

## 7 Environmental management

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This section describes how the proposal will be managed to reduce potential environmental impacts throughout detailed design, construction and operation. A framework for managing the potential impacts is provided with reference to environmental management plans and relevant RMS QA specifications. A summary of site-specific environmental safeguards is provided as detailed in **Chapter 6** and the licence and/or approval requirements required prior to construction are also listed.

### 7.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Project Environmental Management Plan (PEMP) and a CEMP will be prepared to describe safeguards and management measures identified. The PEMP outlines all REF safeguards, while the CEMP is developed by the Contractor and focuses on those safeguards applicable to the construction. These plans would provide a framework for establishing how the safeguards and management measures would be implemented and who would be responsible for their implementation.

The plans will be prepared prior to construction of the proposal and must be reviewed and certified by the Roads and Maritime Services Environmental Officer, South Coast region, prior to the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP and PEMP would be developed in accordance with the specifications set out in:

- *QA Specification G36 – Environmental Protection (Management System),*
- *QA Specification G38 – Soil and Water Management (Soil and Water Management Plan)*
- *QA Specification G40 – Clearing and Grubbing.*

### 7.2 Summary of safeguards and management measures

Environmental safeguards outlined in this document would be incorporated into the detailed design phase of the proposal and during construction and operation of the proposal, should it proceed. These safeguards would minimise any potential adverse impacts arising from the proposed works on the surrounding environment. The safeguards and management measures are summarised in **Table 7-1**.

**Table 7-1: Summary of site specific environmental safeguards.**

No.	Impact	Environmental safeguards	Responsibility	Timing
<b>General</b>				
1	General	All environmental safeguards must be incorporated within the Project Environmental Management Plan (those relevant to the detailed design stage). Relevant mitigation measures for the contractor during construction would be included into the contract specifications, and these safeguards would be addressed by the contractor in the Contractor's Environmental Management Plan.	Project manager	Pre-construction
2	General	Any works resulting from the proposal and as covered by this REF may be subject to environmental audits or inspections at any time during their duration.	Project manager and regional environmental staff	Pre-construction After first audit
3	General	Relevant environmental contract specifications must be forwarded to the Roads and Maritime Services Senior Environmental Officer for review at least 10 working days prior to the tender stage. A contractual hold point must be maintained until the CEMP is reviewed by the Roads and Maritime Services Senior Environmental Officer.	Project manager	Pre-construction
4	General	The Roads and Maritime Services Project Manager must notify the Roads and Maritime Services Environmental Officer, South Coast Office, at least 5 days prior to work commencing.	Project manager	Pre-construction
5	General	All businesses and residences likely to be affected by the proposal must be notified at least five working	Project manager	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		days prior to the commencement of the proposed activities.		
6	General	Environmental awareness training must be provided, by the contractor, to all field personnel and subcontractors.	Contractor	Pre-construction and during construction as required.
<b>Biodiversity</b>				
7	Design updates	<p>Any updates to the design of the proposal should include the following:</p> <ul style="list-style-type: none"> <li>• Four fauna underpasses, with at least two including fauna furniture.</li> <li>• A vegetated fauna crossing underneath the new bridge to encourage fauna passage</li> <li>• One canopy rope bridge at the southern end of the proposal.</li> <li>• where possible</li> </ul>	RMS project manager	Detailed design
8	Impact on flora and fauna	<p>Measures involving minimising the construction footprint in areas of important habitat and subsequent removal of vegetation would be considered in the detailed design. Specific measures include:</p> <ul style="list-style-type: none"> <li>• Avoiding habitat currently occupied by the Yellow-Bellied Glider, including a significant sap feeding tree and several hollow-bearing habitat trees located in the southern part of the proposal adjacent to stage 2 works. This may include reducing the size of the proposed batter during detailed design.</li> <li>• Where possible, minimise impacts to areas of high</li> </ul>	RMS project manager	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>quality habitat for the Koala and other threatened fauna. This includes vegetation associated with vegetation map units 1, 2 and 3 and areas of the TEC recognised as River-flat Eucalypt Forest on Coastal Floodplains (map unit 5).</p> <ul style="list-style-type: none"> <li>• Minimise the removal of vegetation/ habitat to minimise impacts to threatened fauna species would be considered in the detailed design</li> <li>• Minimise impacts to the TEC (River-flat Eucalypt Forest on Coastal Floodplains) that is located along the banks of Dignams Creek and Blind Creek during construction of the new bridge and any temporary bridge crossing.</li> </ul>		
9	Impact on flora and fauna -	<p>A flora and fauna management plan would be prepared as part of the construction environmental management plan (CEMP). It would be prepared in accordance with the RMS <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA 2011) (Biodiversity Guidelines). The plan would include a clearing procedure, which in turn would specify the requirements for:</p> <ul style="list-style-type: none"> <li>• Undertaking pre-clearing surveys in accordance with Guide 1 of the Biodiversity Guidelines. This includes provision for a suitably qualified and licensed fauna ecologist to confirm the appropriate management.</li> <li>• Identifying the locations and extent of impacted habitats to be salvaged for reuse/relocation such as bush rock, hollow trees and woody debris.</li> </ul>	Construction contractor	Pre-construction and during construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> <li>Identifying, defining and managing exclusion zones for construction sites, including temporary fencing requirements, to avoid damage to vegetation, fauna habitat (both potential Koala feed trees and Yellow-bellied Glider sap feed trees and hollow-bearing trees). Maps of exclusion zones would be provided and developed in accordance with Guide 2 of the Biodiversity Guidelines.</li> <li>Identifying nearby habitats for suitable release of fauna that may be encountered during pre-clearing process of habitat removal</li> <li>Checking for the presence of threaten flora and fauna species immediately before clearings begins.</li> <li>Handling fauna in accordance with Guide 9 of the Biodiversity Guidelines, including the requirement to contact a local vet and wildlife handler prior to vegetation clearance, to ensure that any fauna injuries that may occur during clearing and other construction activities can be treated.</li> <li>Undertaking staged habitat removal in accordance of Guide 4 of the Biodiversity Guidelines.</li> </ul>		
10	Impacts to retained vegetation	Vehicles, equipment and stockpiles would not be located in the drip line of trees.	Construction Contractor	Construction
11	Controlling the spread of noxious weeds	A weed management plan would be developed as part of the CEMP in accordance with the <i>Biodiversity Guidelines(2011)</i> and <i>Introduction Weed Management Manual (Natural Heritage trust 2004)</i> , and would include descriptions and mapping of major	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		weed infestation during the pre-clearing survey and appropriate management actions to be undertaken.		
12	Controlling the spread of pathogens/disease causing agents such as bacteria and fungi	<p>Measures to confirm the presence of pathogens/disease causing agents such as bacteria and fungi would be undertaken prior to construction. This would include the following:</p> <ul style="list-style-type: none"> <li>• A background search of government-maintained websites for the most up-to-date hygiene protocols for each pathogen and for the most recent known locations of contamination.</li> <li>• If risks are identified in the vicinity of the proposal, testing from a National Association of Testing Authorities (NATA) approved laboratory may be required to confirm the presence of pathogens in the soil and/or water.</li> </ul> <p>If pathogens/disease causing agents are found to present, measures to prevent the introduction and/or spread of these pathogens/disease causing agents would be incorporated into the Pest and Disease Management Plan developed as part of the CEMP for the proposal.</p> <p>The pest and disease management plan would be developed in accordance Guide 7 of the Biodiversity Guidelines (RTA 2011)</p> <p>If pathogens are identified exclusion zones with fencing and signage to restrict access into contaminated areas would be required.</p>	Construction contractor	Construction
13	Habitat re-	The landscape plan would detail the re-establishment of native vegetation on batters, cut faces, areas	RMS project	Pre-construction and

No.	Impact	Environmental safeguards	Responsibility	Timing
	establishment	<p>surrounding sediment basins and other areas disturbed during construction. Re-establishment of habitat would take into account Guide 3 of the Biodiversity Guidelines (RTA 2011) and would include local species derived from vegetation communities identified within the proposal, refer to <b>Figure 6-1</b> and <b>Table 6-2</b>.</p> <p>A nest box management strategy would be developed as part of the CEMP in accordance with Guide 8 of the RMS Biodiversity Guidelines.</p>	manager	post-construction
14	Maintaining wildlife connectivity	<p>Incorporate design principles for the proposed wildlife crossing structures as outlined in the Biodiversity Report (refer to <b>Appendix K</b>)</p> <p>If a temporary creek crossing is required and impacts to fish passage are unavoidable, a permit would be sought from DPI (Fisheries and aquaculture). In-stream structures would be designed and constructed to minimise potential impacts to fish passage according to Fairfull &amp; Witheridge (2003).</p>	RMS project manager	Pre-construction and during construction
15	Impacts to riparian and aquatic habitat	<p>Prior to any disturbance on the banks a thorough inspection for aquatic fauna would be conducted.</p> <p>Instream and riparian disturbance, and the removal of sediment, woody snags or debris from streams or stream channels would be minimised. Trimming or 'lopping' of branches and logs would be considered as a first option before moving.</p> <p>The risk of instream and riparian weeds would be minimised through the implementation of a vegetation clearing and revegetation management strategy that</p>	Construction contractor	Pre-construction and during construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>would form part of the Flora and Fauna Management Plan.</p> <p>Working platform sites would avoid direct impacts to Dignams Creek and would avoid clearing of riparian vegetation located adjacent to the creek where possible.</p> <p>If a temporary creek crossing over Dignams Creek is required, vegetation clearance of riparian vegetation would be minimised where possible. Exclusion zone fencing would be erected around any surrounding vegetation to avoid indirect impacts.</p>		
16	Instream woody debris management	<p>Any large woody debris (ie logs and branches) located instream would be retained to the greatest extent possible.</p> <p>If any instream woody debris is removed during construction for the proposal, it would be stockpiled and replaced at the completion of the works within the same waterways from which it was removed.</p>	Construction contractor	Pre-construction and during construction
17	Biodiversity offset	<p>An offset plan would be developed for the loss of native vegetation (20.6 hectares), threatened species and habitat for native flora and fauna.</p> <p>This plan would be developed in consultation with OEH. This strategy would be developed in accordance with the <i>RMS Guideline for Biodiversity Offsets</i>, November 2011 and would also identify when offsets would be implemented.</p>	RMS project manager	Pre-construction
18	Impact to Yellow-Bellied Glider sap	The design would avoid direct impacts to the identified Yellow-Bellied Glider sap feeder tree	RMS project manager	Detailed design



No.	Impact	Environmental safeguards	Responsibility	Timing
	feeder tree	located at Easting 766245 Northing 5971353.		
19	Impacts to Square Raspwort	Prior to clearing, clumps of Square Raspwort within the construction footprint surrounding Dignams Creek would be protected where possible.	Construction contractor	Pre-construction and during construction
20	Impacts to TECs	The location of TECs would be mapped and identified in the CEMP. Exclusion zones would be erected to identify TECs.	Construction contractor	Construction
21	Clearance of existing vegetation	<p>A landscape management plan would be developed as part of the (CEMP) which provides specific details for the re-establishment of native vegetation areas disturbed during construction. This would include revegetation and habitat restoration activities. Landscaping for the proposed action would follow the RTA (2011) Biodiversity Guidelines document and would include the following:</p> <ul style="list-style-type: none"> <li>• Landscaping of areas impacted by the proposed action including batter slopes, any ancillary sites, sediment basins and other areas disturbed/cleared during construction.</li> <li>• Removal of existing road followed by revegetation with local flora species and habitat re-establishment.</li> <li>• Habitat re-establishment including provision of bushrock and woody debris (Guide 5 of the Biodiversity Guidelines).</li> <li>• Revegetation activities along Dignams Creek and habitat re-establishment to improve wildlife connectivity and provide safe fauna passage</li> </ul>	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		across the proposed action beneath the proposed bridge structure (Guide 3 of the Biodiversity Guidelines).		
<b>Noise and vibration</b>				
22	Noise and vibration management plans	When developing and implementing management strategies, make all practical efforts to comply with the requirements of the POEO Act and, where applicable; the EPA publications <i>Interim Construction Noise Guideline</i> , <i>Industrial Noise Policy</i> and <i>Environmental Criteria for Road Traffic Noise</i> ; and the RMS publication <i>Environmental Noise Management Manual</i> .	Construction contractor	Pre-construction
23	Impacts to sensitive receivers from construction noise	Prepare and implement a Noise Management Plan (NMP) in accordance with RMS QA Specification G36 as part of the CEMP to minimise the impact of noise from your operations on adjacent properties. The Noise Management Plan must cover all significant noise generating activities. The NMP would include measures to reduce noise impacts to adjacent sensitive receivers. The plan include but not be limited to the following: <ul style="list-style-type: none"> <li>• Substitution by an alternative low noise process.</li> <li>• Restricting times when noisy work is carried out.</li> <li>• Placement of work compounds, parking areas, equipment and material stockpile sites away from noise-sensitive locations;</li> <li>• Screening or enclosures;</li> <li>• Consultation with affected residents.</li> </ul>	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>All construction plant and equipment used would be, in addition to other requirements:</p> <ul style="list-style-type: none"> <li>• Fitted with properly maintained noise suppression devices in accordance with the manufacturer's specifications.</li> <li>• Maintained in an efficient condition.</li> <li>• Operated in a proper and efficient manner.</li> </ul>		
24	Vibration impacts to sensitive receivers from construction activities	<p>Prepare and implement a Vibration and Airblast Management Plan (VAMP) as part of the CEMP to minimise the impact of noise from your operations on adjacent properties. The Noise Management Plan would be developed in accordance with RMS QA Specification G36 and must cover all significant noise generating activities. The NMP would include measures to reduce noise impacts to adjacent sensitive receivers.</p> <p>Feasible and reasonable vibration mitigation measures to be adopted during construction would include:</p> <ul style="list-style-type: none"> <li>• Substitution by an alternative process.</li> <li>• Restricting times when work is carried out.</li> <li>• Screening or enclosures.</li> <li>• Consultations with affected residents.</li> </ul>	Construction contractor	Construction
25	Operational noise impacts	<p>During the detailed design stage of the proposal, investigations of all feasible and reasonable mitigation treatments would be considered for the affected receiver (R7). All feasible and reasonable measures would be considered in accordance with</p>	RMS	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		the <i>NSW Road Noise Policy</i> (DECCW, March 2011) and Practice Note iv of the RMS <i>Environmental Noise Management Manual</i> (ENMM).		
26	Out of hours noise and vibration impacts	<p>Works would be carried out during standard working hours (that is 7am-6pm Monday to Friday, 8am-1pm Saturdays). Any work that is performed outside normal work hours or on a Sunday or public holiday would need to minimise noise impacts in accordance with the <i>Environmental Noise Management Manual</i>, "Practice Note vii – Roadworks Outside of Normal Working Hours" and the <i>Interim Construction Noise Guidelines</i> (OEH 2010). This would include notifying the local community of any works planned to be undertaken outside standard construction hours prior to the works occurring using the following methods:</p> <ul style="list-style-type: none"> <li>• Contact the local community potentially affected by the proposed works (outside of recommended construction hours) and inform them by letter of the proposed work, location, type of work days and dates of work and hours involved. The contact would be made 5 days prior to commencement of works.</li> <li>• Place a suitable advertisement in local papers including a reference to night-time noise impacts.</li> <li>• Provide a community liaison phone number and permanent site contact so that complaints can be received and addressed in a timely manner.</li> </ul>	Communications manager and contractor	Construction
<b>Landscape character, visual impacts and urban design</b>				

No.	Impact	Environmental safeguards	Responsibility	Timing
27	Change of landscape character and visual impact	Detailed design would be undertaken according to the urban design vision, objectives and principles (refer to <b>Table 6-36</b> ) which underpin the concept design.	RMS	Detailed design
28	Views of the new Dignams Creek Bridge	The design would be undertaken to reflect the advice given in the <i>RMS Bridge Aesthetics</i> guidelines. The bridge structure is to be integrated into the adjacent landform.	RMS	Detailed design
29	Impact from large earthworks and change in landform	The potential visual impact of earthworks would be minimised by careful design that allows them to integrate with adjoining landforms.	RMS	Detailed design
30	Visual amenity impacts from construction of new retaining walls/cut batters	Retaining walls and batters would be steepened to grades suitable for the proposed surface treatment in order to minimise the overall footprint of the proposal, whilst still enabling appropriate landscaping. Where possible, retaining walls/batters would be constructed of materials that would visually integrate with the surrounding geology and landscape. Screen planting would be provided below walls and use materials that integrate visually with the surrounding environment.	RMS	Detailed design
31	Impact from new drainage features	Visible roadside channels would be vegetated or rock lined. Concrete lined channels would be avoided as much as possible. Where they are to be used, the concrete would be coloured and/or heavily roughened.	RMS	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
32	Changes to the landscape character and visual amenity of the existing environment	<p>Existing cultural/landmark trees in the surrounding paddocks would be retained where feasible. This would be undertaken by identifying 'no go areas' to restrict access around trees not affected by the proposal and making minor adjustments to the horizontal and vertical carriageways to move them clear of root zones.</p> <p>Natural rock cutting faces would be maintained where feasible, to allow the geological character of the landscape to be viewed.</p>	Construction contractor	Construction
33	Changes to the landscape character and visual amenity of the existing environment	<p>Following construction, landscaping of areas impacted by the proposal would be undertaken in accordance with the Landscape Plan and the , and would consider:</p> <ul style="list-style-type: none"> <li>• Revegetation of cleared areas using species occurring from vegetation map units identified within the proposal footprint (refer to Table 6-2).</li> <li>• Including screening trees and shrubs to block views of the proposal and intercept potential headlight glare.</li> <li>• Ensuring trees and revegetation areas are in conformance with the landscape drawings.</li> <li>• Restoring and enhancing areas impacted along Dignams Creek with endemic, riparian vegetation, from the TEC recognised as River-flat Eucalypt Forest on Coastal Floodplains.</li> <li>• Ensuring clear zones are kept to the minimum in order to allow regeneration to occur, particularly in parts of the proposal where regeneration would</li> </ul>	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>assist with screening and headlight glare control such as on the west facing fill embankments visible from Dignams Creek Road.</p> <ul style="list-style-type: none"> <li>Re-using removed vegetation in the form of mulch added to planting and bushland reconstruction areas; and coarse woody debris in fauna crossings and creeklines (downstream of structures).</li> </ul>		
<b>Aboriginal heritage</b>				
34	Indirect impacts to Aboriginal cultural heritage	<p>Whilst a proposal wide AHIP has been approved, RMS would avoid indirect impacts to AHIMS site numbers 62-3-0623 (survey unit 9), 62-3-0626 (survey unit 14), 62-3-0624 (survey unit 11) 62-3-0627 (survey unit 16) during construction where possible.</p>	Construction Contractor	Construction
35	Unexpected Aboriginal heritage find	<p>The following safeguards would be applied to manage unexpected Aboriginal heritage finds:</p> <ul style="list-style-type: none"> <li>The CEMP would adopt the implementation of the RMS <i>Unexpected Archaeological Finds Procedure</i> (2011b).</li> <li>Construction personnel would receive toolbox training in the recognition of Aboriginal cultural heritage material and sites and information about existing AHIMS sites.</li> <li>When any soil, vegetation clearing or leaf litter removal activities are conducted, workers would be observant and keep a look out for rock engravings, surface shell, bone, rocks or any other Aboriginal cultural heritage material.</li> </ul>	Construction Contractor	Pre-construction and construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> <li>Should any Aboriginal objects be uncovered during construction, works would immediately cease in the vicinity of the find. Guidance would be sought from the RMS Aboriginal Cultural Heritage Advisor. The Planning and Aboriginal Heritage Section of the OEH would then be notified by the RMS.</li> </ul>		
<b>Non-Aboriginal heritage</b>				
36	Indirect impacts to Non-Aboriginal heritage, specifically item DC5	An exclusion zone would be placed around DC5 to avoid indirect impacts. If impacts do occur, a section 140 permit would be required to undertake archival recording and salvage excavation prior to works occurring	RMS manager project	Pre-construction
37	Indirect impacts to Non-Aboriginal heritage, specifically item DC2	Where possible impacts to DC2 (sections of the Old Princes Highway) would be minimised where possible.	RMS manager project	Pre-construction
38	Unexpected non-Aboriginal heritage find	<p>The following safeguards would be applied to manage unexpected non-Aboriginal heritage finds:</p> <ul style="list-style-type: none"> <li>Should any relics (as defined by the Heritage Act 1977) or sites of heritage significance be found, construction would cease immediately in the vicinity of the find and advice sought from the RMS Environment Branch. This would allow as necessary an archaeologist to assess the find and notify the Heritage Branch in accordance with the Heritage Act.</li> <li>Steps in the RMS <i>Standard Management Procedure: Unexpected Archaeological Finds</i> would be followed.</li> </ul>	Construction Contractor	Pre-construction and construction



No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> <li>The CEMP would adopt the RMS <i>Unexpected Archaeological Finds Procedure</i> (2011b).</li> </ul>		
39	Delisting of a heritage item	<p>The bridge would be bypassed, and cease to be an RMS asset.</p> <p>The bridge would need to be delisted from the section 170 register in accordance with the Heritage Act.</p> <p>The Dignams Creek Bridge would be managed by the new private property owners of 9523 Princess Highway as this would be part of the properties access road.</p>	RMS manager project	Pre-construction and construction
<b>Water quality</b>				
40	Pollution as a result of sediment entering waterways during construction	<p>A soil and water management plan (SWMP) would be developed to include controls that would limit movement of sediment (erosion controls) and remove sediment from runoff before discharge to watercourses (sediment controls). It would be prepared in accordance with the <i>Managing Urban Stormwater – Soils and Construction, Volumes 1 and 2D</i> (Landcom, 2004 and DECCW, 2008) and <i>RTA Road Design Guideline: Section 8 Erosion and Sedimentation</i> (RTA 2003) and <i>QA Specification G38 Soil and Water Management (Soil and Water Management Plan)</i> (RMS 2011a). The SWMP would include, but not be limited to procedures for controlling the following standard activities:</p> <ul style="list-style-type: none"> <li>Mud and litter transfer.</li> <li>Maintenance and cleaning of sediment control works.</li> <li>Soil and stockpile management (in accordance</li> </ul>	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>with RMS <i>Stockpile Site Management Guideline</i> (RTA 2011f).</p> <ul style="list-style-type: none"> <li>• Dewatering of sediment basins and excavations (in accordance with RMS <i>Technical guideline – Environmental Management of Construction Site Dewatering</i>).</li> </ul>		
41	Pollution as a result of sediment entering waterways during construction	<p>The SWMP would include a preliminary erosion and sediment control plan (ESCP) prepared in accordance with Landcom (2004) and DECCW (2008), which would identify the erosion and sediment control measures that would be implemented on site for preliminary work.</p> <p>Progressive ESCPs would be developed throughout construction to reflect the changes in activities and risk throughout the construction process. The plan would include diagrams of erosion and sediment control techniques and details of when and where these measures would be applied. Specific measures would include:</p> <ul style="list-style-type: none"> <li>• Work scheduling (installation of protective measure before earthworks commence, suspension of works during rain, etc).</li> <li>• Use of protective measures (silt curtains, use of bunds, site drainage, separation of 'clean' and 'dirty' water, sediment traps, etc).</li> <li>• Active management and maintenance of those measures (replacing damaged sediment control measures, modify sediment control and stormwater management systems if they are not</li> </ul>	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>working appropriately and removing accumulated sediment, ensuring the water quality of any run-off into the lake adheres to the Blue Book (Landcom, 2004) during construction and <i>Managing Urban Stormwater – Council Handbook</i> (EPA, 1997) during operation.</p> <ul style="list-style-type: none"> <li>• Rehabilitation of impacted environments such as riparian vegetation and stabilisation of creek banks upon completion of the works.</li> </ul>		
42	Water quality management and prevention / minimisation of in-stream barriers	<p>Construction traffic would be restricted to access tracks, and maintained until construction is complete.</p> <p>Chemicals and fuels would be appropriately stored in a bunded area.</p> <p>If construction works cause the temporary isolation of pools of water from the watercourse for any period of time and they become susceptible to drying or poor water quality, then any resident native fish that are trapped would be relocated to undisturbed areas.</p> <p>Appropriate sediment and erosion control measures would be put in place during the construction process to control turbidity generated during the construction and restoration process.</p> <p>If the temporary creek crossing is constructed in Dignams Creek sediment and erosion control curtains would be required in Dignams Creek to control turbidity generated during the construction and restoration process</p> <p>No turbid water generated from the construction corridor or construction area would be discharged</p>	Construction contractor	Pre-construction and during construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>into any waterway.</p> <p>A Water Quality Monitoring Plan would be prepared to monitor water quality impacts.</p> <p>All construction materials for the temporary creek crossing (ie rocks and gravel) would be washed prior to being used to minimise turbidity.</p>		
43	Pollution as a result of sediment entering waterways during construction	<p>The SWMP would include a program for inspecting sediment and erosion controls, including:</p> <ul style="list-style-type: none"> <li>• Weekly inspection of erosion and sediment control measures and prior to forecast rainfall events to ensure measures are in place, and functioning in the event of a rainfall event.</li> <li>• Inspection of erosion and sediment control measures during rainfall events that cause runoff, to ensure controls are working effectively.</li> </ul>	Construction contractor	Pre-construction
44	Pollution from construction disturbance of the ground surface	<p>Chemicals and fuels would be appropriately stored in a bunded area.</p> <p>Environmental flow in Dignams Creek would be maintained however if construction works inadvertently cause the temporary isolation of pools for any period of time and they become susceptible to drying or poor water quality then any resident native fish that are trapped would be relocated to areas not being disturbed and away from impacts.</p> <p>No turbid water generated from the construction corridor or construction area would be discharged into any waterway.</p>	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
45	Pollution as a result of sediment entering waterways during construction	In the preparation of the SWMP and associated ESCPs, the recommendations of the <i>Erosion and Sedimentation Management Report</i> prepared by SCS (2012) would be considered.	Construction contractor	Pre-construction
46	Construction water entering downstream environments	<p>A water quality monitoring plan would be developed and implemented in accordance with the <i>RMS Guideline for Construction Water Quality Monitoring</i> (RTA undated). The plan would focus on water quality of Dignams Creek, with flow on benefits to downstream environments. Additional to that outlined in the abovementioned guideline, the plan would include:</p> <ul style="list-style-type: none"> <li>• Monitoring of pH, dissolved oxygen, conductivity, temperature, turbidity, total suspended solids, oils and grease would be undertaken.</li> <li>• Measurement of the variables described above would be undertaken during construction at identified water monitoring sites on Dignams Creek during rainfall events that produce runoff (receiving 10 millimetres in one rainfall event).</li> <li>• An assessment of the adequacy of all water quality control and erosion and sediment control measures would be undertaken should monitoring show a decline in water quality. The progressive erosion and sediment control plan(s) would be updated to reflect any revised controls.</li> </ul>	Construction contractor	Pre construction/ Construction
47	Impacting on the water flow of Dignams Creek from extraction of	During the extraction of water from Dignams Creek for the purposes of road construction activities, water flows would be maintained to ensure the continuing	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	water for the purposes of road construction.	supply of water to downstream water bodies.		
48	Impact of flooding on the proposal during construction	<p>A flood management plan would be prepared to manage any potential flooding in and around the proposal during construction. This would include:</p> <ul style="list-style-type: none"> <li>• Regular weather monitoring.</li> <li>• Procedures to move plant and equipment out of identified flood-prone areas.</li> </ul>	Construction contractor	Pre-construction, construction
<b>Geology, topography and soils</b>				
49	Discovery of previously unidentified contaminated land	<p>Where evidence of contamination is encountered (such as odorous or visually contaminated materials), work in the area would cease immediately and the RMS Senior environmental officer would be contacted to advise, in consultation with a contaminated land specialist on the appropriate action. Works that may disturb the identified contamination would not re-commence until advised by the RMS Senior environmental officer.</p>	Construction contractor and RMS project manager	Construction
50	Contamination of environment from accidental chemical spills, machinery fuel and oil leaks	<p>Fuel would be stored on an impervious surface in an appropriately bunded area and would carry spill kit material. Should fuels, chemicals and liquids be stored they would be:</p> <ul style="list-style-type: none"> <li>• Stored at least 40 metres away from any waterways or drainage lines.</li> <li>• Stored in an impervious surface or taken off-site.</li> <li>• Any refuelling of construction vehicles would occur at least 40 metres away from any waterways or drainage lines.</li> </ul>	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
51	Contamination of environment from machinery fuel and oil leaks	Machinery would be kept in good working order according to the manufacturers specifications and would be checked daily to ensure that no oil, fuel or other liquids are leaking from the machinery.	Construction contractor	Construction
<b>Air Quality and Climate Change</b>				
52	Dust from construction activities	<p>An air quality management plan would be prepared before any pre-construction or clearing activities. , and would provide guidance on the use of appropriate dust suppression methods which would include (but are not limited to):</p> <ul style="list-style-type: none"> <li>• Stabilising of areas with the capacity to cause dust, with water spraying, compaction or progressive revegetation.</li> <li>• Covering of stockpile and storage areas.</li> <li>• Covering of all materials transported to and from the construction site.</li> <li>• Considering speed limits for equipment on unsealed surfaces.</li> <li>• Locating stockpiles as far away from residences as practically possible.</li> <li>• Minimising the extent of disturbed areas as far as practicable. This may be achieved by staging the works to minimise the number of disturbed areas at any one time.</li> <li>• Rehabilitating disturbed areas as quickly as possible.</li> <li>• Suppressing dust on unsealed surfaces, temporary roadways, stockpiles and other exposed areas</li> </ul>	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>using water trucks, hand held hoses, temporary vegetation and other practices.</p> <ul style="list-style-type: none"> <li>• Modifying or stopping dust generating activities during very windy conditions or when dust can't be controlled.</li> <li>• Operating and maintaining vehicles and equipment in accordance with manufacturer's specifications.</li> <li>• Local residents would be advised of hours of operation and provided with contact details for queries regarding air quality.</li> </ul>		
53	Impacts of flooding on infrastructure	<p>During detailed design, consider:</p> <ul style="list-style-type: none"> <li>• Sizing drainage system to accommodate the impact of climate change on maximum storm/ rainfall level predictions.</li> <li>• Whether the increase in frequency or intensity of flood events is likely to require modification to concept design scour protection of bridge piers, piles and other infrastructure.</li> </ul> <p>Projected climate change when selecting suitable vegetation for landscaping. Consider vegetation suitable for regular inundation, increased rainfall and evaporation and seasonal droughts where applicable to the area.</p>	Design contractor	Detailed design
54	Increased average temperature and heatwave	<p>During detailed design, consider projected temperature extremes when:</p> <ul style="list-style-type: none"> <li>• Selecting bridge expansion joints.</li> <li>• Selecting bitumen design.</li> </ul>	Design contractor	Detailed design



No.	Impact	Environmental safeguards	Responsibility	Timing
		<ul style="list-style-type: none"> <li>Selecting suitable vegetation and management plans for the maintenance of landscaped areas.</li> </ul> Developing suitable vegetation and management plans.		
55	Carbon dioxide concentration in the atmosphere alongside increased temperatures	Review detailed design to take into account potential increase in carbonation levels for the future life of the asset. Ensure that where appropriate, design and construction measures take account of increased carbon dioxide concentrations through enhanced design specification.	Design contractor	Detailed design
<b>Land use and Property</b>				
56	Change in land use	Consultation would be undertaken with property owners impacted by the proposal.	RMS	Detailed design
57	Property acquisition	Property acquisition would be managed in accordance with the provisions of the Road and Maritime Services' <i>Land Acquisition Policy</i> and the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> .	RMS project manager	Detailed design
58	Property access	Property access would be maintained wherever possible. Prior to any unavoidable disruption to access, consultation would be undertaken with the affected property owner.	Contractor	Prior and during construction
<b>Traffic and access</b>				
59	Impacts to traffic flow and property access during construction	A detailed Traffic Management Plan would be prepared in accordance with the RTA's <i>Traffic Control at Work Sites Manual (2010a)</i> and <i>RTA Specification G10 – Control of Traffic</i> , and would be approved by	Construction contractor	Pre-construction and construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<p>RMS prior to implementation. The Traffic Management Plan would address:</p> <ul style="list-style-type: none"> <li>• Maintaining access along the Princes Highway during construction.</li> <li>• Maintaining access for local traffic using Dignams Creek.</li> <li>• Maintaining access into the National Parks, other forest lands and residential property along the proposal route.</li> <li>• Maintaining property access whenever possible. Where changes to access arrangements are necessary, owners and tenants would be advised and consulted with on alternate access arrangements.</li> <li>• Providing safe access points to work areas from the adjacent road network, eg safety barriers where necessary, temporary speed restrictions etc.</li> <li>• Construction traffic would enter/exit the construction zone only in areas designated for this purpose in the Traffic Management Plan.</li> <li>• Approval for road occupancy would be obtained for any lane closures or road traffic changes.</li> <li>• Procedure for informing the community about upcoming road construction activities.</li> </ul>		
60	Impacts to traffic flow and property access during construction	Traffic control plans (TCPs) would be prepared for the appropriate stage of works and implemented by suitably qualified personnel. Implementation of TCPs would be inspected as required for the duration of the construction phase in accordance with the RMS	Construction contractor	Pre-construction & construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		<i>Traffic Control at Worksites Manual.</i>		
<b>Socio-economic</b>				
61	Commencing construction with adequate notification	Local residents would be notified prior to works commencing and would be kept regularly informed of construction activities during the construction process.	RMS	Pre-construction and construction
62	Complaints	A complaints-handling procedure and register would be included in the CEMP.	RMS	Pre-construction
63	Change of conditions and disruptions	Road users, pedestrians and cyclists would be informed of changed conditions including likely disruptions to access.	Contractor	Construction
64	Changes to property access	Property access would be maintained wherever possible. Prior to any unavoidable disruption to access, consultation would be undertaken with the affected property owner.	RMS	Construction
65	Emergency vehicle access	Access would be maintained for emergency vehicles in the vicinity of construction works. Ongoing consultation would be undertaken with emergency services during construction to ensure that potential impacts are identified and appropriately managed.	RMS	Construction
66	Interruptions to utility services	Residents would be informed before any interruptions to utility services that may be experienced as a result of utilities relocation.	RMS	Construction
67	Commencing construction with adequate notification	Prior to construction starting, RMS would notify residents that are located adjacent to the proposal of the forthcoming works.	RMS	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
68	Property acquisition	Property acquisition would be managed in accordance with the provisions of the Road and Maritime Services' <i>Land Acquisition Policy</i> and the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> .	RMS	Construction
69	Local goods and services	Goods and services would be sourced locally during construction wherever possible.	Contractor	Construction
<b>Waste minimisation and management</b>				
70	Generation of construction waste	Resource management hierarchy principles are to be followed: <ul style="list-style-type: none"> <li>• Avoid unnecessary resource consumption as a priority</li> <li>• Avoidance is followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery).</li> </ul> Disposal is undertaken as a last resort (in accordance with the <i>Waste Avoidance and Resource Recovery Act 2001</i> ).	Contractor	Construction
71	Generation of construction waste	A Waste Management Plan would be completed in accordance with the requirements of the RMS's <i>QA Specification G36 – Environmental Protection (Management System)</i> .	Contractor	Construction
72	Generation of construction waste	Housekeeping at the construction site would be addressed regularly. This includes collection and sorting of general waste, recycling and green waste. Waste would be disposed of regularly at a licensed waste facility.	Contractor	Construction

### 7.3 Licensing and approvals

The licences and approvals required for the proposal have been listed in **Table 7-2**.

**Table 7-2: Summary of licensing and approval required.**

Requirement	Timing
<p>The proposal may temporarily block fish passage during the construction of culverts, temporary creek crossing and the new bridge and accordingly, a permit to block fish passage would be required under section 220(1) of the FM Act.</p>	<p>Prior to the commencement of works that may block fish passage.</p>
<p>The proposal is defined as both dredging and reclamation works under Section 198A of the FM Act. As such notification and approval is required by the Minister for NSW Department of Trade and Investment, Regional Infrastructure and Service (Department of Primary Industries) under section 199 of the FM Act. Consideration must be made of any matters that are raised by the Minister within 28 days.</p>	<p>Prior to the commencement of works within waterways, this includes construction of the new Dignams Creek Bridge. Notification is required 28 days prior to works occurring.</p>
<p>If excavation is required in areas of archaeological potential for the site of the second public school, a section 140 application would need to be made to the NSW Heritage Council in order to obtain an excavation permit (under the Heritage Act).</p>	<p>Prior to the commencement of construction works.</p>
<p>The existing Dignams Creek Bridge would be bypassed and would be bypassed, and ceases to be an RMS asset.</p>	<p>The bridge would need to be delisted from the s.170 register in accordance with the <i>Heritage Act 1977</i>. This would include giving the Heritage Council not less than 14 days written notice of the delisting.</p>

## 8 Conclusion

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This section provides the justification for the proposal taking into account its biophysical, social and economic impacts, the suitability of the site and whether or not the proposal is in the public interest. The proposal is also considered in the context of the objectives of the EP&A Act, including the principles of ecologically sustainable development as defined in Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.

### 8.1 Justification

The proposal is considered to be consistent with a number of strategies or plans, including:

- NSW 2021.
- NSW State Infrastructure Strategy 2008-2018.
- RMS Corporate Strategy 2012 - 2016.
- South Coast Regional Strategy 2006-2031.
- South East NSW Local Action Plan

Additionally, the proposal would address one of the recommendations of the 2008 coronial inquiry undertaken by the NSW government in response to 15 fatalities on the Princes Highway. The recommendation was that the NSW Government seek Australian Government funding to upgrade the Princes Highway between Victoria Creek and Dignams Creek.

Improvement of this section of the Princes Highway is also considered to be regionally important as it is a critical link for both passenger and freight transport along the south coast of NSW, as there are no rail services. This section has been identified as important due to its poor crash history with a crash rate seven times higher than the expected crash rate for similar types of roads in NSW. These safety considerations would be addressed along the 3.7 kilometre section of the highway through the construction of the proposal. Furthermore the proposal would provide the opportunity for RMS to achieve the objectives of:

- Providing a continuous 100 kilometres/hour travel speed environment.
- Improving economic efficiency including freight transport along the Princes Highway through improved alignment.
- Providing a well-engineered, safe and environmentally acceptable road transport facility.
- Providing a value for money project.

### 8.2 Objects of the EP&A Act

The performance of the proposal with respect to the objects of the EP&A Act has been considered in **Table 8-1**.

**Table 8-1 Summary of Objects of the EP&A Act**

Object	Comment
5(a)(i) To encourage the proper management, development and conservation of natural and artificial	The proposal has been designed to encourage the proper management, development and conservation of

Object	Comment
resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment.	natural and artificial resources, whilst providing improvements to social services such as the transport network in the South Coast region of NSW.
5(a)(ii) To encourage the promotion and co-ordination of the orderly economic use and development of land.	The proposal has considered economic use and development of land, including changes in land use. Impacts to land use and future development of land has been minimised where possible however changes to existing land uses would occur. This would include the restriction of further development in the area of land adjacent to the proposal that would be used as an offset and which would be handed over to OEH and potentially rezoned as conservation lands. Impacts are not considered to be significant.
5(a)(iii) To encourage the protection, provision and co-ordination of communication and utility services.	The proposal has been designed to minimise impacts on communication and utility services (as addressed in <b>Section 3.5</b> ).
5(a)(iv) To encourage the provision of land for public purposes.	Not relevant to the proposal.
5(a)(v) To encourage the provision and co-ordination of community services and facilities.	Not relevant to the proposal.
5(a)(vi) To encourage the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats.	The proposal would occur within the South East Corner bioregion which is significant for biodiversity. Assessments of significance undertaken for the identified TEC and threatened species found that the impacts from the proposal would not be considered significant. Mitigation measures would be implemented to manage impacts to biodiversity and cleared areas would be appropriately revegetated at the completion of works. Impacts to native animals and plants, including threatened species, populations and ecological communities and their habitats were considered in <b>Section 6.1 and Appendix K</b> .
5(a)(vii) To encourage ecologically sustainable development.	The detailed assessment of potential environmental impacts has sought to

Object	Comment
	<p>minimise impacts of the proposal on the environment. Where information has been lacking, a conservative approach has been adopted for the assessment. Safeguards have been proposed to minimise potential impacts. These safeguards would be implemented during construction and operation of the proposal. No safeguards have been postponed as a result of a lack of scientific certainty.</p> <p>Feasible and reasonable mitigation measures would be implemented to reduce long term and short term impacts associated with the proposal and the impacts are not considered to be of a nature or extent that would result in disadvantage to any specific section of the community or to future generations.</p> <p>A thorough assessment of the existing local environment has been undertaken to identify and manage any potential impact of the proposal on local biodiversity and is provided in <b>Section 6.1</b>. Specific efforts have been taken at the design stage of the proposal to minimise impacts where possible upon the local biodiversity including the identified TEC and threatened species.</p> <p>The concept design for the proposal has been developed with an objective of minimising potential impacts on the surrounding environment. This indicates that the concept design for the proposal has been developed with an environmental objective in mind.</p> <p>Ecologically sustainable development is considered in further detail in <b>Sections 8.3.1 – 8.3.4</b>. Ecologically sustainable development is considered in Sections 8.2.1 – 8.2.4 below.</p>
5(a)(viii) To encourage the provision and maintenance of affordable housing.	Not relevant to the proposal.
5(b) To promote the sharing of the responsibility for environmental planning between different levels of government in the State.	RMS has consulted extensively with agencies and stakeholders, including Eurobodalla Shire Council and Bega Valley Shire Council, OEH, DP&I, Batemans Marine Authority and DPI (Fisheries and Aquaculture).



Object	Comment
	RMS is planning to consult with the DSEWPaC regarding the proposal and impacts to threatened species which are not considered to be significant.
5(c) To provide increased opportunity for public involvement and participation in environmental planning and assessment.	The proposal development process has involved consultation with relevant stakeholders. Consultation undertaken and proposed is outlined in <b>Chapter 5</b> . This REF is on public display for community and stakeholder comment. RMS would consider submissions made prior to making a decision about whether to proceed with the proposal.

### 8.3 Ecologically sustainable development

The principles of ecologically sustainable development as defined under section 6(2) of the POEO Act have been incorporated into the concept design and environmental assessment of the proposal. These are discussed below.

#### 8.3.1 The precautionary principle

The precautionary principle deals with certainty in decision-making. It provides that where there is a threat of serious or irreversible environmental damage, the absence of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation.

Alternative road design options have been considered and implemented to reduce the risk of serious and irreversible impacts on the environment. This has included avoiding/ minimising substantial environmental impact, such as avoiding clearance of TECs and threatened species and avoiding large scale visual impacts where feasible.

The detailed assessment of potential environmental impacts has sought to minimise impacts of the proposal on the environment. Where information has been lacking, a conservative approach has been adopted for the assessment. Safeguards have been proposed to minimise potential impacts. These safeguards would be implemented during construction and operation of the proposal. No safeguards have been postponed as a result of a lack of scientific certainty.

A CEMP would be prepared prior to commencing construction. This requirement would ensure that the proposal achieves a high-level environmental performance. No mitigation measures or management mechanism would be postponed as a result of lack of information.

#### 8.3.2 Intergenerational equity

Intergenerational equity provides that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. The proposal would cater for the future population growth in the Dignams Creek region by improving the capacity and safety of the road.

Long term adverse impacts are, however, associated with the proposal but are not considered to be significant and include:

- Noise impacts to one receiver on Dignams Creek Road (receiver 7 at Lot 321 DP873421) which is to the west of the proposal.
- Removal of vegetation including TSC Act and EPBC Act listed communities and species.
- Changes and increase in the length of two residential property access tracks during operation.
- Property acquisition.

The proposal would benefit future generations as it would ensure that the Princes Highway in the Dignams Creek area is operated in a reliable and safe manner in the future. This would include safety improvements for the two residential property's accessing the Princes Highway where the access arrangements would change.

These benefits would be realised by ensuring that proposed works do not give rise to long-term adverse impacts on the environment and that potential impacts are minimised by implementation of appropriate safeguards. This would ensure that the principle of intergenerational equity is not compromised.

Should the proposal not proceed, the principle of intergenerational equity may be compromised, as future generations would inherit a lower level of service associated with the Princes Highway. Travel times and public safety may be affected by future traffic accidents within the corridor due to substandard road geometry and alignment.

### **8.3.3 Conservation of biological diversity and ecological integrity**

The conservation of biological diversity and ecological integrity deals with maintaining and improving diversity of genes, species, populations and communities as well as ecosystems and habitats, to ensure their survival.

A thorough assessment of the existing local environment was undertaken to identify and manage any potential impact of the proposal on local biodiversity and is provided in **Section 6.3**. Specific efforts have been taken at the design stage of the proposal to minimise impacts where possible upon the local biodiversity including identified TECs and threatened species.

Impacts on vegetation and habitat would still occur as a result of the proposal and includes the removal of about 20.6 hectares of vegetation during construction including 0.2 hectares of the TEC recognised as River-flat Eucalypt Forest on Coastal Floodplains. Assessments of significance were undertaken for this TEC and were found not to be significant. The proposal would not substantially fragment or isolate any existing large patches and would not compromise biological diversity or ecological integrity.

The proposal would also directly impact on threatened flora including around 50 individuals of the Square Raspwort (*Haloragis exaltata* subsp. *exaltata*) which is listed as vulnerable under the TSC Act and the *Environmental Planning and Conservation Biodiversity Act 1999* (EPBC Act). Vegetation removed would also include known foraging habitat (and may also remove breeding habitat) for 24 threatened species, and may also remove potential foraging and breeding habitat for a number of other species.

The proposal would remove 19.9 hectares of habitat that meets the criteria for habitat critical to the survival of Koalas in accordance with DSEWPaC (2012).

Tests of significance were undertaken to assess these impacts to threatened flora and fauna species and habitat and no significant impacts were identified. For further details refer to **Section 6.1** and **Appendix K**.

### **8.3.4 Improved valuation, pricing and incentive mechanisms**

Improved valuation, pricing and incentive mechanisms provide that cost to the environment should be factored into the economic costs of a proposal. This REF has examined the environmental consequences of the proposal and identified mitigation measures for areas which have the potential to experience adverse impacts. Requirements imposed in terms of implementation of these mitigation measures would result in an economic cost to RMS. The implementation of mitigation measures would increase both the capital and operating costs of the proposal. This signifies that environmental resources have been given appropriate valuation.

The concept design for the proposal has been developed with an objective of minimising potential impacts on the surrounding environment.

## **8.4 Conclusion**

The proposal to upgrade 3.7 kilometres of the Princes Highway at Dignams Creek is subject to assessment under part 5 of the EP&A Act. The REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity. This has included consideration of conservation agreements and plans of management under the NPW Act, joint management and Biobanking agreements under the TSC Act, wilderness areas, critical habitat, impacts on threatened species, populations and ecological communities and their habitats and other protected fauna and native plants.

A number of potential environmental impacts from the proposal have been avoided or reduced during the options assessment and concept design development. The proposal as described in the REF best meets the proposal objectives but would still result in temporary disruptions to traffic flow and access, removal of vegetation (including communities and species listed under the TSC Act and EPBC Act), noise and vibration and property acquisition impacts. Mitigation measures as detailed in this REF would ameliorate or minimise these expected impacts. The proposal would also improve safety, improve driving conditions, and provide a more efficient regional transport system for all road users using the Dignams Creek section of the Princes Highway. On balance the proposal is considered justified.

The environmental impacts of the proposal are not likely to be significant and therefore it is not necessary for an environmental impact statement to be prepared and approval to be sought for the proposal from the Minister for Planning under part 5.1 of the EP&A Act. The proposal is unlikely to significantly affect threatened species, populations or ecological communities or their habitats, within the meaning of the *Threatened Species Conservation Act 1995* or *Fisheries Management Act 1994* and therefore a Species Impact Statement is not required. The proposal is also unlikely to affect Commonwealth land or have a significant impact on any matters of national environmental significance. However, RMS intends to submit a referral, to the Australian Government DSEWPaC to determine whether or not the proposal constitutes a controlled action due to:

- Potential impacts upon an important population of Koala and habitat being impacted is considered critical to the survival of Koalas based on Commonwealth guidelines (DSEWPaC 2012), refer to **Section 6.1**. The Koala (*Phascolarctos cinereus*) has recently been listed as vulnerable under the TSC Act and the EPBC Act.
- Potential impacts to Square Raspwort.

If the proposal is determined to be a controlled action, the approval of the Australian Government Minister for the Environment is required.

## 9 Certification

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



Rachel Vazey, Environmental Planner  
Sinclair Knight Merz  
Date: 18/6/2013

I have examined this review of environmental factors and the certification by Rachel Vazey from Sinclair Knight Merz and accept the review of environmental factors on behalf of Roads and Maritime Services.



Tim Webster, Project Manager  
Roads and Maritime Services South Coast Region/Wollongong  
Date: 18/6/2013

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# 11 Terms and acronyms used in this REF

Acronym	Definition
AADT	Annual average daily traffic
ABS	Australian Bureau of Statistics
ACHA	Aboriginal cultural heritage advisor
ACM	Asbestos Containing Material
AFG	Aboriginal Focus Group
AHD	Australian height datum
Afflux	Afflux is the rise in water level upstream due to an obstruction of flow downstream.
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal heritage impact permit
ANZECC	Australia and New Zealand environment conservation council
ARI	Annual recurrence interval
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ASS	Acid sulfate soils
Chainage	Road chainages for the proposal are based on the distance in metres that the proposal is from Batemans Bay, which is the zero point for RMS chainages along this section of the Princes Highway. Chainages are shown on the cross sections and plans of the proposal.
CEMP	Construction environmental management plan
CLM Act	<i>Contaminated Land Management Act 1997(NSW)</i>
CNVMP	Construction Noise and Vibration Management Plan
CHAR	Cultural Heritage Assessment Report
CP Act	<i>Coastal Protection Act 1979 (NSW)</i>
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CTMP	Construction Traffic Management Plan
DDT	Chlorinated hydrocarbon compound used as an insecticide.
dB(A)	decibels (A weighted)
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DECCW	Department of Environment, Climate Change and Water
DPI	Department of Primary Industries
DTRIS	Department of Trade and investment, regional Infrastructure and Services.

Acronym	Definition
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
DUAP	Department of Urban Affairs and Planning
EIA	Environment impact assessment
EIS	Environment impact statement
ENMM	Environmental Noise Management Manual
EPA	Environment Protection Authority
EPBC Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i> . Provides the legislative framework for land use planning and development assessment in NSW.
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i> .
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i> . Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
EPL	Environmental protection licence
ESCP	Erosion and sediment control plan
ESD	Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased.
FM Act	<i>Fisheries Management Act 1994 (NSW)</i>
GDE	Groundwater dependent ecosystem
ICNG	Interim Construction Noise Guideline
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
LEP	Local environmental plan. A type of planning instrument made under Part 3 of the EP&A Act.
LGA	Local government area
LOS	Level of service. A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers.
MNES	Matters of national environment significance
MVKT	Million vehicle kilometres travelled
MLALC	Merrimans Local Aboriginal Land Council
NCA	Noise catchment area
NML	Noise management level
MSB	Mine Subsidence Board
Notched	Is where a small metre bench has been cut into a batter

Acronym	Definition
	slope. The bench is inset about 2 – 2.5 metres into the batter and then angles back at 90 degrees towards the face of the batter slope to create a notch. The batter maintains its slope and does not step back.
NPW Act	<i>National Parks and Wildlife Act 1974 (NSW)</i>
NPWS	National Parks and Wildlife Services
NSW	New South Wales
NTU	A measure of turbidity
OEH	Office of Environment and Heritage
PACHCI	Procedure for Aboriginal Cultural Heritage Consultation and Investigation
PAD	Potential archaeological deposit
PAH	Polycyclic Aromatic Hydrocarbons
PASS	Potential acid sulfate soils
PEMP	Project environment management plan
Piezometer	A device used to measure groundwater levels.
PM10	Particulate matter (with equivalent aerodynamic diameters equal or less than 10 microns)
POEO Act	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
RBL	Rating background level, Rating background level, the overall sing-figure background level, which is the 10th percentile of the LA90 values for each of the day, evening and night time periods over the whole monitoring period.
REF	Review of Environmental Factors
ELEP	<i>Eurobodalla Rural Local Environmental Plan 1987</i>
RMS	Roads and Maritime Service (Former NSW department).
RNP	Road Noise Policy
ROL	Road Occupancy Licence
QA Specifications	Specifications developed by Roads and Maritime Services for use with road works and bridgeworks contracts let by Roads and Maritime Services
RSL	Relative sea level
RTA	Roads and Traffic Authority (Former NSW department)
SEPP	State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act.
SEPP 14	<i>State Environmental Planning Policy No.14 – Coastal Wetlands</i>
SEPP 26	<i>State Environmental Planning Policy No.26 – Littoral Rainforests</i>

<b>Acronym</b>	<b>Definition</b>
SEPP 44	<i>State Environmental Planning Policy No.44 – Koala Habitat and Protection</i>
SKM	Sinclair Knight Merz
SOHI	Statement of Heritage Impact
SWMP	soil and water management plan
TCP	Traffic Control Plan
TEC	Threatened ecological community
TMP	Traffic management plan
TPH	Total Petroleum Hydrocarbons
TRAQ	Tool for Roadside Air Quality
TSC Act	<i>Threatened Species Conservation Act 1995 (NSW)</i>
VCZ	Visual Catchment Zones
VDV	Vibration dose values
VEM	Visual envelope map
WARR Act	<i>Waste Avoidance and Resource Recovery Act 2001</i>
WM Act	<i>Water Management Act 2000 (NSW)</i>