



NSW National Parks and Wildlife Service

Karuah National Park

Review of environmental factors: infrastructure upgrades



Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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Artist and designer Nikita Ridgeway from Aboriginal design agency – Boss Lady Creative Designs, created the People and Community symbol.

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List of shortened forms

Short form	Full form
4WD	four-wheel-drive (vehicles)
AIS	Asset of Intergenerational Significance
BC Act	<i>Biodiversity Conservation Act 2016</i> (NSW)
CM Act	<i>Coastal Management Act 2016</i> (NSW)
DPI Fisheries	NSW Department of Primary Industries – Fisheries NSW
EEC	endangered ecological community under the BC Act
EIS	environmental impact statement under the BC Act
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2021</i> (NSW)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)
FAFT	fire action and fire trail

Short form	Full form
FM Act	<i>Fisheries Management Act 1994 (NSW)</i>
ILUA	Indigenous land use agreement under the NT Act
Karuah PoM	<i>Karuah, Medowie and Wallaroo Group plan of management (NPWS 2016)</i>
KFH	key fish habitat under the FM Act
LALC	Local Aboriginal Land Council
LGA	local government area
LLS Act	<i>Local Land Services Act 2013 (NSW)</i>
MNES	matters of national environmental significance under the EPBC Act
MPA	Marine Parks Authority
NNTT	National Native Title Tribunal
NPW Act	<i>National Parks and Wildlife Act 1974 (NSW)</i>
NPW Regulation	<i>National Parks and Wildlife Regulation 2021 (NSW)</i>
NPWS	National Parks and Wildlife Service
NSW RA Act	<i>NSW Reconstruction Authority Act 2022 (NSW)</i>
NT Act	<i>Native Title Act 1993 (Cth)</i>
PCT	plant community type
PoM	plan of management
PSGLMP	Port Stephens – Great Lakes Marine Park
REF	review of environmental factors
RF Act	<i>Rural Fires Act 1997 (NSW)</i>
SEPP	State environmental planning policy
SEPP (Exempt and Complying Development Codes)	<i>State Environmental Planning Policy (Exempt and Complying Development Codes) 2008</i>
SEPP Biodiversity and Conservation	<i>State Environmental Planning Policy (Biodiversity and Conservation) 2021</i>
SEPP Resilience and Hazards	<i>State Environmental Planning Policy (Resilience and Hazards) 2021</i>
SEPP Transport and Infrastructure	<i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i>
TEC	threatened ecological community under the BC Act

1. Introduction

1.1 Brief description of the proposal

A series of infrastructure (trails, signage and visitor precincts) upgrades are required within Karuah National Park to increase the New South Wales (NSW) National Parks and Wildlife Service (NPWS) management capabilities and visitor access.

Karuah National Park is located approximately 6 kilometres north of the township of Karuah on the mid-north coast of NSW (Figure 1). The proposed activity will occur at multiple locations throughout the northern portion of the park as shown in Figure 2.

This review of environmental factors (REF) applies to land reserved under Part 4 of the *National Parks and Wildlife Act 1974* (NSW) (NPW Act).

The activity will be carried out by the Hunter Central Coast Branch of the NPWS.

The activity is situated within the MidCoast local government area (LGA), for which MidCoast Council is responsible, and within the Legislative Assembly District of Upper Hunter.

The activity will be carried out as development permitted without consent pursuant to section 2.73(1)(a) of *State Environmental Planning Policy (Transport and Infrastructure) 2021* (SEPP Transport and Infrastructure) and is therefore being assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). NPWS is the activity's proponent and the Environment and Heritage group of the NSW Department of Climate Change, Energy, the Environment and Water is the determining authority for the proposed activity under Part 5 Division 5.1 of the EP&A Act.

Section 6 of this REF provides a detailed description of the activity.

1.2 Estimated development cost of proposal

The estimated development cost of the activity is \$500,000.

1.3 Estimated duration of proposal

The activity is proposed to begin in the second quarter of 2025 and take approximately 6 months to complete (weather permitting). On completion of the activity, operation and maintenance of the infrastructure will be incorporated into the NPWS maintenance program.

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Figure 1 Location of the activity

Karuah National Park review of environmental factors: infrastructure upgrades

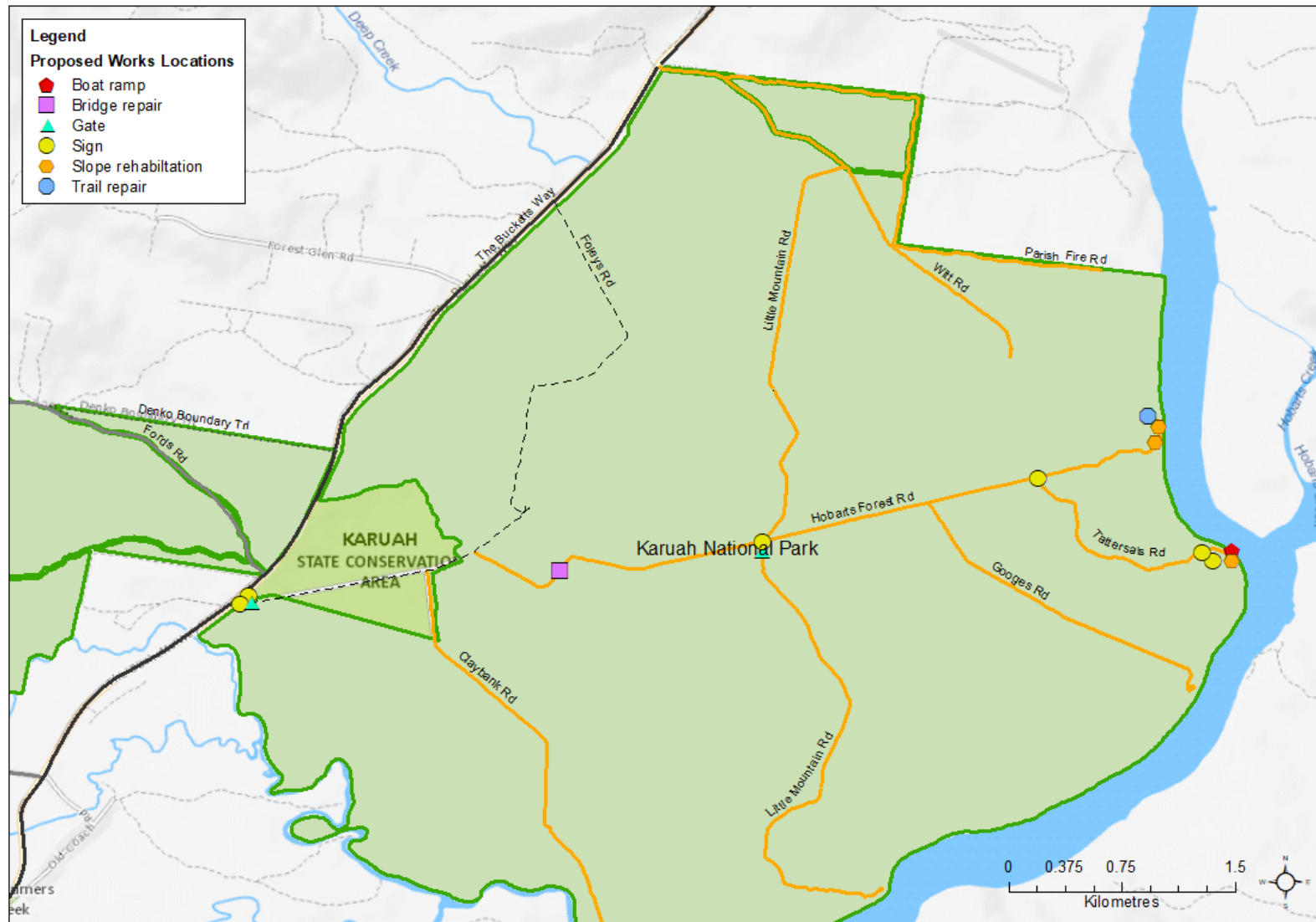


Figure 2 Location of each proposed section of the project

2. Proponent's details

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3. Permissibility and assessment pathway

3.1 Permissibility under NSW legislation

The following sections outline how the activity is permissible under applicable NSW legislation.

3.1.1 National Parks and Wildlife Act 1974

On land reserved or acquired under the *National Parks and Wildlife Act 1974*

Under the NPW Act, the Secretary for the NSW Department of Climate Change, Energy, the Environment and Water has the responsibility for the care, control and management of all lands reserved and acquired under that Act and may arrange for the carrying out of such works as is considered necessary for or in connection with the management and maintenance of that land.

The objects of this Act (section 2A(1)) are as follows:

- (a) the conservation of nature, including, but not limited to, the conservation of –
 - (i) habitat ecosystems and ecosystem processes, and
 - (ii) biological diversity at the community, species and genetic levels, and
 - (iii) landforms of significance, including geological features and processes, and
 - (iv) landscapes and natural features of significance including wilderness and wild rivers,
- (b) the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to –
 - (i) places, objects and features significance to Aboriginal people, and
 - (ii) places of social values to the people of New South Wales, and
 - (iii) fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation, and
- (c) fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation, and
- (d) providing for the management of land reserved under this Act in accordance with the management principles for each type of reservation

Impacts of the activity have been considered and shown to comply with the objects of the Act. The primary objective of the proposal is to improve the safety and amenity of the park's infrastructure for public use and appreciation. Additional objectives are to significantly contribute to the management capacity of NPWS staff; and to facilitate the delivery of best practice conservation and management of the park by reducing ongoing impacts.

Specifically, the activity:

- will not significantly impact on biodiversity and ecosystems or processes, with measures to conserve and protect potential impacts
- will improve the condition and accessibility of infrastructure within the park, which will facilitate effective management to carry out conservation activities to reduce ongoing adverse impacts to the park
- will benefit the park by improving conservation outcomes and protecting ecosystems and cultural values
- respects the cultural significance of the park, both Aboriginal and non-Aboriginal
- takes into consideration potential impacts to flora and fauna and identifies safeguards (see section 9.2 of this REF)

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- takes into consideration potential impacts to cultural values and identifies safeguards (see sections 9.5 and 9.6 of this REF)
- will be undertaken in line with the key management strategies applicable to the park and the relevant plan of management (see below in this section and Table 2).

Ecologically sustainable development

References to ecologically sustainable development are included in NSW legislation, specifically the NPW Act, and Commonwealth legislation. The principles of ecologically sustainable development under section 6(2) of the *Protection of the Environment Administration Act 1991* (NSW) include:

- (a) the precautionary principle – namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
In the application of the precautionary principle, public and private decisions should be guided by –
 - (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
 - (ii) an assessment of the risk-weighted consequences of various options,
- (b) inter-generational equity – namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,
- (c) conservation of biological diversity and ecological integrity – namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,
- (d) improved valuation, pricing and incentive mechanisms – namely, that environmental factors should be included in the valuation of assets and services, such as –
 - (i) polluter pays – that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,
 - (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,
 - (iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) adopted a similar definition of the principles of ecologically sustainable development (section 3A) and added a fifth principle, which includes:

- (a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.

This REF has been guided by these principles when assessing the potential impact of the proposed activity. Where uncertainty exists, a precautionary approach has been taken to mitigate and minimise potential environmental impacts. The activity is considered to be ecologically sustainable within the meaning of the above principles.

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Protection of the values for which land is reserved under the Act and the appropriate management of those lands

The purpose of reserving land as a national park is to identify, protect and conserve areas containing outstanding or representative ecosystems, natural or cultural features, and landscapes or phenomena that provide opportunities for public appreciation and inspiration and sustainable visitor or tourist use and enjoyment, so as to enable those areas to be managed in accordance with the principles outlined in section 30E(2) of the NPW Act. The proposed activity's consistency with the principles of section 30E(2) are addressed in Table 1.

Table 1 Consistency with NPW Act section 30E(2) principles for national parks

Principle	Relevance to proposed activity
(a) the conservation of biodiversity, the maintenance of ecosystem function, the protection of geological and geomorphological features and natural phenomena and the maintenance of natural landscapes	<p>The <i>Karuah, Medowie and Wallaroo Group plan of management</i> (NPWS 2016) (Karuah PoM) outlines the policies and framework for conserving the natural and cultural environment of the Karuah National Park.</p> <p>In accordance with the Karuah plan of management (PoM), this REF considers the existing environment; assesses potential adverse impacts to the park's environment and how they relate to the policies and framework for conservation, maintenance and protection of the park; and recommends safeguards to avoid or minimise impacts to the park's natural values.</p>
(b) the conservation of places, objects, features and landscapes of cultural value	<p>The NPW Act specifies that the Secretary shall be responsible for the proper care, preservation and protection of any Aboriginal object or Aboriginal place on any land reserved under this Act. It is an offence under the NPW Act to harm or desecrate an object that a person knows is an Aboriginal object.</p> <p>The Karuah PoM provides policies which mandate that an archaeological survey and cultural assessment will be undertaken prior to all works with the potential to impact on Aboriginal or historic sites and places.</p> <p>This REF contains a summary of the report on the due diligence study that describes and assesses potential impacts to Aboriginal heritage, and sets out required safeguards.</p>
(c) the protection of the ecological integrity of one or more ecosystems for present and future generations	<p>The Karuah PoM outlines the policies and framework for the protection of the ecological integrity of ecosystems within the park.</p> <p>In accordance with the PoM, this REF considers the park's existing environment; assesses potential adverse impacts to the park's environment and how they relate to the policies and framework for protecting the ecological integrity of ecosystems within the park; and recommends safeguards to avoid or minimise impacts to the ecological integrity of ecosystems for present and future generations.</p>
(d) the promotion of public appreciation and understanding of the national park's natural and cultural values	<p>The Karuah PoM outlines the policies and framework for recreational opportunities and sustainable visitor use of the natural qualities of the park.</p> <p>In accordance with the PoM, the proposed activity will maintain the existing low-key natural qualities of the park, while catering for a wide variety of recreation pursuits. This REF recommends safeguards to avoid or minimise adverse impacts to the park's natural and cultural values.</p>

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Principle	Relevance to proposed activity
(e) provision for sustainable visitor or tourist use and enjoyment that is compatible with the conservation of the national park's natural and cultural values	<p>The Karuah PoM provides management responses for a variety of recreational opportunities provided in the park, including improving both park access and day-use areas.</p> <p>In accordance with the PoM, the proposed activity will maintain the existing low-key recreational opportunities. This REF recommends safeguards to avoid or minimise adverse impacts to the park's natural and cultural values.</p>
(f) provision for the sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to the conservation of the national park's natural and cultural values	<p>The Karuah PoM provides a range of sustainable recreation opportunities and contains a number of actions to protect the natural environment as a result of continued use of those opportunities.</p> <p>In accordance with the PoM, the proposed activity will ensure ongoing use and enjoyment of the park's natural and cultural values. This REF recommends safeguards to avoid or minimise adverse impacts to the park's natural and cultural values.</p>
(fa) provision for the carrying out of development in any part of a special area (within the meaning of the <i>Hunter Water Act 1991</i>) in the national park that is permitted under section 185A having regard to the conservation of the national park's natural and cultural values	Not applicable to this activity.
(g) provision for appropriate monitoring and research	<p>The Karuah PoM recognises that the park contains a range of values which may provide scientific and educational values.</p> <p>In accordance with the PoM, this REF recommends safeguards to minimise adverse impacts to these values.</p>

Karuah PoM = *Karuah, Medowie and Wallaroo Group plan of management* (NPWS 2016); NPWS = National Parks and Wildlife; PoM = plan of management; REF = review of environmental factors; Secretary = Secretary for the NSW Department of Climate Change, Energy, the Environment and Water.

Part 6 Aboriginal objects and Aboriginal places

Section 85(2)(a) of the NPW Act provides for the proper care, preservation and protection of any Aboriginal object or Aboriginal place on any land reserved under this Act.

Section 86 of the Act mandates that a person must not harm or desecrate an Aboriginal object or an Aboriginal place.

Section 87 provides defences to prosecution under section 86, including:

- Subsection (2): 'It is a defence to a prosecution for an offence under section 86(2) if the defendant shows that the defendant exercised due diligence to determine whether the act or omission constituting the alleged offence would harm an Aboriginal object and reasonably determined that no Aboriginal object would be harmed.'
- Subsection (3): The regulations may provide that compliance with requirements specified in the regulations, or in a code of practice adopted or prescribed by the regulations, is taken for the purposes of subsection (2) to constitute due diligence in determining whether the act or omission constituting the alleged offence would harm an Aboriginal object.

Under regulation 57 of the *National Parks and Wildlife Regulation 2021* (NPW Regulation), compliance with the department's *Due diligence code of practice for the protection of*

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Aboriginal objects in New South Wales is taken for the purposes of section 87(2) of the NPW Act to constitute due diligence in determining whether the act or omission constituting the alleged offence would harm an Aboriginal object.

The activity does not comprise exempt development nor is the subject of a complying development certificate, so it is not a low-impact activity pursuant to section 58 of the NPW Regulation. Accordingly, a due diligence study assessed potential impacts to Aboriginal objects and Aboriginal places with respect to the proposed activity within the park. The study, in consultation with the Karuah Local Aboriginal Land Council (LALC), determined that the proposed park upgrade and remediation works are not considered likely to impact on Aboriginal objects or landforms with the potential to contain Aboriginal objects. Therefore, compliance with the NPW Act and the NPW Regulation does not require additional consultation with the Aboriginal community or archaeological excavation. However, in accordance with the requirements of the Due Diligence Code of Practice, an appropriate management strategy for the activity is the implementation of an Unexpected Aboriginal Objects Find Procedure (see section 9.5). For the report on the outcomes of the due diligence study see Appendix B.

Section 81 Operations under a plan of management

Section 81(1) of the NPW Act states that where the Minister has adopted a plan of management (PoM) for a national park, historic site, nature reserve, karst conservation reserve, Aboriginal area or wildlife refuge, the Secretary shall carry out and give effect to the plan. No operations may be undertaken in relation to the lands to which the plan relates unless the operations are in accordance with the plan (section 81(4)).

The relevant plan under section 81 is the *Karuah, Medowie and Wallaroo Group plan of management* (NPWS 2016) (Karuah PoM), which outlines the policies and framework for conserving the natural and cultural environment of the Karuah National Park. Table 2 identifies each of the infrastructure works included in the proposed activity and the applicable management strategy of the plan of management. Because the proposed activity will contribute to achieving the management strategies described in the PoM, the activity is permissible under section 81.

Table 2 Proposed infrastructure works and applicable management strategies in the park's plan of management (NPWS 2016)

Proposed works	Applicable management strategy
Repairs to the bridge spanning Deep Creek on Hobarts Forest Road	3.5.1 Allow public vehicular access on park roads (shown on Map 2 in the plan). However, access may be restricted to prevent damage during periods of wet weather or to ensure public safety. 5.1.1 Maintain the roads and management trails (shown on Map 2 in the plan).
Upgrade one publicly accessible boat ramp at Tattersalls campground	3.5.10 Undertake stabilisation works at the small boat launching sites at Tattersalls campground and Double Wharf picnic area to reduce erosion.
Installation of new regulatory and wayfinding signage	3.5.14 Improve park signage including replacement of park identification signage where required.
Installation of 2 park management gates	3.5.1 Allow public vehicular access on park roads (shown on Map 2 in the plan). However, access may be restricted to prevent damage during periods of wet weather or to ensure public safety. 5.1.2 Install gates and/or signs to restrict unauthorised access to management trails.

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Carrying out the activity will also significantly contribute to the following specific management directions outlined in the Karuah PoM:

- manage fire to protect life and property and maintain appropriate burn frequencies within ecological thresholds
- rationalise the network of vehicular roads and tracks
- provide sustainable camping opportunities in Karuah National Park.

Assets of Intergenerational Significance

Part 12A of the NPW Act allows the Minister for the Environment to declare an area to be an environmental or cultural Asset of Intergenerational Significance (AIS). An AIS can be any area of exceptional value that warrants special protection including dedicated management measures.

The activity will not be undertaken on land declared an AIS nor will the activity occur in close proximity to land declared an AIS.

No conservation action plans apply to the activity as no land declared under Part 12A of the NPW Act falls within the area of the activity.

Leasing, licensing and easement provisions

No such provisions apply, as this is an internal NPWS activity.

Internal NPWS projects

Section 8(3) of the NPW Act requires that the Secretary shall arrange for the carrying out of such works as the Secretary considers necessary for or in connection with the management and maintenance of a national park. As the proposed activity is consistent with the park's PoM and will meet the conservation outcomes under the Act, the Secretary is the appropriate authority to authorise the activity. The activity is considered to be relevant to the management and maintenance practices used to protect the park's natural and cultural values and to provide opportunities for the public to appreciate, understand and enjoy the natural and cultural heritage of the area.

Under section 12 of the Act, NPWS is to carry out such works and activities as the Minister may direct, either generally or in a particular use case, in relation to the conservation and protection of wildlife, Aboriginal objects and Aboriginal places, and the provision of facilities and opportunities for sustainable visitor and tourist use.

The activity is consistent with the powers and responsibilities of NPWS under section 8 and section 12 of the Act.

3.1.2 Wilderness Act 1987 (for activities in wilderness areas)

The objects of the *Wilderness Act 1987* (NSW) are to provide for the permanent protection and proper management of wilderness areas and to promote the education of the public in the appreciation, protection and management of wilderness.

Section 5.5(3) of the EP&A Act provides that 'a determining authority shall consider the effect of an activity on any wilderness area (within the meaning of the *Wilderness Act 1987*) in the locality in which the activity is intended to be carried on'. No land within Karuah National Park has been declared as wilderness, so the *Wilderness Act* does not apply to the proposed activity.

3.1.3 Biodiversity Conservation Act 2016

The purpose of the *Biodiversity Conservation Act 2016* (NSW) (BC Act) is to maintain a healthy, productive and resilient environment for the greatest wellbeing of the community, now and into the future, consistent with the principles of ecologically sustainable development.

Section 7.8(2) of the BC Act states that an activity under Part 5 of the EP&A Act that is 'likely to significantly affect threatened species' is regarded 'as an activity likely to significantly affect the environment'.

Where an activity is likely to significantly affect the environment, a species impact statement must be prepared in accordance with the Secretary's requirements or, if the proponent elects, a biodiversity development assessment report must be prepared by an accredited assessor in accordance with the biodiversity assessment method. If the activity's likely significant effect on threatened species is its *only* likely significant effect on the environment, an environmental impact statement (EIS) is not required, but a species impact statement or a biodiversity development assessment report is still required.

Under section 7.2(1)(a) and (c) of the BC Act, an activity is likely to significantly affect threatened species if one or both of the following criteria are met:

- the activity is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3
- the activity is carried out in a declared area of outstanding biodiversity value.

Section 7.2(2) of the BC Act provides that the biodiversity offsets scheme does not apply to development under Part 5 of the EP&A Act. As the activity comes under Part 5, the Biodiversity Value Map under the scheme is not relevant.

The activity has been ecologically assessed in accordance with the provisions of the BC Act and the results of the assessment are reported in the Karuah National Park Infrastructure Upgrades Ecological Assessment (Ecological Assessment) (see Appendix A). A summary of the Ecological Assessment follows.

Survey results

A site survey was carried out in June 2023.

Vegetation at the impact sites comprises several dry sclerophyll open forest communities, forested wetlands and mangroves. Two of the vegetation communities qualify as threatened ecological communities (TECs) under the BC Act. One threatened flora species, the netted bottle brush (*Callistemon linearifolius*), was detected at the 2 gate sites.

No threatened fauna species were detected during the field survey. A total of 20 threatened species were found to have at least a low potential to occur within the study area.

Impact of the proposal

The works will require the removal of a small extent of vegetation at the impact sites. This largely comprises shrubs and groundcover, with a few small trees also requiring removal. The works will avoid direct impact on all mature trees, habitat features and threatened species. However, there is potential for the works to result in indirect impacts on adjoining vegetation or fauna using the site, including weed invasion, edge effects and increased noise at the time of works. Specific mitigation measures are recommended to reduce the potential for indirect impacts.

A test of significance as prescribed under section 7.3 of the BC Act has been prepared to determine whether the proposed activity is likely to significantly affect threatened species or

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ecological communities, or their habitats, and is included within the Ecological Assessment. The test of significance has determined that the proposed activity would not result in a significant impact on threatened species or ecological communities, or their habitats.

3.1.4 NSW Reconstruction Authority Act 2022

The primary object of the *NSW Reconstruction Authority Act 2022* (NSW RA Act) is to promote community resilience to the impact of disasters in NSW through disaster prevention, preparedness and adaptation, and recovery and reconstruction following disasters (section 3).

Under section 38(4) of the NSW RA Act, NPWS must have regard to the State disaster mitigation plan and any relevant disaster adaptation plan in exercising the planning authority's functions that are prescribed by the regulations. The section is within Part 4, which at the time of publication had not yet commenced (s 2). Accordingly, the section does not currently apply to this REF.

3.1.5 Rural Fires Act 1997

The objects of the *Rural Fires Act 1997* (NSW) (RF Act) in section 3 are to provide:

- (a) for the prevention, mitigation and suppression of bush and other fires in local government areas (or parts of areas) and other parts of the State constituted as rural fire districts, and
- (b) for the co-ordination of bush fire fighting and bush fire prevention throughout the State, and
- (c) for the protection of persons from injury or death, and property from damage, arising from fires, and
- (c1) for the protection of infrastructure and environmental, economic, cultural, agricultural and community assets from damage arising from fires, and
- (d) for the protection of the environment by requiring certain activities referred to in paragraphs (a)–(c1) to be carried out having regard to the principles of ecologically sustainable development described in section 6 (2) of the *Protection of the Environment Administration Act 1991*.

The proposed activity will have a positive impact on the ability of the NPWS and other bush firefighting agencies to fully utilise the existing fire trail network and to close the park during prescribed burns and bush fires, to undertake operations to protect life, property or the environment, making it consistent with the objects of the RF Act.

The proposal is consistent with:

- the park's PoM, which includes the specific management direction to 'manage fire to protect life and property and maintain appropriate burn frequencies within ecological thresholds'
- the Karuah National Park, Nature Reserve and State Conservation Area, Medowie Nature Reserve and State Conservation Area, Wallaroo National Park Fire Management Strategy (Type 2) (NPWS 2015), which identifies Hobarts Forest Road as an essential Category 1 fire trail.

Fire access and fire trail (FAFT) plans for Karuah National Park are currently in development. However, the FAFT plans propose that Hobarts Forest Road be classified as a strategic Category 1 fire trail as specified in the NSW Rural Fire Service's *NSW fire trail standards* (NSW RFS 2023), retaining its current importance in the fire trail network, as defined in the Fire Management Strategy (Type 2).

Proposed works at the bridge and the fire trail will support the ongoing fire trail classifications and use, and any future trail upgrade work.

3.2 Environmental Planning and Assessment Act 1979

3.2.1 Assessment pathway

The EP&A Act regulates development carried out in New South Wales. Part 5 of the Act permits activities to be assessed by a determining authority. Under section 5.1(1) of the Act:

- the proposal is an ‘activity’ which includes (d) the carrying out of work
- ‘determining authority’ includes a ‘public authority by or on whose behalf the activity is to be carried out’.

Section 1.4 of the Act defines a ‘public authority’ as including a ‘Public Service agency’. The Environment and Heritage group is a Public Service agency of the NSW Department of Climate Change, Energy, the Environment and Water and is therefore a public authority under section 1.4. For the purposes of the proposed activity, the NPWS is the proponent and the Environment and Heritage group is the determining authority under Part 5 Division 5.1 of Act.

The relevant sections of the EP&A Act include:

- section 5.5(1), which requires the determining authority to ‘examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity’
- section 5.5(3), which requires the determining authority to ‘consider the effect of an activity on any wilderness area (within the meaning of the *Wilderness Act 1987*) in the locality in which the activity is intended to be carried on’
- section 5.6, which requires the determining authority to address the regulations for environment impact assessments (currently the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation))
- section 5.7, which requires an EIS to be prepared if the proposed activity is ‘a prescribed activity, an activity of a prescribed kind or an activity that is likely to significantly affect the environment’.

The EP&A Act permits public authorities to carry out development without consent if an environmental planning instrument provides that specified development may be carried out without the need for development consent.

The proposed activity falls within the scope of section 2.73(1)(a) of the SEPP Transport and Infrastructure, which means it may be undertaken without development consent under this section:

2.73 Development permitted without consent

(1) Development for any purpose may be carried out without consent —

- (a) on land reserved under the *National Parks and Wildlife Act 1974*, or acquired under Part 11 of that Act, if the development is for a use authorised under that Act, ...

Section 1.7 of the EP&A Act provides that ‘the Act has effect subject to the provisions of Part 7 of the *Biodiversity Conservation Act 2016* and Part 7A of the *Fisheries Management Act 1994* that relate to the operation of this Act in connection with the terrestrial and aquatic environment’. The provisions of the BC Act and the *Fisheries Management Act 1994* (NSW) (FM Act) are discussed in sections 3.1.3 and 3.3.6, respectively, of this REF.

The Environment and Heritage group, as the determining authority, has made the following assessments under the EP&A Act:

- The proposed activity would not result in a significant impact on threatened species or ecological communities, or their habitats.

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- The activity is not ‘designated development’ under Schedule 3 of the EP&A Regulation.
- The activity is not declared to be state significant infrastructure under section 2.13 of the *State Environmental Planning Policy (Planning Systems) 2021*.
- The activity is not identified within a State environmental planning policy (SEPP) as not permissible without development consent under another environmental planning instrument that prevails over the SEPP Transport and Infrastructure. In particular:
 - The activity is not in a coastal wetland or littoral rainforest, and does not otherwise meet the criteria for development requiring consent outlined in section 2.7(2) of the *State Environmental Planning Policy (Resilience and Hazards) 2021*.
 - The activity is not coastal protection works nor one of the types of coastal protection works that may be carried out by or on behalf of a public authority without development consent.
 - The activity is not a type of development requiring development consent under section 2.9 of the *State Environmental Planning Policy (Resources and Energy) 2021*.
- The activity is not declared to be exempt development under an environmental planning instrument or does not fail to fully meet the requirements for exempt development.

3.2.2 State environmental planning policies

State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 2 Vegetation in non-rural areas

The aims of Chapter 2 of the *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (SEPP Biodiversity and Conservation) are:

- to protect the biodiversity values of trees and other vegetation in non-rural areas of the state
- to preserve the amenity of non-rural areas of the state through the preservation of trees and other vegetation.

The activity involves vegetation removal, but section 2.3(2) provides that Chapter 2 does not apply to national park estate.

Chapter 4 Koala habitat protection

Chapter 4 of the SEPP Biodiversity and Conservation aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas, to support a permanent free-living population over their present range and reverse the current trend of koala population decline.

Chapter 4 applies to each LGA listed in Schedule 2 of the SEPP, which includes the MidCoast LGA, but section 4.4(3)(a) provides that Chapter 4 does not apply to land dedicated or reserved under the NPW Act, or acquired under Part 11 of that Act.

Notwithstanding that exemption, this REF has considered the requirements of Chapter 4. The Ecological Assessment has determined there are numerous koala records within the locality, and the park contains a variable abundance of primary and secondary koala food trees, such as tallowwood, forest red gum, spotted gum and grey ironbark. No mature koala food trees will be removed at the impact sites. Given the relatively low-impact nature of the activity, the likely effect on koalas is not considered significant.

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Chapter 6 Water catchments

The activity is not located within a water catchment listed under Chapter 6 of the SEPP Biodiversity and Conservation.

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

The *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008* (SEPP Exempt and Complying Development Codes) aims to provide streamlined assessment processes for development that complies with specified development standards.

The proposed activity cannot be carried out under the SEPP Exempt and Complying Development Codes as it is not a development listed under an exempt development code.

State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 2 Coastal management

The aim of the *State Environmental Planning Policy (Resilience and Hazards) 2021* (SEPP Resilience and Hazards) is to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objectives of the *Coastal Management Act 2016* (NSW), including the management objectives for each coastal management area.

Division 1 Coastal wetlands and littoral rainforests

The proposed activity is not situated on land identified as coastal wetlands or littoral rainforest; however, it is situated on land identified as 'proximity area for coastal wetlands' on the Coastal Wetlands and Littoral Rainforests Area Map adopted under the SEPP Resilience and Hazards (Part 2.2 Division 1). Section 2.8 requires the consent authority to consider whether the proposed development is likely to significantly impact the biophysical, hydrological or ecological integrity of a coastal wetland or littoral rainforest prior to consent of an application. Section 2.8 only applies to development applications under Part 4 of the EP&A Act and therefore does not apply to this proposal. Nevertheless, this REF has considered potential impacts to coastal wetland values (Table 3).

Table 3 Consistency of activity with coastal wetland values

Coastal wetland value	How proposed activity is consistent with the value
(a) the biophysical, hydrological or ecological integrity of the adjacent coastal wetland	The activity involves only minor ground disturbance and negligible vegetation modification. This REF recommends safeguards to mitigate potential impacts on the biophysical, hydrological or ecological integrity of the adjacent coastal wetland (see section 9.2).
(b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland	The activity will occur within previously disturbed areas and does not involve significant ground disturbance or vegetation removal to an extent that would impact on the quantity and quality of surface and groundwater flows to and from the adjacent coastal wetland. This REF recommends safeguards to mitigate potential impacts (see section 9.2).

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Division 2 Coastal vulnerability area

The proposed activity is not situated on land that is within the area identified as 'coastal vulnerability' on the Coastal Vulnerability Area Map under the SEPP Resilience and Hazards.

Division 3 Coastal environment area

The proposal is situated on land that is within the coastal environment area. Section 2.10 of SEPP Resilience and Hazards requires the consent authority to consider whether the proposed development is likely to cause an adverse impact on coastal environment areas prior to consent of an application. Although section 2.10 only applies to development applications under Part 4 of the EP&A Act, and therefore does not apply to this proposal, this REF has considered potential impacts to the coastal environment area (Table 4).

Table 4 Consistency of activity with coastal environment values in section 2.10 of the State Environmental Planning Policy (Resilience and Hazards) 2021

Coastal environment value	How proposed activity is consistent
(a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment	The activity will occur within previously disturbed areas and does not involve significant ground disturbance or vegetation removal to an extent that would impact on the receiving biophysical, hydrological and ecological environment. This REF recommends safeguards to mitigate potential impacts (see section 9.2).
(b) coastal environmental values and natural coastal processes	The activity will occur within previously disturbed areas and does not involve significant ground disturbance or vegetation removal to an extent that would impact on coastal environmental values and natural coastal processes. This REF recommends safeguards to mitigate potential impacts (see section 9.2).
(c) the water quality of the marine estate (within the meaning of the <i>Marine Estate Management Act 2014</i>), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1	The activity involves minor earthworks to facilitate stabilisation and rehabilitation of the boat ramp adjacent to the habitat protection zone of the Port Stephens – Great Lakes Marine Park. Given the relatively small nature of works, the activity is unlikely to adversely impact the water quality of the adjacent marine estate. During the preparation of this REF, NPWS consulted with the MPA to discuss potential impacts. A site visit with representatives of NPWS and the MPA on 16/1/24 did not raise any concerns. A permit application will be forwarded to the MPA following determination of this REF.
(d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms	Native vegetation removal is required to carry out the activity; however, the Ecological Assessment has determined impact on native vegetation and fauna and their habitats is not likely to be significant.
(e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability	Public open spaces associated with the coastal environment area will be temporarily closed during the works; however, on completion of the activity, these spaces will be significantly improved for the public to access and appreciate coastal environment values.

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(f) Aboriginal cultural heritage, practices and places	A due diligence study assessed potential impacts to Aboriginal objects and Aboriginal places with respect to the proposed activity within the park (see section 9.5). The outcomes of the assessment determined that the proposed park upgrade and remediation works will not likely result in harm to Aboriginal objects and places within Karuah National Park (see section 3.1.1).
(g) the use of the surf zone	Not applicable.

MPA = Marine Park Authority; NPWS = National Parks and Wildlife Service; REF = review of environmental factors.

Division 4 Coastal use area

The proposed activity is situated on land within the coastal use area. Section 2.11 of the SEPP Resilience and Hazards requires the consent authority to consider whether the proposed development is likely to cause an adverse impact on coastal use areas prior to consent of an application. Although section 2.11 only applies to development applications under Part 4 of the EP&A Act, and therefore does not apply to this proposal, this REF has considered potential impacts to the coastal use area (Table 5).

Table 5 Consistency of activity with coastal use values in section 2.11(1) of the *State Environmental Planning Policy (Resilience and Hazards) 2021*

Coastal use value	How proposed activity is consistent
(i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability	During the works, access to coastal use areas will be temporarily closed; however, on completion of the activity, these areas will be significantly improved for safety to the public.
(ii) overshadowing, wind funnelling and the loss of views from public places to foreshores	The activity will not create overshadowing, wind funnelling or the loss of views from public places to the foreshore.
(iii) the visual amenity and scenic qualities of the coast, including coastal headlands	During the works, there will be minor impacts to visual amenity associated with construction activities and machinery and materials stored on site. However, these impacts will be temporary and of short duration. On completion of the activity, rehabilitation works will improve the visual amenity of the coast.
(iv) Aboriginal cultural heritage, practices and places	A due diligence study assessed potential impacts to Aboriginal objects and Aboriginal places with respect to the proposed activity within the park (see section 9.5). The outcomes of the assessment determined that the proposed park upgrade and remediation works are unlikely to result in harm to Aboriginal objects and places within Karuah National Park (see section 3.1.1).
(v) cultural and built environment heritage	Not applicable.

Chapter 4 Remediation of land

Chapter 4 of the SEPP Resilience and Hazards provides a statewide planning approach for the remediation of contaminated land and aims to promote the remediation of contaminated land to reduce the risk of harm to human health or the environment. Section 4.6(1) requires the consent authority to consider whether land is contaminated prior to consent of an application. However, because Chapter 4 only applies to development applications under Part 4 of the EP&A Act, this section does not apply to the proposal.

Nevertheless, this REF has considered potential impacts from contaminated land. Searches of the NSW Environment Protection Authority (EPA) *List of notified sites* (NSW EPA n.d.-b), the *Contaminated land public record* (NSW EPA n.d.-a), and the *NSW Government PFAS investigation program* (NSW EPA 2024), undertaken on 8 October 2024, did not identify any contaminated land sites occurring in proximity to the proposed activity.

3.2.3 Strategic plans

Hunter regional plan 2041

Objective 6 of the *Hunter regional plan 2041* (DPE 2022) aims to ensure areas of high environmental value are protected to contribute to a sustainable region. The regional plan describes the NSW Government's adoption of criteria to define areas of high environmental value, which include national parks and reserves (DPE 2022). The proposed activity will contribute to the performance outcomes of Objective 6 by improving access within the park, as well as improving management activities associated with protecting the natural and cultural values of the park.

MidCoast Community Strategic Plan 2022–2032

Community Outcome 2 of the MidCoast Community Strategic Plan 2022–2032 (MidCoast Council 2022) includes a strategic objective to protect, manage and restore the natural environment and biodiversity, and identifies the NPWS as playing a role in achieving that objective. The proposed activity will contribute to the strategic objective by improving the condition and safety of roads required to carry out conservation and management works associated with the park.

3.3 Other relevant NSW legislation

3.3.1 Aboriginal Land Rights Act 1983

The purposes of the *Aboriginal Land Rights Act 1983* (NSW) include:

- to provide land rights for Aboriginal persons in New South Wales
- to provide for representative Aboriginal Land Councils in New South Wales
- to vest land in those councils.

Native title rights (see section 5.1 in this REF) are different and separate from the statutory right of Aboriginal Land Councils to make claims for land under the Act.

A LALC must comply with the Act and the *Aboriginal Land Rights Regulation 2020* when it wants to 'deal with land' that is 'vested' in it. Compliance includes the requirements for the LALC to apply to the NSW Aboriginal Land Council for approval of any such dealing. However, under section 42A(1) of the *Aboriginal Land Rights Act*, an Aboriginal Land Council must not deal with land that is vested in it and that is reserved or dedicated under Part 4 of the NPW Act except in accordance with that Act.

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The proposed activity does not require a dealing to be entered into with a LALC; therefore, there is no legislative requirement for application or notification with the NSW Aboriginal Land Council under the *Aboriginal Land Rights Act*.

Section 52(4) of the Act mandates that a LALC has the following functions in relation to Aboriginal culture and heritage:

- to take action to protect the culture and heritage of Aboriginal persons in the LALC's area, subject to any other law
- to promote awareness in the community of the culture and heritage of Aboriginal persons in the LALC's area.

The proposed activity is located within the boundary of the Karuah LALC. Undertaking the due diligence study assessing potential impacts of the activity on Aboriginal objects and places (see sections 3.1.1 and 9.5 of this REF) fulfils the Karuah LALC's obligations under the Act.

3.3.2 Biosecurity Act 2015

The primary objective of the *Biosecurity Act 2015* (NSW) is to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers.

Part 3 of the Act provides mandatory measures which require persons who deal with biosecurity matter or carriers to take specified actions to prevent, eliminate or minimise a biosecurity risk posed or likely to be posed by the biosecurity matter, carrier or dealing.

NPWS has a general biosecurity duty to ensure the risk of further weed contamination is prevented, eliminated or minimised, so far as reasonably practicable. This REF recommends mitigation measures to reduce the risk of spreading weeds (see section 9.2).

3.3.3 Coal Mine Subsidence Compensation Act 2017

The activity does not involve the erection or alteration of an improvement of an NPWS asset within the mapped mine subsidence district as specified under the *Coal Mine Subsidence Compensation Act 2017* (NSW).

3.3.4 Coastal Management Act 2016

The objects of the *Coastal Management Act 2016* (NSW) are to manage the coastal environment of New South Wales in a manner consistent with the principles of ecologically sustainable development for the social, cultural and economic wellbeing of the people of the state.

The activity is located within the coastal zone under section 5 of the Act and will contribute to the Act's objects in paragraphs (b) and (e), respectively:

- to protect and support the social and cultural values of the coastal zone and maintain public access, amenity, use and safety
- to facilitate ecologically sustainable development in the coastal zone and promote sustainable land use planning decision-making.

Part 3 Division 4 of the Act provides obligations for local councils and other public authorities that exercise functions in connection with the coastal zones, including to have regard to coastal management programs and the coastal management manual. A coastal management program has not been prepared for the Hunter Coast area within which the

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proposed activity falls. However, the activity is consistent with the values of the relevant coastal zones, as discussed in section 3.2.2.

3.3.5 Contaminated Land Management Act 1997

The general object of the *Contaminated Land Management Act 1997* (NSW) is to establish a process for investigating and (where appropriate) remediating land that the EPA considers to be contaminated significantly enough to require regulation. Considerations of the provisions and requirements of the Act are provided in section 8.2.2 of this REF. No remediation is proposed.

3.3.6 Fisheries Management Act 1994

The FM Act applies to all waters that are within the limits of the State of New South Wales. It aims, among other things, to conserve fish stocks and key fish habitats, threatened species, populations and ecological communities of fish and marine vegetation, and to promote ecologically sustainable development, including through the conservation of biological diversity.

Part 7 Division 3 of the FM Act aims to provide for the management of dredging and reclamation work, consistent with the principles of ecologically sustainable development (see section 3.1.1 of this REF).

Section 198A of the FM Act provides the following definitions of dredging work, reclamation work and water land:

Dredging work means —

- (a) any work that involves excavating water land, or
- (b) any work that involves moving material on water land or removing material from water land that is prescribed by the regulations as being dredging work to which this Division applies.

Reclamation work means any work that involves —

- (a) using any material (such as sand, soil, silt, gravel, concrete, oyster shells, tyres, timber or rocks) to fill in or reclaim water land, or
- (b) depositing any such material on water land for the purpose of constructing anything over water land (such as a bridge), or
- (c) draining water from water land for the purpose of its reclamation.

Water land means land submerged by water—

- (a) whether permanently or intermittently, or
- (b) whether forming an artificial or natural body of water,

and includes wetlands and any other land prescribed by the regulations as water land to which this Division applies.

The activity involves dredging and reclamation works at the bridge spanning Deep Creek and the boat ramp at Tattersalls campground, which is situated on the Karuah River. Deep Creek and the Karuah River are also mapped as key fish habitat under the FM Act. The activity therefore comes within section 199 of the Act, which provides:

- (1) A public authority (other than a local government authority) must, before it carries out or authorises the carrying out of dredging work or reclamation work —
 - (a) give the Minister written notice of the proposed work, and
 - (b) consider any matters concerning the proposed work that are raised by the Minister within 21 days after the giving of the notice (or such other period as is agreed between the Minister and the public authority).

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Notification of the activity was provided to the NSW Department of Primary Industries – Fisheries NSW (DPI Fisheries) on 6 October 2023, with a response received from DPI Fisheries on 26 October 2023 (see Appendix D).

Section 221ZT(b) of the FM Act states that Part 7A Division 12 of the Act applies to environmental assessments under Part 5 of the EP&A Act. Section 221ZX of the FM Act defines an activity under Part 5 of the EP&A Act that is 'likely to significantly affect threatened species, populations or ecological communities' as an activity that is 'likely to significantly affect the environment'. Searches of the *Fisheries NSW spatial data portal* (NSW DPI n.d.) did not identify any aquatic species listed under Schedules 4, 4A or 5 of the FM Act with the potential to occur within or near the activity location, and no species or ecological communities listed under the Act were recorded on site. Therefore, no species listed under the FM Act have been evaluated for their potential to occur on the site and the activity is not likely to 'significantly affect threatened species, populations or ecological communities'.

Further, the activity does not require approvals under sections 144, 200, 201, 205 or 219 of the FM Act.

3.3.7 Heritage Act 1977

The objectives of the *Heritage Act 1977* (NSW) include to encourage the conservation of the state's heritage and to assist owners with the conservation of items of State heritage significance. Section 4 of the Act broadly defines environmental heritage as comprising 'those places, buildings, works, relics, moveable objects, and precincts, of state or local heritage significance'.

The Act defines a 'relic' as 'any deposit artefact, object or material evidence' that meets both the following criteria:

- it relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement
- it is of State or local heritage significance.

Sections 139 to 145 within Part 6 Division 9 of the Act prevent the excavation or disturbance of land for the purpose of discovering, exposing or moving a relic, except by a qualified archaeologist to whom an excavation permit from Heritage NSW has been issued.

Section 146 of the Act requires that a person who is aware or believes that they have discovered or located a relic (in any circumstances, and whether or not the person has been issued with a permit) must:

- within a reasonable time after first becoming aware or believing that they have discovered or located that relic, notify the Heritage Council of the relic's location, unless they believe on reasonable grounds that the Heritage Council is aware of the location of the relic
- within the period required by the Heritage Council, furnish the Heritage Council with such information concerning the relic as the Heritage Council may reasonably require.

Searches have been undertaken of the *NSW State heritage inventory* (NSW EHG n.d.-c), the *Historic heritage information management system* (NSW DCCEEW n.d.-b) under section 170 of the Act, and the heritage list in Schedule 5 of the *Great Lakes Local Environmental Plan 2014*. No listed items of state, local or agency significance have been recorded within or near the proposed activity area.

3.3.8 Local Land Services Act 2013

The *Local Land Services Act 2013* (NSW) (LLS Act) regulates the clearing of native vegetation across the state; however, section 60A(b)(ii) provides that land reserved under the NPW Act or land acquired under Part 11 of that Act are not considered areas of the state to which the LLS Act applies. Because the activity will take place on land that falls within section 60A(b)(ii), the LLS Act does not apply.

3.3.9 Marine Estate Management Act 2014

The *Marine Estate Management Act 2014* (NSW) aims to provide for the management of the marine estate of NSW consistent with the principles of ecologically sustainable development (see section 3.1.1 of this REF), in a manner that:

- promotes a biologically diverse, health and productive marine estate
- facilitates economic opportunities; cultural, social and recreational use of the marine estate; the maintenance of ecosystem integrity; and the use of marine estate for scientific research and education.

The boat ramp at Tattersalls campground is located within close proximity (less than 20 m) to the Port Stephens – Great Lakes Marine Park (PSGLMP). No work will occur within the boundary of the marine park; however, this REF has considered the objects of the Act. Accordingly, NPWS consulted the Marine Park Authority (MPA) in writing on 6 December 2023 about the proposed activity, with a subsequent site meeting held on 16 January 2024. Advice from the MPA is that a permit to carry out works at the boat ramp is required under section 55 of the Act. NPWS applied for a permit and the PSGLMP advisory committee issued Permit MEAA24/1729(B) on 25 October 2024 (see Appendix E).

3.3.10 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (NSW) is the key environmental protection and pollution statute in the state. The Act is administered by the NSW EPA and establishes a licensing regime for waste, air, water and pollution. Relevant parts of the Act are:

- Part 5.3 Water pollution
- Part 5.4 Air pollution
- Part 5.5 Noise pollution
- Part 5.6 Land pollution and waste.

Any work potentially resulting in pollution must comply with the Act, including obtaining any required licences. Relevant licences required under sections 47, 48, 49 or 122 of the Act do not apply to the proposed activity, nor is the activity a scheduled activity or scheduled development work identified in Schedule 1 of the Act.

3.3.11 Roads Act 1993

The activity involves carrying out works within the road corridors of Hobarts Forest Road, Little Mountain Road and Tattersalls Road. Transport for NSW (n.d.) has mapped these roads as local roads, which the 'Schedule of classified roads and unclassified regional roads' (2023) categorises as 'unclassified roads'.

The Dictionary of the *Roads Act 1993* (NSW) defines an unclassified road to mean 'a public road that is not a classified road', and further defines a public road to mean:

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- (a) any road that is opened or dedicated as a public road, whether under this or any other Act or law, and
- (b) any road that is declared to be a public road for the purposes of the Act.

Section 138(1) of the Act provides that a person must not:

- (a) erect a structure or carry out work in, on or over a public road, or
- (b) dig up or disturb the surface of a public road, or
- (c) remove or interfere with a structure, work or tree on a public road, or
- (d) pump water into a public road from any land adjoining the road, or
- (e) connect a road (whether public or private) to a classified road.

The activity involves works on public roads which are reserved under Part 4 of the NPW Act; however, section 188B of the NPW Act provides that section 138 of the *Roads Act* does not apply to anything done under a provision of the NPW Act in relation to a road that is, or is on, land reserved under the NPW Act.

3.3.12 Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001* (NSW) aims to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development (see section 3.1.1 of this REF), to ensure resource management options are considered against a hierarchy, and to minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste. The Act acknowledges that certain materials present risks to humans or the environment (or both), and require classification, treatment and disposal in accordance with specific waste management provisions.

The activity would generate waste during the construction phase; however, the principles of the waste management hierarchy and other relevant waste management requirements shall be implemented onsite. Further assessment of the impacts of waste generation is provided in section 9 of this REF.

3.3.13 Water Management Act 2000

The *Water Management Act 2000* (NSW) outlines approval requirements for activities at a specified location in, on or under waterfront land. The Act also outlines water access rights and surface water runoff. The Natural Resources Access Regulator administers the Act and is required to assess the impact of any proposed 'controlled activity' to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the activity.

Under section 91E(1) of the Act, a controlled activity approval is required to carry out a controlled activity in, on or under waterfront land. The Dictionary of the Act provides the following definitions of these and other relevant terms:

controlled activity means —

- (a) the erection of a building or the carrying out of a work (within the meaning of the *Environmental Planning and Assessment Act 1979*), or
- (b) the removal of material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise, or
- (c) the deposition of material (whether or not extractive material) on land, whether by way of landfill operations or otherwise, or
- (d) the carrying out of any other activity that affects the quantity or flow of water in a water source

waterfront land means —

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- (a) the bed of any river, together with any land lying between the bed of the river and a line drawn parallel to, and the prescribed distance inland of, the highest bank of the river, or
- (a1) the bed of any lake, together with any land lying between the bed of the lake and a line drawn parallel to, and the prescribed distance inland of, the shore of the lake, or
- (a2) the bed of any estuary, together with any land lying between the bed of the estuary and a line drawn parallel to, and the prescribed distance inland of, the mean high water mark of the estuary, or
- (b) if the regulations so provide, the bed of the coastal waters of the state, and any land lying between the shoreline of the coastal waters and a line drawn parallel to, and the prescribed distance inland of, the mean high water mark of the coastal waters,

where the prescribed distance is 40 metres or (if the regulations prescribe a lesser distance, either generally or in relation to a particular location or class of locations) that lesser distance. Land that falls into 2 or more of the categories referred to in paragraphs (a), (a1) and (a2) may be waterfront land by virtue of any of the paragraphs relevant to that land.

river includes —

- (a) any watercourse, whether perennial or intermittent and whether comprising a natural channel or a natural channel artificially improved, and
- (b) any tributary, branch or other watercourse into or from which a watercourse referred to in paragraph (a) flows, and
- (c) anything declared by the regulations to be a river,

whether or not it also forms part of a lake or estuary, but does not include anything declared by the regulations not to be a river.

The activity meets the requirements of a ‘controlled activity’; however, under section 41 of the *Water Management (General) Regulation 2018*, ‘a public authority is exempt from section 91E(1) of the Act in relation to all controlled activities that it carries out in, on or under waterfront land’. NPWS is a ‘public authority’ as defined in section 1.4 of the EP&A Act and is therefore exempt from section 91E. A controlled activity approval is thus not required.

3.4 Commonwealth legislation

3.4.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the primary Commonwealth environmental legislation and is administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water. The Act provides the legal framework to protect and manage nationally and internationally important values, including flora, fauna, ecological communities and heritage places defined under the Act as matters of national environmental significance (MNES).

The EPBC Act requires that proposed ‘actions’ that the proponent believes will, or may be likely to, significantly impact MNES, the environment of Commonwealth land, or the environment generally if they are being carried out by an Australian Government agency, must be referred to the Australian Minister for the Environment and Water for assessment. The approval of the Minister is required if an action is likely to have a significant impact on or involve any of the following:

- world heritage properties
- national heritage places
- wetlands of international importance
- nationally threatened species and ecological communities
- migratory species

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- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions
- a water resource, in relation to coal seam gas development and large coalmining development.

Under the EPBC Act, any action which has a significant impact on a MNES value triggers a referral to the Minister under the Act. There are no significant impacts detected on MNES values on or near the activity area and therefore the EPBC Act is not triggered by this the proposed activity.

Evaluations of species and communities listed under the EPBC Act have been incorporated into section 8.5 and section 9.7 of this REF, and were assessed within the Ecological Assessment (see Appendix A), which also includes the EPBC Act protected matters report.

3.4.2 Native Title Act 1993

Compliance with the Commonwealth *Native Title Act 1993* (NT Act) also requires compliance with the NSW *Native Title Act 1994*. Because the 2 Acts are inextricably linked, only the NT Act is considered in this REF.

Section 223(1) of the NT Act defines 'native title' to mean:

the communal, group or individual rights and interests of Aboriginal peoples or Torres Strait Islanders in relation to land or waters, where:

- (a) the rights and interests are possessed under the traditional laws acknowledged, and the traditional customs observed, by the Aboriginal peoples or Torres Strait Islanders; and
- (b) the Aboriginal peoples or Torres Strait Islanders, by those laws and customs, have a connection with the land or waters; and
- (c) the rights and interests are recognised by the common law of Australia.

People who hold native title have a right to continue to practise traditional activities over their traditional lands and waters while respecting other Australian laws. Traditional activities generally involve visiting sites of significance, performing rites or other ceremonies, or carrying out hunting, fishing, gathering or camping activities. Further, when a native title claimant application is registered by the National Native Title Tribunal (NNTT), the people seeking native title recognition gain a right to consult or negotiate with anyone who wants to undertake a proposal on the area claimed.

The main objects of the NT Act are:

- (a) to provide for the recognition and protection of native title; and
- (b) to establish ways in which future dealings affecting native title may proceed and to set standards for those dealings; and
- (c) to establish a mechanism for determining claims to native title; and
- (d) to provide for, or permit, the validation of past acts, and intermediate period acts, invalidated because of the existence of native title.

A 'future act' comprises an act carried out after the NT Act's commencement on 1 January 1994 that either validly affects native title or is invalid because of native title.

The park was first reserved as Karuah Nature Reserve in 1999 then reclassified as national park in 2007. Any acts carried out within the park are considered future acts for the purposes of the NT Act. Determination of validity of the proposed activity as a future act is assessed in section 5 of this REF.

3.5 Consistency with national parks policy

There are 2 national parks policies relevant to the activity: the vehicle access policy (EHG 2025) and the visitor safety policy (EHG 2022). The consistency of the activity with these policies is detailed in Table 6.

Table 6 Consistency of activity with national parks policies

Policy	How proposed activity is consistent
Vehicle access policy	<p>The activity involves improving the safety and condition of the bridge on Hobarts Forest Road and is consistent with the policy's objectives in that the proposed works would:</p> <ul style="list-style-type: none">• not cause unacceptable impacts to the environment and cultural heritage• be designed with sensitivity to the landscape• be appropriate and necessary to meet park management needs.
Visitor safety policy	<p>The activity is consistent with the policy's objectives in that the proposed works would:</p> <ul style="list-style-type: none">• contribute to NPWS's duty of care for visitor safety and prohibit conduct which does not discharge that duty• prioritise and resource higher-rated risks than lesser-rated risks• take a risk management approach that promotes conservation over alternative approaches that may compromise conservation• protect property (including park infrastructure)• contribute to the objectives of the park's plan of management (NPWS 2016), which is a management planning instrument consistent with the policy.

3.6 Summary of licences and approvals

3.6.1 Approval required from National Parks and Wildlife Service

The activity requires internal NPWS approval or authorisation, including expenditure.

3.6.2 Other approvals

A permit from the MPA is required (see Appendix E). Application for the permit must be supported by a REF, and will be submitted upon determination of this REF.

3.6.3 Publication triggers

The publication triggers under section 171(4) of the EP&A Regulation are set out in Table 7. This REF does not require publication on the NPWS website or the NSW planning portal following determination.

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Table 7 Triggers for publication of the review of environmental factors

Permit or approval	Applicable?
<i>Fisheries Management Act 1994</i> , sections 144, 200, 205 or 219	No
<i>Heritage Act 1977</i> , section 57(1) (commonly known as a section 60 application and not an exemption under section 57(2))	No
<i>National Parks and Wildlife Act 1974</i> , section 90 (Aboriginal Heritage Impact Permit)	No
<i>Protection of the Environment Operations Act 1997</i> , sections 47–49 or 122	No

4. Consultation – general

4.1 Statutory consultation

4.1.1 SEPP Transport and Infrastructure

The SEPP Transport and Infrastructure requires consultation with relevant authorities as identified in Table 8.

Table 8 Consultation triggers under the *State Environmental Planning Policy (Transport and Infrastructure) 2021*

Authority to be consulted (SEPP section)	Trigger	Applicable to proposal?
Local council (s 2.10)	Development with impacts on council infrastructure or services (such as stormwater, sewer, water, roads and footpaths)	No
Local council (s 2.11)	Development with impacts on heritage items listed under the LEP	No
Local council (s 2.12)	Development that will change flood patterns on flood-labile land	No
State Emergency Service (s 2.13)	Development on flood-labile land*	No
Local council (s 2.14)	Development that is inconsistent with a certified coastal management program affecting land within the mapped coastal vulnerability area	No
NPWS (s 2.15(2)(a))	Development adjacent to land reserved or acquired under the NPW Act	No
NPWS (s 2.15(2)(b))	Development on land in Zone C1 that is yet to be reserved under the NPW Act	No
Transport for NSW (s 2.15(2)(c))	Development comprising a fixed or floating structure in or over navigable waters	No
Director of the Siding Spring Observatory (s 2.15(2)(d))	Development that may increase the amount of artificial light in the night sky and that is on land within the mapped dark sky region	No
Commonwealth Department of Defence (s 2.15(2)(e))	Development located within the buffer around the defence communications facility near Morundah as mapped under the Lockhart, Narrandera or Urana LEPs	No
Subsidence Advisory NSW (s 2.15(2)(f))	Development on land in a mine subsidence district	No
Willandra Lakes Region World Heritage Advisory Committee and Heritage NSW (s 2.15(2)(g))	Development on, or reasonably likely to have an impact on, a part of the Willandra Lakes Region World Heritage Property	No
Western Parkland City Authority (s 2.15(2)(h))	Development within a Western City operational area (<i>Western Parkland City Authority Act 2018</i> , Schedule 2) with a capital investment value of \$30 million or more	No
Transport for NSW (s 2.122)	Traffic-generating development listed in Schedule 3 of the SEPP	No

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LEP = local environmental plan; NPW Act = *National Parks and Wildlife Act 1974* (NSW); NPWS = National Parks and Wildlife Service; SEPP = State environmental planning policy.

* The activity is partially situated on flood-labile land as set out in the *Great Lakes Local Environmental Plan 2014*; however, section 2.13 of the of SEPP Transport and Infrastructure only requires consultation with the State Emergency Service if the activity is a 'relevant provision' listed under section 2.13(2). The activity is not a relevant provision listed under section 2.13(2), so no consultation is required.

4.1.2 Other statutory consultation

As set out in section 3.3.6 of this REF, notification of dredging or reclamation works that fall within section 199 of the FM Act is to be provided to the Department of Primary Industries and Regional Development before the works begin.

4.2 Targeted consultation

4.2.1 Adjacent landowners

The proposed activity will be undertaken on land reserved under Part 4 of the NPW Act and will not impact on adjacent landowners, so consultation is not required.

4.2.2 Wider community consultation and notification of works

The wider community does not require consultation, but there will be public notices about the works. Notification that will be undertaken before the activity begins includes:

- temporary signage on site for the duration of the activity
- notification of the activity on the NPWS website.

4.2.3 Interest groups and notification of works

No particular interest groups relevant to the works have been identified. However, interest groups can access the notification of the activity that will be placed on the NPWS website.

5. Consultation – Aboriginal communities

5.1 Native title notification requirements

1. Is the land subject to an Indigenous land use agreement (ILUA)? No

An online search of the NNTT's *Native title vision* geospatial viewer (NNTT n.d.), undertaken on the 8 October 2024, did not identify any IULAs present within or close to the proposed activity.

2. Has native title been **extinguished**? No or unclear
3. Has there been a determination of native title applicable to the land or is there a native title claim pending? No

An online search of the *Native title vision* geospatial viewer, undertaken on 8 October 2024, did not identify any native title applications or determinations over the study area.

4. If native title is not confirmed as extinguished, **and** the activity is occurring on land reserved as park on or before 23 December 1996, is it an act in accordance with the purpose of reservation **and will it**:
- a. be a 'public work' as per subdivision J of the NT Act (for example, a building or other structure that is fixed to the landscape, a road or bridge, a well or a bore, or involves major earthworks, carried out by a public authority)
 - or**
 - b. involve the grant of a lease or easement?
- No
5. If native title is not confirmed as extinguished and the circumstances of Question 4 do not otherwise apply (for example, the park was reserved after 23 December 1996), is the activity either:
- a. a facility for service to the public (as defined in subdivision K of the NT Act)
 - or**
 - b. a low-level activity (as defined in subdivision L of the NT Act)?
- Yes

The proposed activity meets the criteria of a facility for service to the public that is a future act under section 24KA of the NT Act, and is therefore valid under the Act. Table 9 sets out how the proposed activity meets these criteria.

Table 9 How the activity meets the criteria for compliance with section 24KA of the *Native Title Act 1993* (Cth)

Relevant criteria in section 24KA	Subsection	Application to the activity
The future act relates, to any extent, to an onshore place.	(1)(a)	The activity will take place onshore.
The future act either: (i) permits or requires the construction, operation, use, maintenance or repair, by or on behalf of any person, of any of the things listed in subsection (2) that is to be operated, or is operated, for the general public; or	(1)(b)	The future act requires the construction of a thing listed in subsection (2) which will be operated for the general public.

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Relevant criteria in section 24KA	Subsection	Application to the activity
(ii) consists of the construction, operation, use, maintenance or repair, by or on behalf of the Crown, or a local government body or other statutory authority of the Crown, in any of its capacities, of any of the things listed in subsection (2) that is to be operated, or is operated, for the general public.		
The future act does not prevent native title holders in relation to land or waters on which the thing is located or to be located from having reasonable access to such land or waters in the vicinity of the thing, except: (i) while the thing is being constructed; or (ii) for reasons of health and safety.	(1)(c)	The future act will not prevent native title holders from having reasonable access to such land or waters in the vicinity of the road, except during construction.
A law of the Commonwealth, a State or a Territory makes provision in relation to the preservation or protection of areas, or sites, which may be: (i) in the area in which the act is done; and (ii) of particular significance to Aboriginal peoples or Torres Strait Islanders in accordance with their traditions.	(1)(d)	A law of a state – the NPW Act – makes provision for the conservation of places, objects and features of significance to Aboriginal people that fall within the park where the activity will be done. However, no sites of particular significance to Aboriginal people have been identified.
The future act is not the compulsory acquisition of the whole or part of any native title rights and interests.	(1A)	The future act is not, and does not require, any compulsory acquisition of native title.
The things in subsection (1)(b) are: (a) a road, railway, bridge, or other transport facility (other than an airport or port); (b) a jetty or wharf; (c) a navigation marker or other navigational facility; (d) an electricity transmission or distribution facility; (e) lighting of streets or other public places; (f) a gas transmission or distribution facility; (g) a well, or a bore, for obtaining water; (h) a pipeline or other water supply or reticulation facility; (i) a drainage facility, or a levee or other device for management of water flows; (j) an irrigation channel or other irrigation facility; (k) a sewerage facility, other than a treatment facility; (l) a cable, antenna, tower or other communication facility; (la) an automatic weather station; (m) any other thing that is similar to any one or more of the things mentioned in the paragraphs above.	(2)	The future act relates to infrastructure upgrades associated with roads, a bridge, and a boat ramp which are things that fall within paragraphs (a), (b) and (m).

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Under section 24KA(8) and (9) of the NT Act, the native title holders or any registered native title claimants in relation to land or waters in the area concerned by the activity have the right to be notified of the future act, as well as other procedural rights. If there are no native title holders or claimants, the notification and procedural rights requirements can be met by ensuring any representative Aboriginal/Torres Strait Islander bodies are notified of the future act (subsection (8) or afforded the right to comment (subsection (9))). The activity meets this requirement under the NT Act because the Karuah LALC was not only notified but consulted during the due diligence process (see section 3.1.1 of this REF), and was provided an opportunity to comment on the activity. To date, no concerns have been raised by any representatives of the Aboriginal community for the area concerned.

5.2 Parks under joint management arrangements other than an indigenous land use agreement

Is the park's management subject to another joint management arrangement such as a memorandum of understanding? No

5.3 Other parks

The Karuah LALC was consulted during the due diligence process and were provided an opportunity to comment on the activity. To date, no concerns have been raised by any representatives of the Aboriginal community for the area concerned. See section 9.5 and Appendix A of this REF for details of the consultation.

6. Proposed activity (or activities)

6.1 Location of activity

The location of the activity is shown in Figure 1 and of each of the particular works in Figure 2. The location information is summarised in Table 10 and the specific site reference points in Table 11. See also the detailed site plans (Appendix C).

Table 10 Summary of activity location

Location information	Summary
Description of location	Karuah National Park is located approximately 6 kilometres north of Karuah in the mid-north coast region of New South Wales. The proposed activity includes infrastructure upgrades in multiple locations throughout the northern portion of the park. This includes works along Hobarts Forest Road, the Tattersalls campground and Double Wharf picnic area.
Site commonly known as	Karuah National Park
Park name	Karuah National Park
Other tenures	This REF is only applicable to lands reserved under Part 4 of the NPW Act.
Lot/DP	Not applicable
Street address	Hobarts Forest Road, Little Mountain Road, Tattersalls Road, and Wharf Fire Road, Karuah National Park

DP = development plan; REF = review of environmental factors; NPW Act = *National Parks and Wildlife Act 1974* (NSW).

Table 11 Site reference points of the activity

Location of works	Easting	Northing	MGA zone
Hobarts Forest Road – gate/signs	397664	6393834	56H
Hobarts Forest Road – bridge	399412	6394048	56H
Little Mountain Road – gate	400550	6394229	56H
Tattersalls Road – sign	402087	639685	56H
Tattersalls Road – roadworks	403098	6394239	56H
Tattersalls campground – boat ramp, bank stabilisation and rehabilitation	403167	639420	56H
Double Wharf picnic area – bank stabilisation and rehabilitation	402765	6394905	56H
Wharf Fire Road – batter works, road closure and rehabilitation	402768	6395058	56H

6.2 Description of the proposed activity

The NPWS proposes to undertake a series of asset upgrades to existing park infrastructure within Karuah National Park. The upgrades are required to significantly improve the management capabilities of NPWS, and to improve the condition, function and safety of several assets to improve access and amenity for park visitors.

The following scope of works are proposed:

- installation of 6 regulatory/wayfinding signs at the following locations:
 - 2 new signs on Hobarts Forest Road (park entrance)
 - 2 new signs at Tattersalls campground
 - one new sign at the intersection of Hobarts Forest Road and Little Mountain Road
 - removal and replacement of one sign at the intersection of Hobarts Forest Road and Tattersalls Road
 - maintenance work as required following establishment
- repair works to the bridge spanning Deep Creek on Hobarts Forest Road as follows:
 - abutment repair works on the southern approach
 - replacement of abutment gabions at both approaches
 - repair and replacement of concrete vehicle barriers
 - ongoing bridge maintenance.
- upgrades to one publicly accessible boat ramp at Tattersalls campground in accordance with the plans in Appendix C for:
 - small extensions and reprofiling of existing batter
 - placement of flexible concrete mat over the ramp up to the high-tide mark
 - reprofiling of trail leading to the boat ramp, including table drain works and rollovers where required to control overland flow
 - no works within the water or that will harm adjacent mangroves
 - ongoing maintenance to the ramp following establishment
- rehabilitation and stabilisation of 3 sites which have been damaged by four-wheel-drive (4WD) vehicles and by motorbikes at:
 - Tattersalls campground:
 - implementation of erosion and sedimentation controls
 - laying of jute mesh at both sites to facilitate revegetation efforts
 - revegetation to support stabilisation of batter and deter vehicle movements
 - importing and placement of large sandstone blocks as barriers to limit vehicle movement
 - ongoing maintenance to the site following establishment
 - Double Wharf picnic area (2 sites):
 - implementation of erosion and sedimentation controls
 - laying of jute mesh to facilitate revegetation efforts
 - revegetation to support stabilisation of batter and deter vehicle movements
 - importing and placement of large sandstone blocks as barriers to limit vehicle movement
 - ongoing maintenance to the sites following establishment
- rehabilitation, stabilisation and temporary closure of one trail damaged by 4WD vehicles and motorbikes at:

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- Hobart Forest Road leading to Double Wharf Trail:
 - temporary closure of significantly degraded trail for visitor safety
 - implementation of erosion and sedimentation controls
 - implementation of trail drainage such as rollovers and table drains
 - filling of scoured ruts to improve visitor safety
 - installation of jute mesh to support revegetation efforts
 - revegetation to support stabilisation of batter and deter vehicle movements
 - placement of temporary barriers at entrances along Witt Road and Hobarts Forest Road to limit vehicle movement
 - ongoing maintenance to the trail as required
- installation and ongoing maintenance of 2 park management gates with associated bollards or sandstone logs at the following locations:
 - double entry gate at the entrance to the park on Hobarts Forest Road
 - single management gate at the entrance to Little Mountain Road.

6.2.1 The proposed activity: pre-construction, construction, operation and remediation

Pre-construction

General procedures

- An ecological survey of each site has identified threatened species of flora: 5 netted bottle brush (*Callistemon linearifolius*) individuals in the vicinity of the proposed Little Mountain Road gate, and black-eyed Susan (*Tetratheca juncea*) and Charmhaven apple (*Angophora inopina*) throughout the park. Thorough pre-construction checks of all bollard lines and sign locations are required as a precautionary measure to identify and flag individuals of threatened flora prior to works commencing.
- Erosion and sediment controls consistent with the NPWS field guide for erosion and sediment control on unsealed roads (NSW EHG 2012) will be installed where required.
- 'No go' areas will be identified and clearly delineated to prevent vegetation harm beyond what has been assessed and marked.
- Site inductions are to occur informing workers of 'no go' areas, vegetation to be cleared or maintained, and the location of any threatened flora. The site induction will also inform workers of potential Aboriginal site locations and provide examples (pictures) of Aboriginal objects.
- Vegetation requiring removal will be clearly marked using a separate method to the 'no go' areas.
- Any tools or machinery used during construction will be appropriately cleaned, degreased and serviced prior to entry and use at the site.

Additional procedures for Hobarts Forest Road bridge

- A qualified ecologist or suitably experienced NPWS staff member will thoroughly inspect potential roosting crevices underneath the bridge to determine if microbats are present. If none are found, the activity may proceed as normal; however, if microbats are identified the procedures set out in section 9.2 of this REF are to be followed.
- Environmental safeguards including the installation of sediment fencing and sediment traps will be installed to minimise the escape of turbid plumes into the adjacent aquatic

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environment. Additional erosion and sediment controls are to be installed where required, consistent with the NPWS field guide for erosion and sediment control on unsealed roads (NSW EHG 2012).

- Minor vegetation clearing including a handful of small trees, shrubs and groundcover would be required either side of the existing bridge within the unnamed creek.

Construction and operation

Signs

- Marked and assessed native vegetation will be cleared in preparation of works, with cleared native vegetation:
 - to be allowed to break down on site
 - not to be piled in a way which smothers adjacent vegetation.
- Minor earthworks will be undertaken to facilitate footings as required.
- Signs will be installed as required.

Hobarts Forest Road bridge

All works are to be undertaken in accordance with the engineering plans in Appendix C.

- Southern abutment works will include:
 - removal of existing gabions
 - reinstatement of gabions as wingwalls upstream and downstream, reusing existing rock from gabions or, if required, additional rock of a similar grade and material
 - underlay with geofabric
 - construction of new concrete abutment.
- Northern abutment works will include:
 - renewal of gabion baskets to match existing ones
 - installation of new gabion to be installed in the cavity under the bridge between the piles and the gabions, installation of gabion basket and filling any additional cavity with gabion rock
 - underlay with geofabric.
- Loose rock previously placed on the creek bed adjacent to each abutment will be removed, and geofabric installed with rock replaced as creek bed scour protection. Additional rock will be installed as required.
- Old timber beams on the creek bed will be retained in situ.
- Existing damaged concrete bridge wheel guides will be replaced.

Tattersalls campground boat ramp

- Flexible concrete mat will be placed over the existing ramp as far as the high-tide mark.
- No works will occur within the water.
- The existing batter will be reprofiled to suit the flexible concrete mat ramp.
- Reprofiling and minor works to the trail leading to the ramp to improve access will be carried out.

Rehabilitation sites

- Minor slope reprofiling will include filling and remediating scour channels and ruts from unauthorised vehicle traffic.

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- Jute mesh will be installed the full length and width of the area to be rehabilitated, in a way which facilitates revegetation and site stabilisation.
- Revegetation will use a diverse combination of local native plants and native vegetation mulch.
- Coir logs will be installed as required to manage water flow.
- Large sandstone blocks will be placed to block recreational vehicle access.
- Trail works will be undertaken to fill scoured ruts and improve pedestrian safety on Wharf Fire Road.

Gates

- Gates will be installed according to the manufacturer's specifications.
- There will be minor ground disturbance to facilitate installation of steel bollards.
- Sandstone logs will be placed at strategic locations in existing cleared areas.

Remediation

- All waste generated by the activity will be removed from each site and recycled or disposed of as necessary.
- The upstream and downstream banks of Deep Creek will be checked for erosion into the waterway and stabilised as required.
- Bridge and trail works will be monitored for settling and managed as required.
- Weed establishment will be monitored and treated as necessary.
- Temporary erosion and sedimentation controls will be removed once the sites have been stabilised and controls are no longer required.
- Regular inspection of the assets will be incorporated into the NPWS maintenance program to ensure the upgrades are maintained to the required operational standards.

6.2.2 The activity footprint (size of the area of impact)

The footprint of the proposed activity has been assessed to be approximately 2,510 square metres (m²), comprising:

- 350 m² for the new gate and 2 signs at the park entrance on Hobarts Forest Road
- 25 m² for the new sign at the intersection of Hobarts Forest Road and Tattersalls Road
- 25 m² for the new sign at the intersection of Hobarts Forest Road and Little Mountain Road
- 50 m² for 2 new signs at Tattersalls campground
- 200 m² for the bridge works, batter protection and wingwalls
- 100 m² for works at the Tattersalls campground boat ramp
- 1,460 m² for the rehabilitation sites as follows:
 - Tattersalls campground batter – 160 m²
 - Double Wharf picnic area batter 01 – 950 m²
 - Double Wharf picnic area batter 02 – 150 m²
 - Wharf Fire Road – 200 m²
- 300 m² for the new gate and steel bollards on Little Mountain Road.

The footprint for each individual works location is indicative only. The calculation of each area took into account stockpiling requirements, parking of vehicles and storage of machinery required to undertake each activity.

6.2.3 Proposed construction methods, materials and equipment

The sequence of the works for each project location will be selected on an 'as needed' basis, determined by safety considerations and available contractors and materials.

Appropriate erosion and sedimentation measures will be implemented at the bridge, boat ramp and rehabilitation sites before works begin; however, it is not anticipated erosion and sedimentation measures will be required for the gate and signage installation works.

A combination of hand tools and small plant or machinery will be used at each location. Posi-track loaders will be used where road reshaping is required, and excavators where needed to facilitate the upgrade works to the bridge and batter works at the boat ramp and rehabilitation sites.

All works will be undertaken in accordance with the attached concept and engineering designs listed in Appendix C.

Materials used in the activity will generally comprise the following:

- In compliance with the approved construction documents, bridge materials will use a combination of concrete, clean rock and steel wire for the gabions.
- Clean road base and materials will be imported as fill where required for the rehabilitation of Wharf Fire Road.
- Any appreciative amounts of excess clean fill material will be reused in other activity locations.
- Materials used for the new gates and signage will comply with the materials designated in the NPWS Park Facilities Manual and comprise a mixture of aluminium panels with steel or timber posts.
- Steel bollards or sandstone blocks will be used adjacent to the gates on Hobarts Forest Road and Little Mountain Road.
- Concrete and jute mesh will be used for the boat ramp and rehabilitation areas.
- Coir logs will be installed at strategic locations at the rehabilitation sites to manage water flow and subsequent erosion.
- A diverse combination of local native plants or native vegetation mulch will be used to revegetate and stabilise the rehabilitation areas.

6.2.4 Receival, storage and on-site management for materials used in construction

The primary access to Karuah National Park and all sites is via Hobarts Forest Road off The Bucketts Way.

Materials and equipment will be delivered on an 'as needed' basis for each activity location and stored within pre-existing cleared areas of the road and parking areas. Watercourses and drainage lines will be protected from stockpile runoff by sediment fencing and traps.

It is not anticipated that vegetation removal or storage within the campgrounds is required to facilitate vehicle parking or material storage.

6.2.5 Earthworks or site clearing including extent of vegetation to be removed

The area of each activity location has been previously disturbed by the installation of the original signage and road infrastructure; however, some vegetation removal will be required to facilitate the upgrade works to the bridge on Hobarts Forest Road. Small regrowth vegetation may require removal to facilitate signage, gates and bollard installation; however,

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the final location of each asset will be selected to reduce potential impacts to native vegetation. It is anticipated that bollards will be installed following a 'path of least resistance' to avoid impacts to trees, habitat features and threatened species.

Areas which are disturbed will be rehabilitated (material shaped with regard to drainage) on completion of works. It is not anticipated that seeding or replanting will be necessary, as disturbance will be minimal.

6.2.6 Environmental safeguards and mitigation measures

The proposed areas of impact have been surveyed and inspected for natural, cultural and heritage values by suitably qualified persons during the preparation of this REF. A number of safeguards and mitigation measures have been identified in order to minimise potential adverse environmental impacts associated with the proposal. Should the proposed activity proceed, the safeguards and mitigation measures outlined in section 9 of this REF will be applied before and during the construction and operation stages of the proposal. Compliance with the safeguards and mitigation measures, and any associated approval conditions, will be periodically audited during the construction and operation stages.

6.2.7 Sustainability measures – including choice of materials, and water and energy efficiency

- Labour and materials will be sourced from local suppliers where possible.
- Vegetation removed will not be burnt.
- Vegetation clearing will not occur beyond what has been marked and assessed.
- Any waste generated by the activity and by workers undertaking the activity will be segregated to maximise recycling opportunities.
- Regular maintenance of construction equipment will be carried out to improve its energy efficiency and reduce its environmental impact.
- Water-efficient practices, such as using recycled or treated water for non-potable uses, will be implemented during construction to minimise water wastage.
- Energy-efficient equipment and practices will be used where possible, such as selecting electric equipment and machinery, and optimising their use to minimise energy consumption during construction activities.
- The use of plastic bags during waste removal will be avoided where practicable.
- Waste disposal will be undertaken in accordance with the *Waste Avoidance and Resource Recovery Act 2001* (NSW).

6.2.8 Construction timetable and staging and hours of operation

Works are proposed to begin in the second quarter of 2025 and be completed over a period of 3 months. Works will be undertaken during standard working hours as follows:

- Monday to Friday: 6 am to 6 pm
- Saturday: 8 am to 1 pm
- Sundays, public holidays and school holidays: no work.

Any works planned to be undertaken outside of the standard hours on weekends or nights will need to be clearly justified as essential at these times, and approved in writing by the area manager or their delegate before the works begin.

However, the activity may include other works outside the recommended standard hours, such as:

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- delivery of oversized plant or structures that police or other authorities determine require special arrangements to transport along public roads
- emergency work to avoid the loss of life or damage to property, or to prevent environmental harm
- maintenance and repair of public infrastructure where disruption to essential services or considerations of worker safety do not allow work within standard hours.

7. Reasons for the activity and consideration of alternatives

7.1 Objectives and reasons for the proposal

The primary objective of the proposal is to improve the safety and amenity of the park's infrastructure for public use and appreciation. The proposal will also significantly contribute to the management capacity of NPWS staff.

7.2 Consideration of alternatives

The only alternative is not to undertake the upgrades. The 'do nothing' approach is inconsistent with the specific management directions of the Karuah PoM. The existing assets are in poor condition and require upgrade works, and the rehabilitation areas are becoming a safety hazard. Further, the 4 rehabilitation zones are required to prevent further environmental impacts associated with unauthorised 4WD vehicles and motorbike movements. The 'do nothing' approach will result in the continuing deterioration of the environmental conditions and safety to visitors to Karuah National Park.

7.3 Justification for preferred option

The proposed activity is the preferred option for the following reasons:

- The existing assets are in a poor condition, posing a risk to NPWS staff, the community using each site, and the environment.
- The proposed activity takes place in areas that are already disturbed, such that undertaking the works in the proposed locations will minimise impacts on the receiving environment.
- The proposed activity meets the specific management directions of the Karuah PoM.

8. Description of the existing environment

8.1 Overview of the project area

Karuah National Park is situated within the mid-north coast region of New South Wales approximately 6 km north of Karuah. Primary access to the park is off The Bucketts Way via Hobarts Forest Road, while alternative access is via Witt Road, Middle Fire Road or Hut Fire Road, all of which are accessed via The Bucketts Way.

Karuah experiences a warm and temperate climate. The closest relevant meteorological station was the Nelson Bay station approximately 24 km east of the park. The details of this station are set out in Table 12. Although this station is now closed, it provides the best source of past meteorological data for the park. The mean maximum and minimum temperatures for the years 1914 to 2023, and the mean rainfall amounts for the years 1881 to 2023 are detailed in Table 13.

Table 12 Details of Nelson Bay (Nelson Head) meteorological station

Feature	Detail
Site name	Nelson Bay (Nelson Head)
Site number	061054
Latitude and longitude	32.71°S, 152.16°E
Elevation	25 m above sea level
Year commenced operation	1881
Current status	Closed 4 December 2023
Latest available data	1 December 2023

Source: Bureau of Meteorology (n.d.).

Table 13 Mean temperatures and rainfall recorded at Nelson Bay station, 1881–2023

Period	Mean max temperature (°C)	Mean min temperature (°C)	Mean rainfall (mm)
January	27.3	19.0	99.5
February	27.0	19.1	112.5
March	25.9	18.0	123.6
April	23.6	15.4	129.2
May	20.8	12.5	149.7
June	18.2	10.3	157.2
July	17.6	9.2	136.7
August	18.9	10.0	101.5
September	21.4	12.2	89.0
October	23.2	14.3	78.4
November	24.7	16.1	79.7
December	26.0	17.8	91.7
Annual	22.9	14.5	1,347.2

Source: Bureau of Meteorology (n.d.).

8.2 Natural values

8.2.1 Geology, geomorphology and topography

Geology within the park comprises a diverse mix of Palaeozoic rocks of the New England Orogen (NSW Resources n.d.). Dominant lithology occurring throughout the northern portion of the park is shown in Figure 3, and consists of the following:

- The northwest portion of the park sits on the Mount Johnstone formation (upper) – sandstone, and comprises graded, massive, lithic arenite with interbeds of fine, laminated sandstone, shale, carbonaceous shale, poor coal and minor chert of the Carboniferous Age.
- The Nerong volcanics of the Middle Mississippian Age occur in the north-eastern portion of the park, and comprise ignimbrite interbedded with tuffaceous sandstone and conglomerate, with rhyodacitic ignimbrite dominating this geology area.
- The Wootton beds occur in the east-central portion and comprise a combination of brown-grey, thin-bedded, barren mudstone and siltstone with interbeds of lithic sandstone (mostly turbiditic) and conglomerate in lower parts. Upper parts contain fossiliferous grey to brown mudstone, thinner bedded lithic sandstone and oolitic limestone of the Carboniferous Age.
- South of the Wootton beds is the Conger formation which consists of grey to brown, fine- to coarse-grained lithic arenite beds up to 6 metres thick. Interbedded lenticular boulder conglomerate, mudstone and thin andesitic to rhyodacitic ignimbrite layers are present from the Middle Mississippian Age.
- The central-western portion contains the Seaham formation which contains tillite, varved siltstone, tuff, red and green zeolitic mudstone with dropstones interbedded in thick-bedded lithic sandstone and conglomerate of the Carboniferous (Pennsylvanian) Age.
- A section of ungrouped Carboniferous units occurs in the southwest section of the main portion of the park, and comprises sandstone, schist, phyllite, slate, chert, jasper, basalt, tuff and amphibolite of the Carboniferous Age.

The surface geology of the study area consists of high-level alluvial terrace deposits containing sand and gravel of the Holocene Age. Areas adjacent to the Karuah River comprise estuarine deposits of organic-rich mud, peat, clay, silt, very fine- to fine-grained sand and fine- to medium-grained sand of the Holocene Age. Surface geology of the study area is shown in Figure 4.

The topography of Karuah National Park is generally flat to gently undulating terrain on relict sediments. The highest peak in this section of the park is Little Mountain, which is approximately 86 metres above sea level.

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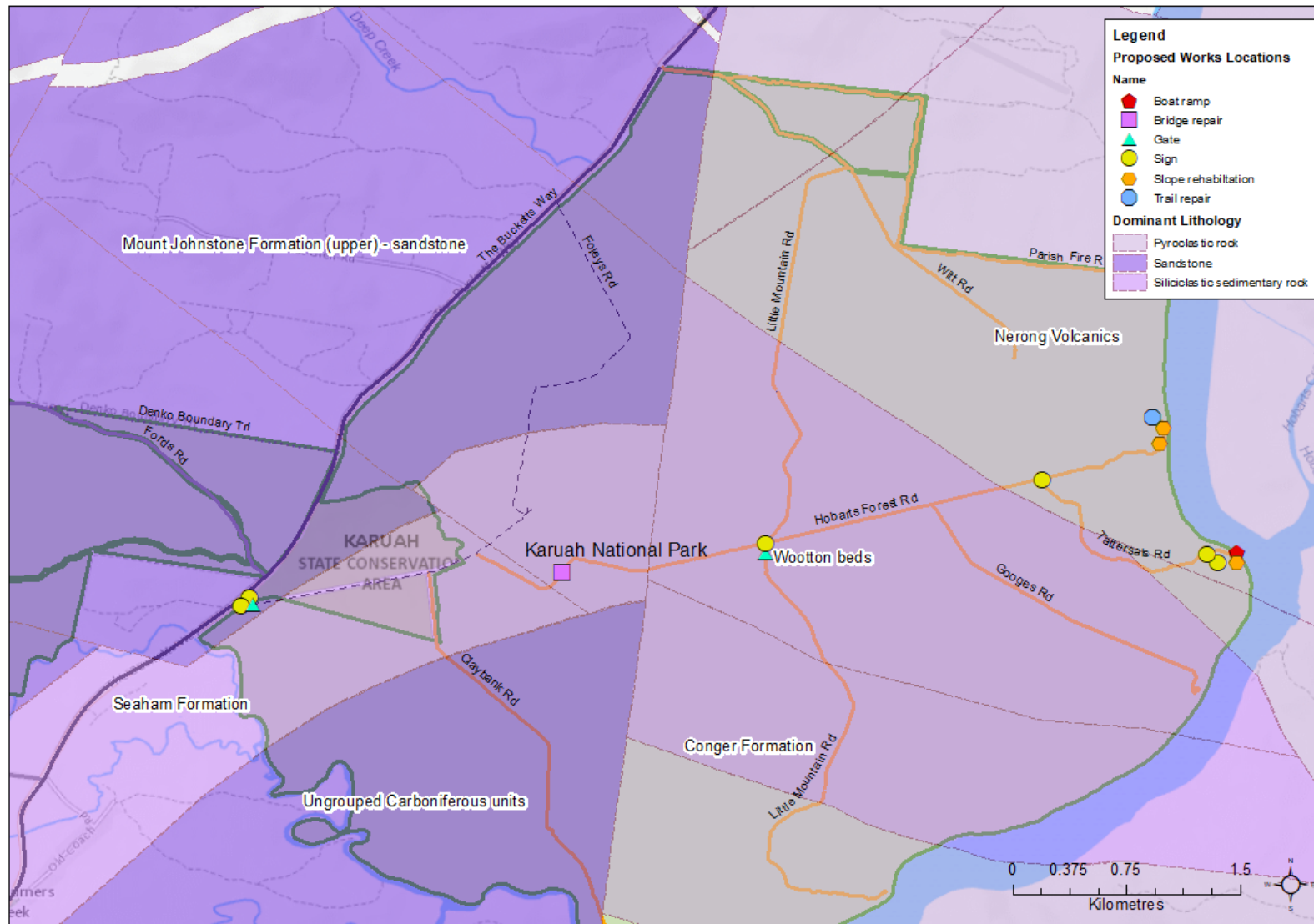


Figure 3 Dominant lithology in and around the proposed activity

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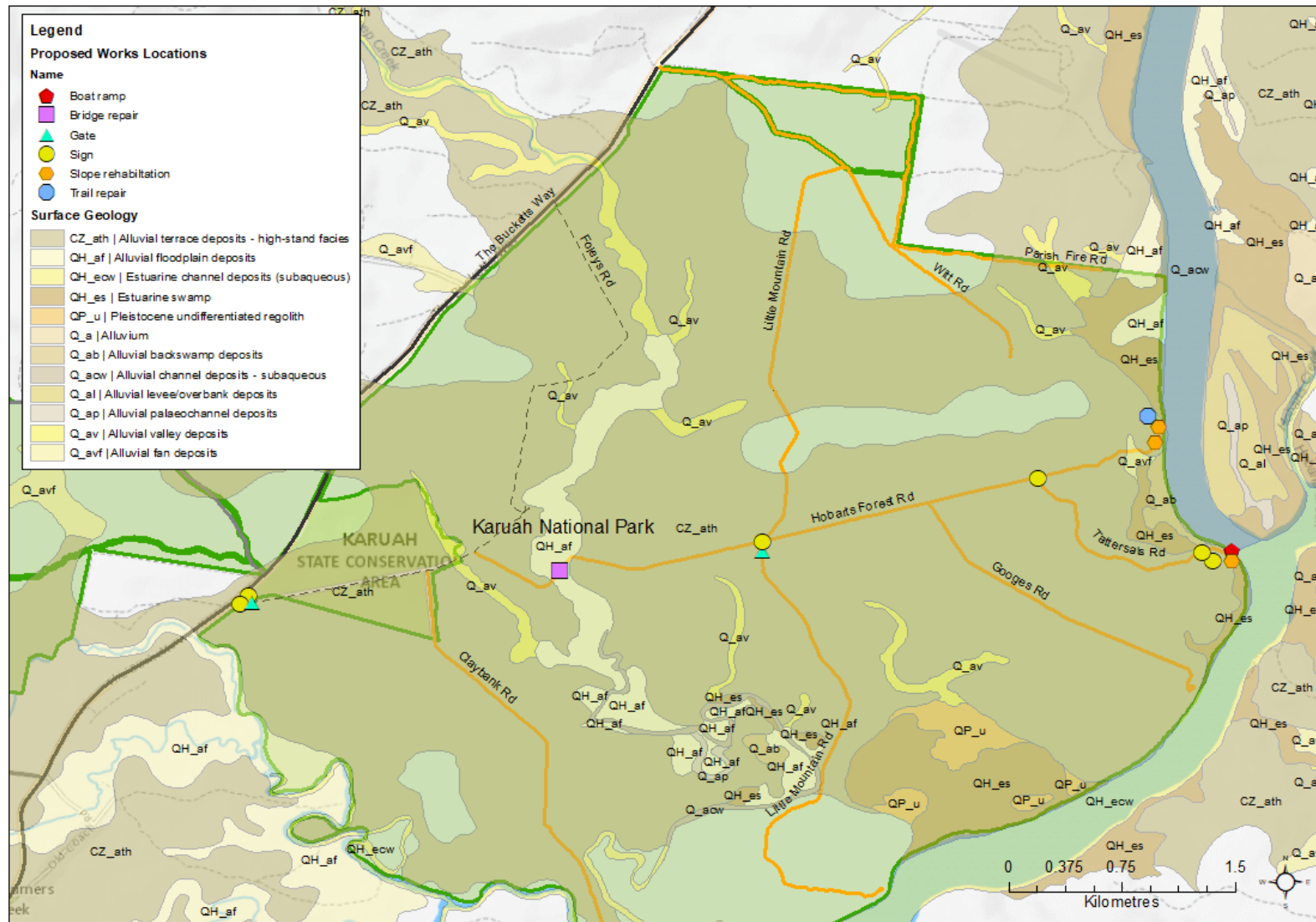


Figure 4 Surface geology in and around the proposed activity

8.2.2 Soil types and properties (including contamination)

The dominant soil landscape occurring throughout the area of works comprises deep (greater than 3 metres) poorly drained soloths. Several portions in the park's central and eastern locations, particularly around the boat ramp, contain deep (greater than 1 metre) very poorly drained solonchaks.

The dominant soil type, as classified under the Australian soil classification system (Isbell 2021), consists of natric kurosols, while sections adjacent to the Karuah River comprise hydrosols (Figure 5).

There is a high probability of occurrence of Class 1 acid sulfate soils occurring within estuarine and bottom sediments adjacent to the boat ramp; however, it is only considered likely within the Karuah River. All works will be undertaken above the high-tide water mark and are unlikely to impact on acid sulfate soils.

A search of the NSW EPA contaminated land records (NSW EPA n.d.), undertaken on 8 October 2024, did not identify any contaminated land sites at or near the proposed works locations.

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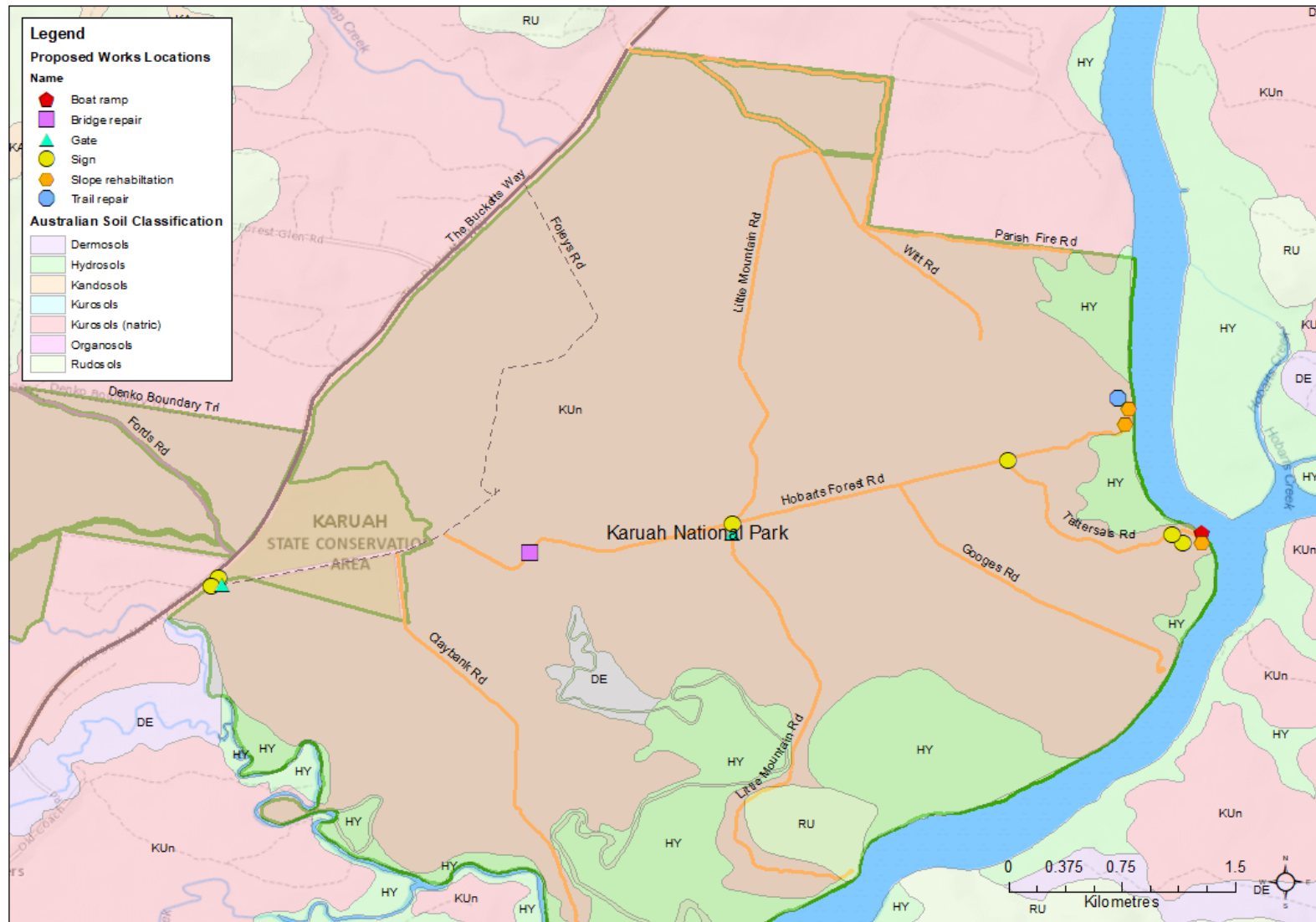


Figure 5 Soil profiles occurring throughout Karuah National Park

8.2.3 Watercourses, waterbodies and their catchments

The eastern edge of the park is next to the Karuah River which flows into Port Stephens. At the location of the Tattersalls campground boat ramp, the river is classified as an eighth order stream under the Strahler order system and becomes a seventh order stream north of the Branch River. Karuah River is mapped as key fish habitat (KFH) under the FM Act; however, as a barrier river estuary, it is unlikely to contain any threatened freshwater species. The bridge on Hobarts Forest Road spans Deep Creek, which is a fifth order stream and is also mapped as KFH. Watercourses near the proposed works are shown in Figure 6.

The study area is situated within the Karuah River estuary which flows in a distinct north–south orientation and is roughly parallel to the east by Myall River. The convergence of the Branch River with the Karuah River supports a vast area of mangrove forest in the mid-section of the river. Several patches of mapped ‘coastal wetlands’ as determined under the SEPP Resilience and Hazards occur along the eastern boundary of the park by the Karuah River. The activity will occur on land identified as ‘proximity area for coastal wetlands’ on the Coastal Wetlands and Littoral Rainforests Area Map (SEPP Resilience and Hazards, Part 2.2 Division 1) as shown in Figure 7. Potential impacts to the coastal zone are assessed in section 3.2.2 of this REF, with safeguards provided in section 9. The activity is consistent with the requirements of Chapter 2 of the SEPP Resilience and Hazards, and it is considered unlikely any adverse impacts to coastal wetlands would occur as a result of the activity.

Tattersalls boat ramp, the bridge and one of the rehabilitation sites occur on flood-labile land as determined by the *Great Lakes Local Environmental Plan 2014* (see Figure 8).

8.2.4 Coasts and estuaries

Karuah River is one of the major tributaries to the Port Stephens estuary, which is located on the Hunter Coast of New South Wales. The Port Stephens estuary is classified as a drowned valley and is permanently linked to the ocean by a large deep entrance. The condition of algae and water clarity in the estuary and the estuary’s overall health are all considered excellent.

The estuary is part of the Port Stephens – Great Lakes Marine Park’s habitat protection zone; however, the activity is unlikely to result in adverse effects on the plants or animals within the marine park or aquatic reserve and their habitat. The area of the Port Stephens – Great Lakes Marine Park associated with the proposed works sites is shown in Figure 9.

Sections of the proposed activity are situated within the coastal use area as determined under the SEPP Resilience and Hazards (Part 2.2 Division 4) and within the coastal environment area under Part 2.2 Division 3. Potential impacts to the coastal zone are assessed in section 3.2.2 of this REF, with safeguards provided in section 9. The activity is consistent with the requirements of Chapter 2 of the SEPP Resilience and Hazards, and it is considered unlikely any adverse impacts to the coastal zone would occur as a result of the activity.

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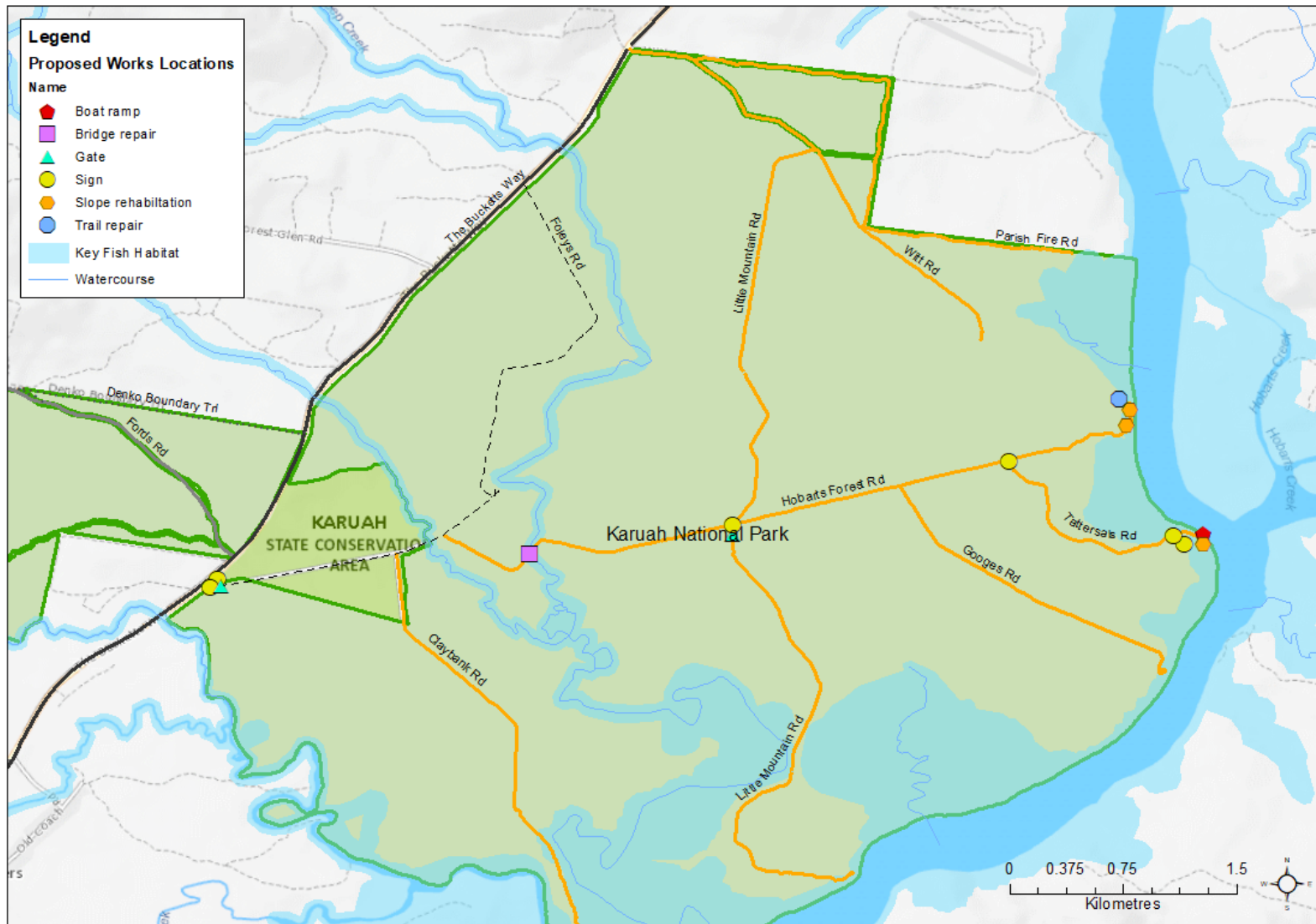


Figure 6 Areas of key fish habitat and watercourses running through, along or near the activity

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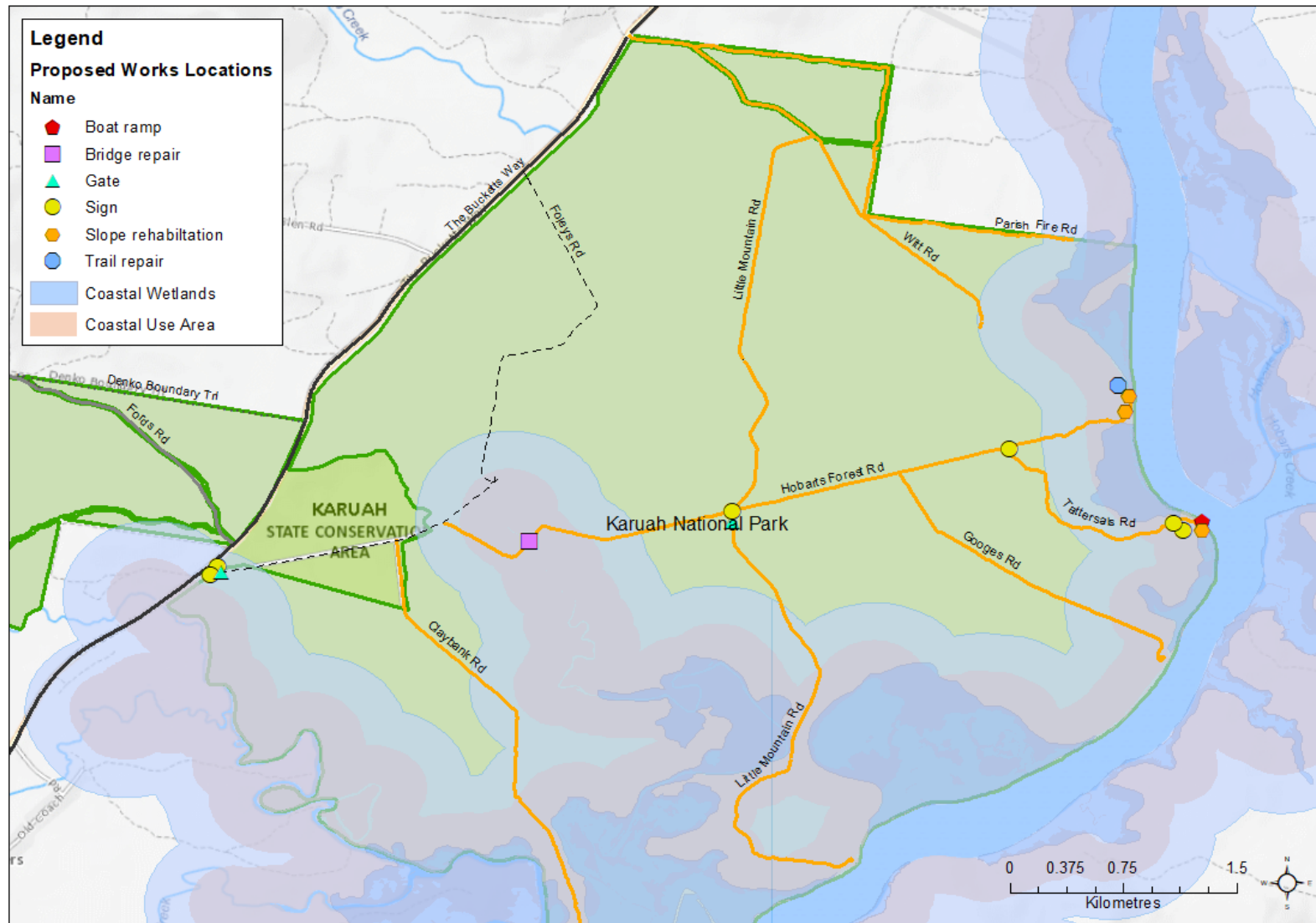


Figure 7 Coastal management zones in or near the activity

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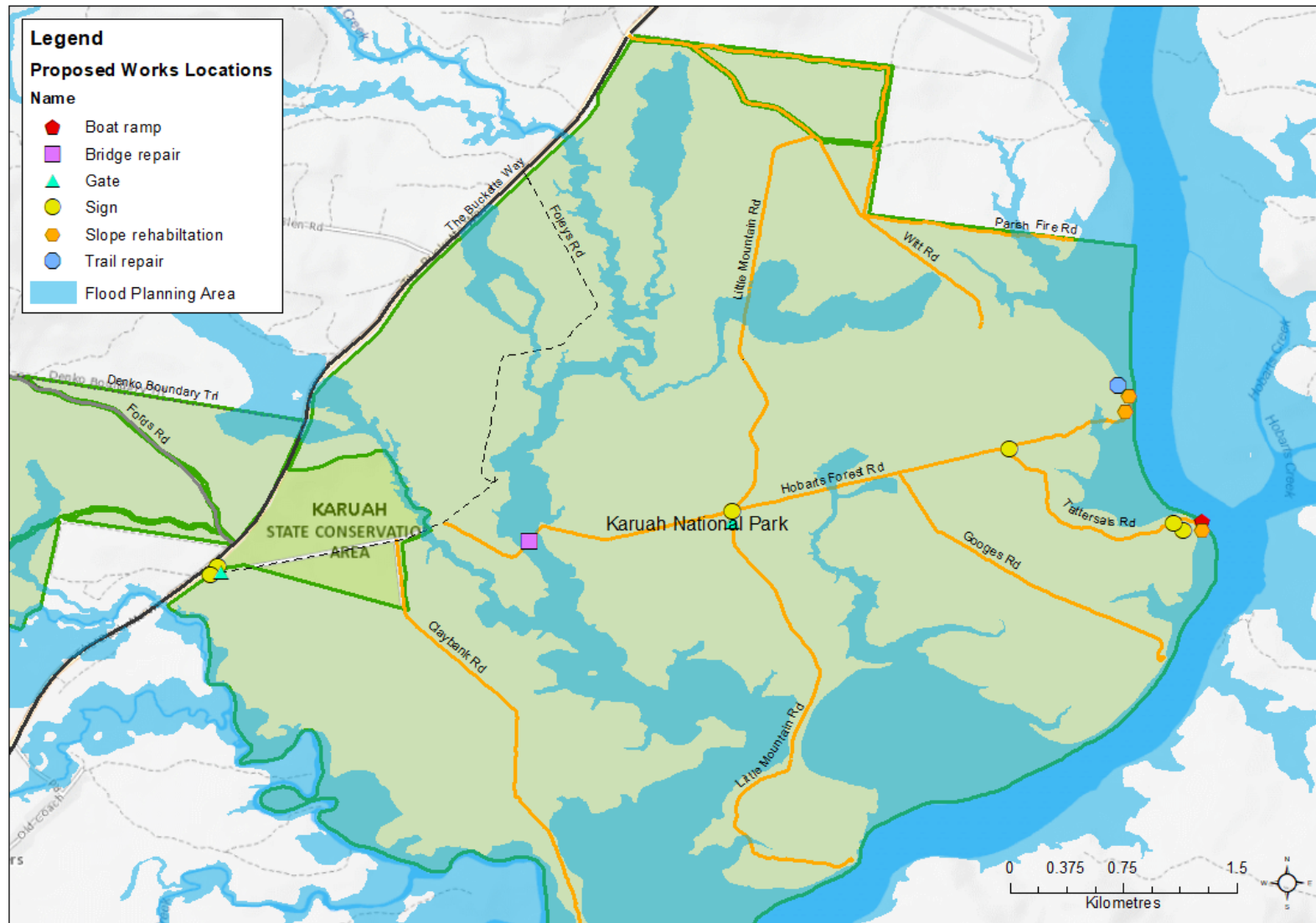


Figure 8 Flood-labile land under the *Great Lakes Local Environmental Plan 2014*

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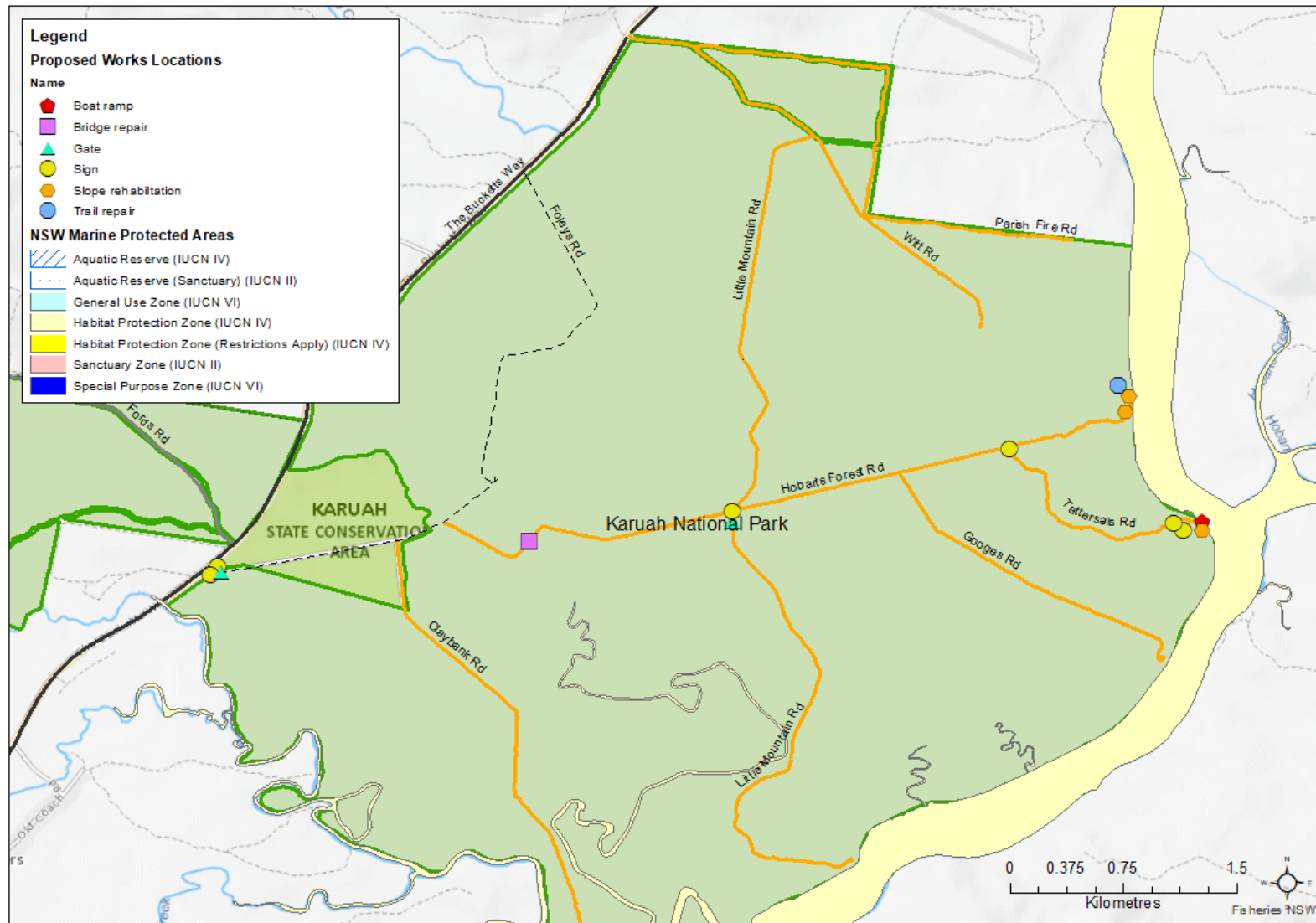


Figure 9 Areas of Port Stephens – Great Lakes Marine Park near the activity

8.2.5 Biodiversity

Overview of terrestrial and aquatic biodiversity

Terrestrial biodiversity

Karuah National Park supports a range of vegetation communities which are generally in good condition; however, few mature or hollow-bearing trees are present due to historical timber harvesting activities. The NSW *State vegetation type map* (DCCEEW 2020) has identified 23 plant community types (PCTs) occurring within the park. These PCTs and their presence near the proposed works are shown in Table 14 and Figure 10.

Table 14 Mapped plant community types (PCTs) within Karuah National Park

PCT #	Plant community type name	Proposed work site
3074	Hunter Coast Lowland Grey Myrtle Wet Forest	Bridge over Deep Creek
3089	Lower North Waterhousea Riparian Rainforest	–
3171	Northern Lowland Viney Wet Forest	–
3244	Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	–
3250	Northern Foothills Blackbutt Grassy Forest	–
3432	Hunter Coast Foothills Apple-Ironbark Grassy Forest	–
3433	Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Tattersalls campground – 2 signs
3435	Hunter Coast Lowland Flats Damp Forest	Hobarts Forest Rd gate – 2 signs
3436	Hunter Coast Sandy Creekflat Low Paperbark Scrub	–
3544	Coastal Sands Apple-Blackbutt Forest	–
3549	Lower North Sandplain Heathy Forest	–
3581	Hunter Coast Foothills Apple Forest	–
3582	Hunter Coast Lowland Apple-Bloodwood Forest	Little Mountain Rd gate – 2 signs
3583	Hunter Coast Lowland Scribbly Gum Forest	–
3906	Northern Lowland Clay Wet Heath	–
3907	Lower North Sands Swamp Scrub	–
3998	Lower North Creekflat Mahogany Swamp Forest	–
4026	Estuarine Sea Rush Swamp Oak Forest	–
4028	Estuarine Swamp Oak Twig-rush Forest	Tattersalls campground – boat ramp and all rehabilitation areas
4042	Lower North Riverflat Eucalypt-Paperbark Forest	Bridge over Deep Creek
4044	Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest	–
4047	Northern Swamp Mahogany-Bottlebrush Swamp Forest	–
4091	Grey Mangrove-River Mangrove Forest	Tattersalls campground – boat ramp
4097	Samphire Saltmarsh	–

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PCT #	Plant community type name	Proposed work site
0	Not classified	—

The vegetation communities within the park provide a diverse range of habitat types which support a variety of fauna species, many of which are threatened. A large part of the park is identified as key habitat for forest-dependent fauna and is part of a regional corridor that forms an important link in achieving landscape connectivity. The Ecological Assessment (Appendix A) has identified a number of constraints and opportunities which habitat provides for common and threatened fauna species, with a summary provided in Table 15.

Table 15 Habitat constraints and opportunities for fauna species in Karuah National Park

Habitat component	Site values	Threatened species values
Aquatic (estuarine)	Small patchy mangrove stands are present near the boat ramp.	Some nursery/foraging habitat for species associated with this habitat on this activity site, as well as offering generic fish nursery habitat.
Aquatic (creek)	Deep Creek is a permanent fifth order stream which is tannin-stained, slow flowing at the bridge site and subject to tidal influence.	Unlikely to provide suitable breeding habitat for frog species as it consists of tidal and brackish water.
Groundcover	Groundcover is dense in the forested areas, comprising a mix of leaf litter, native grasses and shrubs. Groundcover is sparse at the boat ramp as a result of significant recreational use.	Very good potential habitat for small terrestrial species in forested sections.
Logs and debris	Fallen timber and debris are common throughout the park, with some hollow logs identified.	Few hollow logs are likely to be large enough for the spotted-tailed quoll (<i>Dasyurus maculatus</i>).
Hollows	Some hollow-bearing trees occur throughout the park, but are not common due to historical timber harvesting activities.	Hollows are generally small with potential to support mainly microchiropteran bats.
Flowering trees	Flowering trees are common within the park with eucalypts throughout, likely to provide a year-round nectar resource. Flowering melaleucas, acacias and callistemons are also abundant.	Flowering trees within the park would provide a potential foraging resource for threatened nectivorous species and gliders.
Sap sources	Most eucalypt species in the park could provide potential sap sources for gliders.	Vegetation at the activity sites contain a potential sap resource for threatened gliders.
Primary preferred koala browse species	The park provides an abundance of local koala food trees including tallowwood (<i>Eucalyptus microcorys</i>) and forest red gum (<i>Eucalyptus tereticornis</i>).	The activity sites provide a fair foraging resource for koalas.

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Habitat component	Site values	Threatened species values
Allocasuarinas	Forest oak (<i>Allocasuarina torulosa</i>) and black she-oak (<i>Allocasuarina littoralis</i>) are locally abundant, indicating the wider area offers important foraging habitat for the south-eastern glossy black-cockatoo (<i>Calyptorhynchus lathami lathami</i>).	The activity sites contain a potential foraging resource for the south-eastern glossy black-cockatoo.
Fruiting species	Fruiting species in the park are generally uncommon and limited to a few shrub species.	Minor foraging resource for threatened frugivorous (fruit-eating) birds.
Caves, cliffs, overhangs, culverts, bridges	The bridge over Deep Creek does not provide potential roosting habitat for microbats due to the absence of gaps and crevices.	Limited roosting potential for threatened microbats.
Corridors and habitat links	The park is considerably vegetated and is directly connected to other vast areas of forested land, including Wallaroo State Forest and Wallaroo National Park.	Site vegetation provides connectivity for a variety of fauna species including birds, macropods and arboreal (tree-dwelling) species.

Aquatic biodiversity

Deep Creek is brackish at the bridge site and subject to tidal influence. No aquatic plants, seagrasses or mangroves occur in the creek at the bridge site, although dense patches of spiny-headed mat-rush (*Lomandra longifolia*) occur along the edges of the creek.

Aquatic vegetation within the Karuah River comprises mainly mangroves and scattered patches of saltmarsh along the river edge (Figure 11), both of which are protected under the FM Act. Grey mangroves (*Avicennia marina*) occur near the Tattersalls campground boat ramp but will not be impacted by the activity.

The presence of freshwater habitat containing in-stream gravel beds in Deep Creek and the presence of coastal wetlands along Karuah River makes both waterways Type 1 habitat (highly sensitive KFH). Both Deep Creek and Karuah River meet the definition of 'marine or estuarine waterway or permanently flowing or flooded freshwater waterway', making them Class 1 Major KFH for fish passage.

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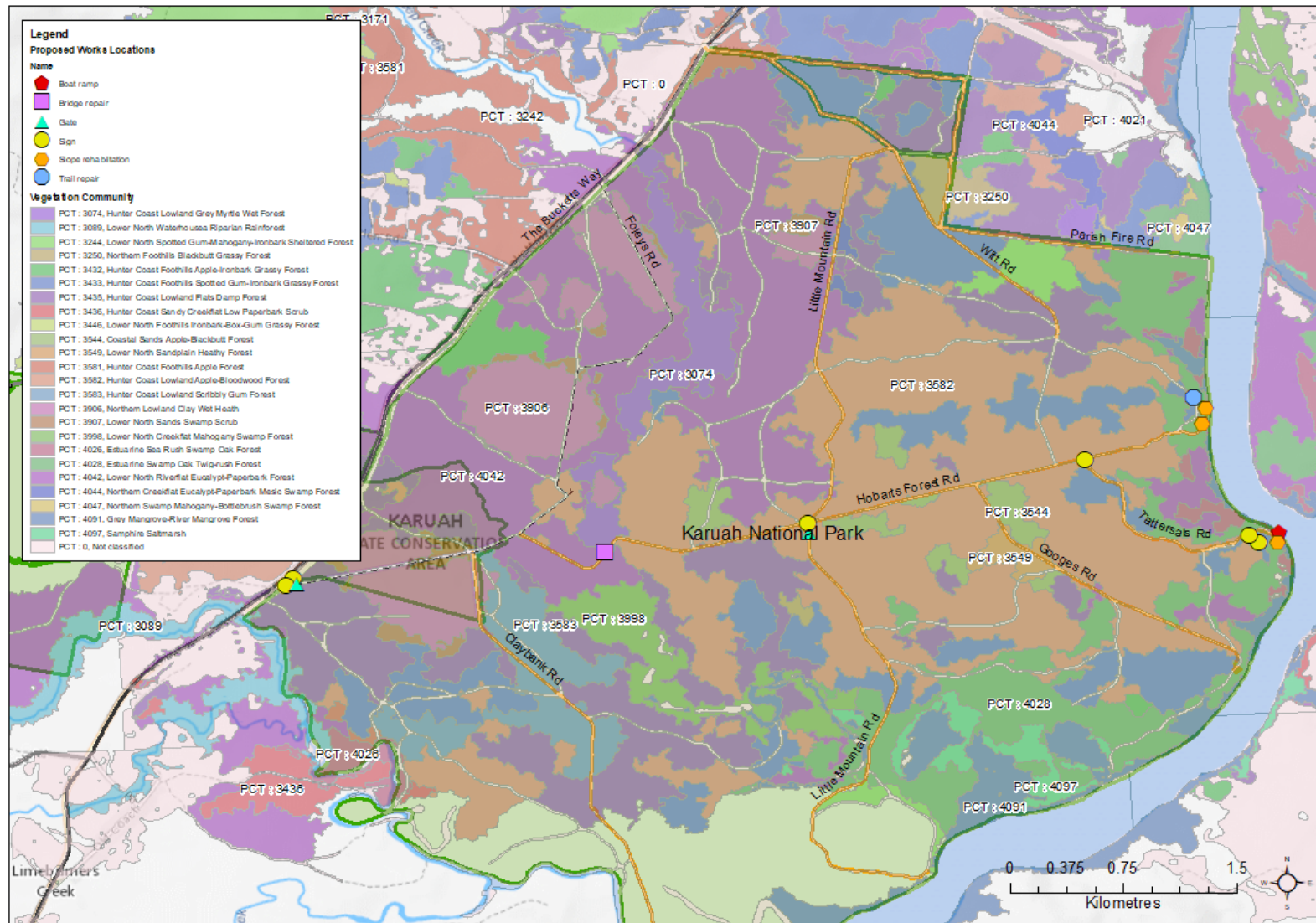


Figure 10 Plant community types (PCTs) at or near the activity

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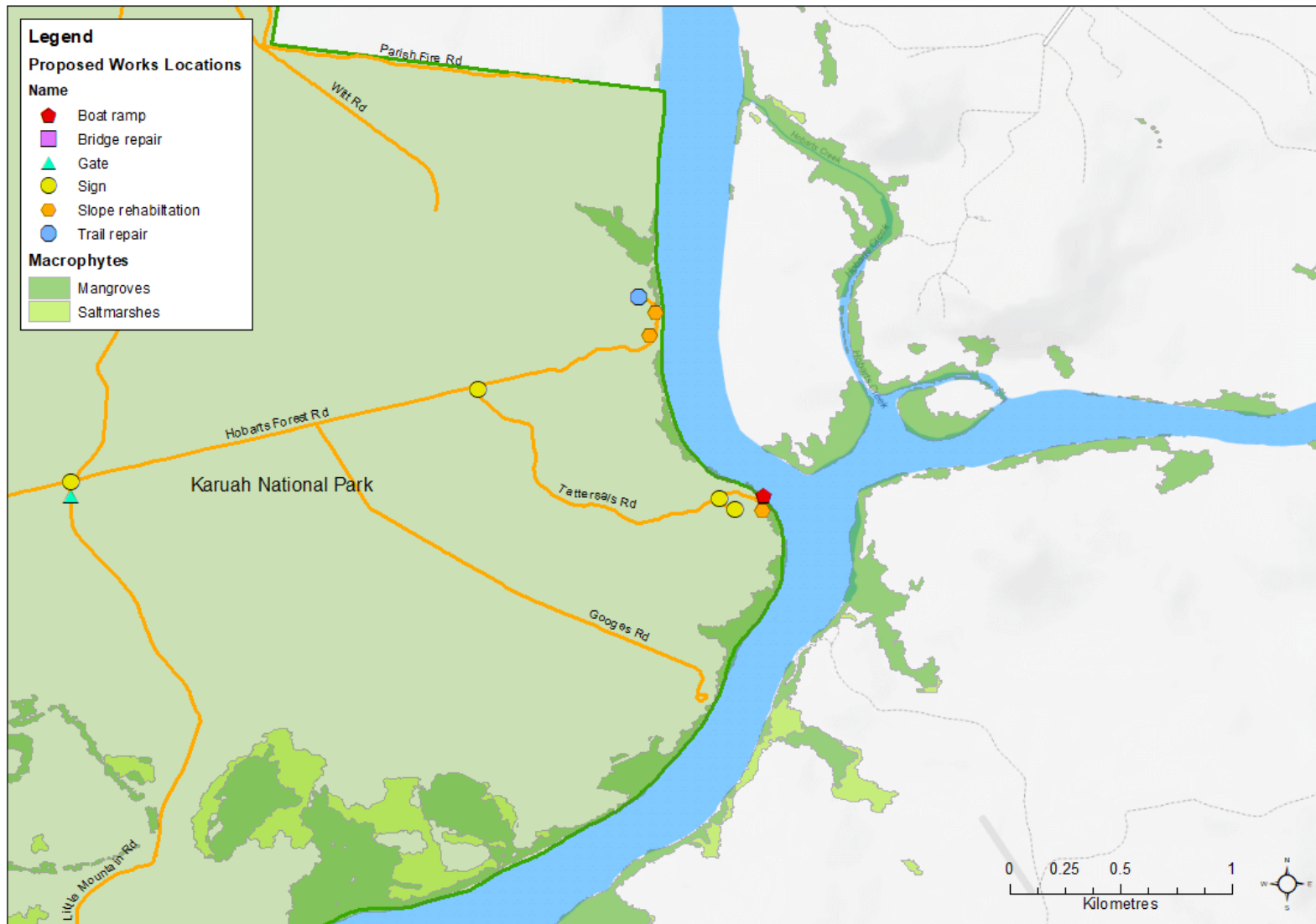


Figure 11 Mapped mangrove and saltmarsh communities near the boat ramp and rehabilitation areas

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Areas of outstanding biodiversity value or critical habitat

The activity will not directly or indirectly affect an area of outstanding biodiversity value or critical habitat as none are mapped as occurring within or near the proposed works area.

Environmental Assets of Intergenerational Significance (AIS)

The activity will not directly or indirectly affect any environmental AIS as none are mapped as occurring within or very near to the proposed works area.

Threatened ecological communities

Several of the vegetation communities near the proposed activity have been determined to be TECs under the BC Act, but none qualify as threatened under the EPBC Act. There are also endangered communities under the FM Act.

Biodiversity Conservation Act 2016

The Lower North Riverflat Eucalypt-Paperbark Forest (PCT 4042) occurring along Deep Creek at the bridge site qualifies as the River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions listed as an endangered ecological community (EEC) in Schedule 2 of the BC Act. The community is characterised by a tree layer with mixed eucalypts, including flooded gum (*Eucalyptus grandis*), and the presence of other characteristic species such as broad-leaved paperbark (*Melaleuca quinquenervia*), grey myrtle (*Backhousia myrtifolia*), acacias, common silkpod (*Parsonsia straminea*) and spiny-headed mat-rush (*Lomandra longifolia*). Weed cover in this community is generally low and limited to groundcover. This community occurs at the bridge site and downstream of the bridge on Deep Creek.

Given its location on a mapped floodplain, the Estuarine Swamp Oak Twig-rush Forest (PCT 4028) occurring at the boat ramp qualifies as the Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions listed as an EEC in Schedule 2. This community is associated with sandy loams, and includes swamp oak (*Casuarina glauca*) in the tree layer and some saltmarsh type groundcover species such as sand couch (*Sporobolus virginicus*).

Patches of Samphire Saltmarsh (PCT 4097) are mapped throughout the estuarine tidal flats in the eastern portion of the park, and classify as Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions listed as an EEC in Schedule 2. No saltmarsh occurs within or adjacent to the impact footprint of the boat ramp; however, a small patch is mapped approximately 80 metres south, which matches latest aerial imagery. This occurs well outside of the impact footprint and will not be directly impacted by the works. Erosion and sedimentation control measures will be implemented to ensure no indirect impacts such as runoff affect this community.

Fisheries Management Act 1994

To date, one) endangered marine vegetation population and 4 endangered aquatic ecological communities have been listed under the FM Act, respectively:

- *Posidonia australis* seagrass in the Port Hacking, Botany Bay, Sydney Harbour, Pittwater, Brisbane Waters and Lake Macquarie regions
- the Lowland Darling River, Lowland Lachlan River, Lowland Murray River and Snowy River aquatic ecological communities.

These do not occur within the study area.

Threatened species and populations

Threatened flora

Searches of the *NSW BioNet* (NSW DCCEEW n.d.-a) and the Commonwealth *Species of national environmental significance* (Cth DCCEEW n.d.-b) databases for threatened species, undertaken on 8 October 2024, identified 9 threatened flora species present within a 10 × 10 km search area around Karuah National Park. A number of threatened flora individuals have been mapped as present in or near some of the project locations, as shown in Figure 12. Threatened flora species likely to be present near the proposed works are listed in Table 16. This includes the netted bottle brush (*Callistemon linearifolius*), which was identified during the site inspection as occurring near the proposed works site at Little Mountain Road, as shown in Figure 13.

Table 16 Threatened flora species likely present near the proposed activity

Common name	Scientific name	BC Act status	EPBC Act status
Black-eyed Susan	<i>Tetralochea juncea</i>	Vulnerable	Vulnerable
Charmhaven apple	<i>Angophora inopina</i>	Vulnerable	Vulnerable
Netted bottle brush	<i>Callistemon linearifolius</i>	Vulnerable	–

BC Act = *Biodiversity Conservation Act 2016* (NSW); EPBC Act = *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

A thin band of grey mangroves occurs along the bank near the boat ramp. Mangroves and saltmarsh are protected under the FM Act; however, none will be impacted by the proposed scope of works.

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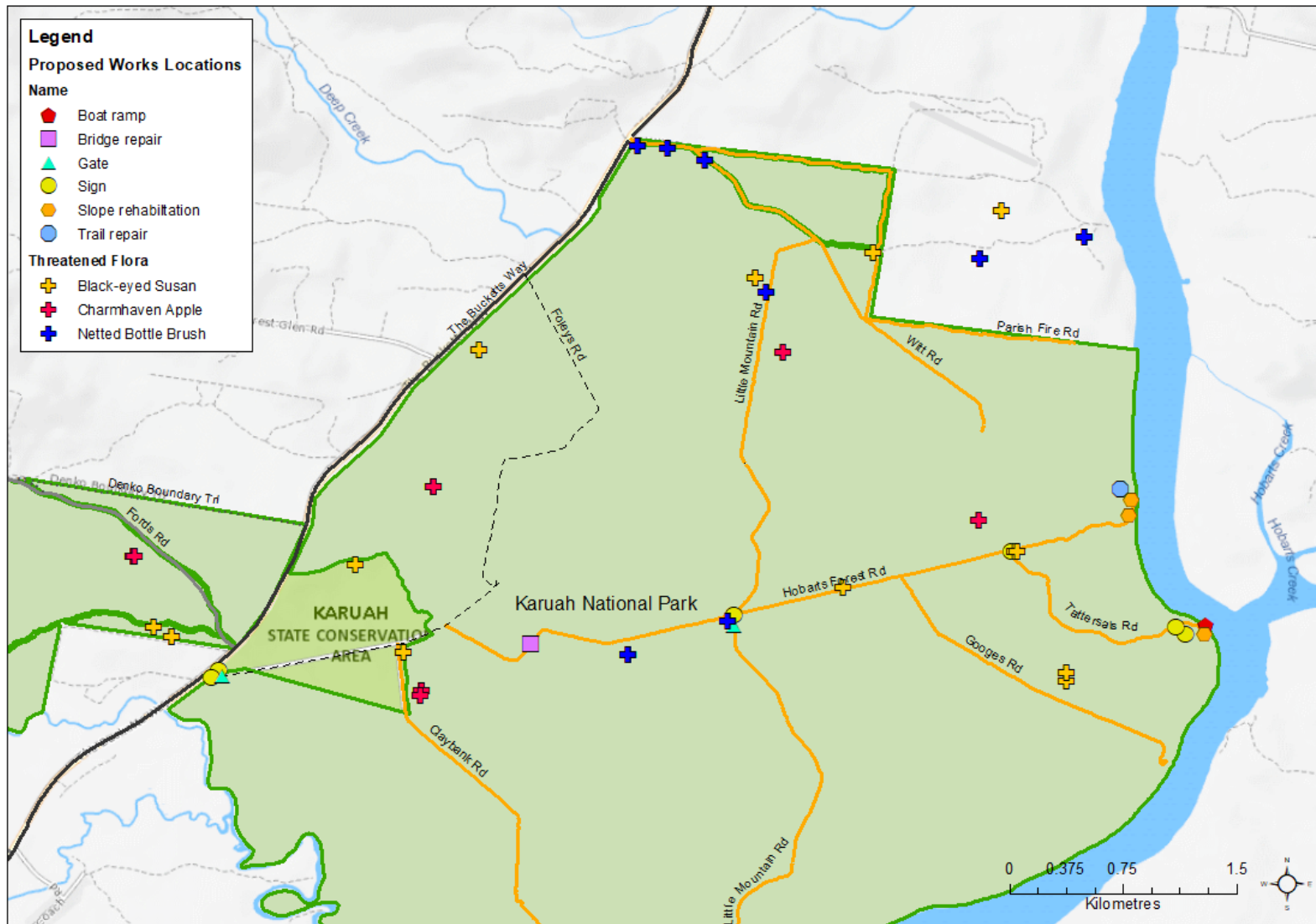


Figure 12 Threatened flora species recorded as present near the activity

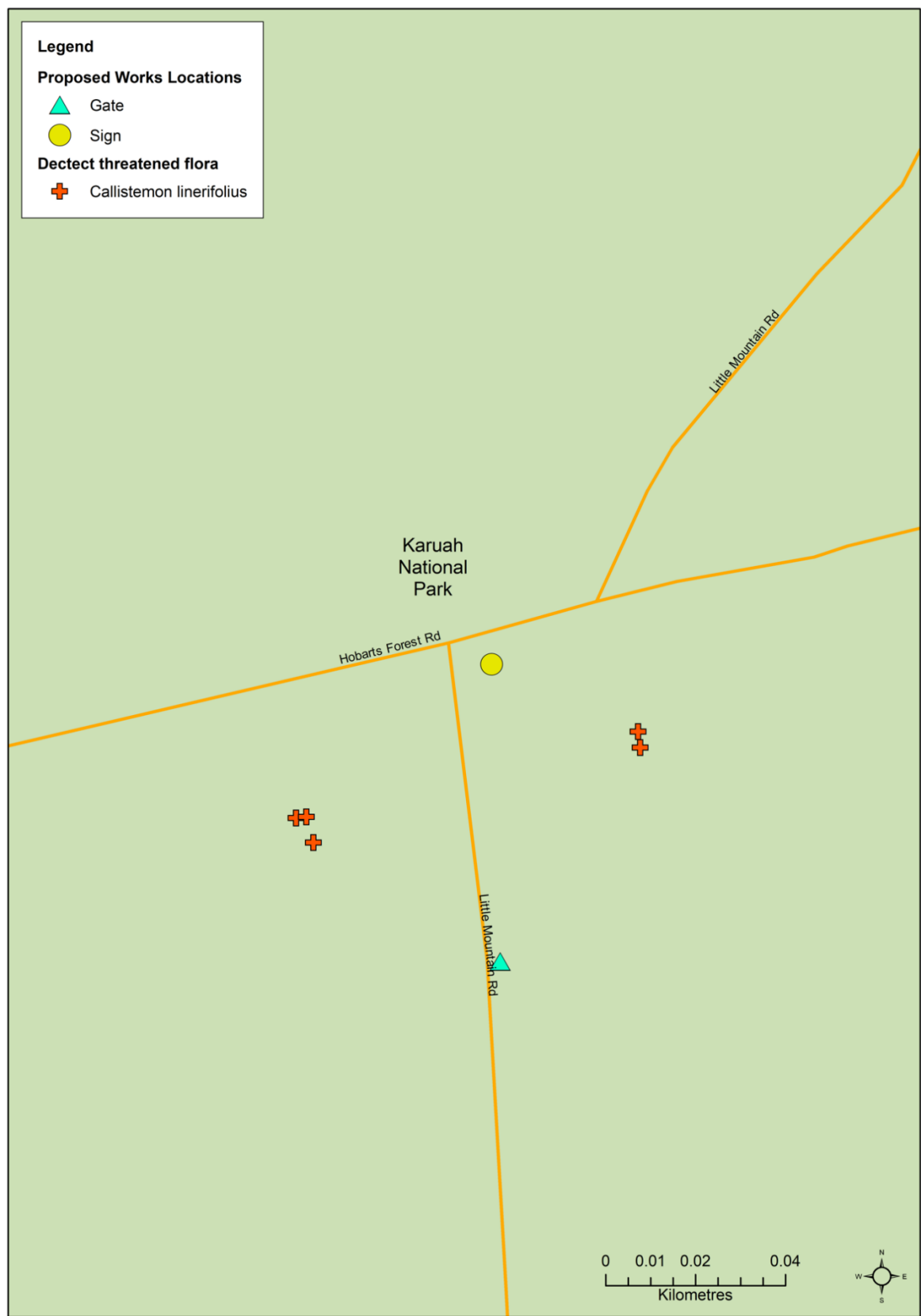


Figure 13 Locations of netted bottle brush (*Callistemon linearifolius*) detected near Little Mountain Road

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Threatened fauna

The NSW BioNet search identified 30 threatened fauna species occurring within a 10 × 10 km search area around Karuah National Park. The 16 species occurring near the project locations are shown in Figure 14. Given the habitat types within the park and recorded presence of species locally, a number of threatened fauna species are considered likely to occur near the project locations; however, none were observed during the site inspection. The bridge on Hobarts Forest Road is not considered a potential roost for microbats. The species listed in Table 17 are likely to use the park for foraging as a part of their larger home range.

Table 17 Threatened fauna species likely to forage in Karuah National Park

Common name	Scientific name
South-eastern glossy black-cockatoo	<i>Calyptorhynchus lathami lathami</i>
Spotted harrier	<i>Circus assimilis</i>
White-bellied sea-eagle	<i>Haliaeetus leucogaster</i>
Powerful owl	<i>Ninox strenua</i>
Masked owl	<i>Tyto novaehollandiae</i>
Grey-crowned babbler (eastern subspecies)	<i>Pomatostomus temporalis temporalis</i>
Varied sitella	<i>Daphoenositta chrysoptera</i>
Spotted-tailed quoll	<i>Dasyurus maculatus</i>
Koala	<i>Phascolarctos cinereus</i>
Squirrel glider	<i>Petaurus norfolcensis</i>
Grey-headed flying-fox	<i>Pteropus poliocephalus</i>
Greater broad-nosed bat	<i>Scoteanax rueppellii</i>
Little bent-winged bat	<i>Miniopterus australis</i>
Large bent-winged bat	<i>Miniopterus orianae oceanensis</i>
Eastern coastal free-tailed bat	<i>Micronomus norfolkensis</i>
Eastern false pipistrelle	<i>Falsistrellus tasmaniensis</i>
Southern myotis	<i>Myotis macropus</i>

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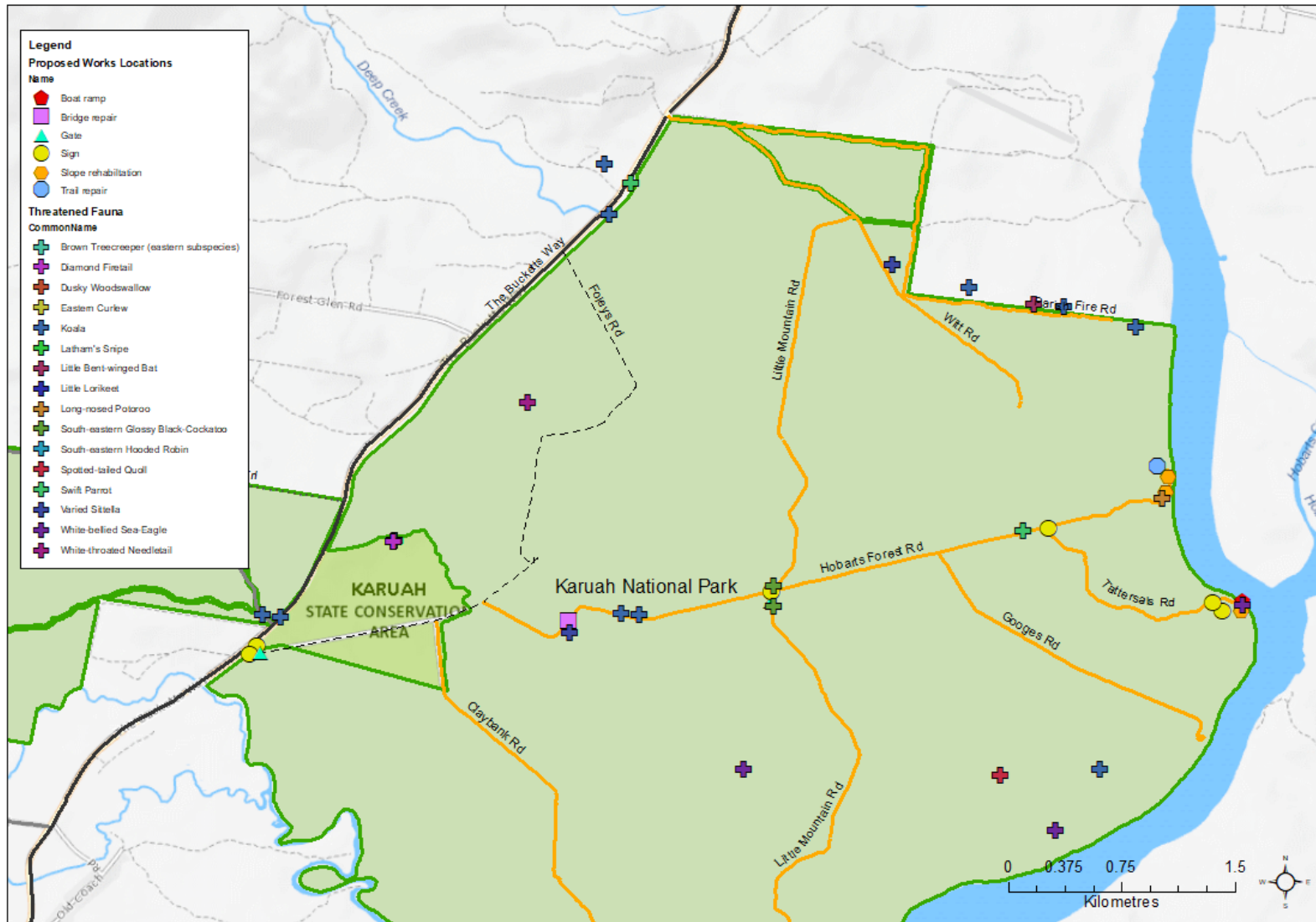


Figure 14 Locations of threatened fauna species recorded as occurring near the activity

8.3 Cultural values

8.3.1 Aboriginal cultural heritage

Aboriginal communities have a strong association and connection to the land and water within a landscape, are central to Aboriginal spirituality and contribute to Aboriginal identity. Aboriginal communities associate natural resources with the use and enjoyment of foods and medicines, caring for the land, passing on cultural knowledge, kinship systems and strengthening social bonds.

Prior to European settlement, the Worimi people occupied an area from Port Stephens to Forster and Tuncurry and as far west as Gloucester. The Worimi nation was made up of several local groups and spoke dialects of the Kattang language. A number of Aboriginal sites are recorded within Karuah National Park with many occurring along Karuah River. The recorded sites include modified trees, artefacts, earth mounds, shell middens and a burial on the boundary of the park.

An Aboriginal cultural heritage (due diligence) assessment (see Appendix B) was undertaken to identify Aboriginal cultural heritage within the proximity of the proposed works, and to determine if the proposed works are likely to harm Aboriginal cultural heritage. As part of the due diligence process, a database search of the *Aboriginal heritage information management system* (NSW EHG n.d.-a) was undertaken on 3 October 2024, identifying 37 sites within or near the project area. Consultation and an archaeological site inspection with members of the Karuah LALC occurred on 22 June 2023 to assess potential Aboriginal cultural heritage.

Based on the database search and the archaeological site inspection, the due diligence report provides the following conclusion:

No Aboriginal Objects were identified within the study area and the assessment has concluded that the proposed park upgrade and remediation works will not likely result in harm to Aboriginal objects within Karuah National Park. As such an [Aboriginal Heritage Impact Permit] is not required prior to commencement of ground disturbing works. However, it is recommended that a[n] Aboriginal Objects Find Procedure is put in place as a precautionary measure.

8.3.2 Historic heritage values

Karuah National Park was formerly Karuah State Forest, which was dedicated in 1914 and used for forestry purposes. Large trees of no commercial value were removed from the forest to promote regrowth from the 1920s, and round mining timber remained the main product harvested from the forest until its dedication as a conservation reserve in 1999.

Several huts were built along the banks of the river which were removed in the 1980s; however, sections of concrete and old bricks remain in some locations. The Karuah PoM identifies that other recorded historic sites occur within the park, including a set of yards at Witt Road, Hunter Jetty at Claybank Road, and Double Wharf Road; however, these sites are not listed for heritage purposes.

Searches have been undertaken of Australia's National Heritage List (Cth DCCEEW n.d.-a), the NSW *State heritage inventory* (NSW EHG n.d.-c), the NSW *Historic heritage information management system* (NSW DCCEEW n.d.-b) under section 170 of the *Heritage Act 1970*, and the list in Schedule 5 (Environmental heritage) of the *Great Lakes Local Environmental Plan 2014*. No listed items of federal, state, local or agency significance have been recorded within or near the proposed works area.

8.4 Social values

8.4.1 Recreation values

The park contributes to relatively low-key but locally significant recreation opportunities, including bushwalking, camping, 4WD vehicle use, motorbike riding, cycling and mountain biking, boating and fishing. Uncontrolled 4WD vehicle and motorbike use has led to environmental damage, particularly at the 4 locations identified in this REF as requiring rehabilitation works.

8.4.2 Scenic and visually significant areas

The highest point within the park is Little Mountain, which is approximately 86 metres above sea level; however, it is not considered to provide scenic or visually significant values. The park adjoins Karuah River to the east, which may provide scenic values to park visitors.

8.4.3 Education and scientific values

The park supports a range of threatened species and vegetation communities that provide opportunities for research on conservation. Given the park's history of timber harvesting, opportunities for research on rehabilitation and regeneration also exist, particularly within the former plantation areas.

8.4.4 Interests of external stakeholders

Carrying out the proposed infrastructure upgrades will significantly contribute to the condition of the assets, which will improve safety and amenity for all park visitors.

8.5 Matters of national environmental significance

The provisions of the EPBC Act require determination of whether the proposal has, will or is likely to have a significant impact on a MNES. These matters have been addressed in the Ecological Assessment (see Appendix A).

The assessments undertaken in accordance with the EPBC Act's significant impact guidelines have determined there is unlikely to be a significant impact on relevant MNES and that referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water is not required.

A summary of these results is provided in Table 18.

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Table 18 Results of assessment of activity's impact on matters of national environmental significance

Assessment criteria	Number of MNES to be assessed	Results	Comment
Any significant impact on a World Heritage property?	None	No impact	There are no World Heritage properties located within or in close proximity to the park.
Any significant impact on a National Heritage Place?	None	No impact	There are no National Heritage places located within or in close proximity to the park.
Any significant impact on a wetland of international importance (Ramsar)?	2 sites	No impact	The activity is situated within the buffer area of the Hunter estuary wetlands and Myall lakes Ramsar sites; however, the location and scope of the works mean there will be no impact on the values of the wetlands.
Any significant impact on a listed threatened species or ecological community?	<ul style="list-style-type: none"> • 104 threatened species • 8 threatened ecological communities 	No likely impact	The significant impact assessments for the threatened species and ecological communities in the park have determined that none is likely to be significantly impacted by the activity.
Any significant impact on listed migratory species?	71	No likely impact	The significant impact assessments for the migratory species found in the park have determined that none is likely to be significantly impacted by the activity.
Any significant impact on Commonwealth marine areas?	None	No impact	There are no Commonwealth marine areas located within or near the park.
Any significant impact on the Great Barrier Reef Marine Park?	None	No impact	The location of the activity is too distant to impact the Great Barrier Reef Marine Park.
Does the proposed activity involve a nuclear action (including uranium mining)?	N/A	No impact	The activity does not involve a nuclear action (including uranium mines).
Is there any impact on a water resource, in relation to coal seam gas development and large coalmining development?	N/A	No impact	The activity does not involve any coal seam gas development or large coalmining development, so will not impact (directly, indirectly or cumulatively) on a water resource in this respect.

MNES = matter of national environmental significance.

9. Impact assessment during all stages of the activity

9.1 Physical and chemical impacts

The level of physical and chemical impact of the proposed activity, and safeguards or mitigation measures to manage any adverse impacts, are set out in Table 19.

Table 19 Physical and chemical impacts of the proposed activity

Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
1. impact on soil quality or land stability?	Yes	a. Low, adverse b. Positive	<p>a. The activity includes disturbance to soils and groundcover vegetation at each of the project locations. Works on the bridge on Hobarts Forest Road and the boat ramp will occur within the waterway and riparian zones, and the 4 rehabilitation sites require works to steep slopes. There is a risk of erosion and sedimentation through:</p> <ul style="list-style-type: none"> erosion of disturbed soils transportation of sediments from the road pavement from vehicle movements transport of sediments in runoff and deposition. <p>Soil disturbance will be limited to the area of each location as required to undertake the proposed works.</p> <p>b. Carrying out the infrastructure upgrades will significantly reduce the amount of maintenance activities associated with the bridge, boat ramp and rehabilitation sites, which will reduce potential soil erosion and sedimentation across the sites.</p> <p>Land stability at each location will also be significantly improved following completion of the works.</p>	<ul style="list-style-type: none"> An erosion and sedimentation control plan will be designed and implemented for each project location before works begin. Erosion and sediment control measures in accordance with the NPWS field guide for erosion and sediment control on unsealed roads (NSW EHG 2012) will be implemented and maintained to: <ul style="list-style-type: none"> prevent sediment moving off-site and sediment-laden water entering a watercourse, drainage lines or drain inlets protect bridge embankments from drain discharge protect the boat ramp batters from high-velocity discharge reduce water velocity and capture sediment on site divert waters upslope and clean waters around each site during construction to ensure the entire system is stable.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
2. affect a waterbody, watercourse, wetland or natural drainage system – either physically or chemically (e.g. due to runoff or pollution)?	Yes	Low, adverse	<p>During the works there is potential for deposition of bridge and soil materials entering the Karuah River and Deep Creek, which could result in short-term sedimentation or pollution.</p> <p>Machinery involved in the works could accidentally spill fluids hazardous to the environment. Construction vehicles might contain spare fuels stored in containers, which could be spilt during construction activities.</p>	<ul style="list-style-type: none"> • Permanent coir logs will be strategically installed at the rehabilitation sites to ensure long-term stability to control water movements down the steep slopes. • Erosion and sedimentation, and waste management safeguards will be effectively implemented to minimise associated water quality impacts. • Safeguards will be implemented in a manner that prevents impacts on the biophysical, hydrological and ecological integrity of adjacent coastal wetlands. Appropriate measures may involve: <ul style="list-style-type: none"> ○ recognising and maintaining the natural movements of waterways ○ ensuring no works or disturbance occur beyond the area assessed in this REF and the accompanying Ecological Assessment ○ conducting onsite NPWS park induction processes and toolbox meetings to ensure workers and contractors are aware of the location of coastal wetlands ○ establishing 'no go' zones around sensitive coastal wetland areas ○ limiting the use of petrochemicals within and next to sensitive wetland areas. • Visual monitoring of local water quality (e.g. turbidity, hydrocarbons spills, slicks) will be periodically undertaken to identify any water quality issues. • All equipment will be maintained in good working condition and operated according to manufacturer specifications. • Refuelling of plant and equipment will be done a minimum of 40 m from drainage lines and waterways.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
				<ul style="list-style-type: none"> • Stockpile sites will not be located within or within 10 m of drainage lines. • Stockpiles will be located on previously disturbed areas, away from areas that receive concentrated runoff. • Sediment fencing and sediment traps will be used to protect watercourses during the works. Works will only be undertaken during periods of low flow. • As much earth and gravel as possible will be removed from the bridge and boat ramp surfaces before works begin, to minimise silt and debris entering adjacent waterways. • No work will be undertaken during or immediately following periods of high rainfall. • Oils and fuels will be stored in a suitably bunded, covered and secure area with sufficient capacity to contain at least 110% of the volume of the largest container. • Spare fuels will be stored in containers within pre-existing cleared areas at a minimum distance of 40 m from drainage lines and waterways. • Spills and leaks will to be contained within the worksite and cleaned up. • Spill kits will be available on site and in construction vehicles.
3. change flood or tidal regimes, or be affected by flooding?	Yes	Low, adverse	<p>Works to the boat ramp will occur above the high-tide mark and are unlikely to impact or be impacted by tidal regimes.</p> <p>Parts of the proposal will occur within flood-liaable land, so have the potential to be affected by storm events and flash flooding.</p>	<ul style="list-style-type: none"> • Erosion and sediment controls in accordance with the NPWS field guide for erosion and sediment control on unsealed roads (NSW EHG 2012) will be implemented and maintained. • Regular inspection of the assets will be incorporated into the NPWS maintenance program and assessed for damage following storm and flash flooding events.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
				<ul style="list-style-type: none"> • Works on the boat ramp will not to be undertaken during periods of exceptionally high tides (i.e. those which typically occur during a new or full moon). • Selection of materials and construction methods will ensure they are designed to withstand events which could adversely impact the structures.
4. affect or be affected by coastal processes and coastal hazards, including those under climate change projections (e.g. sea level rise)?	Yes	Negligible, adverse	The bridge and boat ramp upgrades will occur adjacent to tidal waterways that could be impacted by coastal processes including high tides; however, these coastal hazards are considered unlikely to affect the activity.	As above.
5. involve the use, storage or transport of hazardous substances, or use or generate chemicals which may build up residues in the environment?	Yes	Low, adverse	Machinery involved in the works could accidentally spill fluids hazardous to the environment. Spare fuels are likely to be stored in containers within construction vehicles.	<ul style="list-style-type: none"> • Oils and fuels will be stored in a suitably bunded, covered and secure area with sufficient capacity to contain at least 110% of the volume of the largest container. • Spare fuels will be stored in containers within pre-existing cleared areas and at a minimum distance of 40 m from drainage lines and waterways. • Spills and leaks will be contained within the worksite and will be cleaned up. • Spill kits will be available on site and in construction vehicles. • To limit the transport and storage of fuels, electric, rather than diesel or petrol, machinery will be used wherever practicable.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
				<ul style="list-style-type: none"> Contractors will be conversant with and adhere to the measures and controls outlined in the NSW Government code of practice on managing risks of hazardous chemicals in the workplace (SafeWork NSW 2022), to ensure gaseous, liquid, or solid wastes or emissions are managed appropriately. If a hazardous substance is discovered on the site, all work that could result in exposure to the substance will be suspended, and the NPWS notified immediately. Asbestos, material containing asbestos, polychlorinated biphenyl (PCB) and lead-based paints are recognised as hazardous substances. Other substances in certain situations are also considered hazardous and therefore will be handled in a controlled manner as required.
6. involve the generation or disposal of gaseous, liquid or solid wastes or emissions?	Yes	Negligible, adverse	<p>Soil, rock, and other material excavated during the works will be stockpiled nearby to each works area and reused where practicable. Parts of the existing bridge on Hobarts Forest Road which cannot be reused or recycled will require disposal.</p> <p>No hazardous waste is anticipated to be generated.</p> <p>Minor consumable and putrescible waste will be generated from workers undertaking the activity.</p>	<ul style="list-style-type: none"> Waste to be managed in accordance with relevant NSW legislation and government policies including using the waste hierarchy principles Characterise and manage waste in accordance with the NSW EPA's Waste Classification Guidelines Waste generated during construction will be collected and disposed of at a suitably licensed waste facility Where feasible, recyclable material is to be segregated to maximise recycling opportunities.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
7. involve the emission of dust, odours, noise, vibration or radiation?	Yes	Low, adverse	<p>Some low levels of dust and noise will be generated during construction and transport activities associated with the works. The primary sources of emissions and airborne particulate matter likely to be generated by the activity includes:</p> <ul style="list-style-type: none"> • delivery and transport of construction vehicles, staff and materials to the works sites • vehicle and machinery (exhaust) emissions during the works. <p>The proposal is unlikely to produce significant emissions of dust, odours, noise or vibration to have an impact on flora, fauna or adjacent landholders.</p>	<ul style="list-style-type: none"> • Machinery on site will be checked to ensure it is registered, clean and devoid of oil or fuel leaks. • Where imported materials (e.g. rock fines) are required to be delivered to site, trucks will to be covered to minimise tracking of dust and materials through the park. • Any vegetation removed will not be burnt. • Noise-generating works will be limited to the recommended standard hours for construction work outlined in the Interim construction noise guideline (NSW DECC 2009), which are: <ul style="list-style-type: none"> ○ Monday to Friday 7 am to 6 pm ○ Saturday 8 am to 1 pm ○ No works on Sundays, public holidays or school holidays. • Works to be undertaken outside of the standard hours (e.g. due to emergencies or weather patterns), will need to be clearly justified as essential and approved by the area manager or their delegate before proceeding.

9.2 Biodiversity impacts

The level of impact of the proposed activity on biodiversity, and safeguards or mitigation measures to manage any adverse impacts, are set out in Table 20.

Table 20 Biodiversity impacts of the proposed activity

Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
1. affect a declared area of outstanding biodiversity value, critical habitat or environmental asset of intergenerational significance?	No	Not applicable	No areas of outstanding biodiversity value, critical habitat or assets of intergenerational significance occur within Karuah National Park.	Not applicable
2. result in the clearing or modification of vegetation, including ecological communities and plant community types of conservation significance?	Yes	Low, adverse	<p>A minor extent of native vegetation will be cleared or modified:</p> <ul style="list-style-type: none"> removal of 2 small black she-oaks (<i>Allocasuarina littoralis</i>) and one small green wattle (<i>Acacia irrorata</i> subsp. <i>irrorata</i>) clearing of a small amount of spiny-headed mat-rush (<i>Lomandra longifolia</i>) next to the bridge site clearing of small shrubs and groundcovers at the sites of the gate and bollard installations minor impacts to an exposed root of one large grey ironbark (<i>Eucalyptus siderophloia</i>) at Tattersalls campground boat ramp. 	<ul style="list-style-type: none"> Parking and storage of materials will be restricted to the existing formation of disturbed road verge. Vegetation requiring clearing will be clearly marked on site before works begin, and works will be restricted to the specified area. No vegetation clearance beyond what is marked and has been assessed will occur.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
3. endanger, displace or disturb terrestrial or aquatic fauna, including fauna of conservation significance, or create a barrier to their movement?	Yes	Negligible, adverse	<p>The bridge structure may support reptiles and small mammals, but its lack of gaps and crevices mean it is not considered a potential roost for microbats. Any fauna using these areas for refuge would be displaced by the works.</p> <p>No new barrier to movement will be created as all works are upgrading existing structures and temporary road barriers will only restrict movement of vehicles.</p>	<ul style="list-style-type: none"> Erosion and sedimentation controls to mitigate risk of turbidity impacts on the adjacent watercourses which provides potential habitat for aquatic species. A qualified ecologist or suitably trained NPWS officer will assist with animal welfare management where needed, such as relocating fish and tadpoles and rescue of any fauna using cracks, crevices or hollows in the old bridge logs for refuge. Wildlife management protocols will be established in the event that fauna is endangered or injured, including the following: <ul style="list-style-type: none"> Wildlife management care groups and local veterinary clinics contact details will be provided to workers. A qualified ecologist will be on standby to transport injured fauna if treatment is required. Reporting protocols will be implemented to report and notify NPWS of any injury or death of fauna.
4. result in the removal of protected flora or plants or fungi of conservation significance?	Yes	Negligible, adverse	<p>The Ecological Assessment (see Appendix A) identified threatened flora, namely 5 individuals of the netted bottle brush (<i>Callistemon linearifolius</i>), in the vicinity of the proposed gate on Little Mountain Road.</p>	<ul style="list-style-type: none"> Thorough pre-clear checks of all bollard lines will be undertaken as a precautionary measure to identify and avoid any individuals of the threatened flora species. If species individuals are detected, the bollard line placement will be adjusted to avoid them. If other threatened flora or plants or fungi of conservation significance are identified, they will be flagged and a buffer zone created around them for protection. Onsite NPWS park induction processes and toolbox meetings will ensure workers and contractors are aware of buffer zones and any identified threatened species.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
5. contribute to a key threatening process to biodiversity or ecological integrity?	Yes	Low, adverse	<p>a. The activity could potentially contribute to a key threatening process through indirect impacts, such as the introduction and establishment of weeds or the introduction of diseases and pathogens during vegetation clearance.</p> <p>b. Removal of native vegetation is required for the proposed activity.</p> <p>c. Energy use by humans will not be sufficient to significantly contribute to anthropogenic climate change.</p>	<p>a. To reduce the risk of spreading weeds, diseases and pathogens, basic hygiene protocols in accordance with the NSW <i>Hygiene guidelines</i> (NSW DPIE 2020) will be implemented, including the following:</p> <ul style="list-style-type: none"> • Check personnel, clothing, footwear, backpacks and equipment for soil, plant material/propagules and other debris. • Remove all soil, plant material and other debris. • Remove seeds from clothing, footwear, tools and equipment by hand. Where possible, have a co-worker double-check that all seeds are removed. • Where practicable, ensure hands, clothing, footwear and equipment are dry before proceeding. • Check the exterior and interior of vehicles and machinery for soil, plant material and other debris. • Remove large clods of dirt and soil. • Remove all soil, plant material and other debris from interior. • Where practicable, allow vehicle or machinery to dry before proceeding. <p>b. Vegetation clearing measures include the following:</p> <ul style="list-style-type: none"> • The vegetation clearing extent will be clearly marked on site before works begin, and works will be restricted to the specified area. No vegetation clearance will occur beyond what is specified and marked. • No hollow-bearing trees or significant dead wood will be removed. <p>c. Emissions measures include the following:</p> <ul style="list-style-type: none"> • Energy use for machinery and plant will be minimised where practicable, including by turning off machinery when not in use and reducing throttle speed of machines; and maintaining machinery be in good, serviced condition to reduce emissions. • Electric machinery will be used instead of diesel or petrol machinery where practicable.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
6. introduce weeds, pathogens, pest animals or genetically modified organisms into an area?	Yes	Low, adverse	<p>There is a risk of the introduction of diseases such as <i>Phytophthora cinnamomi</i>, myrtle rust and amphibian chytrid fungus via contaminated tools, plant, vehicles, shoes and clothing, both in construction and remediation stages.</p> <p>The presence of existing weed cover throughout the site means there is a risk of introducing weeds into an area through machinery.</p> <p>The works will generally be confined to the existing footprint of each project location and would not significantly contribute to improving access for pest animals.</p>	<ul style="list-style-type: none"> • Basic hygiene protocols (as listed in item 5 above) will be implemented to reduce the risk of spreading weeds, diseases and pathogens. • Hygiene protocols according to the Commonwealth <i>Hygiene protocols for the control of diseases in Australian frogs</i> (Murray et al. 2011) will be implemented for works likely to impact frog species at the bridge site on Hobarts Forest Road. These include: <ul style="list-style-type: none"> ○ Hands, arms, knees etc. are to be cleaned to remove debris and washed or wiped with a suitable disinfectant. ○ Footwear must be thoroughly cleaned and disinfected at the commencement of fieldwork. ○ Equipment must be cleaned and disinfected before use at the site. ○ Wheels and tyres are to be cleaned and disinfected to prevent mud and water entering the site. • Each area will be monitored for weeds post-construction, to ensure weed establishment does not occur. • Weeds will be treated as necessary.

9.3 Community impacts

The level of community impact of the proposed activity, and safeguards or mitigation measures to manage any adverse impacts, are set out in Table 21.

Table 21 Community impacts of the proposed activity

Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
1. affect community services or infrastructure?	Yes	Positive	The proposed works to the bridge, boat ramp and rehabilitation areas will significantly improve the safety and condition of the existing infrastructure and improve long-term accessibility throughout the park.	Not applicable
2. affect sites important to the local or broader community for their recreational or other values or access to these sites?	Yes	a. Low, adverse b. Positive	<p>a. The proposal will occur in areas which are typically open to the public. The works will create short-term access restrictions for the duration of the works.</p> <p>NPWS will use the new gates to restrict access to the park for management purposes.</p> <p>The park and campgrounds will likely remain open during the works; however, short-term accessibility impacts may occur for the duration of the works on the bridge.</p> <p>b. The proposed works to the bridge, boat ramp, and rehabilitation areas will significantly improve the safety and condition of the existing infrastructure and improve long-term accessibility throughout the park.</p>	<ul style="list-style-type: none"> • 'No go' zones will be established using signage and pedestrian barriers to prevent public access to construction zones. • During construction, appropriate signage will be displayed and the area fenced off to the public. • Detour signage will be placed at strategic locations to inform the public of alternative routes. • Notification of the works will be placed on the NPWS website to inform the public of the nature and duration of the works.
3. affect economic factors, including employment, industry and property value?	Yes	Low, positive	The proposed works would have a small, but positive impact on the economy through the employment of local staff/contractors undertaking the works.	Not applicable

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
4. have an impact on the safety of the community?	Yes	a. Low, adverse b. Positive	<p>a. There is the potential for personal injury during the activity (e.g. from construction-related activities). However, safety risks to the community are considered to be low and no public access would be permitted to the work site.</p> <p>b. On completion of the activity, the upgraded infrastructure will significantly improve the safety of all users.</p>	<ul style="list-style-type: none"> • Regard to public safety will always be maintained. • Public access to the construction site will be restricted. • The contractor will be responsible for the preparation and implementation of any safe work method statements in accordance with the <i>Work Health and Safety Act 2011</i> (NSW). • Visitor-safety risks associated with the operation of the new bridge will be assessed and managed through the departmental risk management system.
5. cause a bushfire risk?	Yes	Low, adverse	<p>The proposed works will occur within vegetation classified as Category 1 under the NSW Rural Fire Service's <i>Guide for bush fire prone land mapping</i> (NSW RFS 2015). Vegetation Category 1 is considered to be the highest risk for bush fire and has the highest combustibility and likelihood of forming fully developed fire, including heavy ember production.</p> <p>However, there will be limited ignition risks as works will occur primarily adjacent to watercourse environments or within the cleared road corridor.</p>	<ul style="list-style-type: none"> • Appropriate fire extinguishing equipment, pumps, hoses etc. will be located on the construction site during periods of extreme fire danger or as otherwise deemed necessary by NPWS. • Machinery use will be limited during periods of fire danger ratings of extreme or above.
6. affect the visual or scenic landscape?	Yes	a. Negligible, adverse b. Positive	<p>a. As the activity takes place entirely within a national park, there is no impact on adjacent landowners.</p> <p>The park's visual landscape will be temporarily impacted by construction activities and signage.</p> <p>Some minor clearing of vegetation will be required to facilitate construction.</p> <p>b. On completion, the works will provide improved visual amenity for the community.</p>	<ul style="list-style-type: none"> • Vegetation removal will be kept at the minimum necessary to complete works. • Construction sites will be kept clean and tidy, and site clean-up will occur daily. • Vegetation rehabilitation works will be completed post-construction.

9.4 Natural resource impacts

The level of impact of the proposed activity on natural resources, and safeguards or mitigation measures to manage any adverse impacts, are set out in Table 22.

Table 22 Natural resource impacts of the proposed activity

Is the proposed activity likely to ...	Applicable ?	Impact level	Reasons	Safeguards/mitigation measures
1. result in the degradation of the park or any other area reserved for conservation purposes?	Yes	Positive	The proposed works will significantly improve NPWS management capabilities by improving access and providing the ability to close the park for fire, weed and pest management.	Not applicable.
2. affect the use of, or the community's ability to use, natural resources?	Yes	a. Low, adverse b. High, positive	<p>a. The activity will occur in areas which are typically open to the public. The works will create short-term access restrictions for the duration of the works. NPWS will use the new gates to restrict access to the park for management purposes.</p> <p>b. The proposed works to the bridge, boat ramp and rehabilitation areas will significantly improve the safety and condition of the existing infrastructure, and improve long-term accessibility to use natural resources.</p>	<ul style="list-style-type: none"> • 'No go' zones with signage and pedestrian barriers will be established to prevent public access to construction zones. • During construction, appropriate signage will be displayed and the area will be fenced off to the public. • Detour signage will be placed at strategic locations informing the public of alternative routes. • Notification of the works will be placed on the NPWS website to inform the public of the nature and duration of the works.
3. involve the use, wastage, destruction or depletion of natural resources including water, fuels, timber or extractive materials?	Yes	Negligible, adverse	<p>The impact on natural resources is likely to be negligible as there will be no or minimal use, wastage, destruction or depletion of natural resources required for the upgrade works.</p> <p>Minimal natural resources (fossil fuels) will be used to power machinery used during the construction phases of the activity.</p>	<ul style="list-style-type: none"> • Machinery and vehicles will be serviced regularly to prevent unnecessary use of resources. • Machinery use will be kept at a minimum. • Electric machinery rather diesel/petrol machinery will be used where practicable.
4. provide for the sustainable and efficient use of water and energy?	Yes	Negligible, adverse	The amount of water and energy used to undertake the activity will be negligible.	Contractors and materials will be sourced locally where practicable to reduce the use of energy.

9.5 Aboriginal cultural heritage impacts

The level of impact of the proposed activity on Aboriginal cultural heritage, and safeguards or mitigation measures to manage any adverse impacts, are set out in Table 23.

Table 23 Aboriginal cultural heritage impacts of the proposed activity

Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
1. disturb the ground surface or any vegetation likely to contain culturally modified trees?	Yes	Low, adverse	<p>The proposal requires minor excavation of ground surfaces and removal of small amounts of native vegetation to facilitate the upgrades.</p> <p>Vegetation to be removed comprises small regrowth trees, shrubs and groundcover.</p> <p>The required due diligence process (see section 3.1.1) determined there is a low probability that Aboriginal objects or burials will be located within the study area, such that an Aboriginal heritage impact permit or additional archaeological investigation is not required, and works may proceed with caution.</p> <p>The potential for undiscovered items to be uncovered does exist.</p>	<ul style="list-style-type: none"> An NPWS officer qualified in Aboriginal site and object identification will be on site during excavation works to inspect soil and ground disturbance for Aboriginal objects. Works will proceed with caution, and if any Aboriginal objects or human remains are located during the works, the <i>Due diligence code of practice for the protection of Aboriginal objects in New South Wales</i> (NSW DECCW 2010) will be followed. If an Aboriginal object is detected, as well as following the code of practice, Heritage NSW will be consulted and NPWS will be notified immediately. If suspected human remains are discovered or harmed in, on or under the land within the activity footprint, the following actions must be undertaken to ensure the remains are not harmed or further harmed: <ul style="list-style-type: none"> Immediately cease all works at that location. Secure the area to avoid harm or further harm to the remains. Notify the NSW Police and the Environment Line (Heritage NSW) on 131 555 as soon as practicable and provide any details of the remains and their location. Do not recommence any work at that location unless authorised in writing by Heritage NSW.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
2. affect or occur near known Aboriginal objects, Aboriginal places or an Aboriginal cultural asset of intergenerational significance? If so, can impacts be avoided? How?	Yes	Low, adverse	A search of the Aboriginal heritage information management system (NSW EHG n.d.-a) identified 38 recorded Aboriginal sites within the area. Consultation and an archaeological site inspection with members of the Karuah LALC occurred on 22 June 2023 to assess known Aboriginal cultural heritage and to confirm the findings of the database search. The site inspection did not identify any Aboriginal sites within the vicinity of the proposed works, and that the database records of known Aboriginal sites near the activity were likely to be incorrect.	As above.
3. affect areas: a. within 200 m of waters b. within a sand dune system c. on a ridge top, ridge line or headland d. within 200 m below or above a cliff face e. in or within 20 m of a cave, rock shelter or a cave mouth? If so, can impacts be avoided? How?	Yes	Low, adverse	The proposed activity involves works within and adjacent to Deep Creek, and adjacent to the Karuah River. An archaeological site inspection with members of the Karuah LALC occurred on 22 June 2023. Oyster shells located along the edge of Tattersalls Road boat ramp were interpreted to be from historical oyster deposits along the riverbank when the area was used for oyster leases. The shells had no signs of ageing and no stone artefacts, charcoal or other species (whelk, cockle or pipi) consistent with shell/oyster middens were identified.	As above.
4. affect wild resources which are used or valued by the Aboriginal community or affect access to these resources?	No	Not applicable	The activity will not affect wild resources which are used or valued by the Aboriginal community.	Not applicable.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
5. affect access to culturally important locations?	Yes	Positive	The proposed bridge replacement on Hobarts Forest Road will improve the safety and condition of the infrastructure and improve long-term access to any potential culturally important locations.	Not applicable.

9.6 Other cultural heritage impacts

The level of other cultural heritage impacts of the proposed activity, and safeguards or mitigation measures to manage any adverse impacts, are set out in Table 24.

Table 24 Other cultural heritage impacts of the proposed activity

Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
1. affect or occur near places, buildings or landscapes of heritage significance?	No	Not applicable	The activity will not affect or occur near places, buildings or landscapes of heritage significance.	Not applicable.
2. impact on relics or moveable heritage items, or an area with a high likelihood of containing relics?	No	Not applicable	The activity will not impact on relics or moveable heritage items, or an area with a high likelihood of containing relics.	Not applicable.
3. impact on vegetation of cultural landscape value (e.g. gardens and settings, introduced exotic species, or evidence of broader remnant land uses)?	No	Not applicable	The activity will not impact on vegetation of cultural landscape value.	Not applicable.

9.7 Impacts on matters of national environmental significance

The level of the proposed activity's impacts on MNES, and safeguards or mitigation measures to manage any adverse impacts, are set out in Table 25.

Table 25 Impacts of the proposed activity on matters of national environment significance

Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
1. listed threatened species or ecological communities)?	Yes	Low, adverse	<p>The activity involves very minor modification of potential habitat of a number of threatened fauna species. The impacts comprise a minimal level of vegetation removal and temporary changes to the hydrology during construction stages. Breeding, foraging, dispersal and other processes would remain as current.</p> <p>There is a small potential for threatened flora species to be indirectly impacted by the proposed works, but no threatened species has been detected within close proximity to any of the activity sites.</p>	As detailed in section 9.2.
2. listed migratory species?	Yes	Negligible, adverse	The activity will have no impact on the potential habitat of listed migratory species. Breeding, foraging, dispersal and other processes would remain as current; and no barrier to movement, entanglement or strike risk will be created.	As detailed in section 9.2.
3. the ecology of Ramsar wetlands?	No	Not applicable	The activity is situated within the buffer area of 2 Ramsar wetlands, but no works will occur within or near the wetlands.	Not applicable.
4. world heritage values of World Heritage properties?	No	Not applicable	No World Heritage properties are recorded within the area.	Not applicable.
5. the national heritage values of national heritage places?	No	Not applicable	No national heritage places are recorded within the area.	Not applicable.

9.8 Cumulative impacts

The level of the proposed activity's cumulative impacts, and safeguards or mitigation measures to manage any adverse impacts, are set out in Table 26.

Table 26 Cumulative impacts of the proposed activity

Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
1. natural landscape or biodiversity values through cumulative impacts?	Yes	Low, adverse	Vegetation removal has the potential to cumulatively impact biodiversity values, including by reducing available habitat. There will be an increase of human activity throughout the reserve during construction, which has the potential to temporarily displace fauna.	<ul style="list-style-type: none"> All works will be coordinated to minimise impacts to natural landscape or biodiversity values. Vegetation clearing will be staged where practicable to limit potential impacts to available habitat. To limit vehicle and machinery movements to and from the site, delivery or resources will be coordinated, as far as practicable.
2. cultural (Aboriginal, shared and historic heritage) values through cumulative impacts?	No	Not applicable	The proposal is unlikely to contribute to cumulative cultural (Aboriginal, shared and historic heritage) values.	Not applicable.
3. social (amenity, recreation, education) values through cumulative impacts?	Yes	a. Negligible, adverse b. Positive	a. Access to the boat ramp, which is an important recreation asset, will be restricted for the duration of the works. The works will be undertaken as a package and will occur sequentially throughout the park. The sequence of the works will be determined on an 'as needed' basis, taking into account safety and available contractors and materials. b. The condition and safety of the bridge and boat ramp will be significantly improved for visitors to the park.	<ul style="list-style-type: none"> All works will be coordinated, to minimise impacts to park users. The works will be completed in the shortest timeframe possible.

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Is the proposed activity likely to ...	Applicable?	Impact level	Reasons	Safeguards/mitigation measures
4. the community through cumulative impacts on any other part of environment (e.g. due to traffic, or waste generation)?	Yes	Negligible, adverse	<p>There will be an increase of vehicle and machinery traffic during construction stages of the activity, as a result of transport of workers, material and machinery required to undertake the works.</p> <p>All access to the site will be via The Bucketts Way, an important regional road linking Gloucester to Taree and Raymond Terrace; however, the increased traffic is not anticipated to adversely impact the community through cumulative impacts.</p>	Vehicle and machinery movements to and from the site will be limited as much as practicable.

10. Proposals needing more information

10.1 Lease or licence proposals under section 151 of the National Parks and Wildlife Act

No lease or licensing requirements are attached to the Karuah National Park infrastructure upgrades project. Any future commercial business or ecotourism proposals that require licences would be addressed separately in accordance with the NPWS Parks Eco Pass program for commercial tour operators (NSW EHG n.d.-b).

10.2 Telecommunications facilities

The activity has no telecommunication facility component so assessment under section 153D of the NPW Act is not required.

10.3 Activities within regulated catchments

The activity does not fall within any regulated catchment, including the Sydney Drinking Water Catchment, so further assessment is not required.

10.4 Activities in River Murray riverine land

The activity is not located within lands defined as Murray riverine land, so further assessment is not required.

11. Summary of impacts and conclusions

The considerations relevant to each of the 18 environmental factors and the significance of the activity's impact are summarised in Table 27.

Table 27 Consideration of significance of impacts for each environmental factor

Environmental factor	Consideration	Significance of impact*
1. the environmental impact on the community	Social, economic and cultural impacts as described in sections 9.3, 9.5 and 9.6.	Not significant
2. the transformation of the locality	Human and non-human environment as described in sections 9.1, 9.2 and 9.4.	Not significant
3. the environmental impact on the ecosystems of the locality	Amount of clearing, loss of ecological integrity, habitat fragmentation and changes to hydrology (both surface and groundwater) as described in sections 9.1, 9.2 and 9.4 and, for nationally listed threatened ecological communities, in section 9.7.	Not significant
4. reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	Visual, recreational, scientific and other impacts as described in section 9.3.	Not significant
5. the effects on any locality, place or building that has – a. aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or b. other special value for present or future generations	Impacts to Aboriginal and historic heritage associated with a locality (including intangible cultural significance), architectural heritage, social/community values and identity, scenic values and others, as described in sections 9.3, 9.5 and 9.6 and (for MNES heritage places) section 9.7.	Not significant
6. the impact on the habitat of protected animals, within the meaning of the <i>Biodiversity Conservation Act</i>	Impacts to all native terrestrial species, including but not limited to threatened species, and their habitat requirements, as described in section 9.2.	Not significant
7. the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air	Impacts to all listed terrestrial and aquatic species, and whether the proposal increases the impact of key threatening processes, as described in section 9.2.	Not significant
8. long-term effects on the environment	Long-term residual impacts to ecological, social and economic values as described in all parts of section 9.	Not significant
9. degradation of the quality of the environment	Ongoing residual impacts to ecological, social and economic as described in section 9.4.	Not significant

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Environmental factor	Consideration	Significance of impact*
10. risk to the safety of the environment	Impacts to public and work health and safety, from contamination, bushfires, sea level rise, flood, storm surge, wind speeds, extreme heat, rockfall and landslip, and other risks likely to increase due to climate change, as described in sections 9.1, 9.3 and 9.4.	Not significant
11. reduction in the range of beneficial uses of the environment	Impacts to natural resources, community resources and existing uses, as described in sections 9.3 and 9.4.	Not significant
12. pollution of the environment	Impacts from air pollution (including odours and greenhouse gases); water pollution (water quality health); soil contamination; noise and vibration (including consideration of sensitive receptors); or light pollution, as described in sections 9.1 and 9.3.	Not significant
13. environmental problems associated with the disposal of waste	Transportation, disposal and contamination impacts as described in section 9.3.	Not significant
14. increased demands on natural or other resources that are, or are likely to become, in short supply	Impacts to land, soil, water, gravel, minerals and energy supply as described in section 9.4.	Not significant
15. the cumulative environmental effect with other existing or likely future activities	The negative synergisms with existing development or future activities as considered in section 9.8.	Not significant
16. the impact on coastal processes and coastal hazards, including those under projected climate change conditions	Impacts arising from the proposed activity on coastal processes, and impacts on the proposed activity from those coastal processes and hazards, both current and future, as considered in section 9.1.	Not significant
17. applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	Inconsistency with the objectives, policies and actions identified in local, district and regional plans, as considered in section 3.2.2.	Not significant
18. other relevant environmental factors.	Any other factors relevant in assessing impacts on the environment to the fullest extent, such as native title.	Not significant

In conclusion:

1. There **is not** likely to be a significant effect on the environment and an environmental impact statement **is not** required

Reasons: This REF has examined and taken into account, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the proposed activity.

This has included consideration of impacts on cultural values (including Aboriginal and non-Aboriginal heritage), socioeconomic values (including potential impacts on the community resulting from construction works) and threatened species, populations and ecological communities and their habitats. It has also considered potential impacts to threatened species and MNES listed under the EPBC Act.

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A number of potential environmental impacts from the proposal have been identified and amended during the design development and options assessment. The proposal as described in the REF best meets the project objectives and will result in limited impacts on biological values. Safeguards and management measures as detailed in this REF will ameliorate or minimise these expected impacts. The proposal will also provide positive environmental, social and cultural benefits. On balance the proposal is considered justified and will significantly improve access and amenity throughout Karuah National Park.

2. There **is not** likely to be a significant effect on threatened species, populations, ecological communities or their habitats and a species impact statement **is not** required

Reason: Tests of significance, pursuant to section 7.3 of the BC Act and Part 7A of the FM Act, have been undertaken as part of the Ecological Assessment (Appendix A) to determine whether the proposed activity is likely to have a significant effect on threatened species, populations, ecological communities or their habitats. The tests concluded that the proposed activity is unlikely to result in a significant impact on threatened species, population, ecological communities or their habitats.

3. The activity **is not** likely to have a significant impact on MNES listed under the EPBC Act and so **will not** require referral to the Australian Government.

Reason: In accordance with the EPBC Act's significant impact guidelines, the Ecological Assessment has determined there is unlikely to be a significant impact on relevant MNES and that referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water is not required.

4. The activity **will not** require certification to the Building Code of Australia, Disability (Access to Premises – Buildings) Standards 2010 or Australian Standards in accordance with the NPWS Construction Assessment Procedures.

12. Supporting documentation

Table 28 provides details of documentation included with this REF. See also Appendix A, Appendix D, Appendix C and Appendix B, respectively.

Table 28 Documents that accompany the review of environmental factors

Document title	Author	Date
Karuah National Park Upgrade Package Ecological Assessment	WolfPeak	July 2023
NSW Fisheries Notification	DPI Fisheries	October 2023
Site Plans and Proposed Works	NPWS	August 2023
Aboriginal Cultural Heritage (Due Diligence) Assessment	Heritage Management & Planning Pty Ltd	October 2024

13. Fees for external proponents

Not relevant – internal proponent.

14. Declarations

As the person responsible for the **preparation** of the REF, I certify that, to the best of my knowledge, this REF 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 it contains is neither false nor misleading.

Declaration detail	Person responsible for preparation of the REF
Signature	—
Name (printed)	Grant Bennett
Position	Environmental Consultant
Date	22/10/2024

By endorsing the REF, the proponent confirms that the information in the REF is accurate and adequate to ensure that all potential impacts of the activity can be identified.

Declaration detail	Proponent endorsing the REF
Signature	—
Name (printed)	Susanne Callaghan
Position	Acting Area Manager
Date	12/2/25

15. References

- Bureau of Meteorology (n.d.) Summary statistics Nelson Bay (Nelson Head), *Climate statistics for Australian locations* [database], accessed 9 May 2025.
- Cth DCCEEW (Commonwealth Department of Climate Change, Energy, the Environment and Water) (n.d.-a) 'Australia's National Heritage List', accessed 3 October 2024.
- Cth DCCEEW (n.d.-b) Species of national environmental significance [database] accessed 8 October 2024.
- Isbell RF, National Committee on Soil and Terrain (2021) The Australian soil classification, 3rd edn, CSIRO Publishing.
- MidCoast Council (2022) *MidCoast 2032: Shared vision, shared responsibility: Community strategic plan 2022–2032*.
- Murray K et al. (2011) Hygiene protocols for the control of diseases in Australian frogs, Report prepared for the Australian Department of Sustainability, Environment, Water, Population and Communities.
- National Native Title Tribunal (n.d.) Native title vision [geospatial data set], accessed 8 October 2024.
- NPWS (National Parks and Wildlife Service) (2015) Lower North Coast Region – Karuah NP, NR & SCA, Medowie NR & SCA, Wallaroo NP: Fire Management Strategy (Type 2).
- NPWS (2016) Karuah, Medowie and Wallaroo Group plan of management, NSW Office of Environment and Heritage.
- NSW DCCEEW (Department of Climate Change, Energy, the Environment and Water) (n.d.-a) NSW Bionet [database], accessed 8 October 2024.
- NSW DCCEEW (n.d.-b) Historic heritage information management system [data set], accessed 8 October 2024.
- NSW DCCEEW (2020) NSW State vegetation type map [data set].
- NSW DECC (Department of Environment and Climate Change) (2009) Interim construction noise guideline.
- NSW DECCW (Department of Environment, Climate Change and Water) (2010) Due diligence code of practice for the protection of Aboriginal objects in New South Wales.
- NSW DPE (Department of Planning and Environment) (2022) Hunter regional plan 2041.
- NSW DPI (Department of Primary Industries) (n.d.) Fisheries NSW spatial data portal [data set], accessed 3 October 2024.
- NSW DPIE (Department of Primary Industries and Environment) (2020) Hygiene guidelines: Protocols to protect priority biodiversity in NSW from Phytophthora cinnamomi, myrtle rust, amphibian citrus fungus and invasive plants.
- NSW EHG (Environment and Heritage Group) (n.d.-a) Aboriginal heritage information management system [database], accessed 3 October 2025.
- NSW EHG (n.d.-b) 'Parks Eco Pass program for commercial tour operators', accessed 9 May 2025.
- NSW EHG (n.d.-c) State heritage inventory [database], accessed 3 October 2024.
- NSW EHG (2012) Erosion and sediment control on unsealed roads.
- NSW EHG (2022) Visitor safety policy.

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NSW EHG (2025) Vehicle access policy.

NSW EPA (Environment Protection Authority) (n.d.-a) Contaminated land public record [database], NSW EPA, accessed 8 October 2024.

NSW EPA (n.d.-b) List of notified sites, NSW EPA, accessed 8 October 2024.

NSW EPA (2024) The NSW Government PFAS investigation program, NSW EPA, accessed 8 October 2024.

NSW Resources (n.d.) MinView [web map application], NSW Department of Primary Industries and Regional Development, accessed 7 October 2024.

NSW RFS (Rural Fire Service) (2015) Guide for bush fire prone land mapping, version 5b.

NSW RFS (2023) NSW fire trail standards, version 2.0, NSW RFS, accessed 9 May 2025.

SafeWork NSW (2022) Managing risks of hazardous chemicals in the workplace, Code of practice.

Transport for NSW (n.d.) NSW road network classifications [mapped data set], accessed 7 October 2024.

Transport for NSW (2023) 'Schedule of classified roads and unclassified regional roads'.

Appendix A: Karuah National Park upgrade package ecological assessment

Document is provided as separate attachment, reference:

DOC23/648121-1 – Appendix A – Karuah National Park Upgrade Package Ecological Assessment.

Appendix B: Aboriginal cultural heritage assessment

Document is provided as separate attachment, reference:

DOC23/648121-2 Appendix B - Infrastructure Upgrades and Remediation, Karuah, NSW - Aboriginal Cultural Heritage (Due Diligence) Assessment.

Appendix C: Site plans and proposed works

Hobarts Forest Road bridge engineering plan

Document is provided as separate attachment, reference:

DOC23/648121-7 Appendix C – 21E110-01 21.9.23 Hobarts Road Bridge Design (FINAL).

Bridge images

Document is provided as separate attachment, reference:

DOC23/648121-11 Appendix C – Hobarts Forest Road Bridge images.

Tattersalls boat ramp concept plans

Document is provided as separate attachment, reference:

DOC23/648121-10 Appendix C – Tattersalls Rd Boat Ramp – Concept Design.

Trail and slope rehabilitation sites concept plans

Document is provided as separate attachment, reference:

DOC23/648121-12 Appendix C – Karuah NP – Trail and Slope Rehabilitation Concept Designs.

Appendix D: Fisheries consultation and permit

Fisheries notification and consultation under section 199

Document is provided as separate attachment, reference:

DOC23/648121-5 Appendix D - Fisheries Notification - c23.650 - National Parks & Wildlife Service - s.199 Consultation - Karuah River and Deep Creek - Tattersalls Boat Ramp and ~ Karuah National Park.

Fisheries Permit to Harm PN23/460

Document is provided as separate attachment, reference:

DOC23/648121-4 Appendix D - Fisheries Permit to Harm Marine Vegetation - PN23 460 HMV - Karuah River - Double Wharf Boat Ramp Upgrade - Karuah National Park.

Appendix E: Port Stephens – Great Lakes Marine Park consultation and permit

Fisheries notification and consultation under section 199

Document is provided as separate attachment, reference:

DOC23/648121-13 Appendix E - PSGLMP Notification, Consultation and EOT.

Fisheries Permit MEAA24/1729(B)

Document is provided as separate attachment, reference:

DOC24/664216 Appendix E - MEAA24 172 PSGLMP Permit - NPWS - Karuah NP Infrastructure upgrade - Marine Park Permit.