

# South Batemans Bay Link Road

## Preferred Option Report

Roads and Maritime Services | October 2019

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Prepared by Roads and Maritime Services

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# Executive summary

Roads and Maritime Services is planning for a connection between the Princes Highway and the existing South Batemans Bay Link Road at Glenella Road (the proposal).

The proposal aims to allow for land use development and increase freight access and productivity in the Batemans Bay central business district (CBD), southern coastal villages and proposed Surf Beach employment lands. It also aims to ease congestion in the Batemans Bay CBD, particularly along Beach Road, by providing a safe and efficient alternative access to the southern coastal villages.

In June 2014, the NSW Government announced \$10 million for the South Batemans Bay Link Road to improve traffic flow and support future growth in the region. In early 2019, Eurobodalla Shire Council completed construction of the South Batemans Bay Link Road between George Bass Drive and Heron Road, east of the Princes Highway. The completed section of the South Batemans Bay Link Road is known as Glenella Road (Figure 1-1).

In January 2019, the NSW Government announced funding of \$30 million for Roads and Maritime to finalise planning and build the connection of the South Batemans Bay Link Road and the Princes Highway.

The main objective of the South Batemans Bay Link Road proposal is to:

- Provide a safe and efficient connection between the Princes Highway and the South Batemans Bay Link Road.

The other objectives are to:

- Facilitate land use development in the Batemans Bay CBD and southern coastal villages to support residential property and employment growth
- Increase freight productivity for heavy vehicles accessing the southern coastal villages and the proposed Surf Beach employment lands
- Improve traffic amenity in the Batemans Bay CBD.

The proposal is located within Mogo State Forest, in an area of very steep terrain and dense vegetation. Access to and within the study area would be challenging during construction. Substantial retaining structures would likely be required. Given these constraints, it was concluded that following the existing path of The Ridge Road to connect the new intersection with the newly completed South Batemans Link Road would provide value for money, be safer to construct and result in lower environmental impacts.

Roads and Maritime has identified a range of intersection options to connect the South Batemans Link Road with the Princes Highway. Past early development work identified that a highway realignment, a grade separated interchange or similar large scale solutions could not be built for the identified funding.

This past work also identified the preferred location for an intersection with the Princes Highway about 150 metres north of the existing Ridge Road intersection.

With the location of the road and intersection locations decided, the project team focused the options identification and assessment process on various intersection types. These were:

- Roundabout (Option 1) (Figure 4-1)
- Seagull (Option 2) (Figure 4-2)
- Left in left out (Option 3) (base case) (Figure 4-3)
- Channelised right turn (Option 4) (Figure 4-4)

Each of the options was assessed against a range of criteria that relate closely to the proposal objectives and best enable differentiation between options. The assessment criteria were:

- Road safety
- Traffic efficiency
- Environment
- Property
- Constructability
- Cost.

An internal Roads and Maritime options evaluation workshop was held in September 2019 to agree on the criteria and assessment of each option (see Section 5) as well as to recommend a preferred option (see Section 6).

The options assessment process identified the roundabout (Option 1) performed consistently well across all assessment criteria. A roundabout to connect the South Batemans Bay Link Road to the Princes Highway would also require a reduced speed limit on the highway and provide a physical structure to slow traffic, while having a low number of conflict points. This is expected to reduce the number and severity of crashes on the Princes Highway in comparison to other options. A roundabout would also enable all traffic movements to and from the South Batemans Bay Link Road, while maintaining efficient north and southbound travel on the Princes Highway.

The roundabout (Option 1) would require the smallest construction footprint, resulting in the lowest environmental and property impacts. It is also the most constructible option, having the least impact on highway traffic and requiring smaller retaining structures than the other options.

While the roundabout (Option 1) was not the lowest cost option, it is only marginally higher than the lowest cost option (Option 3 - left in left out), but provides greater benefits in particular in regard to road safety and traffic accessibility to and from the Princes Highway.

The roundabout (Option 1) is considered to best meet the main objective of the South Batemans Bay Link Road proposal to provide a safe and efficient connection between the Princes Highway and the South Batemans Bay Link Road. The other objectives of the proposal are also met by the roundabout (Option 1). The roundabout (Option 1) was agreed as the preferred option by all attendees at the internal options assessment workshop.

Roads and Maritime is now seeking feedback from the community on the preferred option. The preferred option will be placed on public display until 22 November 2019 to provide the community and stakeholders an opportunity to review the preferred option and provide feedback.

Roads and Maritime will use this information to further refine the preferred option. Roads and Maritime will start work on the environmental impact assessment for the proposal, which will have more detailed information about the design features, potential benefits and impacts, as well as offer further opportunities for the community and key stakeholders to provide feedback.

Please visit the project website at [rms.work/sbblr](https://rms.work/sbblr) for more information and to provide your feedback.

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# 1. Introduction

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Roads and Maritime Services has started early planning for a connection between the Princes Highway and the existing South Batemans Bay Link Road (also known as Glenella Road) (the proposal).

The proposal aims to allow for land use development and increase freight access and productivity in the Batemans Bay central business district (CBD), southern coastal villages and proposed Surf Beach employment lands. It also aims to ease congestion in the Batemans Bay CBD, particularly along Beach Road, by providing a safe and efficient alternative access to the southern coastal villages.

## 1.1 Background

Batemans Bay is the main commercial centre of the Eurobodalla Shire. The town centre has a mix of commercial, tourist, recreational and residential land uses. There is further urban residential land located along the coastal villages south of Batemans Bay. The area is a popular tourist destination, particularly for Australian Capital Territory (ACT) residents and the Batemans Bay population increases substantially during holiday periods.

The Princes Highway is an important connection for regional motorists and is a key route for recreational and tourist traffic movements. The traffic volume on the Princes Highway just south of Batemans Bay is around 8,800 vehicles per day with 8.3 per cent heavy vehicles and a growth rate of around 1.2 per cent per year.

Beach Road is a regional road and a major sub-arterial road through the Batemans Bay CBD linking the Princes Highway, just south of the Batemans Bay Bridge, to the various residential areas and beaches south of the CBD, from Catalina to Surf Beach and further south along George Bass Drive (Figure 1-1).

To reduce pressure on the existing Beach Road/Princes Highway intersection, ease congestion in the CBD and accommodate future traffic growth in response to land use development, Eurobodalla Shire Council proposed an east-west link between the Batehaven Bypass (George Bass Drive) and the Princes Highway. This would provide an alternative access between the Princes Highway and the southern coastal villages of Batemans Bay. This is known as the South Batemans Bay Link Road.

In June 2014, the NSW Government announced \$10 million funding for the South Batemans Bay Link Road to improve traffic flow and support future growth in the region. Eurobodalla Shire Council was allocated \$9.5 million to build the South Batemans Bay Link Road, Roads and Maritime was allocated \$500,000 for early development for the connection to the Princes Highway.

In 2015, Roads and Maritime developed and assessed a number of strategic options connecting the South Batemans Bay Link Road with the Princes Highway. The strategic options investigated by Roads and Maritime at this time were mostly large-scale highway realignments and grade separated interchanges. A lower scale option of a dual lane roundabout was also investigated.

Funding to further develop the proposal past this stage was secured and announced in 2019.

On 8 January 2019, the NSW Government announced funding of \$30 million to finalise planning and build the connection of the South Batemans Bay Link Road and the Princes Highway.

In early 2019, Eurobodalla Shire Council completed construction of the South Batemans Bay Link Road between George Bass Drive and Heron Road, east of the Princes Highway. The completed section of the South Batemans Bay Link Road is known as Glenella Road.

This report has been prepared to document the decision making processes used to arrive at the preferred option to connect the South Batemans Bay Link Road with the Princes Highway. It includes the identification, consideration and assessment of a number of options.



## 1.2 Proposal objectives

The main objective of the proposal is to:

- Provide a safe and efficient connection between the Princes Highway and the South Batemans Bay Link Road.

Other objectives are to:

- Facilitate land use development in the Batemans Bay CBD and southern coastal villages to support residential property and employment growth
- Increase freight productivity for heavy vehicles accessing the southern coastal villages and the proposed Surf Beach employment lands
- Improve traffic amenity in the Batemans Bay CBD.

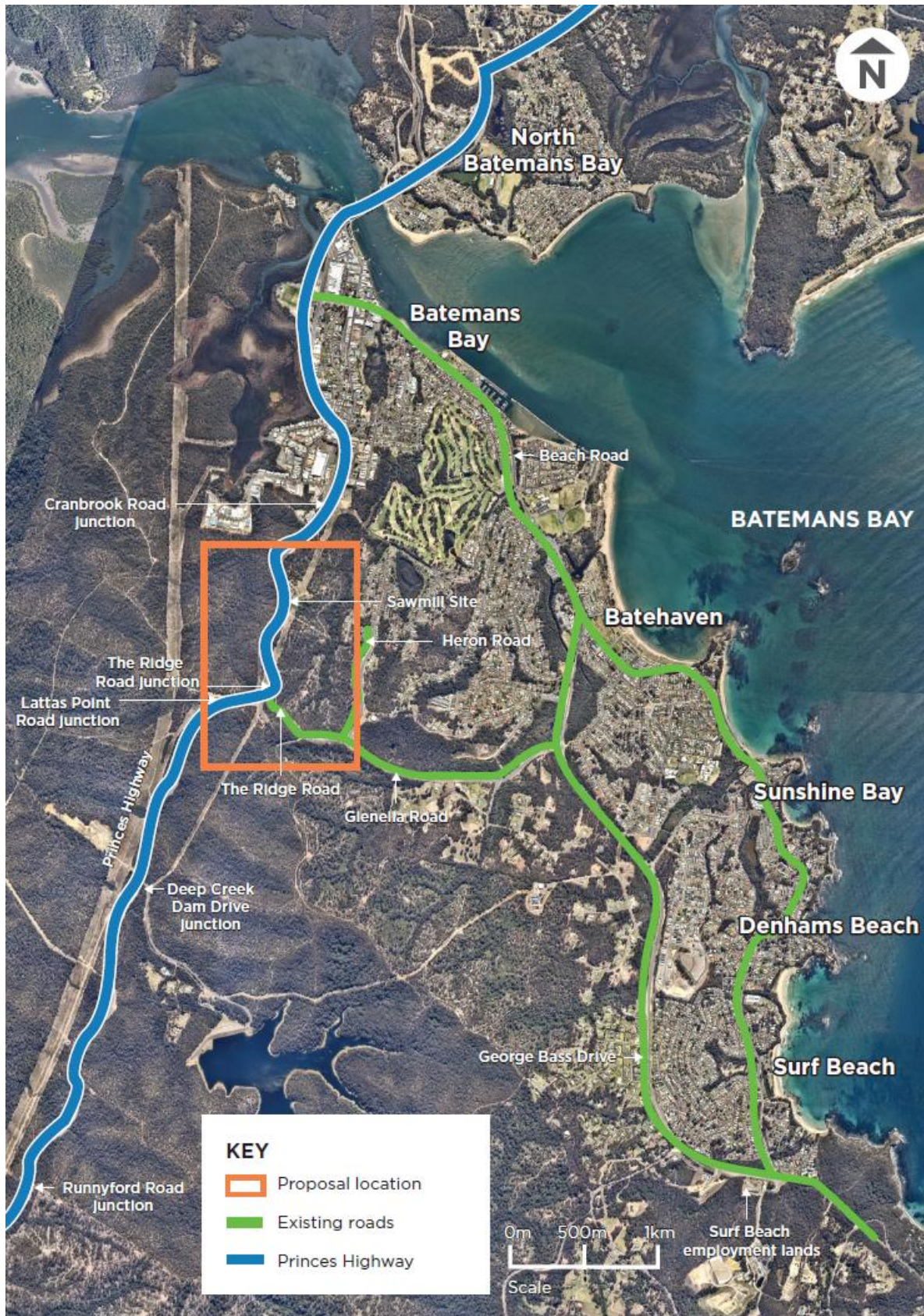
Roads and Maritime also places a high priority on achieving quality project outcomes from a customer, time, budget, environmental and work health and safety perspective. These factors are fundamental to design development, options evaluation and options selection.

## 1.3 Purpose of this report

The purpose of this report is to describe the steps taken to identify a preferred option to connect the Princes Highway with the South Batemans Bay Link Road.

Specifically, this report:

- Identifies the need for the proposal
- Summarises the proposal issues and constraints
- Presents the options
- Documents the options assessment process
- Identifies the preferred option for the proposal.



**Figure 1-1: South Batemans Bay Link Road regional context**



## 2. Need for the proposal

The Princes Highway is an important connection for regional road users and is a key route for commuter, recreational and commercial traffic movements. Beach Road connects with the Princes Highway just south of the Batemans Bay Bridge. Beach Road extends east through the Batemans Bay CBD, then south-east to various residential areas and beaches from Catalina to Surf Beach (Figure 1-1).

Eurobodalla Shire Council has observed Beach Road often experiences congestion, particularly during holiday periods.

The potential benefits of connecting the Princes Highway with the South Batemans Bay Link Road include:

- Improving journey reliability and reducing delays by enabling access to the South Batemans Bay Link Road from the Princes Highway
- Reducing traffic congestion through the Batemans Bay CBD
- Improving road safety and a reducing the rate of fatal and serious injury (FSI) crashes (including reductions from a reduced speed zone between Cranbrook Road)
- Improving freight access and travel time
- Supporting residential and employment growth by improving access to areas south-east of the Batemans Bay CBD.

The proposal is consistent with relevant strategic planning documents, as described in Table 2-1.

**Table 2-1: Strategic alignment of the proposal**

Strategic plans	Strategic alignment of the proposal
NSW Premiers Priorities 2018	The proposal contributes to achieving several priorities including: <ul style="list-style-type: none"><li>• Increasing housing supply (State)</li><li>• Reducing road fatalities (State)</li></ul>
State Infrastructure Strategy 2018-2038: Building Momentum	The proposal contributes to achieving the sector based strategic objectives for transport by: <ul style="list-style-type: none"><li>• Supporting the 'hub and spoke' model of connected regional centres</li><li>• Providing safer, more efficient road freight corridors</li><li>• Removing constraints on the local road network</li><li>• Providing infrastructure to keep pace with regional population growth</li></ul>
NSW Future Transport Strategy 2056	The proposal contributes to achieving the customer outcomes identified in the Regional Services and Infrastructure Plan by: <ul style="list-style-type: none"><li>• Connecting people and places in growing regions</li><li>• A strong economy – improvements to the M1 Princes Highway will create more efficient connections between people, jobs and services in the South Coast</li><li>• Safety and performance – reducing road fatalities across the state</li><li>• The proposal would be developed to balance the function of the Princes Highway with the needs of the community and local business by providing an efficient movement corridor.</li></ul>
South East and Tableland Regional Plan 2036	The proposal responds to: <ul style="list-style-type: none"><li>• Direction 11: Enhance strategic transport links to support economic growth - by delivering new road infrastructure that would address local congestion issues and improve road safety and freight logistics in Batemans Bay.</li></ul>

Strategic plans	Strategic alignment of the proposal
NSW Freight and Ports Plan 2018-2023	The proposal would contribute to the delivery of a freight network that supports economic growth by improving efficiency for freight accessing the proposed Surf Beach employment lands and servicing coastal villages further to the south. The proposal would also contribute to efficiency, safety and access objectives by reducing the number of heavy vehicles passing through the Batemans Bay CBD, which would also result in safety and amenity improvements for the local community.
NSW Road Safety Plan 2021	The proposal would provide a safe connection between the Princes Highway and the South Batemans Bay Link Road.
Tourism and Transport Plan	<p>This proposal supports the plan by:</p> <ul style="list-style-type: none"> <li>• Providing greater access to more of NSW</li> <li>• Making transport the attraction</li> <li>• A seamless experience</li> </ul>
NSW South Coast Marine Tourism Strategy	The proposal aligns with Strategic Direction 4: Tourism Activation of the Marine Environment by improving accessibility to the South Coast from Sydney.

### 3. Proposal issues and constraints

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Investigations carried out by Roads and Maritime have identified key issues and constraints which have assisted in the development of the proposal. The key constraints and their implications for the proposal are described in the following sections.

The study area for the proposal is broadly located within 200 to 400 metres either side of the existing Princes Highway and Ridge Road corridors, from south of Cranbrook Road to Glenella Road, South Batemans Bay.

The study area is located within Mogo State Forest, in an area of very steep terrain and dense vegetation. The closest residential properties are located on Albatross Road, Heron Road and Gannet Place, Catalina.

#### 3.1 Statutory and planning framework

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the main piece of legislation regulating land use planning and development in NSW. The planning pathway for development under the EP&A Act is generally dependent on the development's size, environmental impact and capital cost, as well as relevant planning provisions under other pieces of NSW legislation. Assessment of infrastructure proposals is generally in accordance with Division 5.1 or Division 5.2 of the EP&A Act.

In August 2019 Roads and Maritime confirmed the proposal would be assessed under Division 5.1 of the EP&A Act. This decision was based on the assumption the proposal is not expected to have a significant effect on the surrounding environment. A review of environmental factors (REF) will be prepared to document the environmental assessment process. Roads and Maritime would be the proponent and determining authority. If the environmental assessment indicates the proposal may significantly affect the environment, an environmental impact statement (EIS) would be prepared in accordance with the provisions of the EP&A Act.

##### 3.1.1 State Environmental Planning Policies

The proposal would require consideration of the State Environmental Planning Policies (SEPPs) described below.

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

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the state, including for roads and road infrastructure facilities. Clause 94 of the 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.

The proposal is appropriately characterised as development for the purposes of a road or road infrastructure facilities, and would be carried out by or on behalf of Roads and Maritime. As such, the proposal would be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required. A REF would be prepared to document the environmental assessment. Roads and Maritime would be the proponent and determining authority.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and would not require development consent or approval under State Environmental Planning Policy (Coastal Management) 2018, State Environmental Planning Policy (State Significant Precincts) 2005 or State Environmental Planning Policy (State and Regional Development) 2011.

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

State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) identifies development that is State Significant Infrastructure (SSI). Schedule 3 Clause 1 of SRD SEPP provides that the following general public authority activities are State significant infrastructure:

*Infrastructure or other development that (but for Division 5.2 of the Act and within the meaning of Part 5 of the Act) would be an activity for which the proponent is also the determining authority and would, in the opinion of the proponent, require an environmental impact statement to be obtained under Part 5 of the Act.*

*This clause does not apply to development if, in the opinion of the proponent, its likely significant effect on threatened species is the only significant effect on the environment (whether or not an environmental impact statement is dispensed with under Section 7.8 of the Biodiversity Conservation Act 2016).*

The proposal is not expected to require an environmental impact statement or have a significant effect on the surrounding environment. Therefore the proposal is unlikely to comprise SSI or State Significant Development. Should it be identified during the environmental assessment that the proposal is likely to significantly affect the environment, an environmental impact statement would be prepared in accordance with the provisions of the EP&A Act.

### **State Environmental Planning Policy (Coastal Management) 2018**

State Environmental Planning Policy (Coastal Management) 2018 (CM SEPP) commenced on 3 April 2018 and replaced State Environmental Planning Policy No 14 – Coastal Wetlands, State Environment Planning Policy No 26 - Littoral Rainforest and State Environment Planning Policy No 71 - Coastal Protection.

CM SEPP promotes an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the *Coastal Management Act 2016*.

A small area in the north-west of the study area is within the Coastal Environment area. Any work proposed in this area would need to be considered in regard to Clause 13 of the CM SEPP.

### **State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017**

The State Environmental Planning Policy (Vegetation in Non-Rural Areas) (VSEPP) complements the *Biodiversity Conservation Act 2016* and the *Local Land Services Amendment Act 2016* to create a framework for the regulation of clearing of native vegetation in NSW.

Part of the study area is within the VSEPP mapped area. In accordance with Clauses 8 and 25 of the VSEPP, vegetation clearing for the proposal within areas mapped under the VSEPP would be permitted provided it is assessed and determined in the proposal REF.

### **State Environmental Planning Policy 44 – Koala Habitat Protection**

State Environmental Planning Policy No 44 - Koala Habitat Protection (SEPP 44) applies to several local government areas (LGAs) across NSW, including the Eurobodalla LGA. SEPP 44 identifies land that is potential koala habitat and land that is core koala habitat. It provides guidelines and matters for consideration as to whether development consent can be granted in relation to core koala habitat.

Although some koala feed tree species (as defined in Schedule 2 of SEPP 44) may be present in the study area, no koalas or signs of their presence have been recorded during the surveys within the study area to date. Joliffe et al. (2013) reported that, since 2009, there had been no clear evidence of koalas persisting in the Eurobodalla LGA, and the impression from formal records and local knowledge was that Koala numbers in the LGA, which had declined since the mid-20th century, were at a critical point by about the year 2000. Very few koalas appear to remain on the NSW south coast as a whole, and most recent sightings are concentrated about 100 kilometres south of the study area (OEH 2016).

While SEPP 44 does not affect the permissibility of the proposal under Division 5.1, the REF would include considerations of the proposal's impact on koala habitat, if found to be present.

### 3.1.2 Other relevant legislation and environmental planning instruments

#### ***Eurobodalla Local Environmental Plan 2012***

The study area is located within the Eurobodalla LGA and therefore the *Eurobodalla Local Environmental Plan 2012* (Eurobodalla LEP) applies. The study area is zoned RU3 Forestry and SP2 Infrastructure along the Princes Highway corridor.

It is expected the proposal could be carried out by, or on behalf of, Roads and Maritime without development consent under State Environmental Planning Policy (Infrastructure) 2007. Therefore the consent requirements of the Eurobodalla LEP would not apply.

#### ***Roads Act 1993***

The *Roads Act 1993* (Roads Act) provides for the classification of roads and the declaration of Roads and Maritime and other public authorities as roads authorities for both classified and unclassified roads. It also regulates the carrying out of various activities in, on and over public roads.

The Roads Act also provides for the entry into land for inspection and investigation purposes.

A Road Occupancy Licence under Section 138 of the Roads Act is expected to be required during construction of the proposal.

#### ***Forestry Act 2012***

The *Forestry Act 2012* (Forestry Act) provides for (amongst other things) the dedication and revocation of State forests in NSW and the regulation of forestry and non-forestry activities within dedicated State forests, timber reserves and flora reserves. The Forestry Act also establishes the Forestry Corporation of NSW, which is responsible for the management of forestry activities within State Forests.

Activities carried out within State Forests are generally managed in accordance with the Forestry Corporation of NSW's system, which classifies State forest land as one of eight categories referred to as Forest Management Zones (FMZ). These management zones set out the way the Forestry Corporation of NSW intends to manage forest areas and differentiate between those areas of State forests which are set aside for conservation and those areas that are available for other activities including timber harvesting.

The study area is located within Mogo State Forest and includes areas mapped as Special Management (Zone 2), Special Prescription (Zone 3), General Management (Zone 4) and non-Forestry use. Some of the land affected by the proposal would require revocation of the State Forest status in accordance with the provisions of the *Forestry Act 2012*. This may involve a resolution or Act of Parliament.

#### ***Crown Lands Management Act 2016***

The *Crown Land Management Act 2016* (Crown Lands Management Act) repealed the Crown Lands Act 1989 on 1 July 2018. The Crown Land Management Act provides the legislative framework for the administration of land that is vested in the Crown in NSW. Ministerial approval is required to grant a 'lease, licence, permit, easement or right of way over a Crown Reserve'.

Crown land is located immediately north of the study area, however based on preliminary investigations no Crown land is expected to be affected by the proposal. If Crown land is identified as being affected by the proposal, the relevant requirements of the *Crown Lands Management Act 2016* and *Commonwealth Native Title Act 1993* would need to be implemented.

### ***Marine Estate Management Act 2014***

The *Marine Estate Management Act 2014* provides the rules for the management of the marine estate of New South Wales as well as the declaration and management of marine parks and aquatic reserves.

The Clyde River near the study area is part of the Batemans Marine Park, which extends from Murramarang Beach near Bawley Point in the north to the entrance to Wallaga Lake at Murunna Point in the south.

Section 56(3) of the *Marine Estate Management Act 2014* requires that a determining authority must not carry out, or approve an activity in the locality of a marine park without considering the criteria set out in that section.

The Batemans Marine Park is about 500 metres from the study area at its closest point, and is separated from the study area by the Cranbrook Road industrial area. As such, it is considered that the proposal is not in the locality of the Batemans Marine Park and therefore Section 56(3) of the *Marine Estate Management Act 2014* would not apply to the proposal.

### ***Protection of the Environment Operations Act 1997***

The *Protection of the Environment Operations Act 1997* (POEO Act) focuses on protecting, restoring and enhancing the environment within NSW, and through the use of various mechanisms, reduce potential risks to human health and the environment. It aims to provide opportunity for increased public involvement and access to information regarding environmental protection.

The POEO Act identifies scheduled activities where an environment protection licence (EPL) is required. The main scheduled activity under the Act that may apply to the proposal is road construction that results in the extraction or processing (over the life of the construction) of more than 50,000 tonnes of materials (clause 35). The proposal may require an EPL under this clause.

### ***Biodiversity Conservation Act 2016***

The *Biodiversity Conservation Act 2016* (BC Act) was passed by the NSW Parliament in November 2016 and came into effect on 25 August 2017. The *Threatened Species Conservation Act 1995* (TSC Act), *Native Vegetation Act 2003* (NV Act) and some parts of the *National Parks and Wildlife Act 1974* (NPW Act) were repealed on 25 August 2017. As a result, the matters relating to the listing of threatened species, biodiversity impact assessment, offsetting and related offences are now contained within the BC Act.

The BC Act, together with the Biodiversity Conservation Regulation 2017, provides a mechanism to address impacts on biodiversity from land clearing associated with development. Under this legislation, there are provisions for a Biodiversity Offsets Scheme (BOS), which includes a framework to avoid, minimise and offset impacts of development on biodiversity.

Based on preliminary investigations, several threatened ecological communities and threatened flora and fauna species listed under the BC Act are known or likely to occur within and near the study area. The potential for the proposal to impact on threatened species listed under the BC Act would be considered during the environmental assessment for the proposal.

### ***National Parks and Wildlife Act 1974***

The *National Parks and Wildlife Act 1974* (NPW Act) provides the basis for legal protection and management of National Parks estate and Aboriginal sites and objects in NSW.

Section 86 lists offences relating to harming or desecrating Aboriginal objects. Under Section 90(1) of the Act, where harm to an Aboriginal object or Aboriginal place cannot be avoided, an Aboriginal Heritage Impact Permit (AHIP) is required.

There are known Aboriginal heritage sites within the study area. The potential for the proposal to impact on Aboriginal heritage would be considered during the environmental assessment for the proposal.



The Clyde River National Park is about 3.5 kilometres north-west of the study area. There are no National Parks within or near the study area.

### ***Heritage Act 1977***

The *Heritage Act 1977* concerns all aspects of heritage conservation ranging from basic protection against indiscriminate damage and demolition of buildings and sites, through to restoration and enhancement.

Approval under Section 57(1) is required for works to a place, building, work, relic, moveable object, precinct, or land listed on the State Heritage Register. An excavation permit is required under Section 139 to disturb or excavate any land containing or likely to contain a relic.

Based on preliminary investigations, there are no registered heritage items located within the study area. The potential for recorded and previously unrecorded heritage items or archaeological relics would be considered during the environmental assessment of the proposal.

### ***Biosecurity Act 2015***

The *Biosecurity Act 2015* (Biosecurity Act) repealed the *Noxious Weeds Act 1993*. The Biosecurity Act specifies the duties of public and private landholders as to the control of priority weeds. Under the Act, priority weeds have been identified for LGAs and assigned duties of control. Under Part 3 of the Biosecurity Act any person who deals with biosecurity matters (ie listed weed species) and who knows, or ought reasonably to know, the biosecurity risk posed or likely to be posed by biosecurity matters has the duty to ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated and minimised.

Based on preliminary investigations, three Weeds of National Significance (WONS) and one weed with a control duty under the NSW *Biosecurity Act 2015* have been recorded within the study area. The presence of declared priority weeds within the study area would be further assessed and managed during construction of the proposal as required.

### ***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. Schedules 4, 4A and 5 of the FM Act list species, populations and ecological communities that have been identified as being endangered, critically endangered and vulnerable to extinction, respectively. If a threatened species, population, ecological community or their habitat could be impacted by an activity, an assessment that addresses the requirements of Section 5A of the EP&A Act must be completed to determine the significance of the impact.

There are areas mapped as key fish habitat within and near the study area, including Hanging Rock Creek. Under Section 199 of the FM Act, proposed dredging or reclamation work within key fish habitat would require notification to the relevant Minister prior to starting this work.

A permit would be required under Section 219 of the FM Act for any work carried out by a public authority that could result in the temporary or permanent blockage of fish passage within a waterway.

### ***Contaminated Land Management Act 1997***

The *Contaminated Land Management Act 1997* (CLM Act) establishes a process for investigating, managing and remediating contaminated land. Where contamination is known to be present but does not pose an unacceptable risk to the current or approved land use, management of the contamination and identification of remediation requirements may be dealt with by the local council under the planning and development framework of the EP&A Act.

Based on preliminary investigations, no registered contaminated sites occur in the study area.

## ***Water Management Act 2000***

The Water Sharing Plan for the Water Sharing Plan for the Clyde River Unregulated and Alluvial Water Sources 2016 applies to the study area. Where a relevant water sharing plan is in place, a person carrying out aquifer interference activities will require a water access licence under the *Water Management Act 2000* (WM Act). However, a roads authority (within the meaning of the *Roads Act 1993*) does not need to obtain a licence under Schedule 5 of the Water Management Regulation 2011 when carrying out works for road construction and maintenance.

Under Schedule 4 of the Water Management (General) Regulation 2018, a roads authority does not need to obtain an access licence when water is required for road construction and road maintenance. However, potential impacts on groundwater would need to be considered during the detailed environmental assessment phase of the proposal. If any dewatering is required a Crown exemption under Section 112 of the Water Act 1912 would be expected to apply.

Controlled activities under the WM Act apply to 'waterfront land' defined as all land within 40 metres of the highest bank of any river, lake or estuary. This would include work near Hanging Rock Creek in the study area. However, under Clause 38 of the Water Management (General) Regulation 2011 public authorities do not need to obtain a controlled activity approval under the WM Act.

## ***Commonwealth Environment Protection and Biodiversity Conservation Act 1999***

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects matters of national environmental significance (MNES) (as defined under the Act) and the environment of Commonwealth land.

Under the 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.

A referral is not required for proposed road activities assessed under Division 5.1 of the EP&A Act that may affect nationally listed threatened species, threatened ecological communities and migratory species. This is because requirements for considering impacts to these biodiversity matters are the subject of a strategic assessment approval granted under the EPBC Act by the Australian Government in September 2015.

For those activities assessed as State Significant Infrastructure (SSI) under Division 5.2 of the EP&A Act, there is currently an agreement between the Commonwealth of Australia and the State of NSW relating to environmental impact assessment under the EPBC Act (assessment bilateral). The assessment bilateral provides for a single environmental assessment process conducted by NSW.

Minor amendments to the assessment bilateral have recently been proposed to ensure consistency with the BC Act. Projects that are determined to be controlled actions prior to the Amending Agreement being finalised (expected mid 2019) are not subject to the agreement and would need to be considered on a case by case basis.

There is also draft approval bilateral agreement that provides for accreditation of NSW processes for approval of proposed actions that would otherwise be assessed by the Australian Government for approval under the EPBC Act. On current drafting the agreement would cover SSI.

Based on preliminary investigations, the only MNES applicable to the project are nationally listed threatened species, threatened ecological communities and migratory species. The potential for the proposal to impact on species and ecological communities listed under the EPBC Act would be considered during the environmental assessment for the proposal.

## **Commonwealth Native Title Act 1993**

The Commonwealth *Native Title Act 1993* aims to:

- Recognise and protects native title
- Establish ways and standards in which future dealings affecting native title may proceed, including providing procedural rights for registered native title claimants and native title holders in relation to acts which affect native title
- Establish the National Native Title Tribunal.

A Native Title claim has been registered to the NSW south coast. Native Title claim NC2017/003, lodged by the South Coast People, was registered with the National Native Title Tribunal on 31 January 2018. The claim extends along the NSW south coast from southern Sydney to Eden and is applicable to Crown land within this area.

While Crown land is located immediately north of the proposal location, no Crown land is expected to be impacted by the proposal. As such, the Native Title claim is not expected to have an effect on the proposal.

## **3.2 Property**

The majority of the proposal is located within land dedicated as public road, managed by Eurobodalla Shire Council, as well as the Princes Highway corridor, managed by Roads and Maritime.

The proposal is located in part within Mogo State Forest, including the Old Sawmill site, which is expected to be used as an ancillary facility during construction. Approval for construction activities, as well as acquisition of operational areas, would be required for the proposal in accordance with the *Forestry Act 2012*.

Access to the Roundhill Lookout, managed by Forestry Corporation, is located on The Ridge Road, just east of the Princes Highway. Utility assets are also located at the Roundhill Lookout (see Section 3.3). The existing lookout access is a steep, unsealed track about two to three metres wide. The access would be maintained in its existing location, with minor sealing work expected to be carried out from the highway to the start of the road.

While some Crown land is located immediately north of the study area, none is expected to be affected by the proposal.

## **3.3 Utilities**

A utility conflict assessment was prepared for the proposal to identify existing utilities within the study area. Utilities within the study area were identified from Dial Before You Dig (DBYD) plans, aerial imagery, a site visit and liaison with utility authorities.

Potholing investigations confirmed the locations and depths of Optus cables, Telstra cables and Council watermains. NBN was installed after the potholing investigations, so the depth is currently unknown.

Utility authorities will be consulted during the design and environmental assessment to determine potential impacts and requirements for protection or relocation of utilities where necessary.

Existing utilities within and near the study area are described in Table 3-1.

The primary utility conflict occurs at the electrical easement between the proposed alignment and both the Optus underground fibre optic cable and the Essential Energy high voltage overhead power lines. At this location, the main Sydney to Melbourne Optus fibre optic cable crosses the existing Ridge Road at a relatively shallow depth. Essential Energy high voltage overhead power lines are present in the same location, with about 8.7 metres clearance above the existing Ridge Road. Clearance requirements would need to be maintained during both construction and operation of the proposal.

Other utility conflicts include a second Essential Energy high voltage overhead power line within the electrical easement and a third at Lattas Point Road, NBN at the western end of Glenella Road and onto the Ridge Road, Council asbestos cement watermain near the Old Sawmill site, and potentially Telstra assets crossing the highway near the Old Sawmill site and at Lattas Point Road.

Potential options to avoid, protect or relocate utilities would be further investigated, in consultation with the relevant utility providers.

**Table 3-1: Existing utilities within and near the study area**

Type	Description	Location
Electricity - Essential Energy	Twin overhead transmission lines and poles	Two sets of Essential Energy overhead powerlines up to 33kV cross the proposal east of the Princes Highway, within a cleared easement. There is about 8.7 metres clearance above The Ridge Road. A stayed power pole is located about 12 metres from the existing road at this location.  Overhead powerlines cross the Princes Highway south of The Ridge Road and extend onto Lattas Point Road. Several power poles are located at this site.
Telecommunications - Optus	Underground cables	The main trunk underground Optus fibre optic cable linking Sydney and Melbourne crosses the road at the electrical easement.  The cable is about 0.84 metres below existing ground level in some sections.
Telecommunications - NBN	Underground cables	NBN underground cable and pits at the western end of Glenella Road and at The Ridge Road south of Glenella Road.  The depth of the cable below existing ground level is unknown.
Telecommunications - Telstra	Underground cables	Telstra underground conduits cross the Princes Highway just north of the Old Sawmill site and also south of The Ridge Road and extend onto Lattas Point Road.  The depth of the cable below existing ground level is unknown.  Near the Old Sawmill site, the cable is about 0.405 and 0.800 metres below the existing Princes Highway level.  Near Lattas Point Road, the cable is between about 0.605 and 0.770 metres below the existing Princes Highway level.
Water - Eurobodalla Shire Council	Three underground asbestos cement watermain (one main is redundant)	Three Eurobodalla Shire Council asbestos cement watermain cross the Princes Highway just south of the Old Sawmill site.  The depth of the watermain below the existing Princes Highway level is between about 0.543 and 0.595 metres. The watermain are exposed in some locations east of the highway.

## 3.4 Traffic

The Princes Highway is an important connection for regional road users and is a key route for commuter, recreational and commercial traffic movements. The Princes Highway south of Batemans Bay is a Class 3 Rural Road with around 8,800 vehicles per day with 8.3 per cent heavy vehicles and experiences a growth rate of around 1.2 per cent per year.

Beach Road is a regional road and a major sub-arterial road through the Batemans Bay CBD that links the Princes Highway, just south of the Batemans Bay Bridge, to the various residential areas and beaches south of the CBD, from Catalina to Surf Beach and further south along George Bass Drive (Figure 1-1).

To reduce pressure on the existing Beach Road/Princes Highway intersection, ease congestion in the CBD and accommodate future traffic growth in response to land use development, Eurobodalla Shire Council proposed the South Batemans Bay Link Road as an east-west link between the George Bass Drive and the Princes Highway. This would provide an alternative access between the Princes Highway and the southern coastal villages of Batemans Bay. Traffic modelling indicates that about 2,500 vehicles would use the South Batemans Bay Link Road each day in 2036.

The Ridge Road extends from Malua Bay in the south to Glenella Road and the Princes Highway in the north. It comprises a narrow, winding, unsealed road through rugged and steeply sloped terrain. Traffic counts from 2014 show around 500 vehicles per day used The Ridge Road at that time. Since the completion of Council's work on the South Batemans Bay Link Road and the subsequent closure of the western section of Glenella Road, usage has been observed to be in the order of 100 to 200 vehicles per day. The origins and destination of these vehicles are unknown.

## 3.5 Road safety

The speed zone on the Princes Highway through the urban area of Batemans Bay is 70 kilometres per hour (km/hr) from just south of the Batemans Bay Bridge to just south of Cranbrook Road. The speed zone increases to 90 km/hr between the southern outskirts of Batemans Bay to the northern outskirts of the Mogo urban area, where the speed limit reduces to 50 km/hr.

Between Cranbrook Road and Deep Creek Dam Drive, the Princes Highway is steep and winding in sections. There are a number of grades at or exceeding 10 per cent. Lane widths are adequate but shoulder widths and clear zones are narrow in some places. The Princes Highway south of Cranbrook Road has one northbound lane and two southbound lanes. The two southbound lanes begin to merge into one at the location of the existing intersection with The Ridge Road.

The existing Ridge Road connection has sight distances that are substandard for the posted speed limit of 90 km/hr on the Princes Highway. Vehicles turning right out of The Ridge Road need to travel across two lanes of southbound traffic.

The Princes Highway in this location has a poor crash history, with 29 crashes occurring between Cranbrook Road and Lattas Point Road from October 2013 to September 2018, including one fatal and nine serious injury crashes. This crash record is extremely poor compared to nearby sections of the Princes Highway and other major highways in NSW.

## 3.6 Topography, geology and soil

The terrain between Batemans Bay and Mogo is rugged. Between Cranbrook Road and Lattas Point Road in South Batemans Bay, the Princes Highway is located along a ridge line. As a result the road is winding and steep.

Topography, geology and soil constraints associated with the proposal would mostly be associated with the presence of steeply sloping land with overlying soil landscapes and a high erosion hazard.

The Ulladulla 1:250,000 Geological Series Sheet S1 56-13 (Geological Survey of NSW, 1966) indicates that the geology of the study area is mainly Ordovician siltstone, sandstone, claystone, and quartzite. The study area is bounded by Cambrian Wagonga beds of chert, conglomerate, agglomerate, slate, sandstone, and phyllite to the east, and Quaternary Alluvium gravel, swamp deposits and sand dunes to the north.

The existing Ridge Road appears to be mostly constructed as cut into the hillside however it is estimated that the northern third of the existing gravel road has been constructed as a filled area. This is likely the result of end dumping, where fill material is pushed over the existing steep hillside areas downhill. This would likely mean the existing road embankments are made up of relatively loose, uncompacted material.

The upper cut profile would encounter gravelly and sandy clays, residual soils and/or extremely weathered rock/very low strength rock material with a California Bearing Ratio (CBR)<sup>1</sup> less than 8 per cent. The materials within the lower cut profile would likely encounter highly weathered, low strength or better quality rock and would likely achieve a CBR greater than 8 per cent.

Based on the geotechnical investigation report prepared for Eurobodalla Shire Council in 2016, it is estimated that material collected from cut areas should break down somewhat under ripping and compaction to a usable grain size for use as a fill. Some areas of higher strength rock may still be present. If this occurs, additional mechanical effort may be required to rip these materials. Areas in cut are likely to require ripping prior to excavation, but are unlikely to require drilling and blasting. Rock hammers would likely be required to excavate medium strength rocks.

The study area has varying degrees of highly erodible, weathered soils (from slightly to extremely weathered), with shallow residual and topsoil layers. Generally, embankments along the Princes Highway in the study area are sparsely vegetated, and prone to scouring (erosion) from uncontrolled run-off. The embankments along Ridge Road are also prone to scouring and slope creep (where rock and soil move slowly down the slope). The potential for erosion and sedimentation to occur would be high, due to the steep gradients and highly erodible nature of the soils likely to be present.

The Acid Sulfate Soil Risk Maps from the NSW Natural Resource Atlas database indicates the risk of encountering acid sulfate soils is generally low.

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<sup>1</sup> A CBR test is a penetration test used to evaluate the subgrade strength of roads and pavements.

## 3.7 Environmental

A preliminary environmental investigation (PEI) was prepared in 2015 to identify potential environmental constraints within and near the study area. In 2019, a preliminary biodiversity investigation (PBI) and an Aboriginal heritage investigation in accordance with Stage 2 of the Roads and Maritime Procedure for Aboriginal cultural heritage consultation and investigation (2011) (PACHCI) were carried out, which further contributed to the understanding of environmental constraints relevant to the proposal.

The study area is located in an area of very steep terrain and is heavily vegetated. The area has a long history of forestry activity, with Mogo State Forest originally gazetted in 1917, although the area remains densely vegetated.

### 3.7.1 Biodiversity

Plant Community Types (PCTs) in the study area occur predominantly as wet forest in moderate to good condition, but with some cleared areas supporting derived native grassland and revegetation plantings. PCTs within and near the study area include:

- PCT1206 Spotted Gum - Blackbutt shrubby open forest on the coastal foothills, southern Sydney Basin Bioregion and northern South East Corner Bioregion
- PCT1220 Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion
- PCT 877 Grey Myrtle dry rainforest of the Sydney Basin Bioregion and South East Corner Bioregion
- PCT 1232 Swamp Oak floodplain swamp forest, Sydney Basin Bioregion and South East Corner Bioregion.

Biodiversity investigations to date have identified the following threatened ecological communities (TECs) listed under the BC Act and the EPBC Act that may occur within or near the study area:

- Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions (BC Act Endangered) / Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community (EPBC Act Endangered)
- Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions (BC Act Endangered)
- River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (BC Act Endangered)
- Lowland Grassy Woodland in the South East Corner Bioregion (BC Act Endangered) / Illawarra and south coast lowland forest and woodland ecological community (EPBC Act Critically Endangered).

Based on preliminary investigations, no TECs are expected to be impacted by the proposal.

The study area may support suitable habitat for several flora threatened species, as described below, although none of these species have been recorded in the study area:

- *Correa baeuerlenii* chef's cap correa (BC Act Vulnerable) / (EPBC Act Vulnerable)
- *Pomaderris bodalla* Bodalla pomaderris (BC Act Vulnerable)
- *Rhodamnia rubescens* scrub turpentine (BC Act Critically Endangered)
- *Cryptostylis hunteriana* leafless tongue orchid (BC Act Vulnerable) / (EPBC Act Vulnerable)
- *Genoplesium vernale* east Lynne midge orchid (BC Act Vulnerable) / (EPBC Act Vulnerable).

Three weeds of national significance (WONS) and one weed with a control duty under the *Biosecurity Act 2015* have been recorded within and near the study area.



Vegetation within and near the study area provides potential foraging and breeding habitat for a range of threatened species listed under the BC Act and the EPBC Act. Key habitat features observed within the study area include:

- Numerous hollow bearing trees, with a range of hollow sizes suitable for hollow dependent fauna, including hollow nesting forest owls, other nesting bird species, and hollow dependent mammals
- Foraging resources for a number of species including black sheoak suitable for glossy black cockatoo and prolifically flowering eucalypt species suitable for nectar dependent species.

Threatened fauna species known or likely to occur within the study area are listed in Table 3-2.

**Table 3-2: Threatened fauna species known or likely to occur within the study area**

Common Name	Scientific Name	Status*	
		BC Act	EPBC Act
little lorikeet	<i>Glossopsitta pusilla</i>	V	-
gang-gang cockatoo	<i>Callocephalon fimbriatum</i>	V	-
glossy black-cockatoo	<i>Calyptrorhynchus lathami</i>	V	-
powerful owl	<i>Ninox strenua</i>	V	-
masked owl	<i>Tyto novaehollandiae</i>	V	-
sooty owl	<i>Tyto tenebricosa</i>	V	-
eastern false pipistrelle	<i>Falsistrellus tasmaniensis</i>	V	-
eastern freetail-bat	<i>Mormopterus norfolkensis</i>	V	-
yellow-bellied glider	<i>Petaurus australis</i>	V	-
greater glider population in the Eurobodalla local government area	<i>Petauroides volans</i>	E	-
greater glider	<i>Petauroides volans</i>	-	V
grey-headed flying-fox	<i>Pteropus poliocephalus</i>	V	V
yellow-bellied sheath-tail-bat	<i>Saccolaimus flaviventris</i>	V	-
greater broad-nosed bat	<i>Scoteanax rueppellii</i>	V	-
swift parrot	<i>Lathamus discolor</i>	E	CE
square-tailed kite	<i>Lophoictinia isura</i>	V	-
dusky woodswallow	<i>Artamus cyanopterus cyanopterus</i>	V	-
brown treecreeper	<i>Climacteris picumnus victoriae</i>	V	-
varied sittella	<i>Daphoenositta chrysoptera</i>	V	-
little eagle	<i>Hieraaetus morphnoides</i>	V	-
satin flycatcher	<i>Myiagra cyanoleuca</i>	-	Mi
spotted-tailed quoll	<i>Dasyurus maculatus</i>	V	E
eastern bentwing-bat	<i>Miniopterus schreibersii oceanensis</i>	V	-
squirrel glider	<i>Petaurus norfolkensis</i>	V	-



Common Name	Scientific Name	Status*	
		BC Act	EPBC Act
brush-tailed phascogale	<i>Phascogale tapoatafa</i>	V	-
black-faced monarch	<i>Monarcha melanopsis</i>	-	Mi
southern brown bandicoot	<i>Isoodon obesulus</i>	E	E
eastern pygmy-possum	<i>Cercartetus nanus</i>	V	-
giant burrowing frog	<i>Heleioporus australiacus</i>	V	V
rufous fantail	<i>Rhipidura rufifrons</i>	-	Mi

\*Status: V = Vulnerable; E = Endangered; CE = Critically Endangered; Mi = Migratory

### 3.7.2 Aboriginal Heritage

An Aboriginal Heritage Information Management System (AHIMS) Extensive Search carried out for the study area in August 2019 showed there are nine registered Aboriginal heritage sites within and near the study area.

In July 2019, an Aboriginal heritage survey of the study area was carried out in accordance with Stage 2 of the PACHCI. The AHIMS registered Aboriginal heritage sites within the revised study area could not be located. The survey identified one new Aboriginal heritage site (an artefact scatter) and one potential archaeological deposit (PAD) within the study area. Preliminary feedback indicates the new site and PAD are likely to be of low heritage significance.

Aboriginal heritage would be further investigated in accordance with the PACHCI during development of the concept design and environmental assessment.

### 3.7.3 Non-Aboriginal Heritage

There are no listed heritage sites within or near the study area and none are likely to be impacted by the proposal.

The Old Sawmill site, which has been mostly demolished, was identified in the PEI as having potential heritage significance. The Old Sawmill site comprises two terraces, with the top level terrace containing three-tiers of concrete slabs. However, the heritage survey investigation carried out as part of the PEI concluded that the Old Sawmill site is no longer intact and is unlikely to meet the criteria for local significance.

The area has a long history of forestry activity, with Mogo State Forest originally gazetted in 1917. The potential for unregistered heritage items associated with the history of forestry would be considered as part of the environmental assessment.

### 3.7.4 Contamination

Potentially contaminating activities have occurred at the Old Sawmill site, including fuel storage, asbestos use and wood treatment. Potential pollutants at this site include heavy metals, phenols, pesticides, total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylenes (BTEX), solvents, heavy metals, polycyclic aromatic hydrocarbons (PAH) and asbestos. Roads and Maritime would carry out a contamination investigation at this site, which would be considered as part of the environmental assessment.

A former landfill site is located on Glenella Road, west of Heron Road. Disturbance to this area may occur during construction of tie-ins to the existing Glenella Road or use of the area as an ancillary site. Eurobodalla Shire Council has advised Roads and Maritime that the landfill was remediated during the recent Glenella Road work carried out by Eurobodalla Shire Council. Evidence of remediation would be sought to confirm the site does not pose a risk.

There is evidence of illegal dumping along The Ridge Road, including construction and demolition material. There is potential for asbestos containing material and other hazardous substances associated with illegal dumping to be present within the study area. The identification and assessment of contaminated sites will be carried out in the next stage of planning where appropriate mitigation measures will be determined.

## 3.8 Constructability

A constructability assessment was carried out to identify the constraints and opportunities associated with construction of the proposal. An internal Roads and Maritime constructability and health and safety in design (HSiD) workshop was also held to further identify key constructability issues, risks and opportunities, as well as to identify major hazard creators associated with the proposal.

The key constructability and HSiD issues, risks and opportunities identified were:

- Steeply sloping and heavily vegetated terrain
- Limited access to and within the study area
- Substantial height of the retaining structures required for the proposal
- Limited suitable locations for ancillary sites and environmental controls
- Utility conflicts at the electrical easement between the South Batemans Bay Link Road and both the Optus underground fibre optic cable and the Essential Energy high voltage overhead power lines
- Unauthorised access and recreational use of The Ridge Road and surrounding area during construction.

Combined with the relatively isolated location, the steeply sloping and heavily vegetated terrain of the study area presents challenges and constraints for construction of the proposal. Primary access to the site for construction would be generally via the Princes Highway or Glenella Road, although the latter would require access through residential areas, which is not preferred. Turning right from The Ridge Road onto the Princes Highway during construction is not preferred unless under traffic control.

Due to the steeply sloping nature of the site, particularly between the southern end of the existing Forestry Corporation access tracks and The Ridge Road, access within the study area for construction activities would be likely to occur from the existing Ridge Road, with limited use of Forestry access tracks. Access from the Essential Energy maintenance track to downslope of The Ridge Road may be possible although it is very steep. Existing tracks parallel with the eastern side of the highway may be used for access between the Old Sawmill site and The Ridge Road. This would reduce the number of construction vehicles using the Princes Highway and minimise the need to turn right from The Ridge Road onto the Princes Highway.

The closure of The Ridge Road to road users would be required during construction to enable safe access and work in this area. Unauthorised access to this area during construction is considered a risk, including inadvertent access by recreational users of The Ridge Road and surrounding State Forest.

The majority of the work on the Princes Highway would likely be completed under two-way two-lane traffic at a reduced speed limit of 40 to 60 km/h. Some work for the proposal, such as modifications of traffic management controls, tie-ins and finishing works, may require highway traffic to operate in stop / slow traffic flow at 40 km/h.

Limited access to the western side of highway is currently available. Additional work and traffic staging would be required to achieve safe construction access to this location.

Due to the steep terrain, substantial retaining structures and cut batters would be required for the proposal. The substantial height of retaining structures and large volume of earthworks presents construction challenges, including access for construction plant and personnel and the potential need to import or export large volumes of fill material.

Construction of the proposal would require several ancillary sites for the main site compound, amenities, laydown, storage and stockpiling of materials. The Old Sawmill site on the Princes Highway is expected to be used as a primary ancillary site, as it provides an existing cleared area close to the proposal with access to and from the Princes Highway. The site is connected to The Ridge Road by an existing unsealed track on the eastern side of the highway. Use of this track during construction would enable separation of construction traffic from general traffic on the Princes Highway.

Other locations expected to be used as ancillary sites during construction include Glenella Road between Heron Road and The Ridge Road, Lattas Point Road (as a construction u-turn facility) and existing Roads and Maritime stockpile sites on the Princes Highway.

Limited suitable locations are available for environmental controls, in particular installation and maintenance of erosion and sedimentation controls. Most of the proposal is located along an east-west ridgeline, with steep slopes both above and below the road. As such, identifying catchments and suitable locations for clean water diversion structures (ie upstream of the work area) and sediment capture structures (ie downstream of the work area) is difficult. Further, installation of large erosion and sediment controls structures, or structures distant from active work areas, would likely require additional vegetation clearing.

As described in Section 3.3, a number of existing utility assets are located in the study area that would present constructability challenges.

## 4. Options identification

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Roads and Maritime has identified a range of options to connect the existing South Batemans Link Road with the Princes Highway. The early development work carried out by Roads and Maritime in 2015 helped to inform this process.

This early development work mainly looked at larger scale options including a highway realignment and a grade separated interchange, which could not be delivered for the identified funding. A dual lane roundabout on the Princes Highway was also investigated at this time. Further development of the roundabout option has continued as part of the current options identification and assessment phase.

The work carried out in 2015 also identified the preferred location for an intersection with the Princes Highway as being about 150 metres north of the existing Ridge Road intersection. The preferred location enables improved sight lines, while facilitating use of The Ridge Road path to link with the existing South Batemans Link Road.

Given the topographic constraints of the area, Roads and Maritime concluded that following the existing path of The Ridge Road to connect the new intersection with the existing South Batemans Link Road would provide value for money, be safer to construct and result in lower environmental impacts.

With the upgrade to The Ridge Road and intersection location decided, the project team focused the options identification and assessment on various intersection types. These were:

- Roundabout (Option 1)
- Seagull (Option 2)
- Left in left out (Option 3)
- Channelised right turn (Option 4).

The roundabout (Option 1) was brought forward from 2015 early development work as the only option considered at that time that might be achievable for the identified funding. The left in left out intersection (Option 3) represents a base case or “do minimum” approach to connecting the South Batemans Link Road with the Princes Highway. The seagull (Option 2) and channelised right turn (Option 4) were identified as intersection types that would potentially suit the speed limit and road environment, while maintaining traffic flow on the Princes Highway and providing for all movements to and from the South Batemans Link Road.

Consideration was given to a signalised intersection (traffic lights) at this location, however this was not pursued as an option for investigation. Traffic signals are not recommended at isolated, high speed locations. In instances where traffic signals are unexpected, road users may take additional time to react (Austroads Guide to Road Design Part 3 and Guide to Traffic Management Part 3). There is also potential for driver non-compliance at red lights, particularly in isolated locations. Traffic signals would not provide a safe systems approach, that is, if there is driver error at the signals the crash would be at high speed. Further, a signalised intersection would not reduce the number of conflict points, it introduces the hazard of traffic light posts and has increased maintenance in comparison to other intersection types.

The four design options considered for the proposal are described in the following sections.

## 4.1 Roundabout (Option 1)

Option 1 is a dual lane roundabout on the Princes Highway, connecting to the South Batemans Bay Link Road (Figure 4-1).

The design was adopted from the early development work carried out in 2015. The roundabout option provides a bypass lane for vehicles travelling north on the Princes Highway, two southbound lanes on the highway through the roundabout and a single lane entry and exit to and from the South Batemans Bay Link Road.

The design of batters around the intersection has been flattened to increase sight distance on approach to the intersection. Vehicles travelling north on the Princes Highway in the bypass lane would merge to the right about 200 metres north of the roundabout. The existing southbound merge on the Princes Highway located about 350 metres south of the roundabout would remain.

The roundabout would be constructed on the eastern side of the existing highway. No work on the western side of the highway would be required. A smaller angle of approach can be utilised for the roundabout option than for other options. Any retaining structures needed to deal with the gully on the eastern side of the Princes Highway near the intersection location would be smaller than for all other options.

The roundabout option would need a posted speed limit of 60 km/h on the South Batemans Bay Link Road and 70 km/hr on the Princes Highway. The roundabout would act as a physical structure to slow vehicles, particularly southbound on the highway and those travelling to and from the South Batemans Bay Link Road. This would help reduce the severity of crashes on the highway. The roundabout has more conflict points (ie points of potential collision between vehicles) than the left in left out (Option 3), but fewer conflict points than the seagull (Option 2) and channelised right turn (Option 4) intersection options.

## 4.2 Seagull (Option 2)

Option 2 is a full seagull intersection on the Princes Highway, connecting to the South Batemans Bay Link Road (Figure 4-2).

The seagull intersection option would retain one northbound and two southbound lanes on the Princes Highway. Vehicles turning right (northbound) onto the highway from the South Batemans Bay Link Road would be required to cross the two southbound lanes on the highway and onto a dedicated northbound lane. They would then merge to the left about 200 metres north of the new intersection. To improve sight distances for northbound vehicles exiting the South Batemans Bay Link Road, a channelised (dedicated) left turn would be available for vehicles travelling south on the Princes Highway entering the South Batemans Bay Link Road.

The design of batters around the intersection has been flattened to increase sight distance on approach to the intersection. The existing southbound merge on the Princes Highway, located about 350 metres south of the new intersection, would remain.

Construction of the seagull option would require substantial work along about one kilometre of the highway, including installation of retaining structures and widening on the western side of the highway to enable adequate merge distances. To enable adequate approach and sight distances from the South Batemans Bay Link Road, substantial retaining structures would be required through the gully on the eastern side of the Princes Highway near the intersection.

The seagull option would need a posted speed limit of 60 km/h on the South Batemans Bay Link Road and 70 km/hr on the Princes Highway. As there is no physical structure to slow vehicles, non-compliance with the posted speed limit could occur through the intersection.

## 4.3 Left in left out (Option 3)

Option 3 is a left in left out intersection arrangement on the Princes Highway, connecting to the South Batemans Bay Link Road (Figure 4-3). This option represents the “do minimum” case for the proposal.

The left in left out intersection option would retain one northbound and two southbound lanes on the Princes Highway. No right turn into or out of the South Batemans Bay Link Road would be allowed. To further reinforce and restrict a right turn out of the South Batemans Bay Link Road, a raised central median along the Highway would be provided. A left in left out intersection is the only option that restricts movements in and out of the South Batemans Bay Link Road.

To improve sight distances for southbound vehicles exiting the South Batemans Bay Link Road, a channelised left turn would be available for vehicles travelling south on the Princes Highway entering the South Batemans Bay Link Road. The design of batters around the intersection has been flattened to increase sight distance on approach to the intersection. The existing southbound merge, located about 350 metres south of the new intersection, would remain.

As a result of including the raised central median, widening along the western side of the Princes Highway would be required near the intersection. To enable adequate approach and sight distances from the South Batemans Bay Link Road, substantial retaining structures would be required through the gully on the eastern side of the Princes Highway near the intersection.

The left in left out option would need a posted speed limit of 60 km/h on the South Batemans Bay Link Road, however the posted speed limit on the Princes Highway would remain at 90 km/hr. As such, no reduction to the severity of crashes on the highway would be expected.

## 4.4 Channelised right turn (Option 4)

Option 4 is a channelised right turn intersection on the Princes Highway, connecting to the South Batemans Bay Link Road (Figure 4-4).

The channelised right turn intersection option would retain one northbound and two southbound lanes on the Princes Highway. A dedicated northbound lane would be available for vehicles turning right into the South Batemans Bay Link Road from the Princes Highway. Vehicles turning right from the South Batemans Bay Link Road to travel north on the highway would need to cross two southbound lanes on the highway and immediately merge with northbound highway traffic. The existing southbound merge on the Princes Highway located about 350 metres south of the new intersection would remain. The design of batters around the intersection has been flattened to increase sight distance on approach to the intersection.

Widening along the western side of the Princes Highway would be required near the intersection. To enable adequate approach and sight distances from the South Batemans Bay Link Road, substantial retaining structures would be required through the gully on the eastern side of the Princes Highway near the intersection.

The channelised right turn option would need a posted speed limit of 60 km/h on the South Batemans Bay Link Road and 70 km/hr on the Princes Highway. As there is no physical structure to slow vehicles, non-compliance with the posted speed limit could occur through the intersection.





Figure 4-1: South Batemans Bay Link Road Option 1 - roundabout



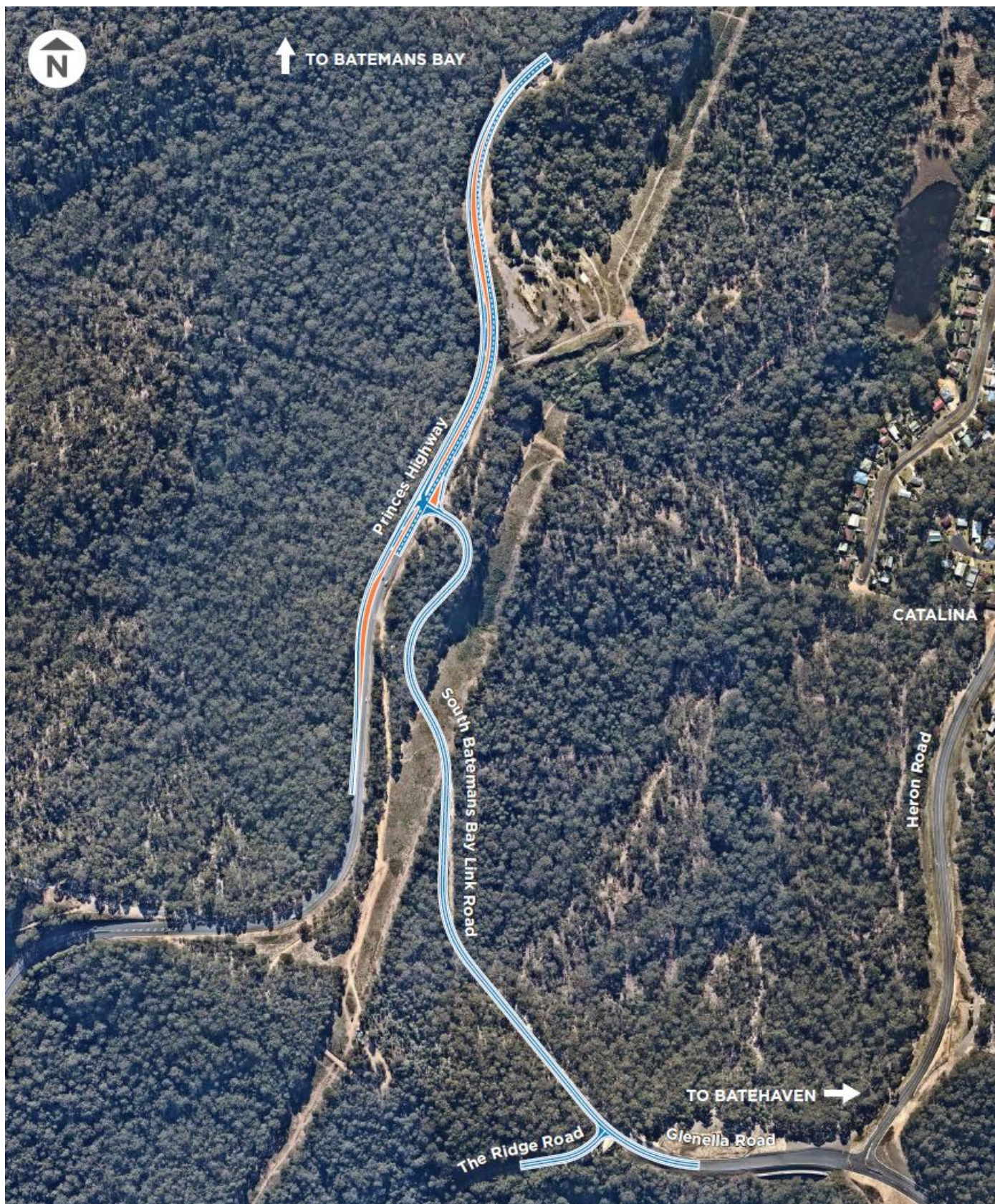


Figure 4-2: South Batemans Bay Link Road Option 2 - seagull





Figure 4-3: South Batemans Bay Link Road Option 3 - left in left out



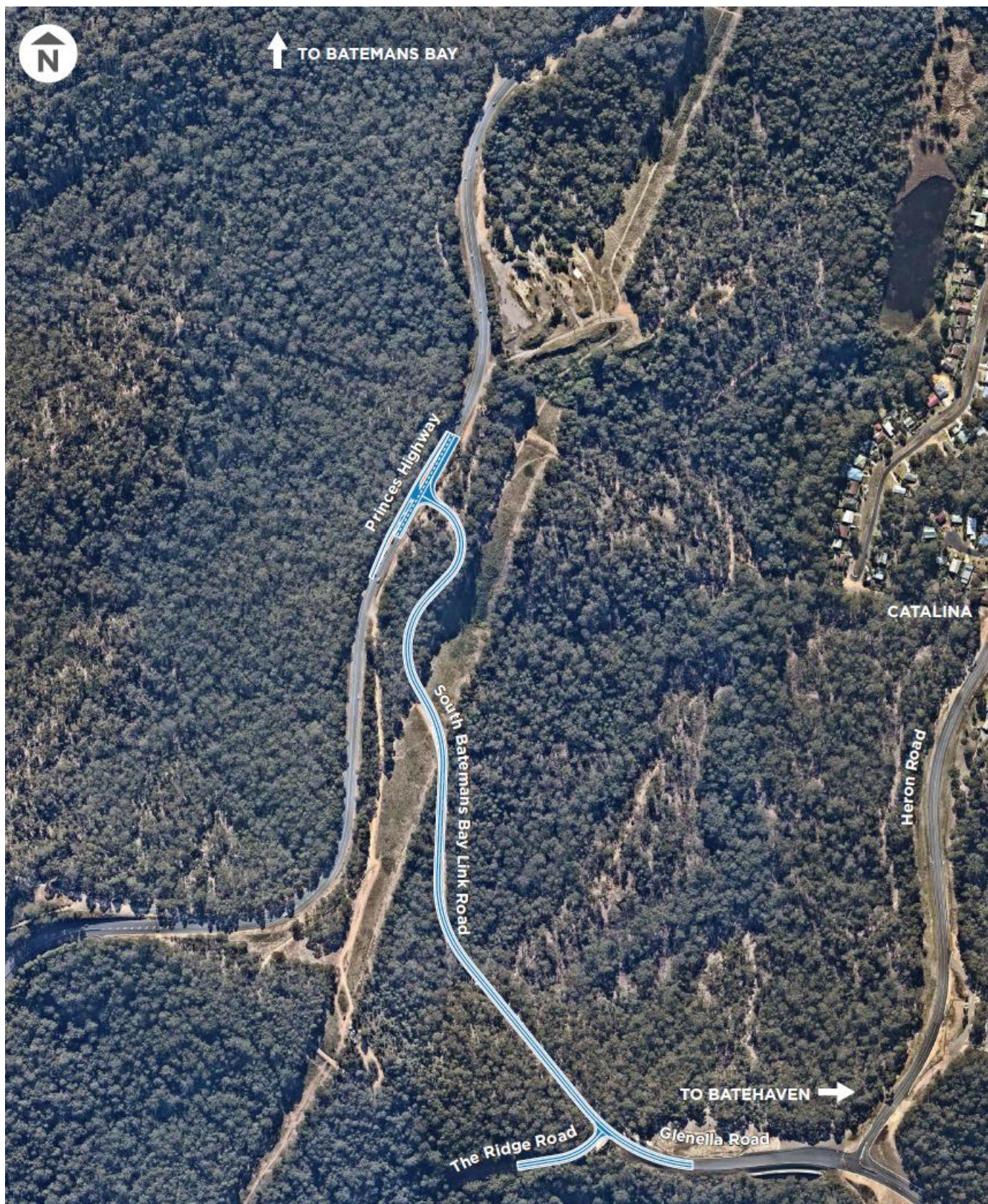


Figure 4-4: South Batemans Bay Link Road Option 4 - channelised right turn



## 5. Options assessment

The intersection options assessment process considered a range of factors and focused on criteria that related closely to the proposal objectives and that would best enable differentiation between options. The criteria considered and selected are identified in Table 5-1. Each option was then assessed against the selected criteria, as discussed in the following sections.

An internal Roads and Maritime options evaluation workshop was held in September 2019 to confirm the assessment criteria and assessment of each option, as described in the following sections, as well as to recommend a preferred option (Section 6).

The selected options assessment criteria were:

- Road safety
- Traffic efficiency
- Environment
- Property
- Constructability
- Cost.

The assessment of the four strategic options against each of these criteria is described in the following sections.

**Table 5-1: South Batemans Bay Link Road options assessment criteria**

Criteria	Key consideration	Relates to proposal objectives	Differentiates between options	Detail
Road safety	✓	✓	✓	Assessment criteria
Traffic efficiency	✓	✓	✓	Assessment criteria
Community	✓	✓	✓	Community impacts incorporated into environment, constructability and property assessments
Environment	✓	✓	✓	Assessment criteria
Property	✓	✓	✓	Assessment criteria
Constructability assessment	✓	✓	✓	Assessment criteria
Utility conflict assessment	✓	✓	✓	Utility conflict incorporated into constructability assessment
Cost estimate	✓	✓	✓	Assessment criteria

## 5.1 Road safety

As discussed in Section 3.5, the Princes Highway generally between Cranbrook Road and Lattas Point Road has a high crash rate, with 29 crashes occurring between October 2013 and September 2018, including one fatal and nine serious injury crashes. A reduction in the speed limit through this area would reduce the severity of crashes. All options except the left in left out (Option 3) would facilitate this change. In addition, the roundabout (Option 1) would also provide a physical structure to slow vehicles through the new intersection, which would further reduce crash severity.

A left in left out (Option 3) intersection would result in the fewest conflict points of the options, followed by the roundabout (Option 1). Both the seagull (Option 2) and channelised right turn (Option 4) would require vehicles turning right (northbound) out of the South Batemans Bay Link Road to cross two southbound traffic lanes. The channelised right turn (Option 4) would also require immediate merge with northbound highway traffic.

Safety concerns have been raised in regard to seagull (Option 2) and channelised right turn (Option 4) intersection treatments elsewhere on the road network. This can be due to driver confusion as to who has right of way with the right turn movements. However these concerns largely relate to these intersection types in high speed environments, with posted speed limits of around 100 km/hr. Seagull (Option 2) and channelised right turn (Option 4) intersection treatments are generally considered appropriate for a posted speed limit of 70 km/hr, as would the case on the Princes Highway in the location of the proposal.

A comparative assessment was carried out on each of the four strategic design options in regard to road safety. A ranking of one indicates the best option comparatively, and a ranking of four indicates the worst option comparatively. Where options were considered to be equivalent, they were ranked in the same position. The options were ranked as follows:

1. Roundabout (Option 1)
2. Left in left out (Option 3)
3. Seagull (Option 2)
4. Channelised right turn (Option 4).

## 5.2 Traffic efficiency

Traffic modelling was carried out for the proposal to quantify the traffic efficiency of each option, including the usage of the South Batemans Bay Link Road, the level of service (LoS) and capacity associated with each option.

LoS is a qualitative measure to describe traffic conditions, as shown in Table 5-2. Capacity is the nominal maximum number of vehicles that can travel along a road or through an intersection in a given time and is typically measured in vehicles per hour. The degree of saturation (DoS), which is the ratio of the traffic arrival flow to the capacity of the intersection approach in a specific period, is used to analyse the capacity and operation of intersections. Low DoS indicates high spare capacity, while DoS close to one indicates the road segment is approaching its maximum capacity. Target DoS of 0.85 for roundabouts and 0.80 for unsignalised intersections are advised by Austroads.

**Table 5-2: Level of service descriptions**

Level of service (LoS)	Description
A, B and C	Considered to represent good to acceptable levels of service. Traffic is within the limits of stable flow with most vehicles being able to travel at the desired speed.
D	Approaching unstable flow where all drivers are severely restricted in their freedom to select desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is poor and small increases in traffic flow will cause operational problems.
E	Traffic volumes are at or close to capacity and there is virtually no freedom to select desired speed and to manoeuvre within the traffic stream. Flow is unstable and minor disturbances within the traffic stream will cause breakdowns in operation.
F	Forced flow. The amount of traffic approaching a point exceeds that which can pass it. Flow breakdowns occur, and queuing and delays occur.

Traffic modelling identified the use of the completed South Batemans Bay Link Road in 2036 was similar for the roundabout (Option 1), seagull (Option 2) and channelised right turn (Option 4) but lower for the left in left out (Option 3) (Table 5-3).

The modelling showed that in 2026 and 2036, the morning (AM) and evening (PM) network generally operates at a LoS C or better for all option networks. The roundabout (Option 1) and seagull (Option 2) would provide marginally higher levels of traffic efficiency in the modelled future years (2026 and 2036). The channelised right turn (Option 4) also functions well and operates within capacity in the future years considered. More detailed intersection (SIDRA) modelling identified that in 2036, vehicles on the South Batemans Bay Link Road would experience high delays in typical peak periods under Option 4 (Table 5-4), where vehicles turning right are required to give way to both northbound and southbound traffic on the Princes Highway. From a network perspective, the roundabout (Option 1), seagull (Option 2) and channelised right turn (Option 4) options provide similar traffic reductions at Beach Road in the 2036 morning and evening peaks, as shown in Table 5-5.

The left in left out (Option 3) was identified as having the lowest network performance for the current and future modelled years. This option does not support all movements to and from the South Batemans Bay Link Road.

The seagull (Option 2), left in left out (Option 3) and channelised right turn (Option 4) enable unobstructed northbound and southbound movement on the Princes Highway, while the roundabout (Option 1) requires southbound highway traffic to slow to navigate through the roundabout. A reduced speed limit of 70 km/hr would be implemented on the Princes Highway for the roundabout (Option 1), seagull (Option 2) and channelised right turn (Option 4), however the existing speed limit of 90 km/hr would be retained for the left in left out (Option 3).

**Table 5-3: Usage of the South Batemans Bay Link Road in 2036 under each option (vehicles per hour)**

	Direction	Roundabout (Option 1)	Seagull (Option 2)	Left in left out (Option 3)	Channelised right turn (Option 4)
AM Peak	Eastbound	66	64	50	64
	Westbound	169	164	125	151
PM Peak	Eastbound	134	130	68	130
	Westbound	80	72	62	76

**Table 5-4: Intersection performance in relation to level of service and degree of saturation (in brackets) under 2036 peak hour flows**

Approach	Roundabout (Option 1)	Seagull (Option 2)	Left in left out (Option 3)	Channelised right turn (Option 4)
AM Peak				
Princes Highway (S leg)	B (0.4)	B (0.4)	A (0.4)	A (0.4)
South Batemans Bay Link Road Link Road (E leg)	B (0.2)	B (0.2)	A (0.1)	F (0.7)
Princes Highway (N leg)	A (0.2)	A (0.1)	A (0.1)	A (0.1)
<b>Total*</b>	<b>B (0.4)</b>	<b>B (0.4)</b>	<b>A (0.1)</b>	<b>F (0.7)</b>
PM Peak				
Princes Highway (S leg)	B (0.3)	B (0.3)	A (0.3)	B (0.3)
South Batemans Bay Link Road Link Road (E leg)	B (0.1)	B (0.1)	A (0.1)	E (0.1)
Princes Highway (N leg)	A (0.2)	A (0.2)	A (0.2)	A (0.2)
<b>Total*</b>	<b>B (0.3)</b>	<b>B (0.3)</b>	<b>A (0.3)</b>	<b>E (0.1)</b>

\* LoS for unsignalised intersections is based on the average delay of the worst movement

**Table 5-5: Traffic reductions at Beach Road in 2036**

Option	Traffic reduction on Beach Road (vehicles / hour)	
	AM Peak	PM Peak
Roundabout (Option 1)	27	42
Seagull (Option 2)	26	40
Left in left out (Option 3)	15	28
Channelised right turn (Option 4)	21	39

A comparative assessment was carried out on each of the four strategic design options in regard to traffic efficiency. A ranking of one indicates the best option comparatively, and a ranking of four indicates the worst option comparatively. Where options were considered to be equivalent, they were ranked in the same position. The options were ranked as follows:

1. Roundabout (Option 1)
1. Seagull (Option 2)
3. Channelised right turn (Option 4)
4. Left in left out (Option 3).

## 5.3 Environment

The proposal is located within the Mogo State Forest, within an area of steep terrain, dense vegetation and challenging access. This means each of the design options has a relatively large operational footprint to provide for retaining structures and cut batters. Construction of each of the design options would require additional clearing beyond the operational footprint to enable safe access and work areas. Establishment of ancillary sites and erosion and sediment controls on the western side of the highway for use during construction may also require additional clearing and associated disturbance. The potential for erosion and sedimentation to occur would be high, due to the steep gradients and highly erodible nature of the soils likely to be present. Sedimentation could affect sensitive receiving environments located within and near the study area, including threatened species habitat and key fish habitat.

Of the four design options, the seagull (Option 2) would have the largest construction and operational footprint, being almost 20 per cent greater than the other options. The footprint would extend about one kilometre along the Princes Highway, on both the eastern and western sides. This option would result in the largest area of clearing, including potential breeding habitat for hollow-dependant threatened species and foraging habitat for the threatened glossy black-cockatoo (*Calyptorhynchus lathami*). Additional access, ancillary sites and erosion and sediment controls above those required for other options further increases the area of impact associated with this option.

The left in left out (Option 3) and channelised right turn (Option 4) intersection types would have similar environmental impacts. Both require work on the western side of the highway, in addition to the eastern side, although the need for additional access, ancillary sites and erosion and sediment controls would be much less than for construction of the seagull (Option 2). Impacts to habitat for hollow-dependant threatened species and glossy black-cockatoo would be expected, but would be of a lower scale than the seagull (Option 2).

Large quantities of imported fill materials would be required for the seagull (Option 2), left in left out (Option 3) and channelised right turn (Option 4) options, which would result in increased external truck movements and associated community impacts of traffic, noise and potentially dust.

Environmental impacts associated with the roundabout (Option 1) would be similar to, but less than the left in left out (Option 3) and channelised right turn (Option 4) intersection types. No work on the western side of the highway is expected to be required for the roundabout (Option 1).

Impacts to known Aboriginal heritage sites and PADs would be similar for all options. No listed non-Aboriginal heritage sites are likely to be impacted by the proposal.

Contamination issues are expected to be similar for all options, although the larger footprint of the seagull (Option 2), in particular along the Princes Highway and near the Old Sawmill site, increases the risk of exposing previously unidentified contamination.

A comparative assessment was carried out on each of the four strategic design options in regard to environment. A ranking of one indicates the best option comparatively, and a ranking of four indicates the worst option comparatively. Where options were considered to be equivalent, they were ranked in the same position. The options were ranked as follows:

1. Roundabout (Option 1)
2. Left in left out (Option 3)
2. Channelised right turn (Option 4)
4. Seagull (Option 2).

## 5.4 Property

All options would affect land owned by the Forestry Corporation of NSW, Eurobodalla Shire Council and Roads and Maritime. No privately owned land or Crown land would be affected.

The larger footprint of the seagull (Option 2) would mean a much larger area of land owned by the Forestry Corporation would need to be leased during construction. The left in left out (Option 3) and channelised right turn (Option 4) would require a similar area of Forestry Corporation to be leased during construction, and the roundabout (Option 1) would require slightly less. The area of Forestry Corporation land that would need to be acquired for operation would be similar for all options.

Impacts to Council owned land would be similar for all options.

A comparative assessment was carried out on each of the four strategic design options in regard to property. A ranking of one indicates the best option comparatively, and a ranking of four indicates the worst option comparatively. Where options were considered to be equivalent, they were ranked in the same position. The options were ranked as follows:

1. Roundabout (Option 1)
2. Left in left out (Option 3)
2. Channelised right turn (Option 4)
4. Seagull (Option 2).



## 5.5 Constructability

As identified in Section 3.8, the steeply sloping and heavily vegetated terrain of the study area presents challenges and constraints for construction of all options.

The most efficient construction would be achieved by implementation of the roundabout (Option 1), as it has the smallest construction footprint, the lowest cut to fill ratio (requiring less imported fill material), could largely be constructed offline (requiring fewer traffic stages) and does not require work on the western side of the Princes Highway. This option would require more pavement reconstruction and grading than the left in left out (Option 3) and channelised right turn (Option 4), however it is still considered the fastest option to construct given work is generally contained to the eastern side of the Princes Highway.

The left in left out (Option 3) option could be largely constructed offline, with the channelised right turn (Option 4) requiring more traffic stages. Both options would require some work on the western side of the Princes Highway. The construction footprint for these options would be slightly larger than for the roundabout (Option 1).

The seagull (Option 2) would require substantial work along the Princes Highway, large quantities of imported fill materials and haulage of earthworks materials across the highway. This option would have a substantially larger construction footprint than the other three options. It may also require additional ancillary sites on the western side of the highway to accommodate embankment and retaining structure work in this location. The larger area of clearing needed would also mean an increased volume of mulch would likely need to be stockpiled on site and disposed (or lawfully reused). This option would have the longest construction timeframe due to its larger size.

Utility impacts are similar for all options, although the seagull (Option 2) would have a greater impact on the Council watermain and possibly on Telstra assets crossing the Princes Highway near the Old Sawmill site.

As part of the internal Roads and Maritime constructability workshop, held in August 2019, a comparative assessment was carried out on each of the four strategic design options in regard to constructability. A ranking of one indicates the best option comparatively, and a ranking of four indicates the worst option comparatively. Where options were considered to be equivalent, they were ranked in the same position.

The options were ranked as follows:

1. Roundabout (Option 1)
2. Left in left out (Option 3)
3. Channelised right turn (Option 4)
4. Seagull (Option 2).

## 5.6 Cost

In order to assess the options against the available funding for the proposal, strategic cost estimates were prepared for the proposal, incorporating each of the intersection options. The estimates were developed using global rates and assumptions in accordance with Roads and Maritime estimating procedures.

The left in left out (Option 3) provided the lowest cost option, however the roundabout (Option 1) was only marginally higher in cost. The seagull (Option 2) and channelised right turn (Option 4) were both higher cost options, being about 15 per cent and 20 per cent higher in cost (respectively) than the left in left out (Option 3).

A comparative assessment was carried out on each of the four strategic design options in regard to cost. A ranking of one indicates the best option comparatively, and a ranking of four indicates the worst option

comparatively. Where options were considered to be equivalent, they were ranked in the same position. The options were ranked as follows:

1. Left in left out (Option 3)
2. Roundabout (Option 1)
3. Seagull (Option 2)
4. Channelised right turn (Option 4).

## 6. Preferred option

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The outcomes of the options assessment process were collated to identify which option or options performed the best against the various criteria. As shown in Table 6-1 below, the roundabout (Option 1) performed consistently well across all assessment criteria.

A roundabout to connect the South Batemans Bay Link Road to the Princes Highway would facilitate a reduced speed limit on the highway and provide a physical structure to slow traffic, while having a low number of conflict points. This is expected to reduce the number and severity of crashes on the Princes Highway in comparison to other options. A roundabout would enable all traffic movements to and from the South Batemans Bay Link Road, while maintaining efficient north and southbound travel on the Princes Highway.

The roundabout (Option 1) would require the smallest construction footprint, resulting in the lowest environmental and property impacts. It is also the most constructible option, having the least impact on highway traffic and requiring smaller retaining structures than the other options.

While the roundabout (Option 1) was not the lowest cost option, it is only marginally higher than the lowest cost option (left in left out; Option 3), but provides greater benefits in particular in regard to traffic efficiency and access.

The roundabout (Option 1) is considered to best meet the main objective of the South Batemans Bay Link Road proposal to provide a safe and efficient connection between the Princes Highway and the South Batemans Bay Link Road. The other proposal objectives are also considered to be met by the roundabout (Option 1). The roundabout (Option 1) was agreed as the preferred option by all attendees at the internal Roads and Maritime options assessment workshop.

**Table 6-1: Options assessment outcomes**

Assessment criteria	Roundabout (Option 1)	Seagull (Option 2)	Left in left out (Option 3)	Channelised right turn (Option 4)
Road safety	1	3	2	4
Traffic efficiency	1	1	4	3
Environment	1	4	2	2
Property	1	4	2	2
Constructability	1	4	2	3
Cost	2	3	1	4

## 7. Next steps

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The preferred option will be placed on public display until 22 November 2019 to provide the community and stakeholders an opportunity to review the preferred option and provide feedback.

Roads and Maritime will use this information to further refine the preferred option. Roads and Maritime will start work on the environmental impact assessment for the proposal which will have more detailed information about the design features, potential benefits and impacts, as well as offer further opportunities for the community and key stakeholders to provide feedback.

Please visit the project website at [rms.work/sbblr](https://rms.work/sbblr) for more information and to provide your feedback.



[rms.work/sbblr](https://rms.work/sbblr)



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