

5. Environmental assessment

5.1 Preliminary assessment

As discussed in Section 1.3, this *Project application report* has been prepared for the Director General of the Department of Planning to prepare formal requirements for the environmental assessment of the project. Following issue of these requirements the RTA will prepare an Environmental Assessment in accordance with Part 3A of the *EP&A Act* with the aim of seeking project approval.

Significant studies have been undertaken to date to provide input into the route options development, the preferred route selection, the refinement of the preferred route, the assessment of the environmental characteristics of the preferred route, and to progress the concept design process.

Project approval is being sought for the highway upgrade's ultimate design - a Class M (motorway). However, construction of the upgrade is likely to be staged and therefore the impacts of the works are required to be assessed according to the staging of construction activities. Consequently, the mitigation measures proposed for the project are also required to reflect this staging approach.

Based on the investigations undertaken to date, Tables 5.1 and 5.2 summarise the issues that have been identified as being important to the environmental assessment phase, and to the final decision for the project in terms of the construction and operation phases respectively. For simplicity, issues have been divided between the construction and operation phases of the project. The tables also summarise the impacts that can be adequately managed through the implementation of mitigation measures in a construction environmental management plan and details the scope of further investigations for the concept design and environmental assessment phases.

The criteria used to determine the proposed level of additional assessment listed in Tables 5.1 and 5.2 is summarised below:

► **Issues manageable – no further assessment proposed**

No further assessment proposed on this issue as the RTA considers that the issue can be adequately managed using standard or previously approved procedures that are accepted within the industry. The proposed procedures will be identified in the relevant environmental management plan for the project. These measures will also be summarised in the environmental assessment;

► **Define management measures – Design/EMP**

Standard management measures are available and will be applied to resolve the issue. Further consideration of available measures may be required for specific locations. The proposed measures will be detailed as necessary in the refined design and/or the relevant environmental management plan for the project. These measures will also be summarised in the environmental assessment;

► **Further environmental assessment proposed**

The RTA considers that the issue requires further assessment during the refined design/environmental assessment phase. Proposed measures to manage this issue will be detailed in the concept design and the environmental assessment.

Table 5.1 Environmental issues, impact, significance, assessment and management – construction phase

Construction phase				
Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Local Community				
Social effects	<p>The preferred route bypasses the village of Telegraph Point and continues the existing severance of the village of Kundabung. Potential impacts to villages of Telegraph Point and Kundabung, and rural residential areas during construction may include:</p> <ul style="list-style-type: none"> ▶ Changes in amenity; ▶ Changed access arrangements; and ▶ Property acquisition. 	<p>Low Negative</p>	<p>Define management measures – Design/EMP.</p>	<p>Continued community consultation.</p> <p>Identify proposed access changes during construction.</p> <p>Appropriate noise mitigation (as required).</p> <p>See Draft Statement of Commitment 3, 4 and 5.</p>
Noise assessment	<p>Residential areas within the study area are concentrated within the villages of Telegraph Point and Kundabung, with scattered rural residences areas elsewhere. Potential impacts include noise and vibration impacts.</p>	<p>Low – Medium Negative</p>	<p>Issues manageable - no further assessment proposed.</p>	<p>Management measures - see Draft Statement of Commitment 5.</p>

Construction phase

Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Heritage				
Indigenous heritage	<p>The preferred route does not impact any known listed heritage sites, but does traverse areas of cultural sensitivity. Potential impacts may result from:</p> <ul style="list-style-type: none"> ▶ Discovery of new heritage sites within the preferred route corridor and their potential loss; and ▶ Impacts to areas of cultural sensitivity that are traversed by the preferred route corridor. 	<p>Medium Negative</p>	<p>Further environmental assessment proposed.</p>	<p>Proposed scope of environmental assessment is discussed in Table 5.3.</p> <p>Management measures – see Draft Statement of Commitment 8.</p>
Non-indigenous heritage	<p>The preferred route bypasses Telegraph Point avoiding the majority of known listed heritage sites within the study area. Potential impacts may result from:</p> <ul style="list-style-type: none"> ▶ Discovery of new heritage sites within the preferred route corridor and their potential loss; and ▶ Impacts to known or potential heritage items (i.e. Dennis Bridge, Maria River bridge [northbound]). 	<p>Low Negative</p>	<p>Define management measures – Design/environmental management plan.</p>	<p>Detailed in Table 5.3.</p> <p>Management measures – see Draft Statement of Commitment 9.</p>

Construction phase

Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Ecology				
Terrestrial	<p>The study area contains a range of vegetation communities and habitats, which contain endangered ecological communities and potentially support listed threatened and migratory species. Potential impacts may result from:</p> <ul style="list-style-type: none"> ▶ Loss of vegetation; ▶ Loss of habitat, including that for threatened and migratory species; ▶ Loss of endangered ecological communities; ▶ Minor loss of SEPP 14 and other wetland areas; ▶ Minor loss of conservation estate (nature reserves); and ▶ Obstruction of wildlife movement corridors resulting in increased injury / death or reduced ability of movement. 	Medium – High Negative	Further environmental assessment proposed.	<p>Proposed scope of environmental assessment is discussed in Table 5.3.</p> <p>Management measures – see Draft Statement of Commitment 7.</p>
Aquatic	<p>Potential impacts may result from:</p> <ul style="list-style-type: none"> ▶ Loss of vegetation; ▶ Loss of habitat, including that for threatened and migratory species; ▶ Loss of endangered ecological communities; ▶ Minor loss of SEPP 14 and other wetland areas; and ▶ Changed hydrological regimes resulting in up/downstream impacts. 	Medium Negative	Further environmental assessment proposed.	<p>Proposed scope of environmental assessment is discussed in Table 5.3.</p> <p>Management measures – see Draft Statement of Commitment 7.</p>

Construction phase

Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Air quality				
Air quality	<p>Traffic growth on the existing highway will increase irrespective of the construction of this project. Potential impacts associated with the preferred route are expected to include:</p> <ul style="list-style-type: none"> ▶ Reduced air quality during construction; and ▶ Improved air quality during operation as a result of improved travel times and efficiency for all vehicles. 	Low Negative	Issues manageable - no further assessment proposed.	Management measures – see Draft Statement of Commitment 11.
Energy and greenhouse				
Energy and greenhouse	Construction of the preferred route will require energy consumption and generate greenhouse gases.	Low Negative	Issues manageable - no further assessment proposed.	Management measures – see Draft Statement of Commitment 12.
Soils and contamination				
Soils and contamination	The preferred route crosses areas of known occurrence of acid sulphate soils, potentially contaminated soils from past and current industrial and agricultural land uses, and would require excavation and filling in erosion prone areas.	Low Negative	Issues manageable - no further assessment proposed.	Management measures – see Draft Statement of Commitment 10.

Construction phase

Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Water quality				
Water quality	<p>The route traverses the Hastings River, Wilson River and Maria River, in addition to a number of other drainage lines. These systems support a range of sensitive aquatic habitats, aquaculture, recreational and commercial fishing and land based agricultural operations.</p> <p>Potential impacts may result from:</p> <ul style="list-style-type: none"> ▶ Erosion and sedimentation during construction; and ▶ Spillages of hazardous materials during operation. 	Low - Medium Negative	Issues manageable – no further assessment proposed.	Management measures – see Draft Statement of Commitment 10.
Hazards and risks				
Hazards and risks	Potential impacts are expected to include spillages during construction as a result of accidents or poor practices.	Low - Medium Negative	Issues manageable – no further assessment proposed.	Management measures – see Draft Statement of Commitment 14.

Construction phase

Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Public utilities				
Public utilities	<p>A number of overhead and underground public utilities exist along the preferred route corridor. Potential issues include:</p> <ul style="list-style-type: none"> ▶ Impacts to telecommunications (Telstra and Visionstream optic fibre); ▶ Impacts to electricity (including Transgrid 132 kV lines, 66kV poles, overhead 33kV powerlines and overhead 11kV powerlines); ▶ Impacts to water and sewerage; and ▶ Improved opportunity for collocation of increased services in the highway corridor. 	<p>Low Negative</p>	<p>Issues manageable - no further assessment proposed.</p>	<p>Management measures – see Draft Statement of Commitment 16.1.</p>
Resource conservation and waste management				
Resource conservation and waste management	<p>Potential impacts are expected to be primarily associated with the construction phase, with limited waste generation expected during operation.</p>	<p>Low - Medium Negative</p>	<p>Issues manageable – no further assessment proposed.</p>	<p>Management measures – see Draft Statement of Commitment 15.</p>

Table 5.2 Environmental issues, impact, significance, assessment and management – operation phase

Operation phase				
Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Local community				
Social effects	<p>The preferred route bypasses the village of Telegraph Point and continues the existing severance of the village of Kundabung. Potential impacts to villages of Telegraph Point and Kundabung, and rural residential areas include:</p> <ul style="list-style-type: none"> ▶ Community severance and consolidation; ▶ Change in amenity; ▶ Changed access arrangements; ▶ Improved pedestrian and cyclist access and safety; ▶ Improved local bus access and safety; and ▶ Economic (business) impacts. 	<p>Low - Medium Negative</p>	<p>Further environmental assessment proposed.</p>	<p>Where appropriate, provision of signage and linkages to villages, businesses and recreational areas as a desirable place to stop and revive.</p> <p>Identify proposed access changes post construction.</p> <p>Proposed scope of environmental assessment is discussed in Table 5.3.</p>
Land use	<p>Traverses a range of land uses including agricultural (grazing and intensive horticultural), state forests, rural residential, businesses, nature reserves and passes along the existing highway through the village of Kundabung. Potential impacts include:</p> <ul style="list-style-type: none"> ▶ Reduced viability of severed or partially acquired properties; ▶ Loss of agricultural lands; ▶ Potential loss of local businesses; 	<p>Medium Negative</p>	<p>Define management measures – Design/environmental management plan.</p>	<p>Develop design that:</p> <ul style="list-style-type: none"> ▶ Is integrated into existing land use where possible; ▶ Minimises loss of existing land uses; ▶ Considers the viability of and minimises acquisition / severance of land parcels; and

Operation phase

Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Noise assessment	<p>Residential areas within the study area are concentrated within the villages of Telegraph Point and Kundabung, with scattered rural residences areas elsewhere. Potential impacts (construction and operation) include:</p> <ul style="list-style-type: none"> ▶ Improved noise environment for the main areas of Telegraph Point; ▶ Potentially increased noise within Kundabung; ▶ Improved noise amenity for all residences in the vicinity of the existing highway where the preferred route is a deviation; ▶ Decreased noise amenity for residences in the vicinity of deviations, including those in Moorside Drive; and ▶ Potential construction noise and vibration impacts. 	Low – Medium Negative	Further environmental assessment proposed.	<ul style="list-style-type: none"> ▶ Continued consultation with affected parties including key agricultural operations, Forests NSW and businesses. <p>Proposed scope of management measures is discussed in Table 5.3.</p> <p>Incorporate appropriate management measures into the concept design which may include:</p> <ul style="list-style-type: none"> ▶ Noise barriers / mounds; ▶ Architectural treatment of individual residences; and ▶ Use of low noise road surfaces. <p>Proposed scope of environmental assessment is discussed in Table 5.3.</p> <p>Management measures - see Draft Statement of Commitment 6.</p>

Operation phase

Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Visual amenity				
Urban design, landscape and visual assessment	<p>The route traverses a range of landscapes and land uses potentially resulting in changes to the visual character of the study area. The Hastings River is identified as one of the 16 key landmarks along the existing Pacific Highway.</p> <p>Potential impacts include:</p> <ul style="list-style-type: none"> ▶ Visual impacts for the locality as a result of new major bridges at the Hastings and Wilson Rivers; ▶ Visual impacts for the locality as a result of vegetation clearing; ▶ Visual impacts for the landscape as a result of large cuttings through Cooperabung Hill; and ▶ Improved visual experience for road users. 	Medium Negative	Define management measures – Design/environmental management plan.	Proposed scope of management measures is discussed in Table 5.3. Management measures – see Draft Statement of Commitment 13.
Ecology				
Ecology (terrestrial and aquatic)	<p>The study area contains a range of vegetation communities and habitats, which contain endangered ecological communities and potentially support listed threatened and migratory species. Potential impacts include:</p> <ul style="list-style-type: none"> ▶ Obstruction of wildlife movement corridors resulting in increased injury / death or reduced ability of movement. 	Medium Negative	Further environmental assessment proposed.	Proposed scope of environmental assessment is discussed in Table 5.3. Management measures – see Draft Statement of Commitment 7.

Operation phase

Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Energy and greenhouse				
Energy and greenhouse	<p>The operation of the preferred route will require energy consumption and generate greenhouse gases.</p> <p>Traffic growth on the existing highway will increase irrespective of the construction of this project. Potential impacts associated with the preferred route are expected to include:</p> <ul style="list-style-type: none"> ▶ Relative decreased energy consumption during operation as a result of improved travel times and efficiency for all vehicles. 	Low Positive	Further environmental assessment proposed.	Proposed scope of environmental assessment is discussed in Table 5.3.
Water Quality				
Water quality	<p>The preferred route traverses the Hastings River, Wilson River and Maria River, in addition to a number of other drainage lines. These systems support a range of sensitive aquatic habitats, aquaculture, recreational and commercial fishing and land based agricultural operations. Potential impacts include:</p> <p>Spillages of hazardous materials during operation.</p>	Low - Medium Negative	Issues manageable – no further assessment proposed.	Management measures – see Draft Statement of Commitment 10.

Operation phase

Issue	Potential impact	Level of significance	Proposed assessment or management level	Scope of assessment or management
Hazards and risks				
Hazards and risks	Potential impacts are expected to include spillages during operation as a result of accidents or poor practices.	Low - Medium Negative	Issues manageable – no further assessment proposed.	Management measures – see Draft Statement of Commitment 14.
Hydrology and flooding				
Hydrology and flooding	<p>The preferred route traverses the floodplains of the Hastings and Wilson Rivers, and also crosses a number of drainage lines.</p> <p>Potential impacts include:</p> <ul style="list-style-type: none"> ▶ Changed flooding patterns resulting in potential damage to property or endangering human life; ▶ Changed hydrological regimes resulting in ecological impacts; and ▶ Improved flood immunity for the Pacific Highway resulting in greater certainty of travel and access. 	<p>Medium Negative</p> <p>Potential: Medium - Positive</p>	Further assessment proposed.	Proposed scope of environmental assessment is discussed in Table 5.3.

5.2 Proposed scope of environmental assessment

The proposed scope of the environmental assessment of the identified issues is separated into the construction and operational phases of the highway project as summarised in Table 5.3 below.

Environmental assessment under Part 3A of the *EP&A Act* encourages proponents to prepare more focused environmental assessments to ensure that key issues are focused on, while those issues that could be managed through implementation of standard mitigation measures are given an appropriately reduced level of attention.

Based on the previous investigations Table 5.3 identifies the proposed scope of investigations to be undertaken during the concept design and environmental assessment phases of the project that will support the final content of the environmental assessment itself. A Draft Statement of Commitments (Appendix C) has also been prepared that illustrates the advanced stage of planning for the minimisation of environmental impacts associated with the Oxley Highway to Kempsey project. It is envisaged that the statement of commitments will be refined during the environmental assessment phase.

5.2.1 Key issues

The key issues that have been identified as representing the most importance based on the comprehensive community and stakeholder consultation together with the investigations undertaken to date are:

Construction phase

- ▶ Indigenous heritage;
- ▶ Ecology (terrestrial and aquatic).

Operational phase

- ▶ Land use;
- ▶ Urban design, landscape and visual assessment;
- ▶ Ecology (terrestrial and aquatic); and
- ▶ Hydrology and flooding.

A wide range of investigations has been undertaken to date during the route options development and preferred route selections stages of the project have influenced the preferred route corridor alignment.

The RTA may elect to construct the project in discrete work packages or defined stages.

Table 5.3 Proposed scope of environmental assessment for key issues

Issue	EA scope
Construction phase	
Indigenous heritage	<p>Conduct a detailed Indigenous heritage impact assessment that:</p> <ul style="list-style-type: none"> ▶ Involves continued consultation with the local Aboriginal community in accordance with the Department of Environment and Climate Change <i>Interim Community Consultation Requirements for Applicants</i>. ▶ Includes a detailed field assessment in conjunction with the Aboriginal stakeholder groups to detect the presence of, or likelihood of previously unidentified heritage sites; ▶ Identifies, as required, development of management measures in consultation with the local Aboriginal community; and ▶ Identifies management measures to be put in place in the event of discovery of previously unidentified artefacts during the course of construction.
Ecology (terrestrial and aquatic)	<p>Conduct a detailed terrestrial and aquatic flora and fauna impact assessment that:</p> <ul style="list-style-type: none"> ▶ Includes a detailed field assessment to detect the presence of, or likelihood of threatened or migratory species, populations, endangered ecological communities, or other regionally important species, communities, populations or habitats; ▶ Identifies the potential impacts of the concept design; ▶ Involves continued consultation with local interest groups, stakeholders, Department of Environment and Climate Change and Department of Primary Industries (Fisheries); ▶ Proposes appropriate management measures to address the impacts including ongoing monitoring as required; and ▶ If required, formulate any compensatory habitat proposals.
Operational phase	
Land use	<p>Impacts to properties (residential, agricultural, businesses and state forest) will be assessed on a case-by-case basis.</p>
Urban design, landscape and visual assessment	<p>Describe changes to views and landscapes along the proposed upgrade. Describe the treatments that would reduce the level of visual impact of the proposed upgrade. Urban and landscape design treatments will be applied on a case-by-case basis, referencing the urban and landscape design objectives for the project.</p>
Ecology (terrestrial and aquatic)	<p>Conduct a detailed terrestrial and aquatic flora and fauna impact assessment that:</p> <ul style="list-style-type: none"> ▶ Includes a detailed field assessment to detect the presence of, or likelihood of threatened or migratory species, populations, endangered ecological communities, or other regionally important species, communities, populations or habitats identified under the

Issue	EA scope
	<p><i>TSC Act or EPBC Act;</i></p> <ul style="list-style-type: none"> ▶ Identifies the potential impacts of the concept design; ▶ Involves continued consultation with local interest groups, stakeholders, Department of Environment and Climate Change and Department of Primary Industries (Fisheries); ▶ Proposes appropriate mitigation measures to address the impacts including ongoing monitoring as required; and ▶ If required, formulate any compensatory habitat proposals.
Hydrology and flooding	Conduct a hydrological and hydraulic assessment that investigates and models existing and predicted flood patterns and informs the development of the concept design and other investigations.

5.2.2 Other issues for further environmental investigations

In addition to the proposed key issues for the environmental assessment shown in Table 5.3, other issues for further environmental investigation are shown in Table 5.4.

Table 5.4 Other issues for further environmental investigations

Issue	Proposed action
Construction phase	
Social effects	A community involvement plan, a construction traffic management sub- plan and a construction noise and vibration management sub-plan will be developed to ensure impacts upon local residents will be minimised during construction.
Non-indigenous heritage	A non-indigenous heritage management sub-plan will form part of the construction environmental management plan.
Operational phase	
Social effects	<p>Prepare a socio-economic assessment, with emphasis on the villages of Telegraph Point and Kundabung, that:</p> <ul style="list-style-type: none"> ▶ Identifies the key social and economic characteristics within the community; ▶ Assesses the potential impacts and their significance; ▶ Considers future potential land use and settlement; ▶ Considers severance, consolidation and access requirements for local traffic, pedestrians, cyclists and other community services; and ▶ Identifies appropriate management measures to minimise any adverse impacts.

Issue	Proposed action
Noise	Undertake noise monitoring in accordance with the Department of Environment and Climate Change <i>Environmental Criteria for Road Traffic Noise</i> and the RTA <i>Environmental Noise Management Manual</i> . Investigate use of noise management measures in areas of likely high noise impact.
Energy and greenhouse	Conduct modelling and predictions into the use of fuels and the production of greenhouse gasses as a result of the operation of the upgraded highway.