Certification

Submission of environmental impact statement, prepared under Part 4 of the Environmental Planning and Assessment Act 1979.

Environmental impact statement prepared by:

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Proposed development

The part of the proposal (being the Batemans Bay Bridge replacement), that is located on land to which State Environmental Planning Policy No 14 — Coastal Wetlands applies.

Address of the land

The proposed development is located on land adjacent and on the existing Princes Highway through Batemans Bay south of the Batemans Bay Bridge.

Description of the infrastructure

This environmental impact statement relates to areas of works associated with the Batemans Bay Bridge replacement proposal by Road and Maritime Services. These areas are located within areas mapped as wetlands under State Environmental Planning Policy No. 14 – Coastal Wetlands.

These areas comprise two separate sections located near and adjacent to the existing Princes Highway:
  • an area located to the west of the existing Princes Highway alignment on the southern approach to the Batemans Bay Bridge. This area comprises wetland vegetation as well as existing road reserve
  • an area located to the west of the existing Princes Highway alignment in Mackay Park. This area consists of an asphalt car park and bowling greens.
Environmental impact statement

This environmental impact statement addresses all matters in accordance with Part 4 of the Environmental Planning and Assessment Act 1979.

Declaration

I certify that I have prepared the contents of this environmental impact statement in response to the Secretary’s environmental assessment requirements dated 1 June 2017 and the relevant provisions of Schedule 1 and Schedule 2 of the Environmental Planning and Assessment Regulation 2000. To the best of my knowledge the information contained in the environmental impact statement is not false or misleading.

Signature: [signature]

Name: Lucia Coletta
Date: 30/10/17
Executive summary

Introduction

Roads and Maritime Services is proposing to construct a new bridge on the A1 Princes Highway over the Clyde River at Batemans Bay. The Batemans Bay Bridge replacement (the proposal) includes a new four lane bridge, two lanes each direction, to the west of the existing bridge and removal of the existing crossing. The proposal would improve access to Batemans Bay and surrounding areas, allow access for larger trucks, reduce traffic delays and improve the Kings and Princes Highway intersection.

The proposal is subject to assessment under two planning pathways, a review of environmental factors (REF) under Part 5 of Environmental Planning and Assessment Act 1979 (EP&A Act) and an environmental impact statement (EIS) under Part 4 of the EP&A Act. The majority of the proposal is subject to approval under Part 5 of the EP&A Act. However, a small part of the proposal (0.54 hectares) falls on land mapped under State Environmental Planning Policy No 14 – Coastal Wetlands (SEPP 14). As such, that part of the proposal (known as the EIS proposal) is subject to approval under Part 4 of the EP&A Act, and considered within this EIS.

The overall proposal

The overall proposal includes construction of a new bridge over the Clyde at Batemans Bay and upgrade of the Princes Highway generally between North Street and the Kings Highway.

The main features of the overall proposal include:
- construction of a new bridge to the west (upstream) of the existing Batemans Bay Bridge across the Clyde River including:
  - bridge approaches generally between Wharf Road on the northern side and Clyde Street on the southern side
  - two traffic lanes in each direction (at least 3.5 metres wide)
  - a three-metre-wide shared use path on the eastern side of the new bridge connecting the Kings Highway intersection to the North Street intersection
  - navigational clearance of about 12 metres from mean high water spring (MHWS) level
  - no access to Clyde Street, which would pass under the new bridge
- upgrade of the Princes Highway generally between North Street and the Kings Highway
- upgrade of the Kings Highway / Princes Highway intersection
- local road adjustments at Clyde Street, Wharf Road and Old Punt Road
- earthworks, including cuttings and embankments and retaining walls to support the new bridge approaches
- temporary ancillary facilities during construction including water quality controls, site offices, construction / demolition compounds, batching plants and stockpile sites
- permanent operational water quality controls
- utility relocations including optic fibre, telecommunications, electrical, water, drainage and sewerage
- replacement of the T-wharf downstream of the existing bridge
- removal of the existing bridge following opening of the new bridge
- site rehabilitation and landscaping works.
The EIS proposal

The EIS proposal area consists of two areas located within mapped SEPP 14 wetlands. A description of the EIS is:

- a small area located to the south of the Clyde River. Some of the land mapped as SEPP 14 comprises the existing Princes Highway. The EIS proposal in this area comprises of some permanent works, being road pavement and earthworks (embankment). In addition, access would be required to construct the overall proposal
- a small area located at the former bowling club site. The land mapped as SEPP 14 includes bowling greens and a hardstand parking area. This site is proposed to be used as an ancillary facility, including uses such as site offices, sheds, workshops and storage and stockpiling and areas for treating water.

The EIS proposal would be constructed and operated together with the REF proposal, which has been assessed in the REF prepared by Roads and Maritime.

Need for the proposal

The EIS proposal is required for the delivery of the overall proposal. The overall proposal is to replace the existing Batemans Bay Bridge.

The Princes Highway is a major road link which connects the Eurobodalla Shire to Sydney, the Illawarra, the Far South Coast and Victoria. The Batemans Bay Bridge is an important local connection between Batemans Bay Central Business District (CBD) and areas north of the river and provides the only link to essential services between these areas on either side of the river. As such, maintaining connectivity across the Clyde River is important.

There are number of network performance and safety issues associated with the existing bridge, built in 1956, which affects this connectivity, including:

- restrictions on higher mass limit (HML) vehicles
- restrictions on over-height vehicles (in excess of 5.1 metres) due to the truss height
- reliance on lift span operation for marine vessels that cannot pass under the bridge due to its low clearance. This causes highway traffic delays, particularly during peak holiday seasons
- poor condition of the bridge with unreliable connectivity for marine vessels and/or road traffic when the lift span fails or is closed for maintenance.

Roads and Maritime is therefore proposing to replace the Batemans Bay Bridge to:

- remove barriers to freight, particularly semi-trailers and B-doubles
- address current poor bridge condition and reduce ongoing maintenance and major rehabilitation obligations
- improve local and regional network connectivity for motor traffic
- improve journey reliability, particularly during holiday seasons.

Proposal objectives

The primary and secondary objectives of the EIS proposal are consistent with those of the overall proposal. The objectives of the overall proposal are to:

- remove barriers to highly productive use of the road freight network
- address poor bridge condition and reduce high ongoing maintenance costs
- improve network connectivity
- improve journey reliability
- provide the best benefit to our customers
- delivering the proposal within an acceptable timeframe
- delivering the proposal within budget
- prioritising the safety of our workers and our customers
• minimise environmental impact
• deliver a proposal which fits sensitively with the built, natural and community environment.

Options considered
Strategic alternatives considered to address the current networks performance and safety issues included:
• business as usual – the ‘do minimum’ alternative
• provision of alternative infrastructure
• bridge renewal (repair and refurbishment)
• bridge replacement.

Bridge replacement was selected as the preferred alternative as it would:
• enable the use of the Batemans Bay Bridge by HML vehicles
• lower maintenance costs compared to the existing bridge
• improve the reliability of the crossing by increasing the bridge capacity and allowing most marine vessels to pass under the bridge without use of a lift span.

A number of design options were then developed, which consisted of several alignments for a new bridge (central, western and eastern options), vertical clearances and bridge types.

A value management workshop was carried out in June 2017 to select the best performing option. This workshop involved the project team, technical specialists, community representatives, businesses, associations, Eurobodalla Shire Council and government agencies. The workshop recommended the western option as the preferred option as it:
• provides the best connectivity and functionality
• provides better opportunities for parking to support CBD growth and foreshore access
• provides the greatest flexibility in terms of options for construction
• has superior geometry (for better safety)
• allows a better driver experience and the better aesthetic solution
• would lead to better pedestrian accessibility
• provides better opportunities for parking and boating facilities on the northern side of the river.

The Preferred Route Option Report (Roads and Maritime 2017a) was placed on display between 4 August and 1 September 2017 to explain the assessment process and identify the preferred option to be taken forward for further community consultation and environmental investigation.

Statutory and planning framework
The EIS proposal falls within mapped SEPP 14 wetlands and as such is classified as designated development under clause 7 of SEPP 14 and Part 4 of the EP&A Act. The EIS proposal requires consent from Eurobodalla Shire Council and the concurrence of the Secretary of the Department of Planning and Environment (DPE). An EIS is required to be submitted as part of a Crown development application to Eurobodalla Shire Council.

In completing the EIS, Roads and Maritime has consulted with the Secretary of DPE to obtain Secretary’s Environmental Assessment Requirements (SEARs). The SEARs were issued on the 1 June 2017 under section 78A(8) of the EP&A Act.

This EIS has been prepared in accordance with the SEARs.

Part of the EIS proposal is located in the Batemans Marine Park. The concurrence of the Ministers for the Environment and Primary Industries is required for the EIS proposal under the Marine Estate Management Act 2014.
Community and stakeholder consultation

During the development of the overall proposal the following stakeholders have been consulted:
- Eurobodalla Shire Council
- potentially affected property owners
- residents of Eurobodalla
- community groups
- government agencies
- business owners including transport providers
- oyster lease operators
- river users and associations
- utility providers
- Aboriginal stakeholders.

The main issues and comments raised as part of the consultation related to the following:
- preference for the western option for the new bridge
- design features such bridge type, intersection modifications and maritime clearance
- flooding impacts and the need for flood assessments
- changes in views from surrounding areas
- general environmental impacts associated with the overall proposal such as property adjustments, compensation for loss of land, construction and operational noise impacts, construction dust management, visual impacts and revegetation
- impacts on the Batemans Marine Park
- impacts on SEPP 14 wetlands.

Environmental impacts

This EIS assesses the impacts of the part of the overall proposal located on land mapped as SEPP 14 wetlands (the EIS proposal).

As the EIS proposal forms only a small component of the overall proposal, most of the potential environmental impacts of the overall proposal are assessed in the REF. In accordance with Clause 9 Schedule 2 of the Environmental Planning and Assessment Regulation 2000, the REF is taken to form part of this EIS and the two documents should be read together. Where relevant, the EIS assesses the indirect and cumulative impacts of the overall proposal and provides a summary of the assessment of the key potential environment impacts of the overall proposal.

While the EIS proposal is located within mapped SEPP 14 wetlands, the majority of the EIS proposal area (0.47 hectares) comprises existing cleared land, including existing road pavement, cleared road verge, former bowling greens and a hardstand carpark. The EIS proposal would result in the clearing of up to 0.07 hectares of wetland vegetation, comprising 0.06 hectares of mangrove forest and 0.01 hectares of saltmarsh.

The EIS proposal would have potential to adversely impact on soils and water quality. An erosion and sediment control plan would be prepared and implemented to minimise the risk of water quality impacts during construction. Due to the proposed management measures, as well as the limited extent of works within the EIS proposal, any impacts would be minor.

Stormwater treatment and spill containment facilities would be implemented as part of the REF proposal to manage potential operational water quality impacts and the risk of impacts from large spills. The existing bridge does not have these features, so the overall proposal is expected to improve the quality of stormwater runoff from the bridge.

The EIS proposal would have minimal impact on construction and operational traffic, construction and operational noise, waste management, air quality, land use, socioeconomic and visual amenity.
The EIS proposal would not have a negative impact on Aboriginal heritage, non-Aboriginal heritage, hydrology and coastal processes.

**Justification and conclusion**

The EIS proposal is required for the delivery of the overall proposal. The overall proposal is considered consistent with a number of strategies and plans including:

- The NSW State priorities
- NSW Long Term Transport Master Plan
- Southern Regional Transport Plan
- Rebuilding NSW – State Infrastructure Strategy
- Draft South East and Tablelands Regional Plan
- Princes Highway Corridor Strategy.

The overall proposal is considered to be important to the region with positive social and economic impacts. The Princes Highway is a critical link for passenger and freight traffic between the NSW South Coast, Canberra, Illawarra and Sydney regions.

Implementation of the overall proposal would result in:

- improved freight access by removing the existing Higher Mass Limit (HML) constraint across the Clyde River at Batemans Bay
- uninterrupted access under the bridge for marine vessels that require up to 12 metre navigational clearance
- reduced traffic delays at the Kings and Princes Highway intersection, especially for forecast growth in peak holiday traffic
- improved connectivity and accessibility for residents, tourists and emergency vehicles between North Batemans Bay and Surfside with Batemans Bay CBD.

This EIS has addressed the key issues identified in the SEARs issued under Part 4 of the EP&A Act and the relevant provisions of Schedules 1 and 2 of the Environmental Planning and Assessment Regulation 2000. Environmental impacts can be effectively mitigated with the application of safeguards outlined within the EIS. The impacts of the EIS proposal are not considered to be significant.
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1 Introduction

1.1 Overview

Roads and Maritime Services is proposing to construct a new bridge on the A1 Princes Highway over the Clyde River at Batemans Bay. The Batemans Bay Bridge replacement (the proposal) includes a new four lane bridge (two lanes each direction) to the west of the existing bridge and removal of the existing crossing. The new bridge would improve access to Batemans Bay and surrounding areas, allow access for larger trucks, reduce traffic delays and improve the Kings Highway / Princes Highway intersection. The proposal location is shown in Figure 1-1.

It is expected that early works for the proposal, such as relocation of existing utilities would commence in 2018 with main construction commencing in 2019. The new bridge is planned to be completed and open to traffic in 2021. Once the new bridge is completed, demolition of the existing bridge would commence. This work is expected to be completed by 2022.

The proposal is subject to assessment under two planning pathways, a review of environmental factors (REF) under Part 5 of Environmental Planning and Assessment Act 1979 (EP&A Act) and an environmental impact statement (EIS) under Part 4 of the EP&A Act.

While the majority of the proposal is permissible under Part 5 of the EP&A Act, a small part of the proposal falls on land mapped under State Environmental Planning Policy No 14 – Coastal Wetlands (SEPP 14). As such, that part of the proposal (known as the EIS proposal) is classified as designated development and requires consent from Eurobodalla Shire Council and concurrence of the Secretary of the Department of Planning and Environment (DP&E) under Clause 7 of SEPP 14 and Part 4 of the EP&A Act.

To seek the necessary development consent, an EIS is required (this document) to assess the impacts of the EIS proposal. As the EIS proposal forms only a small part of the overall proposal (ie the development comprised of the EIS proposal and the REF proposal), most of the potential environmental impacts are assessed in the REF. In accordance with Clause 9 Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation), the REF is taken to form part of this EIS and the two documents should be read together.

Where relevant, the EIS assesses the indirect and cumulative impacts of the overall proposal and summary of the assessment of the key potential environment impacts of the overall proposal is contained in section 8.7.

The relationship between the EIS proposal and the REF proposal is discussed in more detail in section 1.4 and section 2.1.
Figure 1-1: Proposal location

Batemans Bay Bridge replacement
Environmental Impact Statement

FIGURE 1-1: Proposal location

Source: Australian, RMS, LPi, Esri Topo, Nearmap

The proposal
Excluded from proposal area
Highway
SEPP 14 wetland area
Major road
Batemans Marine Park
EIS proposal area
The proposal area

Projection: GDA1994 MGA Zone 56

Batemans Bay Bridge replacement
Environmental impact statement

2
1.2 The proposal

1.2.1 Background

Batemans Bay is a major regional centre and is the closest seaside town to Canberra, making it a popular holiday destination for residents of the ACT and surrounding areas.

The Princes Highway is a classified State Highway (A1) and is the primary coastal route between Sydney and Melbourne. The Kings Highway, which is Canberra’s primary road connection to the NSW South Coast, intersects with the Princes Highway at the northern extent of the proposal area (being the Princes Highway between North Street in the south and the Kings Highway in the north).

The Princes Highway at Batemans Bay is the main north-South Coastal transport corridor. Commercial, industrial and residential zones are located on the southern side of the Clyde River extending to the coastal south-east. Tidal wetlands and mangroves have prevented development to the south-west. Areas north of the river include residential development and holiday accommodation.

The existing Batemans Bay Bridge was built in 1956 to replace a ferry, with a lift span to accommodate commercial marine traffic. The normal vertical clearance for marine traffic is 3.6 metres (mean high water springs) when the lift span is not raised, but can be increased to a maximum clearance of about 23 metres when the lift span is operating.

The crossing over the Clyde River is an important local connection between the commercial centre of Batemans Bay and areas north of the river such as North Batemans Bay and provides the only link to essential services between these areas on either side of the river. When the lift span is operating, traffic along the Princes Highway is disrupted and this link is severed.

The timber-related and fishing industries which initially navigated through the bridge have been mostly replaced by commercial and recreational water traffic. Most lifts are made for a local tourist ferry, but the lift span also operates for other commercial vessels, yachts, motor cruisers and for maintenance of the bridge.

Issues with the existing bridge include increased maintenance costs, no access for larger heavy (higher mass limit (HML)) vehicles due to weight and height restrictions, lack of reliable access across the Clyde River due to failures in operating the lift span and restricted access to the Clyde River for river vessels due to the bridge height when the lift span is down. The lift span and nearby intersections cause long traffic queues during peak holiday periods. These issues can be increased due to the lift span’s occasional operational issues. Where there is an incident on the bridge or where the lift span has failed, the detour for highway traffic is about 350 kilometres.

Implementation of the overall proposal would result in:
- improved freight access by removing the existing Higher Mass Limit (HML) constraint across the Clyde River at Batemans Bay
- uninterrupted access under the bridge for marine vessels that require up to 12 metre navigational clearance
- reduced traffic delays at the Kings and Princes Highway intersection, especially for forecast growth in peak holiday traffic
- improved connectivity and accessibility for residents, tourists and emergency vehicles between North Batemans Bay and Surfside with Batemans Bay CBD.

1.2.2 Proposal location and setting

The bridge over the Clyde River at Batemans Bay is located on the A1 Princes Highway, about 270 kilometres south of Sydney and 150 kilometres east of Canberra. It is located on the NSW South Coast, within the Eurobodalla local government area (LGA).
On the southern side of the bridge, Batemans Bay’s main shopping and commercial area includes a large supermarket and shopping mall. Key features adjacent to the proposal area on the southern side of the bridge include holiday accommodation, commercial areas, river foreshore areas and facilities as well as an area mapped as a SEPP 14 wetland.

On the northern side of the bridge are the suburbs of North Batemans Bay and Surfside. Other features near the proposal area include holiday accommodation, residences and commercial development.

The Clyde River around the proposal area has many uses including ecological function, tourist and recreational maritime use and aquaculture uses. The Clyde River (and tributary, Mcleods Creek), in the proposal area is part of the Batemans Marine Park, with most of the river zoned as Habitat Protection. Mcleods Creek is also mapped as SEPP 14 Wetlands. The Clyde River also caters for commercial, recreational and tourist boating and fishing use, with a number of moorings located upstream of the exiting bridge and private and commercial wharves located downstream, mostly on the southern bank. Aquaculture on the Clyde River consists of oyster farming. There are a number of oyster leases located upstream of the existing bridge, on either side of the Clyde River, particularly around Budd Island and Mcleods Creek.

1.2.3 Overall proposal

The overall proposal includes construction of a new bridge over the River Clyde and upgrade of the Princes Highway at the bridge approaches between North Street to the south and the intersection of the Princes Highway and the Kings Highway in the north. The proposal also includes the demolition of the existing bridge following the completion and opening of the new bridge to traffic.

The key features of the proposal are shown in Figure 1-2 and include:
- construction of a new bridge to the west (upstream) of the existing Batemans Bay Bridge across the Clyde River including:
  - bridge approaches generally between Wharf Road on the northern side and Clyde Street on the southern side
  - two traffic lanes in each direction (at least 3.5 metres wide)
  - a three-metre-wide shared use path on the eastern side of the new bridge connecting the Kings Highway intersection to the North Street intersection
  - navigational clearance of about 12 metres from mean high water spring (MHWS) level
  - no access to Clyde Street, which would pass under the new bridge
- upgrade of the Princes Highway generally between North Street and the Kings Highway
- upgrade of the Kings Highway / Princes Highway intersection
- local road adjustments at Clyde Street, Wharf Road and Old Punt Road
- earthworks, including cuttings and embankments and retaining walls to support the new bridge approaches
- temporary ancillary facilities during construction including water quality controls, site offices, construction / demolition compounds, batching plants and stockpile sites
- permanent operational water quality controls
- utility relocations including optic fibre, telecommunications, electrical, water, drainage and sewerage
- replacement of the T-wharf downstream of the existing bridge
- removal of the existing bridge following opening of the new bridge
- site rehabilitation and landscaping works.

The key features of the overall proposal are shown in Figure 1-2. Further details of the EIS proposal is contained in chapter 5.
FIGURE 1-2: Key features of the proposal

Batemans Bay Bridge replacement Environmental Impact Statement

Projection: ODA 1994 UGA Zone 56

Source: Aspecos, RMS, LPI, Eki Topp

- Bridge design
- Indicative foreshore parking
- Shared use path
- Indicative local road adjustments
- Fill
- REF proposal area
- Cut
- EIS proposal area
- Bridge and approaches to be removed
- Excluded from proposal area
- T-wharf to be replaced
- SEPP 14 wetland area

FIGURE 1-2: Key features of the proposal
1.3 EIS proposal

A small part of the overall proposal (0.54 hectares) is located on land mapped as SEPP 14 wetlands (the EIS proposal). This EIS assesses impacts to the SEPP 14 area within the overall proposal area. It also assesses the indirect impacts of the REF proposal where it would impact on the SEPP 14 wetlands. The extent of the work subject to this EIS is shown in Figure 1-3.

The EIS proposal area is located in two discrete areas. A description of the EIS proposal in each of these areas is as follows:

- a small area (0.31 hectares) located to the south of the Clyde River. The EIS proposal in this area comprises of some permanent works, being road pavement and earthworks (embankment) to support the realigned approach to the new bridge. In addition, access in this area would be required to construct the overall proposal. This area includes 0.07 hectares of wetland vegetation, while the remainder of the area comprises existing road pavement and cleared road verge.

- a small area (0.23 hectares) located at the former bowling club site. The land mapped as SEPP 14 includes bowling greens and a hardstand parking area. This site is proposed to be used as an ancillary facility, including uses such as site offices, sheds, workshops and storage and stockpiling and areas for treating water. This area comprises existing cleared and developed areas, with no wetland vegetation.

Chapter 5 describes the EIS proposal in more detail.

The EIS proposal would be constructed and operated in conjunction with the REF proposal, as assessed in the REF.

1.4 Relationship of the REF and EIS

Development consent under Part 4 is usually not required for development for the purposes of a road being undertaken by Roads and Maritime as a public authority. This type of development is ordinarily assessed as an ‘activity’ under Part 5 of the EP&A Act.

However, given the EIS proposal is located on land mapped as SEPP 14 wetland area, it is classified as designated development and requires consent from Eurobodalla Shire Council under Part 4 of the EP&A Act and concurrence of the DP&E. The part of the overall proposal located within SEPP 14 wetlands is therefore assessed under Part 4 of the EP&A Act.

Under Part 4, works classified as designated development requires an EIS to be prepared to assess the impacts of any works located within SEPP 14 wetland or any impacts on a SEPP 14 wetland. This EIS will be submitted with a Crown development application to seek for the EIS proposal from Eurobodalla Shire Council.

A separate REF has been prepared for the assessment of the REF proposal in accordance with Part 5 of the EP&A Act. This document would be determined by Roads and Maritime.

This EIS also considers any indirect and cumulative impacts of the REF proposal. The cumulative impacts of the overall proposal are discussed in section 8.7. Together, the EIS and this REF assess the potential environmental impacts of the proposal and it is intended that these documents be read in conjunction with each other.

Figure 1-3 shows the area of the proposal assessed under Part 5 (the REF proposal) and the area subject to assessment under Part 4 (the EIS proposal).
Figure 1-3: REF and EIS proposal for Batemans Bay Bridge replacement Environmental Impact Statement

Legend:
- The proposal
- Lot
- EIS proposal area
- REF proposal area
- Excluded from proposal area
- SEPP 14 wetland area

Source: Agrecon, RMS, LPI, Esri Topo, Neamap

Projection: ODA 1994 MGA Zone 58

FIGURE 1-3: the REF and EIS Proposal
1.5 Structure of this EIS

1.5.1 Secretary's Environmental Assessment Requirements

This EIS has been prepared to address the environmental assessment requirements issued by the Secretary of the DP&E on 1 June 2017 (Table 1-1) and the relevant provisions of Schedule 1 and 2 of the EP&A Regulation (Appendix B).

Table 1-1 Secretary's environmental assessment requirements and where they are addressed

<table>
<thead>
<tr>
<th>Secretary’s Requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General requirements</td>
<td></td>
</tr>
<tr>
<td>The Environmental Impact Statement (EIS) must meet the minimum form and content requirements in clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000</td>
<td>Appendix B</td>
</tr>
<tr>
<td>Key issues</td>
<td></td>
</tr>
<tr>
<td>Project justification - including the need for the proposal, its consistency with relevant strategic planning documents and consideration of impacts of 'no action' and consideration of different alignments and technologies of constructing the new bridge</td>
<td>chapter 3 and chapter 4</td>
</tr>
<tr>
<td>Flora and fauna - impacts on flora and fauna and habitat, within and surrounding the proposed development footprint, including threatened species, ecological communities and critical habitat listed under the Threatened Species Conservation Act 1995</td>
<td>section 7.1</td>
</tr>
<tr>
<td>- impacts on marine vegetation and aquatic species and key fish habitat listed under the Fisheries Management Act 1994 and aquaculture activities in the area.</td>
<td></td>
</tr>
<tr>
<td>Heritage - impacts on Aboriginal heritage (including cultural and archaeological significance). The assessment shall be undertaken consistent with the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011) and related guidelines and requirements.</td>
<td>section 7.2</td>
</tr>
<tr>
<td>Coastal processes</td>
<td></td>
</tr>
<tr>
<td>- the effects of coastal processes and coastal hazards including the effects of climate change</td>
<td>section 7.3</td>
</tr>
<tr>
<td>- consistency with coastal zone management plans, floodplain risk management plans and flood hazards associated with the land</td>
<td></td>
</tr>
<tr>
<td>- flooding - consideration of the impacts of the proposal on the hydraulic and hydrologic regime of the area.</td>
<td></td>
</tr>
<tr>
<td>Soil and water quality - detail the disturbance of soils, and the associated impacts on:</td>
<td>section 7.4</td>
</tr>
<tr>
<td>- receiving water ways and wetlands, in particular the Batemans Marine Park</td>
<td></td>
</tr>
<tr>
<td>- groundwater dependent ecosystems</td>
<td></td>
</tr>
<tr>
<td>- surface and groundwater sources and quality</td>
<td></td>
</tr>
<tr>
<td>- occurrence of acid sulfate soils and likely disturbance of those soils.</td>
<td></td>
</tr>
<tr>
<td>Secretary’s Requirement</td>
<td>Where addressed in the EIS</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td><strong>Traffic</strong> - consideration of the traffic impacts on the surrounding land uses during construction</td>
<td>section 7.5</td>
</tr>
<tr>
<td><strong>Noise</strong> - assess the likely impacts during construction in accordance with relevant construction noise guidelines, and the effectiveness of any necessary measures to manage and mitigate construction noise</td>
<td>section 7.6</td>
</tr>
<tr>
<td><strong>Waste</strong> - detail waste classification, handling, control and disposal measures</td>
<td>section 7.7</td>
</tr>
<tr>
<td><strong>Visual amenity</strong> - consideration of the visibility of the project from adjacent sensitive viewpoints</td>
<td>section 7.8</td>
</tr>
<tr>
<td><strong>Environmental Monitoring and Management</strong> - the EIS must describe in detail what measures would be implemented to manage, mitigate or offset the potential impacts (including cumulative impacts) of the proposal (as identified above) during construction and operation as relevant, and where required, describe how the environmental performance of the proposal would be monitored and managed over time. Where possible, reasonable and feasible mitigation measures should be developed in consultation with surrounding affected landowners and relevant public authorities</td>
<td>chapter 9</td>
</tr>
</tbody>
</table>

**Planning document and environmental planning instruments**

The EIS must assess the proposal against the relevant planning documents and environmental planning instruments, including, but not limited to:
- State Environmental Planning Policy No 14 – Coastal Wetlands
- State Environmental Planning Policy No 71 - Coastal Protection
- State Environmental Planning Policy (Infrastructure 2007)
- Draft South East and Tablelands Regional Plan 2017
- Eurobodalla Local Environmental Plan 2012

**Agency Issues and Guidelines**

During the preparation of the EIS you should address relevant development Guidelines assessment guidelines available on the Department's website at planning.nsw.gov.au.

Matters to be considered and guidelines identified in consultation with agencies in the preparation of these requirements should also be addressed.

**Plans and Documents**

The EIS must include all relevant plans, diagrams and relevant documentation required under Schedule 1 of the Regulation. These items are to be provided as part of the EIS rather than as separate documents.

Refer to figures through the EIS, and to appended studies.
<table>
<thead>
<tr>
<th>Secretary's Requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultation</td>
<td>chapter 6</td>
</tr>
<tr>
<td>You must undertake an appropriate and justified level of consultation with relevant parties during the preparation of the EIS, including: local, State or Commonwealth government authorities and service providers including the: • Office of Environment and Heritage (OEH) • Department of Primary Industries (DPI) (including Fisheries, Water and Lands) • NSW Environment Protection Authority (EPA) • Marine Park Authority • Eurobodalla Shire Council • specialist interest groups, including local Aboriginal land councils and Registered Aboriginal Parties • utilities and service providers • the local community, including affected and surrounding landowners The EIS must describe the consultation process, document consultation undertaken and identify any issues raised (including where these have been addressed in the EIS).</td>
<td></td>
</tr>
<tr>
<td>Further consultation after two years</td>
<td>Noted</td>
</tr>
<tr>
<td>You should note that if the Development Application to which these requirements relate is not made within two years of the date of issue, you must re-consult with the Secretary prior to lodging the application.</td>
<td></td>
</tr>
</tbody>
</table>

### 1.5.2 Contents of the EIS

The structure of the EIS is:
- chapter 1: Introduction – provides a broad overview of the overall proposal and the EIS proposal and where it is located
- chapter 2: Assessment process – outlines the statutory requirements and explains the steps in the assessment and approval process
- chapter 3: Strategic justification and proposal need – provides the strategic context, explains the need for the proposal and identifies the proposal objectives
- chapter 4: Proposal development and alternatives – reviews the options considered in developing the overall proposal including the consequences of not proceeding
- chapter 5: Description of the proposal – provides a detailed description of the EIS proposal including the route alignment, design standards, key design features and construction methodologies and staging
- chapter 6: Consultation – outlines the consultation activities undertaken, issues raised and how these have been addressed
- chapter 7: Assessment of key issues – identifies the key environmental issues, assesses the impacts and proposes environmental management measures
- chapter 8: Assessment of other issues – identifies other environmental issues, assesses the impacts and proposes environmental management measures
- chapter 9: Environmental management – collates all of the environmental management measures for the EIS proposal identified through the impact assessment
- chapter 10: Proposal justification and conclusion – presents the justification for the EIS proposal, including consideration of the principles of ecologically sustainable development and the objects of the EP&A Act.
2 Assessment process

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

<table>
<thead>
<tr>
<th>Secretary’s requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>The EIS must assess the proposal against the relevant planning documents and environmental planning instruments, including, but not limited to:</td>
<td></td>
</tr>
<tr>
<td>State Environmental Planning Policy No 14 – Wetlands</td>
<td>section 2.2.3</td>
</tr>
<tr>
<td>State Environmental Planning Policy No 71 – Coastal Protection</td>
<td>section 2.2.4</td>
</tr>
<tr>
<td>State Environmental Planning Policy (Infrastructure 2007)</td>
<td>section 2.2.2</td>
</tr>
<tr>
<td>Draft South East and Tablelands Regional Plan 2017</td>
<td>section 3.2.5</td>
</tr>
<tr>
<td>Eurobodalla Local Environmental Plan 2012</td>
<td>section 2.3.1</td>
</tr>
</tbody>
</table>

2.1 Approval framework

2.1.1 Overview

As outlined in chapter 1, the overall proposal is subject to two separate assessments:

- Part 5 of the EP&A Act. This is applicable to the majority of the proposal (the area that does not fall in SEPP 14 wetlands). An assessment under Part 5 is prepared in a REF, which is determined by Roads and Maritime.
- Part 4 of the EP&A Act. This is applicable to the part of the proposal that falls within mapped SEPP 14 wetlands. This development is designated development that is required to be supported by an EIS, with consent required from Eurobodalla Shire Council and concurrence from DP&E. As a government agency, Roads and Maritime will prepare a Crown development application for submission to Eurobodalla Shire Council.

2.1.2 Environmental Planning and Assessment Act 1979

The EIS proposal falls within mapped SEPP 14 wetlands and as such is classified as designated development under clause 7 of SEPP 14 and Part 4 of the EP&A Act. The EIS proposal would require consent from Eurobodalla Shire Council. Under Section 7(1) of SEPP 14, concurrence of the Secretary of the DP&E is also required prior to consent being provided.

Roads and Maritime applied to the Secretary of the DP&E to obtain SEARs for the EIS proposal. The SEARs were issued on the 1 June 2017 under section 78A(8) of the EP&A Act. This EIS has been prepared in accordance with the SEARs and pursuant to relevant provisions of Schedule 1 and Schedule 2 of the EP&A Regulation.

This EIS for designated development will be lodged with Eurobodalla Shire Council as part of the Crown development application seeking consent for the EIS proposal under section 76A of the EP&A Act.

In accordance with section 79 of the EP&A Act, this EIS must be publicly exhibited for at least 30 days, during which time any person may make a written submission to the consent authority (Eurobodalla Shire Council) with respect to the development application. Eurobodalla Shire Council will then consider the submissions as part of its evaluation of the EIS proposal.
Matters that must be taken into consideration by a consent authority when determining a development application under Part 4 are detailed in section 79C of the EP&A Act. These matters are outlined in Table 2-1 with a reference to where each of these matters is addressed in the EIS.

As the development application to Eurobodalla Shire Council will be made by the Crown (ie Roads and Maritime) it will constitute a Crown development application under Division 4 of Part 4 of the EP&A Act. In accordance with section 89 of the EP&A Act, a consent authority may not refuse to grant consent for a Crown development application except with the approval of the Minister for Planning and may not impose conditions upon its consent except with the approval of either the Minister for Planning or the applicant for consent (ie Roads and Maritime).

The approval process under Part 4 of the EP&A Act for designated development is shown in Figure 2-1.

Table 2-1 Section 79C EP&A Act – Matters for consideration

<table>
<thead>
<tr>
<th>Matters for consideration</th>
<th>Comment/where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) the provisions of:</td>
<td></td>
</tr>
<tr>
<td>(i) any environmental planning instrument, and</td>
<td>sections 2.2 and 2.3.1</td>
</tr>
<tr>
<td>(ii) any proposed instrument that is or has been the subject of public consultation under this Act and has been notified to the consent authority (unless the Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and</td>
<td>section 2.2.4</td>
</tr>
<tr>
<td>(iii) any development control plan, and</td>
<td>sections 2.3.2</td>
</tr>
<tr>
<td>(iiiia) any planning agreement that has been entered into under section 93F, or any draft planning agreement that a developer has offered to enter into under section 93F, and</td>
<td>No planning agreement is applicable to the proposal</td>
</tr>
<tr>
<td>(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph), and</td>
<td>Addressed as part of discussions in section 2.1</td>
</tr>
<tr>
<td>(v) any coastal zone management plan (within the meaning of the Coastal Protection Act 1979), that apply to the land to which the development application relates,</td>
<td>No coastal zone management plan applies to land to which the development application relates. However, a coastal hazard management plan for Eurobodalla Shire that has been considered in section 7.3.</td>
</tr>
<tr>
<td>(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,</td>
<td>chapters 7 and 8</td>
</tr>
<tr>
<td>(c) the suitability of the site for the development,</td>
<td>section 10.1.3</td>
</tr>
<tr>
<td>(d) any submissions made in accordance with this Act or the regulations,</td>
<td>This EIS will be placed on public exhibition for community and stakeholder feedback. Submissions would be considered by Council.</td>
</tr>
<tr>
<td>(e) the public interest.</td>
<td>section 10.1</td>
</tr>
</tbody>
</table>
Figure 2-1: Approval processes

Batemans Bay Bridge replacement Environmental Impact Statement

**EIS PROPOSAL**

Part 4 Designated Development process for lands within SEPP14 wetlands

Roads and Maritime requests Secretary Environmental Assessment Requirements (SEARs) from Department of Planning and Environment

Secretary prepares SEARs in consultation with relevant public authorities

Roads and Maritime prepares an Environmental Impact Statement (EIS) to support a Crown Development Application

Crown Development Application and EIS submitted to Eurobodalla Shire Council

**REF PROPOSAL**

Part 5 REF process for lands outside SEPP14 wetlands

Roads and Maritime prepares a Review of Environmental Factors to assess the impacts of the REF proposal

**COUNCIL TO PLACE THE EIS ON PUBLIC EXHIBITION FOR A PERIOD OF 30 DAYS**

ROADS AND MARITIME PLACE THE REF ON PUBLIC DISPLAY FOR A PERIOD OF 30 DAYS

Council considers submissions made and forwards submissions through to the Department of Planning and Environment

Secretary provides concurrence to the Application

Eurobodalla Shire Council grants consent (or refuses consent, only if approval to refuse is received from Minister of Planning)

**PROPOSAL PROCEEDS TO DETAILED DESIGN AND CONSTRUCTION**

Roads and Maritime prepares a Submissions Report to address concerns raised during the public display period

Determination of REF by Roads and Maritime
2.2 **State Environmental Planning Policies**

2.2.1 **State Environmental Planning Policy (State and Regional Development) 2011**

Part 4 of the State Environmental Planning Policy (State and Regional Development) 2011 (State and Regional Development SEPP) identifies the development types that are considered to be regional development where consent authority functions are conferred on regional planning panels.

Clause 5 of Schedule 4A of the EP&A Act outlines that Crown development with a capital investment value of over $5 million is deemed to be regional development.

The value of the works forming the EIS proposal would not have a value of over $5 million as they only consist of minor embankment works and road widening as part of the overall proposal. Therefore, a regional panel could not ordinarily be authorised to exercise Eurobodalla Shire Council functions as consent authority in respect of the development application.

2.2.2 **State Environmental Planning Policy (Infrastructure) 2007**

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State.

Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

However, while the proposal is a road project being undertaken by a public authority, it affects land that is regulated by State Environmental Planning Policy No. 14 - Coastal Wetlands (SEPP 14). As such, the provisions of SEPP 14 prevail over the ISEPP and ISEPP does not apply to the EIS proposal.

2.2.3 **State Environmental Planning Policy No. 14 – Coastal Wetlands**

SEPP 14 aims to ensure that coastal wetlands identified within the SEPP are preserved and protected in the environmental and economic interests of the State.

One wetland listed under SEPP 14, No. 212, is located on the south western side of the overall proposal and would be impacted (Figure 1-2).

Clause 7(1) of SEPP 14 states that a person may not clear, drain, fill or construct a levee on land to which the policy applies, except with the consent of the relevant local council and concurrence of the Secretary of the DP&E. The EIS proposal would result in the clearing and filling of land for the construction and operation of approaches associated with the new bridge and therefore consent is required from Eurobodalla Shire Council.

Such development is declared designated development pursuant to Clause 7(3) of SEPP 14 and section 29 of the EP&A Act and a Crown development application with an EIS is required to be prepared. Development consent under Part 4 of the EP&A Act is required for the EIS proposal.

In considering whether to grant concurrence, the Secretary of the DP&E must consider the matters outlined in Clause 7(2) of SEPP 14. These matters have been addressed in Table 2-2.
Table 2-2 SEPP 14 – Matters for consideration

<table>
<thead>
<tr>
<th>Matter of consideration</th>
<th>Comment/where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) the environmental effects of the proposed development, including the effect of the proposed development on:</td>
<td></td>
</tr>
<tr>
<td>(i) the growth of native plant communities,</td>
<td>Section 7.1</td>
</tr>
<tr>
<td>(ii) the survival of native wildlife populations,</td>
<td>Section 7.1</td>
</tr>
<tr>
<td>(iii) the provision and quality of habitats for both indigenous and migratory species,</td>
<td>Section 7.1</td>
</tr>
<tr>
<td>(iv) the surface and groundwater characteristics of the site on which the development is proposed to be carried out and of the surrounding area, including salinity and water quality,</td>
<td>Section 7.4</td>
</tr>
<tr>
<td>(b) whether adequate safeguards and rehabilitation measures have been, or will be, made to protect the environment,</td>
<td>Section 9</td>
</tr>
<tr>
<td>(c) whether carrying out the development would be consistent with the aim of this policy,</td>
<td>The EIS proposal is considered to preserve and protect the SEPP 14 wetlands as areas to be impacted contain only small areas of actual wetlands. The EIS proposal areas is 0.54 hectares in size, however this includes part of the existing Princes Highway, highly disturbed grass verge, parking areas and bowling greens. The area of actual wetlands to be impacted is only 0.07 hectares of already disturbed vegetation to be removed. These minor impacts are considered to be justifiable due to the economic benefits the overall proposal provides to the region by improving road safety and ensuring this key transport corridor remains open.</td>
</tr>
<tr>
<td>(d) the objectives and major goals of the “National Conservation Strategy for Australia” (as set forth in the second edition of a paper prepared by the Commonwealth Department of Home Affairs and Environment for comment at the National Conference on Conservation held in June, 1983, and published in 1984 by the Australian Government Publishing Service) in so far as they relate to wetlands and the conservation of “living resources” generally, copies of which are deposited in the office of the Department,</td>
<td>The current version of the National Conservation Strategy for Australia is Australia's Biodiversity Conservation Strategy 2010-2030 (Natural Resource Management Ministerial Council 2010). The EIS proposal is not considered to result in any substantial reduction of actual wetlands, with the areas to be impacted minimal in size and due to their location next to the existing infrastructure (ie Princes Highway) being highly degraded. The EIS proposal is not considered to result in any substantial impacts on wetland vegetation as only about 0.07 hectares are predicted to be impacted within SEPP 14 wetland No. 212.</td>
</tr>
<tr>
<td>(e) whether consideration has been given to establish whether any feasible alternatives exist to the carrying out of the proposed development (either on other land or by other methods) and if so, the reasons given for choosing the proposed development,</td>
<td>Section 4</td>
</tr>
<tr>
<td>(f) any representations made by the Director of National Parks and Wildlife in relation to the development application, and</td>
<td>A copy of the EIS will be forwarded to the Director of National Parks and Wildlife by Council in accordance with section 8 of SEPP 14. Any representations made by the Director would be considered by Council as part of the application.</td>
</tr>
</tbody>
</table>
(g) any wetlands surrounding the land to which the development application relates and appropriateness of imposing conditions requiring the carrying out of works to preserve or enhance the value of those surrounding wetlands.

The EIS proposal areas would be delineated with the use of fencing to ensure that surrounding wetland areas are protected from direct damage. Indirect impacts would be minimised through the implementation of environmental safeguards and measures outlined in section 9.

2.2.4 State Environmental Planning Policy No. 71 – Coastal Protection

State Environmental Planning Policy No. 71 – Coastal Protection (SEPP 71) ensures that development in the NSW coastal zone is appropriate and suitably located, that there is a consistent and strategic approach to coastal planning and management and that there is a clear development assessment framework for the coastal zone.

SEPP 71 applies to land within the coastal protection zone which extends along the Clyde River from the coast, as defined in the Coastal Protection Act 1979.

Clause 7(b) of SEPP 71 states that the matters for consideration set out in clause 8 should be taken into account by a consent authority when it determines a development application to carry out development on land to which this Policy applies.

This EIS has been prepared to address impacts in this area and has addressed the matters for consideration outlined in Clause 8 of SEPP 71 (Table 2-3).

### Table 2-3 SEPP 71 – Clause 8 matters for consideration

<table>
<thead>
<tr>
<th>Matter of consideration</th>
<th>Comment/where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) the aims of this Policy set out in clause 2,</td>
<td>The EIS proposal is considered to meet the aims of SEPP 71 as the EIS proposal would involve works which do not significantly impact upon the natural environment or impact access to the foreshore areas of the Clyde River. The works forming the EIS proposal would not result in substantial changes to the existing situation with works in these locations being similar to the existing roadway. The overall proposal would upgrade the Princes Highway which provides a key link north south along NSW’s eastern coast and provides a number of economic benefits. The overall environmental impacts have been minimised where possible through the implementation of mitigation measures. The economic benefits of the overall proposal have been considered and the environmental impacts which would result from the proposal are considered justifiable when considering the economic benefits of the overall proposal.</td>
</tr>
<tr>
<td>(b) existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved,</td>
<td>The EIS proposal would not include any new access (or reduce existing access) to the foreshore areas and therefore existing access levels would be maintained.</td>
</tr>
<tr>
<td>Matter of consideration</td>
<td>Comment/where addressed in the EIS</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>(c) opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability,</td>
<td>The EIS proposal does not include any new access to foreshore areas. Due to the positioning of the EIS proposal area, providing access is not considered to be a viable option. The overall proposal would potentially increase the amount of the foreshore available to be accessed through the removal of the existing bridge and bridge approaches, as well as the new bridge allowing access underneath.</td>
</tr>
<tr>
<td>(d) the suitability of development given its type, location and design and its relationship with the surrounding area,</td>
<td>The EIS proposal is considered to be suitable as the works would be located near the existing Princes Highway and would be for the same use. There would be some impacts to mapped SEPP 14 wetland areas, however the majority of these areas are not actual wetlands but rather areas of the existing Princes Highway or highly disturbed adjacent grass verge. Areas where impacts to actual wetlands are proposed are considered to be degraded due to their proximity to the existing highway and therefore impacts to these areas are not considered substantial.</td>
</tr>
<tr>
<td>(e) any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore,</td>
<td>Addressed in section 7.8</td>
</tr>
<tr>
<td>(f) the scenic qualities of the New South Wales coast, and means to protect and improve these qualities,</td>
<td>Addressed in section 7.8</td>
</tr>
<tr>
<td>(g) measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995) and plants (within the meaning of that Act), and their habitats,</td>
<td>Addressed in section 7.1.</td>
</tr>
<tr>
<td>(h) measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994) and marine vegetation (within the meaning of that Part), and their habitats</td>
<td>Addressed in section 7.1.</td>
</tr>
<tr>
<td>(i) existing wildlife corridors and the impact of development on these corridors,</td>
<td>The EIS proposal would not result in any impacts on existing wildlife corridors as it is positioned on the edge of existing vegetation areas adjacent to existing road infrastructure.</td>
</tr>
<tr>
<td>(j) the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards,</td>
<td>The EIS proposal is considered to have limited impacts on coastal process when considered in isolation. The overall proposal would result in some changes in hydrology along the Clyde River, however these impacts are considered to be minimal. These impacts are discussed further in section 7.3.</td>
</tr>
<tr>
<td>(k) measures to reduce the potential for conflict between land-based and water-based coastal activities,</td>
<td>The EIS proposal would be located in areas where there is no potential for conflicts between land-based and water-based coastal activities due to the presence of the existing highway and wetland areas.</td>
</tr>
<tr>
<td>Matter of consideration</td>
<td>Comment/where addressed in the EIS</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>(l) measures to protect the cultural places, values, customs, beliefs and traditional</td>
<td>The EIS proposal would not impact upon any Aboriginal heritage items (refer to section 7.2).</td>
</tr>
<tr>
<td>knowledge of Aboriginals,</td>
<td></td>
</tr>
<tr>
<td>(m) likely impacts of development on the water quality of coastal waterbodies,</td>
<td>Water quality impacts of the EIS proposal and overall proposal are discussed in section 7.4.</td>
</tr>
<tr>
<td>(n) the conservation and preservation of items of heritage, archaeological or historic</td>
<td>The EIS proposal would not impact upon any non-Aboriginal heritage items (refer to section 8.1).</td>
</tr>
<tr>
<td>significance,</td>
<td></td>
</tr>
<tr>
<td>(o) only in cases in which a council prepares a draft local environmental plan that</td>
<td>Not applicable</td>
</tr>
<tr>
<td>applies to land to which this Policy applies, the means to encourage compact towns and</td>
<td></td>
</tr>
<tr>
<td>cities,</td>
<td></td>
</tr>
<tr>
<td>(p) only in cases in which a development application in relation to proposed development</td>
<td>Cumulative impacts of the overall proposal are discussed in section 8.7.</td>
</tr>
<tr>
<td>is determined:</td>
<td>Water and energy use would be confirmed during construction planning. Where possible the use of water and energy would be minimised.</td>
</tr>
<tr>
<td>(i) the cumulative impacts of the proposed development on the environment, and</td>
<td></td>
</tr>
<tr>
<td>(ii) measures to ensure that water and energy usage by the proposed development is</td>
<td></td>
</tr>
<tr>
<td>efficient,</td>
<td></td>
</tr>
<tr>
<td>2.2.5 Draft State Environmental Planning Policy (Coastal Management) 2016</td>
<td></td>
</tr>
<tr>
<td>The Draft State Environmental Planning Policy (Coastal Management) 2016 (Draft Coastal</td>
<td></td>
</tr>
<tr>
<td>Management SEPP) has been developed by the DP&amp;E and OEH. The Draft Coastal Management</td>
<td></td>
</tr>
<tr>
<td>SEPP responds to existing and emerging coastal challenges and opportunities with the aim</td>
<td></td>
</tr>
<tr>
<td>of having thriving and resilient communities living and working on a healthy coast now</td>
<td></td>
</tr>
<tr>
<td>and in the future.</td>
<td></td>
</tr>
<tr>
<td>The Draft Coastal Management SEPP would consolidate current coastal-related SEPPs. It</td>
<td></td>
</tr>
<tr>
<td>would replace SEPP 14 (Coastal Wetlands), SEPP 26 (Littoral Rainforests) and SEPP 71</td>
<td></td>
</tr>
<tr>
<td>(Coastal Protection).</td>
<td></td>
</tr>
<tr>
<td>Although this SEPP is still in draft form and the existing SEPP 14 is still in force, a</td>
<td></td>
</tr>
<tr>
<td>review was undertaken of the SEPP 14 mapping system to identify any changes to the extent</td>
<td></td>
</tr>
<tr>
<td>of the SEPP 14 wetland near the proposal area.</td>
<td></td>
</tr>
<tr>
<td>Under the Draft Coastal Management SEPP, coastal wetland mapping has been refined and no</td>
<td></td>
</tr>
<tr>
<td>longer includes areas of the Princes Highway or parts of the former bowling club that</td>
<td></td>
</tr>
<tr>
<td>are currently mapped as SEPP 14 wetlands (which fall within the proposal area). However,</td>
<td></td>
</tr>
<tr>
<td>the proximity area for coastal wetlands under the Draft Coastal Management SEPP extends</td>
<td></td>
</tr>
<tr>
<td>over a larger area of the existing Princes Highway and over a larger area of the former</td>
<td></td>
</tr>
<tr>
<td>bowling club.</td>
<td></td>
</tr>
<tr>
<td>Clause 12 states that development consent must not be granted to development on land</td>
<td></td>
</tr>
<tr>
<td>wholly or partly identified as “proximity area for coastal wetlands” unless the consent</td>
<td></td>
</tr>
<tr>
<td>authority is satisfied that the proposed development will not significantly impact on the</td>
<td></td>
</tr>
<tr>
<td>biophysical, hydrological or ecological integrity of the adjacent coastal wetland or;</td>
<td></td>
</tr>
<tr>
<td>the quantity and quality of surface and ground water flows to the adjacent coastal</td>
<td></td>
</tr>
<tr>
<td>wetland, subject to zoning under an environmental planning instrument.</td>
<td></td>
</tr>
</tbody>
</table>
The proposal is also located on land mapped as “coastal environment area”. Development consent within this area must be in accordance with Clause 14 of the Draft Coastal Management SEPP, which includes consideration by the consent authority that the proposal will not cause adverse impacts to coastal processes, water quality of a marine estate, Aboriginal heritage and that the proposal incorporates water sensitive urban design.

The Draft Coastal Management SEPP and the *Coastal Management Act 2016* have not yet commenced. As such the provisions of SEPP 14 still apply to this proposal. However, should the Draft Coastal Management SEPP commence prior to this EIS being lodged, the planning pathway would be confirmed.

### 2.3 Local plans and strategies

#### 2.3.1 Eurobodalla Local Environmental Plan 2012

The EIS proposal is located within the Eurobodalla local government area and the Eurobodalla Local Environmental Plan 2012 (Eurobodalla LEP) applies to the EIS proposal.

The EIS proposal is situated on land that is zoned as E2 Environmental Conservation, W1 Natural Waterways and SP2 Infrastructure.

Table 2-4 outlines the consistency of the EIS proposal against the objectives of each zone. The land use zones are shown in Figure 2-2.

#### Table 2-4 Consistency of proposal with LEP zones

<table>
<thead>
<tr>
<th>Zone</th>
<th>Objectives of zone</th>
<th>Consistency of proposal with objectives</th>
</tr>
</thead>
</table>
| E2 Environmental conservation | • To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.  
                                 | • To prevent development that could destroy, damage or otherwise have an adverse effect on those values.  
                                 | • To identify sensitive coastal lakes, estuaries, wetlands, overland flow paths and riparian zones and those areas at risk from coastline hazards, including sea level rise.  
                                 | • To protect and improve water quality.  
                                 | • To protect and enhance the natural environment for recreation purposes.  
                                 | • To manage items, places and landscapes of Aboriginal cultural heritage significance into the future in collaboration with the local Aboriginal community. | The proposal has been designed to minimise impacts to Mcleods Creek and its natural values. The EIS proposal would not have an impact on any Aboriginal heritage places or known landscapes.  
                                 |                                                                                   | As part of the overall proposal, road drainage would connect to Council’s existing stormwater system. There is an outlet that drains to Mcleods Creek. This drainage would be augmented with appropriate treatment devices to treat water prior to its release into Mcleods Creek.  
                                 |                                                                                   | Overall the EIS proposal would not have significant impacts on ecological, scientific, cultural and fishing values. |
| W1 Natural Waterways         | • To protect the ecological and scenic values of natural waterways.  
                                 | • To prevent development that would have an adverse effect on the natural values of waterways in this zone.  
                                 | • To provide for sustainable fishing industries and recreational fishing. | The proposal has been designed to minimise impacts to Mcleods Creek and its natural values. Overall the EIS proposal would not have significant impacts on ecological and fishing values. |
**Zone** | **Objectives of zone** | **Consistency of proposal with objectives**
--- | --- | ---
SP2 - Infrastructure | • To provide for infrastructure and related uses.  
• To prevent development that is not compatible with or that may detract from the provision of infrastructure. | The proposal would be consistent with the objectives of this zone as it is road infrastructure.

Development for the purposes of roads is permitted in the E2 and SP2 zones with consent from Council.

While roads are not permissible in the W1 Natural Waterways zoning, the works within this zone consist of embankment works and would be constructed on a levee, which would protect the highway and part of the Batemans Bay CBD to the east from flooding. As such, the embankment works are classified as environmental protection works and are permissible without consent.

However, development consent for the EIS proposal is required under Part 4 of the EP&A Act due to the application of SEPP 14.

### 2.3.2 Batemans Bay Regional Centre Development Control Plan 2012

The Batemans Bay Regional Centre Development Control Plan 2012 is applicable to the proposal area. While the aim of the Plan is to further the aims of the Eurobodalla LEP, its particular objectives are for the zoning of the R3 Medium density residential, B4 Mixed Uses and B5 Business Development zones. These zones are not present in the EIS proposal area.

However, the Plan also aims to achieve the following objectives in relation to the Batemans Bay Regional Centre:

- promote efficient use of land by encouraging redevelopment that benefits local residents as well as visitors to Batemans Bay
- encourage the amalgamation of small properties for redevelopment
- ensure that future buildings neither dominate this coastal setting nor intrude unreasonably onto coastal views that are available from surrounding residential hillsides
- promote the highest standards of urban and architectural design quality
- ensure high levels of amenity along streets and laneways.

While the plan is not specifically applicable to the zoning in the EIS proposal area, the proposal would facilitate improved access to Batemans Bay through the overall proposal for both local residents and tourists alike. As part of this proposal, an assessment of visual amenity (section 0) has been undertaken to ensure the design is sympathetic to its surrounds and consider the impact on surrounding viewpoints.
Batemans Bay Bridge replacement Environmental Impact Statement

FIGURE 2-2: LEP zoning

Source: Auresco, RMS, LPI, Earl Topp

Projection: GDA 1994 MGA Zone 56
2.4 Other relevant NSW legislation

2.4.1 Marine Estate Management Act 2014

The Clyde River and Mcleods Creek form part of the Batemans Marine Park (the Marine Park) which is located on the NSW South Coast between Murramarang Beach near Bawley Point in the north and the entrance to Wallaga Lake at Murunna Point in the south.

Part of the overall proposal, including a small part of the EIS proposal, would be located within the Marine Park.

Under Section 55(1) of the Marine Estate Management Act 2014, prior to determining a development application under Part 4 for development located within a marine park, a consent authority must consider the following:

- if there are management rules for the marine park or aquatic reserve, the purposes of the zone within which the area concerned is situated as specified in those management rules
- the permissible uses of the area concerned under the regulations or those management rules
- if a management plan for the marine park or aquatic reserve has been made, the objectives of the marine park or aquatic reserve
- any relevant marine park or aquatic reserve notifications.

Under Section 56 (1), in determining a development application, Eurobodalla Shire Council must consider:

- the objects of the Marine Estate Management Act 2014
- the permissible uses of the area concerned under the regulations or the management rules
- any advice given to it by the relevant Ministers about the impact on the marine park.

Consideration of the matters identified in Section 55(1) and 56(1) of the Marine Estate Management Act 2014 is provided in Table 2-5.

Table 2-5 Considerations under Sections 55(1) and 56(1) of the Act

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Consistency of proposal with objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 55(1)</td>
<td></td>
</tr>
<tr>
<td>(a) (i) if there are management rules for the marine park or aquatic reserve, the purposes of the zone within which the area concerned is situated as specified in those management rules, and</td>
<td>Part of the EIS proposal is located within the habitat protection zone of the Batemans Marine Park. While resulting in a reduction in the biological diversity due to removal of vegetation (up to 0.07 ha), it is not considered to result in a substantial reduction. The proposal has been designed where possible to minimise impacts on the wetland vegetation of Mcleods Creek.</td>
</tr>
<tr>
<td>(a) (ii) the permissible uses of the area concerned under the regulations or the management rules, and</td>
<td>The EIS proposal (as part of the overall proposal) is considered to be for the purpose of public safety as the existing bridge which is to be replaced is showing signs of deterioration and therefore is considered a safety risk in the next five to ten years. This is consistent with the uses to which a permit can be obtained within the habitat protection zone under Clause 1.16(2) of Marine Estate Management (Management Rules) Regulation 1999.</td>
</tr>
</tbody>
</table>
Consideration | Consistency of proposal with objectives
--- | ---
(a) (iii) if a management plan for the marine park or aquatic reserve has been made, the objectives of the marine park or aquatic reserve, and | No management plan exists for the Batemans Marine Park. The operational plan is considered to be the management plan for this Marine Park. The EIS proposal, as it would not result in a substantial reduction in biological diversity of the zone, is considered to be consistent with the operational plan. The EIS proposal is also considered to be a permissible use under the zoning plan which forms part of the operational plan.
(a) (iv) any relevant marine park or aquatic reserve notifications, and | Not applicable
Section 56(1) | The objects of the *Marine Estate Management Act 2014*. The EIS proposal would result in some reduction in the biological diversity of the Marine Park due to the requirement for vegetation removal along the wetlands for Mcleod Creek. Overall the area to be impacted is considered relatively small and unlively to substantially reduce the biological diversity of the Marine Park. The EIS proposal would be constructed as part of the overall proposal that would facilitate economic opportunities for the people of NSW and the surrounding regional communities as it would provide an improved river crossing for the Princes Highway to support regional and interstate movements for both people and freight. The overall proposal would also improve access along the Clyde River as the navigational clearance of the bridge would be greater than the existing bridge.
The permissible uses of the area concerned under the regulations or the management rules. | The EIS proposal (as part of the overall proposal) is considered to be for the purpose of public safety as the existing bridge which is to be replaced is showing signs of deterioration and therefore is considered a safety risk in the next five to ten years. This is consistent with the uses to which a permit can be obtained within the habitat protection zone under Clause 1.16(2) of Marine Estate Management (Management Rules) Regulation 1999.
Any advice given to it by the relevant Ministers about the impact on the marine park. | This would need to be undertaken by Eurobodalla Shire Council

Section 55(1)(b) of the Act also states that concurrence from the Minister for the Environment and the Minister for Primary Industries would be required if works are confirmed to be required within the Marine Park. The Marine Park Manager has been delegated this concurrence role.

If Eurobodalla Shire Council is of the opinion that the development is likely to have an effect on the plants or animals within the Marine Park, then consultation is required with the relevant Ministers prior to determining the application.

An operational plan for the Marine Park was prepared in November 2010. This document outlines how the Marine Park is to be operated in line with the zoning plan and the objects of the former *Marine Parks Act 1997*. The EIS proposal is located within and next to the ‘habitat protection’ zone of the Marine Park.
Figure 2-3 shows the extent of the habitat protection zone in the Marine Park near the EIS proposal area.

Within the habitat protection zone under the Batemans Marine Park Operational Plan, a permit is required to be obtained for infrastructure development. The EIS proposal is partially within the Marine Park, and as such, a NSW Marine Parks permit would be required under Clause 1.16(2)(a) of the Marine Estate Management (Management Rules) Regulation 1999.

When considering the permit application, DPI would be required to consider the application against the criteria outlined in Clause 9 of the Marine Estate Management Regulation 2009.

Table 2-6 outlines how the proposal meets the permit assessment criteria.

### Table 2-6 Assessment criteria for Marine Parks Permit

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Consistency of proposal with objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) the objects of the Act</td>
<td>The EIS proposal would result in some reduction in the biological diversity of the Marine Park due to the requirement for vegetation removal along the wetlands for Mcleod Creek. Overall the area to be impacted is considered relatively small and unlikely to substantially reduce the biological diversity of the Marine Park. The EIS proposal would be constructed as part of the overall proposal that would facilitate economic opportunities for the people of NSW and the surrounding regional communities as it would provide an improved river crossing for the Princes Highway to support regional and interstate movements for both people and freight. The overall proposal would also improve access along the Clyde River as the navigational clearance of the bridge would be greater than the existing bridge.</td>
</tr>
<tr>
<td>(a1) the purposes of marine parks and aquatic reserves (as specified in sections 22 and 33 of the Act respectively)</td>
<td>The EIS proposal, while resulting in a reduction in the biological diversity due to removal of vegetation, is not considered to be a substantial reduction. The proposal has been designed where possible to minimise impacts on vegetation associated with Mcleods Creek.</td>
</tr>
<tr>
<td>(b) the objectives of the zone in which the activity is proposed to be located</td>
<td>The EIS proposal is not considered to contravene the objectives of the habitat protection zone as it would not result in any substantial impacts on the habitat and biological diversity of the zone or any impacts to heritage located within the habitat protection zone.</td>
</tr>
<tr>
<td>(c) the activities that are permissible in the zone in which the activity is proposed to be carried out (as specified in the relevant management rules)</td>
<td>The EIS proposal forms part of the overall proposal, which is considered to be for the purpose of public safety as the existing bridge which is to be replaced is showing signs of deterioration and therefore is considered a safety risk in the next five to ten years. This is consistent with the uses to which a permit can be obtained within the habitat protection zone under Clause 1.16(2) of Marine Estate Management (Management Rules) Regulation 1999.</td>
</tr>
<tr>
<td>Assessment criteria</td>
<td>Consistency of proposal with objectives</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>d) any operational plan for the marine park adopted by the Marine Parks Authority pursuant to section 25 (4) of the Marine Parks Act 1997 (before its repeal) that continues to have effect because of clause 5 of Schedule 2 to the Marine Estate Management Act 2014</td>
<td>The EIS proposal while resulting in a reduction in the biological diversity due to removal of vegetation is not considered to be a substantial reduction. As such, the EIS proposal is considered to be consistent with the operational plan.</td>
</tr>
<tr>
<td>d1) any management plan for the marine park or aquatic reserve</td>
<td>No management plan exists for the Marine Park. The operational plan is considered to be the management plan for this Marine Park.</td>
</tr>
<tr>
<td>(e) any threatened species or other protected flora or fauna under the Fisheries Management Act 1994, the National Parks and Wildlife Act 1974 or the Threatened Species Conservation Act 1995 that may be affected by the proposed activity</td>
<td>Impacts on threatened species or other protect flora and fauna is discussed further in section 7.1. The EIS proposal would not have a substantial impact on threatened species.</td>
</tr>
<tr>
<td>(f) the form of transport to be used to gain access to the zone in, on or from which the activity is proposed to be carried out, having regard to the adequacy of facilities for parking, mooring and landing vehicles, vessels and aircraft, and for loading and unloading them</td>
<td>The EIS proposal area within the habitat protection zone would be accessed via Clyde Street or existing paved car park.</td>
</tr>
<tr>
<td>(g) the type of equipment to be used in connection with the proposed activity</td>
<td>The construction methodology for the EIS proposal is outlined in section 5.2.1</td>
</tr>
<tr>
<td>(h) the arrangements that have been made for the making good of any damage to the marine park or aquatic reserve that arises from the proposed activity</td>
<td>Impacts to vegetation within the Marine Park would be offset as part of the overall proposal, as outlined in section 7.1. Rehabilitation works within the Marine Park would also be undertaken once construction is complete in this area. Further details of this rehabilitation would be confirmed following detailed design and would be included in the construction environmental management plan to be prepared for the proposal.</td>
</tr>
<tr>
<td>any such other requirements as the relevant Ministers consider appropriate to the proposed activity</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
2.4.2 Coastal Protection Act 1979
The Coastal Protection Act 1979 (NSW) (CP Act) contains provisions relating to the use and occupation of the coastal region of NSW and regulates the carrying out of development and certain coastal protection works within the coastal zone established under the CP Act. The proposal may be subject to the requirements of the CP Act as the proposal falls within the coastal zone. The coastal zone extends along the Clyde River from the coast.

However, under Section 37(B), as the EIS proposal requires development consent under the EP&A Act, concurrence of the Minister is not required.

2.4.3 Protection of the Environment Operations Act 1997
The Protection of the Environment Operations Act 1997 (POEO Act) regulates land, air, noise and water pollution in NSW. It also aims to provide opportunity for increased public involvement and access to information regarding environmental protection.

An environment protection licence (EPL) is required for scheduled activities or scheduled development work outlined in Schedule 1 of the POEO Act. The following scheduled activities potentially apply to the proposal:

- road construction if it results in four or more traffic lanes (not including bicycle lanes or lanes used for entry or exit), where the road is classified or proposed to be classified as a main road for at least three kilometres of its length in the metropolitan area, and for at least five kilometres in any other area
- extractive activities - where excavation required for the proposal is greater than 30,000 tonnes per year
- cement or lime handling - meaning the handling of cement, fly ash, powdered lime (other than agricultural lime) or any other similar dry cement products. While the project would handle cement, it would not meet the criteria of 30,000 tonnes per year or 150 tonnes per day, based on the amount of concrete required for the project.

The EIS proposal does not meet the definitions of the above scheduled activities and would not require an EPL.

However, the overall proposal has the potential to meet the 30,000 tonners per annum of excavated material. As such, an EPL may need to be sought for the overall proposal. This would be confirmed during detailed design.

2.4.4 Water Management Act 2000
The overall proposal area is covered by the Water Sharing Plan for the Clyde River Unregulated and Alluvial Water Sources 2016 and therefore the Water Management Act 2000 (WM Act) applies to the EIS proposal areas. The WM Act aims to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations.

A controlled activity approval is required from DPI Water for certain types of developments and activities that are carried out in or near a river, lake or estuary. Roads and Maritime, as a public authority is exempt from the requirements to obtain a controlled activity approval under Clause 38 of the Water Management (General) Regulation 2004.

Excavations for activities such as foundation treatment works may have the potential to intercept groundwater. Should groundwater be intercepted by the proposal an aquifer interference approval may be required under section 91(3) of the WM Act. Further consultation with DPI (Water) would be undertaken to confirm the licencing requirements.
2.4.5 Crown Lands Act 1989
The EIS proposal is located on Crown land adjacent to Mcleods Creek. This land is administered under the Crown Lands Act 1989 (Crowns Lands Act).

Under Clause 34(1), the Minister for Primary Industries can:
'in such manner and subject to such terms and conditions as the Minister determines: (b) grant easements or rights-of-way over, or licences or permits in respect of, Crown land, on behalf of the Crown.'

In accordance with the Crown Lands Act, work proposed to be carried out on Crown Land requires a permit from the DPI (Crown Land). A licence would be sought following consultation with the DPI (Crown Land) for those works that are part of the overall proposal.

2.4.6 Fisheries Management Act 1994
The Fisheries Management Act 1994 (FM Act) aims to conserve, develop and share the fishery resources for the benefit of present and future generations.

Section 199 of the FM Act states that an approval is not required for a public authority to undertake dredging or reclamation work. The public authority is required to give the Minister written notice of the proposed works and consider any matters received from the Minister within 21 days of the notice.

Mangroves and saltmarsh are located along Mcleods Creek, which are classified as protected marine vegetation under the FM Act. A permit under Section 205 of the FM Act is required to impact protected marine vegetation. Impacts on mangroves and saltmarsh are considered further in section 7.1.

The EIS proposal would not involve work within the Mcleods Creek channel and would not obstruct fish passage. As such, a permit would not be required under Section 219 of the FM Act.

2.4.7 Biodiversity Conservation Act 2016

The BC Act sets out the environmental impact assessment framework for threatened species, threatened ecological communities and Areas of Outstanding Biodiversity Value (formerly critical habitat) for Part 5 activities (amongst other types of development).

However, the transitional provisions of the Biodiversity Conservation (Savings and Transitional) Regulation 2017 apply to the proposal because the EIS began under Part 4 of the EP&A Act before the commencement of the new Act and is pending assessment under Part 4 (Clause 28). Consequently the proposal has been assessed in accordance with the Threatened Species Conservation Act 1995.

2.4.8 Threatened Species Conservation Act 1995 (repealed)
The Threatened Species Conservation Act 1995 (TSC Act) lists threatened species, populations or ecological communities to be considered in deciding whether there is likely to be a significant impact on threatened biota, or their habitats. If a significant impact is likely, an assessment of significance that addresses the requirements of section 5A of the EP&A Act must be completed.

Assessments of significance have been prepared for fauna species with a moderate to high likelihood of occurrence in the EIS proposal area, comprising shorebirds, and microbats. An assessment of significance has also been prepared for coastal saltmarsh, which would be impacted by the EIS proposal. The conclusion of these assessments was that the overall proposal
would not result in significant impacts to these species, and a species impact statement is not required. Further information on the impacts to threatened species, populations or ecological communities is provided in section 7.1.

2.4.9 Noxious Weeds Act 1993

The *Noxious Weeds Act 1993* (NW Act) provides for the declaration of noxious weeds by the Minister for Primary Industries. Noxious weeds may be considered noxious on a national, state, regional or local scale.

All private landowners, occupiers, public authorities and Councils are required to control noxious weeds on their land under Part 3 Division 1 of the NW Act. As such, if present, noxious weeds on the site should be assessed and controlled.

No noxious weeds have been identified within the EIS proposal area.

2.5 Other environmental policies

2.5.1 NSW Coastal Policy 1997

The NSW Coastal Policy 1997 (NSW Government 1997) sets the direction for coastal zone management and planning in NSW. It seeks to ensure the natural, cultural, spiritual and heritage values of the coastal environment are protected whilst acknowledging and planning for population growth and economic development.

The management of the coastal zone is the responsibility of a range of government agencies, local councils and the community. The Policy provides a framework for the balanced and coordinated management of the coast.

Table 2-7 outlines the objectives listed in the coastal policy which are relevant to the EIS proposal.
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Comment/ where addressed in EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2 – To conserve the diversity of all native plant and animal species and to protect and assist the recovery of threatened and endangered species.</td>
<td>The EIS proposal would result in impacts on land mapped as SEPP 14 wetlands. Lands within the EIS proposal area would only have a small impact on actual wetlands (comprising mangroves and saltmarsh), being about 0.07 hectares. Overall the EIS proposal is not considered to result in the loss of a substantial amount of the wetlands and therefore would not impact upon the conservation status of the wetland. Any loss of wetland vegetation is also proposed to be offset. The preliminary offset strategy for the overall proposal is summarised in section 7.1.4.</td>
</tr>
<tr>
<td>1.3 – To improve water quality in coastal and estuarine waters and coastal rivers where it is currently unsatisfactory and to maintain water quality where it is satisfactory.</td>
<td>The EIS proposal would potentially result in water quality impacts during construction, however mitigation measures outlined in section 7.4.4 would be implemented to minimise these impacts. As part of the overall proposal, road drainage would connect to Council’s existing stormwater system. There is an outlet that drains to Mcleods Creek. This drainage would be augmented with appropriate treatment devices to treat water prior to its release into Mcleods Creek.</td>
</tr>
<tr>
<td>1.4 – To manage the coastline and estuarine environments in the public interest to ensure their health and vitality</td>
<td>The EIS proposal would result in impacts on SEPP 14 wetlands. The development of the overall proposal has minimised the impacts on the SEPP 14 wetlands where possible while ensuring that the overall proposal addresses the issues associated with the existing bridge and approaches (ie safety issues and the need to either replace or repair the existing bridge). Any loss of wetland vegetation is also proposed to be offset. The preliminary offset strategy for the overall proposal is summarised in section 7.1.4.</td>
</tr>
<tr>
<td>2.1 – To give the impacts of natural processes and hazards a high priority in the planning and management of coastal areas.</td>
<td>The EIS proposal (and overall proposal) includes assessments on the impacts of the works on flooding of the Clyde River. Section 7.3.3 provides a summary of the impacts.</td>
</tr>
<tr>
<td>3.2 – To design and locate development to complement the surrounding environment and to recognise good aesthetic qualities.</td>
<td>The EIS proposal would be located in a similar position to the existing Princes Highway and therefore is considered to not result in any substantial change to the existing environment.</td>
</tr>
<tr>
<td>4.1 – To effectively manage and conserve cultural heritage places, items and landscapes</td>
<td>The EIS proposal would not result in any impacts on Aboriginal or non-Aboriginal heritage items or places.</td>
</tr>
<tr>
<td>4.2 – To recognise the rights and needs of indigenous people and to ensure inputs by Aboriginal communities prior to making decisions affecting indigenous communities.</td>
<td>As described in section 6.2.2, consultation with the Aboriginal community has been undertaken as part of the overall proposal.</td>
</tr>
</tbody>
</table>
Objectives | Comment/ where addressed in EIS
--- | ---
6.1 – To ensure that future expansion or redevelopment of urban and residential areas, including the provision of infrastructure, avoids or minimises impacts on environmentally sensitive areas and cultural heritage. | The development of the overall proposal considered minimising impacts on the environment including SEPP 14 wetlands and heritage items. The preferred option was selected by weighing up the potential impacts while also ensuring that the operational requirements for the new bridge and approaches were met.

### 2.5.2 NSW Wetlands Policy

The NSW Wetlands Policy (DECCW 2010c) aims to provide for the protection, ecologically sustainable use and management of wetlands within NSW. Twelve guiding principles have been developed for the sustainable management of wetlands.

The EIS proposal includes some works within wetland vegetation as discussed in section 7.1 and Appendix C.

The EIS proposal is considered to be consistent with the NSW Wetlands Policy as the overall proposal development has considered the impacts on wetlands to ensure that impacts are minimised where possible. The public interest (ie the functional benefits) of the overall proposal has been considered.

Impacts on wetland areas are considered minimal with the majority of mapped SEPP 14 wetland areas in the EIS proposal areas consisting of highly disturbed grass verge. The EIS proposal would result in the clearance of about 0.07 hectares of wetland vegetation, which would be offset in line with the offset strategy prepared for the overall proposal (refer to section 7.1.4).

Mitigation measures are also proposed to be implemented to minimise indirect impacts including potential water quality impacts, on the adjacent SEPP 14 wetlands (refer to section 9.2).

### 2.6 Commonwealth legislation

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) a referral is required to the Australian Government for proposed actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land. These are considered in section 7.1 of the EIS.

The assessment of the EIS proposal’s impact on matters of national environmental significance and the environment of Commonwealth land found that there is unlikely to be a significant impact on relevant matters of national environmental significance. Accordingly, the EIS proposal has not been referred to the Australian Government Department of the Environment and Energy.
3 Strategic justification and proposal need

<table>
<thead>
<tr>
<th>Secretary’s requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
</table>
| Project justification - including the need for the proposal, its consistency with relevant strategic planning documents and consideration of impacts of 'no action' and consideration of different alignments and technologies of constructing the new bridge | chapter 3  
chapter 4 |

3.1 Need for the EIS proposal

The EIS proposal is needed as, without the aspects forming the EIS proposal, the overall proposal would not be able to be constructed.

The EIS proposal would assist in achieving the broader objectives of the overall proposal which are outlined in section 3.1.1 and section 3.3.

3.1.1 Need for the overall proposal

The overall proposal is needed to:

- address rising maintenance costs and poor bridge condition
- improve bridge operations to reduce the risk of highway network severance and to allow access to higher mass limit vehicles
- improve journey reliability for both road and maritime traffic.

Bridge condition and maintenance costs

The existing Batemans Bay Bridge was constructed in 1956 to replace a ferry, that shuttled road traffic across the Clyde River. The bridge included a lift span to accommodate commercial marine traffic. The bridge is about 287 metres long with two lanes (one either direction) and a narrow pedestrian pathway along the eastern side. The bridge has 10 spans; four steel girder spans and six truss spans, one of which is the lift span. The normal vertical clearance to MHWS for marine traffic is 3.6 metres, but can be raised to a maximum clearance of about 23 metres. The timber-related and fishing industries which initially navigated through the bridge have been mostly replaced by commercial and recreational water traffic. Most lifts are made for a local tourist ferry, but the lift span also operates for other commercial vessels, yachts, motor cruisers and for maintenance of the bridge.

After 60 years of operation in a coastal environment, the condition of the bridge has deteriorated and it has a Bridge Health Index (BHI) rating of 'poor'. Routine inspection has identified structural and operational elements of the bridge that are in poor condition. These include:

- corroded piers, deck slab and steel trusses
- deterioration of the protective paint system
- accumulation damage from vehicle impacts
- sub-standard traffic barriers.

The lift span equipment, which must operate to meet maritime navigation obligations, is complex, damaged by corrosion, difficult to operate and maintain and unreliable.

Maintenance and operation costs and associated short term severance of traffic would increase in the future, given the current poor condition of the structure and the coastal environment in which the bridge is situated. For example, the protective paint coating on the bridge would require repainting. This would result in a closure of one lane for that period, as the lead paint on the bridge would have to be removed from within an enclosed temporary works area.
Furthermore, there are a number of network performance and safety issues associated with the existing bridge including:

- it restricts freight access along the Princes Highway and to Batemans Bay due to restrictions on High Mass Limit (HML) semi-trailers and B-double vehicles up to 26 metres crossing the bridge
- over-height vehicles in excess of 5.1 metres cannot cross the bridge due to the truss height
- unreliable connectivity across the river when the lift span is in operation, with longer delays when the lift span fails or during an incident
- journey reliability is poor and long traffic delays between Berrima Parade and Beach Road with little accommodation for future traffic growth without corridor and intersection improvements. This affects both highway travellers as well as local residents of Batemans Bay
- there is less than desirable road user safety due to the bridge width and existing traffic barriers
- there is constrained access on the Clyde River for water craft due to the height of the bridge and reliance on lift span operation.

**Network connectivity and journey reliability**

The Princes Highway is a major road link which connects the Eurobodalla Shire to Sydney, the Illawarra, the Far South Coast and Victoria. It provides a link for the following purposes:

- commuter route between Batemans Bay and surrounding area
- local route for residents
- major tourist route for destinations on the South Coast and ACT
- important freight route for the South Coast.

The section of the Princes Highway within the study area is generally free of traffic congestion and has good levels of service (LoS) during typical weekday peak periods but is known to deteriorate considerably during holiday periods, particularly over summer.

Lift span operation of the current bridge is an impediment to the efficiency and consistency of traffic flow and journey reliability between Berrima Parade, North Batemans Bay and Cranbrook Road, Batemans Bay.

Regular network severance and consequent traffic build up and delays are caused by scheduled morning and afternoon lift span openings. Delays are undesirable at any time as Batemans Bay is a twin town with substantial areas of settlement and commercial activity and emergency vehicle access requirements on both sides of the river.

The population of the district and local and through traffic increase during peak holiday periods. For example, during the Christmas and New Year period, the population of Eurobodalla LGA increases from 35,000 (of which 11,000 live in Batemans Bay) to over 100,000. Local and through traffic is also significantly elevated throughout the summer months, particularly at weekends.

At these times, northbound and southbound queues extending past Cranbrook Road (in the south) and the Kings Highway intersection (in the north) are experienced by road users, taking around one hour and 45 minutes to clear after the lift span has opened for marine traffic (refer Figure 3-1).
In addition to the regular, scheduled openings, breakdowns of the lift span mechanism cause unexpected network severance for Batemans Bay residents and visitors, freight transport, scheduled bus and coach services and the wider travelling public using the Princes Highway to cross the Clyde River. Lift mechanism breakdowns range in times. Unexpected network severance may also be caused by accidental damage to the bridge structure from vehicles and river traffic and in future, by the deteriorating condition of the bridge.

Key outage data for the existing bridge’s lift span are:
- there have been 30 incidents in the past four years
- of these 19 resulted in no significant delay (ie less than eight minutes, the normal opening time) while the other 11 resulted in delays of nine to 180 minutes
- many of the incidents, particularly the shorter ones, were related to issues with the vehicle boom gates
- on at least five occasions in the last 12 years, the bridge has failed to lower when raised or to close properly when lowered. Resultant delays have been 15, 25, 30, 43 and 180 minutes respectively.

In the event of outages exceeding 60 minutes, there is no detour option that offers acceptable network connectivity. Runnyford Road provides a local route at an additional distance of 37 kilometres, via the Kings Highway at Nelligen and the Princes Highway at Mogo. However, Runnyford Road is a low quality, unsealed road with tight bends. It is only suitable for low traffic volumes in dry weather conditions and would not offer a viable alternative route for the highway in case of a longer term severance at the bridge. The next alternative route is via the Kings Highway to Bungendore, Queanbeyan, Cooma and Bega, a distance of about 340 kilometres.

The risk of long delays due to lift span failure, restricting access across the Clyde River is a concern of the emergency services – Ambulance, Police, Fire Brigade, Rural Fire Service and State Emergency Services. This can stop emergency services responding to emergencies or accessing facilities such as hospitals in Batemans Bay.

**Traffic volumes**

Historical traffic data within the study area shows:
- the Princes Highway north of the Kings Highway intersection carried an average annual daily traffic (AADT) of 7922 vehicles per day in 2016
- the average daily traffic (ADT) on the Princes Highway at Batemans Bay Bridge was 13,476 with 7.5 per cent heavy vehicles in June 2015
• casualty crash rate is 40.75 per 100 million vehicle kilometres travelled which is the highest rate on the Princes Highway between Yallah and Eden.

The Princes Highway at Batemans Bay has an annual traffic growth rate of 0.9 per cent per annum.

Further recent traffic investigations carried out by Roads and Maritime observed heavy and towing light vehicles slowing down when crossing the existing bridge due to the narrow lane width and proximity to the truss bridge structure. They also observed low use of the kerbside lane at the northbound approach to the Princes Highway and Kings Highway intersection. These behaviours lead to a general slowing down of traffic across the bridge and increasing traffic queues and traffic delays.

### 3.2 Strategic planning and policy framework

The following section details how the overall proposal (including the EIS proposal) is consistent with strategic planning policies and strategies. As noted above, the EIS proposal is required to enable the construction of the overall proposal and therefore is also considered to be consistent.

#### 3.2.1 NSW State Priorities

There are thirty different NSW State priorities that aim to:

- grow the economy
- deliver infrastructure
- protect the vulnerable
- improve health, education and public services.

The priority that is relevant to the overall proposal is ‘improving road travel reliability’. Ninety per cent of peak travel on key road routes is on time as highlighted, a primary objective of the proposal is to improve journey times and reliability for all road users.

The overall proposal is consistent with improving road travel reliability through the replacement of the existing bridge and associated lift span bridge, which would avoid delays along the Princes Highway through Batemans Bay especially during peak travel periods.

#### 3.2.2 State Infrastructure Strategy

The State Infrastructure Strategy 2012-2032 (SIS) (Infrastructure NSW, 2012) presented a 20-year strategy that identified and prioritised the delivery of critical public infrastructure to drive productivity and economic growth for NSW.

In 2014, an update to the Strategy was published. The State Infrastructure Strategy Update 2014 (Infrastructure NSW, 2014) identifies long term planning goals.

Key challenges for urban roads identified in the 2014 Update were:

- keep Sydney’s roads moving and tackle congestion
- cater for growing demand for road travel without reducing safety, efficiency and amenity
- extract the optimum performance from the existing road network
- build future network capacity and protect potential future road corridors
- enhance access to Sydney from growing regional cities
- plan for population growth and integrate transport and land use planning more effectively.

The 2014 Update made recommendations for the next round of critical infrastructure for NSW. The overall proposal is not specifically mentioned in the strategy as a key project, however is an example of a regional road project to which funds were highlighted for within Rebuilding NSW. This includes the improvement of freight routes, with the weight and height limitations of the existing Batemans Bay Bridge restricting the use of the Princes Highway by HML vehicles.
### The NSW Long Term Transport Master Plan

The NSW Long Term Transport Master Plan (Transport for NSW 2012) provides a framework for addressing transport challenges across NSW over the next 20 years. The master plan is designed to guide the allocation of available funds to deliver maximum benefits to the people of NSW.

The overall proposal is considered to assist in meeting the transport challenges identified for regional NSW. These are summarised in Table 3-1.

#### Table 3-1 Long Term Transport Master Plan transport challenges

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Proposal response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing convenient, reliable, and safe travel in regional areas by modernising and making the best use of our transport networks and providing better road connections, rail passenger services and public transport within and between regional centres</td>
<td>The Princes Highway is the primary north-south route along the NSW South Coast. The Kings Highway is the primary connection between the NSW South Coast and the Canberra region, and intersects with the Princes Highway just north of the overall proposal. Due to the importance of both corridors, any disruption or restrictions on movement along the Princes Highway and Kings Highway from the condition or closure of the bridge has the potential to impact on South Coast and Canberra regions. The overall proposal would provide a convenient, reliable and safe travel route across the Clyde River on the Princes Highway. It would also remove load and height restrictions for HML freight vehicles movements along the corridor.</td>
</tr>
<tr>
<td>Make sure our state roads can support the needs of customers, communities and regional industries through improved road maintenance and safety</td>
<td>After 60 years of operation in a coastal environment, the condition of the bridge has deteriorated. Routine inspections have identified structural and operational elements of the bridge that are in poor condition. The overall proposal involves the construction of a new bridge and approaches which would improve safety and reduce traffic delaying events along the Princes Highway at Batemans Bay. The overall proposal would also remove the need for the substantial maintenance requirements of the existing bridge.</td>
</tr>
<tr>
<td>Facilitating access to vital services for an aging population with increasing rates of disability</td>
<td>The NSW South Coast region is known to be a popular destination to retire or to experience a sea or tree change, which has resulted in an aging population in the region. One issue for the region is that many specialist health facilities are not located in this area, but in the Canberra region to the west. Due to an increasingly aging population in the NSW South Coast region, the Princes Highway and Kings Highway provide direct access to specialist care facilities located in the Canberra region. The overall proposal would assist in ensuring the Princes Highway can remain open to provide access between Canberra and the NSW South Coast. Without the overall proposal there is a risk of bridge failure in the future which would result in increased travel times for those wishing to access vital services in Canberra. The overall proposal would also provide reliable access to essential services for the communities located on either side of the Clyde River.</td>
</tr>
<tr>
<td>Increase network efficiency by fixing bottlenecks on road and rail networks, ensuring better regulation, modernising the network, and removing obstacles to improved freight productivity</td>
<td>The overall proposal would alleviate the bottleneck across the Batemans Bay Bridge, particularly during holiday peak periods and in periods when the lift span is operational. The bridge replacement would also remove the current restriction to HML vehicles on the Batemans Bay Bridge which restricts heavy vehicles using the Princes Highway to transport freight from the Far South Coast further north.</td>
</tr>
</tbody>
</table>
### Challenges

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Proposal response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grow future freight capacity to meet the growing freight task through targeted investment that expands road and rail capacity to support the growth of critical industries and by making better use of the existing network</td>
<td>The bridge replacement would remove the current restriction to HML vehicles on the Batemans Bay Bridge which restricts heavy vehicles using the Princes Highway to transport freight from the Far South Coast further north. This would improve freight capacity and movement of the existing highway network.</td>
</tr>
</tbody>
</table>

#### 3.2.4 Southern Regional Transport Plan

The Southern Regional Transport Plan (Transport for NSW 2014) was developed to support the NSW Long Term Transport Plan. This plan focuses on more specific local transport needs and outlines priorities for the southern region, including the Eurobodalla LGA.

While not specifically mentioned in the plan, the overall proposal meets a number of actions proposed under the plan including:

- investing in the road network – continuing program of upgrades to the road network providing connections to and from the Southern region, focusing on improving safety, increasing accessibility and enhancing freight efficiency
- improving road safety – continuing to progress the actions of The NSW Road Safety Strategy 2012-21 to achieve the NSW 2021 target of reducing fatalities to 4.3 per 100,000 population by 2016
- investing in road upgrades - continuing program of upgrades to the Southern region road network
- addressing pinch points on the road network - working with local councils to develop solutions for addressing localised congestion points on the road network.

#### 3.2.5 South East and Tablelands Regional Plan 2036

The Draft South East and Tablelands Regional Plan was enacted in August 2017. This section addresses the published document: South East and Tablelands Regional Plan 2036 (NSW Government 2016). This plan is a 20 year blueprint for the region, with a vision of a borderless region in Australia’s most geographically diverse natural environment with the nation’s capital at its heart.

The bridge replacement would be consistent with a number of the directions identified within the plan, as follows:

- **Direction 2.1:** ‘Protect the region’s diverse environmental values’ – The EIS proposal is located within an environmentally sensitive area of SEPP 14 wetlands. The proposal has sought to minimise impacts on these mapped wetlands, where possible. Impacts on wetlands are discussed further in section 7.1
- **Direction 2.5:** ‘Protect the region’s cultural heritage’ – The overall proposal is located near Aboriginal and non-Aboriginal heritage items, however, the EIS proposal is not located near any heritage items. Sections 7.2 and 8.1 outline the impacts on Aboriginal and non-Aboriginal heritage respectively
- **Direction 3.1:** ‘Support and promote the growth of the tourism industry’ – The Princes Highway is a key tourist route which provides access between the NSW South Coast, Sydney and Canberra. Should the Princes Highway become unavailable due to bridge failure, journey times increase substantially making the Batemans Bay area (and wider south coast region) less desirable as a tourist destination. This would result in a reduction in the economic stimulus that the tourism industry currently provides to the area.
3.2.6 NSW Freight and Ports Strategy

The NSW Freight and Ports Strategy (TfNSW 2013) details how the NSW Government will consider commercial interests and work across government to provide an efficient network and a framework for managing growth. It highlights short, medium and long term tasks to improve freight movement on the network. The Strategy will inform government and commercial investment decisions across all modes of transport and allow for the alignment of purpose.

The overall proposal contributes to the delivery of a freight network which efficiently supports the projected growth of the NSW economy by removing barriers to highly productive use of the road freight network and supporting regional network development. The overall proposal would alleviate the bottleneck across the Batemans Bay Bridge, particularly during holiday peak periods and in periods when the lift span is operational. The proposal would remove the current restriction to HML vehicles on the Batemans Bay Bridge which restricts heavy vehicles using the Princes Highway transporting freight from the Far South Coast to the north.

3.2.7 Princes Highway Corridor Strategy

The Princes Highway Strategy (TfNSW 2016) was developed to plan actions over the next 20 years to improve the performance of the Princes Highway and meet specific corridor objectives.

The overall proposal would meet the following objectives in the strategy:

- provide freight access for Performance Based Standards (PBS) class 2(B) vehicles (up to 30 metres long and 85 tonnes) south to BTU Road in South Nowra, and to allow PBS class 2(A) vehicles (up to 26 metres long including B-double access) and Higher Mass Limits for the remainder of the corridor
- provide improved safety and efficiency through wider clear zones, wider sealed shoulders and lanes and realigned road with smaller grades and smoother curves
- maintain connectivity and safe access along the Princes Highway in low lying areas (below four metres Australia Height Datum) and within four kilometres of the coastline in response to climate change and flooding
- support the efficient management of planned and unplanned incidents including safe access for emergency vehicles.

The strategy also included an assessment of the condition of road infrastructure including bridges. Five bridges were identified as being deficient for HML access and six bridges were identified as being in ‘poor’ condition. Only the bridge over the Clyde River at Batemans Bay is in both of these categories. The strategy recommended that Roads and Maritime start planning the renewal or replacement of the bridge over the Clyde River at Batemans Bay.

3.2.8 Southern Rivers Catchment Action Plan 2013-2023

The Southern Rivers Catchment Action Plan 2013-2023 is a 10-year strategic plan that identifies the properties and actions for natural resource management in the region. The plan is a statutory, non-regulatory plan, prepared under the Catchment Management Authorities Act 2003.

The plan focuses on three key outcomes for the Southern Rivers region, being:

- sustainable economies and community wellbeing
- adaptive management and devoted decision making
- diverse, healthy, connected and productive natural environments.

The overall proposal would support the key outcomes of the plan through providing improved drainage and spill containment to maintain or improve the high water quality of Batemans Bay and the Clyde River. Environmental investigations have been undertaken to adequately identify potential impacts and provide opportunities to minimise impacts or to improve the existing situation (such as water quality). Further details of these investigations and identified management measures are included in section 7.4.4.
As well as assisting in the provision of healthy and productive natural environments, the improved bridge structure would assist in allowing continual access to low to mid-sized vessels along the Clyde River, supporting sustainable recreational and commercial uses of the estuary into the future.

The overall proposal would also improve connectivity for the local and regional communities, reducing the potential for network and community severance. These benefits may result in community wellbeing.

3.2.9 Batemans Bay and Clyde River Estuary Management Plan

The Batemans Bay and Clyde River Estuary Management Plan (WBM Oceanics Australia 2005) provides a program of strategic actions to assist with managing the waterways, foreshores and catchments of the estuary. The vision for Batemans Bay and the Clyde River estuary is to protect and enhance the preservation of environmental, social and cultural features. While undertaking this however, sustainable use of Clyde River estuary and Batemans Bay will be encouraged for recreational and economic use so that they can be appreciated in the future.

The management plan outlines six objectives for the protection and use of the estuary. These are addressed in Table 3-2.

Table 3-2 Batemans Bay and Clyde River Estuary Management Plan objectives

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Proposal response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain the existing high water quality standards of Batemans Bay and the Clyde River</td>
<td>Under the overall proposal, the design of the new bridge would provide improved drainage and spill containment to maintain or improve the high water quality of Batemans Bay and the Clyde River. During construction, in-river works would be carried out under strict controls put in place as part of the Construction Environmental Management Plan (CEMP) and associated plans. The CEMP would be applicable to the EIS proposal. Further discussion on these measures are included in section 9</td>
</tr>
<tr>
<td>Ensure recreational and commercial uses of the estuary are sustainable</td>
<td>The overall proposal would improve recreational use of the Clyde River as the new bridge would allow continuous access to low and mid-sized vessels under the bridge. However, some larger vessels would not be able to pass under the new bridge. Some short term temporary impacts to the use of the Clyde River would occur during the construction phase, particularly through the demolition of the existing bridge. Operation of the proposal would not impact on commercial uses using the river. However, one oyster lease would need to be extinguished due to its proximity to the EIS proposal. This lease does not currently have a leaseholder.</td>
</tr>
<tr>
<td>Consider implications of coastal foreshore hazards and other ocean impacts in development planning</td>
<td>The overall proposal has been and would continue to be designed (during detailed design) to ensure the new infrastructure is not adversely impacted by any sea level rise. An assessment of coastal processes is located in section 7.3.</td>
</tr>
<tr>
<td>Protect and enhance ecological communities and habitats</td>
<td>The proposal would result in some impacts on ecological communities and habitats, including protected marine vegetation. These impacts have been minimised through the design development where possible. An assessment of ecological impacts is located in section 7.1.</td>
</tr>
</tbody>
</table>
Objectives | Proposal response
--- | ---
Improve the scientific knowledge base to support management of the estuary | Not applicable to the proposal.
Integrate aspects of the Estuary Management Plan with the Southern Rivers Catchment Action Plan | Not applicable to the proposal.

### 3.3 EIS proposal objectives

The objectives of the EIS proposal are consistent with those of the overall proposal as presented in Table 3.3.

Table 3-3 Primary proposal objectives

<table>
<thead>
<tr>
<th>Proposal objectives</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove barriers to highly productive use of the road freight network</td>
<td>To achieve the current Australian Standard 5100 design loading (ie SM1600 loading). To remove restriction on HML semi-trailers and HML 19 metre, 23 metre, 25 metre and 26 metre B-doubles from crossing the Clyde River on the Princes Highway.</td>
</tr>
<tr>
<td>Address poor bridge condition and reduce high ongoing maintenance costs</td>
<td>To address the poor condition of elements on the bridge such as: • corrosion of the piers, deck slab and steel trusses • deterioration of the protective paint system • damage to truss members from vehicle impact • ageing lift span equipment with poor reliability. To address maintenance and operation costs of the existing bridge in the future.</td>
</tr>
<tr>
<td>Improve network connectivity</td>
<td>To reduce the risk of Batemans Bay residents being cut off from the road network. To improve freight movement and wider connectivity of the travelling public across the Clyde River.</td>
</tr>
<tr>
<td>Improve journey reliability</td>
<td>To enable efficient and consistent traffic flow between Berrima Parade, North Batemans Bay and Beach Road, Batemans Bay.</td>
</tr>
</tbody>
</table>

Roads and Maritime has also worked to achieve high quality proposal outcomes across customer service, time management, budget, environmental and work health and safety. These factors are fundamental to enable the design development, options evaluation and option selection for the proposal and are reflected and described in Table 3-4.
### Table 3-4 Secondary proposal objectives

<table>
<thead>
<tr>
<th>Secondary proposal objectives</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide the best benefit to our customers</td>
<td>Batemans Bay Bridge serves a wide variety of customers with a diverse set of requirements. The proposal is to investigate these requirements and identify a preferred option which provides the best balance and overall benefit to our customers, the community and stakeholders.</td>
</tr>
<tr>
<td>Delivering the project within an acceptable timeframe</td>
<td>To provide a proposal that can be completed within a short term timeframe.</td>
</tr>
<tr>
<td>Delivering the project within budget</td>
<td>To deliver a sustainable and innovative solution which achieves the proposal objectives and presents good value for money.</td>
</tr>
<tr>
<td>Prioritising the safety of our workers and our customers</td>
<td>The safety of our people and our customers is to be a priority during the planning, construction and operational phases.</td>
</tr>
<tr>
<td>Minimise environmental impact</td>
<td>To identify a proposal that best balances the overall environmental impact.</td>
</tr>
<tr>
<td>Deliver a project which fits sensitively with the built, natural and community environment</td>
<td>Batemans Bay Bridge is an important landmark within the local and regional context of Batemans Bay and the South Coast of NSW. Options were identified and developed appreciating its role as the northern entry to Batemans Bay, and an experience of crossing the river widely recognised as a memorable aspect of the journey along this section of the Princes Highway.</td>
</tr>
</tbody>
</table>
4 Proposal development and alternatives

<table>
<thead>
<tr>
<th>Secretary’s requirement</th>
<th>Where addressed in the EIS</th>
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</thead>
<tbody>
<tr>
<td>Project justification - including the need for the proposal, its consistency with relevant strategic planning documents and consideration of impacts of 'no action' and consideration of different alignments and technologies of constructing the new bridge</td>
<td>chapter 3</td>
</tr>
<tr>
<td></td>
<td>chapter 4</td>
</tr>
</tbody>
</table>

The EIS proposal is a direct requirement of the overall proposal and is necessary to enable implementation of the overall proposal.

The development of strategic alternatives and options and the process undertaken for the selection of the preferred option for the overall proposal is detailed in the following sections.

4.1 Strategic alternatives assessment

4.1.1 Methodology for selection of preferred option

Options for the Batemans Bridge replacement were considered in a two stage process.

Stage 1 of the process identified a range of strategic alternatives being:
- business as usual – the 'do minimum' alternative
- provision of alternative infrastructure
- bridge renewal (repair and refurbishment)
- bridge replacement.

These alternatives were then evaluated by criteria based on the primary and secondary proposal objectives in a workshop to identify a preferred way forward. Details on this stage of the process are discussed in sections 4.1.2 and 4.1.3.

Stage 2 of the process identified a number of options for bridge replacement (including alignment, vertical clearance and structure type) which were assessed. This stage considered seven initial alignment options (vertical clearance and structure types also considered) which were refined down to three final options. These three final options were assessed in a value management workshop to identify the preferred option. Details on this stage of the process are discussed in sections 4.1.4 and 4.1.5.

The strategic alternatives and options process is detailed in the Batemans Bay Bridge Preferred Route Option Report (Roads and Maritime, 2017).

4.1.2 Strategic alternatives

In early 2017 Road and Maritime developed strategic alternatives to evaluate solutions to the constraints facing the existing Batemans Bay Bridge. These alternatives included:

- "do minimum" - Continuing routine maintenance treatments to extend the life of the existing Batemans Bay bridge for as long as reasonably practicable without major intervention
- alternative infrastructure measures – Alternatives which did not require new road infrastructure:
  - investigating opportunities to improve traffic flow at the Kings Highway and Princes Highway intersection and its interaction with the lift span during peak periods
  - investigating intersection performance on the Princes Highway at the Kings Highway, Wharf Road, Clyde Street, North Street and Beach Road
• installing camera detection systems and approach portals to discourage and identify over height and over width vehicles using the existing bridge
• relocating the ferry operations that are currently downstream of the existing bridge
• relocating or redistributing private mooring licences
• amending or ceasing lift span operations

**bridge renewal** - Major rehabilitation and strengthening works to renew the existing bridge and extend its life for at least 50 years. A 50-year bridge renewal design was selected to extend the life of the current bridge beyond 100 years. The bridge renewal included:
• repairing and replacing bridge elements in poor condition
• strengthening bridge elements required to carry HML vehicles
• installing holding treatments to prevent further deterioration such as cathodic protection on the concrete piers and deck
• reinstating protective elements such as repainting all steel elements
• upgrading of traffic and pedestrian barriers
• potentially upgrading to four lanes and shared path

**bridge replacement** – New bridge structures based on:
• a minimum design speed of 70 kilometres per hour to enable the existing speed limit of 60 kilometres per hour to be maintained on the Princes Highway
• a four lane bridge (two lanes either direction)
• pedestrian and cyclist shared path
• sufficient clearance over the Clyde River for the majority of marine traffic
• the assumption that the existing bridge would be removed.

### 4.1.3 Analysis of strategic alternatives

Roads and Maritime held an internal shortlisting workshop on 30 January 2017 to assess the strategic alternatives. The strategic alternatives were assessed against criteria based on the primary and secondary proposal objectives.

The initial assessment of the alternatives used information from preliminary traffic modelling, Roads and Maritime design guidelines, the location of major public utilities and an understanding of the key proposal constraints. The outcomes of the workshop are discussed in the following sections. The assessment of the strategic alternatives against the primary and secondary proposal objectives (refer to section 3.3).

**Do minimum**

The “do minimum” option would not meet the primary proposal objectives including:
• there would continue to be restrictions on HML vehicles using the Princes Highway crossing of the Clyde River at Batemans Bay
• maintenance costs would increase over time as the bridge and associated infrastructure deteriorates further and reaches the end of its design life
• there would be a further decrease in the reliability of the crossing as the central lift span fails more often.

As the “do minimum” option did not meet the primary proposal objectives it was not considered further.

**Alternative infrastructure measures**

Six alternative infrastructure measures were assessed by the project team. They were considered in relation to whether they would provide additional benefit to the do minimum, bridge renewal and bridge replacement alternatives.

Table 4-1 shows the result of this assessment.
Table 4-1 Assessment of alternative infrastructure measures

<table>
<thead>
<tr>
<th>Alternative infrastructure measures</th>
<th>Business as usual</th>
<th>Bridge renewal</th>
<th>Bridge replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection improvements at the Princes Highway and Kings Highway intersection</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Intersection improvements at Wharf Road, Clyde Street, North Street and Beach Road intersections with Princes Highway</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Installation of camera detections systems and approach portals for over height vehicles</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Relocation of ferry operations west of the existing bridge</td>
<td>✔</td>
<td>✔</td>
<td>✗*</td>
</tr>
<tr>
<td>Relocation and redistribution of mooring licences</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Amending or ceasing lift span operations</td>
<td>✔</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>

✔ Measure is considered to provide additional benefits to the bridge treatment alternative.

✗ Measure is considered to provide no additional benefits to the bridge treatment alternative.

* The shortlisting criteria for the vertical clearance of a new bridge include catering for existing commercial marine traffic.

The assessment concluded that providing alternative infrastructure measures would address some of the primary proposal objectives including:

- improving reliability of the crossing – by reducing the frequency or ceasing the operation of the central lift span and improving traffic management at intersections at either end of the bridge. However, impacts on marine traffic may require relocation of an upstream wharf to downstream of the existing bridge
- decreasing maintenance costs – improved detection and management of heavy vehicles would reduce damage to the bridge and associated maintenance costs. However, the likely saving in maintenance costs would not be significant.

However, the alternative infrastructure measures would not meet the primary proposal objective of allowing HML vehicles to use the Princes Highway crossing of the Clyde River at Batemans Bay.

The alternative infrastructure measures would meet some of the secondary objectives including:

- minimising environmental impacts and delivering a proposal which fits sensitively with the built, natural and community environment – the works associated with the alternative options are relatively minor and would not be expected to result in unacceptable environmental impacts or changes to context of the bridge
- delivering the proposal within an acceptable timeframe and within budget – the works associated with the alternative options are relatively minor and could be delivered within an acceptable timeframe and budget.

The alternative infrastructure measures would not meet the following secondary proposal objectives including:

- providing the best benefit to our customers – Customers for the bridge include marine and vehicle traffic. By stopping the lift span or reducing the frequency of opening, marine traffic could be substantially impacted
- prioritising the safety of our workers and our customers – the safety issues associated with the existing bridge would not be addressed.

As this option would not meet a number of the objectives including the objective to provide access for HML vehicles, this option was not considered further.
Bridge renewal
The bridge renewal option was assessed using shortlisting criteria based on the proposal objectives and whether the option is feasible in terms of engineering design. Table 4-2 shows the result of this assessment.

Table 4-2 Assessment of bridge renewal alternative

<table>
<thead>
<tr>
<th>Shortlisting criteria</th>
<th>Four lane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the alternative feasible in terms of engineering design?</td>
<td>✔</td>
</tr>
<tr>
<td>Does the alternative remove barriers to highly productive use of the road network?</td>
<td>△</td>
</tr>
<tr>
<td>Does the alternative address poor bridge condition and reduce ongoing maintenance costs?</td>
<td>△</td>
</tr>
<tr>
<td>Does the alternative improve network connectivity and journey reliability?</td>
<td>△</td>
</tr>
</tbody>
</table>

- ✔ alternative cannot be eliminated as impacts are either considered likely to be acceptable; or could potentially be reduced to acceptable levels through design refinements
- △ alternative is considered to require significant design refinements to eliminate or reduce impacts to an acceptable level but cannot be eliminated at this stage.
- ✗ alternative fails against criterion and should be eliminated.

While it would be possible to renew the existing bridge to partially meet all the primary proposal objectives it was noted that:
- the renewal alternative would strengthen elements of the bridge to remove the constraint to HML vehicles but not remove the height and width constraints
- the renewal alternative would improve bridge condition with maintenance costs reducing initially but increasing as the bridge elements age and deteriorate
- the renewal alternative includes an upgrade of the lifting mechanism and controls. Improvements in network connectivity and journey reliability would improve initially but decrease as the lift equipment ages and reliability decreases.

Other issues identified in the assessment included:
- impacts on customers – Undertaking renewal activities on an operational bridge would take a substantial period of time and would require frequent temporary bridge closures. There would be considerable and prolonged disruption to both road and marine traffic – as well as foreshore areas used for construction
- environmental impacts - The risk of environmental impacts from bridge renewal activities would be high due to the type of activities and the long period of construction
- unacceptable program and costs – As noted above the construction period for bridge renewal would be substantial. Costs would also be high as the existing bridge would need to remain operational during renewal activities and the renewal construction activities would be complex.

Based on the identified issues and only being able to partially meet the proposal objectives, this alternative was not considered further.

Bridge replacement
The bridge replacement alternative would meet the primary proposal objectives by:
- enabling the use of the crossing by HML vehicles
- lowering maintenance costs compared to the existing bridge
- improving the reliability of the crossing by increasing the bridge capacity and allowing water craft to pass under the bridge without having a lift span.

Unlike bridge renewal, the bridge replacement alternative could generally be constructed with minimal impacts on traffic performance and the operation of the existing Batemans Bay Bridge.
Preferred strategic alternative
Based on the assessment of the strategic options, the bridge replacement alternative was selected as the preferred strategic option as it best meets all the primary proposal objectives and has the potential to meet many of the secondary proposal objectives. Further refinement of this preferred strategic alternative was undertaken through the shortlisting process considering horizontal alignment, vertical profile and clearance, typical cross section and bridge type. This process is described in the following sections.

4.1.4 Shortlisting bridge replacement options

Horizontal alignment
Initially seven horizontal alignments for a replacement bridge were considered for shortlisting including two options east of the existing bridge (E1 and E3) and five options to the west of the existing bridge (W1 to W5) as shown in Figure 4-1 and Figure 4-2:

- **Option E3** - A new bridge with straight horizontal alignment would be constructed as close as possible to the existing bridge on the eastern side. The road alignment on the southern side would impact the estuarine mangrove forest and SEPP 14 wetlands to the west of the Princes Highway and pass through the shopping centre car park to the east. On the northern side the road alignment impacts on existing residential properties. This option is based on a design speed of 80km/h

- **Option E1** - This option is a modification of Option E3 which reduces the impact to the estuarine mangrove forest and SEPP 14 wetlands by decreasing the design speed to 70km/h. The new bridge would have an identical horizontal alignment to Option E3 but the southern approach has a greater impact on the shopping centre carpark. The reduced design speed enables the road alignment to skirt existing properties on the northern side

- **Option W1** - A new bridge with straight horizontal alignment would be constructed as close as possible to the existing bridge on the western side. The road alignment on the southern side impacts the estuarine mangrove forest, SEPP 14 wetlands, commercial property, former car ferry ramps and Lions Park carpark located to the west of the Princes Highway. On the northern side the road alignment impacts the Spotted Gum - Blackbutt shrubby open forest and Woollybutt - White Stringybark - Forest Red Gum grassy woodland communities and existing commercial property. The design speed of option W1 is 70km/h

- **Option W2** - A new bridge with a straight alignment would be constructed from immediately west of the existing bridge on the southern side, continuing in a north-east direction to Old Punt Road on the northern side of the Clyde River. The road alignment would then curve right, crossing the Kings Highway and Bayridge Drive before re-joining the Princes Highway north of the existing intersection with the Kings Highway. The design speed of Option W2 is 80km/h and utilises a constant vertical grade on the bridge. The road alignment has similar impacts to Option W1 on the southern approach and is likely to impact a known Aboriginal heritage site located on the northern foreshore near Wray Bay

- **Option W3** - In this option a new bridge with a 1600 metre radius horizontal curve would be constructed as close as possible to the existing bridge on the western side. This option impacts the estuarine mangrove forest, SEPP 14 wetlands and commercial properties on the southern approach and the Spotted Gum - Blackbutt shrubby open forest and Woollybutt - White Stringy bark - Forest Red Gum grassy woodland communities on the northern approach

- **Option W4** - This option is a modification of Option W3 where the curve radius has been decreased to a 1000 metre radius horizontal curve, moving the bridge to the west of Option W3. The decreased curve radius of the bridge reduces the impact on estuarine mangrove forest located on the southern approach but increases the impact to the Spotted Gum - Blackbutt shrubby open forest and Woollybutt - White Stringybark - Forest Red Gum grassy woodland communities on the northern approach

- **Option W5** - In this option a new bridge and road alignment with a continuous 656 metre radius horizontal curve would be constructed west of Options W3 and W4. The road alignment on the southern side reduces the impact to the estuarine mangrove forest but has greater impact on commercial properties. Impacts to the Spotted Gum - Blackbutt shrubby open forest and
Woollybutt - White Stringybark - Forest Red Gum grassy woodland communities on the northern approach would also increase with this option.

An initial assessment undertaken by Roads and Maritime concluded that all the replacement bridge options were feasible with the exception of Option W2.

Option W2 involved a bridge on a different alignment to the existing bridge and a new connection to Kings Highway. The key benefits of Option W2 included a reduced impact to the SEPP 14 wetlands located adjacent to Mcleods Creek and a bridge alignment which used the natural height near Old Punt Road. But, the benefits were considered to be outweighed by:

- a significant increase in proposal length
- an increase in bridge length and the number of piers required
- the potential impact to a significant Aboriginal heritage site
- greater impact to properties adjacent to the proposed road corridor than other options
- being a poor fit with the existing Princes Highway corridor.

Due to these issues, option W2 was not considered further.

Figure 4-1 Eastern horizontal alignment options
Vertical profile and clearance
Six vertical profile and clearance options were considered feasible from an engineering and constructability perspective. The assessment criteria focussed on the impact to commercial marine traffic, urban design objectives and maximum grades for heavy vehicles and pedestrian access.

The criteria used during the assessment process included:
- does the vertical profile have a maximum grade of less than or equal to six per cent to meet current state road network planning targets?
- does the vertical profile have a maximum grade of less than or equal to five per cent for pedestrian and mobility access?
- does the vertical profile and clearance cater for all existing commercial marine traffic?
- does the option meet urban design objectives and principles for the proposal setting?

Table 4-3 presents the outcomes of the assessment of the vertical profiles against the shortlisting criteria.
Table 4-3 Assessment of proposed vertical profiles

<table>
<thead>
<tr>
<th>Shortlisting criteria</th>
<th>Vertical clearance (metres)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.6</td>
</tr>
<tr>
<td>Does the vertical profile have a maximum grade ≤ 6 per cent to meet current planning targets?</td>
<td>✔</td>
</tr>
<tr>
<td>Does the vertical profile have a maximum grade ≤ 5 per cent for pedestrian and mobility access?</td>
<td>✔</td>
</tr>
<tr>
<td>Does the vertical clearance cater for all existing commercial marine traffic?</td>
<td>×</td>
</tr>
<tr>
<td>Would the option meet urban design objectives and principles for the proposal setting?</td>
<td>✔</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Status</th>
<th>Eliminated</th>
<th>Eliminated</th>
<th>Retained</th>
<th>Retained</th>
<th>Retained</th>
<th>Retained</th>
<th>Retained</th>
</tr>
</thead>
</table>

✔ Option cannot be eliminated as impacts are either considered likely to be acceptable; or could potentially be reduced to acceptable levels through design refinements.
△ Option is considered unfeasible to eliminate or reduce impacts to an acceptable level.
× Option fails against criterion and should be eliminated.

As a result of the shortlisting workshop in January 2017, two vertical clearance options (3.6 metres and seven metres) were eliminated as they did not meet the criteria of providing a vertical clearance suitable for all existing commercial marine traffic that has a required clearance of about eight metres. This decision was based on information provided by Roads and Maritime.

The 18 metre and 23 metre vertical profiles were assessed as unfeasible as bridge approaches either side of the river would need to be lengthened to achieve a maximum grade of less than five per cent for pedestrian and mobility access. This would particularly impact on the intersection of the Princes Highway and Kings Highway. These options would also result in an adverse urban design and visual impact. The 18 and 23 metre clearances were eliminated as a result.

The shortlisting process identified that the 12 metre and 14 metre vertical profile and clearance options should be considered for further assessment.

**Bridge cross section**

Three bridge cross sections (two, three or four lane cross section) were assessed at the shortlisting workshop in January 2017 against the criteria given below:
- is the option feasible in terms of engineering design?
- does the cross section maintain or improve current safety risks to customers and workers during operation?
- is the cross section consistent with the Princes Highway corridor within the proposal setting?
- does the option meet current network targets for lane and shoulder widths?

Each of the bridge cross section options were considered with the assessment results shown in Table 4-4.
Table 4-4 Assessment of proposed bridge cross sections

<table>
<thead>
<tr>
<th>Shortlisting criteria</th>
<th>Two lane</th>
<th>Three lane</th>
<th>Four lane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the option feasible in terms of engineering design?</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Does the option maintain or improve current safety risks to customers and workers?</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Is the cross section consistent with the Princes Highway corridor within the proposal setting?</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Does the option meet current network targets for lane and shoulder widths?</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Status</td>
<td>Retained</td>
<td>Eliminated</td>
<td>Retained</td>
</tr>
</tbody>
</table>

✓ Option cannot be eliminated as impacts are either considered likely to be acceptable; or could potentially be reduced to acceptable levels through design refinements

× Option fails against criterion and should be eliminated.

The shortlisting workshop in January 2017, based on the above assessment, eliminated the three lane cross section. The three lane cross section’s reversible lane was considered to be a traffic management solution more suited to an inner city main road rather than a coastal town urban setting. The shortlisting workshop also concluded the reversible lane would considerably increase the safety risks to customers and workers during operation when compared to the existing bridge and other renewal and cross section options.

The decision to eliminate the three lane option is also supported by traffic modelling carried out by Roads and Maritime which identified a two lane option is expected to be needed to accommodate the forecast future traffic demands.

However, further discussion identified that of the two lane and the four lane cross sections, the four lane cross section was considered most appropriate to be carried forward for development. This cross section would best provide for future growth in traffic and minimise the risk of requirements for upgrades to the bridge in the future as traffic volumes increase.

As such, only four lane cross sections were considered for the bridge replacement options.

**Bridge type**

*Concrete haunched girder*

The concrete haunched girder enables long span lengths which minimises the number of piers required and allows through views. The girders would be more dominant and may screen the landscape beyond from some viewing locations, yet the elegance of the structure makes the bridge a feature which would respect the river setting.

The concrete haunched girder is typically constructed using the balanced cantilever technique (Figure 4-3). The method consists of building the bridge in segments which are concreted into travelling formwork. Construction begins at each pier with segments built outward and continuing until a joining midpoint is reached and a balanced pair is closed.
Concrete box girder

A concrete box girder would likely utilise span lengths up to 60 metres, and although there are more piers compared to the haunched girder option, they are generally less bulky. The result is a structure which provides good visual permeability and generous deck cantilevers to provide an elegant structure.

The concrete box girder bridge is typically constructed using the incrementally launched technique, which involves building the bridge deck segments in a casting yard located behind one bridge abutment (Figure 4-4). Each segment is then joined to the segment previously built, with the whole structure then pushed forward a distance equal to the length of the segment. The process is then repeated until the bridge is in its final position.

Concrete Super-Tee girder

The concrete Super-Tee option consists of precast girders spanning about 38 metres between the more numerous, but least bulky piers. The Super-Tee arrangement limits the cantilevers of the bridge deck from the girder making the arrangement typically less elegant than the other options considered.

The Super-Tee option is constructed using precast girders manufactured offsite. The precast girders are then lifted into place onto the piers and headstocks.
The shortlisting workshop considered the three bridge types which were assessed against the following shortlisting criteria:
- is the option feasible in terms of engineering design?
- does the option meet the urban design objectives and principles for the proposal setting?

Each of the bridge types were considered with the assessment results shown in Table 4-5.

Table 4-5 Assessment of proposed bridge types

<table>
<thead>
<tr>
<th>Shortlisting criteria</th>
<th>Concrete Super-Tee</th>
<th>Concrete haunched girder</th>
<th>Concrete box girder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the option feasible in terms of engineering design?</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Does the option meet the urban design objectives and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>principles for the proposal setting?</td>
<td>Δ</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Status</td>
<td>Eliminated</td>
<td>Retained</td>
<td>Retained</td>
</tr>
</tbody>
</table>

✓ Option cannot be eliminated as impacts are either considered likely to be acceptable; or could potentially be reduced to acceptable levels through design refinements

Δ Option considered unfeasible to eliminate or reduce impacts to an acceptable level

× Option fails against criterion and should be eliminated.

The shortlisting workshop noted the Super-Tee bridge type would be unfeasible to achieve the urban design principles and objectives than the haunched girder and box girder bridge types in this proposal setting. It would also introduce more piers in the water that presents a greater maintenance liability and hazard to marine traffic. The Super-Tee bridge type was eliminated by the project team on this basis.

### 4.1.5 Bridge replacement options

The shortlisting process outlined above identified a number of options suitable for further design and assessment during concept design. The retained options can be summarised as follows:
- replacement of the existing bridge with:
  - a new bridge constructed to the east of the existing bridge
  - a new bridge constructed to the west of the existing bridge
  - demolition of the existing bridge.

The bridge replacement options include the following sub options:
- concrete box girder
- concrete haunched girder.

All bridge replacement options were also identified with two vertical profiles being 12 metres and 14 metres.

Further design work was undertaken to refine the replacement bridge options and three shortlisted design options were developed for detailed assessment. These are shown in Figure 4-5 and include:
- East
- West
- Central.
The East option was based on E1 alignment from the strategic design options. This was chosen ahead of E3 as it proposed the least amount of impact to the surrounding environment and best met road design standards.

The West option was based on W4 alignment from the strategic design options. This was refined and chosen ahead of W1, W3 and W5 as it provided the desired urban design outcomes along with minimal impact to the surrounding environment.

The Central option was developed on the basis of using the available land on the south eastern side of the existing bridge and the north western land of the existing bridge. The aim was to develop a compliant design with minimal impact to the surrounding environment while also considering urban design, constructability and costing.

These three options were considered through a value management process, which is discussed further in section 4.1.6.

To compare the relative options on a like for like basis, the options were developed using the following consistent design elements:

- **cross section** – All options provide four lanes and a shared use path and have a design speed of 70 kilometres per hour. The structural depth of each bridge option would be 3.5 metres.
- **geometry** – The bridge geometry allows for a launched bridge construction method with the flexibility for other options. The bridge spans would be between 50 metres and 55 metres depending on the bridge height and final outcome of urban design input.
- **pedestrian facility** – A shared use path/cycleway would be provided on the ocean side of the new bridge.
- **alignment extents** – The northern proposal limit of works is just south of the roundabout with the Kings Highway and the southern proposal limit of works is just north of the intersection with North Street.
- **navigational clearance** – A nominal navigational clearance of 12.0 metres above Mean High Water Spring (MHWS).
Figure 4-5 Shortlisted bridge replacement options

Batemans Bay Bridge replacement Environmental impact statement

FIGURE 4-5: Final bridge replacement options

Source: Aurecon, RMS, LPI, Esri Topp

Projection: GDA 1994 MGA Zone 58
4.1.6 Analysis of bridge replacement options

A value management workshop was held in June 2017 to consider the three shortlisted options for bridge replacement with the objectives to:

- gain a common understanding of the work to date on the Batemans Bay Bridge Replacement proposal
- review the three short listed options and evaluate them against agreed assessment criteria
- recommend a preferred option to progress the proposal.

This workshop included representatives from NSW Maritime, NSW DPI (Fisheries and Water), Eurobodalla Council, the local Aboriginal Land Council, boating clubs, State Emergency Services and Transport for New South Wales. Participants of the workshop reviewed the detail of the three options and gained a common understanding of investigations carried out to date. The participants then developed draft assessment criteria to qualitatively evaluate the functional, socio-economic and environmental performance of the east, central and west options. The criteria were used to help the workshop participants differentiate between the options.

The assessment criteria were developed using the project objectives, standard development criteria common to all shortlisted options and constraints. For each of the draft assessment criteria identified, the workshop group clarified what it meant, ensured it reflected the appropriate intent and that it would assist in differentiating between the various options. Each criteria also needed to reflect the project objectives. The agreed criteria are presented in Table 4-6.

Relative weightings for the assessment criteria were then carried out by the whole group using a paired comparison technique.

The discussion during the comparison process was extensive and allowed the workshop group to understand and appreciate the various perspectives represented within the workshop and the relative importance of various criteria within each category. The final weightings were reached as a consensus.

Table 4-6 Bridge replacement options assessment criteria

<table>
<thead>
<tr>
<th>ID</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Functional perspective</strong></td>
</tr>
<tr>
<td>F1</td>
<td>Construction staging provides effective passage under existing and forecast traffic conditions (<em>to ensure free flow traffic</em>)</td>
</tr>
<tr>
<td>F2</td>
<td>Provides for flexibility in construction method – Launch or Balanced Cantilever</td>
</tr>
<tr>
<td>F3</td>
<td>Ease of safe demolition of existing structure while the replacement bridge is operational</td>
</tr>
<tr>
<td>F4</td>
<td>Minimises impact on major public utilities (flexibility in pier locations to optimise)</td>
</tr>
<tr>
<td>F5</td>
<td>Inherently safer for road users (road user experience)</td>
</tr>
<tr>
<td></td>
<td><strong>Socio-economic perspective</strong></td>
</tr>
<tr>
<td>S1</td>
<td>Minimises direct impacts to properties (including lots, houses, businesses and community facilities)</td>
</tr>
<tr>
<td>S2</td>
<td>Best fits with existing and future planning and local connectivity (including regional development and local planning foreshore planning, etc.)</td>
</tr>
<tr>
<td>S3</td>
<td>Minimises direct and indirect impact on businesses during construction and operation (including impact on CBD car parking)</td>
</tr>
<tr>
<td>ID</td>
<td>Criteria</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>S4</td>
<td>Minimises social impacts associated with traffic disruption during construction (including pedestrian and cyclist movements)</td>
</tr>
<tr>
<td>S5</td>
<td>Minimises access impacts to river users during construction and operation - access to and from the river</td>
</tr>
<tr>
<td></td>
<td><strong>Environmental perspective</strong></td>
</tr>
<tr>
<td>E1</td>
<td>Minimises impact on biodiversity (ie. vegetation communities, areas of ecological value, threatened fauna and flora species, fishing grounds and sensitive environmental areas, natural processes, etc. excluding SEPP 14 wetland boundaries)</td>
</tr>
<tr>
<td>E2</td>
<td>Minimises encroachment and impacts on SEPP 14 area</td>
</tr>
<tr>
<td>E3</td>
<td>Minimises impact on Aboriginal heritage</td>
</tr>
<tr>
<td>E4</td>
<td>Minimises impact on Non-Aboriginal heritage</td>
</tr>
<tr>
<td>E5</td>
<td>Provides for a structure form that best fits with its surrounding landscape character and visual amenity</td>
</tr>
<tr>
<td>E7</td>
<td>Minimises the impact of noise</td>
</tr>
</tbody>
</table>

In terms of the functional criteria, the assessment found that:
- the West Option would allow the use of a side track during construction and therefore would be easier to build and minimises traffic impacts. The Central option would require a pier and abutment to be built within the existing Princes Highway alignment and would require more substantial temporary roadworks in close proximity to live traffic to minimise traffic impacts during construction. The East option was marginally harder to construct than the West option
- the West and East options allowed the greatest flexibility in construction methodology. Balanced cantilever construction could not be used for the Central option
- demolition of the existing bridge would be easiest and safest with the West option because of its the greater distance from the existing bridge. The Central Option would be marginally worse as it is closer to the existing bridge. The East option had substantial constraints on demolition including lack of laydown areas and insufficient crane areas
- the West option had the potential for the best pedestrian and cyclist facilities. The Central option was rated the next best with the East option rated as the worst against this criterion.

In terms of socio-economic criteria, the assessment found that:
- the Central option would have the least impact on property, followed by the West option. The East option would require substantial property acquisition
- the West option would provide the best result for future planning and local connectivity followed by the Central option. The East option has the greatest impact on future development areas
- the Central option would have the least impact on businesses during construction followed by the West option. The East option would have substantial impacts on businesses during its construction
- the West option would have the least impact on river users, followed by the Central option. The East option would impact a tourist boat wharf.

Findings of the assessment, in relation to the environmental criteria found that:
- the East option would have the least impact on biodiversity however, the impact on biodiversity of Central and West options would not be substantial
- all three options would have similar impacts on SEPP 14 wetlands
• the Central option has a lesser impact on an Aboriginal archaeological site on northern bank. However further investigation and consultation would be required to establish the presence and sensitivity of Aboriginal heritage sites and the impact of bridge options
• the East option would have minimal impacts on Non-Aboriginal Heritage. The West and Central options would have the potential to impact a historic punt ramp
• the West option would have the best visual appearance and integration with the existing landscape. The East option was would have higher visual impacts.

Assessment of replacement bridge options costs
Detailed cost estimates were not developed for each of the options, however the relative costs of each option to a base case was estimated. The base case was the Central option as it was estimated that it would have the lowest cost of the three options.

The most expensive option would be the East option due to land acquisition costs and more complex construction. The West option would be more expensive than the Central option as the bridge and approaches are longer.

Summary of the Value Management assessment
Participants at the preferred option workshop unanimously recommended the West Option as the preferred option as it:
• scored the highest on most assessment criteria at a relative cost that is not “significantly” more than the cheapest option (Central Option)
• provides the best connectivity and functionality
• provides better opportunities for parking to support CBD growth and foreshore access
• provides the greatest flexibility in terms of options for construction
• has superior geometry (for better safety)
• allows a better driver experience and the better aesthetic solution
• will lead to better pedestrian accessibility
• provides better opportunities for parking and boating facilities on northern side of the river.

However, it was noted that further work was required to resolve the following issues:
• investigating further the potential for Aboriginal heritage artefacts to be found on the north west bank of the river and suitable mitigation being undertaken
• resolving the urban design aspects of the bridge super-T backspan
• minimising environmental impacts
• considering temporary construction access tracks on the south eastern side of the bridge work to decrease SEPP 14 wetland impacts
• resolving satisfactorily with Council the pedestrian/cyclist connections to the CBD of Batemans Bay
• determining an appropriate demolition staging of the existing bridge after the new bridge is operational
• resolving and managing the relocation or protection of the impacted utilities
• having the appropriate navigation clearance for water craft determined
• considering the relocation of the boat ramps to use the space on the northern side of the river
• managing the access and parking access to the boat ramps on the northern side of the river.

Navigational clearance height
The participants of the workshop discussed potential navigational clearance heights. The following issues were raised during the discussion:
• greater clearance heights are unlikely to provide greater benefit for the greater costs involved
• most coastal cruising is likely to stay east of the bridge and the future is likely to favour more motor cruising which would be in water craft of a lower height than yachts. Boat sizes are increasing but not much greater in height
• higher clearances would open up greater stretches of the Clyde River for use to most boats moored in the marina (east of the bridge) and provide opportunities for a marina upstream of
the bridge. Also with the entrance to the Clyde River being dredged more regularly and the potential for a greater bridge clearance could attract more boats heading up the coast and provide a greater economic benefit to Batemans Bay

- higher clearances would require a bridge that would have a major change to the landscape in terms of greater visual impact, steeper grades for the road over the bridge to get to the increased height and then down the other side, it would require a greater footprint which in turn would impact on the SEPP 14 wetlands and the difference in levels to obtain the grade would require major retaining walls very close to the CBD
- the oyster farming community would not support greater number of boats upstream due to the potential pollution risk to their industry
- when built in 1956, the existing lift span bridge was designed to cater for timber-related and fishing industries which initially navigated through the bridge. These have been mostly replaced by recreational water traffic and over the years there are fewer commercial craft using the waterway west of the bridge that require the greater clearance
- it was put that most boats are likely to stop downstream of the bridge and the extra funds for bridge clearance could be better used for greater water access to attract boats as a destination to the CBD.

The conclusion reached by the group was that the clearance height needed to be resolved following further investigations including an assessment of the maritime traffic and discussions with relevant stakeholders.

For the value management workshop, the preliminary assessment around the vertical clearance assessed navigational clearances of between eight and 23 metres to assess impacts to the project footprint and project costs. At that time the clearance options were narrowed to 12 and 14 metres. After the value management workshop, an independent boat study was undertaken to review existing maritime vessels and boat movements under the Batemans Bay Bridge to identify the preferred navigational clearances. The assessment also considered future trends of boat ownership. This assessment considered navigational clearances of eight metres, 12 metres and 15 metres. These options were chosen for consideration as a sensitivity analysis against the preliminary assessment. The boat study identified that through this process the optimal height that catered for about 90 per cent of the current river users was the vertical clearance of about 12 metres. The report found that:

- less than 10 per cent of vessels passing through the lift span of the existing bridge are yachts
- forecast future boating trends suggest that vessel lengths and number of long vessels are increasing, but that most this growth is likely in powered vessels rather than yachts. Most of these powered vessels would pass under a bridge with eight metre clearance
- the eight metre clearance from MHWS would allow most current commercial vessels, excluding the larger commercial houseboats (it was noted that a slight increase to nine metres would allow all commercial vessels to pass under the new bridge however, would not allow for two storey houseboats in future (after sea level rise)
- both the 12 metre and 15 metre clearance options would allow some proportion of yachts in the area to pass under the bridge. It is estimated that the 15 metre clearance option allows about 80 per cent of all registered vessels in the area, compared to about 65 per cent of all registered vessels for the 12 metres clearance. This does not include the proportion of yachts that can drop their masts to pass under the bridge.
- the 12 metre clearance option would ensure that all current commercial operators (including houseboats) can pass under the bridge both now and into the future, as well as the majority of current users.

The 12 metre MHWS was selected as the preferred option as:

- it would provide uninterrupted access for all current commercial operators
- it would allow for some yacht traffic uninterrupted access.
• adopting a higher (15 metre clearance) did not change the proportion of current vessels able to travel under the bridge
• on balance the 12 metre clearance bridge provided better pedestrian and cyclist access, aesthetic design outcomes as well as managing current and future boating needs on the Clyde River.

4.2 Preferred option

The process for identifying the preferred option for the proposal consisted of two stages- being consideration of strategic alternatives and assessment of bridge replacement options.

Roads and Maritime identified a number of strategic options to improve the crossing of the Clyde River at Batemans Bay. These included:
• business as usual – the ‘do minimum’ alternative
• provision of alternative infrastructure
• bridge renewal (repair and refurbishment)
• bridge replacement.

The assessment identified that the preferred option was the bridge replacement options, with four lane cross section and with a navigational clearance of 12 metres.

Seven bridge replacement options were considered and assessed through a value management workshop. The workshop participants recommended the West Option as the preferred option as it:
• scored the highest on most assessment criteria at a relative cost that is not “significantly” more than the cheapest option (Central Option)
• provides the best connectivity and functionality
• provides better opportunities for parking to support CBD growth and foreshore access
• provides the greatest flexibility in terms of options for construction
• has superior geometry (for better safety)
• allows a better driver experience and the better aesthetic solution
• would lead to better pedestrian accessibility
• provides better opportunities for parking and boating facilities on northern side of the river.

A preferred bridge type for the options was not identified, rather both the concrete haunched girder and concrete box girder were considered to be feasible. However, for the purpose of the proposal development, a concrete box girder was progressed in the concept design.

4.3 Design refinements

There are no design refinements to the overall proposal that are relevant to the EIS proposal.
5 Description of the proposal

5.1 The proposal

This chapter describes the proposed scope of works for the EIS proposal which is the subject of this EIS. Section 1.4 provides an overview of how the EIS proposal fits within the overall proposal for the Batemans Bay Bridge replacement, to be undertaken by Roads and Maritime and assessed under an REF in parallel with this EIS.

A detailed description of the REF proposal is provided in the REF. Details of the construction of the REF proposal have also been summarised in this chapter to provide context for any potential indirect impacts on the SEPP 14 wetlands.

The EIS proposal is shown in context of the overall proposal in Figure 5-1. The figure also shows the EIS proposal areas which comprise the largest extent expected to be required for the operational footprint of the proposal as well as used during the construction.

The proposal description presented in this EIS represents the concept design for the proposal. Sufficient flexibility has been provided in the concept design to allow for refinement during detailed design or in response to any submissions received following the display of the EIS or to minimise environmental impacts. The final design may therefore vary from the concept design described in this chapter.

5.1.1 EIS proposal

The EIS proposal includes the part of the overall proposal that is located within mapped SEPP 14 wetlands. The EIS proposal would be constructed and operated as part of the overall proposal (ie in conjunction with the REF proposal). Overall the proposal would impact on 0.54 hectares of mapped SEPP 14 wetland, however only 0.07 hectares of native vegetation occurs within this area and would be directly impacted.

EIS proposal area: Southern approach

A 150-metre-long section of the existing Princes Highway on the southern approach to the existing bridge is located within an area (about 0.31 hectares) that is mapped as a SEPP 14 wetland.

The southern approach required for the overall proposal would be located within the existing Princes Highway road reserve where possible, which is highly disturbed. However, a small area of wetland vegetation (0.07 hectares) within the mapped SEPP 14 wetland would be impacted for the new road embankment, road widening and to provide for maintenance and construction access. Vegetation in this location consists of estuarine mangrove forest (0.06 hectares) and saltmarsh (0.01 hectares).

The new southern approach is expected to be constructed on 3:1 earth embankments and retaining walls. This would provide the required clearance of at least 4.6 metres over Clyde Street and the required stability of the overall approach.

The proposed works would include ground stabilisation, foundation treatment, earthworks associated with the new embankment, road profiling and sealing of the new road pavement. Existing drainage, road furniture and utilities would be extended to cover this new pavement section where required. Progressive stabilisation of these areas would be carried out during construction.

The proposed works are required to allow the new alignment of the southern approach to tie in with the existing section of the Princes Highway. This would not result in any substantial changes in the landscape along this section of the highway with most of the works occurring within the existing road reserve.
Figure 5-1 Key features of the proposal

Batemans Bay Bridge replacement

Environmental impact statement

3:1 fill embankment

Area to be used as an ancillary facility

The proposal area

SEPP 14 wetland area

Lot

Bridge design

Indicative foreshore parking

Indicative local road adjustments

T-wharf to be replaced

Pier location

Bridge abutment

Retaining wall

Source: Aspect, RMS, LPI, Exi Topp

Projection: GDA 1994 MGA Zone 56

FIGURE 5-1: Key features of the EIS proposal
EIS proposal area: former bowling club site
A section of the former bowling club and parking area associated with Mackay Park is mapped as SEPP 14 wetland (about 0.23 hectares). No wetland or other native vegetation occurs in this area.

The former bowling club site has been identified as an ancillary facility for the construction of the proposal. As well as providing for site offices and amenities, it would also serve for parking and stockpiling of materials and structural elements. Some structures may be removed if they are not suitable for use as site offices and amenities and replaced with temporary site offices and amenities for use during construction.

5.1.2 Components of the overall proposal with indirect impacts
The construction and operation of the realigned Princes Highway southern approach to the new bridge outside the EIS proposal area would have potential indirect impacts on the mapped SEPP 14 wetlands as it is located adjacent to the mapped SEPP 14 wetland boundary.

Key components which could result in indirect impacts are:
- new southern approach, embankment and retaining walls and potential foundation treatment works
- ancillary facilities adjacent to SEPP 14 wetlands.

Southern approach
The new southern approach would consist of four 3.8 metre lanes (two lanes in each direction) with 0.5 metre shoulders on each side. A three metre shared use path would be provided connecting North Street to the new bridge (Figure 5-1). The southern approach would be constructed on a 3:1 earth embankment and retaining walls. Due to the presence of soft soils / generally poor, unconsolidated ground materials, specialised design and construction techniques including foundation treatments and possibly piling may be required.

Ancillary facilities
While part of one ancillary facility (former bowling club site) forms part of the EIS proposal area, another ancillary facility is located adjacent to the SEPP 14 wetlands. The Reef Motor Inn would be acquired for the overall proposal as it is required for the realigned bridge approach. It would be used as an ancillary facility during construction.

Other components of the overall proposal such as the new bridge would be about 250 metres downstream from the closest extent of the mapped SEPP 14 wetland areas.

5.2 Construction activities
Construction methods to be employed for the EIS proposal would be consistent with those for the overall proposal. This is largely due to the small scale of the area comprising the EIS proposal, being limited to ground treatment and embankment works, road widening, road re-profiling and sealing.

The following sections provide an overview of the proposed methods to be used for the construction of the southern approach to the new bridge. Some of the details mentioned are not applicable to the EIS proposal, however they have been included to identify any indirect impacts on the SEPP 14 wetlands.

Further construction details for the overall proposal can be found in the REF which will be placed on public display at the same time as this EIS.

The EIS proposal would include site establishment works, vegetation clearing, earthworks for new embankments, drainage works, pavement construction, line marking and rehabilitation works.
Detailed construction methods would be determined during detailed design and construction planning.

5.2.1 Work methodology

The construction methodology outlined below includes discussion about the broader construction of the proposed southern approach where relevant, as it would have both potential indirect and direct impacts on the SEPP 14 wetland. Description of the construction of other components of the overall proposal such as the new bridge is presented in the REF.

Construction activities would be carried out in accordance with a CEMP to help ensure work complies with Roads and Maritime’s commitments and legislative requirements. Detailed work methodologies would be identified by the construction contractor. The EIS proposal is anticipated to involve the following general work methodology and sequencing:

- establishment works including ancillary facilities
- Utility relocations
- earthworks and drainage
- construction of the southern bridge approach
- pavement construction
- landscaping and finishing works
- removal of ancillary facilities and site rehabilitation.

Establishment works

Establishment works would include:

- installation of fencing and sediment and erosion control works
- property adjustment works including relocating fences/ boundary features
- minor earthworks to establish temporary construction roads, level areas for site compounds and water quality control ponds
- minor vegetation clearing and grubbing works
- utility connection works
- establishment of site compounds and ancillary facilities
- minor road works to establish access points.

Utility relocations

Some land based utilities near or within the footprint of the approaches would require relocation. Utility relocations would be one of the first tasks undertaken during construction and may be undertaken by service providers. The type of utilities that would require relocation are further discussed in section 5.4. The activities that would be undertaken to relocate land based utilities include:

- excavation and construction of new underground cutover locations within the existing utility network. These would be generally located in pits
- installation of new poles to carry overhead services
- excavation of trenches along the new utility routes
- installation of bedding material and new utilities within the trenches or onto new poles
- testing and cutover of utilities into new infrastructure
- decommissioning and removal of redundant utilities where required.

Earthworks and drainage

Earthworks and drainage activities for the new southern approach include:

- clear and grub vegetation, including the removal and/or trimming of vegetation
- stripping, stockpiling and management of topsoil and unsuitable material
- excavate and fill to the road formation levels, including excavations for embankments and cuttings and boxing out the new pavement
- dispose of unsuitable and/or surplus excavated material
- install new drainage lines, pits and subsoil drains to connect into the existing drainage lines within the road formation.
Construction of the southern bridge approach

Land based structural works would be required for the construction of the southern approach, including retaining walls and stabilised embankments. Typical construction activities would include:

- ground preparation including minor earthworks
- bored piling to provide foundation to support structural elements where required due to ground conditions
- for cast in-situ elements, erection of formwork, placement of steel reinforcing and pouring concrete
- for pre-cast elements, lifting, placing and securing precast components
- stitching, joining and other similar processes to join structural elements together
- back filling and compaction of engineered fill or concrete.

Pavement construction

Pavement works would include:

- install new kerb and gutter where required
- construct new pavement, including placing and compacting select fill, sub base and asphalt wearing surface.

Landscaping and finishing works

Finishing and landscaping would include:

- install new street lights
- rehabilitate disturbed areas and landscape in accordance with the landscaping plan
- line marking and sign posting.

Removal of construction compounds, ancillary facilities and site rehabilitation

Upon completion of works, construction compound, ancillary facilities and construction access tracks would be demobilised. The site would be rehabilitated to a condition agreed to by the property owner.

5.2.2 Construction hours and duration

It is expected that early works for the proposal, such as relocation of existing utilities would commence in 2018 with main construction commencing in 2019. The new bridge is planned to be completed and open to traffic in 2021. Once the new bridge is completed, demolition of the existing bridge would commence. This work is expected to be completed by 2022. Construction of the proposal would start in 2018, commencing with early works, construction works would be completed by 2021 and demolition of existing bridge completed by 2022.

Construction hours would be in accordance with the Interim Construction Noise Guideline (DECC 2009b) (ICNG) which defines the standard construction working hours as follows:

- Monday to Friday: 7 am to 6 pm
- Saturday: 8 am to 1 pm
- Sundays and public holidays: no work.

In accordance with the Construction Noise and Vibration Guidelines (Roads and Maritime 2016), activities with impulsive or tonal noise emissions would be carried out only within the following hours:

- Monday to Friday: 8 am to 5 pm
- Saturday: 9 am to 1 pm
- Sundays and public holidays: no work.

Work with impulsive or tonal noise emissions would be carried out in continuous blocks not exceeding three hours each with a minimum respite of at least one hour between each block.

It is anticipated that some works would be carried out outside of standard construction hours, including where works would interrupt the operation of the Princes Highway or utility provision. Any
out of hours works would be undertaken in accordance with the Construction Noise and Vibration Guidelines (Roads and Maritime 2016).

Should an environment protection licence be required (refer to section 2.4.3), any conditions relating to construction hours would also be adhered to.

5.2.3 Plant and equipment
A range of plant and equipment would be used during construction of the southern approach. The final equipment and plant requirements would be identified by the construction contractor. An indicative list of plant and equipment that would be used for each construction stage is provided in Table 5-1.

Details on construction plant and equipment to be used for the overall proposal is identified in the REF.

Table 5-1 Indicative construction plant and equipment

<table>
<thead>
<tr>
<th>Construction phase</th>
<th>Plant and equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment works</td>
<td>Trucks, trucks with hiab, cranes, clearance equipment such as chainsaws and chippers</td>
</tr>
<tr>
<td>Utility relocations</td>
<td>Excavators, rigid and articulated trucks, jackhammers, cranes, concrete pumps, welding equipment, concrete saws, light vehicles, cranes, directional drilling rigs, suction dredges, marine vessels, cherry pickers</td>
</tr>
<tr>
<td>Earthworks and drainage</td>
<td>Excavators, jackhammers, rigid and articulated trucks, compactors, water carts, concrete trucks, generators, bulldozers, boring machines, graders, profilers, vibrating rollers, concrete pumps, welding equipment, cranes</td>
</tr>
<tr>
<td>Construction of southern bridge approach</td>
<td>Excavators, concrete pumps, concrete trucks, trucks, bulldozers</td>
</tr>
<tr>
<td>Pavement construction</td>
<td>Rigid and articulated trucks, compactors, water carts, graders, paving machines, light vehicles, concrete saws, concrete trucks, concrete pumps, concrete pumps, slip-forming machines, vibrating rollers, generators, compressors, welding equipment, asphalt trucks, rollers, curing machines,</td>
</tr>
<tr>
<td>Finishing and landscaping</td>
<td>Milling machines, piling machines, concrete pumps, cranes, welding equipment, trucks, rollers, road marking machine, concrete trucks, generators, oxy-cutting equipment, sprayers, light vehicles</td>
</tr>
<tr>
<td>Removal of ancillary facilities</td>
<td>Generators, trucks, cranes, light vehicles.</td>
</tr>
</tbody>
</table>

5.2.4 Earthworks
The EIS proposal would result in the construction of embankments to support the southern approach to the new bridge. Earthwork volumes in the EIS proposal area are estimated to be less than 21,000 cubic metres. There is likely to be a requirement for material to be imported for the EIS proposal. This would be sourced from either the overall proposal or from an appropriately licensed commercial suppliers in nearby areas.
5.2.5 Source and quantity of materials
About 1,400 cubic metres of concrete and 4,350 cubic metres of asphalt would be required for the overall proposal. Only a fraction of this would be required for the EIS proposal. Materials would be sourced from appropriately licensed commercial suppliers in nearby areas as well as from a concrete batching plant to be established for the proposal. None of the materials proposed to be used are considered to be in short supply.

Surplus material that cannot be used on-site or on adjacent projects would be classified in accordance with the NSW EPA Waste Classification Guidelines (2014) and disposed of at an approved materials recycling or waste disposal facility.

The amount of water that would be required during construction is unknown at this stage. The amount would depend on material sources and methodologies applied by the contractor. Water would be obtained from the town water supply.

5.2.6 Waste management
The construction of the proposal would generate typical construction waste material such as:

- packaging from construction materials
- excess or unusable construction materials
- excavated material that is unsuitable for reuse on the proposal
- green waste from clearing of vegetation
- general office and amenity waste.

Potential waste material would be generated from the demolition including:

- minor quantities of materials from demolition of existing infrastructure and utilities
- materials from the demolition of the buildings.

While the demolition waste material is not directly related to the EIS proposal, its incorrect management could result in impacts on the adjacent SEPP 14 wetland.

A comprehensive waste management plan would be developed based upon the hierarchy of waste minimisation including maximising the proportion of waste that can be minimised, reused and recycled. Further information on waste management can be found in section 7.7.

5.2.7 Traffic management and access

Construction traffic numbers
Construction of the EIS proposal would generate light and heavy vehicle movements. Heavy vehicle movements would mainly be associated with:

- delivery of construction materials
- spoil removal
- delivery and removal of construction equipment and machinery
- workers travelling to, from and within the construction site.

In comparison to the overall proposal, the EIS proposal would generate very little additional construction traffic as it is only a small proportion of the overall proposal (less than five per cent). Consequently, construction traffic impacts for the EIS proposal are negligible. Construction traffic impacts are discussed in more detail in section 0.

Site access for construction vehicles
Construction vehicles would access the site via the Princes Highway or from Clyde Street. Employee vehicles would park at one of the main site compound facilities, such as the former bowling club site. Access from the bowling club site to the EIS proposal area would be via the existing Princes Highway. No access track would be constructed in the verge for access.
Road closures
The majority of the works as part of the overall proposal would be undertaken offline from the Princes Highway and therefore no long-term closures of the Princes Highway would be required. However, the EIS proposal is located at the tie in with the existing Princes Highway and works are either within or on the existing highway pavement. When road closures are required, they would be programmed to occur during low traffic periods (ie at night) and would not occur during holiday periods or weekends when traffic numbers are highest along the highway.

Construction traffic management plan
A construction traffic management plan would be prepared for the overall proposal in accordance with the Traffic Control at Work Sites Manual Version 4 (RTA, 2010) and Roads and Maritime Specification G10 – Control of Traffic (RTA, 2006). The plan would provide details of the traffic management to be implemented during construction to ensure traffic flow on the surrounding network is maintained where possible.

Access management
All property access would be maintained during construction. Any adjustments would be discussed with land owners/occupiers to determine any specific access requirements and alternatives available.

5.3 Ancillary facilities
There are two ancillary facilities within or near the EIS proposal area which could result in direct or indirect impacts to the SEPP 14 wetlands. These are:
- former bowling club site - current unused site to be leased from Eurobodalla Shire Council. This site forms part of the EIS proposal area
- Reef Motor Inn site - land acquired north of the southern approach to the existing bridge (adjacent to the EIS proposal area).

These proposed ancillary facilities are shown in Figure 5-2 and evaluated against the site assessment criteria in Table 5-2.

Should additional or alternative stockpiles and compounds sites be required following detailed design and construction planning, the positioning of these sites would be undertaken in consideration with the following site assessment criteria:
- operational during a flood event and avoid or minimise impacts to surrounding properties
- more than 40 metres from a watercourse
- more than 50 metres from residential dwellings
- in previously disturbed areas that do not require the clearing of native vegetation
- in plain view of the public to deter theft and illegal dumping
- outside the drip line of trees
- on relatively level ground
- away from areas of heritage conservation value.

The positioning of any additional ancillary facilities would aim to meet all of the above criteria. However due to the nature of the proposal area and the surrounding landscape, this may not be possible. Consultation with the Roads and Maritime Senior Environment Officer would be undertaken to confirm the suitability of any additional ancillary facilities and whether any additional environmental assessment is required.
### Table 5-2 Ancillary facilities

<table>
<thead>
<tr>
<th>Site context</th>
<th>Potential use</th>
<th>Compliance with site assessment criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reef Motel Inn site</strong></td>
<td>The site could accommodate:</td>
<td>This site would comply with the site assessment criteria with the exception of:</td>
</tr>
<tr>
<td></td>
<td>• site compound that incorporates site offices, sheds, workshops and storage</td>
<td>• proximity to sensitive receivers – A motel is immediately adjacent to the site and residential areas would be about 20 metres away.</td>
</tr>
<tr>
<td></td>
<td>• areas for the delivery and storage of bridge structural elements</td>
<td>• proximity to waterways - Some areas of the site would be within 40 metres of Mcleods Creek</td>
</tr>
<tr>
<td></td>
<td>• areas for treating water</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• stockpile sites for materials, temporary spoil storage and mulch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This site would comply with the site assessment criteria.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>However, the site is adjacent to the SEPP 14 wetlands.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>While there would be no direct impacts to the wetlands, indirect impacts from sedimentation have been considered.</td>
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<td></td>
<td>(continued)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This site would be acquired for the proposal and all existing structures demolished.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The former motel site is located to the north of the new southern approach.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The site currently contains a private residence and a small motel. These would be acquired and demolished as the alignment of proposal would directly impact upon them. Land not required for the new alignment would be used as a construction compound.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Another motel is directly adjacent to the site and other holiday accommodation facilities are in close proximity. The Mcleods Creek SEPP 14 wetland is adjacent to the east of the site. There are a few planted trees along the boundary of the site with the Princes Highway.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This site would be leased for construction of the proposal.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Former bowling club site</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The former bowling club site is located to the south of the Proposal near the Princes Highway / Church Street intersection. The site is a former bowling club that is currently unused, with a clubhouse and four bowling greens. Part of the site falls within the SEPP 14 wetland boundary. The site is bounded by SEPP 14 on the north and west. To the south and south west, are community sporting facilities including an oval, mini-golfing and swimming pool.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This site would be leased for construction of the proposal.</td>
<td></td>
</tr>
</tbody>
</table>
Figure 5-2 Construction key features

Batemans Bay Bridge replacement Environmental Impact Statement

Indicative construction sedimentation basins
Exclusion and sedimentation fencing
The proposal area
Ancillary facility
Indicative routes for construction traffic
SEPP 14 wetland area

Source: Aurecon, RMS, LPI, Enviro Topo

0 25 50 100 m
Projection: GDA 1994 MGA Zone 56

FIGURE 5-2: Construction key features
5.4 **Public utility adjustment**

The southern approach to the new bridge would be constructed on a raised embankment which would need the sub-surface soils to be stabilised for support. Major services in southern approach area would need to be relocated so that they are not damaged in the stabilisation works and include:

- telecommunication cables
- high voltage electricity cables
- water pipeline.

5.5 **Property acquisition**

The EIS proposal would require the acquisition of land owned by the Crown. Acquisition of land (outside of the existing Princes Highway) in this area, would be required prior to construction in accordance with the *Crown Lands Act 1989*.

Another parcel of land (part of the former bowling club site within mapped SEPP 14 wetlands) would be leased during the construction period.
6 Consultation

This chapter discusses the consultation undertaken to date for the proposal and the consultation proposed for the future.

### Secretary’s requirement

You must undertake an appropriate and justified level of consultation with relevant parties during the preparation of the EIS, including:

<table>
<thead>
<tr>
<th>Local, State or Commonwealth government authorities and service providers including the:</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office of Environment and Heritage</td>
<td>section 6.2.3</td>
</tr>
<tr>
<td>DPI (including Fisheries, Water and Lands)</td>
<td></td>
</tr>
<tr>
<td>NSW Environment Protection Authority (EPA)</td>
<td></td>
</tr>
<tr>
<td>Marine Park Authority</td>
<td></td>
</tr>
<tr>
<td>Eurobodalla Shire Council</td>
<td></td>
</tr>
<tr>
<td>• Specialist interest groups, including local Aboriginal land councils and Registered Aboriginal Parties</td>
<td>section 6.2.2</td>
</tr>
<tr>
<td>• Utilities and service providers</td>
<td>Consultation has been undertaken in relation to utility relocations. Refer to section 5.4</td>
</tr>
<tr>
<td>• The local community, including affected and surrounding landowners</td>
<td>Consultation with the community and stakeholders was undertaken for the overall proposal. Refer to section 6.2</td>
</tr>
</tbody>
</table>

The EIS must describe the consultation process, document consultation undertaken and identify any issues raised (including where these have been addressed in the EIS).

### 6.1 Consultation strategy

A consultation strategy was prepared for the environmental assessment of the proposal. The objectives of the consultation strategy have guided all communication and consultation with stakeholders in the preparation of this EIS. The consultation objectives would continue to apply to all stages of the proposal to guide the continued implementation of adequate and appropriate consultation with stakeholders.

Engagement objectives are:

- introduce the proposal benefits, features, objectives and complexities and to give the community a clearer understanding of what would be achieved at the end of the engagement period
- keep the local community and other key stakeholders informed of proposal progress
- increase stakeholder understanding of the proposal and its objectives
- provide the community and stakeholders with regular and targeted information to build awareness about the proposal
- provide clear information about when we would be seeking feedback and why
- ensure community and stakeholder feedback is continuously fed into communication and engagement
- ensure transparency in all that we do
- engage in a manner that is informative, innovative, adaptive and sustainable
- ensure that community and stakeholder enquiries about the proposal are managed and resolved effectively
- ensure that proposal information is distributed in an effective and timely manner.
6.2 Consultation process and activities to date

6.2.1 Community and stakeholder involvement

Consultation with the community, stakeholders and government agencies was undertaken on the preferred option for the proposal during August and September 2017.

The community were asked to provide feedback on the preferred route, how they would like to tribute the current bridge, and the river foreshore areas. During this consultation period, over 200 community members completed the feedback survey.

Three drop-in community information sessions were held in Batemans Bay during the consultation period

- Batemans Bay Community Centre
  Thursday 10 August, 4pm-7pm
- Batemans Bay Village Centre
  Thursday 17 August, 3pm-6pm
- Batemans Bay Community Centre
  Saturday 19 August, 10am-1pm.

A total of 145 people attended across the three sessions, with most attendees completing the feedback survey. The information sessions provided community members with an opportunity to meet the project team and ask questions about the proposal.

All feedback received during the preferred option consultation period has helped the project team to refine the proposal. Most respondents indicated they like the existing bridge, but also understand the need for its removal. Table 6-1 outlines the key issues raised by the community during the August consultation period.

Table 6-1 Summary of key issues raised for the overall proposal by the community

<table>
<thead>
<tr>
<th>Group</th>
<th>Issue raised</th>
<th>Response / where addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community members</td>
<td>Height of the new bridge</td>
<td>The navigational clearance of the new bridge is identified in chapter 5</td>
</tr>
<tr>
<td></td>
<td>Local business</td>
<td></td>
</tr>
<tr>
<td>Community members</td>
<td>Need to tribute current bridge</td>
<td>Roads and Maritime are committed to paying tribute to the bridge. Ongoing consultation with the community would continue to work on an appropriate tribute and more details would be available as the proposal progresses.</td>
</tr>
<tr>
<td></td>
<td>Local business</td>
<td></td>
</tr>
<tr>
<td>Community members</td>
<td>Improving the river foreshore, boating and fishing facilities</td>
<td>The removal of the existing bridge abutments would open up the foreshore and enable better connectivity along the foreshore areas. Roads and Maritime would relocate any affected facilities such as boating and fishing facilities and carparking.</td>
</tr>
<tr>
<td>Community members</td>
<td>Visual design of the new bridge</td>
<td>The new bridge would have four traffic lanes, a shared use path for pedestrians and cyclists and be higher than the existing bridge to allow uninterrupted access upstream for taller boats. The new bridge has been designed to balance functionality and appealing design and considered community feedback.</td>
</tr>
<tr>
<td>Group</td>
<td>Issue raised</td>
<td>Response / where addressed</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Community members</td>
<td>Congestion at the Princes and Kings Highway intersection</td>
<td>Roads and Maritime has carried out traffic investigations at this intersection which has informed the design development. Traffic lights would be introduced at the roundabout and an additional right turn lane from the Kings Highway onto the Princes Highway would be added to help ease congestion and improve traffic flow.</td>
</tr>
<tr>
<td>Community members</td>
<td>Wharf Road access and parking</td>
<td>Travelling southbound on Princes Highway, Wharf Road would be accessed via a slip road just before the new bridge. Wharf Road would be connected to Old Punt Road underneath the new bridge and more parking would be created in this area. Wharf Road would also be accessible via Old Punt Road or Peninsula Drive.</td>
</tr>
<tr>
<td>Community members</td>
<td>Proposal timing</td>
<td>It is expected that early works for the proposal, such as relocation of existing utilities would commence in 2018 with main construction commencing in 2019. The new bridge is planned to be completed and open to traffic in 2021. Once the new bridge is completed, demolition of the existing bridge would commence. This work is expected to be completed by 2022.</td>
</tr>
<tr>
<td>Community members</td>
<td>Pedestrian, cyclist and disability access</td>
<td>A shared pedestrian and cycle path would be included in the new bridge. There would be access to this path from both the northern and southern sides of the bridge. Refer to chapter 5 which shows the location of the shared use path.</td>
</tr>
<tr>
<td>Community members</td>
<td>Clyde Street access</td>
<td>Moving the bridge to the west of the current alignment provides better opportunities for parking to support CBD growth and foreshore access. Clyde Street would be connected beneath the new bridge allowing pedestrians, cyclists and vehicles uninterrupted travel along Clyde Street.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Road users who wish to access the new bridge from Clyde Street would travel to North Street to turn onto the Princes Highway.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Changes in local access are addressed in chapter 5, while traffic and transport issues are addressed in section 0.</td>
</tr>
<tr>
<td>Community members</td>
<td>Impacts (including noise, construction and environmental)</td>
<td>Environmental impacts are assessed in chapter 7 and 8 of this EIS.</td>
</tr>
</tbody>
</table>

In addition, in accordance with the SEARs, Roads and Maritime consulted with relevant utility providers about the proposal and potential alterations required to existing utility assets present within or in close proximity to the proposal area. Consultation has been ongoing through the design process, with site meetings held with Council, Telstra, Optus, NBN and Essential Energy in August and September 2017.

6.2.2 Aboriginal cultural heritage consultation

An Aboriginal heritage assessment was undertaken for the proposal in accordance with the Procedure for Aboriginal Cultural Heritage Consultation and Investigations (PACHCI) (Roads and Maritime, 2011).

In accordance with the PACHCI, the early planning stages of Roads and Maritime projects involve consultation with Local Aboriginal Land Councils and registered Native Title holders and claimants. There are no Native Title holders or claimants in the proposal study area. Consultation has been undertaken for the proposal with the Batemans Bay Local Aboriginal Land Council (BBLALC).
BBLALC was contacted by Roads and Maritime’s Aboriginal Cultural Heritage Officer at the commencement of the proposal to discuss the proposed works and invited to participate in the archaeological survey. An archaeological field survey of the study area was undertaken with two representatives of the BBLALC on 26 May 2017. Subsequent to the field survey, BBLALC has provided a cultural heritage survey report for Roads and Maritime in accordance with the PACHCI.

Four known Aboriginal heritage sites and one potential archaeological deposit (PAD) site were identified within the study area, near the northern approach to the existing Batemans Bay Bridge. Subsequent subsurface investigations identified the PAD site as an Aboriginal heritage site. No Aboriginal heritage sites were identified within or near the EIS proposal area.

Roads and Maritime advertised in local media and contacted potential Aboriginal stakeholders identified from government agency notification responses. Roads and Maritime also invited Aboriginal people who hold knowledge relevant to determining the cultural heritage significance of Aboriginal objects and Aboriginal places in the study area to register an interest in a process of community consultation. A total of 13 Aboriginal parties registered for consultation on the proposal (refer to Appendix D for further details).

The formal consultation process included:
- advertising for registered Aboriginal parties
- government agency notification letters
- notification of closing date for registration
- an Aboriginal Focus Group (AFG) meeting on 2 August 2017 to discuss archaeological assessment methodology and cultural assessment. Registered Aboriginal parties were also invited to identify individuals they regarded as knowledge holders for the area
- provision of proposed archaeological and cultural values assessment methodology (allowing 28 day review) outlining the methodology to prepare the Cultural Heritage Assessment Report (CHAR)
- ongoing compilation of registrants list, through continuing to register individuals and groups for consultation on the project
- provision of draft CHAR for review (allowing a minimum 28 day review)
- a second AFG meeting on 18 October 2017 to discuss investigation results, draft cultural values assessment, draft CHAR and detailed mitigation strategies
- ongoing consultation with the local Aboriginal community.

6.2.3 Government agencies consultation
Consultation was undertaken by DP&E as part of the request for SEARs with the following agencies:
- OEH
- DPI (Agriculture)
- DPI (Water)
- DPI (Fisheries).

During the preparation of the EIS, consultation, in accordance with the SEARs, was undertaken with the following agencies:
- OEH
- DPI (Fisheries) (incorporating the former Marine Park Authority)
- DPI (Crown Land)
- NSW Environment Protection Authority (EPA)
- Eurobodalla Shire Council.

These agencies were consulted either through phone calls, meetings or letters. A greater level of consultation was undertaken with Eurobodalla Shire Council and DPI (Fisheries), including attendance at value management workshops and one-on-one meetings to discuss the proposal and the EIS.
Submissions on the Batemans Bay Bridge Preferred Route Option Report (Roads and Maritime 2017a) were provided by DPI (Crown Land), DPI (Fisheries) and Eurobodalla Shire Council. These submissions have been considered in development of the overall proposal.

Meetings were requested with DPI (Water), however representatives of this agency were unavailable.

The key issues of relevance to the EIS proposal raised through consultation and where addressed in the EIS are detailed in Table 6-2.

Table 6-2 Issues raised by government agencies

<table>
<thead>
<tr>
<th>Agency</th>
<th>Issue</th>
<th>Where addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPI (Fisheries)</td>
<td>• Demonstrate that impacts to SEPP 14 wetlands are unavoidable and have been minimised to the greatest extent possible.</td>
<td>• The proposal has minimised impacts on SEPP 14 wetlands through the options assessment and concept design phases. The majority of land mapped as SEPP 14 wetlands in the proposal area has been previously developed. The impacts to native vegetation within SEPP 14 wetlands is up to 0.07 hectares.</td>
</tr>
<tr>
<td></td>
<td>• The extent and significance of direct impacts on key fish habitats (mangroves and associated saltmarsh species).</td>
<td>• Refer to section 7.1</td>
</tr>
<tr>
<td></td>
<td>• The risk of and potential significance of indirect impacts on key fish habitat (mangrove and saltmarsh) within the SEPP 14 wetland both during the construction phase (due to vehicles and construction machinery or from water quality decline) and subsequently during the operation phase as a result of stormwater discharge from the road surface.</td>
<td>• Refer to section 7.1</td>
</tr>
<tr>
<td></td>
<td>• It is important that the Environmental Impact Statement (EIS) assesses the full extent of potential impacts to the aquatic environment within the development area. Proposed measures to mitigate, rehabilitate or compensate for such impacts are to be detailed in accordance with the Department’s Policy and Guidelines for fish habitat conservation and management (2013 update) to ensure that there is no net loss of aquatic habitats.</td>
<td>• Refer to section 7.1</td>
</tr>
<tr>
<td></td>
<td>• Due consideration must also be described in relation to Sections 55 and 56 of the Marine Estate Management Act 2014 related to development activities within and affecting marine parks and aquatic reserves.</td>
<td>• Refer to section 2.4.2</td>
</tr>
<tr>
<td>Agency</td>
<td>Issue</td>
<td>Where addressed</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>OEH</td>
<td>• Analysis of any interactions of the proposed development with aquatic and riparian environments and predictions of any impacts upon aquatic and riparian environments (including fish and aquatic and riparian vegetation). This should include assessment of both direct impacts (removal, disturbance, smothering) and indirect impacts (e.g. shading, water quality decline).</td>
<td>Refer to section 7.1</td>
</tr>
<tr>
<td></td>
<td>• Predictions of impacts upon water quality of the proposal both during the construction and operational phases.</td>
<td>Refer to section 7.4.2</td>
</tr>
<tr>
<td></td>
<td>• Safeguards to mitigate any impacts upon aquatic species and environments and water quality during construction and operation of the proposal. In particular, provide details on proposed erosion and sediment control (to be incorporated into a Construction Environmental Management Plan - CEMP) and proposed stormwater and road drainage management measures (e.g. sediment basins). Water quality management for the proposal should be designed to achieve no net increase in pollutant run-off to the SEPP 14 wetland.</td>
<td>Refer to section 7.1 and 7.4.4</td>
</tr>
<tr>
<td></td>
<td>• Description of proposed environmental compensation measures to offset the unavoidable loss of aquatic and riparian habitats in the SEPP 14 wetland.</td>
<td>Refer to section 7.1.4</td>
</tr>
<tr>
<td></td>
<td>• Assessment of the impact of increased tourist boat activity on the environment</td>
<td>Refer to section 8.6</td>
</tr>
<tr>
<td></td>
<td>• Assessment of dredge depths if the project invites bigger boats upstream</td>
<td>The proposal would not promote the taller boats than are currently able to pass under the existing bridge with the lift span open</td>
</tr>
<tr>
<td></td>
<td>• Assessment of acid sulfate soils in the EIS</td>
<td>Refer to section 7.4</td>
</tr>
<tr>
<td></td>
<td>• Address concerns of oyster farmers in regard to water quality, biosecurity and vibration</td>
<td>Refer to sections 7.1 and 7.4</td>
</tr>
<tr>
<td></td>
<td>• Address temporary works platforms if proposed, relating to sediment disturbance</td>
<td>No temporary works platforms are proposed. Rather temporary jetties may be used. Refer to the REF (Chapter 3)</td>
</tr>
<tr>
<td>OEH</td>
<td>• Assess, quantify and report on biodiversity including threatened species, native vegetation and habitat</td>
<td>Refer to section 7.1</td>
</tr>
<tr>
<td></td>
<td>• Assess, quantify and report on flooding and coastal erosion</td>
<td>Refer to section 7.1</td>
</tr>
<tr>
<td>Agency</td>
<td>Issue</td>
<td>Where addressed</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>• Assess, quantify and report on Aboriginal cultural heritage in accordance with OEH requirements</td>
<td>• There are no Aboriginal heritage sites within the EIS proposal. Refer to section 7.2</td>
</tr>
<tr>
<td></td>
<td>• Overarching report combining REF and EIS impacts</td>
<td>• A separate REF and EIS have been prepared in accordance with legislative requirements however an holistic approach has been taken for supporting assessments. Cumulative impacts for the REF and EIS proposal are detailed in section 8.7.2.</td>
</tr>
<tr>
<td>EPA</td>
<td>• Concerned about potential noise impacts</td>
<td>Refer to section 8.3</td>
</tr>
<tr>
<td></td>
<td>• Water quality is key concern. Water quality is of extremely high standard and critical to marine park, oyster leases.</td>
<td>Refer to section 7.4</td>
</tr>
<tr>
<td>DPI (Water)</td>
<td>• Assessment of impacts of the proposed works on shallow groundwater and surface water resources, which would include consideration of any possible impacts to both surface and subsurface drainage regime and possible dewatering requirements during construction.</td>
<td>Refer to section 7.4</td>
</tr>
<tr>
<td></td>
<td>• Water demand and supply requirements during construction,</td>
<td>Water demand for the proposal would be investigated during detailed design</td>
</tr>
<tr>
<td></td>
<td>• Appropriate water licensing for all water taken and/or intercepted. May include aquifer interference to shallow groundwater. In proximity to the estuary and wetland areas</td>
<td>Refer to section 2.4.4</td>
</tr>
<tr>
<td></td>
<td>• Impacts on adjoining waterfront/riparian lands, groundwater dependent ecosystems and other water users,</td>
<td>Refer to section 7.4</td>
</tr>
<tr>
<td></td>
<td>• Final landscape and drainage impacts.</td>
<td>Refer to sections 7.1, 7.4, 7.8</td>
</tr>
<tr>
<td></td>
<td>• Full technical details and data of all surface and groundwater modelling.</td>
<td>Refer to section 7.4 and water quality assessment (Appendix G)</td>
</tr>
<tr>
<td></td>
<td>• Proposed surface and groundwater monitoring activities and methodologies.</td>
<td>Refer to 7.4 and water quality assessment (Appendix G)</td>
</tr>
<tr>
<td></td>
<td>• Proposed management and disposal of produced or incidental water</td>
<td>Refer to section 5.2.1</td>
</tr>
<tr>
<td>Eurobodalla Shire Council</td>
<td>• Property impacts due to the new bridge location</td>
<td>Refer to section 5.5</td>
</tr>
<tr>
<td></td>
<td>• Pedestrian access across the river – must be appropriate for those with restricted mobility</td>
<td>Refer to chapter 3 for details on the shared use path</td>
</tr>
</tbody>
</table>
6.3 Future consultation

6.3.1 Consultation during the public exhibition period
Eurobodalla Shire Council will place this EIS on public exhibition in accordance with the requirements of Part 4 of the EP&A Act. The EIS exhibition period will occur in parallel with the REF display.

Eurobodalla Shire Council as the consent authority would place the EIS on public exhibition and ask for any comments from the community or key stakeholders. Any submissions would be considered by Council as part of their approval process.

For further information on consultation activities undertaken for the EIS proposal or to make a submission on the EIS, go to Council's website (esc.nsw.gov.au).

6.3.2 Consultation during construction
Following the public exhibition period and into the construction phase of the proposal, Roads and Maritime would continue to identify and manage issues of interest or concern to the community. The aims of ongoing communications and consultation are to provide the community with:

- accurate and accessible information regarding the processes and activities associated with the proposal
- information in a timely manner
- appropriate avenues for providing comment or raising concerns, and to ensure they are aware of the avenues
- a high level of responsiveness to their issues and concerns throughout development and delivery of the proposal.

This consultation would be undertaken by both Roads and Maritime and the construction contractor. The community would be updated about the progress of construction and provided notification of any road closures or night works in advance of the works occurring.

To effectively manage consultation during the construction stage of the proposal a community and stakeholder participation plan would be developed and implemented by the construction contractor.
7 Assessment of key issues

7.1 Flora and fauna

<table>
<thead>
<tr>
<th>Secretary’s requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flora and fauna</td>
<td></td>
</tr>
<tr>
<td>• impacts on flora and fauna and habitat, within and surrounding the proposed development footprint, including threatened species, ecological communities and critical habitat listed under the Threatened Species Conservation Act 1995</td>
<td>Section 7.1.3</td>
</tr>
<tr>
<td>• impacts on marine vegetation and aquatic species and key fish habitat listed under the Fisheries Management Act 1994 and aquaculture activities in the area.</td>
<td>Section 7.1.3</td>
</tr>
</tbody>
</table>

7.1.1 Methodology

The biodiversity assessment prepared for the overall proposal. This assessment is provided in Appendix C and is summarised for the EIS proposal area in the following sections.

The following activities were undertaken to complete the detailed biodiversity assessment:

- a literature review of applicable previous studies, documents and resources specific to the study area (an area around the existing bridge and Princes Highway that encompasses the REF and EIS proposal area and surrounds):
- a database review to update the list of threatened flora and fauna species, populations and ecological communities (biota) listed under the TSC Act and FM Act, and MNES listed under the EPBC Act, that could be expected to occur in the locality, based on previous records, known distribution ranges, and habitats present
- field surveys for terrestrial and aquatic surveys to validate findings from previous assessments and better characterise the study area
- an assessment of ‘likelihood of occurrence’ following the collation of database records and species and community profiles
- assessing the potential impacts to flora, fauna, migratory and aquatic species including assessments of significance where required
- assessing the potential impacts to the SEPP 14 wetlands
- identification of construction and operational management measures as well as the need for offsets.

Field investigations undertaken for the assessment included:

- terrestrial fauna and flora field surveys from 9 to 13 January 2017, 15 to 16 February 2017 and 29 May to 1 June 2017. The surveys included flora sampling, vegetation mapping and condition assessment, targeted threatened flora surveys, a fauna survey and targeted surveys for threatened and migratory fauna species
- aquatic survey from 29 to 30 May 2017. The survey included marine vegetation mapping and assessment of condition and habitat value.

Generally, the survey effort met the required guidelines with the following exceptions:

- marine vegetation mapping and assessment was limited to areas of where access was available via wading and of suitable visibility but augmented with recent DPI mapping
- threatened and migratory shorebirds surveys were undertaken in summer and were not undertaken from a boat, as per the migratory shorebird species significant impact guidelines (former Department of the Environment, Water, Heritage and the Arts; DEWHA) (2009), but...
from the shoreline. The surveys in May 2017 occurred when most migratory shorebirds have returned to northern hemisphere breeding grounds

- microchiropteran bats - it was not possible to undertake a detailed inspection of the entire existing bridge to identify potential microbat roosts. Opportunistic surveys undertaken from the foreshore at dusk and dawn did not detect any bats leaving or returning to roost sites.

The biodiversity assessment was prepared with reference to the SEARs, Roads and Maritime’s Environmental Assessment Practice Note: Biodiversity Assessment EIA-N06 (Roads and Maritime 2012a) and the Framework for Biodiversity Assessment (State of NSW and OEH 2014). Further detail of the methods employed by the assessment can be found in section 3.4 of Appendix C.

7.1.2 Existing environment

Flora

Vegetation communities

Seven plant community types (PCTs), macroalgae and urban native and exotic vegetation were recorded within the study area (Figure 7-1).

Based upon their known extent and the local conditions, 16 terrestrial threatened ecological communities (TECs) were predicted to potentially occur in the study area. Of these TECs, three endangered ecological communities (EECs) (TSC Act listed), one vulnerable ecological community (EPBC Act listed) and one critically endangered ecological community (CEEC) (EPBC Act listed) were identified within the study area. Two aquatic PCTs (estuarine mangrove forest and seagrass) and macroalgae identified within the study area comprise protected vegetation under the FM Act.

Within the EIS proposal area, two PCTs were recorded, namely estuarine mangrove forest and saltmarsh. Both PCTs are protected vegetation under the FM Act, while saltmarsh is protected under the TSC Act and EPBC Act (Table 7-1).

Table 7-1 Plant community types recorded within the EIS proposal area

<table>
<thead>
<tr>
<th>PCT number</th>
<th>PCT name</th>
<th>Condition class</th>
<th>Equivalent TEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>920</td>
<td>Mangrove forests in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion</td>
<td>Moderate/Good</td>
<td>None (FM Act protected marine vegetation)</td>
</tr>
<tr>
<td>1126</td>
<td>Saltmarsh in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion</td>
<td>Moderate/Good</td>
<td>Coastal saltmarsh EEC (EPBC Act vulnerable, TSC Act endangered, FM Act protected marine vegetation)</td>
</tr>
</tbody>
</table>

Threatened flora species

No threatened flora species were recorded in the study area and none are considered likely to occur in the EIS proposal area given the considerable survey effort for the relatively small study area.

Noxious weeds

No noxious weeds were recorded in or adjacent to the EIS proposal area.
**SEPP 14 coastal wetlands**

One SEPP 14 wetland (No. 212) is located within and adjacent to the EIS proposal area and is part of Mcleods Creek. Mcleods Creek is a small tributary of the Clyde River. The Mcleods Creek catchment is predominately mapped as a SEPP 14 wetland. Vegetation in the mapped SEPP 14 wetland boundary includes all the vegetation types listed in Table 7-1.

The mapped SEPP 14 wetland comprising the EIS proposal areas includes a 150 metre section of the Princes Highway and part of a former bowling club as well as some wetland vegetation. The production of SEPP 14 maps was undertaken using aerial photo-interpretation with minimum of ground truthing (Adam et al 1985), and therefore can include areas that do not contain wetland vegetation. The mapped boundary does not correspond with the functional wetland boundary in this area. The Princes Highway has been constructed on an embankment to prevent it from being subject to tidal inundation. The functional wetland boundary lies at the base of this embankment.

Within the EIS proposal area, there is 0.54 hectares of the mapped SEPP 14 Mcleods Creek wetland of which 0.47 hectares consists of mown grass within the Princes Highway verge, part of the highway itself, part of a former bowling club and part of an existing carpark. The remaining 0.07 hectares within the EIS proposal area consists of 0.01 hectares of the coastal saltmarsh EEC and 0.06 hectares of estuarine mangrove forest. The extent of clearing required in the SEPP 14 wetland is small compared to the total area of vegetation within it in the study area.

**Groundwater dependant ecosystems**

According to BoM (2016) and Kuginis et al. (2012), and as indicated in Table 7-2, the PCTs present in the EIS proposal area have a high dependence on groundwater. A moderate or high potential for groundwater interaction means that there is a strong possibility that ecosystems are interacting with groundwater.

Further, the Clyde River is mapped as being reliant on the surface expression of groundwater (BOM 2016).

**Table 7-2 Groundwater dependant PCTs identified in the EIS proposal area**

<table>
<thead>
<tr>
<th>PCT number</th>
<th>PCT name</th>
<th>Potential for groundwater dependent ecosystem interaction (BoM, 2016)</th>
<th>Level of groundwater dependence (Kuginis et al. 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>920</td>
<td>Estuarine mangrove forest</td>
<td>High</td>
<td>Obligate</td>
</tr>
<tr>
<td>1126</td>
<td>Saltmarsh</td>
<td>High</td>
<td>Obligate</td>
</tr>
</tbody>
</table>

**Fauna**

A total of 103 fauna species was recorded in the field surveys for the study area, comprising 95 native and eight introduced species. A full list of the species recorded is provided in Appendix C.

**Threatened and migratory species and populations**

No endangered populations of any fauna species were recorded in the EIS proposal area or the overall proposal area during the surveys, but fauna species listed as threatened under the TSC Act and/or the EPBC Act were recorded in the study area. Several other recorded species in the study area are listed as migratory under the EPBC Act.

Within the EIS proposal area, no threatened species were recorded and one migratory species was recorded (Little Egret).
Several other threatened and migratory species are considered to have a moderate to high likelihood of occurrence in the EIS proposal area given the limitations of the surveys and the presence of suitable habitat. Table 7-3 provides details of all threatened and migratory species recorded or considered likely to occur in the EIS proposal area and surrounds.

Table 7-3 Threatened species present or likely to be present in the EIS proposal area

<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
<th>TSC Act</th>
<th>EPBC Act</th>
<th>Likelihood of occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Pied Oystercatcher (<em>Haematopus longirostris</em>)</td>
<td>E</td>
<td>-</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>Sooty Oystercatcher (<em>Haematopus fuliginosus</em>)</td>
<td>V</td>
<td>-</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>Eastern Freetail-bat (<em>Mormopterus norfolkensis</em>)</td>
<td>V</td>
<td>-</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>Southern Myotis (<em>Myotis macropus</em>)</td>
<td>V</td>
<td>-</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>Yellow-bellied Sheathtail Bat (<em>Saccolaimus flaviventris</em>)</td>
<td>V</td>
<td>-</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>Grey-headed Flying-fox (<em>Pteropus poliocephalus</em>)</td>
<td>V</td>
<td>V</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>Australian Grayling</td>
<td>V</td>
<td>-</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>Little Egret (<em>Egretta garzetta</em>)</td>
<td></td>
<td>Mig</td>
<td></td>
<td>Present</td>
</tr>
<tr>
<td>Eastern Bentwing Bat (<em>Miniopterus schreibersii oceanensis</em>)</td>
<td>V</td>
<td>-</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>Greater Broad-nosed Bat (<em>Platyrrhinus vittatus</em>)</td>
<td>V</td>
<td>-</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>Eastern Osprey (<em>Pandion cristatus</em>)</td>
<td>V</td>
<td>Mig, Mar</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>White-bellied Sea Eagle (<em>Haliaeetus leucogaster</em>)</td>
<td>V</td>
<td>Mar</td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>White-fronted Chat (<em>Epthianura albifrons</em>)</td>
<td>V</td>
<td>-</td>
<td></td>
<td>Moderate</td>
</tr>
</tbody>
</table>

V= Vulnerable, E= Endangered, CE= Critically endangered, Mig = Migratory, Mar = Marine

None of the threatened fauna species recorded in the study area were recorded within the EIS proposal area. The Australian Grayling could occur within the waterway of Mcleods Creek on occasion, but would be expected to occur in the main Clyde River channel on its migration from upstream freshwater habitats to the ocean. One migratory species – the Little Egret – was recorded foraging amongst the mangroves adjacent to the Princes Highway, but the only other fauna species recorded in the wetland were common waterbirds such as the White-faced Heron and Australian White Ibis, common small birds such as the Superb Fairy Wren and Yellow Thornbill, and common, and, in areas such as the carpark that partially lies within the mapped wetland boundary, urban-adapted species such as the Noisy Miner.

The Mcleods Creek SEPP 14 wetland does however provide suitable habitat for some threatened species. Hollow-bearing mangroves provide suitable roost sites, including maternity roosts, for a number of threatened microbats, several of which were recorded in the study area. Intertidal mudflats are likely to be used, at least on occasion, by threatened shorebirds such as the Eastern Curlew, Australian Pied Oystercatcher and Sooty Oystercatcher that were recorded elsewhere in the study area. In addition, threatened raptors such as the White-bellied Sea-eagle and Eastern Osprey, which were recorded elsewhere in the study area, are likely to forage in the Mcleods Creek SEPP 14 wetland. The saltmarsh within the Mcleods Creek SEPP 14 wetland, does not appear optimum for the White-fronted Chat, but this species may nevertheless also occur in the SEPP 14 wetland on occasion.

**Fauna habitat**

The study area generally has good fauna habitat values, due to moderate habitat complexity and the variety of habitat types, allowing for a moderate diversity of fauna species. Habitat types in or nearby the EIS proposal areas include:

- intertidal sandbanks and mudflats - There are no PCTs associated with these features, but they provide low tide foraging habitat and in some cases roosting habitat for a range of shorebirds, including threatened and migratory species. The Clyde River estuary was not
identified as an important site for threatened migratory shorebirds (Avifauna Research & Services 2006) and other sites in the bioregion appear more important to waders

- coastal saltmarsh - This habitat type, which corresponds with PCT 1126, occurs in and adjacent to the EIS proposal area, where it provides foraging habitat for wading birds such as herons, egrets, ibis and lapwings. Threatened and migratory waders may also forage within it from time to time
- mangrove forest - This habitat type (PCT 920) occurs along Mcleods Creek in and adjacent to the EIS proposal area and provides foraging and roosting habitat for wading birds, smaller bird species and bats. Hollows of various sizes are present in mature mangroves in Mcleods Creek, however, these were not mapped due to the large number present and access issues (deep mud)
- woodland/forest - This habitat type includes PCT 1206, PCT 1212, and PCT 1326 and provides foraging, roosting and breeding resources for a range of birds; microbats and megachiropteran bats (flying foxes); arboreal marsupials, arboreal and terrestrial reptiles; and small mammals. However, the value of this habitat within the study area is limited for many species as a result of previous understorey clearing and fragmentation due to clearing associated with urban development, including new residential areas. Numerous mature, hollow-bearing trees (HBTs) were recorded in this habitat type

Matters of National Environmental Significance

Threatened species and ecological communities
One of the PCTs mapped in the EIS proposal area – coastal saltmarsh – is listed as threatened under the EPBC Act. The Grey-headed Flying-fox which is listed as threatened under the EPBC Act was considered to have a moderate or high likelihood of occurrence in the EIS proposal area. This species has previously been recorded in the study area.

Migratory species
Six species listed as migratory or marine under the EBPC Act were recorded in the study area during the field surveys. These were the Eastern Curlew, Eastern Osprey, White-bellied Sea Eagle, Whimbrel, Caspian Tern and Little Egret. Another 14 migratory and/or marine species listed under the EPBC Act are considered to have a moderate to high likelihood of occurrence in the overall study area. However it is likely that one migratory species and an additional marine species listed under the EPBC Act would be found in the EIS proposal area (Table 7-3).

Wetlands of international importance
No wetlands of international importance occur within or near the EIS proposal area.

World and natural heritage
The overall and EIS proposal area does not contain any world or natural heritage sites.

Aquatic environments
Some of estuarine habitats in and near the EIS proposal area have been modified by coastal development and aquaculture. The most notable modifications are along the foreshore where land reclamation along the fringes of the SEPP 14 wetlands has occurred for road, recreational urban and wharf development, and within the subtidal zone for the operation of oyster leases. However the remainder of the SEPP 14 wetland has not been substantially disturbed and is in good condition. Areas of seagrass are located in the central channel of Mcleods Creek. Mcleods Creek drains into the Clyde River.

The Clyde River it is identified as containing a nationally important population of the Australian Grayling, in the National Recovery Plan for the Australian Grayling Prototroctes maraena (Backhouse et al. 2008).
The Clyde River is considered Type 1 Highly Sensitive Key Fish Habitat and Class 1 Major Key Fish Habitat due to the following:

- Seagrass meadows greater than five square metres of *Zostera* sp. are present
- *Posidonia australis* may be present
- It is within a Marine Park
- It is a permanently flowing estuarine waterway, and contains habitat for a threatened fish species.

The Clyde River and Mcleods Creek also contain mangrove forest, saltmarsh and macroalgae, all of which are protected marine vegetation under the FM Act.

### 7.1.3 Potential impacts

The EIS proposal would have the potential to result in the following direct and indirect impacts to biodiversity:

- Clearing of native vegetation, comprising the coastal saltmarsh EEC and estuarine mangrove forest, including hollow-bearing mangroves
- Changes to hydrological regimes
- Turbidity, sedimentation and erosion
- Water pollution
- Increased noise, light and vibration
- Disturbance to aquatic habitats
- Disturbance to a SEPP 14 Coastal Wetland.

The proposal would also have potential for the following additional impacts to biodiversity:

- Disturbance to groundwater dependent ecosystems
- Injury and mortality of fauna
- Increased habitat fragmentation
- Invasion and spread of weeds and pests
- Invasion and spread of pathogens and disease.

These impacts are discussed in further detail in the following sections, with a particular discussion of impacts to threatened species. Most impacts would be limited to the construction phase, although some would continue into the operational phase.

#### Construction impacts

**Clearing of native vegetation**

The EIS proposal would result in the removal of up to 0.07 hectares of vegetation representative of two PCTs within the mapped Mcleods SEPP 14 wetland (Table 7-4) during the construction phase. This includes small areas of the coastal saltmarsh EEC (0.01 hectares) and estuarine mangrove forest (0.06 hectares). The coastal saltmarsh and estuarine mangrove forest are protected marine vegetation under the FM Act as well as key fish habitat as defined by DPI.

<table>
<thead>
<tr>
<th>Plant community type (PCT)</th>
<th>Threatened ecological community (TEC)</th>
<th>Status TSC Act</th>
<th>Status FM Act</th>
<th>Status EPBC Act</th>
<th>Impact footprint (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saltmarsh in estuaries of the Sydney Basin and South East Corner</td>
<td>Coastal saltmarsh/subtropical and temperate saltmarsh</td>
<td>E</td>
<td>PMV</td>
<td>V</td>
<td>0.01</td>
</tr>
<tr>
<td>Mangrove forest in estuaries of the Sydney Basin and South East Corner</td>
<td>-</td>
<td>-</td>
<td>PMV</td>
<td>-</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>0.07</strong></td>
</tr>
</tbody>
</table>

1. Area to be cleared based on ground-truthed vegetation mapping within the study area.
2. Based on the VIS classification database.
3. E = Endangered ecological community, PMV = Protected marine vegetation, V = Vulnerable ecological community.
The estuarine mangrove forest to be cleared is in moderate to good condition. However, the saltmarsh to be cleared occurs in a highly modified environment and is part of a small, linear patch that has colonised parts of the base of the current road embankment (see Plate 1).

While the proposal would involve clearing of 0.07 hectares of vegetation comprising saltmarsh and estuarine mangrove forest within the mapped SEPP 14 Coastal Wetland area, it would not involve any direct impacts to aquatic environments including seagrass meadows or intertidal. There would however be potential for the proposal to indirectly impact these, as well as to have indirect impacts to additional saltmarsh and estuarine mangrove forest within the mapped SEPP 14 area as discussed in the following sections.

The mangroves that would be cleared may be hollow-bearing. Their removal could result in destruction of roost sites, including maternity roosts, for microbats including threatened species such as the Eastern Freetail Bat, Southern Myotis, and Greater Broad-nosed Bat. All of these species are known to roost in mangroves, and the former two were recorded in the overall study area (but not in mangroves of the study area). The vegetation clearing within the EIS proposal area would result in the loss of a small amount of potential foraging habitat for other fauna species such as the Little Egret.

**Turbidity, erosion and sedimentation**

There would be potential for vegetation clearing, excavation, and other earthworks to cause erosion and sedimentation within and adjacent to the EIS proposal area and this could impact on the SEPP 14 wetland, particularly saltmarsh and estuarine mangrove forest. Erosion and sedimentation could cause increased turbidity in receiving waters, with consequent potential for reduced light penetration and/or smothering of seagrass. Increased turbidity could also reduce foraging resources for threatened and migratory shorebirds. Similarly, increased turbidity, erosion and sedimentation could be detrimental to oyster leases within the SEPP 14 wetland.

To minimise impacts, management measures detailed in section 7.1.5 would be implemented.

**Water pollution**

Within the mapped SEPP 14 wetland boundary, the EIS proposal would involve works within the intertidal zone and land-based works in adjacent areas. There would therefore be potential for water pollution, for example due to hydrocarbon leaks or spills from vehicles or equipment used in the construction phase, and for hydrocarbon pollution from vehicles using the road during the operational phase.
Soil and erosion control measures would be implemented during construction to minimise adverse impacts to water quality are avoided or minimised (section 7.4.4).

Surface excavation required for the proposal would be likely to expose ASS, with potential for acidification of waterways. This would have potential for adverse impacts to aquatic species occurring within the wetland. However, the construction methodology would manage any ASS uncovered and no works would be undertaken within the waterway of Mcleods Creek which would avoid the acidification of the waterway.

**Noise, vibration, light and movement**

The SEPP 14 wetland within the study area currently experiences ongoing noise, light and vibration from regular traffic movements along the Princes Highway and elsewhere in the town of Batemans Bay, and to some extent from watercraft on the Clyde River and Mcleods Creek. The proposal would increase noise, vibration and potentially light during construction, through plant and machinery operation and lighting of work areas, construction compounds, and other ancillary facilities, one of which is proposed for the site of the existing bowling club within and adjacent to the mapped wetland boundary. The increased noise, vibration and most of the increased lighting would be limited to the construction phase.

Increased noise, vibration and light levels, could cause some fauna species to temporarily or permanently vacate the SEPP 14 wetland area. Species of concern in this regard in relation to the wetland are threatened microbats and shorebirds. Although none of these species were recorded in the SEPP 14 wetland during the surveys, it contains suitable habitat for them.

Management measures would be implemented to minimise impacts associated with noise, vibration and light in relation to the SEPP 14 wetland.

**Disturbance to groundwater dependent ecosystems**

The two PCTs identified in the EIS proposal area are considered to be groundwater dependent. However, the two PCTs occur in the intertidal zone, in which surface water is likely to be more important than groundwater to the ecosystems present.

Also, given the relatively small area directly impacted by the EIS proposal and particularly the small amount of excavation that would be involved, it is considered that any such impacts would be minimal, with the local groundwater resource unlikely to be significantly reduced in terms of availability or extent. It is expected that any impacts on groundwater dependent ecosystems would be localised and minor.

**Injury and mortality of fauna**

There would be potential for injury to or mortality of native fauna where native vegetation would be cleared. Tree-dwelling fauna, particularly nesting birds and hollow-dwelling species including threatened microbats, as well as less mobile, small terrestrial fauna (such as common reptiles) would be most at risk. There may also be potential for injury or mortality to threatened and migratory shorebirds, through vehicle movements in and near their intertidal habitats.

The potential for such impacts would be limited to the construction phase.

Mitigation measures would be implemented to minimise potential for injury and mortality of fauna (see section 7.1.5).

**Increased habitat fragmentation**

The EIS proposal would not substantially increase habitat fragmentation such that habitat connectivity would be affected for any fauna species. The area of vegetation to be removed is very small in relation to the amount of native vegetation that would remain adjacent to the impact footprint and in the wider locality. All of the vegetation that would be cleared for the EIS proposal is already edge-effected, and the amount of vegetation clearing required would not substantially
increase these effects relative to the existing situation. Nor would it increase potential for genetic isolation of populations of any species.

**Invasion and spread of weeds and pests**
The EIS proposal area is not currently subject to high degrees of weed infestation. During the construction phase, there would be potential for weed propagules to be introduced and spread by vehicles, machinery, other equipment, and workers’ boots and clothing. However, the main vegetation communities that would be impacted by the works — estuarine mangrove forest and saltmarsh — occur in saline soils that inhibit the growth of many weeds, and the remaining vegetation within the impact footprint is highly modified and mostly comprises scattered trees over mown lawns. It is therefore unlikely that any increased weed occurrence would be significant, or have any substantial adverse impact on the native vegetation communities or fauna habitats present.

There is unlikely to be any risk of spreading the marine pest *Caleurpa taxifolia*, as this species is considered to have been largely eradicated or under control at the 12 sites at which it has been recorded.

Section 7.1.5 presents the mitigation measures that would be implemented to ensure the proposal does not result in invasion or spread of weeds or pests.

**Impacts on TECs and threatened species**
While no threatened fauna species were recorded within the EIS proposal area, there are a number of threatened species recorded within the overall proposal area, which have the potential to occur within the EIS proposal area. Impacts on TECs and threatened species resulting from the EIS proposal are summarised in Table 7-5.

Apart from the removal of hollow-bearing mangroves, removal of mangroves would result in a small reduction in foraging habitat for some small birds and waders, including the migratory Little Egret, which was recorded in this part of the study area as well as at other locations within it. However, given the large areas of mangroves that would remain undisturbed in the study area and elsewhere in the locality, the impact of removal of this small area on such fauna would be very minor. It is unlikely that any threatened waders would use this particular part of the study area given its location adjacent to the existing Princes Highway and their preference to forage and roost in more open areas such as intertidal mudflats and sandbanks.

Similarly, the removal of saltmarsh would be unlikely to impact on the White-fronted Chat or any other fauna species given the very small area to be removed, and its location immediately adjacent to the existing Princes Highway.

The EIS proposal would directly impact on one TEC, coastal saltmarsh, listed under the TSC Act and the EPBC Act. An Assessment of Significance (AoS) in accordance with section 5A of the EP&A Act has been prepared for this EEC (Appendix C). The AoS concluded that the EIS proposal would not have a significant impact.

AoS in accordance with the EP&A Act and/or the EPBC Act were also prepared for all threatened fauna species listed under the TSC Act, FM Act and/or EPBC Act for which a moderate or greater level of impact is likely (Appendix C). These include species recorded in the study area, as well as species with records in the locality for which suitable habitat could be disturbed (threatened shorebirds) or removed (hollow-roosting microbats) (Table 7-5). Each AoS concluded that the EIS proposal would not have a significant impact.
Table 7-5 Impacts on TECs and threatened fauna species

<table>
<thead>
<tr>
<th>Community / species</th>
<th>Potential occurrence</th>
<th>Level of impact (low, moderate, high)</th>
<th>AoS prepared</th>
<th>Significant impact likely?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TECs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal saltmarsh (TSC Act, EPBC Act)</td>
<td>Recorded</td>
<td>Moderate – clearing of 0.01 hectares</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Resident shorebirds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian Pied Oystercatcher (TSC Act)</td>
<td>Recorded in the overall proposal study area</td>
<td>Moderate – disturbance to foraging and potential nesting habitat</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Sooty Oystercatcher (TSC Act)</td>
<td>Recorded in the overall proposal study area</td>
<td>Moderate – disturbance to foraging habitat</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Microbats</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Freetail-bat (TSC Act), Yellow-bellied Sheathtail Bat (TSC Act), Southern Myotis (TSC Act)</td>
<td>Recorded in the overall proposal study area</td>
<td>Moderate – removal of potential roosting habitat</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Eastern Bentwing Bat (TSC Act), Greater Broad-nosed Bat (TSC Act)</td>
<td>High</td>
<td>Moderate – removal of potential roosting habitat</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Raptors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Osprey (TSC Act)</td>
<td>Recorded in the overall proposal study area</td>
<td>Low – potential for disturbance from noise and light only</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>White-bellied Sea Eagle (TSC Act)</td>
<td>Moderate</td>
<td>Low – potential for disturbance from noise and light only</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Square-tailed Kite (TSC Act)</td>
<td>Moderate</td>
<td>Low – potential for disturbance from noise and light only</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Other species</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grey-headed Flying-fox (EPBC Act, TSC Act)</td>
<td>Recorded</td>
<td>Low – loss of small amount of potential foraging and/or roosting habitat only</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>White-fronted Chat (TSC Act)</td>
<td>Moderate</td>
<td>Low – potential impacts negligible. Would be unlikely to use the vegetation that would be cleared.</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Mitigation measures are proposed in section 7.1.5 to minimise the impacts of the proposal on biodiversity generally, but particularly on TECs and threatened species.

**Operation impacts**

Operation of the EIS proposal would have negligible impact on native biodiversity values.

There may be some introduction of weeds as a result of movement of vehicles, however, this would not differ substantially from current levels of weed introduction from the existing highway.

The operation of the overall proposal would result in noise, lights and vibration along the route, however such impacts are currently present due to the existing highway alignment.

The overall proposal would not cause substantial changes to the existing hydrological regimes of the Clyde River or Mcleods Creek (section 7.3). There would be potential for increased...
hydrocarbon pollution from vehicles using the road during the operational phase, given that surface runoff flows from the new bridge and road alignment would be almost double the existing flows that drain into the SEPP 14 wetland. The overall proposal would capture and treat overland flows from the new bridge and approaches. Some treated stormwater would be directed to the existing outlet to Mcleods Creek, however the design would ensure that this would not impact on the hydrological regime or water quality of Mcleods Creek and no SEPP 14 wetland would be affected. This would provide a beneficial impact to water quality, seeing as the current stormwater runoff into the wetlands is untreated.

Measures to avoid potential for erosion and sedimentation during the operational phase will be incorporated into the detailed design, for example in relation to road drainage.

Impacts on the SEPP 14 wetlands due to changes in water quality during operation are discussed in section 7.4. As the proposal is not considered to result in any decrease in water quality during operation indirect impacts on SEPP 14 wetlands are considered minimal.

### 7.1.4 Biodiversity offset strategy

The Guideline for Biodiversity Offsets (Roads and Maritime, 2016) provides guidance as to when offsets should be considered for residual impacts on biodiversity associated with an activity or proposal. The guidelines specify offsetting thresholds in relation to clearing of TECs, threatened species habitat, and Type 1 and Type 2 key fish habitats (which are defined by the DPI and include seagrass, mangroves and saltmarsh).

The vegetation clearing associated with the EIS proposal would result a net loss of Type 1 or Type 2 key fish habitats and consideration needs to be given to offsets or supplementary measures, such as vegetation rehabilitation activities.

The proposal would result in a net loss of up to 0.07 hectares of Type 1 and Type 2 key fish habitat, comprising:
- 0.06 hectares of estuarine mangrove forest (Type 2 key fish habitat)
- 0.01 hectares of saltmarsh (Type 2 key fish habitat).

An offset package would be developed to offset impacts of both the REF and EIS proposals.

The offset package would be developed by Roads and Maritime in accordance with the Guideline for Biodiversity Offsets (Roads and Maritime, 2016) and the DPI’s Policy and guidelines for fish habitat conservation and management (DPI 2013), in consultation with DPI (Fisheries).
### 7.1.5 Safeguards and measures

Safeguards and management measures provided below would be implemented to minimise potential biodiversity impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation measures</th>
<th>Responsibility</th>
<th>Timing and duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodiversity – general</td>
<td>A Biodiversity Management Plan will be prepared as part of the CEMP and implemented throughout construction.</td>
<td>Contractor</td>
<td>Pre-construction</td>
</tr>
<tr>
<td>Biodiversity – general</td>
<td>Roads and Maritime will determine and implement a suitable offset for impacts to key fish habitat, in consultation with DPI (Fisheries).</td>
<td>Roads and Maritime</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Removal of native vegetation</td>
<td>Measures to minimise clearing of native vegetation within the proposal area, including marine vegetation, will be investigated during detailed design and implemented where practicable and feasible.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Flora and flora management guidelines</td>
<td>Biodiversity management and mitigation will be undertaken in accordance with the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011) and the associated guides and procedures.</td>
<td>Contractor</td>
<td>Pre-construction</td>
</tr>
<tr>
<td>Changes to hydrological regimes</td>
<td>The new bridge piers and drainage structures associated with the new road alignment will be located and designed to maintain or improve existing hydrological regimes as far as possible. Particular care should be taken to avoid or minimise additional scour of the extensive sandbar downstream of the existing bridge.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Increased light</td>
<td>Measures to minimise light spill into the waterway and vegetated areas from the new bridge and approaches will be considered during detailed design.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Disturbance to aquatic habitats</td>
<td>Aquatic habitat will be protected in accordance with Guide 10: Aquatic habitats and riparian zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011) and Section 3.3.2 Standard precautions and management measures of the Policy and guidelines for fish habitat conservation and management Update 2013 (DPI (Fisheries NSW) 2013).</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Aquatic pests and diseases</td>
<td>All machinery and vessels used during construction are to be verified as clean and free of potential weeds, pests and pathogens prior to arrival to site.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
</tbody>
</table>
7.2 Aboriginal heritage

<table>
<thead>
<tr>
<th>Secretary's requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts on Aboriginal heritage (including cultural and archaeological significance). The assessment shall be undertaken consistent with the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011) and related guidelines and requirements.</td>
<td>Section 7.2.3</td>
</tr>
</tbody>
</table>

### 7.2.1 Methodology

An Aboriginal Cultural Heritage Assessment Report has been prepared for the overall proposal. The assessment is provided in Appendix D and is summarised for the EIS proposal area in the following sections.

The Aboriginal Cultural Heritage Assessment Report and associated investigations and consultation have been undertaken in line with the following guidelines:

- Roads and Maritime Services Procedure for Aboriginal Cultural Heritage Consultation and Investigation (Roads and Maritime 2011a) (PACHCI)
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010c)
- Guide to investigating, assessing, and reporting on Aboriginal Cultural Heritage in NSW (OEH 2011)
- Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010a).

Desktop research was undertaken to determine the Aboriginal cultural, ethnographic and archaeological context for the study area. A search was also undertaken of the OEH Aboriginal Heritage Information Management System (AHIMS) database on 25 May 2017 for any sites that had been previously recorded within or adjacent to the study area. Other registers, databases and the LEP were also searched. No Aboriginal heritage sites were recorded in the study area from these sources. A field survey of the study area was conducted on foot with representatives from the Batemans Bay Local Aboriginal Land Council (BBLALC) on 26 May 2017.

Subsequent to the field survey, BBLALC has provided a cultural heritage survey report to Roads and Maritime in accordance with the PACHCI.

Test excavations were undertaken in September 2017 in Korners Park which contained a potential archaeological deposit that would be impacted by the REF proposal. The test excavations were used to confirm the level of significance of the site and to identify potential management measures.

Directly impacted cultural heritage sites were assessed for their significance based upon the principles of the Australia ICOMOS Burra Charter, 1999 (Australia ICOMOS 1999). Of the principles, scientific (archaeological) value has been determined to be the most relevant for the identified Aboriginal archaeological sites within the study area. This value has been developed based on significance criteria of research potential (including integrity/condition, complexity and archaeological potential), representativeness and rarity. Identified archaeological sites in the study area displayed low to moderate scientific significance.
7.2.2 Existing environment

Archaeological heritage
Aboriginal heritage investigations as part of the PACHCI Stage 2 assessment identified three shell middens (B Bay Shell 1, B Bay Shell 2 and B Bay Shell 3), one artefact scatter (Batemans Bay Artefact Scatter 1/BBAS1) and one area of potential archaeological deposit (Korners Park PAD 1) within the study area. Archaeological test excavation of Korners Park PAD 1 was subsequently undertaken which identified the presence of artefacts within a disturbed fill overlying natural sands that did not contain Aboriginal objects. The site was reclassified and renamed Korners Park AFT 1.

There were no Aboriginal sites in or adjacent to EIS proposal area.

Cultural heritage
An Aboriginal cultural values assessment was undertaken for the overall proposal. The concept of cultural significance encompasses all the cultural values and meanings that could potentially be associated with a place. The cultural and natural values of a place are generally indivisible in the context of Aboriginal cultural heritage. The cultural values and meanings in a place can be both tangible and intangible.

Consultation with identified Aboriginal knowledge holders is a key component to the assessment of Aboriginal cultural heritage values and was undertaken with nominated Aboriginal stakeholders (or knowledge holders) in the area (ICOMOS 2013).

The identified knowledge holders provided cultural and historical information on the broader cultural landscape of the region, however did not identify any specific locations of cultural significance within the overall proposal area. The knowledge holders noted that the Bhundoo (Clyde) River broadly, and more specifically the northern banks and river shallows, were a traditionally and historically important area for a wide range of water and land based resources. The knowledge holders requested that interpretative signage be developed to acknowledge the cultural significance of the Bhundoo (Clyde) River on which the proposal would be located.

7.2.3 Potential impacts

Construction
There are no known Aboriginal heritage sites or potential archaeological deposits within or adjacent to the EIS proposal area. As such, the proposal would not result in any impact to known Aboriginal heritage items or potential archaeological deposits.

Should any previously unidentified Aboriginal heritage items be encountered during construction, mitigation measures outlined in section 7.2.4.

Operation
No impacts to Aboriginal heritage during operation would occur.

7.2.4 Safeguards and management measures

Safeguards and management measures provided below would be implemented to minimise any unexpected Aboriginal heritage impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unexpected finds</td>
<td>The Unexpected Heritage Items - Heritage Procedure 02 (Roads and Maritime, 2015) will be followed in the event that a potential heritage item is found during construction.</td>
<td>Contactor</td>
<td>Construction</td>
</tr>
</tbody>
</table>
7.3 Hydrology and coastal processes

<table>
<thead>
<tr>
<th>Secretary's requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coastal processes</strong></td>
<td></td>
</tr>
<tr>
<td>• the effects of coastal processes and coastal hazards including the effects of climate change</td>
<td>Section 7.3.3</td>
</tr>
<tr>
<td>• consistency with coastal zone management plans, floodplain risk management plans and flood hazards associated with the land</td>
<td>Section 7.3.3</td>
</tr>
<tr>
<td>• flooding - consideration of the impacts of the proposal on the hydraulic and hydrologic regime of the area.</td>
<td>Section 7.3.3</td>
</tr>
</tbody>
</table>

7.3.1 Methodology

A hydrology and coastal processes assessment has been prepared for the overall proposal. The assessment is provided in Appendix E and is summarised in the following sections.

**Data collection**

A desktop review was undertaken to gather available information relevant to the overall proposal. A list of the data provided by the review is identified in Appendix E.

**Existing environment modelling and analysis**

No existing flooding data or modelling was available for the overall proposal area. However, a hydrological model was developed for the assessment of a new bridge for the Kings Highway crossing of the Clyde River at Nelligen. While this new bridge was about 15 kilometres upstream of the proposal, the catchment and model was included in the model for overall proposal. Flood models for the existing environment were developed to determine existing flooding patterns. These models were later used to determine the changes in flooding patterns resulting from the overall proposal. Appendix E provides greater details on the model used for the overall proposal.

**Impact assessment**

The flood model was updated to include the overall proposal including the new bridge and the removal of the existing bridge. The impacts of the overall proposal were then assessed by comparing the existing environment model with the model incorporating the overall proposal for the one per cent AEP and Peak Maximum Flood events.

The impact of the overall proposal on coastal processes was assessed. Relevant coastal processes for the proposal include:

- waves – waves are typically the dominant driver of coastal processes, however the Batemans Bay Bridge is well sheltered from large swell waves and wind waves due to its location within the Bay
- tides and current – the tidal range at the site is less than two metres and tidal currents are expected to range from small to moderate
- flood flows –flooding of the Clyde River is a significant influence on the area, a significant source of sediment supply and driver of sediment transport
- sediment transport – sediment supply and sediment transport driven by waves, tidal currents and flood flows.
7.3.2 Existing environment

Catchment overview
The catchment for the Clyde River is 1,720 km² with an estuary area comprising about 17 km². Land use within the catchment is primarily forest (95.7 per cent) with some rural (3.3 per cent) and urban land use (0.5 per cent)¹.

The overall proposal is located in the estuarine section of the Clyde River and at a location where the Clyde River is at its narrowest. Immediately downstream of the overall proposal the Clyde River discharges into Batemans Bay. Consequently, the hydrology of the overall proposal area would be influenced by both upstream catchment flows and tides and storm surges from the ocean environment.

The EIS proposal area is located in the catchment of Mcleods Creek, a tributary and sub-catchment of the Clyde River. Mcleods Creek has a very small catchment and primarily consists of mangroves and estuarine wetland vegetation. Freshwater inflows to the creek are minimal and the hydrology of the creek is largely controlled by the main channel of Clyde River.

Existing flooding
Modelling undertaken as part of the assessment shows that during a one per cent annual exceedance probability (AEP) event, flooding is largely contained within the Clyde River valley upstream of Budd Island. Downstream, some low lying areas become inundated. Outcomes of the one per cent AEP flood modelling include:

- Budd Island is mostly inundated to a depth of around 1.5 metres
- properties south of Budd Island near Lattas Point experience flood depths of around 1.5 metres
- Smoke Point is inundated to flood depths in the order of 0.5 metres
- the southern Princes Highway approach is inundated to a depth of around 0.25 metres
- a peak flood level of around 2.4 metres AHD at the existing bridge is lower than lowest bridge soffit level of 3.87 metres AHD.

In the peak maximum flood (PMF), flood behaviour is similar to that of the one per cent AEP upstream of Princes Highway although there is a greater extent of inundation. Downstream, flooding through Batemans Bay CBD extends further south inundating Albert Ryan Park east of the proposal area.

The EIS proposal area is affected by both flooding from Mcleods Creek and overland flow from Smoke Point.

Flood evacuation routes
Flood evacuation routes exist on both sides of the Clyde River near the overall proposal area. However, on the southern bank flood evacuation routes and options would not be affected by the overall proposal.

Coastal processes
Most of the shoreline at the mouth of the Clyde River has shoreline protection structures installed. The southern bank of the Clyde River around the existing bridge and downstream of the bridge is fully protected by rock revetments and rock training walls. The northern bank has limited coastal protection with smaller rock walls further up the dunes to protect the residential areas at Wharf Road. This northern side of the river appears to be more dynamic, with shifting beaches and sand shoals and less shoreline protection works. The existing Batemans Bay Bridge is not likely to have had major impacts on coastal processes in the area, except from impacts due to the small

causeway structures which form part of the bridge abutments. The existing southern abutment protrudes about 20 metres into the river and therefore constricts flows through the river slightly.

Details of specific coastal processes are detailed in Table 7-6.

Table 7-6 Coastal processes

<table>
<thead>
<tr>
<th>Coastal process</th>
<th>Existing environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waves</td>
<td>Batemans Bay and its offshore region is exposed to regular offshore swell waves, locally generated wind-waves within the bay; and severe offshore swell waves during significant weather events associated with East Coast low pressure systems. However, the existing Batemans Bay Bridge itself is relatively well sheltered from large swell waves and wind waves due to its location within the Bay. The 100-year ARI significant wave height ARI off-shore is 7.7 metres whereas at the existing bridge it is estimated to be 0.9 metres, while the daily ARI significant wave height is 0.1 metres. Larger waves can occur immediately south-east of the bridge and south-east of the sand shoals at the river mouth, however these larger waves tend to break in the shallower water over the sand shoals, which dissipates their energy and they are unable to reach the bridge. Overall the wave climate at the existing bridge is relatively benign.</td>
</tr>
<tr>
<td>Tides</td>
<td>The tides in Batemans Bay are predominantly semidiurnal with two high tides and two low tides each day. Given the relatively modest tidal range in the region it is likely that ambient tidal currents in the area are likely to be modest. Extreme storm tide levels consist of two main components – the astronomical tide and tidal anomaly or storm surge. Tidal anomalies primarily result from weather factors including wind set-up or sit-down, barometric pressure effects, or other anomalies such as long waves propagating within the Bay. The combination of tide and tidal anomaly or storm surge is referred to as the storm tide. Storm tide levels for Batemans Bay have been sourced from the Eurobodalla Coastal Hazard Assessment (Water Research Laboratory, 2017). Storm tide levels range between 1.26m AHD in a 5 year flood to 1.40m AHD for a 100 year flood.</td>
</tr>
<tr>
<td>Sea level rise</td>
<td>A sea level rise factor of 0.9 metres has been considered in the design to account for the 100-year design life for the new bridge, based on levels relative to 2008 provided in the study of Sydney Harbour, the Sea Level Rise Vulnerability Study (DECCW, 2008). This level accounts for a ‘high’ sea level rise scenario, based on a combination of IPCC 2007 advice, CSIRO advice on NSW sea level rise being above global average, and measured water levels at Fort Denison.</td>
</tr>
<tr>
<td>Sedimentation</td>
<td>Sedimentation in the bridge area is primarily influenced by ambient and extreme waves, ambient tidal currents and extreme flood flows. Ambient and extreme waves are relatively uni-directional in the area due to the shape of the Bay and location of the existing bridge, and waves are therefore typically moving sediment towards the river mouth creating the sand shoals and beaches adjacent to Wharf Road. While the waves cause sediment accretion in the river mouth, during periods of floods sediment is transported down the river and flushed into the Bay, maintaining a deep channel through the south-western edge of Batemans Bay. The primary sources of sediment supply to the area is riverine sediment transport and sand from adjacent beaches. These two coastal processes have created a long-term equilibrium near the existing bridge. The Wharf Road shoreline includes a small dynamic beach on the northern bank of the river. This beach varies in size and shape over long periods of time, however it is not impacted by the bridge itself.</td>
</tr>
</tbody>
</table>
Coastal process | Existing environment
---|---
Geomorphology | The valley setting for the estuary reach of the Clyde River can be described as partly confined with pocket floodplains occurring in the confluence area of tributary streams. Bedrock is close to the surface along much of the northern bank as indicated by bore logs taken for both the existing and new bridges. Mcleods Creek joins the Clyde River along its southern bank downstream of Budd Island and about 250 metres upstream of the existing bridge. Within the estuary reach from about one kilometre upstream of the bridge significant in-stream geomorphic features include:
- a mid-stream island (Budd Island)
- a 250 metre long scour hole along the northern bank immediately upstream of the projecting headland where the northern abutment is to be located
- a scour hole about two metres below the general bed level centred between the existing Piers 3, 4, and 5 which includes the navigation channel.

The bed and banks are primarily comprised of sands and gravels. Bed rock close to the surface on the northern bank would be expected to limit lateral movement but elsewhere the river is likely to have the potential to alter its bank alignment and bed profile during major flooding. In rivers with predominately sandy beds and banks the thalweg (line of deepest water) can move relatively unchecked in response to influences that include in-stream structures (eg bridges, wharves), flood debris, and the relative magnitude of inflow from tributaries.

7.3.3 Potential impacts

Construction impacts
The potential flooding and hydrology impacts during construction would be:
- localised flooding impacts from construction works
- potential flooding of construction works sites during major flood events.

Localised flooding impacts
During construction, impacts to hydrology would be associated with changes in the local topography and changes to the existing drainage patterns near the site. Such impacts would potentially be a result of earthworks, positioning of ancillary facilities (eg compound buildings or stockpiles) or the positioning of plant and equipment. Impacts to drainage patterns would be temporary in nature and would be localised to small areas. Such impacts would be minimised by redirecting flows from offsite around the overall proposal to ensure that flow paths largely remain intact.

The EIS proposal would involve works within tidal areas which would result in soils being stirred up and potentially resulting in boggy ground. Impacts on surface water flows would be minimised through the implementation of safeguards and management measures including the erosion and sedimentation plan for the site (see section 6.7).

Flooding of construction areas
The Reef Motel Inn and the former bowling club ancillary facilities are observed to have flood immunity in the five per cent AEP flood event, however become inundated to some degree in the one per cent AEP flood event.

Due to the proximity of the EIS proposal to the river, impacts due to flooding would potentially occur and are unavoidable and therefore impacts need to be minimised where possible. A flood management plan would be developed to ensure that in the event of a flood, measures are in place to minimise any impacts to the construction of the EIS proposal (as part of the overall proposal).
Operational impacts

Localised flooding from runoff
There would be an increase in the amount of runoff with the overall proposal as there would be an increase in impervious area. As part of the REF proposal, the new bridge would have four lanes, a shared path and a drainage system which collects runoff and transports it to water treatment devices. The existing bridge is only two lanes and does not have a formal drainage system, rather runoff is discharged directly from the bridge deck into the Clyde River. However, the increase in impervious area relative to local and overall catchment areas would be small and would not increase flooding.

During the detailed design, local drainage systems within and adjacent to the overall proposal area would be investigated to develop an appropriate design to discharge water from the overall proposal in a manner that does not result in increased localised flooding or erosion. Also, the detailed design would ensure that surface water flows to the surrounding landscape including the SEPP 14 wetland areas are not substantially altered. It is not expected that the number of discharge locations from the proposal would increase, however some locations would be altered due to the change in the road alignment.

The EIS proposal would not result in localised flooding from runoff.

Water flow impacts
The introduction of a new bridge and removal of the existing bridge would not result in any substantial changes in the flow of the Clyde River during normal flow conditions. The area below the bridge is not considered to be substantially changed and therefore flows would be similar to the existing bridge. As flows are not expected to be altered with the new bridge, water availability to upstream SEPP 14 wetlands and other wetland areas would not change.

The EIS proposal would not result in water flow impacts.

Flood impacts
The new bridge would have a greater similar open waterway cross-sectional area to the existing bridge, which has limited the changes of flood behaviour because it is higher, there are fewer piers in the river and the abutments are further away from river’s edge. The existing bridge and its abutments present a constraint to flood flows in significant events, whereas the new bridge would present less of a constraint. This is especially the case in the PMF where the existing bridge would be submerged and present a significant constraint to flood flows. The soffit height of the new bridge would be above the PMF flood level and there would be less constraints to flood flows.

Flood levels for one per cent AEP for the new bridge would be marginally lower compared to the existing bridge (Table 7-7 and Figure 7-2). However, the difference in flood levels between the overall proposal and existing conditions would be relatively minor and would not result in any substantial changes in flooding levels and extents.

The only exception to this is the area downstream of the new southern approach which includes part of the EIS proposal. The new southern approach would be higher than the existing southern approach and would act as a levee. Overland flows from Smoke Point and Mcleods Creek would be diverted by the new southern approach either into Mcleods Creek or the Clyde River – instead of flowing into the Batemans Bay town centre as currently occurs. Flooding of the Batemans Bay town centre would be largely eliminated in the one percent AEP with the EIS and overall proposal.

During the PMF, flood levels upstream of the new bridge would be lower compared to the existing bridge and downstream they would be higher. The inundation of the existing bridge results in a substantial constraint to flow, resulting in higher upstream flood levels and lower downstream flood levels. The new bridge would also result in small increases in PMF flood levels in the Clyde Street south of the new bridge, however no additional areas would experience flooding. Water velocities would generally be higher with overall proposal when compared to the existing bridge.
### Table 7-7 Changes in flood levels and water velocities

<table>
<thead>
<tr>
<th>Location</th>
<th>1% AEP</th>
<th></th>
<th>PMF</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change in flood levels (m)</td>
<td>Change in velocities (m/s)</td>
<td>Change in flood levels (m)</td>
<td>Change in velocities (m/s)</td>
</tr>
<tr>
<td>Main channel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600 metres upstream of new bridge</td>
<td>0</td>
<td>0.01</td>
<td>-0.02</td>
<td>0.17</td>
</tr>
<tr>
<td>New bridge location</td>
<td>-0.01</td>
<td>-0.11</td>
<td>-0.06</td>
<td>0.02</td>
</tr>
<tr>
<td>Existing bridge location</td>
<td>-0.28</td>
<td>-0.11</td>
<td>-1.18</td>
<td>0.24</td>
</tr>
<tr>
<td>100 metres downstream of new bridge</td>
<td>0</td>
<td>-0.08</td>
<td>0.09</td>
<td>0.35</td>
</tr>
<tr>
<td>600 metres downstream of new bridge</td>
<td>-0.01</td>
<td>0.03</td>
<td>0.05</td>
<td>-0.03</td>
</tr>
<tr>
<td>Southern bank</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budd Island</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.20</td>
<td>0.04</td>
</tr>
<tr>
<td>Lattas Point</td>
<td>-0.02</td>
<td>0</td>
<td>-0.16</td>
<td>-0.03</td>
</tr>
<tr>
<td>Smoke Point</td>
<td>-0.01</td>
<td>0.02</td>
<td>-0.08</td>
<td>-0.14</td>
</tr>
<tr>
<td>North Street intersection</td>
<td>-0.01</td>
<td>0</td>
<td>-0.2 to -0.5</td>
<td>-0.05</td>
</tr>
</tbody>
</table>

**Coastal processes**

The EIS proposal would have no impacts on coastal processes as it is located in a sheltered minor tributary of the Clyde River. Also the EIS proposal has a very small footprint and is not located within a waterway. The REF proposal has the potential for minor localised impacts on coastal processes (minor scouring around new pier locations) and this is detailed in the REF.
Figure 7-2 Change in flood level in the 1% AEP

Batemans Bay Bridge replacement Environmental Impact Statement

Projection: GDA 1994 MGA Zone 56

FIGURE 7-2: Change in flood level for 1% AEP
Consistency with existing management plans

There are a number of coastal assessments and management plans for Batemans Bay, being:
- Eurobodalla Coastal Hazard Assessment, UNSW Water Research Laboratory, 2017
- Coastal Zone Management Plan Wharf Road North Batemans Bay, Eurobodalla Shire Council, 2016

The new bridge is located within two main areas in the Batemans Bay Coastline Hazard Management Plan:
- the Wharf Road area, located on the northern bank of the Clyde River
- the Central Business District (CBD) located on the southern bank of the Clyde River.

The Coastal Hazard Assessment identifies that both locations are vulnerable to coastal inundation from tidal flood waters and sea level rise. Both areas are relatively low lying and potentially subject to flooding. The CBD has not historically been inundated, although Wharf Road has experienced minor flooding in the past.

Inundation in these areas is currently managed through enforcement of housing regulations under Eurobodalla Shire Council’s Development Control Plan (DCP) and by maintaining current coastal protection measures.

The new bridge design is considered to be consistent with Eurobodalla Shire Council’s coastal management plans.

Eurobodalla Shire Council has also prepared an Interim Coastal Hazards Adaptation Code which is the relevant guideline until the Coastal Zone Management Plan is completed. This interim Code aims to:
- facilitate economic and residential use of the coast and foreshore over the maximum period possible under conditions of sea level rise
- provide a precautionary risk based approach to managing the impacts of coastal hazards
- provide strategic options for an adaptive response to coastal hazards
- identify Investigation Areas in accordance with recommendations contained within the NSW Coastal Planning Guideline: Adapting to Sea Level Rise
- promote appropriate development within Investigation Areas
- apply coastal hazard planning guidelines for merit based assessment of development applications
- provide an interim reference during the development of a comprehensive coastal zone management study and plan in accordance with the process outlined in the NSW Guidelines for Preparing Coastal Zone Management Plans 2013.

Under the Code, the proposal would be considered “Major Infrastructure” and the Possible Maximum Strategic Hazard time-line would apply. This means that the proposal should consider potential sea level increases due to climate change for 85+ years into the future. Based on the predictions of sea level rise contained in the Code this would be one metre higher than existing sea levels. The Code also defines freeboard levels from coastal inundation as:
- 500 millimetres for residential land uses
- 300 millimetres for commercial land uses.

The EIS and overall proposal has been designed to cater for predicted sea level rises of greater than one metre. This includes the 12 metre navigational clearance under the new bridge which has included consideration of potential sea level rises, storm surges and tides. The EIS and overall proposal would not result in any increase in flooding extents or levels at any commercial and residential properties and therefore would be consistent with code.
### 7.3.4 Safeguards and management measures

Safeguards and management measures provided below would be implemented to minimise potential hydrology and coastal processes impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>General construction impacts</td>
<td>Temporary drainage structures will be constructed in accordance with the <em>Technical Guideline – Temporary Stormwater Drainage for Road Construction</em> (Roads and Maritime 2011c).</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Flooding</td>
<td>Further flood modelling will be undertaken during detailed design to confirm that afflux, flood extent and scour are equivalent to or better than assessed in the REF.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Flooding</td>
<td>As part of the CEMP a flood risk management plan will be prepared that details the processes for monitoring and mitigating flood risk. The plan will specify the steps to be taken in the event of a flood warning, including removal or securing of loose material, equipment, fuels and chemicals.</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
</tr>
</tbody>
</table>
7.4 Soils and water quality

<table>
<thead>
<tr>
<th>Secretary's requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil and water quality</td>
<td></td>
</tr>
<tr>
<td>detail the disturbance of soils, and the associated impacts on:</td>
<td></td>
</tr>
<tr>
<td>• receiving water ways and wetlands, in particular the Batemans Marine Park</td>
<td></td>
</tr>
<tr>
<td>• groundwater dependent ecosystems</td>
<td></td>
</tr>
<tr>
<td>• surface and groundwater sources and quality</td>
<td></td>
</tr>
<tr>
<td>• occurrence of acid sulfate soils and likely disturbance of those soils.</td>
<td>Section 7.4.3</td>
</tr>
</tbody>
</table>

7.4.1 Methodology

A soils and geology assessment and an operational water quality assessment have been prepared for the overall proposal. These assessments are provided in Appendix F and Appendix G, respectively and is summarised for the EIS proposal area in the following sections.

For the purposes of the EIS proposal soil and water assessment, the EIS study area has been defined as the southern bank of overall proposal area including Mcleods Creek.

The following generally methodology was used in preparation of each of the reports:

• Collation of existing information from databases, websites, reports and other sources of information
• Sampling of water and soil environments
• Development of description of existing environment
• Construction and operational impact assessment
• Development of management measures and safeguards.

7.4.2 Existing environment

Topography

Topography of the EIS proposal area is relatively flat, sloping gently towards the north and west.

Geology and soils

A review of the Ulladulla Geological Map 1:250,000 (sheet S1 56-13) indicates that the overall proposal area is located within an area underlain by both Ordovician and Quaternary deposits. Ordovician units comprise siltstone, sandstone, claystone and quartzite sediments. The Eurobodalla Area Coastal Quaternary Geology 1:100,000 and 1:25,000 (Batemans Bay) Mapsheets show that Quaternary sediments comprise of Holocene tidal delta flat either side of the Clyde River and Holocene saline swamp in the area comprising the Mcleods Creek wetland.

Geotechnical investigations indicate that the EIS proposal area is generally characterised by man-made fill material, overlying Quaternary Sediments of varying thickness, in turn overlying the Ordovician bedrock. Fill materials include silty sands and gravelly sandy clays. Quaternary sediments include granular sediments, cohesive sediments and gravels and the Ordovician bedrock includes interbedded argillite, phyllite and meta-siltstone.
Soil investigations have identified several different soil types depending on landscape position with alluvial soils (sands, gravels, clays) on the near-level coastal flats associated with the Clyde River. Key soil constraints identified for coastal soils included Potential Acid Sulfate Soils (PASS) (localised), low fertility soils and non-cohesive soils. The majority of the soils within the study area would have most likely been disturbed as a result of urbanisation or as part of previous road construction but are considered to be mostly reminiscent of the natural soil materials.

**Acid sulfate soils**

The EIS proposal area has been identified as having a high probability of the presence of acid sulfate soils (Figure 7-3). Limited soil sampling from one borehole on the southern bank indicated that low strength potential acid sulphate soils may be present, however, further soil sampling is required to conclusively determine the presence, extent and strength of acid sulfate soils.

**Water quality**

The Clyde River catchment is 1,720 km² with an estuary area comprising about 17 km². The Clyde River Estuary Report Card 2014-2015 (Eurobodalla Shire Council 2015) indicates that land use within the catchment is primarily forest (95.7 per cent) with some rural (3.3 per cent) and urban land use (0.5 per cent). The overall proposal area is located in an area affected by urban development. Additionally, the proposal would be located in an area containing sensitive environmental features including the Batemans Marine Park, oyster leases, and SEPP 14 wetlands.

Monthly monitoring undertaken at three locations by Eurobodalla Shire Council along the Clyde River indicates water quality at these three locations is relatively consistent with the exception of conductivity which varies significantly along the length of the river due to mixing of fresh and marine waters. Eurobodalla Shire Council water quality monitoring found that water quality is generally good within the Clyde River and generally complies with ANZECC 2000 criteria. Monitoring undertaken by the OEH upstream of the confluence of the Buckenbowra River showed water quality results similar to those measured by Eurobodalla Shire Council.

A single round of surface water monitoring was undertaken at 11 selected locations within the Clyde River during July 2017 to identify baseline water quality conditions showed contaminant concentrations were largely below the laboratory detection limits except for some total iron and arsenic concentrations which were just above laboratory detection limits.

Existing bridge drainage comprises of road grates which then discharge any collected runoff directly into the river. On both the northern and southern approaches to the bridge run-off is currently collected, piped and discharged directly to the Clyde River and Mcleods Creek SEPP 14 wetland, respectively. The local stormwater system on either bank or approach does not contain treatment measures.

**Contaminated land**

A search of the NSW EPA Contaminated Sites Register and Record of Notices (issued under section 58 of the Contaminated Land Management Act, 1997) was carried out on 21 June 2017. The search did not find any notified sites within one kilometre of the EIS proposal area. A contaminated site comprising of a service station on the Princes Highway was noted at around 1.2 kilometres south of the EIS proposal area.

A review of data indicates that a historic contamination investigation and/or remediation works may have occurred at the 21 Clyde Street, Batemans Bay. While this site in not in the EIS proposal areas, it is near to it. The site contained service station from the 1970s until January 2003 and hydrocarbon contamination of the soils and groundwater was a concern at the site. Previous investigations indicate that there is no gross contamination of underlying soils by petroleum hydrocarbon compounds although mild hydrocarbon odour was detected in one monitoring well and low level concentrations of hydrocarbons were present in groundwater of the underlying aquifer.
A review of historic aerial photographs indicates increasing urbanisation in the area from 1959 to 2012 with significant redevelopment of the Batemans Bay township apparent in the March 1989 aerial including the construction/extension of the Princes Highway through the western portion of the township. Princes Highway and Batemans Bay Bridge appear in their current design within the June 1969 aerial within North Batemans Bay.

Identified one Area of Environmental Concern (AEC) within or near to the EIS proposal area, are:

- Roads and Maritime South Batemans Bay Stockpile Site due to storage of fill materials which may contain heavy metals, poly aromatic hydrocarbons (PAH) and pesticides
- vacant land (formerly Batemans Bay Motors) at 21 Clyde Street: potential for contaminated soil/groundwater from historic land use
- Reef Motor Inn and Seafood Restaurant at 25-27 Clyde Street: unclassified fill material/contaminated soils.

A site walkover did not identify any visible evidence of contamination (staining, odours or materials) impacting the soils at the identified AECs. No further AECs were identified during the site walkover to those identified in the desktop study.

**Groundwater**

There are two aquifers within the study area comprising:

- an overlying shallow alluvium aquifer – this aquifer is generally located one to two metres below the surface and can be influenced by intrusion by water from the estuary and Clyde River. It’s salinity can vary depending on antecedent rainfall and often the salinity of the groundwater makes it unsuitable for human uses or irrigation
- a deeper regional aquifer in the Ordovician bedrock. There is limited information of the aquifer however data indicates that groundwater may be encountered between 20 metres below ground level (mbgl) and 40 mbgl with a potential yield of four litres per second.

A review of data from DPI-Water Groundwater Map was conducted in July 2017 and indicates that there are 15 registered (14 active) groundwater bores within 500 metres of the overall proposal area. However, there are no active bores within the REF or EIS proposal areas.
Acid Sulfate Soil Risk

- The proposal
- EIS proposal area
- REF proposal area
- Excluded from proposal area
- Lot

Source: Assimo, RMS, LPI, Esri Topo, Nearmap

Batemans Bay Bridge replacement Environmental Impact Statement

FIGURE 7-3: Acid sulfate soil risk
7.4.3 Potential impacts

Construction

Topography
The construction of an embankment on the southern approach to the new bridge within the EIS proposal area would impact on local topography, however this would not result in any substantial changes to local topography.

Water quality impact due to erosion and sedimentation
The Clyde River within and adjacent to the overall proposal area is a sensitive receiving environment and is protected as part of the Batemans Marine Park. Mcleods Creek SEPP 14 wetland is within and adjacent to the EIS proposal area and the Clyde River is used for recreational activities as well as commercial activities including tourism and oyster farms.

As the EIS proposal area drains into the Mcleods Creek SEPP 14 wetland and there would be works within the Mcleods Creek SEPP 14 wetland, construction could impact water quality should environmental safeguards not be implemented. Erosion and sedimentation of disturbed areas could present a substantial risk to water quality with the overall proposal comprising of earthworks adjacent to and within the river. The construction activities that have the highest risk include:
- earthworks, including stripping of vegetation and topsoil, excavation or filling
- stockpiling of topsoil, vegetation and other construction materials
- transportation of cut or fill materials
- movement of heavy vehicles across exposed earth
- removal of riparian vegetation
- construction in any areas of highly erodible soils
- construction in any contaminated land
- construction in any acid sulfate soils.

The above potential impacts would be mitigated through the implementation of the sediment control measures discussed in section 6.7.3 and in the preliminary erosion and sediment management report (Appendix F) which has been prepared for the overall proposal.

A preliminary erosion and sediment control plan has been developed and includes the following key aspects relevant to the EIS proposal:
- two sediment basins on the southern bank due to the high risk nature of this proposal and its proximity to the Batemans Marine Park
- drainage to divert upslope (‘offsite’ or ‘clean) water away from completed cut and fill batters to prevent mixing with onsite (dirty) water
- mulch bunds or clean rock filter bunds along the toe of the work area adjacent to Mcleods Creek.

Through the further development and implementation of an erosion and sedimentation control plan and additional safeguards and management measures in section 6.7.3, the impacts on water quality would be minimised to acceptable levels.

Water quality due to spills and leaks
Spills and leaks of fuel, oils and other chemicals from construction plant and equipment may result in water quality impacts as any spills within the EIS proposal area have the potential to end up in the Mcleods Creek SEPP 14 wetland due to its close proximity to the works. The incorrect storage of fuel, oils and other chemicals could also result in impacts on water quality.

The risk of these impacts would be low with the implementation of safeguards and management measures outlined in section 6.7.3.
**Water quality due to demolition of bridge**

The demolition of the existing bridge would also present a potential risk to water quality in Clyde River. However, as the nearest area of SEPP 14 wetland is at least 400 metres upstream of the existing bridge, the risk of impacts would be low.

**Contamination**

The potential for widespread contamination within overall proposal area as result of past and present land use activities is generally considered to be low.

Within the overall proposal area there is the potential for legacy residual contamination affecting shallow groundwater and soils at the vacant land at 21 Clyde Street. An assessment of soil and groundwater at 21 Clyde Street would be required to ensure that there has been no significant change to previously reported conditions and to assess the site’s suitability for the proposal. Monitoring of the site during construction would also be required.

Should any contaminated soil be encountered during construction, protocols to deal with the management of potential contamination and unexpected contamination finds would be implemented. These protocols would seek to minimise the movement of contamination soils and therefore reduce the likelihood of the material entering the river and therefore impacting water quality.

There is potential for chemical and fuel spills to occur during construction which may result in localised contamination of soils. Management measures such as spill kits would be implemented to ensure that contamination of soils can be minimised.

Other safeguards and management measures are outlined in section 7.4.4.

**Acid Sulfate Soils**

Soil excavated as part of the EIS proposal, in particular soils from areas identified as having a high probability of PASS and within low lying areas, would be tested for the presence of acid sulfate soils. All soils considered to be or confirmed as acid sulfate soils would be managed in compliance with an Acid Sulfate Soils Management Plan. This plan would be prepared in accordance with RTA’s Guidance for the Management of Acid Sulphate Materials 2005 (Roads and Traffic Authority 2005). With the implementation of the Acid Sulfate Soils Management Plan, the risks of impacts from acid sulphate soils would be low.

**Groundwater**

No substantial excavation would be required for the EIS proposal. Due to the relatively small footprint of the EIS proposal as well as the absence of activities likely to significantly interfere with groundwater, the risk of impacting on groundwater from construction activities would be low. However the generation of preferential pathways for external sources of contamination to seep into underlying aquifers as a result of construction activities should be managed through appropriate mitigation measures.

Despite the relatively low risk to groundwater sources from the proposal, further groundwater investigations would be carried out during detailed design of the overall proposal. Should it be identified that groundwater would be encountered, relevant licences would be sought in consultation with DPI (Water) and additional relevant management measures implemented.

As no extraction of groundwater is proposed, no impacts on groundwater dependent ecosystems or SEPP 14 wetlands are anticipated. These ecosystems are discussed further in section 7.1.3. As groundwater flow appears to be towards the Clyde River and/or Batemans Bay, the EIS proposal would not decrease groundwater levels at nearby groundwater bores, which are located further away from the river.
Operation

Stormwater

During operation stormwater discharge from the new bridge and approaches could potentially impact the water quality of receiving watercourses as stormwater run-off may contain a range of pollutants including heavy metals, hydrocarbons, particulates, gross pollutants and nutrients.

As part of the Operational Water Quality Assessment Specialist Study (Appendix G), the Roads and Maritime Water sensitive urban design guidelines (Roads and Maritime 2017b) stormwater treatment design targets in Table 7-8 were identified as the most appropriate as the proposal is located in a sensitive marine environment.

Table 7-8 Proposal stormwater quality treatment design targets

<table>
<thead>
<tr>
<th>Pollutant/ parameter</th>
<th>Design target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total suspended solids</td>
<td>85% retention of the annual average load</td>
</tr>
<tr>
<td>Total nitrogen</td>
<td>45% retention of the annual average load</td>
</tr>
<tr>
<td>Total phosphorus</td>
<td>65% retention of the annual average load</td>
</tr>
<tr>
<td>Flow management</td>
<td>Maintain the 1.5 year ARI peak discharge to pre-development magnitude.</td>
</tr>
</tbody>
</table>

The location, type and suitability of stormwater treatments options for the proposal would be determined during detailed design. The location of stormwater discharge points and the volume of treated stormwater directed to each discharge point would require consideration during detailed design to ensure no increase in pollutant loads to SEPP 14 wetlands. Stormwater treatment options would be developed in conjunction with spill containment requirements.

The inclusion of a stormwater treatment system in the proposal to meet the proposal stormwater quality treatment design targets water quality objectives and would result in an improvement in overall the water quality in of the stormwater entering receiving waters, as the existing bridge and approaches do not have a stormwater treatment systems. This would be particularly evident in wet weather, during and after stormwater runoff events.

Spills

Large spills of hazardous substances resulting from traffic incidents on the bridge and approaches could have a significant environmental impact if the spilt hazardous substance entered the Clyde River or adjacent or nearby SEPP 14 wetlands.

Potential spills that are not able to be contained on the road surface and drainage system would generally drain towards the proposed spill containment systems which would a minimum of 20,000 litres. Spill containment would need to be provided on both sides of the Clyde River.
### 7.4.4 Safeguards and management measures

Safeguards and management measures provided below would be implemented to minimise potential soil and water quality impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water quality monitoring</td>
<td>A water quality monitoring program would be developed and implemented during construction in accordance with Roads and Maritime Guideline for Construction Water Quality Monitoring (Roads and Maritime, 2003).</td>
<td>Contractor</td>
<td>Pre-construction/Construction</td>
</tr>
<tr>
<td>Contamination of surface water</td>
<td>All fuels, chemicals, and liquids will be stored at least 40 metres away from waterways (including existing stormwater drainage system) and will be stored in an sealed bunded area within the ancillary facility. On barges, fuels, chemicals and liquids will be stored within a bunded area.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td>The refuelling and maintenance of land-based plant and equipment will be undertaken in a designated sealed bunded area at ancillary facilities, where possible. Refuelling of marine based plant and vessels will be undertaken in a suitably bunded area (through use of silt curtain or booms) to minimise risk of spills.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td>Vehicle wash downs and concrete washouts will be carried out within designated sealed bunded areas at ancillary facilities, or carried out off-site.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td>Regular visual water quality checks (include for turbid plumes and hydrocarbon spills or slicks) will be carried out when working in or near the waterway.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Accidental spill</td>
<td>A site specific emergency spill plan will be developed, and include spill management measures in accordance with the Roads and Maritime Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan would address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA).</td>
<td>Contractor</td>
<td>Pre-construction/Construction</td>
</tr>
<tr>
<td>Accidental spill</td>
<td>Emergency spill kit would be kept on site at all times. Spill kits will be located at all ancillary facilities and main construction work areas, including barges. All staff would be made aware of the location of the spill kit and trained in its use.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Acid sulfate soils</td>
<td>An Acid Sulfate Soils Management Plan will be developed as part of the CEMP and implemented during construction. This plan will be prepared in accordance with the Roads and Maritime Guidance for the Management of Acid Sulphate Materials 2005 (RTA 2005a).</td>
<td>Contractor</td>
<td>Pre-construction/Construction</td>
</tr>
<tr>
<td>Impact</td>
<td>Environmental safeguards</td>
<td>Responsibility</td>
<td>Timing</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------</td>
<td>---------------</td>
<td>--------</td>
</tr>
<tr>
<td>Soil and water - general</td>
<td>A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks would be addressed during construction. The SWMP will be reviewed by a soil conservationist on the Roads and Maritime list of Registered Contractors for Erosion, Sedimentation and Soil Conservation Consultancy Services.</td>
<td>Contractor</td>
<td>Pre-construction, Construction</td>
</tr>
<tr>
<td>Construction surface water</td>
<td>A site specific Erosion and Sediment Control Plan/s will be prepared and implemented as part of the Soil and Water Management Plan. This plan will develop further on the Conceptual Erosion and Sedimentation Management Report located in Appendix F. Erosion and sediment controls would be developed following the guidelines of the ‘Blue Book’ (Landcom, 2004 and DECC 2008). The Plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.</td>
<td>Contractor</td>
<td>Pre-construction, Construction</td>
</tr>
<tr>
<td>Construction surface water</td>
<td>Surface water diversions will be installed in accordance with the erosion and sedimentation control plan (ESCP) prior to construction commencing.</td>
<td>Contractor</td>
<td>Pre-Construction, Construction</td>
</tr>
<tr>
<td>Soil and water - general</td>
<td>A soil conservationist on the Roads and Maritime list of Registered Contractors for Erosion, Sedimentation and Soil Conservation Consultancy Services will be engaged and consulted throughout the construction of the overall proposal.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Stormwater runoff</td>
<td>Operational water quality treatment and quantity will be identified during detailed design in consideration of the Roads and Maritime Water Sensitive Urban Design Guidelines (2017), impacts to SEPP 14 wetlands and the capacity of Council's stormwater systems.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Spill containment</td>
<td>Operational spill containment of a minimum of 20,000 litres will be provided to ensure that spills on the new bridge and approaches can be captured before reaching sensitive environments.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
</tbody>
</table>
7.5 Construction traffic

<table>
<thead>
<tr>
<th>Secretary's requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic</td>
<td></td>
</tr>
<tr>
<td>consideration of the traffic impacts on the surrounding land uses during construction</td>
<td>Section 7.5.3</td>
</tr>
</tbody>
</table>

7.5.1 Methodology
A Traffic and Transport Assessment was prepared for the overall proposal. The assessment is provided in Appendix H and is summarised for the EIS proposal area in the following sections. Operational traffic impacts are discussed in section 8.3.

The traffic and transport assessment was prepared in accordance with the following documents:
- Roads and Maritime Traffic Modelling Guidelines, February 2013 Version 1.0
- Highway Capacity Manual (HCM 2016)
- AustRoads Guide to Traffic Engineering Practice
  - Part 3 – Traffic Studies Analysis
  - Part 6 – Intersections, Interchanges, Crossings.

The key tasks and assumptions for the assessment included:
- collation of previous modelling files - Previous Aimsun traffic modelling was undertaken by GHD for the purposes of the Batemans Bay Bridge Replacement proposal.
- collation of existing traffic data - Traffic data from the Roads and Maritime permanent traffic volume counter north of the Kings Highway / Princes Highway roundabout was obtained. This data has been used to assist in the understanding of long term trends in traffic volumes through the study area. It was also used in the development of a normal weekend peak period scenario. Existing traffic data has been obtained to cover AM and PM weekday periods, weekend periods and public holiday periods. Traffic counts were undertaken during 2015, 2016, and 2017 to provide hourly and daily vehicle count information for the Princes Highway. Tube counts were sourced for a period over Easter 2017 on Princes Highway on either side of the Kings Highway roundabout, as well as on the Kings Highway approach to Princes Highway. This provided the peak holiday traffic volumes for the regional road network
- understanding the existing transport networks. A review of different transport networks and conditions was undertaken as part of this assessment. These networks include:
  - public transport
  - active transport
  - private road based transport
  - maritime transport
- assessing existing network performance - The current performance of the local road network was assessed, including general capacity of the existing bridge, queueing and level of service at intersections on the road network. The existing road network performance was modelled in both SIDRA and Aimsun modelling
- assessing construction activities and impacts - Construction activities and their associated traffic impacts were assessed.
7.5.2 Existing environment

Road network and performance

The A1 Princes Highway forms part of the main north south transport corridor that runs from Sydney to north east Victoria. To the north of the existing bridge, the highway comprises a single carriageway with one lane in each direction with localised widening to incorporate overtaking sections and turning traffic at intersections. Intersections are generally provided in the form of unsignalised T-intersections or roundabouts. To the south of the existing bridge, the highway is primarily provided as a single carriageway with a minimum of two lanes in each direction. Intersections in this area are generally controlled by traffic signals. The highway reverts to one lane in each direction about one kilometre south of the existing bridge.

The Batemans Bay Bridge is about 300 metres in length and comprises a single traffic lane in each direction. The bridge has a central single lift span which can be raised to height of about 23 metres. Traffic lights are located at both ends of the lift span and are about 110 metres from the southern end of the bridge and about 90 metres from the northern end of the bridge. The traffic lights are only used to hold traffic when the lift span is open. The central lift span of the bridge is raised twice a day at 11.45am and 2.20pm for a tourist ferry with additional openings for private maritime vessels (when requested). On average the central lift span is raised about 1000 times each year. The central lift span is not raised during the peak periods of between 8am and 10am and 2.30pm and 6pm. The raising of the central lift span generally takes about five minutes, during which traffic on the Princes Highway is stopped at traffic signals at either end of the central lift span.

Key local roads that intersect with the Princes Highway near the EIS proposal area are:

- North Street – runs east-west from a signalised intersection with the Princes Highway to Clyde Street. The road generally comprises a wide unmarked lane which accommodates a single lane of traffic in each direction and kerbside car parking
- Clyde Street – provides access to the riverfront, accommodation, retail shops and boat ramps in Smoke Point. It currently forms an unsignalised cross road with Princes Highway about 50 metres south of the existing bridge. All traffic movements at the intersection are permitted except for right turns out of Clyde Street south on to the Princes Highway. This movement is prohibited with signage and a traffic island that forces vehicles to make a left turn movement only. Batemans Bay bus interchange, which caters for regional coach services, is located on Clyde Street just to the north of the North Street / Clyde Street intersection
- Beach Road – a key link to the southern coastal suburbs of Batemans Bay as well as connecting into a recreational area on the western side of Princes Highway. Beach Road is an east west connection, starting at an intersection with the Princes Highway and connecting to Mackay Park in the west, travelling east to the beachfront and providing access to Catalina. The intersection at Princes Highway is a four way signalised intersection. The road is generally two lanes in each direction
- Cranbrook Road – provides access to an area comprising of various commercial businesses to the west of the Princes Highway. Cranbrook Road intersects with the Princes Highway in a four way signalised intersection. It is generally one lane in each direction with on-street parking. Cranbrook Road is located south of the proposal area.

Traffic data from a variety of sources is presented in Table 7-9. Typically there are about 13,400 vehicle movements on the bridge every day, with higher volumes during holiday periods and during the warmer months from October to March. Generally traffic volumes are below the capacity of road network with no congestion experienced on any of the roads. During the AM and PM peak weekday and weekend peak periods all key intersections within the study area have an acceptable Level of Service (LoS), with generally either a LoS of A or B.
However, during peak holiday periods when there are higher numbers of tourists and holiday makers from the NSW and Canberra in the region, substantial congestion of particularly the Princes Highway, Kings Highway and their intersection is experienced especially at the beginning or end of holiday periods.

Table 7-9 Existing traffic data

<table>
<thead>
<tr>
<th></th>
<th>Date of latest Information</th>
<th>Average daily volumes</th>
<th>Average peak hour</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Princes Highway</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At Batemans Bay Bridge (counter 08.003, currently inactive)</td>
<td>2015</td>
<td>13,476</td>
<td>-</td>
</tr>
<tr>
<td>At Bridge</td>
<td>2016</td>
<td>13,364</td>
<td>1,262</td>
</tr>
<tr>
<td><strong>Local roads</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clyde Street North</td>
<td>2016</td>
<td>614</td>
<td>58</td>
</tr>
<tr>
<td>Clyde Street South</td>
<td>2016</td>
<td>2,371</td>
<td>224</td>
</tr>
<tr>
<td>North Street</td>
<td>2016</td>
<td>1,956</td>
<td>197</td>
</tr>
<tr>
<td>Beach Road</td>
<td>2016</td>
<td>7,772</td>
<td>783</td>
</tr>
<tr>
<td>Cranbrook Road</td>
<td>2016</td>
<td>6,720</td>
<td>677</td>
</tr>
</tbody>
</table>

**Crashes**
Between 2012 and 2016, a total of 22 crashes were reported on the Princes Highway, Clyde Street, North Street, Kings Highway and Wharf Road. Eleven of the crashes were moderate or serious, however, no fatalities were recorded. Fifteen crashes occurred along the Princes Highway or within 50 metres of local road intersections. Intersection crashes accounted for 80 percent of Princes Highway incidents.

**Heavy vehicle constraints**
There are a number of constraints to heavy vehicle freight traffic movement through the study area. This includes:
- the Princes Highway is only approved for use by heavy vehicles up to a 23 metre B-Double. Batemans Bay Bridge provides no current constraint to these vehicles
- the Kings Highway is only approved for use by heavy vehicles up to a 19 metre B-Double. However, 23 metre B-Doubles are prohibited
- the Princes Highway to the north of Batemans Bay Bridge and the Kings Highway are Higher Mass Limits (HML) short combination routes. The existing bridge is a constraint to these vehicles and as they are not permitted to use the bridge and must detour around the bridge for destinations south of the bridge
- the Princes Highway is a 4.6 metre high vehicle route with conditions to the north and south and across Batemans Bay Bridge
- the Kings Highway is a 4.6 metre high vehicle route without conditions.

The key constraint is the restriction to HML vehicles using the existing bridge.

**Public transport**
The Princes Highway is a strategic bus corridor, used by frequent bus services that connect major regional centres. Regional bus services are provided by 14.5 metre coaches that currently turn from Princes Highway into Clyde Street to access the bus interchange located at the intersection of Clyde Street and North Street. On leaving the interchange, regional buses access Princes Highway via the North Street intersection.
Three local bus routes operate within Batemans Bay although only one route uses the existing bridge. Route 757, from Long Beach to Batemans Bay, crosses the bridge and includes a stop at Wharf Road. From Wharf Road, buses turn left onto the Princes Highway to cross the Clyde River into Batemans Bay.

There are no bus stops along the Princes Highway in the study area.

**Pedestrian and cyclist network**

The shared use path on the existing bridge connects to local road shared use paths and paths on adjoining sections of the Princes Highway. There are also existing shared use paths along the southern and northern foreshore which connects to the shared use path on the existing bridge.

The shared use path across the existing bridge is not to current standards in terms of the width of the path.

The Eurobodalla Shire Council has developed a Pathway Strategy (2017) to guide the provision of footpaths and shared use pathways throughout the shire.

### 7.5.3 Potential impacts

#### Construction impacts

Construction of the overall proposal would commence in 2018/2019 and the new bridge would be complete and open to traffic in 2021. Potential construction impacts on traffic and transport would include:

- temporary increases to travel times for vehicles, cyclists and pedestrians due to:
  - speed limit restrictions required around construction zones
  - diversions around areas of works that are located or impinge on the existing roads and paths
- increased traffic on the surrounding road network from:
  - heavy construction vehicles hauling material to or from the site
  - additional vehicle movements near the ancillary sites associated with smaller deliveries and workforce movements
- changes to the operating profile of the site given traffic and diversions associated with the works
- altered property access arrangements
- possible bus timetable delays due to temporary traffic control measures
- closure of some local road connections
- loss of parking.

The overall proposal would be generally located on new alignment to the existing bridge and approaches and consequently any minor diversions to temporary pavement areas and speed restrictions would be limited to where the new approaches tie in to the existing Princes Highway alignment. Overall speed restrictions and diversions would only have a minor impact on vehicle and bus travel times.

The number of construction vehicles during peak and typical construction periods were estimated and compared against the current traffic volumes in the road network (Table 7-10). These estimates were for the overall proposal and construction traffic generated by the EIS proposal would be a small proportion of this.

The increase in traffic volumes on relevant roads due to construction of the EIS proposal would be less than two per cent. Apart from peak holiday periods, the road and intersection performance is generally acceptable in the construction area and the minor increase in traffic volumes from construction traffic would not result in a deterioration in travel times and queuing. Construction
activities and vehicle movements during peak holiday periods would be planned to avoid impacts on the road network.

Table 7-10 Increases in road traffic volumes from construction traffic

<table>
<thead>
<tr>
<th></th>
<th>Existing daily traffic (vehicles per day)</th>
<th>Typical construction period</th>
<th>Percent increase in traffic volumes</th>
<th>Peak construction periods</th>
<th>Percent increase in traffic volumes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Princes Highway South</td>
<td>13,500</td>
<td>150</td>
<td>1%</td>
<td>170</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

Some local roads may require periods of temporary closure to allow construction works to be undertaken including Clyde Street. During construction these local road closures would be temporary and generally would be partial closures (eg a single lane). Either alternative routes or traffic control would be provided to ensure that all vehicles are able to access their intended destination with minimal delay.

Access to properties may be temporarily impacted by construction activities. Before any property access would be affected, the property owner would be consulted and temporary access arrangements would be developed to ensure that access for the required vehicles is maintained at all times. Overall the number of property accesses impacted by the proposal would be low.

The construction of the overall proposal would result in the temporary loss of parking in a number of areas including:

- supermarket car park – An area of the supermarket car park containing about 60 parking spaces would be required for construction of the new south approach
- informal car park adjacent to supermarket car park – A vacant site which is adjacent to the construction area on the southern bank would be acquired and used for an ancillary facility. This vacant lot is currently used an informal car parking facility for the adjoining supermarket
- foreshore parking areas at Clyde Street – Car parking spaces in these areas would be closed at various times during construction and demolition.

Roads and Maritime would consult with Council, the supermarket operator and other potentially affected businesses to identify their parking requirements and alternative parking arrangements during construction. There are other viable options for alternative parking locations on the southern bank as well as substantial on-street parking available. Where possible alternative parking arrangements would be identified for affected foreshore car parks, however in some cases alternative parking arrangements near the affected car park may not be able to be provided. This would not a substantial impact as access and parking at foreshore areas is available at numerous locations and if specific car parks are temporarily closed access and parking would be available at other locations.

Minor modifications to bus routes and bus facilities may be required during construction. While Clyde Road south would remain open during construction of the new bridge and approaches, once the new bridge is opened and demolition of the existing bridge begins, access to this road would change. As regional and local buses use these roads and the final road configuration would not be in place until the demolition of the existing bridge is completed, an interim option for bus routes and facilities may need to be developed in consultation with bus operators and Council.

The vacant bowling club which forms part of the EIS proposal shares car parking and access to the Princes Highway with other adjacent recreational facilities such as Mackay Oval and Batemans Bay Swimming Centre. The vacant lawn bowling club could be used as an ancillary construction facility, however its use and layout would be determined by the construction contractor. They may be a temporary loss of some car parking, however this would be minimised wherever possible.
Roads and Maritime would consult with Council and other relevant stakeholders to identify their parking requirements and alternative parking arrangements if required during construction.

Impacts on access would not be expected as the peak use of recreational facilities on weekends would be outside times of peak use of the ancillary construction facility which would generally be during weekdays.

The EIS proposal would not directly impact pedestrian and cyclist routes or public transport.

### 7.5.4 Safeguards and management measures

Safeguards and management measures provided below would be implemented to minimise potential traffic and transport impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
</table>
| Traffic and transport - Construction impacts | A Traffic Management Plan (TMP) will be prepared and implemented for road and marine traffic during construction. The TMP will be prepared in accordance with the Roads and Maritime Traffic Control at Work Sites Manual (RTA, 2010) and QA Specification G10 Control of Traffic (Roads and Maritime, 2008). The TMP will include:  
- confirmation of haulage routes  
- measures to maintain access to local roads, properties and the waterway  
- site specific traffic control measures (including signage) to manage and regulate traffic movement  
- measures to maintain pedestrian and cyclist access  
- requirements and methods to consult and inform the local community of impacts on the local road network and the waterway  
- access to ancillary sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads  
- a response plan for any construction road or marine traffic incident  
- consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic  
- monitoring, review and amendment mechanisms. | Contractor | Pre-construction Construction |
<p>| Traffic and transport - Construction impacts | Traffic control plans would be prepared for the construction area and progressively updated as the works progress. The plans would be prepared and implemented by suitably qualified personnel. | Contractor | Construction |</p>
<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic and transport -</td>
<td>A Road Occupancy Licence would be obtained where required.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Construction impacts</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.6 Construction noise

<table>
<thead>
<tr>
<th>Secretary's requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise</td>
<td>Section 7.6.4</td>
</tr>
<tr>
<td>assess the likely impacts during construction in accordance with relevant construction noise guidelines, and the effectiveness of any necessary measures to manage and mitigate construction noise</td>
<td></td>
</tr>
</tbody>
</table>

7.6.1 Methodology

A Noise and Vibration Assessment was prepared for the overall proposal. The assessment is provided in Appendix I and is summarised for the EIS proposal area in the following sections. Operational noise impacts are discussed in section 8.3.

The noise and vibration assessment was prepared in accordance with the following guidelines:

- Interim Construction Noise Guideline (ICNG) (DECC 2009b)
- Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime 2016)
- Construction Noise Strategy (Transport for NSW 2012a)

Noise monitoring

Noise monitoring was undertaken to determine the existing noise environment in the vicinity of the overall proposal. Noise monitoring was undertaken from 5 to 15 June 2017 at two locations near the EIS proposal area (shown in Figure 7-4) to determine background noise levels and existing traffic noise on the Princes Highway. All noise monitoring activities were undertaken and processed in accordance with the Industrial Noise Policy (EPA 2000). Further details of the noise monitoring methodology are located in Appendix I.

Construction noise assessment

Noise impacts on sensitive receivers from construction activities during and outside standard construction hours have been assessed. A quantitative assessment was undertaken as there are many potentially impacted receivers and the construction duration is greater than three weeks. This assessment provides a detailed analysis of the noise levels at each sensitive receiver location and compares them with the relevant noise management level. To assess the impact of construction noise on sensitive receivers, construction stages, the equipment and plant to be used in each of the stages and the location of their use was identified. This information was used in a noise model to identify maximum construction noise levels experienced at each sensitive receiver for each stage of construction.

For the noise assessment, the EIS proposal was defined as construction of the southern approach and operation of ancillary construction facility at the vacant lawn bowling club.

The construction stages relevant to the EIS proposal included:

- site establishment
- utility relocation
- construction of bridge approaches
- pavement construction
- finishing and landscaping
- removal of site compounds.
Further details on construction stages and the plant and equipment assumed to be used in each stage can be found in Appendix I. Each of the stages were modelled for both the day and night-time periods. Plant and equipment for each stage were assumed to be operating simultaneously and the activity sound power level based on the CNVG was used in the construction model. This provides a worse-case scenario as it is unlikely that all construction equipment would be operating at any one time.

7.6.2 Existing environment

The area surrounding the EIS proposal consists of suburban residential properties and commercial businesses (including motels and a retirement village) located along or near the Princes Highway and the Clyde River crossing.

The upgrade works along the Princes Highway and the southern approaches would generally occur outside the existing road corridor as the new bridge would be to the west of the existing bridge. Sensitive receivers northwest and southwest of the bridge would become closer to the Princes Highway as a result of the proposal and therefore, potentially become more affected by road traffic noise. However, sensitive receivers along the eastern side of the Princes Highway would benefit from the road moving further away from their property boundary as a result of the proposal. The study identified suburban residential properties, motels (managers permanent living quarters) and a retirement village in the vicinity of the Princes Highway potentially impacted by the construction and operation of the proposal, most of which are currently exposed to road traffic noise from the Princes Highway.

The study area for the noise and vibration assessment includes land within 600 metres of the overall proposal.

The study area does not contain any non-residential sensitive receivers (eg schools, medical facilities, aged care homes and places of worship).

To facilitate the assessment of noise impacts from the overall proposal, noise sensitive receivers within the study area have been divided into Noise Catchment Areas (NCAs). Two NCAs are relevant for the EIS proposal and are shown in Figure 7-4 and described below including:

- NCA 3 – Suburban residential and commercial area, which includes motels, a retirement village and a picnic area on the western side of the Princes Highway, southwest of the Batemans Bay Bridge and bordered by the southern end of the Batemans Bay Bridge and North Street to the south
- NCA 4 – Commercial area on the eastern side of the Princes Highway, southeast of the Batemans Bay Bridge and bordered by the southern end of the Batemans Bay Bridge and North Street to the south.
Figure 7-4 Noise catchment areas

Batemans Bay Bridge replacement
Environmental Impact Statement

projection: GDA 1994 MGA Zone 58

Source: Aurecon, RMS, LPI, Eni Tops, Nearmap
Noise monitoring was undertaken at one location in NCA3. Noise monitoring was not required for NCA4 as this area contains commercial premises and noise guidelines values for commercial areas are not based on existing noise levels. Monitoring of road noise was also undertaken near the southern abutment of the existing bridge for noise model calibration. The results of the monitoring are presented in Table 7-11. The noise environment in the study area is generally determined by traffic noise from the Princes Highway.

Table 7-11 Existing background (L_{90}) and ambient (L_{eq}) noise monitoring results

<table>
<thead>
<tr>
<th>Noise monitoring location</th>
<th>L_{A90} Background noise levels (dB(A))</th>
<th>L_{Aeq} Ambient noise levels (dB(A))</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCA 3 – 23 Clyde Street</td>
<td>57</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>66</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>57</td>
</tr>
<tr>
<td>Road noise - Princes Highway</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>southern abutment</td>
<td></td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>74</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>66</td>
</tr>
</tbody>
</table>

7.6.3 Noise and vibration criteria

Construction noise criteria

The construction noise management levels for the overall proposal have been developed in accordance with:
- Interim Construction Noise Guideline (DECC 2009b)

For work during standard construction hours:
- the 'noise affected level' represents the point above which there may be some community reaction to noise. The noise affected level is calculated by adding 10 dB(A) to the rating background level. For this assessment, the measured short-term background noise levels have been used
- the 'highly noise affected level' represents the point above which there may be strong community reaction to noise. The ICNG specifies that the highly noise affected level is 75 dB(A).

For any work outside standard construction hours:
- a strong justification would typically be required for works outside the standard construction hours
- the proponent should apply all feasible and reasonable work practices to meet the noise affected level
- where all feasible and reasonable practices have been applied and noise is more than five dB(A) above the noise affected level, the proponent should negotiate with the community.

For work outside standard construction hours, the construction noise management level is calculated by adding 5 dB(A) to the rating background level. The noise management level for sleep disturbance is based on a maximum internal noise level of 55 dB(A) \( L_{Amax} \) as recommended by the RNP and a 10 dB(A) reduction in noise from outside the building. The RNP acknowledges that one or two noise events per night with maximum external noise levels of 75 to 80 dB(A) are unlikely to substantially affect health and wellbeing. The proposal specific construction noise management levels are provided in Table 7-12.
Table 7-12 Construction noise management levels - $L_{Aeq(15\text{min})}$ (dBA) - for overall proposal

<table>
<thead>
<tr>
<th>Noise catchment</th>
<th>Noise management levels $L_{Aeq(15\text{min})}$ (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day</td>
</tr>
<tr>
<td>NCA 3</td>
<td>67</td>
</tr>
<tr>
<td>NCA 4 spur</td>
<td>70</td>
</tr>
</tbody>
</table>

1 As the background noise level was less than 30 dBA it was increased to 30 dBA as per the INP
2 All sensitive receivers in NCA 4 are commercial premises

Construction vibration

**Human comfort criteria**

Human comfort vibration criteria have been determined including consideration of Assessing Vibration: A Technical Guideline and British Standard (BS) 6472 – 1992, Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz) which is recognised by OEH as the preferred standard for assessing ‘human comfort’ in relation to potential vibration impacts. Typically, construction activities generate ground vibration of an intermittent nature. Intermittent vibration is assessed using the vibration dose value. Acceptable values of vibration dose are presented in Table 7-13 for sensitive receivers.

Table 7-13 Human comfort intermittent vibration limits (BS 6472-1992)

<table>
<thead>
<tr>
<th>Receiver type</th>
<th>Period</th>
<th>Preferred value</th>
<th>Maximum value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>Day (7am to 10pm)</td>
<td>0.2</td>
<td>0.4</td>
</tr>
<tr>
<td>Residential</td>
<td>Night (10pm to 7am)</td>
<td>0.13</td>
<td>0.26</td>
</tr>
<tr>
<td>Offices, schools, educational institutes and places of worship</td>
<td>When in use</td>
<td>0.4</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Humans are capable of detecting vibration at levels which are well below those that could cause damage to a building. The degrees of perception for humans are shown in Table 7-14.

Table 7-14 Guidance on effects of vibration levels for human comfort (BS 5228.2-2009)

<table>
<thead>
<tr>
<th>Vibration level</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.14 mm/s</td>
<td>Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction.</td>
</tr>
<tr>
<td>0.3 mm/s</td>
<td>Vibration might be just perceptible in residential environments.</td>
</tr>
<tr>
<td>1.0 mm/s</td>
<td>It is likely that vibration at this level in residential environments would cause complaints, but can be tolerated if prior warning and explanation has been given to residents.</td>
</tr>
<tr>
<td>10 mm/s</td>
<td>Vibration is likely to be intolerable for any more than a very brief exposure.</td>
</tr>
</tbody>
</table>
**Structural damage criteria**

Table 7-15 presents the German Standard DIN 4150-3: 1999 Structural Vibration – Part 3: Effects of vibration on structures minimum safe levels of vibration at different frequencies for commercial and residential buildings. Based on DIN 4150-3, a measured value exceeding those listed in Table 7-15 “…does not necessarily lead to damage; should they be significantly exceeded, however, further investigations are necessary.”

Table 7-15 Guideline values for short term vibration on structures

<table>
<thead>
<tr>
<th>Type of structure</th>
<th>Guideline values for velocity, (mm/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Hz to 10 Hz</td>
</tr>
<tr>
<td>Buildings used for commercial purposes, industrial buildings, and buildings of similar design.</td>
<td>20</td>
</tr>
<tr>
<td>Dwellings and buildings of similar design and/or occupancy.</td>
<td>5</td>
</tr>
<tr>
<td>Structures that, because of their particular sensitivity to vibration, cannot be classified above and are of great intrinsic value (e.g., listed buildings under preservation order).</td>
<td>3</td>
</tr>
</tbody>
</table>

† Note: At frequencies above 100 Hz the values given in this column may be used as minimum values.

**7.6.4 Potential impacts**

**Works within standard construction hours**

The majority of construction works would be undertaken in standard construction hours and compliance with the day time NML’s for all construction stages is discussed and presented below in Table 7-16. Site establishment, utility relocations, pavement construction and finishing and landscaping works would have the highest noise impacts and cause the most exceedances of NMLs. Particularly impacted locations in each of the noise catchments include:

- NCA 3 – 29 and 31 Clyde Street: Both of these sensitive receivers are motels which would be adjacent to new southern approach
- NCA 4 – 13 and 19 Clyde Street: These sensitive receivers are a restaurant and shops.

It should be noted that these exceedances are based on all assumed plant and equipment working simultaneously in a location closest to a sensitive receiver and consequently are the maximum or worst case impact from that activity. In reality this would only occur for short periods of time, if at all, and actual noise levels would generally be lower. However as NMLs have been predicted to be exceeded at sensitive receivers a feasible and reasonable approach towards noise management would be applied to reduce noise levels as much as possible to manage the impact from construction noise. Noise management measures are presented in section 7.6.5.

The construction of the EIS proposal would exceed the highly noise affected level of 75 dBA during standard construction hours at four sensitive receivers due to their proximity to the proposed works (Table 7-16). Those items that are in bold, indicates highly affected. These sensitive receivers are commercial premises or recreational areas. Should these impacts not be reduced by the implementation of standard noise safeguards and management measures outlined in the Construction Noise and Vibration Guideline (Roads and Maritime 2016), additional measures outlined in the Construction Noise and Vibration Guideline (Roads and Maritime 2016) would be implemented.
Table 7-16 Construction stages and locations where day time NMLs would be exceeded

<table>
<thead>
<tr>
<th>Stage</th>
<th>Location of exceedance of day time NMLS</th>
</tr>
</thead>
</table>
| Site establishment           | NCA3 - Foreshore picnic area, 29 Clyde Street (Commercial)  
NCA4 - 13 Clyde Street (Commercial), 19 Clyde Street (Commercial) |
| Utilities relocation         | NCA3 - Foreshore picnic area, 29 Clyde Street (Commercial), 31 Clyde Street (Commercial)  
NCA4 - 13 Clyde Street, 19 Clyde Street |
| Construction of bridge       | NCA3 - 29 Clyde Street (Commercial)  
NCA4 - 13 Clyde Street (Commercial) |
| approaches                   |                                                                                                          |
| Pavement construction        | NCA3 - Foreshore picnic area, 29 Clyde Street (Commercial), 31 Clyde Street (Commercial), 37 Clyde Street, 39 Clyde Street, 41 Clyde Street  
NCA4 - 13 Clyde Street, 19 Clyde Street |
| Finishing and landscaping    | NCA3 - Foreshore picnic area, 29 Clyde Street (Commercial), 31 Clyde Street (Commercial), 37 Clyde Street, 39 Clyde Street, 41 Clyde Street  
NCA4 - 13 Clyde Street, 19 Clyde Street |
| Removal of site compounds    | NCA3 – None  
NCA4 - None |
| Simultaneous activities      | NCA3 - Foreshore picnic area, 29 Clyde Street (Commercial), 31 and 33 Clyde Street (Commercial)  
NCA4 - 13 and 19 Clyde Street |

**Works outside standard construction hours**

Works outside standard working hours would result in exceedances of NMLs at a larger number of sensitive receivers as the NMLs in evening and night time are lower than those in the day time. The most likely activities that would occur outside standard working hours would be utility relocation and pavement construction to tie in the new approaches to the Princes Highway. While these works would result in exceedance of NMLs, generally these works would be short in duration and appropriate noise mitigation measures would be implemented to minimise their impacts.

**Construction traffic noise**

The assessment of noise impacts from traffic associated with the construction works for the proposal is highlighted in section 9 of the CNVG. The CNVG states the following:

“…an initial screening test should first be applied by evaluating whether noise levels would increase by more than 2dBA due to construction traffic or a temporary reroute due to a road closure. Where increases are 2dBA or less then no further assessment is required.”

It is assumed that traffic associated with the construction of the proposal would use the Princes Highway as a route to and from the construction sites. The Average Annual Daily Traffic (AADT) volumes along the Princes Highway in the vicinity of the EIS proposal is 8,733 vehicles. Vehicle movements during the peak construction periods would be 310 per day, which comprise of 260 light vehicles, 40 heavy vehicles and 10 light commercial vehicles. Based on the estimated construction traffic movements and the existing AADT volumes along the Princes Highway, it is expected that construction traffic would increase existing traffic volumes by around 3.5 percent,
which equates to a noise increase of less than 1dB(A). Therefore, construction traffic noise impacts would be minor and no further assessment is required.

Construction traffic noise impacts would be confirmed during the preparation of the Construction Noise and Vibration Management Plan when the final construction scheduling is determined.

**Vibration**

Vibration generated by construction plant was estimated and potential vibration impacts on residential and commercial receivers are summarised in Table 7-17. Measures to minimise vibration impacts on sensitive receivers would be detailed in the Construction Noise and Vibration Management Plan.

Table 7-17 Potential vibration impacts

<table>
<thead>
<tr>
<th>NCA</th>
<th>Approximate distance to nearest buildings from works</th>
<th>Structural damage risk</th>
<th>Human disturbance</th>
<th>Vibration monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10m to 20m</td>
<td>Medium risk of structural damage from vibratory rolling Low risk of structural damage from other activities</td>
<td>High risk of adverse comment as a result of compacting, truck traffic and/or vibratory rolling</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>10m to 20m</td>
<td>Medium risk of structural damage from vibratory rolling Low risk of structural damage from other activities</td>
<td>High risk of adverse comment as a result of compacting, truck traffic and/or vibratory rolling</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>21m to 30m</td>
<td>Low risk of structural damage from vibratory rolling Very Low risk of structural damage from other activities</td>
<td>Medium risk of adverse comment as a result of compacting, truck traffic and/or vibratory rolling</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>10m to 20m (commercial receivers)</td>
<td>Very Low risk of structural damage.</td>
<td>Low risk of adverse comment.</td>
<td>Not required</td>
</tr>
</tbody>
</table>

7.6.5 **Safeguards and management measures**

Safeguards and management measures provided below would be implemented to minimise potential construction noise impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction noise and vibration</td>
<td>A Noise and Vibration Management Plan (NVMP) will be prepared and implemented as part of the CEMP. The NVMP will be prepared in accordance with the Construction Noise and Vibration Guideline (Roads and Maritime 2016) and identify: • all potential significant noise and vibration generating activities associated with the activity • a monitoring program to assess performance against the noise and vibration criteria • arrangements for consultation with affected</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
</tr>
<tr>
<td>Impact</td>
<td>Environmental safeguards</td>
<td>Responsibility</td>
<td>Timing</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Neighbours and sensitive</td>
<td>neighbours and sensitive receivers, including notification and complaint handling</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td>procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• contingency measures to be implemented in the event of non-compliance with noise and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>vibration criteria.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out of hours work</td>
<td>Out of hours works will be undertaken in accordance with the Construction Noise and</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td>Vibration Guideline (Roads and Maritime 2016).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.7 Waste management

<table>
<thead>
<tr>
<th>Secretary's requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail waste classification, handling, control and disposal measures</td>
<td>Section 7.7</td>
</tr>
</tbody>
</table>

Roads and Maritime is committed to ensuring the responsible management of unavoidable waste and promotes the reuse of such waste in accordance with the resource management hierarchy principles outlined in the *Waste Avoidance and Resource Recovery Act 2001*. These resource management hierarchy principles, in order of priority are:

- avoidance of unnecessary resource consumption in operations, maintenance, construction and management
- resource recovery (including reuse, reprocessing, recycling and energy recovery)
- disposal.

By adopting the above principles, Roads and Maritime aims to efficiently reduce resource use, reduce costs, and reduce environmental harm in accordance with the principles of ecologically sustainable development.

7.7.1 Potential impacts

The EIS proposal has the potential to generate waste from the following activities:

- vegetation clearance including native, exotic and noxious species
- topsoil removal for embankments and removal of soil for road widening
- utility adjustments.

Waste streams likely to be generated during construction of the overall proposal include:

- excess spoil – material generated by the EIS and overall proposal would be reused on site in areas of fill with the exception of any unsuitable material. The only spoil which would be removed from site is material which is deemed unsuitable for reuse on site
- green waste as a result of vegetation clearing. Noxious weed material would be separated from native green waste. Green waste would either be mulched and reused on site or sent to a composting facility
- roadside materials (e.g. fencing, guide posts and guard rails)
- packaging and general waste from staff (e.g. lunch packaging, portable toilets)
- chemicals and oils
- waste water from wash-down and bunded areas
- redundant erosion and sediment controls.

Unsuitable fill material and all other wastes would be classified in accordance with the NSW EPA Waste Classification Guidelines (2014) and disposed of at an appropriately licenced facility. Final waste classification is required once the volumes of waste requiring offsite disposal during construction are confirmed.

There would be only minimal generation of waste from the construction of the EIS proposal.
### Safeguards and management measures

Safeguards and management measures provided below would be implemented to minimise potential traffic and transport impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste management - general</td>
<td>A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to: • measures to avoid and minimise waste associated with the project • classification of wastes and management options (re-use, recycle, stockpile, disposal) • statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions • procedures for storage, transport and disposal • monitoring, record keeping and reporting. The WMP will be prepared taking into account the Environmental Procedure - Management of Wastes on Roads and Maritime Services Land (Roads and Maritime, 2014) and relevant Roads and Maritime Waste Fact Sheets.</td>
<td>Contractor</td>
<td>Pre-construction, Construction, Demolition</td>
</tr>
<tr>
<td>Waste management - general</td>
<td>All wastes will be managed and disposed of in accordance with the POEO Act.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Waste management - general</td>
<td>Appropriate portable toilets or pump out facilities will be provided for construction sites workers and sewage will disposed of appropriately and in accordance with relevant legislation.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Waste management - general</td>
<td>Site inductions will include waste management and disposal requirements and facilities.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Fill material</td>
<td>Any additional fill material required will be sourced from appropriately licensed facilities and/or other construction projects wherever possible. Additional fill material will be sourced and verified as suitable for use in accordance with relevant EPA and Roads and Maritime guidelines.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Management of green waste</td>
<td>Where possible and suitable for use, mulch would be used on-site.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Disposal of waste</td>
<td>All waste and excess excavated material will be disposed of at an appropriate licensed facility.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Management of tannins</td>
<td>A tannin leachate management protocol will be developed in accordance with Roads and Maritime’ Environmental Direction – Management of Tannins from Vegetation Mulch (Roads and Maritime, 2012) to manage the stockpiling of mulch and use of cleared vegetation and mulch filters for erosion and sediment control</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
</tbody>
</table>
7.8 Visual amenity

<table>
<thead>
<tr>
<th>Secretary's requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual amenity</td>
<td></td>
</tr>
<tr>
<td>consideration of the visibility of the project from adjacent</td>
<td>Section 7.8</td>
</tr>
<tr>
<td>sensitive viewpoints</td>
<td></td>
</tr>
</tbody>
</table>

7.8.1 Methodology

The Urban Design Report Landscape Character and Visual Impact Assessment is contained in Appendix J and is summarised for the EIS proposal area in the following sections.

The methodology used to undertake the study is summarised as follows:

- background review of the strategic concept design and supporting material to gain an appreciation of the proposal
- detailed site visit to identify sensitivities, views, visual catchments, magnitude of change and to gain a full appreciation of the interface of the proposed bridge in its setting
- contextual analysis evaluating the characteristics of the site including land uses, scenic values, character zones, heritage and landform
- determination of sensitivity levels based on the contextual analysis
- formulation of a proposal vision and identification of key urban design objectives and principles
- identification of key constraints and opportunities and development of initial ideas in collaboration with the design team
- development of a concept strategic design plan that outlines key urban design strategies
- in collaboration with the project team, iterative identification of strategies that would improve the outcome of the proposal from an urban design, landscape character and visual impact point of view
- description of the design based on the urban design input and mitigation strategies
- evaluation of the proposal’s impact on the landscape character
- determination of visual exposure and preparation of a visual envelope map to determine the visual catchment of the proposal
- selection of viewpoints within the visual catchment that are representative of the varying site conditions and the proposal
- evaluation of the proposal’s visual impact by comparing the sensitivity of existing viewpoints and the magnitude of impact of the proposal upon them
- identification of any further mitigating measures that could be incorporated into the design.

The assessment was undertaken with reference to the following Roads and Maritime guidelines:
- Beyond the Pavement, January 2014
- Bridge Aesthetics, August 2012
- Landscape Design Guidelines, April 2008

Based on the concept design, a visual and landscape character impact assessment has been undertaken based on Roads and Maritime guidelines. The landscape character impact is based on the aggregate of an area's built, natural and cultural character and sense of place. In this regard, it is measured by the combination of the area's sensitivity and the magnitude (scale, character and distance). The magnitude of impact refers to the type of proposal and its compatibility with the
existing landscape character. Factors such as visual contrast, scale, location or setting all influence the magnitude that the proposal may have on its surroundings. The magnitude impact rating also considers whether the proposal has a positive or negative impact on the landscape character. For example, a proposal may be of a large scale, yet could positively impact how an area functions or improve its sense of place, providing beneficial outcomes.

Key viewpoints were also identified and the same assessment methodology was used to assess the impacts of the overall and EIS proposal in views.

Table 7-18 below shows how the level of sensitivity and magnitude are combined to achieve an overall level of impact for both the landscape character impact and the visual impact.

Table 7-18 Visual impacts rating matrix

<table>
<thead>
<tr>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>High</th>
<th>Moderate</th>
<th>Low</th>
<th>Negligible</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>high</td>
<td>high - moderate</td>
<td>moderate</td>
<td>negligible</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>high - moderate</td>
<td>moderate</td>
<td>moderate - low</td>
<td>negligible</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>moderate</td>
<td>moderate-low</td>
<td>low</td>
<td>negligible</td>
<td></td>
</tr>
<tr>
<td>Negligible</td>
<td>negligible</td>
<td>negligible</td>
<td>negligible</td>
<td>negligible</td>
<td></td>
</tr>
</tbody>
</table>

### 7.8.2 Existing environment

#### Landscape context

Batemans Bay is located on the southern coast of New South Wales and is the main commercial centre of the Eurobodalla LGA (Local Government Area). It is a major regional centre and significant future redevelopment is expected within its town centre to support ongoing population growth. Its proximity to Canberra makes it also a popular coastal tourist destination with a substantial increase in population during peak holiday periods.

The A1 Princes Highway functions as the primary north-South Coastal transport corridor, both for local and regional traffic and provides a critical link between the northern and southern end of town, separated by the Clyde River. The bridge over the Clyde River provides a critical link that supports the functioning of the town.

The area is popular with retirees and has also begun to attract young families seeking affordable housing and a seaside lifestyle. The landscape surrounding Batemans Bay is of considerable beauty and the natural setting strongly contributes to the overall quality and identity of this urban centre.

#### Landscape setting

Batemans Bay is a coastal town strongly defined by its riverside setting amongst undulating hills of the NSW South Coast. The area is known for its coastal beauty, ease of access to beaches, relaxed holiday destination and for being easily accessible for residents of Canberra wanting a seaside destination. The existing bridge sits within the urban context of Batemans Bay township, connecting the more commercial/industrial/residential areas of Batemans Bay town to the south of the river, to connect with the generally less dense and more dispersed residential focussed developments on the north, with more generous landscape buffers on steeper land, where the Princes Highway and Kings Highway converge.
Key elements of the natural setting include:
- water systems - Tasman Ocean, Clyde River and Mcleods Creek
- natural green edges - including mangroves, wetlands to the coastal edges and woodland forests to the undulating ridges
- high landforms and major ridgelines
- beaches
- enclosing topography including small bays.

Other key elements within the study area include:
- the heritage car ferry ramps and heritage alignment of the existing Old Punt Road that provide interest and landmarks
- the generous open space/recreation areas that provide ease of access around the river’s edge and within the town promenade areas
- key viewing areas to the existing bridge
- the large, high cutting on the northern approach to the town that dramatises the entry to the bridge and bay below the road level at the cutting.

Landscape character zones and key view points
The purpose for identifying different landscape character types or zones was to assess levels of sensitivity and to provide a description of each zone, giving the overall proposal its context and interface. This informed the design process, particularly in the identification of impacts and mitigation measures applied as a design tool.

The sensitivity value refers to the qualities of a particular character zone, which may include the number and type of receivers and how sensitive the existing character of the setting is to the proposed change. For example a pristine natural environment will be more sensitive to change than a built up industrial area.

There were a number of distinct landscape character types identified in Batemans Bay, each distinguished by its particular combination of land use, topography and built form. The relationship between these landscape character types is an important aspect of the urban experience of the town and the visual experience for the traveller. Of the twelve landscape zones identified in the overall study area, five landscape zones were relevant to the EIS proposal (Table 7-19 and Figure 7-5).

Of the ten key view points identified in the overall study area, two view points were relevant to the EIS proposal (as shown in Figure 7-6). The general characteristics and sensitivity of each of these view points are presented in Table 7-20.

Generally most of the landscape character zones and view points had a moderate to high sensitivity due to the high scenic values of the estuary, its foreshore and the vegetated surround hills, and the close proximity of residential, commercial and tourist areas to the proposal.
Figure 7-6 Key View Points
Batemans Bay Bridge replacement
Environmental Impact Statement

1 View point location and ID
- The proposal
- The proposal area
- Lot

Source: Ausaceo, RMS, LPI, Esri Topo

Projection: GDA 1994 NGA Zone 59

FIGURE 7-6: View point locations
<table>
<thead>
<tr>
<th>Zone and location</th>
<th>Natural environmental</th>
<th>Built environment</th>
<th>Spatial character</th>
<th>Infrastructure</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B – Wetlands</strong></td>
<td>The Clyde River estuary footprint represents an assortment of high quality habitats and complex ecotones of intertidal saltmarsh, mangroves and fringing forests</td>
<td>None</td>
<td>Mcleods Creek provides a more intimate setting with mangroves and salt marshes. The sensitive environment defines the character of this zone</td>
<td>Oyster leases</td>
<td>The sensitivity is high due to the environmental, scenic and recreational value that strongly contributes to the overall character of the setting</td>
</tr>
<tr>
<td><strong>H – The Promenade</strong></td>
<td>Extensive hardscape areas with some open grass spaces and streetscape vegetation. Parkland setting with picnic shelters at the western end of this zone with stands of trees and a mown grassed understorey</td>
<td>A variety of built form elements from single and double storey homes, double storey hotel/motel accommodation to retail strip of single and double storeys</td>
<td>Open vistas to the landscape beyond with the waterway as a focal point. Panoramic views across the river include the existing bridge, boats and forest ridgeline beyond. This zone provides a key interface with boating and river activities</td>
<td>Foreshore promenade includes shared pedestrian and cycle path and street lighting. Extensive car park areas and foreshore park west of the existing bridge include picnic shelters and a boat ramp</td>
<td>Highly sensitive zone that is popular for locals and visitors alike</td>
</tr>
<tr>
<td><strong>I – Sport facilities and bowling clubs</strong></td>
<td>Highly modified urban environment with some stands of mature native trees. Extensive grassed areas used for sportfields and functions</td>
<td>Limited built elements in the form of single storey buildings</td>
<td>Open character with extensive grassed areas allow for district vistas beyond</td>
<td>This zone is composed of various sporting and recreational facilities including a bowling club, mini golf, swimming centre and sports fields</td>
<td>The sensitivity of this zone is moderate. This zone is predominantly used for recreational purposes including sports. The introverted nature of this zone makes it less susceptible to change</td>
</tr>
<tr>
<td>Zone and location</td>
<td>Natural environmental</td>
<td>Built environment</td>
<td>Spatial character</td>
<td>Infrastructure</td>
<td>Sensitivity</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------------------------------</td>
<td>--------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>J – Batemans Bay town centre</strong></td>
<td>Highly modified urban environs with minimal greenery, dominated by car parks and built form elements. This area sits low and flat in the landscape setting</td>
<td>A variety of building typologies both in scale and style provide a somewhat un-unified built form ensemble. This zone comprises predominantly of single and double storey buildings either in the form of strip malls or as single properties</td>
<td>Due to the variety of built form elements and styles, the streetscape character lacks cohesion. The lack of streetscape vegetation and dominance of carparking contribute to this outcome</td>
<td>Street lighting and overhead power lines. Local roads and car parks dominate the streetscape in key areas</td>
<td>The sensitivity of this zone is considered high albeit its commercial land use due to its importance to the community and visitors alike. The town centre provides a critical function for the tourism industry</td>
</tr>
<tr>
<td><strong>K – Forest</strong></td>
<td>Dense vegetated setting that acts as a backdrop from numerous vantage points, Main vegetation is Southern Lowland Wet Sclerophyll Forest</td>
<td>None</td>
<td>Dominant green dense forest</td>
<td>None, natural environment</td>
<td>The sensitivity of this character zone is high. The area is a pristine natural environment highly sensitive to change. This zone contributes to the identity of Batemans Bay</td>
</tr>
</tbody>
</table>
Table 7-20 Key view points

<table>
<thead>
<tr>
<th>View point</th>
<th>Element of proposal visible</th>
<th>Category of viewer</th>
<th>Visual sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 - Clyde Street shops opposite the foreshore carpark/ picnic shelter zone</td>
<td>Glimpses of bridge alignment through the trees</td>
<td>Public</td>
<td>High due to tourists, and locals using this popular main street/hub zone for Bateman’s Bay</td>
</tr>
<tr>
<td>10 - From Vesper Street, looking towards the old bridge approach</td>
<td>High bridge structure above Clyde Street and shared use path linking to foreshore</td>
<td>Locals and tourists</td>
<td>High due to the visual dominance of the bridge at this intersection, transforming visually the</td>
</tr>
</tbody>
</table>

7.8.3 Potential impacts

Construction

Visual impacts during construction of the EIS proposal would be experienced due to the clearance of vegetation and the presence of works areas including plant and equipment. Views of construction would primarily be available from Smoke Point, the foreshore recreational areas on the southern banks, some residential properties on the northern bank and users of the Princes Highway. These impacts would be present throughout construction, but would be temporary in nature. Safeguards and management measures would be implemented to minimise any visual impacts during construction.

Operation

Landscape character assessment

The overall proposal would have an impact on landscape character surrounding the overall proposal. While the works would partially take place in an established road corridor, they would impact on most landscape character zones to some degree. From the perspective of local property owners, tourists, motorists and cyclists, landscape character would be impacted, particularly in highly visible areas adjacent to the Clyde River.

The EIS proposal would have impacts on the landscape character zones in the Batemans Bay town centre and the southern foreshore area as are summarised in Table 7-21. These impacts would be both negative and positive. Drivers would also experience a modification to their existing views from the Princes Highway.

These impacts would be mitigated where possible through the principles and objectives identified within the urban design report (Appendix J). The design would be further refined to address the specific urban design objectives in Appendix J. Rehabilitation and enhancement of foreshore areas would improve the visual catchment adjacent the EIS proposal area.
Table 7-21 Impacts on landscape character zones

<table>
<thead>
<tr>
<th>Zone and sensitivity</th>
<th>Magnitude of change</th>
<th>Landscape character impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B - Wetlands</strong></td>
<td>Negligible - the project would have a very limited impact to this zone, as it has a limited interface with the proposal. The introverted character of this zone further helps to limit any impacts.</td>
<td>Negligible - no noteworthy impact identified as a result of the proposal. However, the proposal has the potential to make this natural environment potentially more present or accessible from the urban areas/town centre.</td>
</tr>
<tr>
<td><strong>H – The Promenade</strong></td>
<td>Moderate - the proposal would affect the foreshore promenade in two distinct ways. The larger scale of the proposed bridge would make it more prominent, emphasising traffic related infrastructure from various vantage points. However by removing traffic at grade and opening the foreshore, traffic would be de-emphasised in the vicinity of the southern abutment of the existing bridge.</td>
<td>Moderate to high - the proposal would have positive and negative effects, both of them contributing to the moderate magnitude of impact and resulting in a moderate to high impact due to the high sensitivity of this zone. Mitigating strategies considered in the design include extending the foreshore promenade and introducing parkland spaces in the vicinity of the existing southern bridge abutment.</td>
</tr>
<tr>
<td><strong>I – Sport facilities and bowling club</strong></td>
<td>Negligible - the proposal would have a minimal effect to this zone due to the limited interface with the proposal.</td>
<td>Negligible - no impact identified as a result of the proposal.</td>
</tr>
<tr>
<td>Zone and sensitivity</td>
<td>Magnitude of change</td>
<td>Landscape character impact</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------</td>
<td>----------------------------</td>
</tr>
</tbody>
</table>
| **J – Batemans Bay town centre**  
High: the town centre is susceptible to change due to its importance as an attractive hub for visitors and the community alike. | Moderate - most of this zone would experience a negligible change in character as a result of the proposal. However, the northwest area of this zone would be strongly impacted by a number of changes that affect its character and functioning. The grade separation of the highway changes the overall streetscape character of this area, creating a more pedestrianised zone that enhances the amenity and permeability from the town centre to the foreshore. This change would also impact the accessibility to the existing boat ramp, making it more difficult to access via North Street. Increased traffic along North Street would create a more congested environment, somewhat changing the character of this street as well. | Moderate to high - The proposal would impact the way the northwest area of the town centre functions. The proposal would provide some key benefits for the general functioning and perceived character of the centre with the main adverse impact being the introduction of additional traffic along North Street. Key mitigation strategies include the improved boat ramp facilities on the northern foreshore, streetscape measures along Clyde Street and creation of parklands adjacent to the southern abutment. |
| **K – Batemans Bay**  
High: due to the residential land use. | Negligible - no effects have been identified to this zone as a result of the proposal. | Negligible - no impact identified as a result of the proposal. |
| **L - Forest**  
High: scenic natural environment in pristine condition that is highly susceptible to change. | Negligible - there overall character and sense of place of this zone would be retained. | Negligible - the integrity of this zone is not being impacted. |
**Visual impact assessment**

Table 7-22 provides a summary of the visual impacts at each of the key viewpoints. The EIS proposal would have a moderate impact on views from Vesper Street and similar impacts would be expected from Clyde Street north.

Overall, the urban design and landscape plan would also ensure that landscaping in the vicinity of the EIS proposal would assist in minimising the visual impacts of new structures. With the implementation of safeguards and management measures (refer to section 6.4.2) visual impacts are considered to be acceptable. As noted above urban design principles and objectives developed specifically for the proposal would be implemented to minimise the proposal’s impact.

Urban design objectives for the overall proposal include:
- create a gateway that contributes to the identity of Batemans Bay
- contribute to the urban structure, functioning and permeability of the area
- respect the sense of place
- exploit views and vistas and minimise impact to existing panoramic views
- be effective to build and require minimal maintenance.
<table>
<thead>
<tr>
<th>View point</th>
<th>Nature of impact</th>
<th>Visual sensitivity</th>
<th>Magnitude of change</th>
<th>Overall visual impact rating</th>
<th>View impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 - Clyde Street shops opposite the foreshore carpark/picnic shelter zone</td>
<td>Negligible</td>
<td>High due to tourists, and locals using this popular main street/hub zone for Bateman's Bay</td>
<td>Negligible due to the existing trees and vegetation providing green buffering</td>
<td>Negligible</td>
<td><img src="image1.jpg" alt="Image" /></td>
</tr>
<tr>
<td>10 - From Vesper Street, looking towards the old bridge approach.</td>
<td>High</td>
<td>High due to the visual dominance of the bridge at this intersection, transforming visually the streetscape</td>
<td>High - due to the visual dominance of the bridge at this intersection, transforming visually the streetscape</td>
<td>Moderate - the limited impact is driven by the lower sensitivity of the viewer</td>
<td><img src="image2.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>
7.8.4 Safeguards and management measures

Safeguards and management measures provided below would be implemented to minimise potential visual impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>An Urban Design and Landscape Plan (UDLP) will be prepared to support the final detailed project design and implemented as part of the CEMP. The UDLP will present an integrated urban design for the project, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The UDLP will include:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• proposed revegetation plan that will include:</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td></td>
<td>• species to be used</td>
<td></td>
<td>Pre-construction</td>
</tr>
<tr>
<td></td>
<td>• screening of infrastructure where required and practical</td>
<td></td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td>• minimising the impacts of headlight glare on surrounding residents</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• planting of foreshore areas to be determined in consultation with council.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• procedures for monitoring and maintaining landscaped or rehabilitated areas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Design treatments for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• built elements including retaining walls and the bridge and consider application of crime prevention through environmental design strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• pedestrian and cyclist elements including shared use path locations, paving types and pedestrian crossings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• fixtures such as seating, lighting, fencing and signs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• details of the staging of landscape works taking account of related environmental controls such as erosion and sedimentation controls and drainage.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The UDLP will be prepared in accordance with relevant guidelines, including:

- Beyond the Pavement urban design policy, process and principles (Roads and Maritime 2014c)
- Landscape Guideline (RTA 2008)
- Bridge Aesthetics (Roads and Maritime 2012c)
- Shotcrete Design Guideline (RTA 2005c).
<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration of earthworks design with existing landform</td>
<td>The potential visual impact of the earthworks will be minimised by careful design that integrates with adjoining landforms. This could be achieved through rounding of the top of cut batters, tailing off of cut batters and a gradual flattening of grades at ends of fill embankments in order to avoid sharp transitions at ends.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Retention of existing vegetation</td>
<td>The proposal will be designed to avoid impact to prominent trees and vegetation communities where possible. Water quality structures and drainage lines will be designed to avoid existing vegetation where possible.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
</tbody>
</table>
8 Assessment of other issues

8.1 Non-Aboriginal heritage

A non-Aboriginal heritage assessment report was prepared for the overall proposal. The following sections provide a summary of this assessment relevant to the EIS proposal. Further details can be found in the REF.

8.1.1 Methodology

The report was prepared in accordance with current heritage guidelines including Assessing Heritage Significance (Heritage Office 2001), Assessing Significance for Historical Archaeological Sites and "Relics" (Department of Planning 2009) and the Burra Charter (ICOMOS 1999).

The assessment included:

- reviewing relevant heritage legislation and all available historical heritage registers
- undertaking a literature review including previous reports, local heritage studies, conservation management plans, as well as regional and local history documents where available
- undertaking field investigation of the study area to identify known historical heritage items, unrecorded historical heritage items and assess the potential for any unrecorded historical heritage items
- assessing the potential impacts to heritage items through statements of heritage impact
- identifying management and mitigation measures.

8.1.2 Existing environment

Historical context

In 1821, Lieutenant Johnston, under the orders of Governor Macquarie, sailed down the coast to explore the Batemans Bay area. Johnston's reports on his expedition inspired Alexander Berry, Hamilton Hume and Thomas Davison to further explore the area, followed later by Charles Throsby who was searching for a land route from Lake George to Batemans Bay. In 1827, Surveyor Thomas Florance began a survey of the coastline between Jervis Bay and what is now Moruya, reaching Batemans Bay in June of 1828.

By 1841 subdivision of land in the area had begun and trade began to emerge mostly through the harvesting of natural resources such as timber, marble and limestone. At this time, vegetation was being cleared to start the construction of roads between Cooks River and Batemans Bay. Development of roads and tracks in the area continued slowly throughout the middle of the 19th century. In 1871 a punt and associated infrastructure was installed at Batemans Bay to help cross the Clyde River.

The actual village of Batemans Bay wasn't surveyed until 1859, when a post office was established in the town. By 1874 it was noted that a great deal of development had occurred with the town including a store, sawmill, railway with iron rails, extensive raised wharf for loading timber, another sawmill on the opposite side of the river, a schoolhouse and a public house. By 1890, the town had a population of about 250 people.

In the latter part of the 19th century and start of the 20th century, the river and harvesting/extraction of natural resources was important in the development of Batemans Bay. In particular, the use of the river to support these industries was evident in the jetties and sawmills located on the river foreshore.

As of 1910, there were only 11 listed businesses in Batemans Bay: three businesses associated with timber getting and processing, one blacksmith, one shipwright, two hotels, and several shops. In 1947 the population of the town was still less than 1000. However, owing to the importance of
the roads in Batemans Bay to southern NSW, a decision was made to build a bridge across the Clyde River to replace the punt.

**Batemans Bay Bridge**

Initial plans for the construction of a bridge to cross the Clyde River at Batemans Bay were made during World War II, owing to increased traffic along the route and the reconstruction of the highway between Batemans Bay and Ulladulla. With the advent of motor vehicles, the use of punts to cross rivers caused congestion along the route. The bridge plans were put on hold at the time due to the war. After the end of World War II, tenders to build the bridge were issued in 1947 for a bridge about 1000 feet long, with six steel trusses and carrying a 22 foot wide roadway and 5 foot wide pathway. It took six months for an appropriate location for the bridge to be determined.

The contract for the construction of the bridge was split into two, with Balgue Constructions Pty Ltd winning the tender for the erection of the bridge for a price of £112,152/3/6. The Clyde Engineering Company won the contract to supply the steel for the bridge. At the time of publication in 1948, it was expected that the bridge would be completed by 1952. Post war material shortages delayed this work.

In 1951 the contract with Balgue Constructions was terminated, with the services of George Balgue being retained, and arrangements made for labour on the project to be supplied by the Department of Main Roads. By this time, the cylinders for the majority of piers had been driven down to rock foundation, and sealed. Headstocks had been placed on these piers, and they were ready for the erection of structural steel.

The contract for the supply of steel was transferred to the State Dockyard at Newcastle in 1952, with the Clyde Engineering Company retained to construct the machinery for the lift span. Progress on the construction of the bridge was slow until 1955, with post war shortages still impacting on the development. After 1955 the rate of construction increased and the bridge was opened on November 21 1956. The cost of the bridge at completion was £350,000.

During the construction of the bridge, the punt ferry across the Clyde River remained in operation, making 50,149 trips and transporting 233,073 vehicles between June 1955 and June 1956.

**Listed heritage items**

There are seven listed heritage items within or adjacent to the study area (Table 8-1). All items are listed in the Eurobodalla LEP 2012, however, the Batemans Bay Bridge is also listed on the Roads and Maritime Services Section 170 register. Also an additional item of local heritage significance but which is not listed in the LEP was identified during field work. These heritage items are shown in Figure 8-1.

None of the listed heritage items are located within the EIS proposal area.
Figure 8-1 Non-Aboriginal heritage items

Batemans Bay Bridge replacement
Environmental Impact Statement

FIGURE 8-1: Non-Aboriginal heritage items and near the proposal area
Table 8-1 Non-Aboriginal heritage items within or adjacent to the study area

<table>
<thead>
<tr>
<th>Site name</th>
<th>Listing</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batemans Bay Bridge</td>
<td>Eurobodalla LEP 2012 Roads and Maritime Services Section 170 Register</td>
<td>Local</td>
</tr>
<tr>
<td>Bay View Hotel</td>
<td>Eurobodalla LEP 2012</td>
<td>Local</td>
</tr>
<tr>
<td>Car Ferry Ramps (former)</td>
<td>Eurobodalla LEP 2012</td>
<td>Local</td>
</tr>
<tr>
<td>Coal Bunker Wharf Site</td>
<td>Eurobodalla LEP 2012</td>
<td>Local</td>
</tr>
<tr>
<td>Presbyterian Cemetery</td>
<td>Eurobodalla LEP 2012</td>
<td>Local</td>
</tr>
<tr>
<td>The Boatshed and Jetty</td>
<td>Eurobodalla LEP 2012</td>
<td>Local</td>
</tr>
<tr>
<td>Roman Catholic Cemetery</td>
<td>Eurobodalla LEP 2012</td>
<td>Local</td>
</tr>
<tr>
<td>War memorial</td>
<td>None</td>
<td>Local</td>
</tr>
</tbody>
</table>

Archaeological potential
Archaeological resources potentially present within the impact boundary may include structural remains associated with mid nineteenth to early twentieth century residential and commercial buildings. The initial occupation of the study area (c.1884 to 1915) consisted of a number of structures on the southern side of the Clyde River. East of the existing bridge location was a shed, mill and hut along the shoreline. West of the bridge on the shoreline, a shed, a mill, a jetty and landing stage associated with the punt were located. A fibro and timber cottage was constructed in 1915 near the former car ferry ramps.

These were all likely to be timber buildings and any archaeological remains would be ephemeral in nature (ie beam slots, post holes). However, more substantial structural remains such as footings may be present.

The remains of the jetty associated with the mill west of the current bridge location appear to be located within a resumed part of the foreshore and therefore may still be present. The Coal Bunker Wharf shows no clear evidence of physical remains and stone boulders have been installed along the break wall where it once stood.

However, there is no archaeological potential in the EIS proposal area.

8.1.3 Potential impacts

Construction
There are no heritage items within or adjacent to the EIS proposal area. The nearest heritage items to the EIS proposal would be about 130 metres and consequently there would no indirect or direct impacts on heritage from the EIS proposal.

Operation
The operation of the EIS proposal would not have any direct or indirect impacts on heritage items or values.
8.1.4 Safeguards and management measures
Safeguards and management measures provided below would be implemented to minimise potential non-Aboriginal heritage impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unexpected finds</td>
<td>The Unexpected Heritage Items - Heritage Procedure 02 (Roads and Maritime, 2015) will be followed in the event that a potential heritage item is found during construction.</td>
<td>Contactor</td>
<td>Construction</td>
</tr>
</tbody>
</table>
8.2 Operational traffic

8.2.1 Methodology

A Traffic and Transport Assessment was prepared for the overall proposal. This assessment is provided in Appendix H and is summarised for the EIS proposal area in the following sections. This focuses on roads on the southern bank as this is the area where the EIS proposal is located.

In conjunction with the methodology identified in section 0, additional key tasks and assumption to assess the operational traffic impacts were:

- future base case models - Future base case models were developed including the Do Nothing and With Proposal scenarios for adopted future years of 2021 and 2031. The future models include growth of 0.9 per cent per annum. The With Proposal scenario distributed traffic associated with the left in slip lane from the Princes Highway to Wharf Road, the connection of Wharf Road to Old Punt Road, and the closure of the Princes Highway / Clyde Street intersection. The With Proposal scenario also included Higher Mass Limit (HML) vehicles on the Princes Highway and across the new bridge, growing at a rate of 10 per cent in the first year and 4 per cent per annum thereafter until 50 per cent of all heavy vehicle traffic is HML vehicles. As a conservative approach, no reduction in non-HML vehicles was considered

- assess future traffic performance - The impact of the proposal was assessed including:
  - capacity of the four lane bridge which would be available to traffic 24 hours
  - the reduced maximum clearance under the bridge for maritime transport
  - the operation of the end of network intersections (Kings Highway / Princes Highway roundabout and Princes Highway / North Street intersection) either end of the bridge as well as intersections further southwest on the road network
  - the operational changes to Wharf Road and Clyde Street from changes to the connections to Princes Highway.

As per the existing network, the future network was assessed for typical weekday, weekend and public holiday traffic volumes. A 1.2 per cent growth factor sensitivity test was also undertaken for the weekend and public holiday periods.

8.2.2 Existing environment

The existing traffic and transport environment, features and performance of the EIS proposal area is described in section 7.5.1.

8.2.3 Potential impacts

Using existing traffic data, traffic and intersection models of the road network were developed and used to predict future traffic volumes in 2021 (new bridge opening) and 2031 (10 years after opening) as well as the traffic impacts of the “Do Nothing” option and with the proposal. Modelling was undertaken of peak periods for vehicle movements including the AM and PM peak weekday, peak weekend and peak holiday periods. This provides a worst-case assessment of future and potential traffic congestion at key intersections. The results of the traffic and intersection modelling are presented in Table 8-3 and Table 8-4. Intersection performance has been assessed against the Level of Service (LoS) rating which is described below in Table 8-2.
### Table 8-2 Description of Levels of Service (LoS)

<table>
<thead>
<tr>
<th>Level of Service (LoS)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, B and C</td>
<td>Considered to represent good to acceptable levels of service. Where traffic is still within the limits of stable flow with most vehicles being able to travel at the desired speed.</td>
</tr>
<tr>
<td>D</td>
<td>Still within capacity. Close to the limit of stable flow with desired speed and manoeuvring restricted. Small increases in traffic flows could cause operational problems.</td>
</tr>
<tr>
<td>E</td>
<td>Traffic volumes are close to capacity and queuing and delays can be considered significant.</td>
</tr>
<tr>
<td>F</td>
<td>Traffic flows generally exceed capacity and/or average delays are significant for the type of intersection or road. Or where a particular movement would experience a degree of saturation (volume over capacity) over 1.0.</td>
</tr>
</tbody>
</table>

### Intersection performance

Generally all intersections would continue to have an acceptable LoS in 2031 with the “Do Nothing” option in AM and PM peak weekday and peak weekend periods. The Princes Highway and North Street intersection generally has an acceptable LoS on all approaches for both the “Do Nothing” option and with the proposal. The exception is the North Street approach which would have an unacceptable LoS by 2031 in AM weekday peak and holiday peak periods with the “Do Nothing” option (Table 8-3 and Table 8-4). With the proposal, an acceptable LoS would be experienced at the North Street approach for all peak periods in 2031.

### Table 8-3 Weekday peak 2021 and 2031 performance of Princes Highway / North Street intersection

<table>
<thead>
<tr>
<th></th>
<th>AM peak</th>
<th></th>
<th></th>
<th>PM peak</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average delay (seconds)</td>
<td>Level of Service</td>
<td>Queuing (metres)</td>
<td>Average delay (seconds)</td>
<td>Level of Service</td>
</tr>
<tr>
<td><strong>2021 – Do Nothing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Princes Highway from bridge</td>
<td>8</td>
<td>A</td>
<td>57</td>
<td>15</td>
<td>A</td>
</tr>
<tr>
<td>North Street</td>
<td>42</td>
<td>C</td>
<td>15</td>
<td>21</td>
<td>B</td>
</tr>
<tr>
<td>Princes Highway from south</td>
<td>5</td>
<td>A</td>
<td>40</td>
<td>8</td>
<td>A</td>
</tr>
<tr>
<td>Overall Performance</td>
<td>8</td>
<td>A</td>
<td>-</td>
<td>12</td>
<td>A</td>
</tr>
<tr>
<td><strong>2021 – with proposal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Princes Highway from bridge</td>
<td>10</td>
<td>A</td>
<td>47</td>
<td>14</td>
<td>A</td>
</tr>
<tr>
<td>North Street</td>
<td>29</td>
<td>C</td>
<td>13</td>
<td>22</td>
<td>B</td>
</tr>
<tr>
<td>Princes Highway from south</td>
<td>5</td>
<td>A</td>
<td>22</td>
<td>10</td>
<td>A</td>
</tr>
<tr>
<td>Overall Performance</td>
<td>9</td>
<td>A</td>
<td>-</td>
<td>14</td>
<td>A</td>
</tr>
<tr>
<td><strong>2031 – Do Nothing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Princes Highway from bridge</td>
<td>8</td>
<td>A</td>
<td>66</td>
<td>14</td>
<td>A</td>
</tr>
<tr>
<td>North Street</td>
<td>46</td>
<td>D</td>
<td>18</td>
<td>22</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>AM peak</td>
<td></td>
<td>PM peak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------</td>
<td>----------------------</td>
<td>---------</td>
<td>----------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average delay (seconds)</td>
<td>Level of Service</td>
<td>Queuing (metres)</td>
<td>Average delay (seconds)</td>
<td>Level of Service</td>
</tr>
<tr>
<td>Princes Highway from south</td>
<td>5</td>
<td>A</td>
<td>47</td>
<td>9</td>
<td>A</td>
</tr>
<tr>
<td>Overall Performance</td>
<td>8</td>
<td>A</td>
<td>-</td>
<td>13</td>
<td>A</td>
</tr>
<tr>
<td><strong>2031 – with proposal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Princes Highway from bridge</td>
<td>10</td>
<td>A</td>
<td>53</td>
<td>14</td>
<td>A</td>
</tr>
<tr>
<td>North Street</td>
<td>29</td>
<td>C</td>
<td>14</td>
<td>22</td>
<td>B</td>
</tr>
<tr>
<td>Princes Highway from south</td>
<td>5</td>
<td>A</td>
<td>24</td>
<td>10</td>
<td>A</td>
</tr>
<tr>
<td>Overall Performance</td>
<td>10</td>
<td>A</td>
<td>-</td>
<td>14</td>
<td>A</td>
</tr>
</tbody>
</table>

Table 8-4 Weekend and public holiday peak 2021 and 2031 performance of Princes Highway / North Street intersection

<table>
<thead>
<tr>
<th></th>
<th>Weekend peak</th>
<th></th>
<th>Public holiday peak</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average delay (seconds)</td>
<td>Level of Service</td>
<td>Queuing (metres)</td>
<td>Average delay (seconds)</td>
</tr>
<tr>
<td><strong>2021 – Do Nothing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Princes Highway from bridge</td>
<td>11</td>
<td>A</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>North Street</td>
<td>27</td>
<td>B</td>
<td>21</td>
<td>67</td>
</tr>
<tr>
<td>Princes Highway from south</td>
<td>6</td>
<td>A</td>
<td>61</td>
<td>4</td>
</tr>
<tr>
<td>Overall Performance</td>
<td>10</td>
<td>A</td>
<td>61</td>
<td>7</td>
</tr>
<tr>
<td><strong>2021 – with proposal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Princes Highway from bridge</td>
<td>13</td>
<td>A</td>
<td>24</td>
<td>11</td>
</tr>
<tr>
<td>North Street</td>
<td>26</td>
<td>B</td>
<td>23</td>
<td>29</td>
</tr>
<tr>
<td>Princes Highway from south</td>
<td>7</td>
<td>A</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>Overall Performance</td>
<td>12</td>
<td>A</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td><strong>2031 – Do Nothing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Princes Highway from bridge</td>
<td>11</td>
<td>A</td>
<td>26</td>
<td>6</td>
</tr>
<tr>
<td>North Street</td>
<td>26</td>
<td>B</td>
<td>21</td>
<td>63</td>
</tr>
<tr>
<td>Princes Highway from south</td>
<td>7</td>
<td>A</td>
<td>67</td>
<td>4</td>
</tr>
<tr>
<td>Overall Performance</td>
<td>10</td>
<td>A</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td><strong>2031 – with proposal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Princes Highway from bridge</td>
<td>15</td>
<td>B</td>
<td>29</td>
<td>12</td>
</tr>
<tr>
<td>North Street</td>
<td>25</td>
<td>B</td>
<td>24</td>
<td>29</td>
</tr>
<tr>
<td>Princes Highway from south</td>
<td>9</td>
<td>A</td>
<td>49</td>
<td>6</td>
</tr>
<tr>
<td>Overall Performance</td>
<td>13</td>
<td>A</td>
<td>-</td>
<td>11</td>
</tr>
</tbody>
</table>
Corridor performance
Vehicle kilometres, travel times and average speeds of the overall Princes Highway corridor, including side roads, was estimated with and without the proposal for the base case and for 2021 and 2031 traffic volumes (Table 8-5). In the weekday and weekend peaks, the proposal has little impact on traffic performance with vehicle kilometres, travel times and average speeds remaining similar for all scenarios. However, during the holiday peak vehicle kilometres, travel times and average speeds were substantially improved with the proposal for both 2021 and 2031.

Table 8-5 Network performance summary

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Total vehicles</th>
<th>Vehicle hours</th>
<th>Vehicle kilometres</th>
<th>Average speed (km)</th>
<th>Average travel time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AM peak period</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016 Base</td>
<td>3,009</td>
<td>112</td>
<td>5,474</td>
<td>48.9</td>
<td>2.2</td>
</tr>
<tr>
<td>2021 Do Nothing</td>
<td>3,361</td>
<td>130</td>
<td>6,092</td>
<td>46.7</td>
<td>2.3</td>
</tr>
<tr>
<td>2021 With proposal</td>
<td>3,351</td>
<td>126</td>
<td>6,174</td>
<td>49.2</td>
<td>2.2</td>
</tr>
<tr>
<td>2031 Do Nothing</td>
<td>3,622</td>
<td>142</td>
<td>6,570</td>
<td>46.3</td>
<td>2.3</td>
</tr>
<tr>
<td>2031 With proposal</td>
<td>3,625</td>
<td>140</td>
<td>6,686</td>
<td>47.9</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>PM peak period</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016 Base</td>
<td>2,952</td>
<td>115</td>
<td>5,576</td>
<td>48.3</td>
<td>2.3</td>
</tr>
<tr>
<td>2021 Do Nothing</td>
<td>3,083</td>
<td>121</td>
<td>5,811</td>
<td>47.9</td>
<td>2.4</td>
</tr>
<tr>
<td>2021 With proposal</td>
<td>3,081</td>
<td>118</td>
<td>5,975</td>
<td>50.5</td>
<td>2.3</td>
</tr>
<tr>
<td>2031 Do Nothing</td>
<td>3,330</td>
<td>134</td>
<td>6,307</td>
<td>47.0</td>
<td>2.4</td>
</tr>
<tr>
<td>2031 With proposal</td>
<td>3,337</td>
<td>131</td>
<td>6,453</td>
<td>49.1</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Weekend peak period</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016 Base</td>
<td>2,519</td>
<td>106</td>
<td>5,069</td>
<td>47.7</td>
<td>2.5</td>
</tr>
<tr>
<td>2021 Do Nothing</td>
<td>2,600</td>
<td>115</td>
<td>5,245</td>
<td>45.6</td>
<td>2.7</td>
</tr>
<tr>
<td>2021 With proposal</td>
<td>2,959</td>
<td>130</td>
<td>6,301</td>
<td>48.4</td>
<td>2.6</td>
</tr>
<tr>
<td>2031 Do Nothing</td>
<td>2,837</td>
<td>128</td>
<td>5,746</td>
<td>45.0</td>
<td>2.7</td>
</tr>
<tr>
<td>2031 With proposal</td>
<td>3,237</td>
<td>144</td>
<td>6,909</td>
<td>48.1</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>Holiday peak period</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016 Base</td>
<td>3,914</td>
<td>669</td>
<td>7,451</td>
<td>11.1</td>
<td>10.3</td>
</tr>
<tr>
<td>2021 Do Nothing</td>
<td>3,915</td>
<td>723</td>
<td>7,449</td>
<td>10.3</td>
<td>11.1</td>
</tr>
<tr>
<td>2021 With proposal</td>
<td>4,210</td>
<td>271</td>
<td>8,513</td>
<td>31.4</td>
<td>3.9</td>
</tr>
<tr>
<td>2031 Do Nothing</td>
<td>4,062</td>
<td>789</td>
<td>7,695</td>
<td>9.7</td>
<td>11.7</td>
</tr>
<tr>
<td>2031 With proposal</td>
<td>4,507</td>
<td>352</td>
<td>9,177</td>
<td>26.1</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Crashes
No specific reduction in crash severity or number can be estimated due to the EIS proposal. However the overall proposal would generally improve road safety by:
- replacing a narrow single lane in each direction bridge with a modern two lane in each direction bridge designed to current road and safety standards
- removing two local road intersections with the Princes Highway which have a history of crashes
- safety and traffic improvement works at the Kings Highway and Princes Highway intersection
- eliminating the need to close the bridge to allow marine vessels to pass. The stopping and queuing associated with closing the existing bridge presents additional crash risks from rear on collisions.

**Local road impacts**

The intersection of Clyde Street and the Princes Highway would be removed with the proposal and instead Clyde Street would be modified and would pass under the new bridge. Vehicles wanting to access and exit Smoke Point and areas north of the new southern approach would generally use North Street or Orient Street. While this would reduce the ease of access to areas north of the new southern approach, North Street and Orient Street would have sufficient capacity for the increased traffic volumes and the increase in travel time would be relatively minor. Roads and Maritime would consult with Council and local businesses in the areas north of the new southern approach to provide appropriate signage and other measures to ensure that motorists are able to easily access this area.

**Public transport**

The proposal would remove the intersection between Princes Highway and Clyde Street and would result in regional buses needing to turn off the Princes Highway at North Street to access the bus interchange. This would result in a negligible increase in travel time and distance to the bus interchange. A turnaround facility would be provided at the northern end of Clyde Street for return services. Bus travel times and reliability, particularly during peak holiday periods would improve with the proposal. Roads and Maritime would continue to consult with local bus companies. Bus travel times and reliability along the Princes Highway, particularly during peak holiday periods would improve with the proposal.

**8.2.4 Safeguards and management measures**

No safeguards and management measures are provided specifically for operational traffic and transport issues in the EIS proposal area.
8.3 Operational noise

8.3.1 Methodology
A Noise and Vibration Assessment was prepared for the overall proposal. The assessment is provided in Appendix I and is summarised in the following sections.

The noise and vibration assessment was prepared in accordance with the following guidelines:
- Road Noise Policy (RNP) (DECCW 2011)
- Noise Criteria Guideline (NCG) (Roads and Maritime 2014a)
- Noise Mitigation Guideline (NMG) (Roads and Maritime 2014b)

Noise monitoring
Noise monitoring was undertaken to determine the existing noise environment near the overall and EIS proposal. Noise monitoring was undertaken from 5 to 15 June 2017 at four locations near the overall proposal area (shown in Figure 7-4) to determine background noise levels and existing traffic noise on the Princes Highway. All noise monitoring activities were undertaken and processed in accordance with the Industrial Noise Policy (EPA 2000). Further details of the noise monitoring methodology are located in Appendix I.

Operational noise assessment
The methodology for the operational noise assessment included:
- establish the noise study area in accordance with the Roads and Maritime Noise Criteria Guideline
- assess changes to road classification for existing side roads
- establish transition zones between new and road redevelopment segments and between the overall proposal and existing roads
- develop a traffic noise model to predict the existing level of road traffic noise for the current year
- determine the noise predictions based on the model for the following operational scenarios:
  - year 2021 ‘no build option’ (existing traffic on the existing alignment at opening)
  - year 2031 ‘no build option’ (existing traffic on the existing alignment 10 years after opening)
  - year 2021 ‘build option’ (operation of overall proposal at opening)
  - year 2031 ‘build option’ (operation of overall proposal 10 years after opening)
- assess the result of the above modelling against noise criteria to determine any resulting increases in road traffic noise at nearby receivers
- identification of sensitive receivers which require consideration of noise mitigation due to impacts from the proposal.

Further details on the noise model and traffic inputs can be found in Appendix I.

8.3.2 Existing environment
The study area surrounding the EIS proposal area consists of suburban residential properties and commercial businesses (including motels and a retirement village) located along or near the Princes Highway and the Clyde River crossing. Boat ramps and picnic areas are located on the northern and southern foreshores of the Clyde River adjacent to the existing Batemans Bay Bridge.

The study area for the noise and vibration assessment includes land within 600 metres of the overall and EIS proposal. The study area does not contain any non-residential sensitive receivers (eg schools, medical facilities, aged care homes and places of worship). The location of sensitive receivers is shown on Figure 7-4.

To facilitate the assessment of noise impacts from the proposal, noise sensitive receivers within the study area have been divided into Noise Catchment Areas (NCAs). Two noise catchment areas were relevant for the EIS proposal and are shown in Figure 7-4 and described below including:
- NCA 3 – Suburban residential and commercial area, which includes motels, a retirement village and a picnic area on the western side of the Princes Highway, southwest of the Batemans Bay Bridge.
Bridge and bordered by the southern end of the Batemans Bay Bridge and North Street to the south.

- NCA 4 – Commercial area on the eastern side of the Princes Highway, southeast of the Batemans Bay Bridge and bordered by the southern end of the Batemans Bay Bridge and North Street to the south.

Noise monitoring was undertaken at one location in NCA3. Noise monitoring was not required for NCA4 as this area contains commercial premises and noise guidelines values for commercial areas are not based on existing noise levels. Monitoring of road noise was also undertaken near the southern abutment of the existing bridge for noise model calibration. The results of the monitoring are presented in Table 8-6. The noise environment in the study area is generally determined by traffic noise from the Princes Highway.

Table 8-6 Existing background ($L_{90}$) and ambient ($L_{eq}$) noise monitoring results

<table>
<thead>
<tr>
<th>Noise monitoring location</th>
<th>$L_{A90}$ Background noise levels (dB(A))</th>
<th>$L_{Aeq}$ Ambient noise levels (dB(A))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day</td>
<td>Evening</td>
</tr>
<tr>
<td>NCA 3 – 23 Clyde Street</td>
<td>57</td>
<td>46</td>
</tr>
<tr>
<td>Road noise - Princes Highway southern abutment</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

8.3.3 Noise and vibration criteria

Road Noise Policy and Noise Criteria Guidelines

The RNP provides traffic noise assessment criteria for residential receivers and sensitive land uses near new roads and redevelopments of existing arterial roads. The NCG provides guidance on how to apply the RNP. The target levels should aim to be achieved 10 years after the overall proposal opening. The RNP and NCG road traffic noise assessment criteria are presented in Table 8-7.

Where residences are exposed to both new and existing roads, the NCG provides transition zone criteria. In this instance the proportion of noise from each road is used to establish transition zone criteria. The overall proposal consists of both new and redeveloped road segments, with transition zones on the Princes Highway on the southern ends of the new bridge. Noise criteria for residences exposed to noise from roads in the transition zone would be between the new and redeveloped NCG noise criteria.

Table 8-7 NCG assessment criteria for residential land uses for arterial and sub-arterial road developments

<table>
<thead>
<tr>
<th>Type of project</th>
<th>Assessment criteria (external) (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day (7 am to 10 pm)</td>
</tr>
<tr>
<td>Existing residences affected by noise from new arterial road corridors</td>
<td>$L_{Aeq(15hr)}$ 55 (external)</td>
</tr>
<tr>
<td>Existing residences affected by noise from redevelopment of an existing arterial road</td>
<td>$L_{Aeq(15hr)}$ 60 (external)</td>
</tr>
<tr>
<td>Existing residences affected by both new roads and the redevelopment of existing arterial/sub-arterial roads in a Transition Zone</td>
<td>$L_{Aeq(15hr)}$ 55-60 (external)</td>
</tr>
<tr>
<td>Type of project</td>
<td>Assessment criteria (external) (dBA)</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Day (7 am to 10 pm)</td>
<td>Night (10 pm to 7 am)</td>
</tr>
<tr>
<td>Existing residences affected by increases in traffic noise of 12dBA or more from new arterial/subarterial roads</td>
<td>( L_{Aeq(15hr)} 42-55 ) (external)</td>
</tr>
<tr>
<td>Existing residences affected by increases in traffic noise of 12dBA or more from redevelopment of existing arterial/subarterial roads</td>
<td>Between ( L_{Aeq(15hr)} 42-60 ) (external)</td>
</tr>
</tbody>
</table>

Where existing noise levels are above the criteria, the RNP relative increase criterion is used. The relative increase criteria is exceeded if the 'build option' noise levels increase by more than 12 dB(A) above the 'no-build option' noise levels. A detailed list of the criteria for each individual receiver is located in Appendix I.

**Sleep disturbance**

Maximum noise levels generated by road traffic noise have the potential to cause disturbance to sleep. Maximum noise levels from the proposal have been assessed qualitatively for their potential to disturb sleep. The effect of traffic noise on sleep is discussed in Section 5.4 of the RNP. From the research on sleep disturbance to date the RNP concludes that:

- \( L_{Amax} \) (the maximum A-weighted noise level) internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep (corresponding to around 60-65 dB(A) externally)
- one or two noise events per night, with maximum internal noise levels of 65-70 dB(A) (corresponding to around 75-80 dB(A) externally), are not likely to affect health and wellbeing significantly.

According to the RNP, triggers for and effects of sleep disturbance from exposure to intermittent noise such as noise from road traffic are still being studied, and there appears to be insufficient evidence to set new indicators for potential sleep disturbance due to road traffic noise. The cause of most maximum noise emissions from the proposal would be from heavy vehicles (eg. during engine compression braking, gear changes etc) travelling along the proposal during the night time period. The highest maximum noise levels would typically be during compression braking events where heavy vehicles would reduce speeds to negotiate curves in the road, descending down road gradients or changes in posted speed limits.

**8.3.4 Operational impacts**

Exceedance of the relevant NCG noise criteria was predicted at four receivers during the day and one receiver during the night in NCA 3 in 2031 (Table 8-8). This increase in traffic noise levels would be due to the upgraded road approaches to the new bridge being realigned closer to the affected receivers and not specifically from the works in the EIS proposal.

Table 8-8 Number of sensitive receivers in NCA 3 exceeding relevant criteria for consideration of noise mitigation
Three receivers were identified as requiring consideration for operational noise mitigation (Table 8-9).

Table 8-9 Properties in NCA 3 identified for consideration of operational noise mitigation

<table>
<thead>
<tr>
<th>Receiver address</th>
<th>Floor level</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 Clyde Street, Batemans Bay</td>
<td>Ground and First</td>
</tr>
<tr>
<td>31 Clyde Street, Batemans Bay</td>
<td>First</td>
</tr>
<tr>
<td>33 Clyde Street, Batemans Bay</td>
<td>First</td>
</tr>
</tbody>
</table>

Based on the location of the sensitive receivers and the feasibility of different operational noise mitigation options, the only feasible noise mitigation option is at-property treatments to reduce noise levels in internal areas. The properties at 29 Clyde Street, 31 Clyde Street and 33 Clyde Street are motels. Therefore, any at-property treatment would only be required to areas of permanent residence (e.g., manager's / caretaker's living quarters).

During the detailed design stage of the overall proposal, further investigation of all reasonable and feasible noise control options would be required as a result of any exceedances of the relevant NCG noise criteria.

The overall proposal would reduce the maximum noise levels in some areas as a result of the following:
- an improved road surface which is likely to reduce road irregularities and associated maximum noise level events
- a wider bridge which would reduce braking to avoid crashes.

Existing maximum noise emissions are from within the existing road corridors and bridge. The overall proposal involves a new bridge and approaches, resulting in the relocation of the road corridor.

Based on the relocated road corridor, residential receivers in NCA 2 to the east of the bridge and the Princes Highway that currently experience maximum noise events would be exposed to lower maximum noise levels, as the source of the maximum noise emissions would be relocated further from these receivers. However, residential receivers in NCA 1 and 3 that are located to the west of the bridge and the Princes Highway would potentially be exposed to higher maximum noise levels following the completion of the proposal.

8.3.5 Safeguards and management measures

No safeguards and management measures are provided specifically for operational noise and vibration issues in the EIS proposal area.
8.4 Air quality

8.4.1 Air quality criteria
Air quality criteria used to assess the potential for ambient air quality to give rise to adverse health or nuisance effects. Emissions from construction equipment and vehicles using the highway have the potential to impact on local air quality. The most significant emissions produced from motor vehicles are:

- oxides of nitrogen (NOx)
- carbon monoxide (CO)
- particulate matter (PM$_{10}$).

Construction activities would also generate dust and other particulate matter. There are various classifications of particulate matter, with OEH providing assessment criteria for:

- total suspended particulates
- particulate matter (PM$_{10}$ and PM$_{2.5}$)
- deposited dust.

Air quality standards are contained in the 2016 National Environment Protection (Ambient Air Quality) Measure. Table 8-10 summarises the criteria which are relevant to the proposal.

Table 8-10 Criteria for relevant air pollutants

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging time</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter (as PM$_{10}$)</td>
<td>24 hours</td>
<td>50 µg/m$^3$</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>25 µg/m$^3$</td>
</tr>
<tr>
<td>Particulate matter (PM$_{2.5}$)</td>
<td>24 hours</td>
<td>25 µg/m$^3$</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>8 µg/m$^3$</td>
</tr>
<tr>
<td>Total suspended particles</td>
<td>Annual</td>
<td>90 µg/m$^3$</td>
</tr>
<tr>
<td>Dust deposition</td>
<td>Annual</td>
<td>2 g/m$^2$/month</td>
</tr>
<tr>
<td>Nitrogen dioxide (NO$_2$)</td>
<td>1 hour</td>
<td>246 µg/m$^3$</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>62 µg/m$^3$</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>15 minutes</td>
<td>100 mg/m$^3$</td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td>30 mg/m$^3$</td>
</tr>
<tr>
<td></td>
<td>8 hours</td>
<td>10 mg/m$^3$</td>
</tr>
</tbody>
</table>

8.4.2 Existing environment
There are no OEH air quality monitoring stations in the overall proposal area or the region. The closest site is at Albion Park. While Albion Park could be impacted by air emissions from Wollongong’s industries, it is only about 150 kilometres north and located in a similar coastal location as Batemans Bay. Air quality data for 2016 from Albion Park air quality monitoring station (OEH 2017) showed:

- PM$_{10}$ concentrations were below both daily and annual criteria
- PM$_{2.5}$ concentrations were below annual criteria and only exceeded the daily criteria on two days of the year
Nitrogen dioxide concentrations were below the annual criteria.

Based on the results of the air quality monitoring at Albion Park, coastal air quality in the region would be considered excellent.

A search of National Pollutant Inventory for the Eurobodalla LGA identified 12 air pollutant substances from 11 sources during the 2014 to 2015 reporting period. The closest identified source of air pollution is a mineral, metal and chemical wholesaling facility in Batemans Bay. However this is unlikely to have substantial air emissions.

The air quality of the study area would typically be good due to its coastal location however there would be impacts from the highway.

Motor vehicles on the Princes Highway and the surrounding road network are a significant local source of air pollutant emissions. Higher emissions would be experienced during periods of traffic congestion. Other significant local sources of air pollutant emissions would include rural activities, forestry operations in nearby state forests (including controlled back burning), backyard burning and domestic wood-fire heaters.

Climate data for the study area was obtained from the Bureau of Meteorology station located at the Catalina Country Club at Batemans Bay (station number 069134). Climate data for the locality is summarised as follows:

- annual average rainfall is 922.6 millimetres, with February receiving the highest average monthly rainfall of about 98.6 millimetres
- annual mean maximum temperature is 21.7 degrees. The warmest months are December to February, with mean maximum temperatures during these months ranging from 24.5 to 25.5 degrees. The coolest month is July, with a mean minimum and maximum temperature of 3.7 degrees and 17 degrees, respectively.

### 8.4.3 Potential impacts

#### Construction

Construction of the EIS proposal may have short-term localised impacts on air quality from:

- clearing of vegetation
- stripping, stockpiling and managing of topsoil
- earthworks and excavation leading to the creation of airborne dust, especially in dry and windy conditions
- road sub-grade preparation and road pavement work
- transport and handling of soil and materials to and from the EIS proposal area
- use of construction vehicles and their associated exhaust fumes
- spray painting of the road for line marking
- demolition activities.

Potential air quality impacts during construction would be predominantly associated with the generation of dust. The settlement of dust may impact upon properties located in the vicinity of the overall proposal. Substantial dust generation could result in health impacts to nearby receivers. Air quality impacts as a result of dust generation are considered to be minor as they would be limited to the construction phase only, and would be minimised through the implementation of the safeguards and management measures outlined in section 8.4.4. The management of dust would be undertaken to ensure that the criteria in Table 8-10 are met at sensitive receivers during construction.

Machinery and other construction vehicles emit exhaust fumes. The impact of these emissions would be limited to the duration of the construction phase. Odours may be generated during the application of asphalt and line marking. However, the construction period be would temporary and
there would be no long-term odour impacts for nearby receivers. Operation of machinery and other construction vehicles would be undertaken to meet the relevant criteria in Table 8-10. Overall, potential air quality impacts during construction would be short-term and minor, provided appropriate safeguards and management measures outlined in section 8.4.4 are implemented.

Operation
During operation, air quality impacts are not expected to differ from the existing situation. The construction of the new bridge to the North West would move vehicle emission sources further from some residential dwellings on the northern bank and closer to other residential dwellings on the southern bank. Any change in air quality impacts would be negligible due to the change in location of the bridge.

The new bridge (two lanes in each direction) would have a higher capacity than the existing bridge (one lane in each direction) potentially resulting in increased traffic use and emissions. However apart from peak holiday periods and the opening of the central lift span, the existing bridge does not experience any capacity constraints and consequently the new bridge would be unlikely to encourage additional traffic apart from natural growth. The new bridge would largely eliminate traffic congestion during peak holidays periods due to its higher capacity and would always remain open to traffic because of the removal of a central lift span. Higher emissions generally occur during periods of traffic congestion – so a reduction in congestion should also result in reduced vehicles emissions.

The overall proposal would allow the Princes Highway at this location to be used by larger heavy vehicles as the weight and height restrictions imposed by the existing bridge would no longer be present with the new bridge. This would potentially result in less heavy vehicles as each vehicle would be able to carry increased loads.

Also HML vehicles would no longer have to detour around Batemans Bay which would reduce their travel distances and regional air emissions. Overall this potential change is minor and would likely only occur once the entire length of highway can accommodate these vehicles as there are other sections of highway, which do not meet the standards required for larger vehicles.

8.4.4 Safeguards and management measures
Safeguards and management measures provided below would be implemented to minimise potential air quality impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>General air quality impacts</td>
<td>An Air Quality Management Plan (AQMP) will be prepared and implemented as part of the CEMP. The AQMP will include:</td>
<td>Contractor</td>
<td>Pre-construction</td>
</tr>
<tr>
<td></td>
<td>• Identification of potential risks/impacts due to the work/activities as dust generation activities</td>
<td></td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td>• Management measures to minimise risk of dust generation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• A process for monitoring dust on-site</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• A process for altering management measures as required and reprogramming construction activities if the safeguards and management measures do not adequately restrict dust generation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dust emissions</td>
<td>Work will cease when levels of visible airborne dust become excessive.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Impact</td>
<td>Environmental safeguards</td>
<td>Responsibility</td>
<td>Timing</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>------------</td>
</tr>
<tr>
<td>Dust emissions</td>
<td>Works that disturb vegetation, soil or stockpiles will not be carried out during strong winds (over 40 km/h) when this may affect receivers (visibility on roads; dust and debris near recreational areas residences and commercial premises).</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Dust emissions</td>
<td>Stockpiled materials will be covered stabilised or stored in areas not subject to high wind.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Dust emissions</td>
<td>All trucks will be covered when transporting material to and from the site.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
</tbody>
</table>
8.5 Property and land use

8.5.1 Existing environment
The overall proposal is located along and adjacent to the Princes Highway within the Batemans Bay township. On the southern bank, the main commercial centre and shopping complex of Batemans Bay is located to the south west of the proposal, while north of the proposal are dwellings and motels which are predominately used for holiday accommodation. On the northern bank, a large motel and service centre are located to the west of the proposal, while a caravan park and low and medium density housing are located to the east of the proposal. Foreshore areas on both banks contain wharfs, car parks, boat ramps, parks, roads and shared paths.

The Clyde River, in the vicinity of the overall proposal, is navigable and also contains a number of moorings on both sides of the existing bridge.

8.5.2 Potential impacts

Construction
The EIS proposal would require the partial acquisition of a strip Crown land along the Mcleods Creek foreshore. The vacant bowling club would also be leased from Council during the construction period for use as an ancillary facility.

The acquisition of the Crown land in Mcleods Creek would not result in any loss of developable land or any other economic impacts. Land acquisition of this land would be conducted in accordance with the Crown Lands Act 1989.

The use of the vacant bowling club as an ancillary facility would be a benefit as currently this facility is not used. With the proposal the facility would be used and maintained and the Council would receive lease fees for the use of the facility. The vacant bowling club would be returned to the Council in an agreed condition once construction has been completed.

Operation
There would be no impacts on property and land use due to operation of the EIS proposal.

8.5.3 Safeguards and management measures

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property acquisition</td>
<td>Property acquisition of Crown Land would be undertaken in accordance with the Crown Lands Act 1989.</td>
<td>Roads and Maritime</td>
<td>Pre-construction and construction</td>
</tr>
</tbody>
</table>
8.6 **Socio economic impacts**

A Socio-economic impact assessment has been prepared for the overall proposal and has been summarised in the following sections.

8.6.1 **Methodology**

In preparing the assessment, the following methodology was undertaken:

- review of assessments undertaken for similar projects to scope issues and identify the potential scale and magnitude of impacts
- definition of the study area and precincts
- development of a profile of existing geographic areas, social infrastructure and businesses that may be influenced by the proposal (using Australian Bureau of Statistics (ABS) Census 2011 and Transport Performance and Analytics (TPA))
- review of consultation findings from communities, businesses and stakeholders within the study area and surrounds to determine community, stakeholder and business values and concerns.
- review of council community strategic plans to further inform the types of values held by the communities
- identification of likely changes/impacts that may occur as a result of the proposal, including specific effects on stakeholders, general community, businesses, social infrastructure and other receivers
- assessment of the significance of social, economic and business impacts during construction and operation
- assessment of the cumulative social, economic and business impacts
- identified mitigation, plans and strategies for monitoring and managing the impacts during both construction and operation.

The assessment has also been informed by the outcomes of various working papers that have been prepared for the proposal. In consideration of the results of the working papers and the outcomes of consultation, a comprehensive assessment of construction and operational socio-economic impacts has been prepared in accordance with the Environmental Impact Assessment Practice Note – Socio-economic assessment (EIA-N05) (Roads and Maritime 2013).

8.6.2 **Existing environment**

At the time of the 2016 census, the population of Batemans Bays was 7692 and the population of the Eurobodalla LGA was 37,232 people.

Key statistical information relevant to socio-economic characteristics of the region and study area include:

- population growth between 2006 and 2016 in Batemans Bay has been marginally higher than other regional areas, whereas growth in the Eurobodalla LGA as a whole has been marginally lower
- in Batemans Bay the percentage of the population over 60 years of age is about 39 percent, compared to about 27 percent for other regional areas in NSW. This suggests that Batemans Bay is a popular retirement location
- in Batemans Bay the percentage of the population living in apartments and town houses was about 14 percent, compared to about 7 percent for other regional areas in NSW.
- the median income and wage of Batemans Bay residents was about 15 percent lower than the other regions in NSW
- the key industries for employment in Batemans Bay were the retail trade, accommodation and food services, construction and health care and social assistance
- about 72 percent of residents used their car to travel to and from work, less than one percent used public transport and about five percent either walked or cycled to work.
Key industries and businesses

Aquaculture
Aquaculture industries, such as the oyster farming industry within the study area, are highly influential in the area. This industry is expanding into international markets, with product leaving the country from Canberra. The processing area for oyster farming is located on the southern bank of the river, and the industry relies on the Batemans Bay Bridge to access its market. The importance of aquaculture industries within Eurobodalla LGA is evident from the industry contributing 7.6 per cent of Regional NSW’s aquaculture employment and 8.0 per cent of its value added in 2015/16. Specifically, the aquaculture industry generated 47 jobs and contributed $4.6 million in value added to Eurobodalla LGA’s economy in 2015/16.

Tourism
Tourism is an important industry within the study area as it provides a substantial economic benefit to the local community. Batemans Bay and surrounding coastal townships are renowned as popular, affordable tourist destinations, particularly for people living in Canberra and Sydney. Eurobodalla Shire Council, also provides tourism facilities such as foreshore paths, scenic parks, boat ramps, clean beaches and high-quality streetscapes. These facilities and environments contribute to the desirability of the area as both a tourist destination and a liveable location.

Over 1.2 million people visited Eurobodalla LGA in 2015. Of these, 23,000 were international visitors, 666,000 were domestic overnight visitors and 470,000 domestic day visitors. A total of $355 million was spent by these visitors within the LGA which supported local businesses, of which, around 550 were tourism businesses. In 2016 there were 14 recorded tourist accommodation establishments with 15 or more rooms within Batemans Bay.

Commercial centre
The Batemans Bay commercial centre is located in and adjacent to the EIS proposal area and contains the town’s main shopping mall, supermarket and high street shops. This area also contains marine facilities such as marinas, wharves and moorings, and land based facilities that service marine vessels. As well as catering to the local population, these businesses also service tourists and visitors. The commercial centre is prone to congested during peak holiday periods.

Other industries
Batemans Bay is one the largest regional towns on the NSW South Coast and consequently there are many businesses and industries which cater for the region. Batemans Bay Industrial Precinct is located along Vesper Street (Princes Highway) south of Batemans Bay town centre. This precinct contains a variety of industrial uses, manufacturers, office, wholesalers, specialised services and trades and food and beverage providers.

Social infrastructure
As an important regional centre, Batemans Bay has substantial social infrastructure including:

- four childcare centres, one primary school, one secondary school and two adult education facilities. None of these are within 400 metres of the EIS proposal area.
- ten parks and reserves, four playgrounds, three sports grounds and six specialised sporting facilities. Four of the parks, two of the playgrounds, one sports field and one swimming complex are located within 400 metres of the EIS proposal area
- four medical centres, five aged care facilities and one hospital. Two retirement villages are located within 400 metres of the EIS proposal area
- two community facilities, two cultural facilities, one library, seven places of worship and three civic facilities. Only one cultural facility is located within 400 metres of the EIS proposal, namely the Batemans Bay Visitor Centre.
8.6.3 Potential impacts

Construction

Access and connectivity

Construction of the proposal would result in changes in road network efficiency and connectivity across the study area and include traffic disruptions or diversions due to temporary, partial or full closures of roads, increased construction traffic (including heavy vehicles) and alterations to standard travel routes. This could result in decreased traffic speeds and delays, particularly during peak holiday and weekend periods.

The existing Batemans Bay Bridge would remain operational while construction of the new bridge occurs, minimising any effects on arterial road network performance. Impacts would also be expected on local roads, particularly Clyde Street, Wharf Road and Old Punt Road, however, these are expected to be minor in nature.

There would be a loss of car parking during construction increasing parking demand. There would be a loss of car parking along the northern foreshore, with the Old Punt Road reserve being closed during construction and Korners Park being used as an ancillary facility. There would be a lesser impact on car parking on the southern foreshore area, with only temporary restrictions to some parking spaces.

The use of the former bowling club site as an ancillary facility could impact on available parking for the adjoining oval. However, parking requirements for the oval may be highest during the weekends, where construction activities would be lower than during the week.

The supermarket adjacent to the southern approach would have about 60 car parking spaces restricted during temporary staging works for construction. In addition, the property at 21 Clyde Street would be used as an ancillary facility that would remove the use of this site as informal car parking. All formal parking spaces would be returned once temporary staging and utilities work are complete. Further consultation would be undertaken with the supermarket to identify adequate parking during construction.

While ancillary facilities would accommodate construction workers parking where practical, streets within and surrounding the construction areas and ancillary facilities are likely to experience an increase in parking demand. Residential streets likely to be impacted include Old Punt Road, Wharf Road and Clyde Street.

Where possible, pedestrian connections that are in close proximity to construction works would be maintained through construction. However, there may be some restrictions or detours that would be required to ensure the safety of pedestrian, cyclists and construction workers. There would also be changes in amenity due to alterations in noise levels, construction dust or visual impacts.

The construction of the new bridge and the demolition of the existing bridge would require the use of boats, barges and other maritime vessels. The increase in maritime vessels is not expected to adversely affect the use of the Clyde River, and a navigational channel would be maintained throughout construction. There are expected to be negligible impacts on maritime transport during construction.

Amenity

Construction of the REF proposal may result in amenity impacts including:
- noise and vibration
- visual impacts
- air quality.

Increased noise not only affects residents, but could also have an impact on the ambience of businesses and social infrastructure through:
• affecting quality of life by day to day increased noise levels. In particular, any night time noise
could result in interrupted sleep patterns with consequential impacts upon health and well-being
• altering the ambience of the environment and affecting the function of a business or the ability
to attract and retain customers and employees. The restaurant and motels would be particularly
sensitive to amenity impacts
• noise annoyance that may deter people from using infrastructure (such as Lions Park and
Korners Park) that could result in reducing social interaction.

For further details on the noise and vibration assessment undertaken for the proposal and
management measures to reduce impacts, refer to section 7.6.

Visual amenity in locations close to construction areas and ancillary facilities has the potential to be
affected by factors through removal of vegetation, demolition of structures and installation of
ancillary facilities and fencing/ hoarding. Impacts would include:
• affects to the appeal of external and internal living spaces and reduce the overall amenity of an
environment.
• the potential to reduce amenity and perceived safety of open space which may influence the
amount of time people in public spaces or spend outdoors exercising may trigger a temporary
reduction in community cohesion and social interaction.

For further details on the visual impact of the proposal and management measures to reduce
impacts, refer to section 0.

Air quality during construction, such as dust generation and odours have the potential to affect
human health, reduce the amenity of an area and generate nuisance dust impacts due to the
increase in dust deposition (dust soiling) potentially deterring people from using spaces, visiting
businesses or enjoying residential amenity. Construction and operation of the proposal are not
anticipated to generate air quality impacts that cannot be effectively mitigated through standard
procedures and impacts are expected to be negligible. Further details on potential air quality
impacts refer to section 8.4.

Community values
Community consultation identified the following community values:
• housing
• neighbourhood character and identity
• community cohesion
• environmental values
• heritage values.

The proposal would impact on these items to varying degrees:
• there would be negligible impacts on availability of housing, with only one residence being
acquired
• the existing bridge is viewed by the community as a feature which contributes to neighbourhood
character and identity. The removal of the bridge could result in a sense of loss of identity
• the access alterations to Clyde Street and Wharf Road are considered unlikely to cause
community severance, as other through roads in the immediate area would remain open. In
addition, the existing bridge would remain open during construction and is unlikely to result in
any community severance impacts
• There may be impacts on water quality resulting from runoff and demolition that could impact
biodiversity and the oyster industry which is important to identity and livelihood in the
community. Mitigation strategies are expected to ensure impacts are minor.
• The removal of the existing bridge will impact on the heritage values of the community and
have a long-term impact as it will result in a permanent change to baseline conditions
Economy

Construction activity directly benefits the economy, injecting economic stimulus benefits into the local, regional and state economies. The economic benefit of construction is multi-dimensional, including:

- increased expenditure at local and regional businesses through purchases by construction workers
- direct employment through on-site construction activities
- direct expenditure associated with on-site construction activities
- indirect employment and expenditure through the provision of goods and services required for construction.

It is estimated that based on a four year construction period, about 650 direct (onsite) job years would be created between 2018 to 2022, which is equivalent to about 160 jobs per annum. Furthermore, about 1900 indirect (off site) job years would be generated, equivalent to jobs per annum based on a similar proposal period. As such, the overall impact upon the socio-economic environment would be moderate positive.

The construction of the proposal has been designed to minimise impacts to freight and commercial vehicle efficiency on the Princes Highway. During construction the existing bridge would remain in use and therefore would not alter the existing situation resulting in a negligible impact.

Business and industry

Potential negative impacts on business from the proposal include:

- access and parking impacts - which could result in businesses being more difficult to access by customers and employees. These are discussed in preceding section and other relevant sections of the EIS
- amenity impacts - which may result in a loss of customers due to noise and dust issues. These are discussed in preceding section and other relevant sections of the EIS
- water quality impacts - There is potential for the proposal to affect the oyster leases downstream due to construction activities impacting on water quality within the Clyde River. Such impacts could result in economic impacts on these lease owner’s due to the sensitive nature of these businesses, which rely on good water quality. However, such impacts are considered to be unlikely with the implementation of safeguards and management measures to minimise impacts on water quality (refer to section 7.3.4)
- loss of motel accommodation - One motel would be fully acquired and demolished for the proposal. This would result in a loss of motel rooms, however, as noted previously, there are at least 13 other large accommodation facilities within Batemans Bay as well as many much smaller holiday accommodation apartments, units and houses available.

Operation

Access and connectivity

The new bridge would have a beneficial impact on road network performance during holiday periods, when peak traffic flows are experienced. Travel times are expected to improve by eight minutes, improving average speeds. Efficient road networks may improve the ability for individuals to access education, employment, health care, entertainment or businesses and tourist destinations. The proposal is likely to reduce the traffic congestion either side of the bridge and indirectly affect Clyde Street and Wharf Road. This reduction in congestion and vehicle stopping is likely to increase the attractiveness and amenity of the environment, however this may also reduce the business visibility for the motels located along Clyde Street.

There would be a number of local road network alterations which would affect the accessibility of areas for local residents, businesses and visitors:

- Wharf Road, where the Princes Highway intersection would become a left in intersection only and a new connection to Old Punt Road under the new bridge
- Clyde Street would pass under the Princes Highway.
Once in operation, the proposal would remove a number of on-street car parking spaces on Clyde Street north to facilitate a coach turning circle. However, additional public parking along the northern and southern river foreshore would be installed as part of the proposal, benefiting residents, businesses and tourists.

The construction of the proposal would require temporary and permanent alterations to existing local and regional bus services. The proposal would result in no left out movements from Wharf Road onto the Princes Highway, which will affect local bus route 575 (Batemans Bay Village Centre to Maloney’s Beach). This bus route currently uses Wharf Road to access the Batemans Bay Bridge. Alterations to route 575 would have the potential to increase travel time, distance travelled for services, and could result in an increase in the length of journeys for customers. However, a roundabout would be installed at the western end of Wharf Road to allow buses to turn around; minimising any impact on local bus services.

The permanent closure of the Clyde Street / Princes Highway intersection could affect regional coaches access the bus interchange in Clyde Street. Regional coaches would need to be diverted and could run via North Street, Orient Street or Beach Road, resulting in increased travel times. On the northern side of Clyde Street, a turning circle would be provided for regional coaches to turnaround.

Roads and Maritime will continue to consult with local and regional bus companies through the future stages of the proposal.

The new shared use path would provide improvements to the existing active transport network, providing new and enhanced, safer movement patterns around the study area, linking pedestrians and cyclists to popular waterfront and open space areas, including Batemans Bay Foreshore Reserve, Lions Park and Korners Park. The improvements would also have the potential to increase connectivity (and reduce community severance) between the communities of North Batemans Bay and Batemans Bay.

Upon operation, the proposal would provide improved access to sailboats and yachts in the Clyde River. This is likely to attract additional tourists to the area and benefit the local economy. The 12 metre navigational clearance of the proposed design would allow yachts of up to seven metres in length to traverse under the bridge. A boat study undertaken for the proposal noted that of all vessels registered in the South Coast region, around 90 per cent are below six metres in length and 97 per cent are below nine metres in length. Some taller yachts would be able to drop their masts to be able to travel upstream of the new bridge.

For the majority of boat users however and the businesses that serve them, the new bridge would provide a significant benefit for ease of travel up the river and have no impact on these commercial operators:
- the tourist ferry could potentially be able to travel up and down the river more frequently
- houseboats, with a maximum required clearance of 8.5 metres will benefit from the new bridge.

A small number of the tallest yachts however would not be able to pass under the bridge and may need to consider a new mooring location downstream of the bridge. A change of mooring location from the upstream side of the bridge to the downstream side is likely to be a minor inconvenience to boat users. Access to the town and surrounds would not be compromised by the change of mooring location.

The REF proposal would replace the T-Wharf downstream of the existing bridge to provide a mooring opportunity for taller yachts.

Overall, the operational impact of the proposal on access and connectivity would provide a positive impact.
Amenity
The operation of the proposal may result in amenity impacts on the local community due to the following:

- change in traffic noise impacts due to realignment of road corridor. Some sensitive receivers would experience lower traffic noise while other sensitive receivers would experience an increase in traffic noise.
- visual impacts associated with the new structure and ancillary infrastructure.

These issues have been addressed in other sections of this REF, as follows:

- noise and vibration (refer to section 8.3)
- visual impacts (refer to section 0).

These impacts would be mitigated through a range of management measures including at-house noise treatments and a landscaping plan for the proposal.

The proposal would also have benefits to local amenity as it would include refurbishment of the foreshore areas adjacent to the new road alignment. This includes additional parking, improved recreational areas, a new T-wharf and other urban domain improvements.

Community values
The proposal, once completed, would provide improved community cohesion delivering improved road (Princes Highway) connectivity across the Clyde River, connecting North Batemans Bay and Surfside to Batemans Bay. It would also improve pedestrian and cyclist connectivity, with new pathways and enhanced access to foreshore areas and open space, which would have the potential to increase social connectivity and community cohesion within the study area.

Economy
The proposal would remove the restrictions to HML vehicles on the Princes Highway at Batemans Bay. This is anticipated to result in an increase in heavy vehicles through Batemans Bay, which would improve the state and regional freight efficiency as these vehicles can use the Princes Highway, instead of detouring along a more inland highway route.

Alterations to the efficiency of the road network would have a noticeable impact on local and regional economic development and impact where businesses choose to locate, for example, the Batemans Bay industrial precinct may become more attractive to businesses.

Improvement in access to Batemans Bay would have a beneficial impact on tourism, particularly during peak holiday periods, where traffic congestion would reduce. In addition, during these periods, the Princes Highway / Kings Highway intersection would be signalised, which would make traffic movements through the intersection more efficient. This would benefit tourists coming from Sydney and Canberra.

There are not expected to be any impacts to aquaculture in the area. A key concern for oyster farmers is around maintaining good water quality in the Clyde River and Mcleods Creek. The existing bridge currently free drains into the Clyde River (downstream of oyster leases) and there is a stormwater pipe that drains into Mcleods Creek. Surface runoff from these sources is untreated. The proposal would install appropriate water quality treatment devices to maintain the existing good water quality.

Business and industry
The proposal would result in changes to vehicle and pedestrian flows that may influence the level of passing trade due to the closure of Clyde Street / Princes Highway intersection. Businesses located along North Street may benefit as passing trade is re-directed towards their business, while businesses along Clyde Street North may be adversely impacted as traffic is diverted away and visibility of their business is reduced. A change in pedestrian or vehicle routes and traffic volumes may also affect the exposure of businesses to potential clients.
These adverse impacts to businesses located along Clyde Street have the potential to be mitigated by the improved amenity of the foreshore and the new pedestrian and cyclist shared path.

The ambience of Batemans Bay town centre and Clyde Street business cluster are likely to improve due to increased access to the foreshore, additional landscaping and additional pedestrian and cyclist connectivity. This has the potential to improve the attractiveness of Batemans Bay as a shopping and tourist destination and directly benefit Batemans Bay town centre business cluster and Clyde Street business cluster.

Businesses located along North Street has the potential to result in decreased ambience and amenity due to increased noise, vehicle emissions and the visual presence of cars. However, as North Street currently contains two large supermarkets, a motel and drive through fast food restaurant, vehicle numbers are already expected to be high. Therefore, the severity of change from the existing environment would be low and therefore result in a negligible impact.

8.6.4 Safeguards and management measures

No safeguards and management measures are provided specifically for socio-economic issues in the EIS proposal area.
8.7 Cumulative impacts

8.7.1 Projects near the proposal

The overall proposal

The EIS proposal forms part of the overall Batemans Bay Bridge replacement proposal (Figure 1-3). The overall proposal apart from impacts on SEPP 14 Wetland, (known as the REF proposal) is subject to approval under Part 5 of the EP&A Act and has been assessed in an REF.

Replacement of Kings Highway bridge over the Clyde River at Nelligen

Roads and Maritime is replacing the existing Kings Highway bridge over the Clyde River at Nelligen with a new bridge and approach roads. The EIS and REF for the bridge replacement were exhibited in 2016 and a submissions report prepared in 2017 to respond to issues raised during the exhibition. Final planning approval of the project is anticipated in late 2017. Construction of the proposal is anticipated to start in 2018/2019 with completion in 2020. This program is dependent on funding and a number of other issues.

The construction of Kings Highway bridge at Nelligen is planned to occur within the same timeframe as this proposal. It is likely that the majority of the construction works on Kings Highway bridge at Nelligen would be occurring during the early stages of construction of this proposal. However if construction is delayed major works on both new bridges could occur simultaneously.

Major projects

A search of the NSW Planning and Environment Major Projects Assessment was undertaken on 10 September 2017. No current or proposed projects are located within the Eurobodalla local government area which are located close to the Princes Highway.

Local development

A review of Eurobodalla Shire Council’s Major Projects and works website page was undertaken on 10 September 2017 to identify additional developments within the local government area that may conflict with the overall proposal. A number of local projects were identified including:

- the proposed Stages 2 and 3 of the Batemans Bay Marina redevelopment project, to the east of the study area, after recent completion of Stage 1. Stages 2 and 3, which are currently in the planning stages, would comprise expansion of the marina to the east, with a doubling of wet berths and more ancillary buildings at the water’s edge
- the South Batemans Bay Link Road project, which comprises a 2.2 kilometre road connecting the Princes Highway and George Bass Drive at Batemhaven, and has been under construction since 2013-14. Eurobodalla Shire Council has undertaken the initial stages, but there are plans for Roads and Maritime to design and construct the Princes Highway intersection
- the proposed Batemans Bay Bowling Club and Mackay Park Precinct redevelopment project, which comprises development of an aquatic and recreation centre, arts and cultural facility, conference and event space, tourist accommodation, restaurant and cafes, visitor centre, and integration of existing sports fields, at the southern end of the project area, immediately west of the Princes Highway. This project, which has been proposed by Eurobodalla Shire Council, is currently in the planning stages.

8.7.2 Potential impacts

Impacts of the overall proposal

The EIS proposal is relatively small in comparison to the overall proposal and is not considered to substantially contribute to the impacts of the overall proposal.
The REF document concludes that the REF proposal would result in the following adverse environmental impacts:

- removal of up to 2.05 hectares of native vegetation, including up to 0.78 hectares of threatened ecological communities
- removal of up to 0.35 hectares of seagrasses
- impacts to five Aboriginal heritage sites. Two of the sites have been identified for salvage. An Aboriginal heritage impact permit would be sought for the overall proposal
- impacts to two non-Aboriginal heritage sites. A former car ferry ramp on the northern bank and the existing Batemans Bay Bridge would be demolished
- moderate to high visual impacts associated with the introduction of a new higher and larger bridge into the visual environment. There would also be opportunities to improve the visual appearance and functionality of the foreshore area near the new and existing bridge
- construction noise impacts for a number of properties located near the proposal with exceedances of NMLs and highly affected criteria at some sensitive receivers
- operation of the overall proposal would result in the majority of sensitive receivers experiencing similar impacts. However about 30 sensitive receivers would experience an increase in traffic noise due to the road alignment moving closer and increased traffic numbers from natural growth. Six sensitive receivers have been identified as requiring consideration for noise mitigation due to the proposal
- a slight reduction in the flood levels upstream and downstream of the existing bridge.
- potential erosion and sedimentation impacts during construction, potentially resulting in impacts on water quality within the Clyde River, Batemans Marine Park and SEPP 14 wetlands
- increase in traffic and traffic delays as a result of construction
- potential air quality impacts due to the generation of dust.

The above impacts would be minimised through the implementation of the mitigations measures outlined within the REF and this EIS.

The main contribution that the EIS proposal provides to the cumulative impacts of the overall proposal is in relation to the amount of vegetation to be cleared. Table 8-11 outlines the cumulative vegetation impacts of the overall proposal.

Table 8-11 Cumulative vegetation impacts

<table>
<thead>
<tr>
<th>Plant community type (PCT)</th>
<th>Threatened ecological community (TEC)</th>
<th>Status</th>
<th>Proposal area (ha)</th>
<th>REF proposal area</th>
<th>EIS proposal area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saltmarsh in estuaries of the Sydney Basin and South East Corner</td>
<td>Coastal saltmarsh/subtropical and temperate saltmarsh</td>
<td>E PMV V</td>
<td>0.01</td>
<td>0</td>
<td>0.01</td>
</tr>
<tr>
<td>Mangrove forest in estuaries of the Sydney Basin and South East Corner</td>
<td>-</td>
<td>- PMV -</td>
<td>0.10</td>
<td>0.04</td>
<td>0.06</td>
</tr>
<tr>
<td>Seagrass meadows of the estuaries and lagoons of the New South Wales coast</td>
<td>-</td>
<td>- PMV -</td>
<td>0.35</td>
<td>0.35</td>
<td>0</td>
</tr>
<tr>
<td>Swamp Oak swamp forest fringing estuaries, Sydney Basin and South East Corner</td>
<td>Swamp Oak floodplain forest</td>
<td>E - DCA</td>
<td>0.05</td>
<td>0.05</td>
<td>0</td>
</tr>
<tr>
<td>Spinifex beach strand grassland,</td>
<td>-</td>
<td>- - -</td>
<td>0.26</td>
<td>0.26</td>
<td>0</td>
</tr>
<tr>
<td>Plant community type (PCT)</td>
<td>Threatened ecological community (TEC)</td>
<td>Status</td>
<td>Proposal area (ha)</td>
<td>REF proposal area</td>
<td>EIS proposal area</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------------------------------</td>
<td>--------</td>
<td>-------------------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Sydney Basin Bioregion and South East Corner Bioregion</td>
<td>-</td>
<td>-</td>
<td>PMV</td>
<td>-</td>
<td>0.04</td>
</tr>
<tr>
<td>Macrolegiae</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.52</td>
</tr>
<tr>
<td>Spotted Gum - Blackbutt shrubby open forest on the coastal foothills, southern Sydney Basin and northern South East Corner</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.52</td>
</tr>
<tr>
<td>Woollybutt - White Stringybark - Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion</td>
<td>Lowland grassy woodland in the South East Corner Bioregion</td>
<td>E</td>
<td>-</td>
<td>-</td>
<td>0.72</td>
</tr>
<tr>
<td>Illawarra and south coast lowland forest and woodland</td>
<td>-</td>
<td>-</td>
<td>CE</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>2.05</strong></td>
</tr>
</tbody>
</table>

E = Endangered ecological community, PMV = Protected marine vegetation, V = Vulnerable ecological community, CE = Critically endangered ecological community, DCA = Draft conservation advice prepared, but not yet listed.

The EIS proposal could also contribute to potential impacts on water quality during construction. The contribution of the EIS proposal would be minor. The erosion and sedimentation controls and operational water quality controls considered as part of the overall proposal are considered to reduce impacts on water quality resulting from the overall proposal. With these measures implemented, impacts on adjacent and downstream SEPP 14 wetlands are considered to be minimal.

While the overall proposal has a number of potential adverse impacts the following benefits would be experienced:

- provide a reliable higher capacity road crossing of the Clyde River at Batemans Bay without load restrictions
- provide a safer road environment
- provide a safer crossing of the Clyde River for pedestrians and cyclists
- support efficient freight movements without load or speed restrictions catering for higher mass limit B-doubles
- eliminate the ongoing maintenance issues with the existing bridge
- reduce traffic congestion in peak holiday periods
- improve permanent clearance under the bridge for marine vessels.

**Other projects**
The construction of a replacement bridge for the Kings Highway crossing of the Clyde River at Nelligen may occur at the same time as the proposal.

Nelligen is about 15 kilometres north west of Batemans Bay and consequently there would be no cumulative impacts on local air, water, noise, biodiversity, heritage and other aspects. The only aspect where cumulative impacts could be experienced would be traffic impacts from construction. Cumulative traffic delays and increased travel times may be experienced by vehicles using the Kings Highway and the Batemans Bay Bridge while both replacement bridges are being
constructed. Given the high peak holiday traffic volumes from the Canberra region, the risk and impacts of delays could be substantial if management measures are not implemented.

The overall proposal with other Princes and Kings Highway projects (which are either completed or planned) would however have a beneficial cumulative impact as they would improve safety along the highway and also potentially result in increases in limits for vehicles which would provide benefits to the region through improved movement of freight.

Construction of a number of smaller scale projects (eg new homes or adjustments to existing properties) may occur in the local area; however the cumulative impacts of the EIS proposal and such small scale projects are expected to be relatively minor as these projects are not likely to be expansive. Should any large projects be proposed cumulative impacts of the overall proposal and these projects would be considered during the environmental approvals for these projects.

8.7.3 Safeguards and management measures
Safeguards and management measures provided below would be implemented to minimise potential cumulative impacts.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative impacts</td>
<td>Ongoing coordination and consultation will be undertaken between the contractors from the Nelligen and Batemans Bay bridge replacement projects to ensure cumulative traffic impacts are appropriately assessed and managed particularly during peak holiday periods.</td>
<td>Roads and Maritime / Contractor</td>
<td>Detailed design Construction</td>
</tr>
<tr>
<td></td>
<td>The CEMP will be revised to consider potential cumulative impacts from surrounding development activities as they become known.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
</tbody>
</table>
9 Environmental management

<table>
<thead>
<tr>
<th>Secretary’s requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental monitoring and management</td>
<td>chapter 9</td>
</tr>
<tr>
<td>The EIS must describe in detail what measures would be implemented to manage, mitigate or offset the potential impacts (including cumulative impacts) of the proposal (as identified above) during construction and operation as relevant, and where required, describe how the environmental performance of the proposal would be monitored and managed over time. Where possible, reasonable and feasible mitigation measures should be developed in consultation with surrounding affected landowners and relevant public authorities</td>
<td></td>
</tr>
</tbody>
</table>

9.1 Environmental management plans

A number of safeguards and management measures have been identified to minimise adverse environmental impacts which could potentially arise from the EIS proposal.

Should the overall proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the overall proposal.

Where possible, the safeguards and management measures proposed for the EIS proposal are consistent with the measures outlined in the REF to aid the preparation of a construction environmental management plan (CEMP) for the overall proposal. The CEMP would cover the works within the EIS and REF proposal areas. The CEMP would also address any conditions of consent received as part of any development approval from Eurobodalla Shire Council. The CEMP would provide a framework for establishing how these measures would be implemented and who would be responsible for their implementation.

The CEMP would be prepared before construction of the overall proposal and would be reviewed and certified by the Roads and Maritime Representative, in consultation with the Roads and Maritime Senior Environment Officer, before the start of any on-site work. The CEMP would be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with the specifications set out in the RTA QA Specification G36 – Environmental Protection (Management System), RTA QA Specification G38 – Soil and Water Management (Soil and Water Plan) and RTA QA Specification G40 – Clearing and Grubbing.

9.2 Summary of safeguards and management measures

The environmental safeguards detailed in Table 9-1 address the environmental impacts contained in chapters 7 and 8, relating to the EIS proposal. These form part of the overall proposal environmental safeguards that are contained within the REF prepared for the proposal. The numbering system from the REF has been used here for consistency. Missing ID measures relate to the REF only. The environmental safeguards outlined in this document would be incorporated into the detailed design phase of the overall proposal and during construction and operation of the proposal, should it proceed. These safeguards would minimise any potential adverse impacts arising from the proposed work on the surrounding environment.
### Table 9-1 Summary of safeguards and management measures

<table>
<thead>
<tr>
<th>Impact</th>
<th>ID</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
</table>
| General - minimise environmental impacts during construction | GEN1 | A CEMP would be prepared and submitted for review and endorsement of the Roads and Maritime Representative prior to commencement of the activity. As a minimum, the CEMP would address the following:  
- any requirements associated with statutory approvals  
- details of how the project would implement the identified safeguards outlined in the REF and EIS  
- issue-specific environmental management plans  
- roles and responsibilities  
- communication requirements  
- induction and training requirements  
- procedures for monitoring and evaluating environmental performance, and for corrective action  
- reporting requirements and record-keeping  
- procedures for emergency and incident management  
- procedures for audit and review  
- a demolition management plan for the existing bridge removal to address sequencing, contamination and safety issues.  
The endorsed CEMP would be implemented during the undertaking of the activity. | Contractor / Roads and Maritime | Pre-construction Construction       |
| General - notification                            | GEN2 | All businesses, residents and other key stakeholders (eg schools, local councils) affected by the activity would be notified at least five days prior to commencement of the activity.                                                                                                                                  | Contractor                        | Pre-construction Construction |
| General – environmental awareness                 | GEN3 | All personnel working on site would receive training to ensure awareness of environment protection requirements to be implemented during the project. This would include up-front site induction and regular "toolbox" style briefings. Site-specific training would be provided to personnel engaged in activities or areas of higher risk. These include:  
- working in and near waterways  
- construction noise management  
- areas of Aboriginal heritage sensitivity  
- threatened species habitat | Contractor                        | Pre-construction Construction      |
<table>
<thead>
<tr>
<th>Impact</th>
<th>ID</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
</table>
|        |    | • threatened ecological communities  
|        |    | • SEPP 14 wetlands       |               |                  |
|        |    |                          | Contractor    | Detailed design  
|        |    |                          |               | Pre-construction |
|        |    |                          |               | Construction     |

### Landscape character and visual impact

**General**

**LC1**

An Urban Design and Landscape Plan (UDLP) will be prepared to support the final detailed project design and implemented as part of the CEMP. The UDLP will present an integrated urban design for the project, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The UDLP will include:

- proposed revegetation plan that will include:
  - species to be used
  - screening of infrastructure where required and practical
  - minimising the impacts of headlight glare on surrounding residents
  - planting of foreshore areas to be determined in consultation with council.
- procedures for monitoring and maintaining landscaped or rehabilitated areas.
- Design treatments for:
  - built elements including retaining walls and the bridge and consider application of crime prevention through environmental design strategies
  - pedestrian and cyclist elements including shared use path locations, paving types and pedestrian crossings
  - fixtures such as seating, lighting, fencing and signs
  - details of the staging of landscape works taking account of related environmental controls such as erosion and sedimentation controls and drainage.

The UDLP will be prepared in accordance with relevant guidelines, including:

- Beyond the Pavement urban design policy, process and principles (Roads and Maritime 2014c)
- Landscape Guideline (RTA 2008)
- Bridge Aesthetics (Roads and Maritime 2012c)
- Shotcrete Design Guideline (RTA 2005c).
<table>
<thead>
<tr>
<th>Impact</th>
<th>ID</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration of earthworks design with existing landform</td>
<td>LC2</td>
<td>The potential visual impact of the earthworks will be minimised by careful design that integrates with adjoining landforms. This could be achieved through rounding of the top of cut batters, tailing off of cut batters and a gradual flattening of grades at ends of fill embankments in order to avoid sharp transitions at ends.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Retention of existing vegetation</td>
<td>LC4</td>
<td>The proposal will be designed to avoid impact to prominent trees and vegetation communities where possible. Water quality structures and drainage lines will be designed to avoid existing vegetation where possible.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>B1</td>
<td>A Biodiversity Management Plan will be prepared as part of the CEMP and implemented throughout construction.</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>B2</td>
<td>Roads and Maritime will determine and implement a suitable offset for impacts to key fish habitat, in consultation with DPI (Fisheries).</td>
<td>Roads and Maritime</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Removal of native vegetation</td>
<td>B3</td>
<td>Measures to minimise clearing of native vegetation within the proposal area, including marine vegetation, will be investigated during detailed design and implemented where practicable and feasible.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Flora and flora management guidelines</td>
<td>B4</td>
<td>Biodiversity management and mitigation will be undertaken in accordance with the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011) and the associated guides and procedures.</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
</tr>
<tr>
<td>Changes to hydrological regimes</td>
<td>B6</td>
<td>The new bridge piers and drainage structures associated with the new road alignment will be located and designed to maintain or improve existing hydrological regimes as far as possible. Particular care should be taken to avoid or minimise additional scour of the extensive sandbar downstream of the existing bridge.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Increased light</td>
<td>B9</td>
<td>Measures to minimise light spill into the waterway and vegetated areas from the new bridge and approaches will be considered during detailed design.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Disturbance to aquatic habitats</td>
<td>B11</td>
<td>Aquatic habitat will be protected in accordance with Guide 10: Aquatic habitats and riparian zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011) and Section 3.3.2 Standard precautions and</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
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<td></td>
<td></td>
<td>management measures of the Policy and guidelines for fish habitat conservation and management Update 2013 (DPI (Fisheries NSW) 2013).</td>
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</tr>
<tr>
<td>Aquatic pests and diseases</td>
<td>B12</td>
<td>All machinery and vessels used during construction are to be verified as clean and free of potential weeds, pests and pathogens prior to arrival to site.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Hydrology and coastal processes</td>
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</tr>
<tr>
<td>General construction impacts</td>
<td>H1</td>
<td>Temporary drainage structures will be constructed in accordance with the Technical Guideline – Temporary Stormwater Drainage for Road Construction (Roads and Maritime 2011c).</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Flooding</td>
<td>H3</td>
<td>Further flood modelling will be undertaken during detailed design to confirm that afflux, flood extent and scour are equivalent to or better than assessed in the REF.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td></td>
<td>H4</td>
<td>As part of the CEMP a flood risk management plan will be prepared that details the processes for monitoring and mitigating flood risk. The plan will specify the steps to be taken in the event of a flood warning, including removal or securing of loose material, equipment, fuels and chemicals.</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
</tr>
<tr>
<td>Soil and water quality</td>
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</tr>
<tr>
<td>Water quality monitoring</td>
<td>SW1</td>
<td>A water quality monitoring program would be developed and implemented during construction in accordance with Roads and Maritime Guideline for Construction Water Quality Monitoring (Roads and Maritime, 2003).</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
</tr>
<tr>
<td>Contamination of surface water</td>
<td>SW3</td>
<td>All fuels, chemicals, and liquids will be stored at least 40 metres away from waterways (including existing stormwater drainage system) and will be stored in an sealed bunded area within the ancillary facility. On barges and jetties, fuels, chemicals and liquids will be stored within a bunded area.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Contamination of surface water</td>
<td>SW4</td>
<td>The refuelling and maintenance of land-based plant and equipment will be undertaken in a designated sealed bunded area at ancillary facilities, where possible. Refuelling of marine based plant and vessels will be undertaken in a suitably bunded area (through use of silt curtain or booms) to minimise risk of spills.</td>
<td>Contractor</td>
<td>Construction</td>
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<tr>
<td>Contamination of surface water</td>
<td>SW5</td>
<td>Vehicle wash downs and concrete washouts will be carried out within designated sealed bunded areas at ancillary facilities, or carried out off-site.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Contamination of surface water</td>
<td>SW6</td>
<td>Regular visual water quality checks (include for turbid plumes and hydrocarbon spills or slicks) will be carried out when working in or near the waterway.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Accidental spill</td>
<td>SW7</td>
<td>A site specific emergency spill plan will be developed, and include spill management measures in accordance with the Roads and Maritime Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan would address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA).</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
</tr>
<tr>
<td>Accidental spill</td>
<td>SW8</td>
<td>Emergency spill kit would be kept on site at all times. Spill kits will be located at all ancillary facilities and main construction work areas, including barges and temporary jetties. All staff would be made aware of the location of the spill kit and trained in its use</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Acid sulfate soils</td>
<td>SW9</td>
<td>An Acid Sulfate Soils Management Plan will be developed as part of the CEMP and implemented during construction. This plan will be prepared in accordance with the Roads and Maritime Guidance for the Management of Acid Sulphate Materials 2005 (RTA 2005a).</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
</tr>
<tr>
<td>Soil and water - general</td>
<td>SW10</td>
<td>A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks would be addressed during construction. The SWMP will be reviewed by a soil conservationist on the Roads and Maritime list of Registered Contractors for Erosion, Sedimentation and Soil Conservation Consultancy Services.</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
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</tbody>
</table>
A site specific Erosion and Sediment Control Plan/s will be prepared and implemented as part of the Soil and Water Management Plan. This plan will develop further on the Conceptual Erosion and Sedimentation Management Report located in Appendix F. Erosion and sediment controls would be developed following the guidelines of the ‘Blue Book’ (Landcom, 2004 and DECC 2008).

The Plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.

Surface water diversions will be installed in accordance with the erosion and sedimentation control plan (ESCP) prior to construction commencing.

A soil conservationist on the Roads and Maritime list of Registered Contractors for Erosion, Sedimentation and Soil Conservation Consultancy Services will be engaged and consulted throughout the construction of the overall proposal.

Operational water quality treatment and quantity will be identified during detailed design in consideration of the Roads and Maritime Water Sensitive Urban Design Guidelines (2017), impacts to SEPP 14 wetlands and the capacity of Council’s stormwater systems.

Operational spill containment of a minimum of 20,000 litres will be provided to ensure that spills on the new bridge and approaches can be captured before reaching sensitive environments.

Progressive rehabilitation will be carried out during construction, whereby rehabilitation will commence as soon as practicable after works are completed in any area.

Further investigations will be undertaken during detailed design to confirm the depth of groundwater near the overall proposal and any potential impacts. If groundwater impacts are likely, a groundwater management plan will be developed and form part of the CEMP. If required, an approval under the Water Management Act 2000 will also be obtained following consultation with the DPI Water.

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<tbody>
<tr>
<td>Construction surface water</td>
<td>SW11</td>
<td>A site specific Erosion and Sediment Control Plan/s will be prepared and implemented as part of the Soil and Water Management Plan. This plan will develop further on the Conceptual Erosion and Sedimentation Management Report located in Appendix F. Erosion and sediment controls would be developed following the guidelines of the ‘Blue Book’ (Landcom, 2004 and DECC 2008). The Plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.</td>
<td>Contractor</td>
<td>Pre-construction</td>
</tr>
<tr>
<td>Construction surface water</td>
<td>SW12</td>
<td>Surface water diversions will be installed in accordance with the erosion and sedimentation control plan (ESCP) prior to construction commencing.</td>
<td>Contractor</td>
<td>Pre-Construction</td>
</tr>
<tr>
<td>Soil and water - general</td>
<td>SW13</td>
<td>A soil conservationist on the Roads and Maritime list of Registered Contractors for Erosion, Sedimentation and Soil Conservation Consultancy Services will be engaged and consulted throughout the construction of the overall proposal.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Stormwater runoff</td>
<td>SW14</td>
<td>Operational water quality treatment and quantity will be identified during detailed design in consideration of the Roads and Maritime Water Sensitive Urban Design Guidelines (2017), impacts to SEPP 14 wetlands and the capacity of Council’s stormwater systems.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Spill containment</td>
<td>SW15</td>
<td>Operational spill containment of a minimum of 20,000 litres will be provided to ensure that spills on the new bridge and approaches can be captured before reaching sensitive environments.</td>
<td>Contractor</td>
<td>Detailed design</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>SW16</td>
<td>Progressive rehabilitation will be carried out during construction, whereby rehabilitation will commence as soon as practicable after works are completed in any area.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Groundwater</td>
<td>SW17</td>
<td>Further investigations will be undertaken during detailed design to confirm the depth of groundwater near the overall proposal and any potential impacts. If groundwater impacts are likely, a groundwater management plan will be developed and form part of the CEMP. If required, an approval under the Water Management Act 2000 will also be obtained following consultation with the DPI Water.</td>
<td>Contractor</td>
<td>Detailed design</td>
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<tr>
<td>Aboriginal heritage</td>
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<tr>
<td>Unexpected finds</td>
<td>AH3</td>
<td>The Unexpected Heritage Items - Heritage Procedure 02 (Roads and Maritime, 2015) will be followed in the event that a potential heritage item is found during construction.</td>
<td>Contactor</td>
<td>Construction</td>
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<tr>
<td>Noise and vibration</td>
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</tbody>
</table>
| Construction noise and vibration | NV1 | A Noise and Vibration Management Plan (NVMP) will be prepared and implemented as part of the CEMP. The NVMP will be prepared in accordance with the Construction Noise and Vibration Guideline (Roads and Maritime 2016) and identify:  
  • all potential significant noise and vibration generating activities associated with the activity  
  • a monitoring program to assess performance against the noise and vibration criteria  
  • arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures  
  • contingency measures to be implemented in the event of non-compliance with noise and vibration criteria.                                                                 | Contactor       | Pre-construction Construction |
| Out of hours work              | NV2 | Out of hours works will be undertaken in accordance with the Construction Noise and Vibration Guideline (Roads and Maritime 2016).                                                                                                   | Contractor       | Construction      |
| Traffic and transport          |     |                                                                                                                                                                                                                            |                 |                   |
| Traffic and transport - Construction impacts | T1 | A Traffic Management Plan (TMP) will be prepared and implemented for road and marine traffic during construction. The TMP will be prepared in accordance with the Roads and Maritime Traffic Control at Work Sites Manual (RTA, 2010) and QA Specification G10 Control of Traffic (Roads and Maritime, 2008). The TMP will include:  
  • confirmation of haulage routes  
  • measures to maintain access to local roads, properties and the waterway  
  • site specific traffic control measures (including signage) to manage and regulate traffic movement  
  • measures to maintain pedestrian and cyclist access  
  • requirements and methods to consult and inform the local community of impacts                                                                                                                                                     | Contractor       | Pre-construction Construction |

Batemans Bay Bridge replacement  
Environmental impact statement
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<tr>
<td></td>
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<td>on the local road network and the waterway</td>
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<td>• access to ancillary sites including entry and exit locations and measures to prevent</td>
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<td>construction vehicles queuing on public roads</td>
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<td>• a response plan for any construction road or marine traffic incident</td>
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<td>• consideration of other developments that may be under construction to minimise traffic</td>
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<td>conflict and congestion that may occur due to the cumulative increase in construction</td>
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<td></td>
<td></td>
<td>vehicle traffic</td>
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<tr>
<td></td>
<td></td>
<td>• monitoring, review and amendment mechanisms.</td>
<td></td>
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</tr>
<tr>
<td>Traffic and transport -</td>
<td>T6</td>
<td>Traffic control plans would be prepared for the construction area and progressively</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Construction impacts</td>
<td></td>
<td>updated as the works progress. The plans would be prepared and implemented by suitably</td>
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<tr>
<td></td>
<td></td>
<td>qualified personnel.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic and transport -</td>
<td>T7</td>
<td>A Road Occupancy Licence would be obtained where required.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Construction impacts</td>
<td></td>
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<tr>
<td>Property and land use</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Property acquisition</td>
<td>P2</td>
<td>Property acquisition of Crown Land would be undertaken in accordance with the Crown</td>
<td>Roads and</td>
<td>Pre-construction and construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lands Act 1989.</td>
<td>Maritime</td>
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<tr>
<td>Non-Aboriginal heritage</td>
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</tr>
<tr>
<td>Unexpected finds</td>
<td>NAH2</td>
<td>The Unexpected Heritage Items - Heritage Procedure 02 (Roads and Maritime, 2015) will be</td>
<td>Contactor</td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>followed in the event that a potential heritage item is found during construction.</td>
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<tr>
<td>Waste management</td>
<td></td>
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</tr>
<tr>
<td>Waste management - general</td>
<td>W1</td>
<td>A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The</td>
<td>Contractor</td>
<td>Pre-construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WMP will include but not be limited to:</td>
<td></td>
<td>Demolition</td>
</tr>
<tr>
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<td></td>
<td>• measures to avoid and minimise waste associated with the project</td>
<td></td>
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<td></td>
<td></td>
<td>• classification of wastes and management options (re-use, recycle, stockpile,</td>
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</table>
### Environmental safeguards

- statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions
- procedures for storage, transport and disposal
- monitoring, record keeping and reporting.

The WMP will be prepared taking into account the Environmental Procedure - Management of Wastes on Roads and Maritime Services Land (Roads and Maritime, 2014) and relevant Roads and Maritime Waste Fact Sheets.

<table>
<thead>
<tr>
<th>Impact</th>
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<tbody>
<tr>
<td>Waste management - general</td>
<td>W2</td>
<td>All wastes will be managed and disposed of in accordance with the POEO Act.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Waste management - general</td>
<td>W3</td>
<td>Appropriate portable toilets or pump out facilities will be provided for construction sites workers and sewage will disposed of appropriately and in accordance with relevant legislation.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Waste management - general</td>
<td>W5</td>
<td>Site inductions will include waste management and disposal requirements and facilities.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Fill material</td>
<td>W7</td>
<td>Any additional fill material required will be sourced from appropriately licensed facilities and/or other construction projects wherever possible. Additional fill material will be sourced and verified as suitable for use in accordance with relevant EPA and Roads and Maritime guidelines.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Management of green waste</td>
<td>W8</td>
<td>Where possible and suitable for use, mulch would be used on-site.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Disposal of waste</td>
<td>W9</td>
<td>All waste and excess excavated material will be disposed of at an appropriate licensed facility.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Management of tannins</td>
<td>W10</td>
<td>A tannin leachate management protocol will be developed in accordance with Roads and Maritime’ Environmental Direction – Management of Tannins from Vegetation Mulch (Roads and Maritime, 2012) to manage the stockpiling of mulch and use of cleared vegetation and mulch filters for erosion and sediment control.</td>
<td>Contractor</td>
<td>Construction</td>
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<tr>
<td>Air quality</td>
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<tr>
<td>General air quality impacts</td>
<td>A1</td>
<td>An Air Quality Management Plan (AQMP) will be prepared and implemented as part of the CEMP. The AQMP will include:</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
</tr>
<tr>
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<td>• identification of potential risks/impacts due to the work/activities as dust generation activities</td>
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<td>• management measures to minimise risk of dust generation</td>
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<td>• a process for monitoring dust on-site</td>
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<td></td>
<td>• a process for altering management measures as required and reprogramming construction activities if the safeguards and management measures do not adequately restrict dust generation.</td>
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<tr>
<td>Dust emissions</td>
<td>A2</td>
<td>Work will cease when levels of visible airborne dust become excessive.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Dust emissions</td>
<td>A3</td>
<td>Works that disturb vegetation, soil or stockpiles will not be carried out during strong winds (over 40 km/h) when this may affect receivers (visibility on roads dust and debris near recreational areas residences and commercial premises).</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Dust emissions</td>
<td>A4</td>
<td>Stockpiled materials will be covered stabilised or stored in areas not subject to high wind.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Dust emissions</td>
<td>A5</td>
<td>All trucks will be covered when transporting material to and from the site.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>Cumulative impacts</td>
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<tr>
<td>Cumulative impacts</td>
<td>CU1</td>
<td>Ongoing coordination and consultation will be undertaken between the contractors from the Nelligen and Batemans Bay bridge replacement projects to ensure cumulative traffic impacts are appropriately assessed and managed particularly during peak holiday periods.</td>
<td>Roads and Maritime / Contractor</td>
<td>Detailed design Construction</td>
</tr>
<tr>
<td>Cumulative impacts</td>
<td>CU2</td>
<td>The CEMP will be revised to consider potential cumulative impacts from surrounding development activities as they become known.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
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</table>
10 Proposal justification and conclusion

10.1 Justification of the EIS proposal

The EIS proposal forms part of the overall proposal and without the EIS proposal the overall proposal is unable to be constructed. This would result in the overall proposal objectives not being met.

The justification for the overall proposal is summarised in section 10.2.

10.2 Justification of the overall proposal

The overall proposal, is considered to be consistent with a number of strategies and plans including:

- The NSW State priorities
- NSW Long Term Transport Master Plan
- Southern Regional Transport Plan
- Rebuilding NSW – State Infrastructure Strategy
- Draft South East and Tablelands Regional Plan
- Princes Highway Corridor Strategy.

An outline of how the EIS proposal and overall proposal meets the above strategies and plans is located in section 3.2. The construction of a new bridge over the Clyde River as part of the overall proposal is considered to be regionally important as the Princes Highway is a critical link for both passenger and freight traffic between NSW South Coast, Canberra, Illawarra and Sydney regions. Without the overall proposal the existing bridge, which is in need of repair or replacement in the medium to long term, has the potential to be deemed unsafe for use or require the introduction of further weight restrictions for heavier vehicles. The loss of this crossing of the Clyde River either for all vehicles or select heavy vehicles would result in substantial detours due to the lack of alternative routes between the NSW South Coast and north of Batemans Bay. Should the bridge at Batemans Bay be unavailable, alternative routes would include travel times of between 2.5 and four hours. The loss of this key route would potentially result in economic impacts on the NSW South Coast region due to its importance for both the tourism and freight industries. The new bridge would also allow an increase in higher mass limits which would benefit the freight industry.

While the Princes Highway and existing bridge have sufficient capacity in peak weekday and weekend periods for current and future traffic volumes, significant congestion in the overall proposal area is experienced in peak holiday periods. Holiday traffic congestion is predicted to increase as traffic volumes grow over time and queues over one kilometre in length at approaches to the Princes Highway and Kings Highway intersection are predicted by 2031. With the overall proposal, the road and intersection performance in the peak holiday periods would improve substantially and the queues at the approaches to the Princes Highway and Kings Highway intersection would be less than 100 metres in 2031.

To pass under the existing bridge most maritime vessels must wait for the central light span to be raised to provide sufficient clearance for passage. The raising of the central lift span is limited to non-peak traffic periods and outside the regular twice daily operation, requires at least one hour’s notice to the bridge operator for its operation. Consequently the existing bridge presents a substantial constraint to the marine vessels over about 3.7 metres in height. The overall proposal would have a permanent navigation span with up to 12 metres clearance over the Clyde River and therefore the majority of marine vessels would be able to pass underneath the new bridge and would no longer have to wait for a central lift span to be raised. Some marine vessels over 12 metres in height would no longer be able to travel upstream without lowering their mast, however
the number and impact of this would be low. The removal of the need to close the bridge to allow the central lift span to be raised would also eliminate road traffic queuing on bridge.

10.3 **Objects of the EP&A Act**

Table 10-1 provides a summary of the overall proposal (including the EIS proposal) against the objects of the EP&A Act.

<table>
<thead>
<tr>
<th>Object</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>5(a) (i) To encourage the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment.</td>
<td>The overall proposal is required to ensure the Princes Highway, an important route for movements between the NSW South Coast, Canberra, Illawarra and Sydney regions remains available. The overall proposal would also reduce peak holiday traffic congestion and reduce restrictions on marine vessels wanting to pass under the bridge crossing. The overall proposal has been designed where possible to minimise impacts on the environment and the community. A number of safeguards and management measures would be implemented to minimise any environmental impacts associated with the overall proposal.</td>
</tr>
<tr>
<td>5(a) (ii) To encourage the promotion and coordination of the orderly economic use and development of land.</td>
<td>The overall proposal is required to cater for the safe and efficient movement of people and goods along the Princes Highway.</td>
</tr>
<tr>
<td>5(a) (iii) To encourage the protection, provision and co-ordination of communication and utility services.</td>
<td>Some utilities would need to be relocated or protected for the overall proposal during construction. The management of utilities is considered in section 3.5.</td>
</tr>
<tr>
<td>5(a) (iv) To encourage the provision of land for public purposes.</td>
<td>The overall proposal involves work for the purpose of a road, which is for a public purpose.</td>
</tr>
<tr>
<td>5(a) (v) To encourage the provision and coordination of community services and facilities.</td>
<td>The overall proposal involves work for the purpose of a road and would not impact on any community services or facilities.</td>
</tr>
<tr>
<td>5(a)(vi) To encourage the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats.</td>
<td>Construction of the overall proposal would require the removal of vegetation. These impacts have however been minimised where possible and offset where impacts could not be mitigated. The potential impacts on vegetation, threatened species, population and ecological communities are discussed in section 6.1.3. Impacts to SEPP 14 wetlands has been minimised where possible. This is shown in the small areas that comprise the EIS proposal area.</td>
</tr>
<tr>
<td>5(a) (vii) To encourage ecologically sustainable development.</td>
<td>Ecologically sustainable development is considered in sections 8.2.1 to 8.2.4.</td>
</tr>
</tbody>
</table>
An objective of the EP&A Act is to encourage ecologically sustainable development. The principles of ecologically sustainable development have been considered throughout development of the overall proposal and are considered further below.

10.3.1 The precautionary principle

This principle states “if there are threats of serious or irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation”.

Evaluation and assessment of alternative options have aimed to reduce the risk of serious and irreversible impacts on the environment. Stakeholder consultation considered issues raised by stakeholders and a range of specialist studies were undertaken for key issues to provide accurate and impartial information to assist in the evaluation of options. The concept design of the overall proposal (and the EIS proposal) has sought to minimise impacts on the amenity of the study area while maintaining engineering feasibility and safety for all road users.

A number of safeguards have been proposed to minimise potential impacts. These safeguards would be implemented during construction and operation of the overall proposal. No safeguards have been postponed as a result of lack of scientific certainty. A construction environment management plan would be prepared before construction starts. This requirement would ensure the overall proposal achieves a high-level of environmental performance. No safeguards and management measures would be postponed as a result of a lack of information.

10.3.2 Intergenerational equity

The principle states, “the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations”.

The EIS proposal (as part of the overall proposal) would not result in any impacts that are likely to adversely impact on the health, diversity or productivity of the environment for future generations. The EIS proposal (as part of the overall proposal) would ensure the long-term availability of a crossing of the Clyde River at Batemans Bay and would also reduce peak holiday traffic congestion and reduce restrictions on marine vessels wanting to pass under the bridge crossing.

The long-term availability of the crossing would provide a key transport route between the NSW South Coast, Canberra, Illawarra and Sydney regions which would benefit the wider region into the future. Should the proposal not proceed, the principle of intergenerational equity may be compromised, as future generations would inherit a lower level of service which could involve substantial increases in travel times between the NSW South Coast, Canberra, Illawarra and Sydney regions due to a lack of alternative routes.
**10.3.3 Conservation of biological diversity and ecological integrity**

This principle states the “diversity of genes, species, populations and communities, as well as the ecosystems and habitats to which they belong, must be maintained and improved to ensure their survival”.

A thorough assessment of the existing local environment was undertaken to identify and manage any potential impacts of the EIS proposal on local biodiversity. The EIS proposal would result in impacts to up to 0.07 hectares of native vegetation, all of which comprises protected marine vegetation and 0.01 hectares of which is a threatened ecological community. The EIS proposal would not have a significant impact on biological diversity and ecological integrity.

A biodiversity assessment and site-specific safeguards are provided in section 7.1. Biodiversity offsets proposed as part of the EIS proposal are also outlined in section 7.1.4.

**10.3.4 Improved valuation, pricing and incentive mechanisms**

This principle requires “costs to the environment should be factored into the economic costs of a project”.

The EIS has examined the environmental consequences of the EIS proposal and identified safeguards and management measures to manage the potential for adverse impacts. The requirement to implement these safeguards and management measures would result in an economic cost to Roads and Maritime.

The implementation of safeguards and management measures would increase both the capital and operating costs of the EIS proposal (as part of the overall proposal). This signifies that environmental resources have been given appropriate valuation. The concept design has been developed with an objective of minimising potential impacts on the surrounding environment. This indicates that the overall proposal is being developed with an environmental objective in mind.

**10.4 Conclusion**

Roads and Maritime is proposing to construct a new Princes Highway bridge over the Clyde River at Batemans Bay. The existing bridge would be demolished following construction of the new bridge.

This EIS has addressed the key issues identified in the SEARs issued under Part 4 of the EP&A Act and the relevant provisions of Schedule 1 and 2 of the EP&A Regulation. A checklist showing where the SEARs are addressed in this environmental assessment is provided in chapter 1.

The EIS proposal (as part of the overall proposal) meets the overall proposal objectives and would help to maintain efficient operation of the Princes Highway, which is a critical link for both passenger and freight traffic between the NSW South Coast, Canberra, Illawarra and Sydney regions. The overall proposal would also enable higher mass limits and reduce peak holiday traffic congestion on this section of the Princes Highway.

A number of potential environmental impacts have been avoided or reduced during the concept design development and options assessment for the overall proposal. However, the overall proposal would result in some environmental impacts, including clearance of vegetation, noise and vibration impacts during construction, impacts on non-Aboriginal and Aboriginal heritage items, changes to flood patterns and potential impacts on water quality during construction. Implementation of the safeguards and management measures detailed in this REF would ameliorate or minimise expected impacts.
The EIS proposal is not likely to have a significant impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the *Environment Protection and Biodiversity Conservation Act 1999*. A referral to the Australian Department of the Environment and Energy is not required.

On balance, the EIS proposal is considered justified as the environmental impacts would be outweighed by the economic benefits and improved functionality of the new Princes Highway bridge over the Clyde River at Batemans Bay.
References


CSIRO. 2007. Australian Soil Research Information System (ASRIS)

Department of Environment and Climate Change (DECC). 2008. Sea Level Rise Vulnerability Study


Department of Environment, Climate Change and Water (DECCW). 2010a. Aboriginal Cultural Heritage Consultation Requirements for proponents.


Department of Environment, Climate Change and Water (DECCW). 2011. Road Noise Policy


Jacobs. 2016. Batemans Bay Bridge replacement Preliminary Environmental Investigation


Batemans Bay Bridge replacement
Environmental impact statement
## Terms and acronyms used in this EIS

<table>
<thead>
<tr>
<th>Term / Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>Average annual daily traffic</td>
</tr>
<tr>
<td>AHD</td>
<td>Australian Height Datum</td>
</tr>
<tr>
<td>ADT</td>
<td>Average daily traffic</td>
</tr>
<tr>
<td>CEMP</td>
<td>Construction environmental management plan</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental impact statement – Batemans Bay Bridge replacement environmental impact statement (this document)</td>
</tr>
<tr>
<td>EIS proposal</td>
<td>The part of the proposal that is located on land mapped as SEPP 14 wetlands and subject to Part 4 of the EP&amp;A Act 1979.</td>
</tr>
<tr>
<td>EP&amp;A Act</td>
<td><em>Environmental Planning and Assessment Act 1979 (NSW)</em>. Provides the legislative framework for land use planning and development assessment in NSW</td>
</tr>
<tr>
<td>EPL</td>
<td>Environmental Protection Licence under the <em>Protection of the Environment Operations Act 1997</em>.</td>
</tr>
<tr>
<td>EPBC Act</td>
<td><em>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</em>. Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.</td>
</tr>
<tr>
<td>ESD</td>
<td>Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased</td>
</tr>
<tr>
<td>FM Act</td>
<td><em>Fisheries Management Act 1994 (NSW)</em></td>
</tr>
<tr>
<td>Heritage Act</td>
<td><em>Heritage Act 1977 (NSW)</em></td>
</tr>
<tr>
<td>HML</td>
<td>Higher Mass Limit heavy vehicles</td>
</tr>
<tr>
<td>ISEPP</td>
<td>State Environmental Planning Policy (Infrastructure) 2007</td>
</tr>
<tr>
<td>LALC</td>
<td>Local Aboriginal Land Council</td>
</tr>
<tr>
<td>LGA</td>
<td>Local Government Area</td>
</tr>
<tr>
<td>LoS</td>
<td>Level of Service. A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers.</td>
</tr>
<tr>
<td>MHWS</td>
<td>Mean High Water Springs</td>
</tr>
<tr>
<td>Term / Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Noxious Weeds Act</td>
<td><em>Noxious Weeds Act 1993 (NSW)</em></td>
</tr>
<tr>
<td>NPW Act</td>
<td><em>National Parks and Wildlife Act 1974 (NSW)</em></td>
</tr>
<tr>
<td>POEO Act</td>
<td><em>Protection of the Environment Operations Act 1997</em></td>
</tr>
<tr>
<td>Proposal area</td>
<td>comprises the operational footprint of the proposal and areas required for construction activities</td>
</tr>
<tr>
<td>REF</td>
<td>Review of Environmental Factors - Batemans Bay Bridge replacement review of environmental factors</td>
</tr>
<tr>
<td>REF proposal</td>
<td>The part of the proposal that is not located on land mapped as SEPP 14 wetlands.</td>
</tr>
<tr>
<td>RL</td>
<td>Relative level</td>
</tr>
<tr>
<td>ROL</td>
<td>Road Occupancy Licence</td>
</tr>
<tr>
<td>Roads and Maritime</td>
<td><em>NSW Roads and Maritime Services</em></td>
</tr>
<tr>
<td>SEPP 14</td>
<td><em>State Environmental Planning Policy No.14 – Coastal Wetlands</em></td>
</tr>
<tr>
<td>The Proposal</td>
<td>The Batemans Bay Bridge replacement proposal: a new bridge on the A1 Princes Highway over the Clyde River at Batemans Bay.</td>
</tr>
<tr>
<td>TSC Act</td>
<td><em>Threatened Species Conservation Act 1995 (NSW)</em></td>
</tr>
</tbody>
</table>
Appendix A

Secretary’s environmental assessment requirements
### ATTACHMENT 1

**Secretary’s Environmental Assessment Requirements**

**Section 78A (8) of the Environmental Planning and Assessment Act 1979**

**Designated Development**

<table>
<thead>
<tr>
<th>Proposal</th>
<th>Construction of a new crossing of Clyde River on the Princes Highway at Batemans Bay (within SEPP 14 Wetland Boundaries)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Batemans Bay, Eurobodalla LGA</td>
</tr>
<tr>
<td>Applicant</td>
<td>Roads and Maritime Services</td>
</tr>
<tr>
<td>Date of Issue</td>
<td>1 June 2017</td>
</tr>
<tr>
<td>General Requirements</td>
<td>The Environmental Impact Statement (EIS) must meet the minimum form and content requirements in clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000.</td>
</tr>
</tbody>
</table>

#### Key Issues

- **Project justification** – including the need for the proposal, its consistency with relevant strategic planning documents and consideration of impacts of 'no action' and consideration of different alignments and technologies of constructing the new bridge.

- **Flora and fauna** –
  - Impacts on flora and fauna and habitat, within and surrounding the proposed development footprint, including threatened species, ecological communities and critical habitat listed under the Threatened Species Conservation Act 1995
  - Impacts on marine vegetation and aquatic species and key fish habitat listed under the Fisheries Management Act 1994 and aquaculture activities in the area

- **Heritage** – impacts on Aboriginal heritage (including cultural and archaeological significance). The assessment shall be undertaken consistent with the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (CEH 2011) and related guidelines and requirements.

- **Coastal Processes** –
  - The effects of coastal processes and coastal hazards including the effects of climate change
  - Consistency with coastal zone management plans, floodplain risk management plans and flood hazards associated with the land
  - Flooding – consideration of the impacts of the proposal on the hydraulic and hydrologic regime of the area

- **Soil and water quality** – detail the disturbance of soils, and the associated impacts on:
  - Receiving water ways and wetlands, in particular the Batemans Marine Park
  - Groundwater dependent ecosystems
  - Surface and groundwater sources and quality
  - Occurrence of acid sulfate soils and likely disturbance of those soils
- **Traffic** – consideration of the traffic impacts on the surrounding land uses during construction
- **Noise** – assess the likely impacts during construction in accordance with relevant construction noise guidelines, and the effectiveness of any necessary measures to manage and mitigate construction noise
- **Waste** – detail waste classification, handling, control and disposal measures
- **Visual amenity** – consideration of the visibility of the project from adjacent sensitive viewpoints
- **Environmental Monitoring and Management** – the EIS must describe in detail what measures would be implemented to manage, mitigate or offset the potential impacts (including cumulative impacts) of the proposal (as identified above) during construction and operation as relevant, and where required, describe how the environmental performance of the proposal would be monitored and managed over time. Where possible, reasonable and feasible mitigation measures should be developed in consultation with surrounding affected landowners and relevant public authorities.

<table>
<thead>
<tr>
<th>Planning Documents and Environmental Planning Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>The EIS must assess the proposal against the relevant planning documents and environmental planning instruments, including, but not limited to:</td>
</tr>
<tr>
<td>- State Environmental Planning Policy No 14 – Wetlands</td>
</tr>
<tr>
<td>- State Environmental Planning Policy No 71 – Coastal Protection</td>
</tr>
<tr>
<td>- State Environmental Planning Policy (Infrastructure 2007)</td>
</tr>
<tr>
<td>- Draft South East and Tablelands Regional Plan 2017</td>
</tr>
<tr>
<td>- Eurobodalla Local Environmental Plan 2012</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agency Issues and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the preparation of the EIS you should address relevant development assessment guidelines available on the Department's website at planning.nsw.gov.au.</td>
</tr>
<tr>
<td>Matters to be considered and guidelines identified in consultation with agencies in the preparation of these requirements should also be addressed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plans and Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>The EIS must include all relevant plans, diagrams and relevant documentation required under Schedule 1 of the Regulation. These items are to be provided as part of the EIS rather than as separate documents.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consultation</th>
</tr>
</thead>
<tbody>
<tr>
<td>You must undertake an appropriate and justified level of consultation with relevant parties during the preparation of the EIS, including:</td>
</tr>
<tr>
<td>- local, State or Commonwealth government authorities and service providers including the:</td>
</tr>
<tr>
<td>- Office of Environment and Heritage</td>
</tr>
<tr>
<td>- Department of Primary Industries (including Fisheries, Water and Lands)</td>
</tr>
<tr>
<td>- NSW Environment Protection Authority (EPA)</td>
</tr>
<tr>
<td>- Marine Park Authority</td>
</tr>
<tr>
<td>- Eurobodalla Shire Council</td>
</tr>
<tr>
<td>- specialist interest groups, including local Aboriginal land councils and Registered Aboriginal Parties</td>
</tr>
<tr>
<td>- utilities and service providers</td>
</tr>
<tr>
<td>- the local community, including affected and surrounding landowners</td>
</tr>
</tbody>
</table>

The EIS must describe the consultation process, document consultation undertaken and identify any issues raised (including where these have been addressed in the EIS).
| Further Consultation After Two Years | You should note that if the Development Application to which these requirements relate is not made within two years of the date of issue, you must re-consult with the Secretary prior to lodging the application. |
Appendix B

Environmental Planning and Assessment Regulation 2000 checklist
Environmental Planning and Assessment Regulation 2000 checklist

Schedule 2 of the Environmental Planning and Assessment Regulation 2000 has been assessed below. Relevant parts of Schedule 1 have also been addressed.

**Form of the environmental impact statement**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>An environmental impact statement must contain the following information</td>
<td></td>
</tr>
<tr>
<td>(a) the name, address and professional qualifications of the person by whom the statement is prepared,</td>
<td>Certification page</td>
</tr>
<tr>
<td>(b) the name and address of the responsible person,</td>
<td>Certification page</td>
</tr>
<tr>
<td>(c) the address of the land:</td>
<td></td>
</tr>
<tr>
<td>(i) in respect of which the development application is made, or</td>
<td></td>
</tr>
<tr>
<td>(ii) on which the activity or infrastructure to which the statement relates is to be carried out,</td>
<td>Certification page</td>
</tr>
<tr>
<td>(d) a description of the development, activity or infrastructure to which the statement relates,</td>
<td>Certification page</td>
</tr>
<tr>
<td>(e) an assessment by the person by whom the statement is prepared of the environmental impact of the development, activity or infrastructure to which the statement relates, dealing with the matters referred to in this Schedule, and</td>
<td>Certification page</td>
</tr>
<tr>
<td>(f) a declaration by the person by whom the statement is prepared to the effect that:</td>
<td>Certification page</td>
</tr>
<tr>
<td>(i) the statement has been prepared in accordance with this Schedule, and</td>
<td></td>
</tr>
<tr>
<td>(ii) the statement contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure to which the statement relates, and</td>
<td></td>
</tr>
<tr>
<td>(iii) that the information contained in the statement is neither false nor misleading.</td>
<td></td>
</tr>
</tbody>
</table>

**Content of the environmental impact statement**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Where addressed in the EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) An environmental impact statement must also contain each of the following:</td>
<td></td>
</tr>
<tr>
<td>a) a summary of the environmental impact statement,</td>
<td>Executive summary</td>
</tr>
<tr>
<td>Requirement</td>
<td>Where addressed in the EIS</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>b) a statement of the objectives of the development, activity or infrastructure,</td>
<td>Section 3.3</td>
</tr>
<tr>
<td>c) an analysis of any feasible alternatives to the carrying out of the development activity or infrastructure, having regard to its objectives, including the consequences of not carrying out the development, activity or infrastructure,</td>
<td>Chapter 4</td>
</tr>
<tr>
<td>d) an analysis of the development, activity or infrastructure, and i) a full description of the development, activity or infrastructure</td>
<td>Chapter 5</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>ii) a general description of the environment likely to be affected by the development activity or infrastructure, together with a detailed description of those aspects of the environment that are likely to be significantly affected, and</td>
<td>Chapters 7 and 8</td>
</tr>
<tr>
<td>iii) the likely impact on the environment of the development, activity or infrastructure, and</td>
<td>Chapters 7 and 8</td>
</tr>
<tr>
<td>iv) a full description of the measures proposed to mitigate any adverse effects of the development, activity or infrastructure on the environment, and</td>
<td>Chapters 7 and 8</td>
</tr>
<tr>
<td>v) a list of any approvals that must be obtained under any other Act or law before the development, activity or infrastructure may lawfully be carried out,</td>
<td>Chapter 1.5.2</td>
</tr>
<tr>
<td>Requirement</td>
<td>Where addressed in the EIS</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>e) compilation (in a single section of the environmental impact statement) of the measures referred to in item (d)(iv)</td>
<td>Chapter 9</td>
</tr>
<tr>
<td>f) the reasons justifying the carrying out of the development, activity or infrastructure in the manner proposed, having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development set out in subclause (4) of Schedule 2 Part 3 Section 7.</td>
<td>Chapters 3 and 10</td>
</tr>
</tbody>
</table>

2) Subclause (1) is subject to the environmental assessment requirements that relate to the environmental impact statement.

SEARs are addressed throughout the document. Refer to chapter 1 for breakdown on where SEARs are addressed.

3) Subclause (1) does not apply if:
   (a) the Secretary has waived (under clause 3 (9)) the need for an application for environmental assessment requirements in relation to an environmental impact statement in respect of State significant development, and
   (b) the conditions of that waiver specify that the environmental impact statement must instead comply with requirements set out or referred to in those conditions.

Not applicable

4) Principles of ecologically sustainable development

Section 10.3
Appendix C

Biodiversity assessment
Appendix D

Aboriginal heritage assessment
Appendix E

Hydrology and coastal processes assessment
Appendix F

Soils and geology assessment
Appendix G

Operational water quality assessment
Appendix H

Traffic and transport assessment
Appendix I

Noise and vibration assessment
Appendix J

Urban design, landscape character and visual impact assessment