Australian Government

RTA

Hume Highway duplication

Yarra Yarra to Holbrook and Woomargama to Mullengandra Environmental Assessments

SUBMISSIONS REPORT AND REVISED STATEMENT OF COMMITMENTS

JUNE 2007

AUSLINK

ISBN 9781877070402
RTA/Pub. 07.119

(blank page)

Document Controls

Branch / Section	RTA Environment Branch / Environmental Planning and Assessment		
Project No			
Document Description	Hume Highway Duplication, Submissions Report and Revised Statement of Commitments		
	Name	Signed	Date
Approving Manager	Joy Duncan		25/06/07

Person(s) managing this document	Person(s) writing this document
Andrew Cook	Andrew Cook

Location	File No.
G:\ENVIRNMNT\Planning and Assessment\Environ\Assessments_Section\Projects\0506\Hume Highway projects\Submissions Report\YY2H and W2M\Report\YY2HW2M EA Subs Rpt Final.doc	7M1575 Vol. 1

Document Status	Date
Final	25 June 2007

Prepared For	Prepared By
Peter Hurst Project Development Manager Hume Highway Office 1 Simmons Street, Wagga Wagga NSW 2650	Environmental Planning and Assessment RTA Environment Branch Level 5, Pod D, 99 Phillip Street Parramatta NSW 2150 T (02) 8837 0594 F (02) 8837 0053 E andrew_cook@rta.nsw.gov.au

Prepared by RTA Environment Branch
Version 1

A person using RTA Environment Branch documents or data accepts the risk of:

- *Using the documents or data in electronic form without requesting and checking them for accuracy against the original hard copy version; and*
- *Using the documents or data for any purpose not agreed to in writing by RTA Environment Branch.*

(blank page)

Contents

1 Introduction and Background 1

2 Summary of issues and responses 2

2.1 Justification and strategic planning 2

2.2 Biodiversity 4

2.2.1 Threatened species and conservation value 4

2.2.2 Mitigation and offsets 5

2.3 Heritage 8

2.3.1 Non-Aboriginal heritage 8

2.3.2 Aboriginal heritage 9

2.4 Hydrology 9

2.5 Resource management 11

2.6 Greenhouse gas emissions 11

2.7 Geology, soils and water quality 12

2.8 Community issues and involvement 13

2.9 Environmental licensing 14

2.10 Environmental Assessment documentation 15

3 Revised Statement of Commitments 17

(blank page)

1 Introduction and Background

The Roads and Traffic Authority of NSW (RTA) is proposing to upgrade five sections of the Hume Highway from single carriageway to a four-lane dual carriageway in the area from the Sturt Highway junction south to Albury (the Hume Highway Duplication). The sections to be upgraded are located in the area from approximately 37 kilometres south of Gundagai to approximately 41 kilometres north of Albury.

The RTA has prepared a Concept Plan Environmental Assessment for the Hume Highway Duplication as a whole in accordance with the process and requirements of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). In addition, the RTA has prepared individual project Environmental Assessments for each of the five sections. The Environmental Assessments address the key environmental issues and includes mitigation measures to address potential impacts.

A Submissions Report and Revised Statement of Commitments was prepared for the Concept Plan and three of the five project Environmental Assessments (being Sturt Highway to Tarcutta, Kyeamba Hill and Little Billabong) and submitted to the NSW Department of Planning (DoP) on 27 April 2007.

This Submissions Report and Revised Statement of Commitments relates to the remaining two Environmental Assessments prepared for the Hume Highway Duplication being:

- Yarra Yarra to Holbrook
- Woomargama to Mullengandra

This report has been prepared pursuant to Section 75H(6) of the EP&A Act following the exhibition of the above Environmental Assessments. It includes the RTA's responses to the submissions (Chapter 2) and a revised Statement of Commitments (Chapter 3). Following consideration of the public submissions, no changes in design to that previously described in the Environmental Assessments are proposed. The preparation of a preferred project report was therefore not considered necessary.

The above Environmental Assessments were on public exhibition between Wednesday 2 May 2007 and Friday 1 June 2007 at locations detailed in Table 1.1. All necessary reference material was made available for review at the nominated locations and the Environmental Assessments were also available on the Department of Planning's website in addition to the RTA's website. Submissions were invited from anyone with an interest in the Hume Highway Duplication and comments (including late submissions) were received up until Tuesday 12 June 2007.

Table 1.1: Locations where the Environmental Assessments were displayed

Location	Address
Albury	Albury Motor Registry, Cnr Hume and McCauley Streets
Holbrook	Holbrook Greater Hume Council Library, Library Lane
Sydney	Department of Planning, Information Centre, 23-33 Bridge Street
Sydney	Nature Conservation Council, Level 2, 301 Kent Street

2 Summary of issues and responses

A total of eight submissions (including late submissions) were received from six respondents. Table 2.1 lists all respondents and each respondent's allocated submission number. The table also indicates where in Chapter 2 their issues have been addressed.

Table 2.1: List of respondents

Respondent	Submission No.	Section where issues are addressed
Dr P. Spooner, Charles Sturt University	1	2.2.1; 2.2.2; 2.3.1; 2.10
NSW Heritage Office (on behalf of the Heritage Council of NSW)	2	2.3.1;
Department of Environment and Climate Change (DECC)	3, 4	2.2.1; 2.2.2; 2.3.2; 2.9; 2.10
Department of Water and Energy (DWE)	5, 6	2.4; 2.5; 2.7; 2.9
M. Mushalik	7	2.1; 2.6
Department of Primary Industries (DPI)	8	2.2.1; 2.2.2; 2.7; 2.9

The issues raised in each submission generally applied to both of the Environmental Assessments described in Chapter 1. However, where an issue was raised that was specific to an individual section of the Hume Highway Duplication it has been noted in the summary of the issue.

Each issue raised within a submission was identified as a broad issue (eg. biodiversity, heritage, etc.) and then is broken down into a more detailed specific issue (eg. additional surveys and monitoring, non-Aboriginal heritage, etc.) if required. Consideration of each issue was undertaken by the RTA and a written response provided.

2.1 Justification and strategic planning

Submission number(s)

7

Issue description

In summary, the respondent raised the following issues:

- The Environmental Assessments fail to prove that the necessary fuel supply which would support the assumed traffic growth will actually be available. Oil production peaked (peak oil) in 2005 and is now in a state of decline. The assessments do not consider alternative fuels in the required quantities to offset the production decline. As such, any cost benefit calculation for the project is null and void.
- The full duplication of the Hume Highway is both uneconomic and unsustainable and AusLink funding for road development should be limited to accident black spot treatment with more focus on rail development and coastal shipping for long distance freight haulage.

- It is recommended that before allocating funding on freeway planning, senior staff at the RTA should undertake a training course and review selected literature (list provided) on peak oil and global warming.

Response

It is contended that "peak oil" will be reached in the foreseeable future. That is, that the peak in the production of oil will be passed and that the supply of oil will begin to decline. There is considerable debate about this contention (BTRE Working Paper 61: Is the world running out of oil?) and about the impact on transport if in fact there is a decline in the availability of oil.

However, governments and industry are taking the view that, whilst the timing remains problematic, it is prudent to assume that peak oil is likely to happen and that there is a need to establish alternatives to oil as a fuel for transport and to improve the energy efficiency of transport. This aligns with recognition of the greenhouse effect and the need to reduce greenhouse gas emissions.

There is a close link between economic growth and transport growth. As the Australian and NSW economies continue to grow the need for transport will also grow. Freight transport for example is predicted to more than double between 2000 and 2020 (BTRE Report 107: Greenhouse gas emissions from transport – Australian trends to 2020). Historically there has been a link between transport growth and a growth in demand for fuel. Action is now being taken through Government supported programs and commercial initiatives to identify alternative sources of fuel and to develop technology to reduce the fuel consumed by vehicles as evidenced by the commercial availability of bio-diesel, ethanol blended fuels and hybrid cars. This will enable the economic benefits provided by road transport to continue to be delivered with a reduced need for fossil fuels.

The duplication of the Hume Highway between the Sturt Highway junction south to Albury would bring substantial long-term national and State-wide economic benefits, including time and vehicle operating efficiencies and associated savings in freight costs. These benefits are particularly significant in relation to the Hume Highway as the busiest inter-capital corridor in Australia for both freight and passenger transport and in the context of expected increases in travel demand. The Hume Highway Duplication also meets the AusLink National Network objectives of supporting national economic growth and contributing to the development of sustainable transport solutions.

As reported in Section 2.3 of the Hume Highway Duplication Concept Plan Environmental Assessment, the Hume Highway Planning Study (Connell Wagner 2004) concluded that the potential achievable shift of freight from the Hume Highway to the rail network would only be marginal (in terms of the total road freight transport task) even with relatively high levels of investment in rail infrastructure and therefore the road network improvements could be justified at any level of rail infrastructure investment.

The AusLink process provides an integrated corridor approach to planning. This process focuses on meeting future passenger and freight needs in the best way, irrespective of the transport mode. The Sydney-Melbourne Corridor Strategy identifies the Hume Highway as an essential road link that services freight and passenger flows between the economies of Sydney, Melbourne and Canberra, regional centres such as Albury-Wodonga, and interstate through traffic to and from South Australia and Queensland. A shift in focus to other transport modes such as rail and coastal shipping for the Sydney-Melbourne corridor would need to be undertaken at the Australian Government level and show that it best meets future passenger and freight needs.

2.2 Biodiversity

2.2.1 Threatened species and conservation value

Submission number(s)

1, 3, 4, 8

Issue description

In summary, the respondents raised the following issues:

- Impacts to the eastern road verge immediately to the north of the Woomargama to Mullengandra section should be prevented during construction and in any future bypass of Woomargama due to the significant conservation value of the vegetation within the verge.
- The avoidance of Wrights Hill and thus the retention of its significant biodiversity values is a win-win outcome.
- An assessment of significance for potential impacts on the Striped Legless Lizard should be provided for the Woomargama to Mullengandra section. Potential habitat for this species occurs within the proposal section.
- Providing protection for the Endangered Ecological Community in the Natural Drainage System of the Lower Murray River Catchment, as well as four other threatened species predicted to occur (particularly the Southern Pygmy Perch) and their habitats is essential prior to commencement of works.
- DPI recommends that threatened aquatic species management measures documented in the Yarra Yarra to Holbrook Environmental Assessment be clearly outlined and presented to DPI for review prior to construction.
- Protecting any remaining remnant pools in affected creek systems is particularly important as they may act as refuges for fish species, such as the threatened Southern Pygmy Perch. DPI requests that the RTA work closely with DPI in areas where there is remnant pools and seek advice prior to works commencing.

Response

The conservation value of the vegetation within the eastern road verge immediately to the north of the Woomargama to Mullengandra section is noted. This area is outside the works footprint of the Woomargama to Mullengandra section and therefore any impacts to this area during construction are considered unlikely. Additionally, the limits of clearing and other native vegetation disturbance will be clearly marked on relevant work plans (refer to Table 3.1, Ref # B1). This would further safeguard against impacts to the vegetation within the verge. If necessary, the conservation value of this vegetation will be considered during the separate environmental planning and assessment process for a proposed Woomargama Bypass.

The comment regarding avoiding the vegetation associated with Wrights Hill is noted.

No suitable habitat for the Striped Legless Lizard was identified in the Woomargama to Mullengandra section of the Hume Highway Duplication as indicated in Table D-1 in Appendix D of the Technical Paper 1 to the Environmental Assessment. Therefore this species was not considered likely to be impacted by the proposed works and an assessment of potential impacts by the ecological consultants was not considered necessary. Where suitable potential habitat for the Striped Legless Lizard was identified in sections of the Hume Highway Duplication, assessments of significance were undertaken by the ecological consultants.

Threatened species management measures relating to aquatic species and their habitat (eg. remnant pools) will be documented during the development of the environmental management plans for the Hume Highway Duplication. This will include reference to relevant government

guidelines and policies and will involve consultation with government agencies where appropriate.

2.2.2 Mitigation and offsets

Submission number(s)

1, 3, 4, 8

Issue description

In summary, the respondents raised the following issues:

- All mitigation and offset measures stated in the Environmental Assessments are required to be implemented not just 'considered'.
- All visual mitigation suggestions contained in the Environmental Assessments are required to be implemented not just 'considered' as they provide for important biodiversity outcomes.
- The DECC and other research institutions should be consulted regarding any fauna relocation and subsequent population monitoring.
- Funds should be provided to consultants and research institutions regarding future monitoring and assessment of biodiversity impacts. This could include consideration of other mitigation projects, such as a potential need for a fauna overpass at Wrights Hill.
- A commitment that details the objectives of the proposed offset strategy is required as the extent of application and degree of effectiveness of the various proposed actions in the preliminary offset strategy are not stated.
- Further survey work is required to develop appropriate and specific mitigation measures for threatened species (such as, Squirrel Gliders and threatened woodland bird species).
- Expert advice is needed in relation to potential crossing points for Squirrel Gilders, such as the need, location and design of the crossings.
- There is no provision for monitoring the impacts of the development on biodiversity, as required by the Director-General's environmental assessment requirements. A threatened species monitoring program is required to allow the effectiveness of mitigation and offset measures to be determined. A commitment is also needed to modify mitigation and offset measures as necessary to ensure that stated objectives are met.
- The Environmental Assessments are relatively general and specific plans for individual sites such as stream crossings and aquatic habitat rehabilitation measures are not provided. Further and more detailed consultation in relation to any works to be conducted at locations affecting any water courses is requested.
- Designs for all waterway crossings (including temporary crossing and permanent bridge, box and pipe culverts) must be designed in accordance with DPI policies. DPI must be consulted during the detailed design phase of all stream crossings on Class 1 – 4 watercourses.
- DPI supports that design of culvert modification/extension and bridges in accordance with the requirements outlined in Fairfull and Witheridge (2003) is listed as a mitigation and management measure in the Environmental Assessments. In addition, DPI supports that fish passage is to be maintained at all times during the extension and modification and bridge construction, and the placement of woody debris downstream of culverts as described in the mitigation and management measures.
- DPI supports the revegetation of riparian zones as stated in the Environmental Assessments.
- Plans for rehabilitation activities including landscape plans are to be provided to DPI for comment prior to works and rehabilitation of riparian sites is to be completed to the satisfaction of DPI.

- DPI requests that any snags requiring removal from waterways as part of the works be reinstated at an appropriate location, in consultation with DPI. Where possible, snags should be retained and returned to their original location or as close as possible.
- DPI requests that felled native hardwood timber is retained for the re-snagging project for the Murray River.
- DPI supports the notion to plant macrophytes along stream banks to filter flow and enhance bank stability as outlined in the mitigation and management measures.
- Where aquatic habitat is affected habitat restoration shall be undertaken to the satisfaction of DPI and a five year annual monitoring program implemented to determine the success of the restoration works. Proposed methods to carry out rehabilitation works for any streams (existing or creek diversions) and riverbanks disturbed during the development and any degraded riparian zones within the site should be developed and presented to DPI for comment prior to works. The monitoring strategy is to be designed to measure riparian and aquatic vegetation distribution and abundance, numbers and identity of aquatic species, and water quality parameters.

Response

All mitigation and offset measures stated in the Environmental Assessments for the individual proposals informed the development of the draft Statement of Commitments for the Hume Highway Duplication. These draft Statement of Commitments have been revised following consideration of the issues raised in the public and stakeholder submissions (refer to Table 3.1). The revised commitments will guide the subsequent phases of the Hume Highway Duplication development to minimise impacts on the environment.

Management measures associated with any fauna relocation and monitoring will be documented within relevant environmental management plans and the threatened species monitoring program for the Hume Highway Duplication (refer to Table 3.1, Ref # B9 and B15). These management measures and monitoring programs will be determined in consultation with DECC and other relevant agencies where appropriate.

The preliminary offset strategy outlined in Chapter 5 of the Environmental Assessments for the individual proposals will be finalised in consultation with the DECC and other relevant government agencies. The finalised offset strategy will include a suite of measures to improve the regional, landscape and site biodiversity values utilising the relevant principles within the Biometric and threatened species assessment tools outlined in the Native Vegetation Regulation 2005 (refer to Table 3.1, Ref # B5).

The ecological impact assessment technical paper (refer to Technical Paper 1 of the Environmental Assessments for the individual sections) described the current conditions of the study area and recommended mitigation strategies for those threatened species likely to be impacted by the individual proposals. The ecologists determined the need and location of these mitigation strategies based on field surveys and habitat assessments. In addition, the RTA has sought further expert input on the need, design or location of mitigation strategies. A threatened species monitoring program will be undertaken to allow for the effectiveness of mitigation measures to be assessed and allow for their modification if necessary (refer to Table 3.1, Ref # B12, B13 and B15).

Expert advice is currently being sought on the specific distribution of Squirrel Glider populations in proximity to the individual proposals to inform the development of the mitigation measures and offset strategies for the Squirrel Glider prior to construction (refer to Table 3.1, Ref # B12). These mitigation measures and offset strategies will be included in the relevant environmental management plans.

The impact of the individual proposals on threatened species was assessed in accordance with the *Department of Environment and Conservation Draft Guidelines for Threatened Species Assessment* (July 2005). The impact of the proposals on threatened species is described in Chapter 5 of the Environmental Assessments for the individual sections as well as the ecological impact assessment technical paper. The Director-General's Environmental Assessment Requirements specify that the RTA identify mitigation and monitoring measures, particularly measures that provide a co-ordinated approach towards the mitigation of biodiversity impacts across the project corridor. The proposed offset strategy will provide a co-ordinated approach to mitigating impacts across the project corridor and will be monitored by the RTA to allow for modification if necessary (refer to Table 3.1, Ref # B5). In addition, a threatened species monitoring program will be developed to allow the effectiveness of mitigation and offset measures to be assessed and modified if necessary (refer to Table 3.1, Ref # B15).

The design of waterway crossings will be developed further in detailed design of the individual sections of the Hume Highway Duplication. The crossings will be designed to facilitate fish passage where appropriate following relevant DPI policies and guidelines, including but not limited to *Fishnote: Policy and Guidelines for Fish Friendly Waterway Crossings* (NSW Fisheries 2003), *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge 2003) and *Policy Guidelines for Aquatic Habitat Management and Fish Conservation* (NSW Fisheries 1999). Consultation with DPI regarding the engineering design and location will be undertaken prior to the commencement of construction (Refer to table 3.1, Ref # B16).

The detailed methodology for restoring aquatic habitat and rehabilitating riparian sites disturbed by the Hume Highway Duplication will be documented during the development of the environmental management plans. This will include reference to relevant government guidelines and policies and will involve consultation with government agencies where appropriate. In addition to the initial establishment of the aquatic habitat and riparian sites disturbed by the construction of the Hume Highway Duplication, a monitoring program will also be developed to allow the effectiveness of the restoration to be assessed and modified if necessary (refer to Table 3.1, Ref # B21).

As part of the RTA's commitments to minimise impacts to aquatic habitats, any snag management required as part of the Hume Highway Duplication will be undertaken in consultation with DPI and will follow the principles described in *Policy Guidelines for Aquatic Habitat Management and Fish Conservation* (NSW Fisheries 1999). Refer to Table 3.1, Ref # B20.

The RTA is committed to consulting with DPI regarding the use of cleared vegetation in the re-snagging program for the Murray River. However, the supply of the cleared vegetation in the re-snagging program would not compromise any of the other environmental objectives of the Hume Highway Duplication, such as maintaining fauna habitat through the placement of logs in landscaping works.

The support for the various mitigation and management measures provided by the DPI is noted.

2.3 Heritage

2.3.1 Non-Aboriginal heritage

Submission number(s)

1, 2

Issue description

In summary, the respondents raised the following issues:

- Impacts to the eastern road verge immediately to the north of the Woomargama to Mullengandra section should be prevented during construction and in any future bypass of Woomargama due to the significant heritage value the vegetation within the verge has.
- Aspects of the present Hume Highway's environmental and cultural heritage values should be retained for future generations and impacts to the environs of this route should be controlled.
- Overall, the Environmental Assessment documents have provided an adequate assessment of the heritage impacts of the Yarra Yarra to Holbrook and Woomargama to Mullengandra sections of the Hume Highway Duplication.
- All mitigation and management measures regarding non-Aboriginal heritage items of State, potentially State and Local significance including the key draft commitments are considered appropriate.
- The recommendations within the Environmental Assessments are supported and would be strengthened through the appropriate conditions of approval for the project including the preparation of a non-Aboriginal heritage management plan.

Response

The heritage value of the vegetation within the verge eastern road verge immediately to the north of the Woomargama to Mullengandra section is noted. This area is outside the works footprint and therefore any impacts to this area during construction are considered unlikely. Additionally, the limits of clearing and other native vegetation disturbance will be clearly marked on relevant work plans (refer to Table 3.1, Ref # B1). This would further safeguard against impacts to the vegetation on the verge. If necessary, the heritage value of this vegetation will be considered during the separate environmental planning and assessment process for a proposed Woomargama Bypass.

The RTA has, where possible, endeavoured to ensure that the original route of the historic road, as well as elements of road side heritage, is preserved as part of the works. This has involved where practicable, preferential utilisation of the existing road alignment for the duplication works and minimising impacts on remnant road. The mitigation and management measures proposed ensure that representative examples of certain items of heritage significance, eg. sections of old road pavement will be preserved within some of the individual proposal lengths duplication for future generations to benefit from. Additionally, all personnel working on site would receive training in their responsibilities under the *Heritage Act 1977* and site-specific training will be given to workers when working in the vicinity of identified heritage items. This will assist in controlling the impacts to non-Aboriginal heritage.

The RTA notes that the Heritage Office has advised that the Environmental Assessments adequately addresses the impacts on non-Aboriginal heritage of the individual proposals.

A Non-Aboriginal Heritage Management Plan (NAHMP) will be prepared that details the heritage management strategies including the management and mitigation measures for heritage items impacted and heritage items that will not be impacted during construction. In addition

the NAHMP will outline the processes for on-going consultation with the Heritage Council of NSW (refer to Table 3.1, Ref # H3).

2.3.2 Aboriginal heritage

Submission number(s)

3, 4

Issue description

In summary, the respondent raised the following issues:

- The Aboriginal heritage section of the Environmental Assessments is lacking in the assessment of both the significance and impacts in identified Aboriginal heritage items. The discussion or summary of results of the test excavations undertaken from December 2006 to February 2007 should be detailed as the results should inform the detailed construction planning.
- Should the results of the test excavations not be provided it is recommended that the RTA commit to preparing an Aboriginal Heritage Management Plan (AHMP). The Plan should include the results of the archaeological test excavations, identifying Aboriginal heritage values, management and mitigation measures for impacted sites and sites that will not be impacted during construction, and processes for on-going consultation with Aboriginal stakeholders and the DECC where required.

Response

The RTA is currently preparing an Aboriginal Cultural Heritage Management Plan (ACHMP) that incorporates the results of the archaeological test excavations, including further discussion of Aboriginal cultural heritage values, and outlines heritage management strategies including management and mitigation measures for impacted sites and sites that will not be impacted during construction. In addition the ACHMP outlines the processes for on-going consultation with the Aboriginal stakeholders and the DECC. A draft ACHMP will be provided to Aboriginal stakeholders and the DECC for comment and will be finalised following consideration of comments received. A revised commitment reflecting this has been included in Table 3.1, Ref # AH3.

2.4 Hydrology

Submission number(s)

5, 6

Issue description

In summary, the respondent raised the following issues:

- The simple duplication of drainage structures leads to a doubling of friction losses associated with the flow of water through the structures therefore increasing afflux (upstream inundation depths, frequency and duration) over the existing scenario. It is recommended that this be further investigated and any drainage structures employed be sized to take this into account.
- The DWE support the management measures provided in the Environmental Assessments regarding drainage infrastructure, further investigation of downstream impacts and increases in vertical alignment.

- With regard to episodic flooding events that may inundate several sections of the highway, the Department of Planning (DoP) need to be satisfied that the potential impacts of having the roadway flooded periodically have been fully investigated and accounted for.
- The impacts and effectiveness of any proposed amelioration of any changes to the current flooding regime should be assessed to the satisfaction of the DoP.
- The acceptability or otherwise of the afflux generated by the proposal is a matter for the RTA. The RTA should consider what development, if any, is affected by any additional inundation depths, frequency of inundation and duration of inundation.
- Regarding the vertical alignment, in the event that there is potential obstruction of flood flows where cross drainage capacity is exceeded, detail should be provided on the potential impacts and amelioration to the satisfaction of the DoP. This detail should also be provided where the potential exists for the re-direction of flood flows during flood events due to the new road formation.
- The DWE support the location of the new carriageway(s) to avoid impacts on major drainage lines.
- If the proposed duplication separates any parcel of floodplain land, it is assumed that drainage will be appropriately managed.
- The RTA should ensure adequate assessment of all potential impacts on the existing environment (built and natural) and inhabitants from any change in the flooding regime.

Response

Whilst duplication of the existing highway drainage infrastructure to maintain all necessary hydrological capacities was proposed, the detailed design will include hydraulic considerations to ensure that drainage meets appropriate requirements. This may include the location, type and size of the drainage structures.

Regarding the issues raised associated with episodic flooding events and potential changes in flood regimes, the RTA will continue to consult with the DWE and DoP to ensure that these issues are satisfactorily addressed. This may consist of further hydraulic investigations during the detailed design and development of further ameliorative measures where necessary.

The comments regarding the acceptability or otherwise of the afflux generated by the Hume Highway Duplication are noted. As part of the options development phase for the individual sections, design principles were developed which aimed to provide an overarching framework and direction for the concept design. One of the design principles developed included minimising flooding impacts on adjacent properties and road users. The detailed design of Hume Highway Duplication will further consider these design principles.

Should the Hume Highway Duplication separate any parcel of floodplain land, appropriate drainage infrastructure would be incorporated to maintain all necessary hydrological capacities. The detailed design will include hydraulic considerations to ensure that drainage meets appropriate requirements. The considerations may include the location, type and size of the drainage structures.

Chapter 5 of the Environmental Assessments for the individual sections of the Hume Highway Duplication assessed the potential impacts on the existing environment (built and natural) and inhabitants from any change in the flooding regime as a result of the proposed works. The detailed design of Hume Highway Duplication will further consider the development of mitigation and management measures for potential changes in the flooding regime.

The support for the various mitigation and management measures provided by the DWE is noted.

2.5 Resource management

Submission number(s)

5, 6

Issue description

In summary, the respondent raised the following issues:

- In relation to securing a water supply, the RTA will be required to undertake a detailed assessment of the impacts on surface and/or groundwater resources and existing water users prior to a licence or approval to access the water. This may take the form of Bore Management Plans for individual works in the case or groundwater.

Response

The RTA is committed to minimising impacts on surface and/or groundwater resources and existing water users. Strategies will be developed to manage groundwater issues associated with surrounding land uses, including management of recharge areas in consultation with the relevant government agencies (refer to Table 3.1, Ref # G1). These strategies will be documented in the relevant environmental management plans and additional reporting and documenting of impacts as required by a licence or approval will be undertaken in consultation with the relevant government agencies.

2.6 Greenhouse gas emissions

Submission number(s)

7

Issue description

In summary, the respondent raised the following issues:

- The Environmental Assessments do not adequately assess the emissions from future traffic, or cement production for the proposed concrete batching plant. Recent literature on climate change has not been incorporated and only the local impacts are considered with no consideration to global warming.
- With no clean, carbon neutral fuel available and the expected growth in traffic, the Hume Highway Duplication is counterproductive to reducing carbon emissions.
- The management commitments associated with greenhouse gas emissions in the Environmental Assessments and referred documentation is refuted and the lack of calculations of emissions expected to result from the Proposal is noted. Addressing the impacts in written form is inadequate and that the project should physically reduce carbon emissions.

Response

Impacts associated with greenhouse gas emissions were not identified as a key issue in the Director-General's requirements for the Hume Highway Duplication Environmental Assessments. Furthermore, following the environmental risk analysis undertaken for the Hume Highway Duplication (as detailed in the Director-General's requirements), impacts from greenhouse gas emissions were not identified as an additional key issue. However, it was considered appropriate for the Hume Highway Duplication Concept Plan Environmental

Assessment to provide a cumulative assessment of anticipated greenhouse gas emissions during construction and operation (refer to Chapter 10 of the Concept Plan Environmental Assessment) instead of covering potential impacts within the Environmental Assessments of the individual sections.

The assessment within the Concept Plan Environmental Assessment provided estimates of the amount of CO_2 which could be emitted during construction for the whole Hume Highway Duplication. Calculations were based on similar major road construction projects which indicated some 110,000 tonnes of CO_2 potentially being emitted. Additionally, it was calculated that 35,000 tonnes of CO_2 could be emitted as a result of vegetation removal. The total CO_2 emissions during construction of the Hume Highway Duplication would therefore be in the order of 145,000 tonnes.

During the detailed design process the RTA will examine strategies for reducing the greenhouse gas emission impacts during construction such as the use of partial cement substitutes (eg. fly ash and/or steel slag), use of recycled aggregates, sourcing local construction materials to reduce transportation needs and use of renewable energy.

The RTA acknowledges that traffic volumes are predicted to increase on the Hume Highway (approximately 60 percent by 2029 compared to existing levels). However, the proposed duplication is not expected to induce increases in traffic volumes above the existing historic rate of growth. As such, the greenhouse gas emissions from the operation of the Hume Highway Duplication would be considered relatively minor.

Nevertheless, the RTA recognises that impacts from greenhouse gas emissions is increasingly an issue that needs to be addressed and is actively involved in researching methods for reducing its own greenhouse gas emission impact and those associated with road transport industry generally.

In addressing the issue of road transport related greenhouse gas emissions which are not attributable to specific projects, the RTA has committed to a number of initiatives and strategies at the government level. The RTA has built a solid research foundation and fostered strategic partnerships in the vehicle emissions field by working with key government agencies and the transport industry. An example of one of the achievements include implementation of the diesel National Environment Protection Measure which provides a range of measures that States can implement to reduce emissions from diesel vehicles. It is anticipated that initiatives such as the above and others committed to at a government level will have a considerable impact on reducing greenhouse gas emissions.

2.7 Geology, soils and water quality

Submission number(s)

5, 6, 8

Issue description

In summary, the respondents raised the following issues:

- Further detailed information on the management of potential erosion of stream bank areas, gully areas and the management of the potential movement of sediments is required to allow for the assessment of potential impacts on the adjacent watercourses.

- All soil and erosion and sediment control works are to be completed and in place prior to the commencement of any works or stockpiling activities that may have the potential to generate soil erosion or sediment.

Response

The mitigation and management strategies for minimising construction impacts on erosion and sedimentation and water quality will be developed in accordance with the principles described in the draft *Managing Urban Stormwater: Soils and Construction, Volume 2 – Book 4 – Main Road Construction*. Erosion and sedimentation controls will be installed, maintained and managed prior to and during construction. Where relevant, the mitigation and management strategies will also refer to other government guidelines, such as DWE's riparian management guidelines. The details of the management strategies will be documented during the development of the environmental management plans.

2.8 Community issues and involvement

Submission number(s)

1

Issue description

In summary, the respondent raised the following issues:

- Further consultation with the Mullengandra community is required, particularly in regard to potential visual amenity and noise impacts on the primary school and Royal Oak Inn.
- Effort should be taken to retain the existing old trees to complement the character of the Royal Oak Inn and town surrounds which may mean that the new alignment is shifted approximately 10 m further to the east and thus provide a wide median.
- The RTA, in conjunction with the local community, should develop an interpretation site at Wright Hills as part of a rest area to encourage awareness of the biodiversity and heritage values of Hume Highway and surrounding region.

Response

Consultation with residents within the Mullengandra community who could potentially affected by the Woomargama to Mullengandra duplication section commenced in August 2006. Affected residents were informed of the Hume Highway Duplication through one-to-one meetings, telephones conservations and letters. Issues that were raised by the residents were incorporated into the various environmental assessment reports prepared for the Hume Duplication, particular those relating to the Woomargama to Mullengandra section. Ongoing consultation with affected residents continued throughout the preparation of the Environmental Assessment of the Hume Highway Duplication to update and address any issues.

The RTA is committed to consulting, prior to construction, with owners and residents of nearby residences that may be affected by noise or vibration generating activities and where necessary, consulting with owners and residents regarding the implementation of operational noise mitigation measure (refer to Table 3.1, Ref # N5 and N9).

Throughout construction of the Hume Highway Duplication the RTA will provide opportunities for the local community to provide feedback or discuss any aspect of the proposed works, such as concerns regarding visual amenity. Contact names and phone numbers of relevant staff will

be provided in newsletters and media coverage and also on a dedicated internet site (refer to Table 3.1, Ref # C1 and C2).

As part of the options development phase for the individual proposals, design principles were developed which aimed to provide an overarching framework and direction for the concept design. A number of the design principles developed included specific design considerations which sought to maintain the existing character of the Royal Oak Inn and town surrounds, such as retaining existing stands of vegetation and ensuring views of the Inn from the northbound carriageway remain unchanged.

Where practicable, the RTA has given consideration to utilising redundant sections of the existing Hume Highway as rest stops. This will be further investigated during detailed design of the individual sections. Where necessary, the RTA may choose to consult with members of the local community to develop interpretation sites as part of the rest stops.

2.9 Environmental licensing

Submission number(s)

3, 4, 5, 6, 8

Issue description

In summary, the respondents raised the following issues:

- Some ancillary activities associated (eg. concrete batch plants, crushing plants) associated with the Hume Highway Duplication, which are scheduled in the *Protection of the Operations Act 1997* (POEO Act), will require an Environment Protection Licence.
- Any proposed groundwater works whether new or replacement works and any proposed surface water extraction may require a licence or approval under the *Water Act 1912* or *Water Management Act 2000*. Any existing groundwater works not owned by the RTA may need to be re-licensed appropriately.
- In the event of an exemption from requiring a licence or approval under the *Water Management Act 2000*, any extraction must be consistent with the rules of the relevant Water Sharing Plan including cease to pump levels for surface water.
- Localised re-alignments of waterways may require a licence or approval under the *Water Act 1912* or *Water Management Act 2000* and therefore will require full assessment of any impacts including, but not limited to, existing water users, geomorphologic issues, environmental issues, water quality issues, floodplain issues, details of any proposed protection works in the form of rock lining or the like.
- The installation of any in-river dam may require a licence or approval under the *Water Act 1912* or *Water Management Act 2000* and therefore will require full assessment of any impacts including, but not limited to, existing water users, geomorphologic issues, environmental issues, water quality issues, floodplain issues, details of any proposed protection works in the form of rock lining or the like. Notwithstanding, the construction of an in-river dam to allow for water extraction is not supported.
- The capturing of surface water in dams is subject to legislative control under Section 53 of the *Water Management Act 2000*. Any capture of water in any storage in excess of Maximum Harvestable Rights Dam Capacity for the property may require a licence.
- Within the Environmental Assessment for the Woomargama to Mullengandra section, there are a contradicting statements regarding the need to a obtain water access licence (refer to p. 107, 'Surface water from the Murray River). Clarification is needed.

- In regards to the permit and/or licence requirements under the *Fisheries Management Act 1994* relating to dredging and reclamation and blockage to fish passage, State government agencies are exempt from these requirements but will need to obtain concurrence of DPI.

Response

Comments regarding the need for Environment Protection Licenses under the POEO Act are noted. Environment Protection Licences will be obtained where necessary.

Comments regarding the need to require a licence or approval under the *Water Act 1912* or *Water Management Act 2000* are noted. Any licence or approval will be obtained where necessary. Additional reporting and documenting of impacts as required by the licence or approval will be undertaken in consultation with the relevant government agencies. In the event of an exemption from requiring a licence or approval under the *Water Management Act 2000*, the RTA will undertake the activity to be consistent with the rules of the relevant Water Sharing Plan and in consultation with the relevant government agencies.

Comments relating to the need for State government agencies to obtain the concurrence of DPI in regard to permit and/or licence requirements under the *Fisheries Management Act 1994* is noted. The RTA will undertake consultation with DPI in areas where there is potential for dredging and reclamation (as defined under the *Fisheries Management Act 1994*) to occur for the Hume Highway Duplication. Additionally, the RTA is committed to maintaining fish passage during construction.

2.10 Environmental Assessment documentation

Submission number(s)

1, 3, 4

Issue description

In summary, the respondents raised the following issues:

- The assessments for the Hume Highway Duplication clearly identify the key impacts.
- The term 'Guiding Principle' in the header row implies a connotation that compliance with the referenced document is not necessary required. As such, it is recommended that the heading be changed to 'Reference Document' or 'Policy/Methodology'.
- The Statement of Commitments needs to be consistent with the information and commitments provided in the body of the Environmental Assessments.

Response

The comment regarding the assessments for the Hume Highway Duplication clearly identifying the key impacts is noted.

As it is not the intention of the RTA to avoid compliance, the suggestion to change the column heading to 'Reference Document' is agreed. The amendment has been included in the revised Statement of Commitments for the Hume Highway Duplication (Table 3.1).

All mitigation and offset measures stated in the Environmental Assessments for the individual proposals informed the development of the draft Statement of Commitments for the Hume Highway Duplication. These draft Statement of Commitments have been revised following consideration of the issues raised in the public and stakeholder submissions (refer to Table 3.1).

The revised commitments will guide the subsequent phases of the Hume Highway Duplication development to minimise impacts on the environment.

3 Revised Statement of Commitments

The environmental assessments of the Hume Highway Duplication and associated infrastructure identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public and stakeholder submissions, the draft Statement of Commitments for the Hume Highway Duplication (refer to Chapter 7 of the Environmental Assessments for the individual sections) has been revised. The revised commitments will guide the subsequent phases of the Hume Highway Duplication development to minimise impacts on the environment.

Revision of the draft Statement of Commitments provided in the Concept Plan Environmental Assessment was not considered necessary. Instead, relevant commitments were included in the revised Statement of Commitments for each section of the Hume Highway Duplication below.

The revised Statement of Commitments, including commitments relating to the key issues described in the Director-General Environmental Assessment requirements are provided in Table 3.1.

Table 3.1: Revised Statement of Commitments

Objective	Ref #	Commitment	Timing	Reference Document
General				
Ensure the adequacy and compliance of environmental management measures	GE1	Environmental Management System(s) will be established and maintained to implement best practice management for environmental impacts.	Pre-Construction and Construction	RTA Specification DCM G36 ISO 14001
	GE2	Dedicated environmental personnel appointed to monitor the performance of the environmental management measures of the Proposal.	Pre-Construction and Construction	
Consultation				
Ensure effective and receptive consultation with the community is undertaken	C1	Newsletters and media coverage will be used regularly to cover the proposed works schedule, areas in which these works are proposed and the construction hours. The newsletters and media coverage will provide contact names and phone numbers of relevant staff.	Pre-Construction and Construction	RTA Community Involvement Practice Notes and Resource Manual (RTA 1998)
	C2	An internet site which contains periodic updates of work progress, consultation activities and planned work schedules will be established and maintained regularly. The internet site will provide contact names and phone numbers of relevant staff.	Pre-Construction and Construction	RTA Community Involvement Practice Notes and Resource Manual (RTA 1998)
Ensure effective management of complaints	C3	A 24 hour toll-free complaints contact telephone number will be established for the Proposal.	Pre-Construction	RTA Community Involvement Practice Notes and Resource Manual (RTA 1998) AS 4269 Complaints Handling
	C4	A system to receive, record, track and respond to complaints within a specified timeframe will be established.	Pre-Construction and Construction	RTA Community Involvement Practice Notes and Resource Manual (RTA 1998) AS 4269 Complaints Handling
Biodiversity				
Minimise native vegetation disturbance	B1	The limits of clearing and other native vegetation disturbance will be clearly marked on relevant work plans and on site with temporary fencing installed prior to clearing.	Construction	RTA QA Specification G40 Clearing and Grubbing
	B2	Equipment storage areas and stockpile areas will be located in existing cleared locations.	Construction	RTA Stockpile Management Procedures 2001
Minimise weed establishment	B3	Soil containing weeds will be stockpiled at least 25 m away from watercourses and native vegetation. Sediment fences will be erected down slope from stockpiled soil.	Construction	RTA QA Specification R178 Vegetation RTA Stockpile Management Procedures 2001

Objective	Ref #	Commitment	Timing	Reference Document
	B4	Noxious weeds in areas disturbed by construction activities will be managed for a minimum of two years post-construction completion.	Construction and Post-Construction	RTA QA Specification G40 Clearing and Grubbing *Noxious Weeds Act 1993*
Offset the residual impacts of the Proposal on biodiversity, particularly on Box Gum woodland and habitat for threatened species so as to maintain or improve biodiversity values in the area in the long term	B5	A biodiversity offset strategy will be developed in consultation with DECC and other relevant government agencies. The offset strategy will include but not be limited to: • Revegetation within the road corridor • Revegetation on other land • A range of management actions to improve the regional, landscape or site value of native vegetation within the region. The strategy will be developed utilising the relevant principles within the Biometric and threatened species assessment tools outlined within the Native Vegetation Regulation 2005.	Pre-Construction and Construction	DEC Restoration and Rehabilitation Guidelines RTA Compensatory Habitat Policy and Guideline (draft) Biometric and threatened species assessment tools (Native Vegetation Regulation 2005)
	B6	Disturbed areas will be progressively revegetated using Box Gum Woodland plant species of local provenance	Construction	
Minimise impacts on hollow dependent fauna species	B7	An appropriately qualified person will check tree hollows prior to clearing for hollow-dependent fauna. Fauna found occupying tree hollows will be relocated into suitable available hollows or nesting boxes within adjacent vegetation. The suitability of adjacent vegetation for relocation will be determined on the basis of expert advice.	Construction	
	B8	Stands containing hollow-bearing trees will be cleared using a two stage clearing process with adjacent non-hollow-bearing trees to be cleared first.	Construction	
	B9	An appropriately qualified person will provide advice on any relocation of logs and dead trees that are to be cleared to provide habitat in adjacent areas where feasible and practicable. Such relocation will be undertaken in a manner to minimise damage to existing vegetation and will not occur in high condition remnant vegetation.	Construction	
	B10	Nest boxes will be fixed to suitable retained vegetation and in a way that does not damage the tree.	Construction and Post-Construction	
Maintain terrestrial fauna connectivity	B11	Drainage culverts will be designed to facilitate movement of fauna species where feasible.	Pre-Construction	

Objective	Ref #	Commitment	Timing	Reference Document
	B12	Expert advice will be sought to assist in identifying the need and location for crossing points for Squirrel Glider populations. Based on this advice and in consultation with DECC, the location and design of these crossing points will be incorporated into the Proposal.	Pre-Construction	
	B13	Expert advice will be sought to assist in identifying the need and location for crossing points based on the areas of potential habitat for the Pink-tailed Worm-lizard and Striped Legless Lizard. Based on this advice and in consultation with DECC, the location and design of crossing points will be incorporated into the Proposal where feasible.	Pre-Construction	
Minimise impacts to Pink-tailed Worm-lizard and Striped Legless Lizard	B14	An appropriately qualified person will check Pink-tailed Worm-lizard and Striped Legless Lizard habitat prior to construction. Individuals found in the construction footprint will be relocated into suitable habitat. The suitability of adjacent habitat for relocation will be determined on the basis of expert advice.	Pre-Construction	
Ensure effectiveness of threatened species mitigation measures	B15	A Threatened Species Monitoring Program will be developed to allow the effectiveness of mitigation and offset measures to be assessed and allow for their modification if necessary.	Pre-Construction, Construction and Post Construction	
Maintain fish passage	B16	Waterway crossings will be designed to facilitate fish passage where appropriate and in consultation with relevant government agencies.	Pre-Construction	Fishote: Policy and Guidelines for Fish Friendly Waterway Crossings (NSW Fisheries 2003) Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings (Fairfull and Witheridge 2003)
	B17	Fish passage will be maintained during construction.	Construction	Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings (Fairfull and Witheridge 2003)
Minimise impacts to aquatic habitat	B18	Riparian areas disturbed by the Proposal will be progressively revegetated using plant species of local provenance.	Construction	
	B19	DPI Fisheries will be consulted regarding use of cleared vegetation in re-snagging programs for waterways.	Construction	

Objective	Ref #	Commitment	Timing	Reference Document
	B20	Snag management will be undertaken in consultation with relevant government agencies and will follow the management principles of lopping as the first priority followed by realignment, then relocation with removal as the last resort.	Construction	Policy Guidelines for Aquatic Habitat Management and Fish Conservation (NSW Fisheries 1999)
	B21	A monitoring program will be developed to allow the effectiveness of revegetating the riparian areas to be assessed and modified if necessary.	Pre-Construction, Construction and Post Construction	
Aboriginal heritage				
Minimise impact on Aboriginal heritage items	AH1	Any Aboriginal heritage items directly or indirectly impacted will be managed in consultation with Aboriginal stakeholders and DECC including development of the appropriate management and mitigation strategy.	Pre-Construction	
	AH2	Test excavation will be undertaken for the following Aboriginal heritage items: T-PAD-1, K3, K10, K-PAD-6, K-PAD-8, K-PAD-9, LB3, LB4, LB-PAD-3, YY7, YY14, YY17, M-PAD-1, M-PAD-3 and LB-PAD-1 and LB-3 (if impacted) and any additional management and mitigation measures will be developed in consultation with Aboriginal stakeholders and DECC.	Pre-Construction	
	AH3	An Aboriginal Cultural Heritage Management Plan (ACHMP) will be prepared, detailing the outcomes of the archaeological test excavations, the proposed mitigation and management measures including the management of any new impacts and any objects encountered during construction, and the process for ongoing consultation of the Aboriginal stakeholders and DECC. The ACHMP will be prepared in consultation with Aboriginal stakeholders and DECC.	Pre-Construction and Construction	
	AH4	Where appropriate through consultation with Aboriginal stakeholders, Aboriginal heritage items within the construction corridor not directly impacted will be marked on construction plans, fenced and signposted where necessary.	Pre-Construction and Construction	
	AH5	All personnel working on site will receive training in their responsibilities under the *National Parks and Wildlife Act 1974*. Site specific training will be developed in consultation with Aboriginal stakeholders and will be given to workers when working in the vicinity of identified heritage items.	Construction	*National Parks and Wildlife Act 1974*

Objective	Ref #	Commitment	Timing	Reference Document
	AH6	Should any human remains be uncovered during works, all works in the vicinity of the find will cease immediately, the Project Manager/Director and the Environmental Manager will notify the NSW Police, DECC, the RTA's Environmental Officer (Heritage) and the RTA's Senior Environmental Officer and will seek specialist advice if required. Works will not re-commence until appropriate clearance has been received.	Construction	*National Parks and Wildlife Act 1974*
Non-Aboriginal heritage				
Minimise impacts on non-Aboriginal heritage items	H1	Where the Proposal will directly impact heritage items of state and local significance, detailed heritage investigations and/or research will be performed prior to construction. Information collected will be documented in appropriate archival records.	Pre-Construction	RTA Heritage Guidelines *Heritage Act 1977*
	H2	Where heritage items are not directly impacted, care will be taken to not disturb them. This will include briefing of the construction works team to protect such assets during the construction phase, minimising access and clear delineation of items including fencing and signage would be provided where necessary in consultation with a heritage specialist. Identified heritage items will be clearly marked on construction plans.	Pre-Construction and Construction	
	H3	A Non-Aboriginal Heritage Management Plan (NAHMP) will be prepared, detailing the proposed mitigation and management strategies for all non-Aboriginal heritage items either impacted directly or indirectly, the proposed management strategy for any new objects uncovered during construction activities and the process for consultation with the Heritage Council of NSW.	Pre-Construction	
	H4	All personnel working on site would receive training in their responsibilities under the *Heritage Act 1977*. Site-specific training will be given to workers when working in the vicinity of identified heritage items.	Pre-Construction and Construction	*Heritage Act 1977*
Resource Management				
Reduce demand on resources	RM1	Geotechnical investigations will be undertaken to identify suitable material on site for any additional fill material requirements.	Pre-Construction	
	RM2	The Proposal will be designed to achieve balanced earthworks where feasible.	Pre-Construction	
	RM3	Construction practices to minimise water use including investigating opportunities to reuse and recycle water will be adopted.	Pre-Construction and Construction	

Objective	Ref #	Commitment	Timing	Reference Document
	RM4	Appropriate water sources for the construction will be investigated and identified in consultation with the relevant government agency.	Pre-Construction	
Minimise transport associated with the demand for resources	RM5	Where feasible, suitable materials will be obtained from local existing licensed quarries.	Construction	
Managing the sourcing of additional fill material outside of the road corridor should it be required	RM6	Only suitably approved and licensed quarries would be used for fill material outside of the road corridor and accordingly environmental impacts from the use of such quarries would be addressed and managed through appropriate licensing and approval processes.	Pre-construction and Construction	RTA Stockpile Management Procedures 2001
Hydrology				
Minimise the impact on groundwater resources and land capability and manage land degradation relating to waterlogging and salinisation	G1	Strategies will be developed to manage groundwater issues associated with surrounding land uses, including management of recharge areas in consultation with the relevant government agencies.	Construction	
Minimise the impact of high water table on road infrastructure	G2	Appropriate subsurface drainage infrastructure (e.g. blind ditches) will be installed in areas identified as having shallow groundwater levels, to divert groundwater away from pavement subgrade.	Construction	
Traffic				
Minimise impact on traffic due to construction	T1	Construction vehicle movement arrangements will be developed to minimise impacts on other road users with specific regard to other road works in the region, local traffic movement requirements (stock or machinery) and peak traffic volumes, including long weekends and holiday periods.	Construction	RTA QA Specification G10 Control of Traffic
	T2	Construction will be planned to minimise disruption to traffic including use of road occupancy licences, variable message signage, static signage and coordination between sections as far as feasible through Hume Highway Duplication coordination meetings.	Construction	RTA QA Specification G10 Control of Traffic
	T3	Periodic review and survey of road conditions would be undertaken in consultation with Council(s) and rectification works undertaken as expediently as possible where considered necessary and/or where there are safety concerns.	Construction	
Social and Economic Considerations				
Minimise property impacts to adjacent landholders	E1	All property will be acquired in accordance with the RTA Land Acquisition Policy.	Pre-Construction	RTA Land Acquisition Policy

Objective	Ref #	Commitment	Timing	Reference Document
Minimise impacts to property access following construction	E2	Negotiations for property acquisition will include consultation on property adjustments where required to maintain farm management practices.	Pre-Construction	
Minimise impact to local and regional roads from construction traffic impacts	E3	Dilapidation surveys of regional and local roads used by construction traffic will be undertaken in consultation with the relevant local government authority. The RTA will be responsible for any necessary repair of deterioration attributable to the impacts of construction traffic.	Pre-Construction and Post-Construction	
Minimise the social and economic impact of the construction works on the local community	E4	Property access will be maintained for the duration of construction with any temporary access requirements being provided in consultation with adjacent landowners where necessary.	Construction	
	E5	Advance notification will be given to property owners on project schedules, construction works and access arrangements.	Pre-Construction and Construction	RTA Community Involvement Practice Notes and Resource Manual (RTA 1998)
Air Quality and Greenhouse Gases				
Minimise generation of dust	A1	Dust will be visually monitored and where necessary best practice mitigation measures will be implemented to minimise the generation of dust.	Construction	Australian Design Rules and relevant manufacturers specifications
	A2	Dust deposition gauges will be installed at sensitive locations, and the performance of the dust suppression actions will be assessed against the DECC guideline.	Construction	Approved Methods for Sampling and Analysis of Air Pollutants in NSW (DEC 2007)
Minimise greenhouse gas emissions and air pollution	A3	Plant and equipment will be maintained in a proper and efficient condition and operated in a proper and efficient manner.	Construction	Australian Design Rules and relevant manufacturers specifications
	A4	Greenhouse gas emission targets for the construction of the Proposal will be in line with government guidelines.	Construction	
	A5	There will be no burning of green waste or any other wastes.	Construction	
	A6	Construction will aim to use electrical energy derived from a renewable energy source accredited by the National Green Power Accreditation Steering Group (or equivalent) for the supply of at least 50 per cent of the on-site electrical energy requirement for the Proposal's construction.	Construction	

Objective	Ref #	Commitment	Timing	Reference Document
Noise and Vibration				
Establish baseline conditions prior to the start of construction	N1	As necessary, condition surveys will be undertaken on buildings and structures within the potential area of vibration impact prior to commencement of rock-breaking and blasting activities.	Pre-Construction	Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration (ANZECC 1990)
Minimise the impact of construction noise and vibration on surrounding residents and where necessary, comply with all relevant standards to reduce noise and vibration to an acceptable level	N2	The standard construction hours for the Proposal will be 7.00am to 7.00pm Monday to Friday; 7.00am to 4.00pm Saturdays and no work on Sunday or public holidays.	Construction	
	N3	Works required outside of standard construction hours will only be undertaken where the works are essential to be completed in this period and after appropriate consultation with affected residences, the DECC, and local council and would be planned to minimise disruption to freight traffic.	Construction	RTA Environmental Noise Management Manual (RTA 2001)
	N4	All plant and equipment will be well maintained and fitted with adequately maintained silencers that meet the vehicle design specifications. At sensitive locations 'broadband' reversing alarms or other alternative vehicle motion warning systems will be considered in lieu of tonal reversing alarms.	Construction	AS 2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites
	N5	Prior consultation and notification will be undertaken with nearby residences that may be affected by noise or vibration generating activities.	Construction	RTA Environmental Noise Management Manual (RTA 2001) RTA Community Involvement Practice Notes and Resource Manual (RTA 1998)
	N6	Construction compounds will be located to limit noise impacts on adjacent residential premises to not more than 5 dB(A) above background.	Construction	
	N7	Best management practices will be adopted in accordance with the RTA Environmental Noise Management Manual. Inspections and noise monitoring will be undertaken to determine the effectiveness of mitigation strategies.	Construction	RTA Environmental Noise Management Manual (RTA 2001)
	N8	Controlled blasting techniques will be employed where feasible. Test blasts will be implemented at locations furthest from residential receivers and noise and vibration levels measured at the nearest structures would be undertaken.	Construction	Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration (ANZECC 1990)

Objective	Ref #	Commitment	Timing	Reference Document
Minimise the operational noise impact on existing nearby residences	N9	Mitigation measures implemented in accordance with the RTA Environmental Noise Management Manual. These will be implemented during detailed design and in consultation with relevant property owners.	Construction and Post-Construction	RTA Environmental Noise Management Manual (RTA 2001) Environmental Criteria for Road Traffic Noise (EPA 1999)
Visual				
Minimise visual impact and continue existing landscape and vegetation types	V1	Disturbed areas will be progressively revegetated using plant species of local provenance selected in consultation with a qualified landscape officer.	Construction	RTA QA Specification R178 Vegetation
	V2	The landscaping plans for the Proposal will consider the retention of existing views and vistas from the highway having regard to road user safety requirements.	Pre-Construction and Construction	
	V3	Cuttings and embankments will be graded out wherever feasible to reflect and best fit the characteristics of the local landform.	Construction	
Waste Minimisation and Management				
Reduce creation of waste and maximise re-use and recycling.	W1	Reuse and recycling and avoidance strategies in accordance with the NSW Government's Waste Avoidance and Resource Recovery Strategy 2006 will be adopted.	Construction	Waste Avoidance and Resource Recovery Strategy 2006
Ensure waste generated is managed appropriately	W2	Waste materials will be classified and managed in accordance with DEC Environmental Guidelines: Assessment and Classification & Management of Liquid and Non-liquid Wastes.	Construction	DEC Environmental Guidelines: Assessment and Classification & Management of Liquid and Non-liquid Wastes
Geology, Soils and Water Quality				
Minimise scour impacts	S1	Scour protection will be installed in creek/river bank areas at risk of erosion as necessary.	Pre-Construction and Construction	RTA QA Specification G38 Soil and Water Management
	S2	Culverts will be installed as early as possible in the construction program to ensure that transverse drainage is in place during early stages of construction. Permanent stream protection measures and other waterway structure requirements will also be established as early as possible.	Construction	
Minimise the risk of water contamination and pollution of local watercourses	S3	Any construction materials and fuels stored or used on site will be appropriately managed to minimise the risk of water contamination.	Construction	Managing Urban Stormwater: Soils and Construction (Landcom 2005)

Objective	Ref #	Commitment	Timing	Reference Document
	S4	Operational stormwater controls will be implemented to meet identified receiving water objectives. These may include dispersed stormwater treatment through grassed swales, constructed treatment measures such as operational stormwater retention basins and the use of gross pollutant traps.	Pre-Construction and Construction	
	S5	The requirement for spill containment will be made on the basis of a site-specific assessment that considers the following: • The sensitivity of the receiving environment. • The likelihood of an accident occurring that would result in a spill. • The proximity of the discharge point to the receiving waters. • The condition of the receiving waters.	Pre-Construction and Construction	
Minimise disturbance to landform, geology and soils and prevent erosion and sedimentation	S6	A soil conservationist will be engaged to provide advice on management of soils through detailed planning and construction.	Pre-Construction and Construction	
	S7	Erosion and sedimentation controls will be installed, maintained and managed prior to and during construction. The principles in Managing Urban Stormwater: Soils and Construction, Volume 2 Book 4 - Main Road Construction will apply. If any issues are encountered which are not covered by Volume 2, Managing Urban Stormwater: Soils and Construction, Volume 1 will be used.	Pre-Construction and Construction	Managing Urban Stormwater: Soils and Construction, Volume 2 Book 4 - Main Road Construction (draft) Managing Urban Stormwater: Soils and Construction (Landcom 2005)
	S8	Sediment will be cleared from behind barriers on a regular basis and controls will be monitored and maintained to ensure they work effectively at all times.	Construction	RTA QA Specification G38 Soil and Water Management
	S9	Site access sediment controls such as hardstand material or rumble grids will be installed at entry and exit points to minimise the tracking of soil and particulates onto pavement surfaces.	Construction	
	S10	Stockpiles will be established on slopes less than 2:1 (horizontal to vertical).	Construction	RTA Stockpile Management Procedures 2001
	S11	All stockpiles sites will be designed, established, operated and decommissioned in accordance with RTA Stockpile Management Procedures 2001. Stockpiles will be located not less than 100 metres from the high bank of any rivers or drainage lines.	Construction	RTA Stockpile Management Procedures 2001
	S12	Rehabilitation of disturbed areas will be undertaken progressively.	Construction	RTA QA Specification R178 Vegetation

Objective	Ref #	Commitment	Timing	Reference Document
Contaminated Land				
Identification and investigation of potentially contaminated sites	CL1	A review will be undertaken of all land impacted by the Proposal to identify potentially contaminated sites. Potentially contaminated sites will be further investigated in accordance with the RTA's Contaminated Land Management Guideline.	Pre-Construction	Contaminated Land Management Guideline (RTA 2005) Guidelines for Assessing Service Station Sites (EPA1994) Sampling Design Guidelines (EPA 1995)
Management of previously unidentified contamination	CL2	If site contamination investigations indicate that contaminants are present on the site in concentrations above the intended land use criteria, then an appropriate risk based management plan approach would be developed in accordance with the RTA's Contaminated Land Management Guideline. Where contamination is found to pose unacceptable risk to either the environment or human health receptors a remedial action plan will be developed and remediation works will be undertaken.	Pre-Construction and Construction	Contaminated Land Management Guideline (RTA 2005) SEPP 55 – Remediation of Land *Contaminated Land Management Act 1997* DEC Guidelines for NSW Site Auditor Scheme
Hazard and Risk				
Minimise the risk of an incident during construction	R1	Bunded storage areas will be located away from watercourses and will be established for oils and other hazardous liquids in accordance with Australian Standards. Spillages will be contained and collected any spillages for appropriate disposal.	Construction	AS 1940 The Storage and Handling of Flammable and Combustible Liquids
	R2	Activities with the potential for spillage such as refuelling, maintenance of equipment, mixing of cutting oil and bitumen will be conducted in bunded areas to prevent discharge into watercourses.	Construction	AS 1940 The Storage and Handling of Flammable and Combustible Liquids
	R3	Potentially hazardous and contaminating activities (such as washing construction plant, concrete mixers, bitumen surfacing equipment and handling hazardous chemicals) will be conducted in bunded areas away from watercourses.	Construction	AS 1940 The Storage and Handling of Flammable and Combustible Liquids