornia azurea	Anchored water hyacinth	**Prohibited Matter**
Sagittaria calycina var. calycina	Arrowhead	**Regional recommended measure**
Asparagus virgatus	Asparagus fern	**Regional recommended measure**
Tamarix aphylla	Athel pine	**Prohibition on certain dealings.**
Chrysanthemoides monilifera subsp. rotundata	Bitou bush	**Prohibition on certain dealings**
Centaurea x moncktonii	Black knapweed	**Prohibited Matter**
Robinia pseudoacacia	Black locust	**Exclusion zone**
Salix nigra	Black willow	**Prohibition on certain dealings**
Rubus fruticosus species aggregate	Blackberry	**Prohibition on certain dealings** **Regional recommended measure**
Opuntia rufida	Blind cactus	**Prohibition on certain dealings** **Regional recommended measure**
Heliotropium amplexicaule	Blue heliotrope	**Regional recommended measure**
Vinca major	Blue periwinkle	**Regional recommended measure**
Chrysanthemoides monilifera subsp. Monilifera	Boneseed	**Prohibition on certain dealings**
Cylindropuntia fulgida var. mamillata	Boxing glove cactus	**Prohibition on certain dealings** **Regional recommended measure**
Asparagus asparagoides	Bridal creeper	**Prohibition on certain dealings**
Asparagus declinatus	Bridal veil creeper	**Prohibited matter**
Schinus terebinthifolius	Broad-leaf pepper tree	**Regional recommended measure**
Orobanche species	Broomrapes	**Prohibition matter**
Cylindropuntia tunicata	Brown-spined Hudson pear	**Regional recommended measure**
Opuntia microdasys	Bunny ears cactus	**Prohibition on certain dealings** **Regional recommended measure**
Cabomba caroliniana	Cabomba	**Prohibition on certain dealings** **Regional recommended measure**
Cinnamomum camphora	Camphor laurel	**Regional recommended measure**

Scientific Name	Common name	Biosecurity duty
Austrocylindropuntia cylindrica	Cane cactus	**Prohibition on certain dealings** **Regional recommended measure**
Genista monspessulana	Cape broom	**Prohibition on certain dealings** **Regional recommended measure**
Dolichandra unguis-cati	Cat's claw creeper	**Prohibition on certain dealings** **Regional recommended measure**
Opuntia schickendantzii	Chicken dance cactus	**Prohibition on certain dealings** **Regional recommended measure**
Nassella neesiana	Chilean needle grass	**Prohibition on certain dealings** **Regional recommended measure**
Celtis sinensis	Chinese celtis	**Regional recommended measure**
Persicaria chinensis	Chinese knotweed	**Regional recommended measure**
Triadica sebifera	Chinese tallow tree	**Exclusion zone** **Regional recommended measure**
Asystasia gangetica subsp. *micrantha*	Chinese violet	**Control Order**
Asparagus africanus	Climbing asparagus	**Prohibition on certain dealings** **Regional recommended measure**
Asparagus plumosus	Climbing asparagus fern	**Prohibition on certain dealings**
Erythrina crista-galli	Cockspur coral tree	**Regional recommended measure**
Opuntia stricta	Common pear	**Prohibition on certain dealings** **Regional recommended measure**
Hyparrhenia hirta	Cooltai grass	**Regional recommended measure**
Barleria repens	Coral creeper	**Regional recommended measure**
Cotoneaster glaucophyllus	Cotoneaster	**Regional recommended measure**
Ageratina adenophora	Crofton weed	**Regional recommended measure**
Hygrophila polysperma	East Indian hyrophila	**Regional recommended measure**
Amelichloa caudata	Espartillo-broad kernel	**Regional recommended measure**
Amelichloa brachychaeta	Espartillo-narrow kernel	**Regional recommended measure**
Myriophyllum spicatum	Eurasion water milfoil	**Prohibition matter**
Austrocylindropuntia subulata	Eve's needle cactus	**Prohibition on certain dealings** **Regional recommended measure**
Senecio madagascariensis	Fireweed	**Prohibition on certain dealings**
Genista linifolia	Flax-leaf broom	**Prohibition on certain dealings**
Asparagus densiflorus	Foxtail fern	**Prohibition on certain dealings**
Limnobium laevigatum	Frogbit	**Prohibition matter**
Galenia pubescens	Galenia	**Exclusion zone**
Andropogon gayanus	Gamba grass	**Prohibition matter**
Solanum chrysotrichum	Giant devil's fig	**Regional recommended measure**
Sporobolus fertilis	Giant Parramatta grass	**Regional recommended measure**
Sporobolus pyramidalis	Giant rat's tail grass	**Regional recommended measure**
Arundo donax	Giant reed	**Regional recommended measure**
Gloriosa superba	Glory lily	**Regional recommended measure**
Ulex europaeus	Gorse	**Prohibition on certain dealings** **Regional recommended measure**
Cestrum parqui	Green cestrum	**Regional recommended measure**
Salix cinerea	Grey sallow	**Prohibition on certain dealings**
Asparagus aethiopicus	Ground asparagus	**Prohibition on certain dealings** **Regional recommended measure**
Baccharis halimifolia	Groundsel bush	**Regional recommended measure**
Harrisia species	Harrisia cactus	**Regional recommended measure**
Hieracium species	Hawkweeds - Hieraciums	**Prohibited matter**
Pilosella species	Hawkweeds – Pilosellas	**Prohibited Matter**
Gleditsia triacanthos	Honey locust	**Regional recommended measure**
Equisetum species	Horsetails	**Regional recommended measure**
Cylindropuntia pallida	Hudson pear	**Prohibition on certain dealings** **Regional recommended measure**
Hydrocotyle ranunculoides	Hydrocotyl	**Prohibited Matter**
Hygrophila costata	Hygrophila	**Recommended management measure**

Scientific Name	Common name	Biosecurity duty
Hymenachne amplexicaulis and hybrids	Hymenachne	**Prohibition on certain dealings** **Regional recommended measure**
Vachellia karroo	Karoo acacia	**Prohibited Matter**
Heteranthera reniformis	Kidney-leaf mud plantain	**Regional recommended measure**
Pilosella piloselloides	King devil hawkweed	**Prohibited Matter**
Bassia scoparia	Kochia	**Prohibited Matter**
Clidemia hirta	Koster's curse	**Prohibited Matter**
Pueraria lobata	Kudzu	**Regional recommended measure**
Lagarosiphon major	Lagarosiphon	**Prohibited Matter**
Lantana camara	Lantana	**Prohibition on certain dealings** **Regional recommended measure**
Pereskia aculeata	Leaf cactus	**Regional recommended measure**
Ludwigia longifolia	Long-leaf willow primrose	**Regional recommended measure**
Ludwigia peruviana	Ludwigia	**Regional recommended measure**
Anredera cordifolia	Madeira vine	**Prohibition on certain dealings**
Berberis lomariifolia	Mahonia	**Regional recommended measure**
Prosopis species	Mesquite	**Prohibition on certain dealings**
Nassella tenuissima	Mexican feather grass	**Prohibited Matter**
Miconia species	Miconia	**Prohibited Matter**
Mikania micrantha	Mikania vine	**Prohibited Matter**
Mimosa pigra	Mimosa	**Prohibited Matter**
Asparagus macowanii	Ming asparagus fern	**Regional recommended measure**
Ageratina riparia	Mistflower	**Regional recommended measure**
Bryophyllum species	Mother-of-millions	**Regional recommended measure**
Pilosella officinarum	Mouse-ear hawkweed	**Prohibited Matter**
Caesalpinia decapetala	Mysore thorn	**Regional recommended measure**
Carduus nutans subsp. *nutans*	Nodding thistle	**Regional recommended measure**
Pilosella aurantiaca	Orange hawkweed	**Prohibited Matter**
Leucanthemum vulgare	Oz-eye daisy	**Regional recommended measure**
Cortaderia species	Pampas grass	**Regional recommended measure** **Exclusion zone**
Parkinsonia aculeata	Parkinsonia	**Prohibition on certain dealings** **Control Order**
Parthenium hysterophorus	Parthenium weed	**Prohibited Matter** **Prohibition on certain dealings**
Echium plantagineum	Paterson's curse	**Exclusion zone**
Bocconia frutescens	Plume poppy	**Regional recommended measure**
Annona glabra	Pond apple	**Prohibited Matter**
Vachellia nilotica	Prickly acacia	**Prohibited Matter**
Austrocylindropuntia species	Prickly pears	**Prohibition on certain dealings** **Regional recommended measure**
Cylindropuntia species	Prickly pears	**Prohibition on certain dealings** **Regional recommended measure**
Opuntia species	Prickly pears	**Prohibition on certain dealings** **Regional recommended measure**
Crotalaria beddomeana	Rattlepod	**Regional recommended measure**
Toxicodendron succedaneum	Rhus tree	**Regional recommended measure**
Opuntia elata	Riverina pear	**Prohibition on certain dealings** **Regional recommended measure**
Cylindropuntia imbricata	Rope pear	**Prohibition on certain dealings** **Regional recommended measure**
Cryptostegia grandiflora	Rubber vine	**Prohibited Matter**
Sagittaria platyphylla	Sagittaria	**Prohibition on certain dealings** **Regional recommended measure**
Salvinia molesta	Salvinia	**Prohibition on certain dealings** **Regional recommended measure**
Cytisus scoparius subsp. *scoparius*	Scotch broom	**Prohibition on certain dealings** **Regional recommended measure**
Euphorbia paralias	Sea spruge	**Regional recommended measure**
Gymnocoronis spilanthoides	Senegal tea plant	**Regional recommended measure**
Nassella trichotoma	Serrated tussock	**Prohibition of certain dealings**

Scientific Name	Common name	Biosecurity duty
		Regional recommended measure
Chromolaena odorata	Siam weed	**Prohibited Matter**
Limonium hyblaeum	Sicilian sea lavender	**Regional recommended measure**
Asparagus falcatus	Sicklethorn	**Regional recommended measure**
Solanum elaeagnifolium	Silverleaf nightshade	**Prohibition on certain dealings** **Regional recommended measure**
Opuntia monacantha	Smooth tree pear	**Prohibition on certain dealings** **Regional recommended measure**
Asparagus scandens	Snakefeather	**Prohibition on certain dealings** **Regional recommended measure**
Juncus acutus	Spiny rush	**Regional recommended measure**
Limnobium spongia	Spongeplant	**Prohibited Matter**
Centaurea stoebe subsp. *micranthos*	Spotted knapweed	**Prohibited Matter**
Hypericum perforatum	St John's Wort	**Regional recommended measure**
Solanum sisymbriifolium	Sticky nightshade	**Regional recommended measure**
Heterotheca grandiflora	Telegraph weed	**Regional recommended measure**
Opuntia aurantiaca	Tiger pear	**Prohibition on certain dealings** **Regional recommended measure**
Ailanthus altissima	Tree-of-heaven	**Regional recommended measure**
Solanum viarum	Tropical soda-apple	**Control Order**
Opuntia tomentosa	Velvety tree pear	**Prohibition on certain dealings** **Regional recommended measure**
Trapa species	Water caltrop	**Prohibited Matter**
Eichhornia crassipes	Water hyacinth	**Prohibition on certain dealings** **Regional recommended measure**
Pistia stratiotes	Water lettuce	**Regional recommended measure**
Stratiotes aloides	Water solider	**Prohibited Matter**
Heteranthera zosterifolia	Water star grass	**Regional recommended measure**
Opuntia robusta	Wheel cactus	**Prohibition on certain dealings** **Regional recommended measure**
Rubus niveus	White blackberry	**Regional recommended measure**
Salix species	Willows	**Prohibition on certain dealings**
Striga species	Witchweeds	**Prohibited Matter**
Tecoma stans	Yellow bells	**Regional recommended measure**
Limnocharis flava	Yellow burrhead	**Prohibited Matter**

NSW GOVERNMENT Department of Primary Industries

primefact

Darling River Hardyhead population in the Hunter River catchment

Craterocephalus amniculus

June 2014 Primefact 1304 first edition
Aquatic Ecosystems Unit, Port Stephens Fisheries Institute

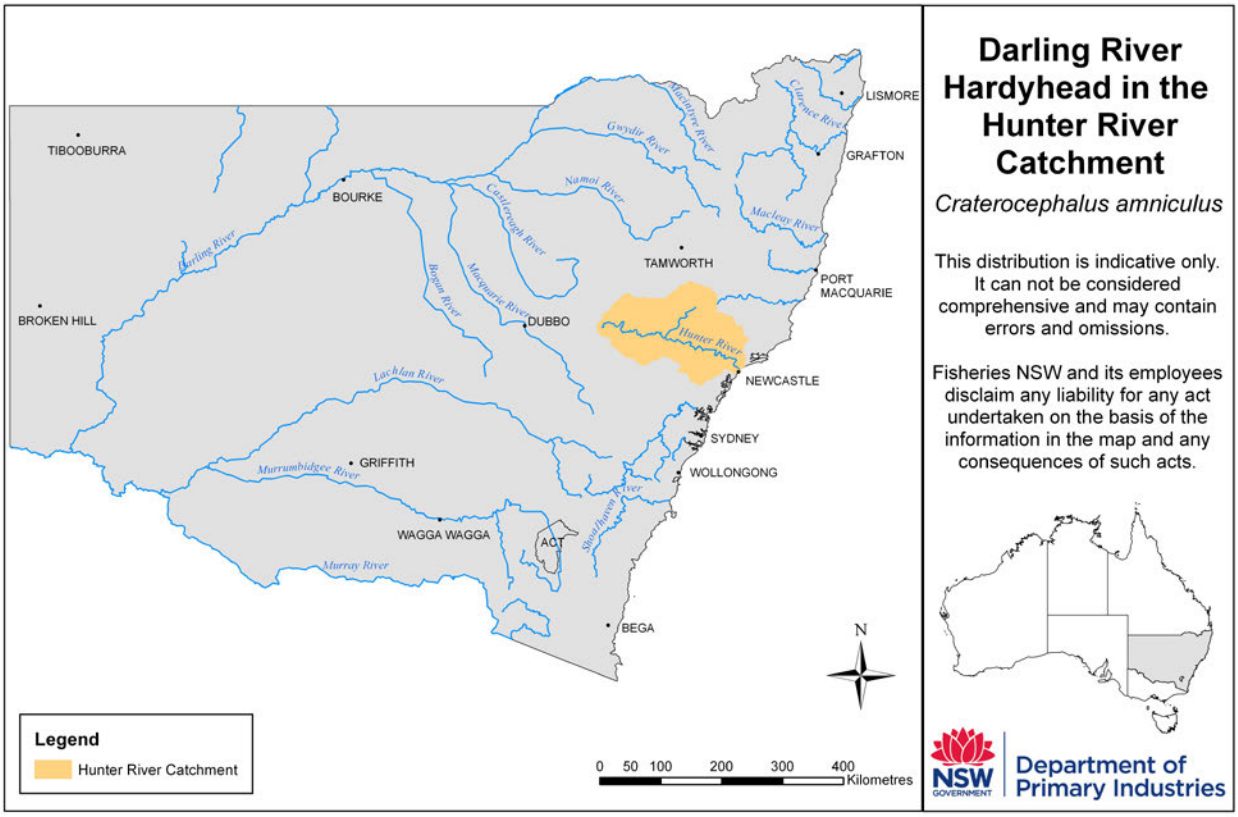
Darling River Hardyhead. (Photo: Gunther Schmida)

Introduction

The Darling River Hardyhead is a small, endemic Australian fish from the Family Atherinidae. The species is found in the upper tributaries of the Darling River including in the Border Rivers and the Gwydir and Namoi catchments. Although its distribution extends into the Queensland portion of the Border Rivers catchment, it is primarily found in NSW. It is also found in the headwaters of the Hunter System in coastal NSW.

Despite extensive sampling throughout its potential distribution, no individuals have been detected from the Hunter catchment since 2003.

The Darling River Hardyhead population in the Hunter River catchment is listed as an **endangered population** in NSW. There are heavy penalties for harming, possessing, buying or selling them, or for harming their habitat (see 'Legal Implications').



Description

The Darling River Hardyhead is a small species of fish growing to a maximum of 80mm fork length, but is generally around 42mm. It has compressed sides and a small protrusible mouth and thin lips to help capture and grip food. It has a forked tail, two small, short-based dorsal fins, and pectoral fins that are positioned high on the body. The second dorsal fin is situated directly above the anal fin.

The Darling River Hardyhead has large, silvery eyes. The scales are small and rarely overlap, and there are usually no scales on top of the head. The species is normally dusky gold coloured on its back with a dark silvery stripe which runs along the length of the body. The underside of the Darling River Hardyhead is lighter in colour, often with a silvery sheen.

Habitat and ecology

- Darling River Hardyheads primarily eat algae and fly larvae, but have also been seen to feed on small insects.
- The species is most commonly found in the north-east part of the Murray-Darling Basin, especially in the MacIntyre, Namoi other border rivers. The Hunter River population is the only known occurrence of the species in an eastward flowing river.
- They are usually found in slow flowing, clear, shallow waters or in aquatic vegetation at the edge of such waters. The species has also been recorded from the edge of fast flowing habitats such as the runs at the head of pools.
- They are usually found singly or in small or large schools of up to about 50 fish.
- Little data has been recorded on the reproductive biology of the species, however it is closely related to the Murray hardyhead (*Craterocephalus fluviatilis*), which is considered a short lived (annual) species with an extended breeding season from spring through to autumn. The eggs will usually be deposited amongst aquatic vegetation.

Why is the Darling River Hardyhead population in the Hunter River catchment threatened?

- The habitat of the Darling River Hardyhead has been degraded through soil erosion, land clearing and livestock damage to riverbanks.
- Thermal pollution (changes in water temperature) from large impoundments such as Glenbawn Dam, Lake Lidell and Lake St Clair is likely to harm populations downstream.

- The presence of competing species, including alien Goldfish (*Carassius auratus*), eastern gambusia (*Gambusa holbrooki*) and common carp (*Cyprinus carpio*) may be causing significant declines of the Darling River Hardyhead in the Hunter River catchment. It is also likely that gambusia feed on the eggs and larvae of the Darling River Hardyhead.
- Water extraction from smaller tributary streams during droughts may put additional pressure on remnant populations.

Conservation and recovery actions

- Develop advisory materials on the identification and conservation status of the Darling River Hardyhead population in the Hunter River catchment and educate landowners and the community.
- Encourage landowners to implement improved land management practices within the Hunter River catchment, such as restricting livestock access to waterways by fencing, and the use of vegetated buffer strips to reduce sediment and fertiliser run off.
- Improve water quality by appropriate land management practices, conserving and restoring riparian vegetation, and using effective erosion and sediment control measures.
- Allocate environmental flows in regulated rivers and minimise extraction during low flow conditions to restore natural seasonal flow patterns.
- Develop cooperative research partnerships to improve understanding of the biology, ecology and genetics of the Darling River Hardyhead, and the threatening processes affecting the species.
- Investigate the feasibility of ex-situ conservation options including translocation and breeding.
- Mitigate the impacts of pest species by developing and implementing management programs.
- Protect key sites within the Hunter River catchment which are likely to support the population, and address key threats.
- **Report any sightings of the species via the NSW DPI Threatened and Pest Species Sighting Form online: www.dpi.nsw.gov.au/fisheries**

Legal Implications

It is illegal to catch and keep, buy, sell, possess or harm Darling River Hardyhead from the Hunter River catchment (or any other threatened species in NSW) without a specific permit, licence, or other appropriate approval. Significant penalties apply. For endangered populations, these penalties can include fines of up to $220,000 and up to 2 years in prison.

There can also be significant penalties for causing damage to the habitat of a threatened species without approval through actions such as dredging riverbeds, removing large woody debris damaging riparian vegetation and constructing barriers that block the free passage of fish.

The impact of developments or activities that require consent or approval (in accordance with the *Environmental Planning and Assessment Act 1979*) must be assessed and considered by consent or determining authorities. Where such actions are likely to result in a significant impact on a threatened species or its habitat, a detailed species impact statement must be prepared.

Strategies to be adopted for promoting the recovery of the Darling River Hardyhead population in the Hunter River catchment to a position of viability are to be set out in the NSW DPI Priorities Action Statement.

A recovery plan may be prepared for the Darling River Hardyhead population in the Hunter River catchment to promote the recovery of the species to a position of viability in nature.

Darling River Hardyhead habitat in the Hunter River at Aberdeen, NSW. (Photo: Hunter-Central Rivers CMA)

Bibliography and further reading

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Fisheries Scientific Committee (2013) Final Determination: The Darling River hardyhead population in the Hunter River catchment – *Craterocephalus amniculu*s as an Endangered Species.

Lintermans M. (2009) Fishes of the Murray-Darling Basin: An Introductory Guide. Murray-Darling Basin Authority Canberra, ACT.

McDowall R. (1996) Freshwater Fishes of South-Eastern Australia. Reed Books, Sydney, NSW.

For further information

See the NSW DPI website: www.dpi.nsw.gov.au

Contact the NSW DPI Threatened Species Section:

Port Stephens Fisheries Institute
Locked Bag 1
Nelson Bay NSW 2315
Fax: (02) 4916 3880
Email:fisheries.threatenedspecies@dpi.nsw.gov.au

Published by the NSW Department of Primary Industries.

Trim: PUB 13/72

Coloration of the Darling Hardyhead, (Illustration: Jill Ruse)

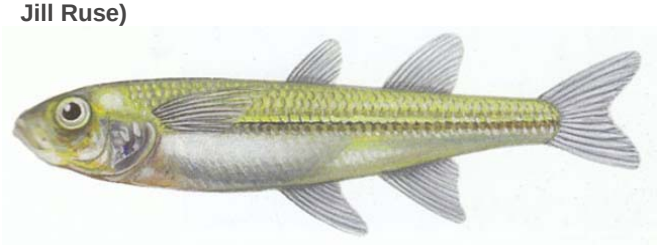
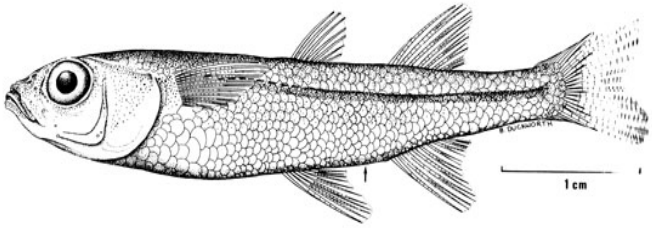


Illustration of the Darling River Hardyhead, displaying details of the scales and average length of the species, (Illustration: Crowley & Ivantsoff)



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: 17-Nov-2023

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:	4
Listed Threatened Species:	43
Listed Migratory Species:	11

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:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	19
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:	None
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	9
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
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	50 - 100km upstream from Ramsar site	In feature area

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 likely to occur within area	In feature area
Hunter Valley Weeping Myall (Acacia pendula) Woodland	Critically Endangered	Community may occur within area	In feature area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community may occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat may 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
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area	In feature area
Erythrotriorchis 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 likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Neophema chrysostoma](#) Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat may 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 likely to occur within area	In feature area
FROG			
[Heleioporus australiacus](#) Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area	In feature area
[Litoria booroolongensis](#) Booroolong Frog [1844]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature area
[Dasyurus maculatus maculatus (SE mainland population)](#) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Petaurus australis australis](#) Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Petrogale penicillata](#) Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Androcalva procumbens			
[87153]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Androcalva rosea			
Sandy Hollow Commersonia [86861]	Endangered	Species or species habitat likely to occur within area	In feature area
Eucalyptus glaucina			
Slaty Red Gum [5670]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eucalyptus pumila			
Pokolbin Mallee [16510]	Vulnerable	Species or species habitat known to occur within area	In feature area
Euphrasia arguta			
[4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
Kennedia retrorsa			
[19716]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Lasiopetalum longistamineum			
[19181]	Vulnerable	Species or species habitat may occur within area	In feature area
Ozothamnus tesselatus			
[56203]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Picris evae			
Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area	In feature area
Pomaderris brunnea			
Rufous Pomaderris, Brown Pomaderris [16845]	Vulnerable	Species or species habitat may occur within area	In feature area
Prasophyllum sp. Wybong (C.Phelps ORG 5269)			
a leek-orchid [81964]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Prostanthera cryptandroides subsp. cryptandroides			
Wollemi Mint-bush [68496]	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
Thesium australe			
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Aprasia parapulchella			
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delma impar			
Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may 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 likely to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area

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
Communications, Information Technology and the Arts - Telstra Corporation Limited		

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Australian Telecommunications Commission [12525]	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 may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
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 may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		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 overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may 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
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 likely 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

Extra Information

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Spur Hill Underground Coking Coal Project, Denman, NSW	2014/7239		Completed	In buffer area only
Controlled action				
Gas Transmission Pipeline	2011/5917	Controlled Action	Completed	In buffer area only
Mt Arthur Coal Extension Project Hunter Valley NSW	2011/5866	Controlled Action	Post-Approval	In feature area
Thomas Mitchell Drive Upgrade, Muswellbrook, NSW	2012/6533	Controlled Action	Completed	In feature area
Not controlled action				
clearing of GWB Woodland for residential development	2004/1771	Not Controlled Action	Completed	In feature area
Construction of a new power line	2011/5930	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
Industrial Subdivision, Thomas Mitchell Drive	2006/3097	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
		(Particular Manner)		

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.

Department of Climate Change, Energy, the Environment and Water
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Canberra ACT 2601 Australia
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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: 30-Nov-2023

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:	4
Listed Threatened Species:	34
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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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	19
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

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Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	7
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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Ramsar Site Name	Proximity	Buffer Status
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MAMMAL			
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Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area	In feature area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
[Eucalyptus glaucina](#) Slaty Red Gum [5670]	Vulnerable	Species or species habitat may occur within area	In feature area
[Euphrasia arguta](#) [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Ozothamnus tesselatus](#) [56203]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Picris evae](#) Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area	In feature area
[Pomaderris brunnea](#) Rufous Pomaderris, Brown Pomaderris [16845]	Vulnerable	Species or species habitat may occur within area	In feature area
[Prasophyllum sp. Wybong (C.Phelps ORG 5269)](#) a leek-orchid [81964]	Critically Endangered	Species or species habitat may 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
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
[Aprasia parapulchella](#) Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Delma impar](#) Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
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 may occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may 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 likely to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
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 may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		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 overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
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 likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Mt Arthur Coal Extension Project Hunter Valley NSW	2011/5866	Controlled Action	Post-Approval	In feature area
Thomas Mitchell Drive Upgrade, Muswellbrook, NSW	2012/6533	Controlled Action	Completed	In feature area
Not controlled action				
clearing of GWB Woodland for residential development	2004/1771	Not Controlled Action	Completed	In feature area
Construction of a new power line	2011/5930	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

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Industrial Subdivision, Thomas Mitchell Drive	2006/3097	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

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.

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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: 30-Nov-2023

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:	4
Listed Threatened Species:	38
Listed Migratory Species:	10

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:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	18
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:	None
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
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	100 - 150km upstream from Ramsar site	In feature area

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 feature area
Hunter Valley Weeping Myall (Acacia pendula) Woodland	Critically Endangered	Community may occur within area	In feature area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community may occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat may 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
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area	In feature area
Erythrotriorchis 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 likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Neophema chrysostoma			
Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Polytelis swainsonii			
Superb Parrot [738]	Vulnerable	Species or species habitat may 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 likely to occur within area	In feature area
FROG			
Heleioporus australiacus			
Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area	In feature area
Litoria booroolongensis			
Booroolong Frog [1844]	Endangered	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Nyctophilus corbeni			
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
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 likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pseudomys novaehollandiae](#) New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In feature area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
[Androcalva procumbens](#) [87153]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Androcalva rosea](#) Sandy Hollow Commersonia [86861]	Endangered	Species or species habitat likely to occur within area	In feature area
[Eucalyptus pumila](#) Pokolbin Mallee [16510]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Euphrasia arguta](#) [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Kennedia retrorsa](#) [19716]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[Lasiopetalum longistamineum](#) [19181]	Vulnerable	Species or species habitat may occur within area	In feature area
[Ozothamnus tesselatus](#) [56203]	Vulnerable	Species or species habitat may occur within area	In feature area
[Prasophyllum sp. Wybong (C.Phelps ORG 5269)](#) a leek-orchid [81964]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Prostanthera cryptandroides subsp. cryptandroides](#) Wollemi Mint-bush [68496]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thesium australe			
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Aprasia parapulchella			
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delma impar			
Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area

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
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [12525]	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 may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
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 may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely 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
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 likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Gas Transmission Pipeline	2011/5917	Controlled Action	Completed	In buffer area only
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

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;
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- 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.

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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.

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

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-Other groups and individuals

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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: 30-Nov-2023

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:	4
Listed Threatened Species:	36
Listed Migratory Species:	11

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	19
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:	None
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
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	100 - 150km upstream from Ramsar site	In feature area

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 feature area
Hunter Valley Weeping Myall (Acacia pendula) Woodland	Critically Endangered	Community may occur within area	In feature area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community may occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Erythrotriorchis 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 likely to 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 may occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Neophema chrysostoma](#) Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat may 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 likely to occur within area	In feature area
FROG			
[Litoria booroolongensis](#) Booroolong Frog [1844]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat likely 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 likely to occur within area	In feature area
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Petaurus australis australis](#) Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area	In feature area
[Petrogale penicillata](#) Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
Eucalyptus glaucina Slaty Red Gum [5670]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
Ozothamnus tesselatus [56203]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Prostanthera cryptandroides subsp. cryptandroides Wollemi Mint-bush [68496]	Vulnerable	Species or species habitat may 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
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Delma impar](#)			
Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
[Apus pacificus](#)			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
[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 may occur within area	In feature area
[Motacilla flava](#)			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
[Myiagra cyanoleuca](#)			
Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
[Rhipidura rufifrons](#)			
Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#)			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Calidris acuminata](#)			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#)			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
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 may occur within area	In feature area
Calidris ferruginea			
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Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely 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
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 may occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
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[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 likely to occur within area overfly marine area	In feature area
[Rostratula australis as Rostratula benghalensis (sensu lato)](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
[North East NSW RFA](#)	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
[Spur Hill Underground Coking Coal Project, Denman, NSW](#)	2014/7239		Completed	In buffer area only
Controlled action				
[Gas Transmission Pipeline](#)	2011/5917	Controlled Action	Completed	In buffer area only
Not controlled action				
[Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia](#)	2015/7522	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
[Aerial baiting for wild dog control](#)	2006/2713	Not Controlled Action (Particular	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
		Manner)		

Bioregional Assessments

SubRegion	BioRegion	Website	Buffer Status
Hunter	Northern Sydney Basin	BA website	In feature area

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