Batemans Bay Bridge replacement

Review of environmental factors consistency review 1 – Kings Highway slip lanes and utility adjustment works

Roads and Maritime Services | January 2019

NSW GOVERNMENT

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Document controls

Approval and authorisation

Title:	Batemans Bay Bridge replacement – Review of environmental factors consistency review 1 - Kings Highway slip lanes and utility adjustment works
Accepted on behalf of Roads and Maritime NSW by:	
Signed:	
Dated:	7 January 2019

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1. Introduction

1.1 The determined project

Roads and Maritime Services completed a review of environmental factors (REF) for the Batemans Bay Bridge replacement project (the project) in November 2017 (the project REF). The project REF described the project, assessed the potential environmental and social impacts associated with the construction and operation of the project and identified safeguards and management measures to avoid, mitigate or manage those potential impacts.

The project REF was placed on public display between 8 November and 8 December 2017 for community and stakeholder comment. The Batemans Bay Bridge replacement REF submissions report (the submissions report) was published in May 2018 to respond to the issues raised during the display period. The submissions report identified a number of design changes to the project. Some of these design changes resulted in a change to the REF area (the revised REF area). The revised REF area is shown in Figure 4-1 of the submissions report.

An environmental impact statement (EIS) was also published for the project in November 2017, as a small part of the project is located on land to which the State Environmental Planning Policy No 14 – Coastal Wetlands (SEPP 14) (now repealed) applied. Development consent for this part of the project was issued by Eurobodalla Shire Council in May 2018.

The project REF and submissions report considered potential impacts on biodiversity and concluded that the project is not likely to significantly impact threatened species, populations or ecological communities or their habitats, within the meaning of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), *Biodiversity Conservation Act 2016* (BC Act) or *Fisheries Management Act 1994 (*FM Act) and therefore there was no requirement for a Species Impact Statement or Strategic Assessment.

Subsequent to determination of the project, Roads and Maritime proposed to modify the project to including the demolition of the former Batemans Bay bowling clubhouse to facilitate the establishment of project ancillary facilities at this site. The former bowling clubhouse site is owned by Eurobodalla Shire Council and would be leased to Roads and Maritime for the project construction period. Although the former bowling clubhouse site is located within both the REF area and the EIS area, the proposed demolition works fall wholly within the REF area. The proposed modification was therefore subject to an Addendum REF (AREF). An AREF was determined in September 2018 to document the potential environmental impacts of the proposed modification.

1.2 Purpose

This consistency review has been prepared by Roads and Maritime to describe the proposed modifications to the Batemans Bay Bridge replacement project and to ensure that the proposed modifications are undertaken in accordance with the statutory requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This consistency review describes and considers only those aspects of the project that are proposed to be modified since the determination of the REF and AREF. This consistency review should be read in conjunction with the determined REF and AREF.

The purpose of this consistency review is to:

- describe the determined project and the proposed modification
- review the potential environmental impacts of the proposed modification against the environmental impacts of the determined project
- decide whether or not the proposed modification is consistent with the determined project in accordance with the EP&A Act and the EPBC Act requirements
- based on the decision of whether or not the proposed modification is consistent with the determined project, identify any further environmental impact assessment or environmental management requirements applicable to the proposed modification.

2. The proposed modification

2.1 The proposed modification

The proposed modification comprises:

- Kings Highway slip lane works north of the revised REF area
- electrical, telecommunication and water utility adjustment works outside of the revised REF area.

An overview of the proposed modification is shown in Figure 2-1. The proposed modification is described further in sections 2.1.1 and 2.1.2.

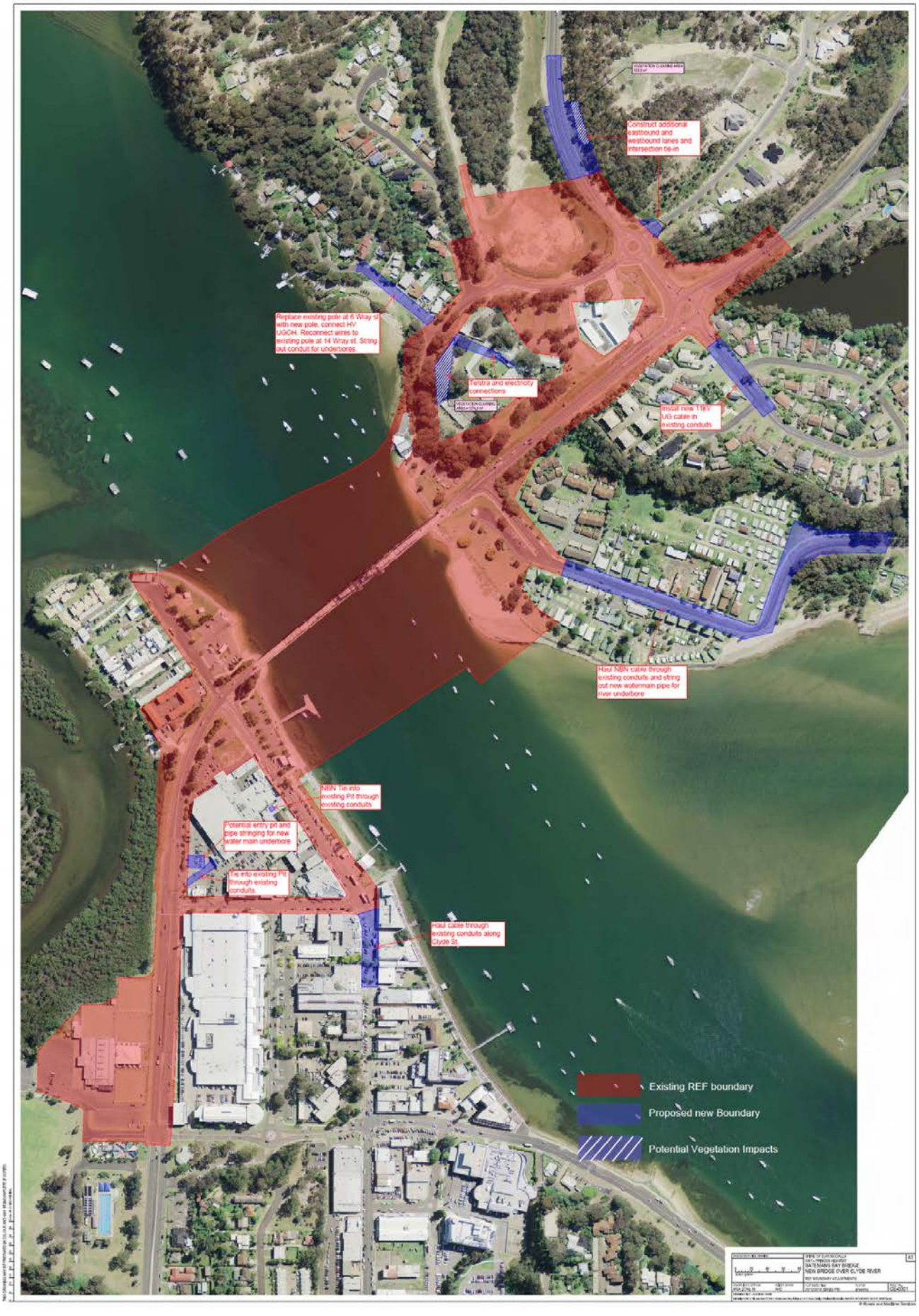


Figure 2-1: Overview of the proposed modification

2.1.1 Kings Highway slip lane works

The determined project described in the submissions report included a number of upgrades to the existing Kings Highway / Princes Highway intersection to improve traffic flow onto the new bridge. These elements include:

- left slip lane from Princes Highway northbound to Kings Highway
- left slip lane from Kings Highway to Princes Highway northbound
- dual right turn lanes provided from Kings Highway to Princes Highway southbound
- traffic signals for Princes Highway northbound and Kings Highway eastbound to be automatically activated during peak periods
- existing footpath to be realigned (if required) on the southern side of the intersection
- raised medians to be provided between slip and through lanes, also acting as pedestrian refuges
- adjustments to the Bayridge Road / Old Punt Road / Kings Highway intersection to accommodate the new slip lanes
- adjustments to the Princes Highway service station entry to accommodate a new slip lane
- utility, drainage and road furniture adjustments and replacements to accommodate the new slip lanes.

Subsequent to the determination of the project, Roads and Maritime has investigated options to further improve traffic conditions at the Kings Highway / Princes Highway intersection. These investigations have resulted in a proposed design change comprising the extension of the two westbound lanes of the Kings Highway. This modification is located north-west of the Kings Highway / Princes Highway intersection to connect into the existing two lanes that develop approximately 100 m west of Old Punt Road. The proposed design change also includes the development of two lanes on the eastbound approach to the Kings Highway / Princes Highway intersection. This will improve the capacity of the intersection by aligning with the proposed two right turn lanes, providing improved accessibility to the left slip lane, and increasing holding capacity. In order to extend the lanes, an additional area would be required to the north of the revised REF area, as shown on Figure 2-1.

The proposed modification would comprise works within the existing Kings Highway and Bayridge Drive road reserves north of the revised REF area, including:

- earthworks (cutting) for the extended lane on the eastern side of the Kings Highway
- minor clearing of vegetation on the eastern side of the Kings Highway
- other activities including mill and re-sheet, pavement marking, drainage work, and installation of roadside furniture.

The proposed design change would:

- improve road safety and traffic flows through this area
- facilitate a high level of service for the Kings Highway / Princes Highway intersection
- provide increased capacity for vehicles turning right from the Kings Highway onto the Princes Highway
- provide improved accessibility for left turning vehicles via the slip lane
- reduce delays and queue lengths particularly during peak holiday traffic.

The activities to be undertaken for the slip lane works are generally consistent with the Kings Highway / Princes Highway intersection upgrade construction activities described in section 3.2.3 of the project REF. Plant and equipment required for the slip lane works is generally consistent with Table 3-2 of the project REF for establishment works, earthworks and drainage, pavement construction and finishing and landscaping. The works associated with the Kings Highway slip lanes would be anticipated to commence mid-2019 and expected to take approximately six months to complete.

2.1.2 Utility adjustment works

During design development for the determined project, Roads and Maritime has identified further utility adjustment works required to support the project and tie into existing services located outside of the revised REF area. This consistency review covers the additional adjustments and amendments to the proposed scope of works for electrical, water and telecommunications services. Locations of utility adjustments works are shown on Figure 2-1.

The proposed electrical works include:

- potential replacement of the existing electricity pole located on the eastern side of Wray Street (near 6 Wray Street) with a new 12.5/8 kN electricity pole with a new direct connect high voltage (HV) underground to over ground connection (UGOH). Construction would be anticipated to use boring techniques, with entry and exit pits for boring being a minimum of 2 m long by 1 m wide and approximately 1.5 m deep. Equipment and waste collection facilities associated with boring would be located close to the entry and exit pits. Alternatively, installation of the new underground connection cable may require trenching. Trenches would be sized in accordance with the *Guide to Codes and Practices for Streets Opening* (NSW Streets Opening Coordination Council, 2018). Dimensions would be dependent on the service(s) required, with a single service standard trench being approximately 0.6 m wide and 1.5 m deep. Trenches would be backfilled as soon as possible after breaking ground. Trenching activities would require a 4 m access track and turning area for plant
- installation of a single commercial pillar and reconnection of the underground service mains to the existing pillar located on the eastern side of Old Punt Road (near 5 Old Punt Road)
- installation of a new HV and low voltage (LV) UGOH on the existing electricity pole located on the eastern side of Old Punt Road near 5 Old Punt Road
- recovery of the existing 11 kV underground cable and installation of a new 11 kV underground cable in conduits located on the eastern side of Peninsula Drive near Lincoln Crescent. Alternatively, installation of the new cable may require trenching or boring.

The proposed telecommunications works include:

- adjustments to Telstra utilities:
  - installation of new conduit/cable parallel to the eastern side of Old Punt Road south of the intersection with Wray Street using boring techniques. Alternatively, installation of the conduit/cable may require partial trenching
  - installation of a pit on land located east of Old Punt Road.
  - stringing out the new conduits along Wray Street for welding prior to pulling through the new underbore.
- adjustments to NBN utilities:
  - hauling of cable through the existing conduits located on the eastern and western sides of Wharf Road, south of Korners Park
  - hauling of cables through existing and new conduits located along Clyde Street and the eastern side of Orient Street.

The proposed water main works include:

- stringing out new water main pipes along Wharf Road for welding prior to pulling through the new Clyde River underbore.
- potential short term occupation of part of the Bridge Plaza carpark to facilitate construction of the Princes Highway water main crossing using underboring techniques. It is anticipated that this highway crossing would be constructed using trenching techniques however adopting boring techniques, if feasible, would minimise disruption to the Princes Highway traffic. A minimum 5 m long by 5 m wide and approximately 2.5 m deep entry pit would be required for boring and the new water main pipe would be strung out in the carpark for welding prior to pulling through the new underbore. Utilisation of the carpark area would not be undertaking without prior agreement with the property owner and the carpark would be reinstated following works.

In the event that existing assets are not suitable for reuse due to size, condition, or require upgrade to meet current standards, existing utility assets, such as conduits, pits, pillars, poles, cabinets, would be replaced on a like for like basis.

Utility assets made redundant as part of the works would be removed where possible.

The described utility works are expected to commence in January 2019 and anticipated to take approximately 8 months to complete.

The activities to be undertaken for the proposed utility adjustments would be consistent with section 3.3.2 of the project REF. Plant and equipment required for the proposed utility adjustments would be consistent with Table 3-2 (refer section 3.3.4) of the project REF for utility relocations.

During the detailed design and construction phases, locations and condition of utilities would be verified through regular updates of the Dial Before You Dig searches and further utility ground truthing as required.

2.2 Need for the proposed modification

Section 2 of the project REF addressed the strategic need for the project, the project objectives and the options that were considered. The proposed modification described and assessed in this consistency review is consistent with the strategic need for the determined project.

2.2.1 Kings Highway slip lane works

Since project determination, further refinement and assessment has identified that additional improvements in road safety and traffic flow through the area can be achieved through the proposed modification to the approach and departure lanes associated with the intersection improvements and Kings Highway slip lanes. The proposed modification would increase capacity for vehicles to turn right from the Kings Highway onto the Princes Highway while providing improved accessibility via the slip lane for vehicles turning left.

The proposed modification would also result in reduced delays and queue lengths on the Kings Highway sections of both the Kings Highway / Princes Highway roundabout and the Old Punt Road / Kings Highway intersection, and improved levels of service at these intersections.

Table 2-1 and Table 2-2 show a comparison of the traffic performance of the design in the submissions report and the proposed modification compared to the project REF, in terms of delay and queue lengths.

Table 2-1: Traffic performance comparison table: delays

Intersection	Approach	Delay (secs)		
		Project REF	Submissions report	Proposed modification
Princes Highway/ Kings Highway	Peninsula Drive	12.7	13.8	13.6
	Princes Highway northbound	10.0	10.7	10.2
	Kings Highway	19.1	9.5	8.8
	Princes Highway southbound	8.4	7.2	6.7
Old Punt Rd / Kings Highway	Kings Highway eastbound	1.7	1.7	1.7
	Bayridge Drive	20.2	20.2	8.7
	Kings Hwy westbound	5.7	5.7	4.7
	Old Punt Road	7.4	7.4	7.3

Similar delay to REF option (+/- 1 second)
Increased delay to REF option
Decreased delay to REF option

Table 2-2: Traffic performance comparison table: queue length

Intersection	Approach	Queue length (m)		
		Project REF	Submissions report	Proposed modification
Princes Highway / Kings Highway	Peninsula Drive	23.0	23.0	22.8
	Princes Highway northbound	31.6	30.5	28.8
	Kings Highway	74.5	21.4	18.0
	Princes Highway southbound	84.1	45.0	31.5
Old Punt Road / Kings Highway	Kings Highway eastbound	6.4	6.4	2.8
	Bayridge Drive	3.8	3.8	0.9
	Kings Highway westbound	104.2	104.2	21.4
	Old Punt Road	3.0	3.0	2.6

Similar queue length to REF option (+/- 1 m)
Increased queue length to REF option
Decreased queue length to REF option

2.2.2 Utility adjustment works

The project REF identified that utility adjustments would be finalised in consultation with utility providers during detailed design. Following project determination, further information on the locations of existing utilities within and adjacent to the revised REF area was obtained, together with more detailed planning of the relocations and adjustments required. This resulted in the need to extend the scope of works of the utility adjustments to include installation, relocation and connection of utilities in an area outside the revised REF area to tie the new assets into the existing network. The works are critical to ensure that construction and operation of the project can proceed and utility services to the community are maintained.

2.3 Consultation

Roads and Maritime undertook consultation with Eurobodalla Shire Council and other utility providers for the project and has undertaken further consultation with Council regarding the proposed modification. Roads and Maritime will continue to consult with Eurobodalla Shire Council, government agencies, stakeholders (including utility providers) and the community throughout the detailed design and construction phases of the project in accordance with the Community and Stakeholder Engagement Plan.

3. Consistency review

3.1 Potential environmental impacts

The project REF described the existing environment, addressed the potential impacts from construction and operation of the project and identified safeguards and management measures to be implemented to ameliorate the identified potential impacts. Further environmental assessment of specific issues and revised safeguards and management measures in response to submissions received and design changes were detailed in the submissions report.

Assessments of the proposed Kings Highway slip lane works (refer to section 3.1.1) and utility adjustment works (refer to section 3.1.2) have been carried out to compare the environmental impacts of the proposed modification relative to the environmental impacts of the determined project. All aspects of the environment potentially impacted upon by the proposed modification have been considered. The identified environmental factors are consistent with those described in the project REF and submissions report.

3.1.1 Kings Highway slip lane works

Potential environmental impacts from the proposed Kings Highway slip lane works have been assessed against the environmental impacts of the determined project and are included in Table 3-1.

Table 3-1: Comparison of environmental impacts for the Kings Highway slip lane works

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the determined project
Landscape character and visual impacts	Potential impacts on landscape character and visual are included in section 6.1.3 of the project REF and section 4.1.2 of the submissions report. ***Construction*** Minor short term localised visual impact - due to the widening of the footprint of the Kings Highway where additional cutting and clearing is required. Minor additional clearance of vegetation located adjacent to the eastern side of the Kings Highway road corridor, supplementary earthworks and the presence of plant and equipment would have minor visual impacts during construction. These impacts would primarily affect road users of the Kings Highway. Views of the works from residences would be partially, if not completely, obscured by the existing topography and vegetation in the area. ***Operation*** Minor negative visual impact – due to a loss of vegetation along the eastbound side of the Kings Highway. This will result in a minor visual impact for road users of the Kings Highway. However, the proposed modification involves works adjacent to an existing road corridor and therefore is not considered a significant alteration to views as the existing infrastructure is already present in these views. Minor visual impact may also occur for a small number of residences located adjacent to the eastbound side of the Kings Highway. However, existing vegetation provides a buffer between the Kings Highway and properties and will minimise any impact resulting from minor clearing required. ***Safeguards and management measures*** Visual impacts would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved Construction Environmental Management Plan (CEMP) and the Urban Design and Landscape Plan.

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the determined project
Biodiversity	Potential impacts on biodiversity are included in section 6.2.3 of the project REF and section 4.1.2 of the submissions report. ***Construction*** Minor negative impact – due to removal of up to around 0.05 ha of native vegetation within the area in which earthworks (cutting) would be carried out. An additional vegetation assessment undertaken for the proposed modification is included at Appendix A. Revised project vegetation impacts are included at Appendix C. Vegetation in the area of the modification primarily comprises plant community type (PCT) 1220 Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion. The vegetation does not comprise a threatened ecological community under the BC Act or the EPBC Act. Vegetation removal would primarily include clearing of shrubby ground cover, small casuarinas and around three mature spotted gum (*Corymbia maculata*) trees. Trees in close proximity to the proposed modification that do not require removal would be protected and retained. The proposed modification would result in a minor increase in noise and vibration due to the operation of plant and machinery and increased movements of vehicles, machinery and people required to carry out earthworks. The disturbance may cause some fauna species to temporarily or permanently vacate the area. ***Operation*** Neutral impact - no impacts on biodiversity additional to those assessed in the project REF and submissions report would be expected due to operation of the proposed modification. ***Safeguards and management measures*** Impacts on biodiversity would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and associated Biodiversity Management Plan.
Soil and water quality	Potential soil and water quality impacts are included in section 6.4.3 of the project REF and section 4.1.2 of the submissions report. ***Construction*** Minor negative impact - due to earthworks adjacent to the Kings Highway including potential for erosion, sedimentation, and spills and leaks from construction plant and equipment. Contaminated soil, including acid sulfate soil, is unlikely to be encountered during earthworks, based on the findings of the project REF. ***Operation*** Neutral impact - no impacts on soil and water quality additional to those assessed in the project REF and submissions report would be expected due to operation of the proposed modification. ***Safeguards and management measures*** Soil and water quality impacts would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and its associated Soil and Water Management Plan, including site specific Erosion and Sediment Control Plan/s.
Waste management	A description of potential waste management sources and impacts is included in section 6.11.1 of the project REF. ***Construction*** Minor negative impact – additional waste generated as part of the proposed modification may include surplus excavated material, vegetation waste, redundant erosion and sediment controls, small quantities of concrete and packaging and general waste materials, consistent with section 6.11.1 of the project REF. The proposed modification would result in an increased area of earthworks adjacent to the Kings Highway. However, the volume of waste produced as a direct result of the extended area of earthworks would be minor in comparison to that for the determined project.

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the determined project
	Operation Neutral impact – no impacts additional to those assessed in the project REF and submissions report would be expected due to operation of the proposed modification. ***Safeguards and management measures*** Waste impacts would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and associated Waste Management Plan. Waste materials would be managed, reused and disposed of in accordance with the relevant guidelines and standard practices. Spoil and green waste would be reused on site unless deemed unsuitable for reuse.
Air quality	Potential air quality impacts associated with the determined project are included in section 6.12.3 of the project REF. ***Construction*** Minor short-term, localised impacts - from generation of dust and particulate matter as a result of clearing of vegetation, moving of topsoil, earthworks and wind erosion of stockpiles prior to reuse or removal from site. Air quality impacts would be consistent with those associated with the determined project. ***Operation*** Neutral impact - no air quality impacts additional to those assessed in the project REF and submissions report would be expected due to operation of the proposed modification. ***Safeguards and management measures*** Air quality impacts would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and Air Quality Management Plan. The management of dust would be undertaken to ensure that the criteria identified in section 6.12.1 of the project REF would be met at sensitive receivers during construction.
Traffic and transport	Potential traffic and transport impacts associated with the determined project are included in section 6.7.3 of the project REF. ***Construction*** Minor negative impact – due to temporary increases to travel times for vehicles due to lane closures or diversions. Temporary changes to access for pedestrians and cyclists along the Kings Highway would occur. ***Operation*** Substantial positive impacts - due to reduction of traffic and transport impacts through provision of long-term improvements in vehicle delays and queuing lengths, traffic flow and performance of the Kings Highway / Princes Highway intersection. These improvements would result in increased road safety and an improved overall experience for road users through the area, particularly during peak holiday periods. An extended ultimate design life of the road network in the Kings Highway / Princes Highway intersection would also result from the proposed modification. The submissions report identified the design life of the upgraded Kings Highway / Princes Highway intersection as up to a future year of 2060, however further investigation has identified that the design life of the Kings Highway / Old Punt Road intersection would be to only 2048. The proposed modification has an overall design life of 2058. ***Safeguards and management measures*** Traffic and transport impacts would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and associated Traffic Management Plan. Traffic control arrangements, fencing and signage would be implemented to reduce traffic delays and ensure safety of road users, cyclists and pedestrians.

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the determined project
Hydrology and coastal processes	Potential impacts on hydrology and coastal processes associated with the determined project are included in section 6.3.3 of the project REF. ***Construction and operation*** Neutral impact - no impact on hydrology and coastal processes additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification.
Aboriginal heritage	Potential impacts on Aboriginal heritage associated with the determined project are included in section 6.5.3 of the project REF. ***Construction and operation*** Neutral impact - the location of the proposed modification is outside of the study area for the Aboriginal cultural heritage assessment prepared as part of the project REF. An additional assessment of Aboriginal heritage was undertaken for the proposed modification in accordance with Stage 1 of the Procedure for Aboriginal Cultural Heritage Consultation and Investigation (Roads and Maritime 2011) (PACHCI). The assessment determined that no impacts on Aboriginal heritage additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification. The PACHCI Stage 1 assessment is included at Appendix B.
Noise and vibration	Potential noise and vibration impacts associated with the determined project are included in section 6.6.4 of the project REF. ***Construction*** Minor short term impacts – due to a minor increase in noise and vibration due to the operation of plant and machinery required to carry out earthworks and construction. ***Operation*** Neutral impact - no noise and vibration impacts additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification.
Property and landuse	Potential impacts on property and landuse associated with the determined project are included in section 6.8.2 of the project REF. ***Construction and operation*** Neutral impact - no property and landuse impacts additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification. The works would be confined to the existing road reserve. There would be a minor change in landuse to extend the slip lanes.
Socio-economic	Potential socio-economic impacts associated with the determined project are included in section 6.9.3 of the project REF. ***Construction*** Neutral impact - no socio-economic impacts additional to those assessed in the project REF and submissions report would be expected due to construction of the proposed modification. ***Operation*** Substantial positive socio-economic impacts due to improved traffic flow.
Non-Aboriginal heritage	Potential impacts on non-Aboriginal heritage associated with the determined project are included in section 6.10.3 of the project REF. ***Construction and operation*** Neutral impact – no impacts on non-Aboriginal heritage additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the determined project
	modification.
Climate change and sustainability	Potential climate change and sustainability issues associated with the determined project are included in section 6.13.2 of the project REF. ***Construction*** Neutral impact – no climate change and sustainability issues additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification. ***Operation*** Positive impact – reduced greenhouse gas emissions due to improved traffic flow at the Kings Highway / Princes Highway intersection and surrounding network.
Cumulative impacts	Potential cumulative impacts associated with the determined project are included in section 6.14.1 of the project REF. ***Construction and operation*** Neutral impact – no impacts additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification.

3.1.2 Utility adjustment works

Potential environmental impacts from the utility adjustment works proposed modification have been assessed against the environmental impacts of the determined project and are included in Table 3-2.

Table 3-2: Comparison of environmental impacts for utility adjustment works

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the determined project
Landscape character and visual impacts	Potential impacts on landscape character and visual amenity are included in section 6.1.3 of the project REF and section 4.7.2 of the submissions report. ***Construction*** Minor short term negative visual impacts - associated with digging of trenches, removal of vegetation and the presence of construction equipment for: • residents of a small number of dwellings on Peninsula Drive and adjoining Lincoln Crescent • residents of a small number of dwellings and road users of Wray Street • road users and visitors to the Bay Waters Resort in the area adjacent to Old Punt Road • residents of a number of dwellings located on Wharf Road and road users of Wharf Road • businesses and residents of a number of dwellings located on Clyde Street and Orient Street. The utility works for the proposed modification would be carried out in urbanised environments and would not impact on the existing landscape character of the area. Existing vegetation would screen some of the works. These impacts would be consistent with those identified for the determined project. ***Operation*** Neutral impact - minor negative visual impacts where new aboveground utilities are visible to local residents would be offset by the positive impacts of undergrounding of some existing overhead utilities. These impacts would be consistent with those assessed in the REF and submissions

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the determined project
	report. ***Safeguards and management measures*** Visual impacts would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and Urban Design and Landscape Plan, including progressive rehabilitation of disturbed areas.
Biodiversity	Potential impacts on biodiversity are included in section 6.2.3 of the project REF and section 4.7.2 of the submissions report. ***Construction*** Minor negative impacts – boring or trenching required for installation of Telecommunications cables adjacent to Old Punt Road and Bay Waters Resort, north of the Princes Highway and to the east of the revised REF area has the potential to result in removal of up to around 0.10 ha of native vegetation of the Spotted Gum – Blackbutt Shrubby Open Forest vegetation community (PCT 1206). This vegetation is not listed under the BC Act, FM Act or EPBC Act. Vegetation clearing would avoid mature trees where possible. Access tracks required for boring works may also disturb vegetation. Revised project vegetation impacts are included at Appendix C. Minor increase in noise and vibration impacts from plant and machinery operation and increased movements of vehicles, machinery and people and light pollution from works undertaken outside standard hours may disrupt fauna and/or cause some fauna species to temporarily or permanently vacate the area. ***Operation*** Minor positive impact – relocation of overhead utilities to underground may reduce the amount of long term vegetation clearing and maintenance required due to a reduction in the width of the road easement. ***Safeguards and management measures*** Impacts on biodiversity would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and Biodiversity Management Plan. Measures to minimise clearing of native vegetation would be implemented where practicable and feasible.
Soil and water quality	Potential soil and water quality impacts are included in section 6.4.3 of the project REF and section 4.7.2 of the submissions report. ***Construction*** Minor negative impacts – soil disturbance associated with localised trenching, boring, and earthworks, including stripping of vegetation and topsoil, excavations and filling, use of access tracks, and minor stockpiling of construction materials, may result in impacts to soil and water quality if not adequately managed. Contaminated soils, including acid sulfate soils, may be encountered at depth during excavation. These impacts are consistent with those for the determined project. There is potential to encounter groundwater during the excavation activities. Dewatering may be required if water ingress is substantial. Management of dewatering will be determined during the detailed design and construction periods in consultation with the Natural Resources Access Regulator (previously DPI-Water and DoI Water) if required, in accordance with the project REF. ***Operation*** Neutral impact – no soil and water quality additional to those assessed in the project REF and submissions report would be expected due to operation of the proposed modification. ***Safeguards and management measures*** Soil and water quality impacts would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and its associated Soil and Water Management Plan, including site specific Erosion and Sediment Control Plan/s, Acid Sulfate Soils Management Plan and Contamination Management Plan. Erosion and sediment controls would be implemented to minimise risk of runoff and sedimentation, particularly at

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the determined project
	worksites in close proximity to the Clyde River. Rehabilitation of disturbed areas would be carried out to minimise soil and water quality impacts from the proposed modification.
Noise and vibration	Potential noise and vibration impacts are included in section 6.6.4 of the project REF and Appendix E of the submissions report. ***Construction*** Minor short term negative noise and vibration impacts for some sensitive receivers, particularly during utility adjustment works undertaken outside standard hours. ***Operation*** Neutral impact – no noise and vibration impacts additional to those assessed in the project REF and submissions report would be expected due to operation of the proposed modification. ***Safeguards and management measures*** Noise and vibration impacts would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and its associated Noise and Vibration Management Plan. Appropriate noise mitigation measures would be implemented to minimise impacts.
Waste management	A description of potential waste management sources and impacts is included in section 6.11.1 of the project REF. ***Construction*** Minor negative impacts - due to generation of minor quantities of waste material associated with the removal of existing utility infrastructure, excavation, boring, minor clearing and concreting work. These waste materials are consistent with the determined project. The volume of waste produced as a result of the proposed modification would be minor in comparison to that for the determined project. ***Operation*** Neutral impact – no waste impacts additional to those assessed in the project REF and submissions report would be expected due to operation of the proposed modification. ***Safeguards and management measures*** Waste impacts would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and its associated Waste Management Plan. Waste would be managed, reused and disposed of in accordance with the relevant guidelines and standard practices.
Socio-economic	Potential socio-economic impacts associated with the determined project are included in section 6.9.3 of the project REF. ***Construction*** Minor short term negative impacts – due to potential disruption to utility services during construction. ***Operation*** Positive impacts – connection of essential utility services for residential properties and commercial businesses would reduce potential socio-economic impacts (such as financial loss) associated with disruption or loss of utilities, particularly for the local business community.
Traffic and transport	Potential traffic and transport impacts associated with the determined project are included in section 6.7.3 of the project REF. ***Construction*** Minor negative traffic and transport impacts – due to temporary disruption to traffic during construction or loss of parking due to use by construction vehicles. This may affect a small number of residents on Wray Street, Peninsula Drive, Wharf Road and Old Punt Road. Potential short term occupation of part of the Bridge Plaza carpark to facilitate construction of the Princes Highway

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the determined project
	water main crossing using underboring techniques would reduce available parking for a short duration, however would reduce traffic impacts to the Princes Highway by avoiding trenching across the highway. Utilisation of the carpark area would not be undertaking without prior agreement with the property owner and the carpark would be reinstated following works. ***Operation*** Minor positive impact – the removal of aboveground utility services adjacent to the roadway may improve road safety by reducing the number of solid objects in close proximity to the roadway that may be encountered by road users. ***Safeguards and management measures*** Traffic and transport impacts would be managed through the safeguards and management measures outlined in section 6.2 of the submissions report, the approved CEMP and associated Traffic Management Plan.
Air quality	Potential air quality impacts associated with the determined project are included in section 6.12.3 of the project REF. ***Construction and operation*** Neutral impact – no impacts on air quality additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification.
Hydrology and coastal processes	Potential impacts on hydrology and coastal processes associated with the determined project are included in section 6.3.3 of the project REF. ***Construction and operation*** Neutral impact – no impacts on hydrology and coastal processes additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification.
Aboriginal heritage	Potential impacts on Aboriginal heritage associated with the determined project are included in section 6.5.3 of the project REF. ***Construction and operation*** Neutral impact – the location of the proposed modification is outside of the study area for the Aboriginal cultural heritage assessment prepared as part of the project REF. An additional assessment of Aboriginal heritage was undertaken for the proposed modification in accordance with Stage 1 of the PACHCI. The assessment determined that no impact on Aboriginal heritage additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification. The PACHCI Stage 1 assessment is included at Appendix B.
Property and landuse	Potential impacts on property and landuse associated with the determined project are included in section 6.8.2 of the project REF. ***Construction and operation*** Neutral impact – no impacts on property and landuse additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification.
Non-Aboriginal heritage	Potential impacts on non-Aboriginal heritage associated with the determined project are included in section 6.10.3 of the project REF. ***Construction and operation*** Neutral impact – no impacts on non-Aboriginal heritage additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification.

Environmental issue	Consideration of the relative environmental impacts of the proposed modification compared to the determined project
Climate change and sustainability	Potential climate change and sustainability issues associated with the determined project are included in section 6.13.2 of the project REF. ***Construction and operation*** Neutral impact – no climate change and sustainability issues additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification.
Cumulative impacts	Potential cumulative impacts associated with the determined project are included in section 6.14.1 of the project REF. ***Construction and operation*** Neutral impact – no cumulative impacts additional to those assessed in the project REF and submissions report would be expected due to construction and operation of the proposed modification.

3.2 EPBC Act factors

Under the environmental assessment provisions of the *Environment Protection and Biodiversity Conservation Act 1999*, matters of national environmental significance and impacts on Commonwealth land are required to be considered for the proposed modification. These matters are considered in the following sections.

Table 3-3 identifies and assesses if the proposed Kings Highway slip lane works and the utility adjustment works are likely to impact on matters of national environmental significance and Commonwealth land.

Table 3-3: Comparison of EPBC Act factors

Factor	**Consideration of the relative impact of the proposed modification compared to the determined project and if applicable any change to the EPBC strategic assessment or other EPBC approval**	
	Kings Highway slip lane works	**Utility adjustment works**
Any impact on a World Heritage property?	No	No
Any impact on a National Heritage place?	No	No
Any impact on a wetland of international importance?	No	No
Any impact on a listed threatened species or communities?	No	No
Any impacts on listed migratory species?	No	No
Any impact on a Commonwealth marine area?	No	No

Factor	Consideration of the relative impact of the proposed modification compared to the determined project and if applicable any change to the EPBC strategic assessment or other EPBC approval	
Does the proposal involve a nuclear action (including uranium mining)?	No	No
Additionally, any impact (direct or indirect) on Commonwealth land?	No	No

The assessment of the impact of the proposed modification on matters of national environmental significance and the environment of Commonwealth land considers that there will be no change to the findings of the determined project and the modification is unlikely to cause a significant impact on matters of national environmental significance or the environment of Commonwealth land. A referral to the Australian Government Department of the Environment and Energy is not required for the proposed Kings Highway slip lane works or utility adjustment works.

3.3 Licences, permits and approvals

All relevant licenses, permits, notifications and approvals needed for the Batemans Bay Bridge replacement project are included in section 6.3 of the submissions report. No additional or changed licences and approval requirements are required for the proposed modification identified in this consistency review.

Table 3-4: Comparison of licence, permit and approval requirements

Existing requirement for the determined project	Identification of additional requirements or any change to the existing requirements as a result of the proposed modification
Protection of the Environment Operations Act 1997 (s43): Environment protection licence (EPL) for scheduled activities being extractive activities from the EPA.	No additional or changed requirements due to the proposed modification.
Fisheries Management Act 1994 (s205): Permit to harm marine vegetation from the Minister for Primary Industries.	No additional or changed requirements due to the proposed modification.
National Parks and Wildlife Act 1974 (s90): Aboriginal heritage impact permit (AHIP) from the Chief Executive of OEH.	No additional or changed requirements due to the proposed modification.
Heritage Act 1977: Written notification to OEH of removal of heritage items from the Roads and Maritime S170 heritage and conservation register.	No additional or changed requirements due to the proposed modification.
Water Management Act 2000 (s90): Water supply work approval from DPI (Water).	No additional or changed requirements due to the proposed modification.
Water Management Act 2000 (s91F): Aquifer interference approval from DPI (Water).	No additional or changed requirements due to the proposed modification.

Existing requirement for the determined project	Identification of additional requirements or any change to the existing requirements as a result of the proposed modification
Marine Estate Management Act 2014: Marine Parks Permit for work in the Batemans Bay Marine Park.	No additional or changed requirements due to the proposed modification.
Crown Lands Act 1989 (s6): Licence to occupy areas of Crown land.	No additional or changed requirements due to the proposed modification.

3.4 Consistency review

Table 3-5 below presents a set of questions to assist in identifying whether the proposed modification is consistent with the determined project, or if further environmental impact assessment is required. These questions are addressed with consideration to the information above.

Table 3-5: Consistency review questions

Consistency questions	Discussion	Response
Q1) Is the proposed modification to be carried out as part of a project which has a determined REF?	Yes, the proposed modification is to be carried out as part of the Batemans Bay Bridge replacement project.	Yes
Q2) Is the proposed modification so different in scope and impacts to the determined REF as to be a radical transformation and so, in reality, an entirely new project?	***Kings Highway slip lane works*** The slip lane works would not result in a substantial change to the design, objectives or impact of the determined project as a whole. The proposed design would not constitute a major change to the design outcomes for the determined project. The scope of works to be carried out is generally in accordance with those described for the slip lane works in the submissions report.	No
	Utility adjustment works The utility adjustment works would not result in a substantial change to the design, objectives or impact of the determined project as a whole. The scope of works would not constitute a major change to those described in the project REF and submissions report for the determined project.	No

Consistency questions	Discussion	Response
Q3) If the project is subject to the EPBC strategic assessment or other EPBC Act approval, would the proposed modification change the potential impacts on matters of national environmental significant or the environment of Commonwealth land?	***Kings Highway slip lane works*** The determined project is not subject to the EPBC Strategic Assessment or any other EPBC Act approval. The assessment of the impact of the proposed modification on matters of national environmental significance and the environment of Commonwealth land considers that there would be no change to the findings of the determined project and the proposed modification is not likely to significantly impact threatened species, populations, ecological communities or migratory species, or the environment of Commonwealth land, within the meaning of the EPBC Act. A referral to the Australian Government Department of the Environment and Energy is not required for the proposed modification to Kings Highway slip lane works.	No
	Utility adjustment works The determined project is not subject to the EPBC Strategic Assessment or any other EPBC Act approval. The assessment of the impact of the proposed modification on matters of national environmental significance and the environment of Commonwealth land considers that there would be no change to the findings of the determined project and the proposed modification is not likely to significantly impact threatened species, populations, ecological communities or migratory species, or the environment of Commonwealth land, within the meaning of the EPBC Act. A referral to the Australian Government Department of the Environment and Energy would not be required for the proposed modification to the utility adjustment works.	No
Q4) If the project is subject to a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR), would the proposed modification change the potential impacts on areas of outstanding biodiversity value, threatened species or ecological communities and their habitats as set out in the SIS or BDAR and its Conditions?	***Kings Highway slip lane works*** The determined project is not subject to a SIS or BDAR. The proposed modification is not likely to significantly impact threatened species, populations or ecological communities or their habitats, within the meaning of the BC Act or FM Act and therefore a Species Impact Statement is not required.	No
	Utility adjustment works The determined project is not subject to a SIS or BDAR. The proposed modification is not likely to significantly impact threatened species, populations or ecological communities or their habitats, within the meaning of the BC Act or FM Act and therefore a Species Impact Statement is not required.	No

Consistency questions	Discussion	Response
Q5) Would the proposed modification result in a reduction of the overall environmental impacts of the determined project including that it would not be likely to trigger the EPBC Act strategic assessment, other EPBC approval, SIS or BDAR?	***Kings Highway slip lane works*** The consistency review has assessed the environmental risks associated with undertaking the proposed modification and considers that it would result in an overall reduction in impacts associated with the determined project. The proposed modification would deliver substantial long-term benefits for road users due to improved traffic conditions and road performance in the project area. Economic benefits would be realised due to improved design life of the road network due to the proposed modification. Potential short-term minor negative impacts associated with the proposed modification during the construction period would be minimised through implementation of safeguards and management measures outlined in the submissions report, and other approved environmental management plans (such as the CEMP and associated sub-plans). The long term benefits of the slip lane works outweigh the minor short term localised impacts during construction.	Yes
	Utility adjustment works The consistency review has assessed the environmental risks associated with undertaking the proposed modification and considers that it would result in an overall reduction in impacts associated with the determined project. The proposed modification is integral to the project and would deliver long-term socio-economic benefits for the local community through ensuring continuity in provision of utility services. Relocation of utility services from overhead to underground may be beneficial for road safety as it reduces the number of solid objects in close proximity to the roadside. Removal of overhead utilities may also have the potential for positive impacts on vegetation due to a reduction in the extent of vegetation that would require long term maintenance. Positive visual impacts would be achieved by the removal of overhead utilities. Potential minor negative short-term impacts associated with the proposed modification during the construction period would be minimised through implementation of safeguards and management measures outlined in the submissions report, and other approved environmental management plans (such as the CEMP and associated sub-plans). The long term benefits of the utility works outweigh the minor short term localised impacts during construction.	Yes
Q6) Whatever the outcome of the consistency review, are modifications to any other authorisations, or new authorisations, required, eg environment protection licences, Heritage Act permits,	***Kings Highway slip lane works*** The Kings Highway slip lane works would not result in any modification to, or additional requirement for, any environment protection licence, permits or approvals compared to the determined project.	No

Consistency questions	Discussion	Response
permits under the *Fisheries Management Act* etc?	***Utility adjustment works*** The utility adjustment works would not result in any modification to, or additional requirement for, any environment protection licence, permits or approvals compared to the determined project.	No

4. Conclusion

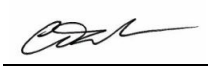
The consistency review has considered the proposed modification in terms of consistency against the determined project, the Batemans Bay Bridge replacement project.

As set out in Table 3-5 above, the proposed modification is considered to be consistent with the determined project. In addition, the project would not result in additional impacts that would likely trigger the need for an EPBC Act strategic assessment, EPBC Act approval, SIS or BDAR.

5. Certification and endorsement

5.1 Certification – Consistency review preparer

This document provides a true and fair consistency review of the scope and potential impacts of the proposed modification compared with the scope and environmental impacts of the determined project.

Signed 

Name Greg Tallentire

Position Principal Environmental Planner, Advisian

Date 3 January 2018

5.2 Roads and Maritime certification and endorsement

I have reviewed the scope and potential environmental impacts of the proposed modification against the determined project. The proposed modification would reduce the overall environmental impacts of the determined project and as such, in accordance with section 5.4(a) of the EP&A Act, is exempt from further environmental impact assessment.

The proposed modification would not trigger the EPBC Act strategic assessment/other EPBC Act approval and/or a SIS or BDAR.

The CEMP and sub plans will be updated to incorporate the modification.

Signed 

Name Nicole Moore

Position Roads and Maritime Senior Environment Officer

Date 3 January 2018 ~~8~~ 9

Signed 

Name Kylie Curran

Position Roads and Maritime Project Manager

Date 7 January 2019

5.2.1 Endorsements

I have examined consistency of the proposed modification with the determined Batemans Bay Bridge replacement project. In accordance with section 5.4(a) of the EP&A Act I endorse the findings of this consistency review subject to adoption of my requirements in the table below.

Requirements	

Signed 

Name Stuart Pigott

Position Roads and Maritime Environment Manager (Acting)

Date 9 January 2019

6. Terms and acronyms used in this consistency review

Term / acronym	Description
AREF	Addendum review of environmental factors
BC Act	*Biodiversity Conservation Act 2016* (NSW) (replaces the TSC Act)
CEMP	Construction Environmental Management Plan
DPI	Department of Primary Industries
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW). Provides the legislative framework for land use planning and development assessment in NSW
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
FM Act	*Fisheries Management Act 1994* (NSW)
HV	High voltage
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
LV	Low voltage
PACHCI	Procedure for Aboriginal cultural heritage consultation and investigation (Roads and Maritime 2011)
REF	Review of environmental factors
Roads and Maritime	NSW Roads and Maritime Services
TSC Act	*Threatened Species and Conservation Act 1995* (repealed)
UGOH	Underground to over ground

Appendix A - Kings Highway additional vegetation assessment

Briefing Note

To: Nicole Moore
From: Umwelt (Australia) Pty Ltd
Author: David Moore
Date: 25 October 2018
Subject: Batemans Bay Bridge Replacement Additional Vegetation Assessment – Kings Highway

1.0 Introduction

RMS proposes to construct a new bridge on the Princes Highway over the Clyde River at Batemans Bay. The Batemans Bay Bridge replacement (the proposal) would remove the existing bridge and provide a new bridge with two lanes in each direction, improving traffic flow along the Princes Highway in Batemans Bay. The proposal was subject to assessment under two planning pathways and has been approved with a determination under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) issued in April 2018 and development consent under Part 4 of the EP&A Act for areas subject to the State Environmental Planning Policy No 14 – Coastal Wetlands (SEPP 14) issued in May 2018.

Aurecon (2017) prepared a Biodiversity Assessment Report (BAR) which documented the threatened and migratory species, plant community types (PCTs), threatened ecological communities (TECs) and impacts that they would be subjected to. It included the collection of biometric data in accordance with the Framework for Biodiversity Assessment (FBA) and assessments of significance of impacts. Environmental Property Services (EPS) prepared a Supplementary Biodiversity Assessment Report (SBAR) (EPS 2018) to support the REF Submissions Report (Roads and Maritime Services 2018). The SBAR was informed by an independent assessment, undertaken by Umwelt, which focussed on the allocation of field vegetation types to NSW PCTs and to NSW and Commonwealth listed TECs.

Subsequent to preparation of the SBAR (EPS 2018), Roads and Maritime identified as part of a minor design refinement has extended the potential area of impact along the eastern side of Kings Highway to the north of vegetation mapping presented in the SBAR. While this was in the SBAR study area (**Figure 1**) vegetation communities were not mapped in this area. Additional assessment is therefore required to identify the vegetation community(ies) present on the eastern side of Kings Highway to the north of Bayridge Road.

Previous assessment conducted by EPS (EPS 2018) identified a patch of PCT1326 Woollybutt – White Stringybark – Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion immediately north of the intersection between Kings Highway and Bayridge Drive (the patch was labelled 'WB6'; **Figure 1**).

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The occurrence of PCT1326 in WB6 was identified as having potential to meet criteria for the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community, however was assessed by EPS (2018) as not meeting criteria on the basis of not meeting the patch size threshold. The EPS mapping did not extend north of WB6 on the eastern side of Kings Highway.

This briefing note provides a summary of a field inspection conducted on 20 September 2018. The Project Area comprises of the road easement and adjacent parts of private lots on the eastern side of Kings Highway for approximately 275 m north of the intersection with Bayridge Drive (**Figure 1**). The Project Area is contained within the Biodiversity Study Area of the SBAR (2018) and includes WB6 previously mapped by EPS and previously unmapped vegetation between WB6 and the northern edge of the Biodiversity Study Area (labelled UM01; **Figure 1**).

The objective of the assessment was to identify the vegetation community(ies) present to the north of WB6. Based on data on floristic composition and condition, the additional assessed area, along with WB6, is assessed against criteria for any EPBC Act and NSW *Biodiversity Conservation Act* 2016 (BC Act) listed threatened ecological communities, including the EPBC Act listed Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community identified as potentially locally present by EPS (2018).

2.0 Method

The site was inspected on 20 September 2018 using a meandering transect approach and rapid vegetation assessment points were conducted within WB6 and areas to the north. Specifically, the basis for determining the extent of WB6 was reviewed.

Subsequent to the field inspection, the floristic diversity and conditions were reviewed against diagnostic criteria and condition thresholds for potential threatened ecological communities.

3.0 Results

The site inspection was conducted on 20 September 2018 by Umwelt Principal Ecologist David Moore, who is familiar with local plant communities and threatened ecological communities. Five rapid vegetation assessment plots were conducted in and to the north of WB6 (**Figure 1**) to capture information on floristic composition and condition. Rapid vegetation assessment details are provided in **Appendix A**.

3.1 Plant community types

Revised vegetation mapping, including vegetation north of WB6 (i.e. UM01), is shown in **Figure 1**. Two PCTs were identified in the Project Area:

- PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion; and
- PCT1326 – Woollybutt – White Stringybark – Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion.

Unmapped areas immediately adjacent to Kings Highway comprised of cleared cutting and formed drainage channel and were not identified as a PCT.

The extent of WB6, mapped by EPS (2018), was confirmed as a maximum extent of vegetation meeting PCT1326 – Woollybutt – White Stringybark – Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion, including ecotonal vegetation.

The majority of WB6 was considered to represent an ecotonal state between these two communities on lower slopes, due to the presence of spotted gum, the absence of forest red gum, sparsity of woollybutt and dry shrubby nature of the understorey. Vegetation clearly meeting PCT1326 – Woollybutt – White Stringybark – Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion was considered to be present for the southern 50 metres of WB6. Due to the ecotonal condition of the site, both rapid assessment points, and previous data collected by EPS (2018) indicated a high level of similarity in groundcover and composition between the northern parts of WB6 and the neighbouring shrubby open forest vegetation.

Patch UM01, north of WB6 supported PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion.

3.1.1 PCT1326 Woollybutt – White Stringybark – Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion

WB6 (**Figure 1**) mapped by EPS (2018), represents a justifiable maximum extent for PCT1326 – Woollybutt – White Stringybark – Forest Red Gum grassy woodland based on maximum distribution of woollybutt (*Eucalyptus longifolia*) in the landscape and the transition from valley flats to lower slopes. Forest red gum (*Eucalyptus tereticornis*) was absent from the area. Swamp oak (*Casuarina glauca*) was present on flats at the base of the slope. Moving up the slope, this area was ecotonal with PCT1220 Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion, and both rapid assessment points, and previous data collected by EPS (2018) indicated a high level of similarity in groundcover and composition between areas.

Typically, grassy cover increased on the moister valley flats at the southern end of WB6, with dry shrubby forest characteristics commencing on the lower slopes and increasing onto the mid slopes. Due to the ecotonal character of the site, the groundcover composition through the northern half of WB6 had shrubby open forest characteristics with a high degree of correspondence to PCT1220, with sparse grassy cover and the presence of shrub and groundcover species more indicative of PCT1220 than PCT1326. Nonetheless, the original extent of PCT1326 is justifiable due to the ecotonal condition and presence of woollybutt in this area.

Two rapid vegetation assessment plots were conducted in this area (**Appendix A**), in addition to the rapid vegetation assessment and biometric plots conducted by EPS (2018). As identified in EPS (2018), the vegetation mapped as PCT1326 had the following characteristics:

- Canopy height ranged from 9 to 20 m with percent foliage cover of 10-50%
- Mid stratum height ranged from 0-6m with percent foliage cover of 10-40% and
- Groundcover height ranged from 0.1 to 0.8 m with percent foliage cover of 0-90%.

Dominant species identified in each stratum were:

- **Canopy**: *Eucalyptus globoidea*; *Eucalyptus longifolia*.
- **Mid stratum**: *Casuarina glauca*; *Exocarpos cupressiformis*; *Bursaria spinosa*; *Allocasuarina littoralis*; *Persoonia linearis*.
- **Groundlayer**: *Entolasia stricta*; *Poa* sp.; *Lepidosperma laterale*; *Lomandra longifolia*; *Daviesia squarrosa*.

3.1.2 PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion

Vegetation to the north of WB6 (i.e. UM01; **Figure 1**) was identified as PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion. This community was distinct from PCT1326 – Woollybutt – White Stringybark – Forest Red Gum grassy woodland due to the dominance of spotted gum (*Corymbia maculata*) and white stringybark (*Eucalyptus globoidea*) and the absence of woollybutt. The mid strata and groundcover composition and structure in this area was consistent with PCT1220. This community was identified as distinct from the PCT 1206 Spotted Gum - Blackbutt shrubby open forest on the coastal foothills, southern Sydney Basin Bioregion and northern South East Corner Bioregion identified elsewhere by EPS (2018) due to the shrub composition and presence of species more tolerant of well drained slopes.

The vegetation was present on mid to upper slopes. Three rapid vegetation assessment plots were conducted in this area (**Appendix A**). The vegetation mapped as PCT1220 had the following characteristics:

- Canopy height ranged from 10 to 20 m with percent foliage cover of 10-50%
- Mid stratum height ranged from 1-6m with percent foliage cover of 10-40% and
- Groundcover height ranged from 0.1 to 0.7 m with percent foliage cover of 0-60%.

Dominant species identified in each stratum were:

- **Canopy**: *Corymbia maculata*; *Eucalyptus globoidea.*
- **Mid stratum**: *Allocasuarina littoralis*; *Exocarpos cupressiformis*; *Persoonia linearis*; *Podolobium ilicifolium*; *Daviesia squarrosa*; *Macrozamia communis*.
- **Groundlayer**: *Entolasia stricta*; *Lepidosperma laterale*; *Lomandra longifolia*.

Key indicator canopy species for grassy woodlands, i.e. forest red gum and woollybut, were absent from this area.

3.2 Threatened Ecological Communities

Occurrences of PCT1326 Woollybutt – White Stringybark- Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion in the larger Biodiversity Study Area assessed for the SBAR (EPS 2018) have previously been conservatively identified as conforming to the following two threatened ecological communities:

- Lowland Grassy Woodland in the South East Corner Bioregion, listed as endangered under the NSW BC Act and

- Illawarra and South Coast Lowland Forest and Woodland, listed as critically endangered under the Commonwealth EPBC Act.

The potential for vegetation in the Project Area to meet diagnostic criteria and condition thresholds for these TECs is addressed in **Section 3.2.1** and **Section 3.2.2**. No other ecological communities listed as threatened under either the NSW BC Act or the Commonwealth EPBC Act were identified as potentially occurring within the project area.

3.2.1 Illawarra and South Coast Lowland Forest and Woodland

Illawarra and South Coast Lowland Forest and Woodland is listed as Critically Endangered under the EPBC Act. Key diagnostic criteria and condition thresholds are identified in the EPBC Act Conservation Advice (Department of Energy and Environment, 2016).

As identified by EPS (2018), PCT1326 Woollybutt - White Stringybark – Forest Red Gum grassy woodland has the potential to meet criteria for the EPBC Act listed Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community when reviewed against key diagnostic criteria. WB6 was determined not to meet criteria for inclusion in the critically endangered ecological community on the basis of not meeting the patch size threshold (EPS 2018).

Key to confirming the EPS (2018) assessment in the SBAR was determining that a justifiable patch size for WB6 was used in the assessment of the patch against condition thresholds for the Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community. This was achieved by confirming the patch boundary with adjacent vegetation (i.e. PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion; UM01), confirming that vegetation in UM01 did not meet criteria for inclusion in the ecological community, and considering the combined areas against diagnostic criteria and thresholds.

Confirmation that the extent of WB6, as mapped by EPS in the SBAR (EPS 2018), was justifiable is presented in **Section 3.1.1**. **Table 1** presents assessment of the vegetation in UM01 against key diagnostic criteria for the EPBC Act listed Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community.

Table 1 - Assessment of PCT1220 against key diagnostic criteria for Illawarra and South Coast Lowland Forest and Woodland.

EPBC Act Conservation Advice (Department of Energy and Environment, 2016)	PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion
The ecological community occurs within the state of New South Wales in the Jervis, Ettrema and Illawarra subregions of the Sydney Basin Bioregion and the Bateman subregion of the South East Corner Bioregion and	Yes - occurs in Batemans Bay subregion
The ecological community occurs below approximately 350 m ASL, on the coastal plain or foothills between the immediate coastal strip and the escarpment **and**	Yes UM01 occurs at <350 m ASL elevation on foothills between the immediate coastal strip and the escarpment
The ecological community is a forest or woodland with at least 10% foliage cover **and**	Yes UM01 comprises a dry shrubby forest and has over 10% foliage cover

EPBC Act Conservation Advice (Department of Energy and Environment, 2016)	PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion
Eucalyptus tereticornis or *Eucalyptus longifolia* dominant or in modified communities *Angophora floribunda; Eucalyptus bosistoana*; or *Eucalyptus globoidea.* Co-dominant species could include: *Corymbia maculata, Eucalyptus amplifolia* subsp. *amplifolia, E. botryoides, E. paniculata* subsp. *paniculata*; *E. pilularis* and *E. quadrangulata* **and**	No PCT1220, including UM01, is naturally (i.e. not modified) dominated by *Corymbia maculata*, with a component of *E. globoidea*
The ecological community is characterised by the plant species described in Appendix A ‑Species lists, Table 8 of the Approved Conservation Advice (Department of Energy and Environment, 2016)	No. While many plant species described in Appendix A - Species lists, Table 8 of the Approved Conservation Advice (Department of Energy and Environment, 2016) are present in UM01, dominant shrub species identified in the ground layer such as *Daviesia squarrosa*, *Podolobium ilicifolium* and *Macrozamia communis* are not identified as characteristic of the critically endangered ecological community.
Does this patch meet the key characteristics:	**No**, the community present at UM01 does not have the required dominant canopy species.

UM01 does not support a vegetation community which potentially meets criteria for inclusion in the EPBC Act listed Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community on the basis that the naturally occurring dominant canopy species are not consistent with the diagnostic criteria for the critically endangered ecological community. Further assessment against condition thresholds is not warranted.

On this size, the patch size threshold for vegetation potentially meeting diagnostic criteria applied by EPS (2018) in determining whether WB6 met remains applicable. Therefore, the conclusion of EPS (2018) that WB6 does not meet criteria for inclusion in the EPBC Act listed Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community is supported.

3.2.2 Lowland Grassy Woodland

EPS (2018) determined that the BC Act listed Lowland Grassy Woodland endangered ecological community is not likely to correspond with the vegetation in the project area mapped as PCT1326. Based on the revised field assessment, the assessment and conclusions of EPS (2018) with respect to WB6, i.e. that the area does not conform to the Lowland Grassy Woodland endangered ecological community, remain unchanged.

Vegetation in UM01 classified as PCT 1220 does not have the potential to meet characteristics for inclusion in the Lowland Grassy Woodland endangered ecological community due to the absence of forest red gum (*Eucalyptus tereticornis*) and the absence of a grassy understorey. While white stringybark may be co-dominant or dominant in disturbed occurrences of Lowland Grassy Woodland, the co-dominance of spotted gum and the presence of a predominantly shrubby understorey is not consistent with key diagnostic criteria for inclusion in the Lowland Grassy Woodland endangered ecological community.

4.0 Conclusion

The site was inspected by meandering traverse on 20 September 2018.

The extent of PCT1326 Woollybutt – White Stringybark – Forest Red Gum grassy woodland identified by EPS (2018) as WB6 was supported based on the maximum distribution of woollybutt in the landscape and the transition from valley flats to lower slopes. Vegetation to the north of WB6 (i.e. UM01) conformed to PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion.

Vegetation identified as PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion does not potentially meet criteria for inclusion in the EPBC Act listed Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community or the BC Act listed Lowland Grassy Woodland endangered ecological community on the basis that the naturally occurring dominant canopy species and the shrubby open forest character are not consistent with the diagnostic criteria for either threatened endangered ecological community. Further assessment against condition thresholds is not warranted.

The exclusion of WB6 from the endangered ecological community on the basis that the patch size did not meet condition thresholds presented in the Supplementary BAR (EPS 2018) is supported. Based on the assessment that adjacent areas of PCT 1220 do not meet criteria for potential inclusion in the EPBC Act listed Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community on the basis of the naturally occurring dominant canopy species, the patch size applied by EPS (2018) in determining whether WB6 met condition thresholds for inclusion in the EPBC Act listed Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community remains applicable. Therefore neither WB6, nor WB6 and UM01 combined, meet criteria for inclusion in the EPBC Act listed Illawarra and South Coast Lowland Forest and Woodland critically endangered ecological community on the basis that the patch size does not meet the applicable threshold.

No other threatened ecological communities listed under the EPBC Act or the BC Act were present.

5.0 References

Aurecon (2017) Batemans Bay Bridge Replacement Biodiversity Assessment. Prepared for Roads and Maritime Services.

EPS (2018) Batemans Bay Bridge Replacement Supplementary Biodiversity Assessment. Prepared for Roads and Maritime Services.

Roads and Maritime Services (2018) Batemans Bay Bridge Replacement Review of Environmental Factors Submissions Report. Prepared by Roads and Maritime Services.

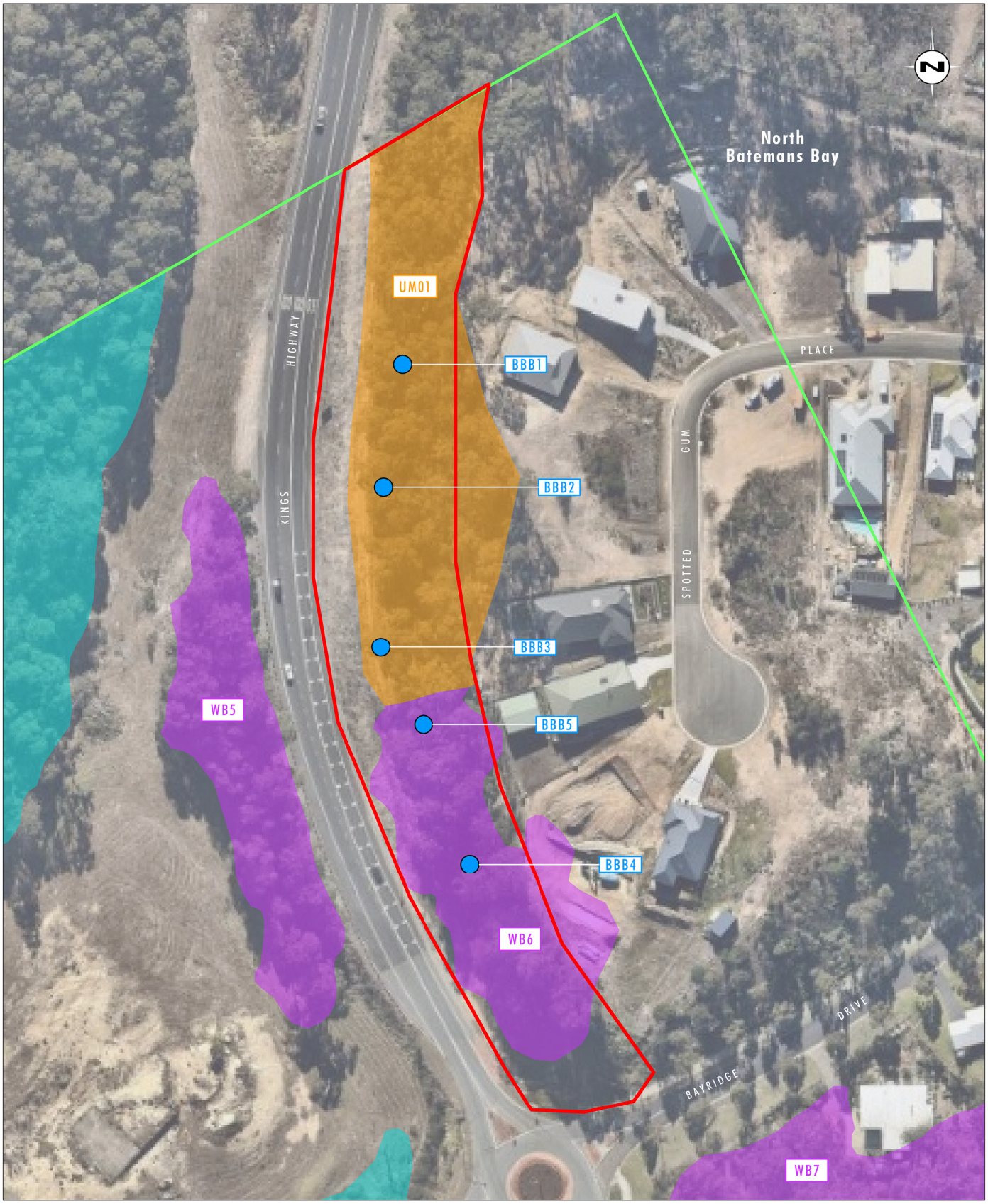


Image Source: Nearmap (Jul 2018)
Data Source: EPS (2018)

0 20 40 80m
1:1 500

Legend

- Project Area (Current assessment)
- Biodiversity Study Area (Environmental Property Services 2018)
- Rapid Vegetation Assessment Points

Plant Community Types (Umwelt 2018)

- Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion

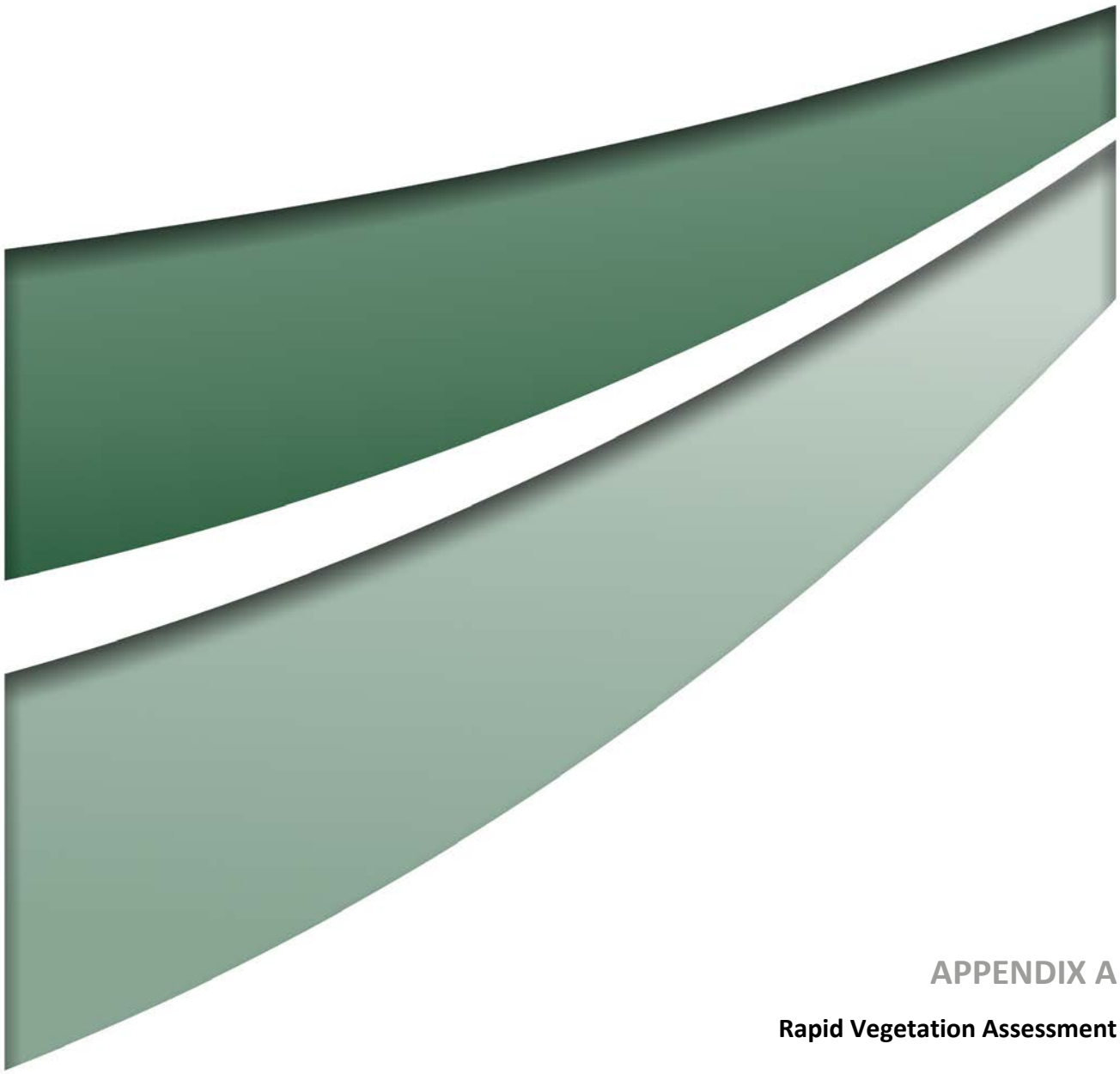
Plant Community Types (Environmental Property Services 2018)

- Spotted Gum - Blackbutt shrubby open forest on the coastal foothills, southern Sydney Basin Bioregion and northern South East Corner Bioregion (PCT 1206)
- Woollybutt - White Stringybark - Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion (PCT 1326)

FIGURE 1

Additional Vegetation Assessment

File Name (A4): 4205_009.dgn
20181102 11.53



APPENDIX A

Rapid Vegetation Assessment

ID	BBB1	**Zone**	55
Easting	245098	**Northing**	245098
Date	20/09/2018	**Dominant canopy**	Spotted gum (*Corymbia maculata*) 4 White stringybark (*Eucalyptus globoidea*) 2
Dominant understorey	Cherry ballart (*Exocarpos cupressiformis*), black she-oak (*Allocasuarina littoralis*); narrow-leaved geebung (*Persoonia linearis*); prickly shaggy pea (*Podolobium ilicifolium*)	**Dominant groundcover**	Bitter-pea (*Daviesia squarrosa*); variable sword-sedge (*Lepidosperma laterale*); wiry panic (*Entolasia stricta*).
Landform	Mid slope.		
PCT	PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion		

ID	BBB2	**Zone**	55
Easting	245093	**Northing**	6045953
Date	20/09/2018	**Dominant canopy**	Spotted gum (*Corymbia maculata*) 4 White stringybark (*Eucalyptus globoidea*) 2
Dominant understorey	Cherry ballart (*Exocarpos cupressiformis*) and black she-oak (*Allocasuarina littoralis*).	**Dominant groundcover**	Wiry panic (*Entolasia stricta*), burrawang (*Macrozamia communis*) and bitter-pea (*Daviesia squarrosa*).
Landform	Mid slope.		
PCT	PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion		

ID	BBB3	**Zone**	55
Easting	245092	**Northing**	6045909
Date	20/09/2018	**Dominant canopy**	Spotted gum (*Corymbia maculata*) 4, White stringybark (*E. globoidea*) 1, Woollybutt (*E. longifolia)* [downslope only]
Dominant understorey	Cherry ballart (*Exocarpos cupressiformis*), black she-oak (*Allocasuarina littoralis*) and narrow-leaved geebung (*Persoonia linearis*).	**Dominant groundcover**	Wiry panic (*Entolasia stricta*), spiny-headed mat-rush (*Lomandra longifolia*) and bitter-pea (*Daviesia squarrosa*).
Landform	Mid slope.		
PCT	PCT1220 – Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion		

ID	BBB4	**Zone**	55
Easting	245117	**Northing**	6045848
Date	20/09/2018	**Dominant canopy**	Woollybutt (*Eucalyptus longifolia*) 3 White stringybark (*Eucalyptus globoidea*) 1 Spotted gum (*Corymbia maculata*) 1
Dominant understorey	Cherry ballart (*Exocarpos cupressiformis*), swamp oak (*Casuarina glauca*), narrow-leaved geebung (*Persoonia linearis*)	**Dominant groundcover**	Variable sword-sedge (*Lepidosperma laterale*), bitter-pea (*Daviesia squarrosa*), tussock grass (*Poa* sp.) and wiry panic (*Entolasia stricta*).
Landform	Lower slope.		
PCT	PCT1326 – Woollybutt – White Stringybark – Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion		

ID	BBB5	**Zone**	55
Easting	245104	**Northing**	6045887
Date	20/09/2018	**Dominant canopy**	White stringybark (*E. globoidea*) 4 Woollybutt (*Eucalyptus longifolia 1* Spotted gum (*Corymbia maculata*) 1
Dominant understorey	Cherry ballart (*Exocarpos cupressiformis*), black she-oak (*Allocasuarina littoralis*), and blackthorn (*Bursaria spinosa*)	**Dominant groundcover**	Tussock grass (*Poa* spp.), wiry panic (*Entolasia stricta*) and spiny-headed mat-rush (*Lomandra longifolia*).
Landform	Lower slope.		
PCT	PCT1326 – Woollybutt – White Stringybark – Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion.		

Appendix B – PACHCI Stage 1 assessment

08 I 11 I 2018

Shaun Foster
A/Project Manager
Engineer
Regional Project Office
Technical and Project Services Division
Roads and Maritime Services NSW

Dear Shaun,

Preliminary assessment results for the Kings Highway Road Widening and Utility Adjustment Works – Batemans Bay Bridge based on Stage 1 of the *Procedure for Aboriginal cultural heritage consultation and investigation* (the procedure).

The project, as indicated in the checklist attached was assessed as being unlikely to have an impact on Aboriginal cultural heritage.

The assessment is based on the following due diligence considerations:

- The AHIMS search conducted on the 8th November 2018 did not indicate moderate to high concentrations of Aboriginal objects or places in the proposed Kings Highway Road Widening and Utility Adjustment Works Project area.
- Parts of the proposed area of work for Kings Highway Road Widening and Utility Adjustment Works – Batemans Bay Bridge Project does contain landscape features that may support Aboriginal objects according to the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (within 200 meters of waters).
- However it is reasonable to conclude that there are no known Aboriginal objects and a low probability of Aboriginal objects occurring in the Kings Highway Road Widening and Utility Adjustment Works Project proposed area of work due to a high level of disturbance and existing infrastructure including roads.

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

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

RMS staff and/or contractors should be aware of the potential of Aboriginal objects (including skeletal remains) being discovered during the course of the project, if this occurs all works in the vicinity of the find must cease. Follow the steps outlined in the Roads and Maritime Services' *Unexpected Archaeological Finds Procedure.*

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

Yours Sincerely

Tabatha Cann
Acting Aboriginal Cultural Heritage Officer

08/11/2018

Roads and Maritime Services NSW

Level 6, 90 Crown Street Wollongong NSW 2500
T 04474988471 **E** tabatha.r.cann@rms.nsw.gov.au

Appendix C - Revised project vegetation impacts

Area of each PCT directly impacted by the approved project and consistency review 1

PCT number	PCT name	Threatened ecological community (TEC)	Status			EIS area (ha)	Revised REF area (ha)	Consistency review area (ha)	Total (ha)
			BC Act	FM Act	EPBC Act				
1126	Saltmarsh in estuaries of the Sydney Basin and South East Corner	Coastal saltmarsh/ subtropical and temperate saltmarsh	E	PMV	V	0.01	0	0	**0.01**
920	Mangrove forest in estuaries of the Sydney Basin and South East Corner	None	-	PMV	-	0.06	0.02	0	**0.08**
1913	Seagrass meadows of the estuaries and lagoons of the New South Wales coast	None	-	PMV	-	0	0.35	0	**0.35**
1234	Swamp Oak forest fringing estuaries, Sydney Basin and South East Corner	Swamp Oak floodplain forest	E	-	DCA	0	0.14	0	**0.14**
1204	Spinifex beach strand grassland, Sydney Basin Bioregion and South East Corner Bioregion	None	-	-	-	0	0.26	0	**0.26**
N/A	Macroalgae	None	-	PMV	-	0	0.04	0	**0.04**
1206	Spotted Gum - Blackbutt shrubby open forest on the coastal foothills, southern Sydney Basin and northern South East Corner	None	-	-	-	0	0.89	0.10	**0.99**
1326	Woollybutt - White Stringybark - Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion	None	-	-	-	0	0.96	0	**0.96**
		Illawarra and south coast lowland forest woodland	-	-	CE	0	0.12	0	**0.12**
1220	Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner Bioregion	None	-	-	-	0	0	0.05	**0.05**
	Total					**0.07 hectares**	**2.78 hectares**	**0.15 hectares**	**3.00 hectares**

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13 22 13

Customer feedback
Roads and Maritime
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January 2019