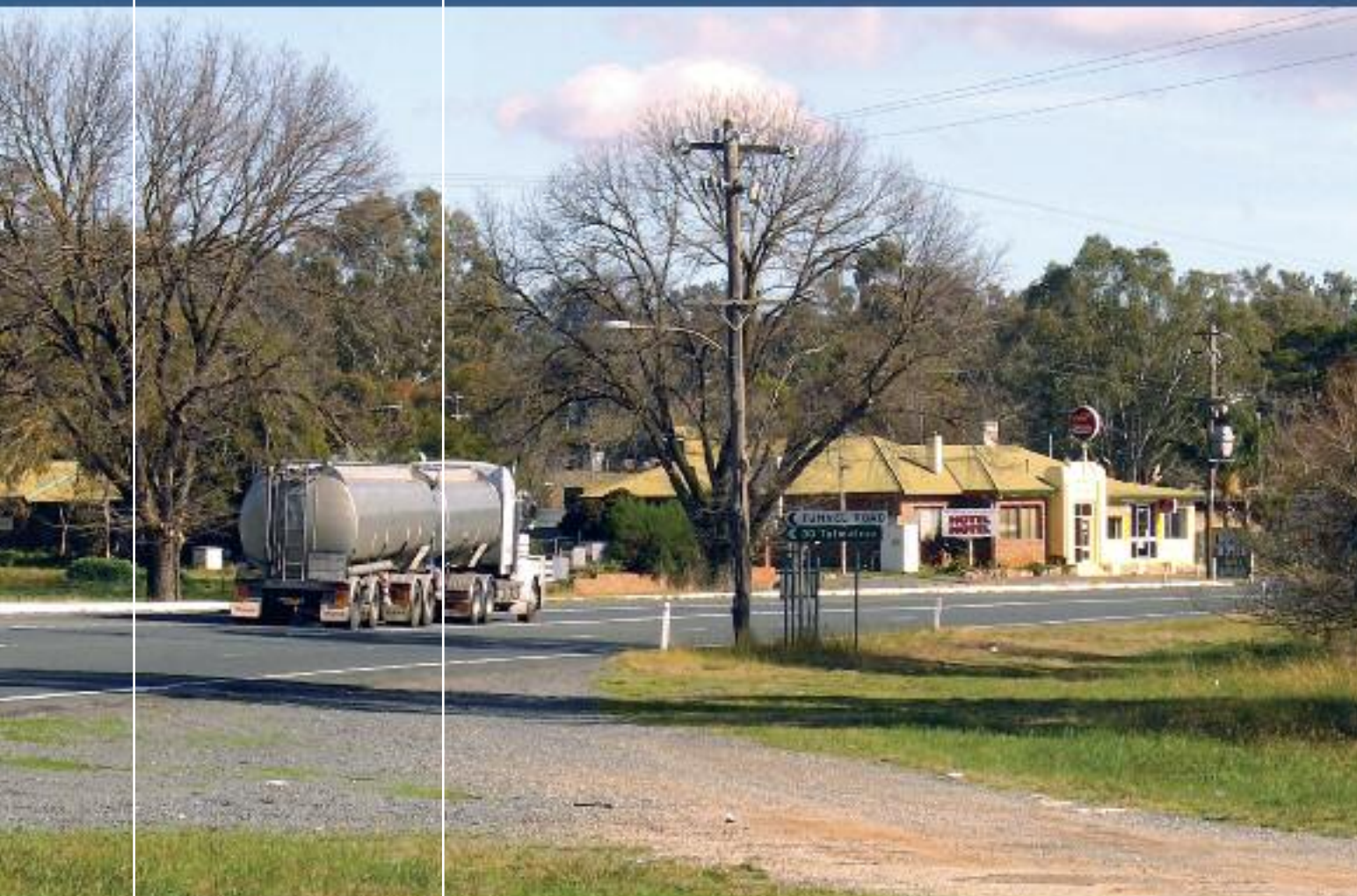




Hume Highway Upgrade
Woomargama bypass
Environmental Assessment
Submissions Report
November 2009

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Hume Highway Upgrade Woomargama bypass

Submissions Report

November 2009

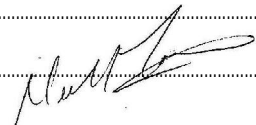
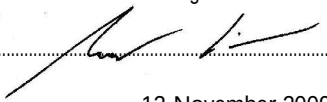
NSW Roads and Traffic Authority



Parsons Brinckerhoff Australia Pty Limited ABN 80 078 004 798

*Ernst & Young Centre,
Level 27, 680 George Street
Sydney NSW 2000
GPO Box 5394
Sydney NSW 2001
Australia
Telephone +61 2 9272 5100
Facsimile +61 2 9272 5101
Email sydney@pb.com.au*

NCSI Certified Quality System ISO 9001

Author: Adam Moore
Signed: 
Reviewer: Neville Moran
Signed: 
Approved by: Hugh Swinbourne
Signed: 
Date: 13 November 2009
Distribution: RTA; PB File; DoP



CONSUMER

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1 Introduction and background

1.1 The Project

The NSW Roads and Traffic Authority (RTA) proposes to construct a bypass of the village of Woomargama located on the Hume Highway approximately 50 kilometres north of Albury, 15 kilometres south of Holbrook and approximately 95 kilometres south-east of Wagga Wagga. The project would include the construction of approximately nine kilometres of new dual carriageway from approximately 7.5 kilometres north of the village to three kilometres south of the village.

The project would include:

- Approximately nine kilometres of dual carriageway.
- An at-grade intersection with the existing Hume Highway approximately 6.5 kilometres north of Woomargama village.
- Bridges over Sandy Creek.
- Six deep cuttings.
- Bridges over Mountain Creek.
- An at-grade intersection with the existing Hume Highway approximately two kilometres south of Woomargama village.
- An upgrade to the at-grade intersection at Fairbairn Road.

A more detailed description of the project is provided in Chapter 5 of the *Hume Highway Upgrade Woomargama Bypass Environmental Assessment* (the 'environmental assessment'; RTA September 2009a).

1.2 Statutory context

The Minister for Planning has declared, by Order dated 20 December 2007 and published in the NSW Government Gazette (No 4 of 2008), that the Hume Highway bypass of Woomargama is a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) applies. The Minister has also declared, by order dated 4 March 2009 and published in the gazette (No 51 of 2009), that the Hume Highway bypass of Woomargama is a critical infrastructure project under section 75B of the EP&A Act.

In accordance with the requirements of the EP&A Act, an environmental assessment was prepared to assess the potential impacts of the proposed bypass.

1.3 Environmental assessment exhibition

The environmental assessment was publicly displayed for 34 days from 23 September 2009 to 26 October 2009.

The environmental assessment was exhibited at the following locations:

- The Department of Planning (Information Centre, Bridge Street Sydney).
- Woomargama Post Office.
- Holbrook Local Library.

- Greater Hume Shire Council.
- The Nature Conservation Council (Kent Street, Sydney).

An electronic copy of the environmental assessment was also available on the Department of Planning's website (www.planning.nsw.gov.au) and the project website (<http://www.pb.com.au/humehighwaybypasses>).

A staffed display was provided at the Woomargama Hall on 1 October 2009. The objective of this staffed display was to provide the community with an opportunity to discuss aspects of the project with the project team.

A toll free project information line (1800 755 767) was available throughout the exhibition period.

1.4 Purpose of this document

During the exhibition of the environmental assessment, seven submissions were made. The Director-General of the Department of Planning provided copies of the submissions to the RTA. In accordance with Section 75H(6) of the EP&A Act, by letter dated 2 November 2009, the Director-General required the RTA to address the issues raised in the submissions. The Director-General advised that if there are any changes to the project to minimise its environmental impacts a preferred project report may be required, and the statement of commitments may also need to be revised to reflect any project changes.

This report includes the RTA's responses to issues raised in submissions (Chapter 2), a description of additional investigations undertaken since the exhibition of the environmental assessment (Chapter 3 and Appendices A and B), and a revised statement of commitments (Chapter 4). No project changes are proposed and as such a preferred project report is not required.

2 Response to issues

2.1 Respondents

The Department of Planning received a total of seven submissions in response to the exhibition of the environmental assessment, comprising six submissions from government agencies and one submission from the community.

Each submission has been examined individually to understand the issues being raised. The issues raised in the submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The RTA's response to these issues forms the basis of this chapter.

Due to the small number of submissions that were received on the project, government and community submissions have been considered together. The RTA's response to each of the submissions is provided in Sections 2.3 to 2.11.

2.2 Overview of issues raised

Submissions were received from the following government agencies:

- Department of Environment, Climate Change and Water.
- NSW Office of Water.
- Land and Property Management Authority.
- Industry and Investment NSW.
- NSW Transport and Infrastructure.
- Greater Hume Shire Council.

One submission was received from the community.

A summary of the key issues raised in government agency and community submissions is provided in Sections 2.2.1 and 2.2.2, respectively.

2.2.1 Government agency submissions

Six government agency submissions were received on the project, which predominately focused on the particular discipline areas of those agencies. Recommendations for conditions of approval were also made. The issues raised by each of the agencies is summarised below.

Department of Environment, Climate Change and Water (DECCW)

The DECCW raised a number of issues related to environmental management, including biodiversity, noise and vibration, and monitoring. The Department also made a number of recommendations to be included in the statement of commitments. Issues raised in DECCW's submission are addressed in Sections 2.3 (*Flora and fauna*), 2.4 (*Aboriginal heritage*), 2.5 (*Noise and vibration*), 2.9 (*Planning and statutory requirements*) and 2.10 (*Monitoring*).

NSW Office of Water (NOW)

The NOW identified a number of project related activities that may require licences under the *Water Act 1912* and the *Water Management Act 2000*. Issues raised in the NOW's submission are addressed in Section 2.9 (*Planning and statutory requirements*).

Land and Property Management Authority (LPMA)

The LPMA identified Crown Land and Public Roads that may be impacted by the project. The Department noted that it requires continued access to these areas. Issues raised in LMPA's submission are addressed in Section 2.6.1 (*Access*).

Industry and Investment NSW (I&INSW)

I&INSW noted that previously raised areas of interest to the agency had been included in the environmental assessment. Issues raised in I&INSW's submission are addressed in Section 2.11 (*General support for the project*).

NSW Transport and Infrastructure (NSWTI)

NSWTI noted that the environmental assessment had adequately addressed its previously raised comments and had no objections to the project proceeding. Issues raised in NSWTI's submission are address in Section 2.11 (*General support for the project*).

Greater Hume Shire Council (GHSC)

The GHSC requested that a grade separated intersection be considered at the southern entrance to Woomargama. Council also raised issues relating to the economic impact of the project on businesses located within the Woomargama village and requested that further assistance be provided to manage the impacts. Issues raised in GHSC's submission are addressed in Sections 2.6.2 (*Economic impacts*) and 2.8 (*Project design*).

2.2.2 Community submission

The community submission primarily related to the concept of peak oil and the impact of peak oil on the demand for motorways. The submission raises concerns that in light of peak oil the forecast traffic volumes for Woomargama are overstated and the environmental assessment fails to understand future oil and energy supplies and the challenge posed by climate change. Issues raised in the community submission are addressed in Section 2.7 (*Sustainable management*).

2.3 Flora and fauna

2.3.1 Habitat and vegetation clearing

Submissions

DECCW

Summary of issues

- The proposal will result in a significant reduction in habitat along the proposed route, with approximately 40 per cent of native vegetation within 100 metres of the alignment to be cleared. This reduction will reduce the viability of threatened species and populations.
- The importance of the area to threatened species, in particular woodland birds and squirrel gliders, is likely to be greater than that documented in the Flora and Fauna Technical Paper.
- The Flora and Fauna Technical Paper indicates that the area of habitat to be cleared is eight hectares. This may be an underestimate as the Flora and Fauna Technical Paper and subsequent flora assessments do not appear to have mapped all woodland communities.
- The area of vegetation cleared for the Hume Highway duplication projects was significantly greater than that detailed in the environmental assessment for those projects. Care needs to be taken to ensure that impacts avoided during the assessment/approval process are maintained during the detailed design and construction phases.

Response

The conservation value of and impact of the project on native vegetation and habitat within the affected corridor is noted and acknowledged in the environmental assessment. Chapter 4 of the environmental assessment describes the selection of the preferred option (based on consideration of a range of issues) and the development of the concept design. Compared to the other preliminary route options, the preferred option would avoid potentially significant impacts on flora and fauna, with less impact on native vegetation including important corridor (roadside and riparian) vegetation and threatened species habitat.

As described in Section 9.1.1 of the environmental assessment, due to property access restrictions targeted flora and fauna assessments were unable to be undertaken as part of the environmental assessment. In accordance with the RTA's statement of commitments, supplementary surveys have been undertaken for the project since the exhibition of the environmental assessment. Supplementary flora and fauna assessments included targeted surveys of identified species and communities, confirmation of the extent of impacts and refinement of mitigation measures as required (refer Chapter 3 and Appendices A and B).

Supplementary survey confirmed the presence of two threatened species (Brown Treecreeper and Squirrel Glider) and one migratory species (Rainbow Bee-eater). Field surveys also revealed an additional threatened species (Gang-gang Cockatoo) and one species (Little Eagle) that has received a preliminary determination for inclusion under the schedules of the *Threatened Species Conservation Act 1995*.

The impact of the loss of native vegetation and habitat on threatened species and populations was assessed through significance assessments prepared as part of the environmental assessment (and reviewed in supplementary flora and fauna assessments, see Chapter 3). Supplementary significance assessments were carried out for the additional threatened species outlined above. It was concluded that it is unlikely the project would have a significant impact on

threatened species or populations. In addition, a biodiversity offset package, to be developed to address impacts from the three proposed town bypass projects (Woomargama, Tarcutta and Holbrook), will offset residual impacts on biodiversity, including threatened species and populations.

The supplementary flora and fauna assessments also provided an opportunity to review the impacts on native vegetation based on the more detailed mapping of vegetation communities and fauna habitats. The additional survey undertaken as part of the supplementary survey has resulted in an increase in the area of mapped vegetation communities within the assessment area, describing the removal of nine hectares of native vegetation (compared to eight identified in the environmental assessment). This includes impacts on eight hectares of Box-Gum Woodland (four of which is consistent with the critically endangered ecological community listed under the *Environment Protection and Biodiversity Conservation Act 1999*) and one hectare of riparian vegetation. Refer to Section 3.1.3 for more detail.

The area of vegetation clearing outlined in the environmental assessment for the Woomargama bypass is based on a concept design in a more advanced stage than that of the previously assessed Hume Highway duplication projects. While the alignment will be subject to detailed design, as outlined in the environmental assessment, design development will seek to keep vegetation clearing and disturbance of native vegetation to the minimum necessary to construct and operate the project.

Lessons learnt on the duplication projects regarding minimising vegetation clearance during construction will be adopted for the Woomargama bypass. During construction, measures will be put in place to minimise impacts on flora and fauna. This will include identification of environmentally sensitive areas such as stands of native vegetation to be retained. Environmentally sensitive areas will be marked on sensitive area maps, and demarcated and signposted on-site where necessary, to limit vegetation disturbance during construction (see statement of commitments EM2 and EM3 in Table 4-1).

2.3.2 Managing impacts

Submissions

DECCW

Summary of issues

- Effective control of weeds is required within wildlife habitat revegetation areas until plantings become established.

Response

The RTA is committed to undertaking landscaping within the project corridor with native plant species. Weed control will continue until all revegetation becomes established. See revised statement of commitment FF6 in Table 4-1. Weed control in offset areas will be detailed in property management plans developed as part of the biodiversity offset package.

2.3.3 Wildlife crossings

Submissions

DECCW

Summary of issues

- Loss of habitat and the barrier posed by the highway have the potential to disrupt wildlife movement corridors.
- Recognition needs to be given to the important role road reserves play in enabling the movement of wildlife.
- Wildlife crossing points need to be fully considered during the design stage to increase the likelihood of their effectiveness and long-term sustainability. Consideration should be given to actions required beyond the project corridor to ensure the effectiveness of these crossing points.
- There is potential for construction and initial operation of the road to result in wildlife mortality due to severing of wildlife movement pathways. The nature of the landscape suggests that the impact on macropod populations may be significant.

Response

Habitat fragmentation and wildlife corridor impacts were identified and assessed within the environmental assessment and Technical Paper 1 (Flora and Fauna). It was concluded that while the project is unlikely to have a significant impact on highly mobile species, the project may result in a barrier effect for small and sedentary fauna, such as ground-dwelling and arboreal mammals, reptiles and amphibians, and may include impacts on threatened woodland birds and squirrel gliders. Impacts to wildlife corridors will be managed through the measures identified in the environmental assessment, including the development of crossing treatments for threatened species. Crossing zones will be developed further during detailed design with consideration given to effectiveness and long-term sustainability. Crossing zones will target threatened species and the design and objectives of the crossing treatments will be developed in consultation with DECCW and other relevant government agencies. A monitoring program will be implemented to determine the effectiveness of crossing treatments. See revised statement of commitment FF7 in Table 4-1.

The importance of regional vegetation movement corridors is acknowledged. While the RTA will consult with adjacent landowners regarding the potential for rehabilitation of adjacent land, the RTA is not in a position to commit to measures beyond the project corridor on private land.

The importance of road reserves to wildlife movement corridors is noted. The project has sought to retain native vegetation as far as possible and will include landscaping with native plant species within the future road reserve. These measures would have regard to the movement of wildlife, however the function of the road reserve as a wildlife movement corridor would only be realised in the long term.

The presence of macropods moving through the project site and any mortality would be monitored during construction. The specifics of this monitoring would be detailed in the Construction Environmental Management Plan (CEMP). Should monitoring identify a high presence of macropods within the project corridor, mitigation measures, such as temporary fencing, would be implemented to minimise the potential conflict with construction activities.

During operation, crossing treatments developed for threatened species may provide for incidental use by macropods. Crossing treatments will be developed in consultation with DECCW (see statement of commitment FF7 in Table 4-1). If required, consideration would be given to additional mitigation measures such as wildlife warning signs.

2.3.4 Monitoring

Submissions

DECCW

Summary of issues

- The lack of monitoring proposed regarding impacts of the proposal on threatened species and the effectiveness of mitigation measures is a concern.

Response

All proposed mitigation measures are best practice management and are consistent with those implemented on the previous Hume Highway duplication projects, which have been developed with specialist advice and in consultation with DECCW. Mitigation measures targeted at threatened species will be subject to a monitoring program to be developed in consultation with DECCW. This will include a pre-construction survey for nominated threatened species to establish baseline data. See revised statement of commitment FF5 in Table 4-1.

2.3.5 Offsets

Submissions

DECCW

Summary of issues

- A comprehensive biodiversity offsets package is required. The rehabilitation of degraded lands that have been acquired by the RTA should be considered as part of this offset package.
- Separate to any biodiversity offset package, there is a need to ensure that the total area of vegetation along or adjacent to the road corridor is not reduced in the long term.

Response

The RTA is committed to developing a biodiversity offset package to offset the residual impacts on biodiversity, particularly on threatened ecological communities and habitat for threatened species. The objective of the biodiversity offset package would be to maintain or improve biodiversity values in the area in the long term. The biodiversity offset package would include a number of actions which would consider the issues raised in submissions. The package would be developed in consultation with DECCW, the Commonwealth Department of Environment, Water, Heritage and the Arts, and other relevant agencies.

Offset areas required as part of the biodiversity offset package would include any land purchased by the RTA provided that it meets the criteria for rehabilitation. The project would, however, include landscaping with native plant species and crossing treatments within the project corridor.

2.4 Aboriginal heritage

2.4.1 Cultural heritage

Submissions

DECCW

Summary of issues

- The environmental assessment is considered to be adequate in regard to Aboriginal Cultural Heritage requirements.

Response

The above comment is noted.

2.5 Noise and vibration

2.5.1 Working hours

Submissions

DECCW

Summary of issues

- It is premature to agree to the requested out-of-hours construction or a variation to standard construction hours. The project approval, as with normal practice, can include a post approval process to seek, and have determined, out-of-hours works and/or variation to standard construction times. The *Interim Construction Noise Guideline* (DECC 2009) provides a framework for this process.
- The temperature for ceasing concrete paving in accordance with the RTA temperature specification is now quoted as 32°C. In previous road projects the referenced critical temperature was 35 or 36°C. This change in specification may result in a significant increase in the number of out-of-hours paving activities, and as such should be confirmed with the RTA.

Response

The environmental assessment was undertaken in accordance with the Director-General's Requirements (as clarified on 29 May 2009), which required the construction noise assessment to take into account Chapter 171 of the *Environmental Noise Control Manual* (EPA 1994). It also made use of the best available design and construction information at the time it was prepared.

The environmental assessment proposed extended daytime construction working hours (6am to 7pm), as well as activities that, due to technical considerations, climatic conditions and an accelerated construction program, would likely be undertaken during the evening and night-time periods. Previous experience on the Hume Highway duplication project has provided the RTA with an understanding of what activities are likely to be required outside standard construction hours. It was intended that the information presented in the environmental assessment would allow work outside of standard construction hours for nominated activities as part of the project approval process. The RTA's commitments to manage construction noise impacts would remain consistent.

The environmental assessment also provided an opportunity to make the community aware of the likely need to work outside standard construction hours, the nature of those activities and the likely impacts. It should be noted that no community submissions were received regarding the proposed construction working hours.

As noted by DECCW, the *Interim Construction Noise Guideline* (ICNG) (DECC 2009) was released in July 2009 and the environmental assessment was submitted to the Department of Planning for adequacy review in August 2009. However, and notwithstanding the assessment approach of the environmental assessment, RTA will undertake to use the ICNG during construction of the project to manage construction noise impacts. See revised statement of commitment NV1 (Table 4-1).

Nevertheless, the RTA does see benefit in the proposed extended daytime working hours (6am to 7pm), particularly during the period of daylight saving. Extended work hours would make use of available daylight, while the additional cooler hours of the day would offer site personnel some respite. Longer working hours would facilitate better project quality outcomes, as longer runs of concrete paving would provide for improved quality, and would assist in achieving the maximum and most efficient use of equipment and resources. The potential increase in productivity, efficiency and quality may result in a more sustainable project overall and earlier project completion. The benefits of the project to the Woomargama community and to the broader community of road users, including improved traffic safety outcomes and improved amenity, would be achieved earlier.

It is considered that due to the low density of sensitive receivers (16 isolated sensitive receivers) in a predominantly rural environment, extended daytime working hours would, with the implementation of management measures identified in the environmental assessment, be unlikely to result in significant impacts on the amenity of affected sensitive receivers.

For the Hume Highway bypass projects, the RTA has confirmed that the critical temperature for placement of a jointed concrete base pavement is 32°C. While ultimately the conditions controlling the quality outcomes for the placement of concrete pavement include a combination of temperature, humidity and wind speed, RTA has adopted 32°C as the upper ambient temperature, based on previous experience and technical advice provided on the Hume Highway duplication projects.

2.5.2 Blasting

Submissions

DECCW

Summary of issues

- There was no specific reference to blasting in the statement of commitments. A commitment should be added.

Response

Noted. Statement of commitment NV2 in Table 4-1 has been amended to address blasting.

2.5.3 Operational noise

Submissions

DECCW

Summary of issues

- The noise model may be under-predicting noise levels by between 3 and 4.5 dB(A) and additional mitigation measures may be required. Given that additional noise modelling will be undertaken at detailed design stage, it is considered that additional model validation can occur at that time.

Response

Noted. As identified by DECCW, additional noise modelling will be undertaken as part of detailed design. The noise model validation and calibration will be reassessed at this stage. Should the additional noise modelling, identify additional noise impacts on sensitive receivers, reasonable and feasible mitigation measures, such as architectural treatment would be considered at those sensitive receivers.

2.6 Socio-economic

2.6.1 Access

Submissions

LPMA

Summary of issues

- The project may impact on Crown Public Roads and Crown Land (non-notified Trigonometrical Reserve Number 1006793 – Woomargama Trig 260). The LPMA requires continued access to these areas.

Response

The project would impact a number of Crown Public Roads. These roads are currently not used and are not required for property access. Those parts of Crown Public Roads impacted by the project would be acquired by the RTA.

Following further consultation with LPMA, the RTA would seek to have the Crown Public Roads adjoining the project closed where they are not required for future access. Alternatively, access arrangements would be subject to further negotiation if and where required.

Trigonometrical Reserve number 1006793 is currently accessed via a formed track within a right of way which adjoins the existing Hume Highway. The right of way will be cut by the project. Access will be maintained by connecting the right of way to the project with left in – left out access.

2.6.2 Economic impacts

Submissions

GHSC

Summary of issues

- The environmental assessment presented a superficial review of the impact of the bypass on Woomargama businesses.
- Significant assistance must be provided to ensure the ongoing viability of the Woomargama community. This should include funding from the project for the installation of highway signage and the development of infrastructure in Woomargama to encourage the travelling public to continue to stop at the town, including improvements to public toilets, parking areas, landscaping etc.

Response

The environmental assessment (Section 9.5.3) indicates that there is potential for adverse impacts of the project on the viability, profitability, productivity and sustainability of highway-related businesses in Woomargama. The impact may be significant for the two highway dependent businesses (ie the service station and hotel/motel). However previous studies of bypassed towns have indicated that the hotel/motel is likely to be the business less affected by the project.

The RTA has identified management and mitigation measures to be implemented prior to commencement of construction, during construction and during operation (refer to Table 9.5.4 in the environmental assessment). The RTA has commenced discussions and is committed to continued consultation with GHSC throughout detailed design and construction to assist in developing strategies to encourage the continued viability of Woomargama and the further development of the *Woomargama Vision 2018* (GHSC 2008). The RTA is also committed to providing support and partial funding to GHSC over a two year period for the employment of an economic development officer.

Appropriate signage will be provided at Woomargama to denote the town's attributes and to ensure it is sufficiently clear and legible to motorists. This will be developed in consultation with GHSC.

As stated in Section 9.5.4 of the environmental assessment, experience from other highway bypass projects has shown that additional strategies could be adopted to assist in managing economic impacts of the project. Such strategies typically seek to identify future advantages that can be realised for the local community once a bypass has been opened. They usually relate to programs that enhance the character and amenity of community places or areas and that promote and revitalise business activities and community events (refer to Section 9.5.4 of the environmental assessment). As has occurred with other bypasses, the project may allow some businesses to capitalise on the improvements in amenity in the village and redirect trade towards local patronage, attracting more locals to shop in Woomargama. The economic development officer may assist the development of such strategies.

The RTA recognises the value that towns close to the highway have in providing rest opportunities for travellers. The RTA will work with GHSC to identify works which may enhance the attractiveness of Woomargama as a rest stop.

2.7 Sustainable management

2.7.1 Peak oil and climate change

Submissions

Community submission

Summary of issues

- The proposed upgrade and environmental assessment did not consider the concept of peak oil and notes that the peak in the production of oil, and the corresponding decline in global fuel supply, may happen any time after 2010.
- It was contended that once the point of peak oil is reached, there will be an increase in the costs of fuel and road construction materials, and a subsequent decline in the demand for motorways. It was contended that, as a result of the increases in fuel prices, the projected traffic increases that form part of the project justification will not actually materialise.
- Due to future likely decrease in oil and energy supplies associated with peak oil and the climate change challenge, the funding earmarked for the project should be spent on upgrading rail infrastructure.

Response

The demand for road transport will continue for both economic and social reasons. Despite efforts to limit demand for road transport, it is expected that the need for transport will continue to grow as the Australian and NSW economies continue to expand. Nevertheless, governments and industry are taking the view that it is prudent to consider that oil production may peak and then decline. This could increase the cost and reduce the availability of transport fuels and construction materials derived from oil.

For transport, the solutions to the problem of peak oil are similar to those for climate change. Alternatives to fossil fuels need to be found and transport must become more energy efficient. There are moves to establish alternatives to oil as a fuel for transport and to improve energy efficiency. This will enable the economic benefits provided by road transport to continue to be delivered with a reduced need for fossil fuels. Similar action is being taken, through recycling and investigation of alternative materials, to reduce the need for construction products derived from fossil fuels.

It should be noted that many of the actions to deal with climate change, and issues involving peak oil, are being addressed on a national level. Specifically, NSW is working collaboratively with the Commonwealth to:

- Introduce fuel efficiency standards for cars and assist the car industry to produce more efficient fuel efficient vehicles.
- Address distortions that create incentives for greater private vehicle use.

The proposed national Carbon Pollution Reduction Scheme will also play a key role in addressing climate change.

The RTA is also participating with Austroads and industry in research and trials with the goal of developing more sustainable road construction materials and practices and reducing reliance on products derived from oil. As road transport is a significant and necessary element of the NSW economy, that also provides many social benefits, the RTA will continue to ensure that all potential impacts on this system, such as peak oil, are identified and action is taken to manage these risks.

2.8 Project design

2.8.1 Intersections

Submissions

GHSC

Summary of issues

- As the Woomargama village is subject to heavy fog during winter months there is concern that the two at-grade intersections proposed present a risk for heavy laden timber transport vehicles and school buses with respect to oncoming traffic travelling at 110 km/h. A grade separated intersection should be considered.

Response

As outlined in the environmental assessment, at-grade intersections are proposed for access to the Woomargama village and local road network. As part of detailed design development, an additional traffic study, assessing traffic volumes entering and leaving Woomargama, has been completed for the project. Forecast traffic volumes are considered to be very low even with the projected increase in logging trucks travelling from the east of Woomargama. A conservative forecast of peak hour traffic leaving and entering Woomargama in 2030 is 23 and 27 vehicles per hour respectively.

Concerns regarding fog in the Woomargama locality are acknowledged. Considering forecast traffic volumes and road safety requirements (including the presence of fog), the proposed at-grade intersections will:

- Be visually prominent.
- Include street lighting.
- Include acceleration lanes to allow slow moving traffic to accelerate to high speed before being required to merge into the through lanes.
- Include a provision for vehicles to cross one dual lane carriageway at a time. This gives vehicles the ability to adequately assess the traffic in the through carriageways prior to crossing.
- Include directional signage to provide warning for traffic on the highway and side roads.

The RTA acknowledges that a grade-separated interchange generally provides for a safer intersection. However considering the forecast traffic volumes, the proposed at-grade intersections, with the above features, are considered to provide adequate and safe intersections for traffic entering and exiting Woomargama, including in the event of fog.

2.9 Planning and statutory requirements

2.9.1 Licences

Submissions

DECCW and NOW

Summary of issues

- The project will need an Environment Protection Licence for construction.
- Approvals and/or licences under the *Water Act 1912* or *Water Management Act 2000* are likely to be required for certain activities associated with the project, including groundwater works, realignment of waterways, flood control works, and capture of water in dams.

Response

The above comments are noted. The RTA will consult with relevant agencies regarding licensing requirements. Licences will be obtained where required.

2.10 Monitoring

Submissions

DECCW

Summary of issues

- Appropriate environmental monitoring is required for the project. This should include on-site weather monitoring to monitor the parameters of rainfall, temperature, and wind speed/direction.

Response

The above comment is noted. The RTA will install an on-site weather station to monitor rainfall, temperature, and wind speed/direction. The weather station would remain on-site for the duration of the construction works.

2.11 General support for the project

Submissions

NSWTI and I&INSW

Summary of issues

- Previous comments concerning potential disruptions to school bus routes during construction and opportunities for cycle access have been satisfactorily addressed.
- The environmental assessment has addressed all previously raised areas of interest.

Response

The above comments are noted.

3 Additional assessment

3.1 Flora and fauna

As outlined in Section 9.1 of the environmental assessment, due to property access restrictions, the flora and fauna assessment was based on a review of previous studies and surveys undertaken as part of the route options assessment for the project. The RTA, following consultation with DECCW, committed to undertaking targeted surveys in Spring 2009 to confirm the extent of impacts and assist in further refining the mitigation measures as required. Accordingly, supplementary flora and fauna assessments have been prepared for the project. The supplementary flora and fauna reports are provided in Appendix A and B respectively and are summarised in this chapter.

3.1.1 Assessment approach

The flora and fauna assessments were undertaken in accordance with the *Draft Guidelines for Threatened Species Assessment under Part 3A* (DEC 2005b) and the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DEH 2006). The assessment area for the supplementary flora and fauna assessments is generally consistent with that defined in Section 1.2 of the environmental assessment (ie incorporates the project plus an approximate 200 metre buffer around its centreline, as well as ancillary areas required for project delivery). The assessment included the following:

Flora

Field surveys for the flora assessment were conducted within the assessment area between 21 to 24 September 2009. The survey aimed to identify the presence of threatened flora species, populations and listed communities, including White Box, Yellow Box, Blakely's Red Gum Woodland (Box-Gum Woodland). Surveys utilised a combination of general traverses or transects, plot-based quadrat assessments (20 metre by 50 metre) and targeted surveys for threatened flora species.

The classification and mapped extent of vegetation communities was reviewed and an assessment was completed to determine areas of Box-Gum Woodland which are consistent with the endangered ecological community listed under the NSW *Threatened Species Conservation Act 1995* and the critically endangered ecological community as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Considering the findings of the supplementary survey, the assessment reviewed the potential impacts of the project on threatened vegetation communities and species, and the management and mitigation measures provided in the environmental assessment.

The methodology for the flora assessment is further detailed in Chapter 2 of Appendix A.

Fauna

Field surveys for the fauna assessment were conducted within the assessment area between 26 September and 1 October 2009. The survey aimed to identify the presence of threatened fauna species, particularly woodland birds and the Squirrel Glider. Surveys included diurnal bird surveys, call playback, spotlighting, diurnal reptile surveys, frog surveys and general habitat assessments. The nature and condition of fauna habitats was assessed and hollow-bearing trees within the assessment area were recorded.

Considering the findings of the additional survey, the assessment reviewed the potential impacts of the project on threatened species and the management and mitigation measures provided in the environmental assessment.

The methodology for the fauna assessment is further detailed in Chapter 2 of Appendix B.

The environmental assessment included an assessment of the aquatic environment and likely impacts on aquatic species and populations. As this included an aquatic survey carried out in May 2009, no need for supplementary aquatic survey was identified. Refer to Section 9.1 of the environmental assessment for information on the existing aquatic environment, likely impacts of the project on aquatic species and populations and proposed management and mitigation measures.

3.1.2 Existing environment

Vegetation communities, including threatened communities

The supplementary assessment found the assessment area to consist largely of relatively isolated remnants of native vegetation, within a matrix of cleared agricultural lands. Two broad vegetation community types were identified, including Box Gum Woodland and River Red Gum very tall open forest of the NSW South-western Slopes Bioregion (River Red Gum Woodland). The condition of vegetation varied depending on past land uses and disturbance history. Areas of Box-Gum Woodland were further categorised based on understorey (see Table 3-1). Excluding isolated trees, Box Gum Woodland within the assessment area was consistent with the definition of the endangered ecological community as listed under the NSW *Threatened Species Conservation Act 1995*, and the high quality vegetation (Box-Gum Woodland – Disturbed understorey, refer Table 3-1) was consistent with the critically endangered ecological community as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Table 3-1 Broad vegetation communities identified in the supplementary assessment

Broad community type		Corresponding rare or threatened community	Observations
Box-Gum Woodland	Box-Gum Woodland – Disturbed understorey	White Box, Yellow Box Blakely's Red Gum Woodland (TSC Act) and White Box- Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland (EPBC Act).	These areas support a partially intact native understorey, including a mix of native and exotic understorey species. During the survey period exotic annual species were generally dominant. The presence of some native species in the understorey suggests the natural soil and associated seed bank are mostly intact and these areas would respond to assisted natural regeneration.
	Box-Gum Woodland – Improved pasture understorey	White Box, Yellow Box Blakely's Red Gum Woodland (TSC Act)	These areas support a highly disturbed understorey consisting of improved pasture dominated by several exotic species. Native species are generally absent. Despite minimal native flora species in the understorey, there is potential for native species to be present in higher abundance during autumn/winter or drier periods.

Broad community type		Corresponding rare or threatened community	Observations
	Box-Gum Woodland – Isolated trees	-	These areas support a highly disturbed understorey supporting improved pasture, with little or no native species present. Considering the highly fragmented and isolated occurrence of mature trees and the high degree of modification in the understorey from pasture improvement, these areas are considered unlikely to respond to assisted natural regeneration.
River Red Gum Woodland ¹		River Red Gum very tall open forest of the NSW South-western Slopes Bioregion.	This community is present along Mountain and Sandy creeks. It is dominated by River Red Gum. The understorey is highly disturbed supporting similar species to the surrounding areas of improved pasture.

Note: 1. Riparian vegetation community fits within the River Red Gum very tall open forest of the NSW Western Slopes Bioregion. This is a regionally rare community, classified as an over-cleared vegetation type within the Murray catchment.

In addition to the two broad vegetation community types identified in the supplementary assessment, the environmental assessment identified two further broad vegetation community types, rocky outcrop woodland and cleared land with scattered eucalypts. Rocky outcrop woodland was not identified within the supplementary surveys as the area of assessment was refined compared to the study area for the environmental assessment (which included three corridor areas for the route options assessment). Vegetation identified within the environmental assessment as cleared land with scattered eucalypts has been reclassified and is generally consistent with the Box-Gum Woodland identified in the supplementary assessment. However some patches were identified as non-indigenous vegetation (including exotics and non-indigenous native species).

The supplementary survey has resulted in an increase in area of mapped vegetation communities within the assessment area. The environmental assessment generally did not identify Box-Gum Woodland – Isolated trees. However due to the highly fragmented nature of native vegetation in the assessment area, and the likely importance of isolated paddock trees within the landscape, the supplementary flora assessment considers these trees as part of the Box-Gum Woodland community. It should be noted that the Box-Gum Woodland – Isolated trees are not considered to meet the definition of the endangered ecological community under the *Threatened Species Conservation Act 1995*.

Terrestrial flora, including threatened plants

A total of 178 flora species were recorded within the assessment area. This total consisted of two species of fern, two conifer species, 113 species of dicotyledons and 61 species of monocotyledons. Of the total species recorded, 86 species were introduced flora, representing approximately 48 per cent of the total, and an additional nine species are non-indigenous native flora species which have been planted in the assessment area. Of the 86 species of introduced flora present, seven are listed as being noxious weeds in the Greater Hume local government area. No threatened species of plant were recorded, although potential habitat does occur for a range of threatened species. This includes potential habitat for an additional three threatened species of plant not identified in the environmental assessment (Small surf-pea, Mountain Swainson-pea and Austral Pilwort, refer to Chapter 4 Appendix A).

Fauna habitats

Habitat surveys identified four habitat types that were generally consistent with the habitat types identified in the environmental assessment (refer Table 3-2). An additional habitat type (open farmland) was identified. Open farmland includes agricultural lands within the assessment area and is not considered to be important habitat for the survival of threatened species.

Table 3-2 Fauna habitat identified in the assessment area

Fauna habitat identified in the environmental assessment	Corresponding fauna habitat identified in the supplementary assessment
Box-Gum Woodland	Eucalypt Woodland
Rock outcrops	Rock outcropping
Cleared land with scattered eucalypts	Eucalypt Woodland
Riparian areas	Riparian Woodland
-	Open farmland

Eucalypt Woodland and Riparian Woodland fauna habitat generally correlate with the vegetation communities identified in the supplementary assessment – Box-Gum Woodland and River Red Gum Woodland respectively (refer Table 3-1).

One hundred and six hollow-bearing trees were identified.

Fauna, including threatened and migratory species

A total of 79 species of animal were recorded during the field survey including. This included 63 species of bird, ten species of mammal, three species of amphibian and three species of reptile. Three threatened fauna species (Squirrel Glider, Brown Treecreeper, Gang-gang Cockatoo), one migratory listed species (Rainbow Bee-eater) and one species (Little Eagle) that has received a preliminary determination for inclusion under the schedules of the *Threatened Species Conservation Act 1995*, were recorded.

Two of these species (the Gang-gang Cockatoo and Little Eagle) are in addition to the threatened fauna recorded or predicted to occur in the environmental assessment. While not recorded, an additional five bird species (listed under a preliminary determination for inclusion under the schedules of the *Threatened Species Conservation Act 1995*, refer to Section 4.3 Appendix B) were considered to have a moderate likelihood of occurrence.

3.1.3 Impacts on flora and fauna

The flora and fauna assessments generally confirmed the impacts detailed in the environmental assessment.

Loss of native vegetation and fauna habitats

Supplementary survey provided an opportunity to refine the extent of clearing based on the more detailed mapping of vegetation communities and fauna habitats. The revised vegetation clearing is presented in Table 3-3. Due to the reclassification and remapping of vegetation communities the total native vegetation clearing would increase by one hectare. Additional impacts to native vegetation include impacts to the Box-Gum Woodland – Isolated trees. As outlined in Table 3-1 above, this vegetation does not form part of the threatened ecological community. Clearing of the threatened Box-Gum Woodland would however be reduced. The extent of clearing within Box-Gum Woodland consistent with the endangered ecological

community under the *Threatened Species Conservation Act 1995* has been reduced from seven to six hectares, while the extent of clearing within Box-Gum Woodland consistent with the critically endangered ecological community under the *Environment Protection and Biodiversity Conservation Act 1999* has been reduced from seven to four hectares. As outlined in the environmental assessment, due to the limited site survey, a precautionary approach was adopted for the classification of vegetation communities. The reduction of impacts on the threatened ecological community is the result of the additional field survey and subsequent reclassification of vegetation communities within the assessment area.

Table 3-3 Revised vegetation communities to be cleared for the project

Environmental assessment vegetation community	Supplementary assessment vegetation community	Clearing documented in the EA (hectares)	Revised clearing (hectares)	Change in impact (hectares)
Box-Gum Woodland and Cleared land with scattered eucalypts	Box-Gum Woodland	7	8	+1
	• TSC Act Box-Gum Woodland	(7)	(6)	(-1)
	• EPBC Act Box-Gum Woodland	(7)	(4) ¹	(-3) ¹
	• Box-Gum Woodland – Isolated trees	-	(2)	(+2)
Riparian vegetation	River Red Gum Woodland	1	1	0
	Total	8	9	+1²

Notes: 1: Areas of EPBC Box-Gum woodland are included in the calculation of TSC Act Box-Gum Woodland clearing.

2: The additional clearing of one hectare of vegetation is the result of supplementary vegetation survey, mapping and reclassification of vegetation communities rather than a revised design.

Clearing of native vegetation would result in an associated loss of fauna habitat.

Wildlife corridor impacts

The environmental assessment indicated that the project would present a barrier in the landscape, particularly within the Mountain Creek riparian corridor and remnant patches of Box-Gum Woodland in the centre of the project. Supplementary fauna assessment confirmed the likely impacts on wildlife corridor movements in these two areas. In addition, potential impact on a north-south squirrel glider movement corridor between the Fairbairn Road intersection and Blue Metal Hill Travelling Stock Reserve was identified.

Significance of impacts

Both the flora and fauna assessments reviewed the significance assessments completed in the environmental assessment and confirmed that the project is not likely to have a significant impact on threatened species and communities. The fauna assessment also completed significance assessments for the Gang-gang Cockatoo, which was recorded during the supplementary survey, as well as a range of birds that have a preliminary listing under the *Threatened Species Conservation Act 1995*. The significance assessments indicated the project would not have a significant impact on these species.

3.1.4 Management of impacts

The supplementary flora and fauna assessments have identified that mitigation measures proposed in the environmental assessment for flora and fauna continue to be supported. However, based on the fauna surveys and the presence of hollow-bearing trees, the fauna assessment recommended consideration of an additional squirrel glider crossing point for a north-south movement between the Fairbairn Road intersection and Blue Metal Hill Travelling Stock Reserve. The supplementary assessments reconfirmed the need to investigate crossing zones at Mountain Creek and in the middle of the project, and the need for nest boxes to offset the loss of hollow-bearing trees.

4 Revised statement of commitments

The environmental assessment for the *Hume Highway Upgrade Woomargama bypass* 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 submissions, the draft statement of commitments for the *Hume Highway Upgrade Woomargama bypass* (refer to Chapter 11 of the environmental assessment) has been revised. Should the project be approved, the revised commitments will guide the subsequent phases of the project.

The following definitions apply in relation to the revised statement of commitments:

Pre-construction	Work in respect of the project that includes design, survey, acquisitions, fencing, investigative drilling or excavation, building/road dilapidation surveys, minor clearing (except where threatened species, populations or ecological communities would be affected), establishing ancillary facilities, or other relevant activities determined to have minimal environmental impact.
Construction	All work in respect of the project other than that defined as a pre-construction activity/work.
Operation	The operation of the project, but not including commissioning trials of equipment, or temporary use of parts of the project during construction.

The revised statement of commitments is provided in Table 4-1. Additional and/or modified commitments to those presented in the draft statement of commitments have been italicised in blue and deleted commitments, or parts of commitments, have been struck out.

Table 4-1 **Revised statement of commitments**

Outcome	Ref. number	Key action	Timing	Reference document
<i>Environmental management</i>				
Compliance and continuous improvement in environmental management.	EM1	An environmental management system, including an environmental performance and compliance program, will be established and maintained for the project.	Pre-construction and construction.	ISO 14001:2004 Environmental Management Systems — requirements with guidance for use. ISO 19011:2003 Guidelines for Quality and/or Environmental Management Systems Auditing. RTA QA specification G36 — environmental protection.
	EM2	The environmental management plans will be developed and implemented by suitably qualified and experienced personnel and will incorporate as a minimum the mitigation and management measures in the environmental assessment.	Pre-construction and construction.	<i>Guideline for the Preparation of Environmental Management Plans</i> (DIPNR 2006).
Provide a consistent methodology to managing environmental issues.	EM3	Environmentally sensitive areas (such as native vegetation and cultural heritage) within the construction site will be marked on sensitive area maps, demarcated and signposted where necessary. Information will be made available during all on-site inductions to construction personnel.	Pre-construction and construction.	
	EM4	All construction personnel will receive training regarding environmental management.	Pre-construction and construction.	

Outcome	Ref. number	Key action	Timing	Reference document
<i>Community consultation</i>				
The community is informed about the project.	CC1	The community will be kept informed with measures such as: • Letter box drops, media releases and community updates. • An internet site established and maintained for the duration of the project. • Variable message signs. • Targeted consultation with affected individuals or groups. Information to be provided will include: • Changes to access and traffic conditions. • Details of future works programs. • General construction progress.	Pre-construction and construction.	<i>Community Involvement and Communications. Draft: A resource manual for staff (RTA 2008a).</i>
Management of community inquiries or complaints.	CC2	Communication management will include: • A 24 hour toll-free contact telephone number. • Directions on how to register a complaint or make an inquiry. • Acknowledgement of complaints within 24 hours. • A complaint recording and tracking system.	Pre-construction and construction.	<i>Community Involvement and Communications. Draft: A resource manual for staff (RTA 2008a). AS 4269 Complaints Handling.</i>

Outcome	Ref. number	Key action	Timing	Reference document
<i>Flora and fauna</i>				
Manage impacts on flora and fauna.	FF1	Targeted surveys will be undertaken during Spring 2009 to assist in further refining the mitigation measures as required. Should any additional impacts be identified, mitigation and management measures will be developed in consultation with DECCW and other relevant agencies.	Pre-construction.	
	FF2	Areas of vegetation identified to be retained will be managed as environmentally sensitive areas.	Pre-construction.	Section 9.1 of the environmental assessment.
	FF3	A suitably qualified and experienced ecologist will conduct a pre-clearing fauna survey, including an inspection of tree hollows immediately prior to tree felling. Fauna with the potential to be harmed during clearing activities will be relocated into suitable adjacent habitat.	Pre-construction and construction.	
	FF4	A two-stage clearing process will be adopted for all hollow tree felling.	Construction.	
	<i>FF5</i>	<i>A threatened species monitoring program will be developed in consultation with DECCW. This program will allow the effectiveness of mitigation measures targeted at threatened species to be assessed.</i>	<i>Pre-construction, construction and operation.</i>	
Manage the spread of weeds.	FF5 6	<i>Weed control will continue until the vegetation in all revegetation areas becomes established. Techniques will vary depending on the species targeted. This will be in consultation with the Greater Hume Shire Council GHSC.</i> Weed control will be carried out, and techniques will vary depending on the species targeted and the area to be treated. This will be in consultation with the Greater Hume Shire Council.	Pre-construction, construction and operation.	<i>Noxious Weeds Act 1993.</i>

Outcome	Ref. number	Key action	Timing	Reference document
Mitigate impacts on wildlife corridors.	FF6 6 7	<i>Crossing treatments will be established along the project corridor, be based on clear objectives and developed in consultation with DECCW and other relevant government agencies. Treatments will target threatened species. A monitoring program to determine their effectiveness will be implemented.</i> Natural and artificial crossing treatments will be developed in consultation with DECCW.	Pre-construction, construction <i>and</i> operation.	
Minimise impacts on fish and aquatic habitat.	FF7 7 8	Works within the main watercourse of Mountain Creek will be avoided during the breeding season of the Southern Pygmy Perch (September to January) unless mitigation measures are developed in consultation with <i>I&NSW</i> the Department of Industry and Investment.	Pre-construction and construction.	
	FF8 8 9	Waterway crossings, including temporary works, will be developed in accordance with the fish habitat classification of each waterway and in consultation <i>I&NSW</i> the Department of Industry and Investment.	Pre-construction and construction.	<i>Policy and Guidelines for Aquatic Habitat Management and Fish Conservation</i> (NSW Fisheries 1999). <i>'Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings'</i> (Fairfull and Witheridge 2003).
Enhance existing habitat.	FF9 9 10	Natural and artificial habitat features and resources (such as felled logs and nest boxes) will be placed in suitable areas to provide alternative habitat for displaced fauna.	Pre-construction and construction.	
Offset loss of vegetation and fauna habitat.	FF10 10 11	A biodiversity offset package will be developed in consultation with DECCW and other relevant stakeholders.	Pre-construction and construction.	

Outcome	Ref. number	Key action	Timing	Reference document
Aboriginal heritage				
Manage impacts on Aboriginal heritage.	AH1	Any Aboriginal heritage items will be managed in accordance with the Aboriginal Cultural Heritage Assessment Report (CHAR), which identifies mitigation measures, developed in consultation with Aboriginal stakeholders and DECCW.	Pre-construction and construction.	
	AH2	Aboriginal sites identified to be conserved will be managed as environmentally sensitive areas.	Pre-construction and construction.	Section 9.2 of the environmental assessment.
	AH3	If any skeletal remains are encountered, all works that would potentially impact the find will stop immediately. Works will not re-commence until appropriate clearance has been received.	Construction.	<i>Skeletal remains — Guidelines for the management of human skeletal remains under the Heritage Act 1977</i> (NSW Heritage Office 1998a).
Noise and vibration				
Minimise construction noise and vibration impacts.	NV1	<i>Best practice mitigation and management measures will be used to minimise construction noise and vibration at sensitive receivers.</i> Monitoring will be undertaken to determine the effectiveness of mitigation measures. Should construction noise generate complaints and the monitoring confirm noise is above predicted levels, additional feasible and reasonable mitigation measures will be implemented.	Construction.	Section 9.5 of the environmental assessment <i>Interim Construction Noise Guideline (DECC 2009).</i> <i>Assessing Vibration: A Technical Guide (DEC 2006).</i> <i>NSW Industrial Noise Policy (EPA 2000).</i> <i>RTA Environmental Noise Management Manual (2001).</i> <i>NSW Government's Environmental Criteria for Road Traffic Noise (EPA 1999).</i> AS 2436-1981 Guide to noise control on construction, maintenance and demolition sites.
	NV2	Where adverse noise impacts from evening and night time construction activities are identified, a notification and negotiation procedure will be implemented. This will involve consultation with sensitive receivers.	Construction.	NSW Industrial Noise Policy (EPA 2000). RTA Environmental Noise Management Manual (2001).

Outcome	Ref. number	Key action	Timing	Reference document
	NV2	<i>Blasting will be designed and undertaken so as to comply with the recommended vibration and overpressure limits.</i>	<i>Construction.</i>	<i>Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration (ANZECC 1990)</i>
Minimise operational noise impacts.	NV3	All reasonable and feasible mitigation measures will be developed and implemented to meet the noise criteria applicable to the project in consultation with the sensitive receiver.	Construction and operation.	NSW Government's Environmental Criteria for Road Traffic Noise (EPA 1999). RTA Environmental Noise Management Manual (2001).
	NV4	Measurement of operational noise will be undertaken along the project between six months and one year after opening. Should the measurement indicate traffic noise impacts exceeding levels predicted, further reasonable and feasible mitigation measures will be implemented in consultation with the sensitive receiver.	Operation.	NSW Government's Environmental Criteria for Road Traffic Noise (EPA 1999). RTA Environmental Noise Management Manual (2001).
<i>Surface and ground water</i>				
Minimise flood impacts.	SGW1	The detailed design of the project will seek to further minimise change in peak flood levels (afflux) in the 1 in 100 year ARI event.	Pre-construction.	Section 9.3 of the environmental assessment.
Conservation of water.	SGW2	Water efficient work practices, such as water reuse and recycling for road construction and revegetation irrigation will be implemented.	Construction.	

Outcome	Ref. number	Key action	Timing	Reference document
<i>Social and economic</i>				
Property access is maintained.	SE1	Property access will be maintained for the duration of the construction. If required, temporary or alternative access would be provided in consultation with the affected landowner(s). <i>Property access will be maintained in consultation with the affected landowner(s). If required, temporary or alternative access during construction will be provided.</i>	Construction and operation.	<i>Community Involvement and Communications. Draft: A resource manual for staff (RTA 2008a).</i>
Manage impacts to directly affected properties.	SE2	Negotiations for property acquisition will include consideration of property adjustments where required to maintain farm management practices.	Pre-construction and construction.	
Minimise economic impacts on Woomargama.	SE3	Appropriate signage will be provided near to interchanges.	Operation.	
	SE4	Consultation with Greater Hume Shire Council GHSC will continue through detailed design and construction regarding assistance towards the development of strategies to encourage the continued viability of Woomargama.	Pre-construction and construction.	
	SE5	Support and partial funding will be provided to Greater Hume Shire Council over a two year period for the employment of an economic development officer.	Pre-construction, construction and operation.	
<i>Traffic and transport</i>				
Avoid or minimise impacts on traffic and the road network.	TT1	Pre- and post-construction road dilapidation reports will be prepared for local roads likely to be used for construction. Any damage resulting from construction (not normal wear and tear) will be repaired unless alternative arrangements are made with the relevant road authority.	Pre-construction and operation.	
	TT2	Construction vehicle movements and works programs will incorporate traffic control measures to minimise traffic and transport impacts on local roads and the existing highway.	Pre-construction and construction.	<i>RTA Traffic Control at Work Sites (RTA 2003c).</i> <i>RTA QA Specification G10 Control of Traffic.</i>

Outcome	Ref. number	Key action	Timing	Reference document
<i>Non-Aboriginal heritage</i>				
Minimise impacts on non-Aboriginal heritage.	NA1	A supplementary archaeological survey of the assessment area will be undertaken prior to the commencement of construction. Should any further items or additional impacts be identified, mitigation and management measures will be developed in consultation with Heritage Branch, Department of Planning.	Pre-construction.	
	NA2	Mitigation (archival record, test/ salvage excavation) will be completed for impacted heritage items, where required.	Pre-construction.	<i>How to prepare archival records of heritage items</i> (NSW Heritage 1998b). Section 10.1 of the environmental assessment.
	NA3	Non-Aboriginal sites identified to be conserved will be managed as environmentally sensitive areas.	Pre-construction and construction.	Section 10.1 of the environmental assessment.
	NA4	If any unknown non-Aboriginal heritage items are encountered, all works that would potentially impact the find will stop immediately. Works will not recommence until appropriate clearance has been received.	Pre-construction and construction.	
<i>Air quality</i>				
Minimise dust impacts to sensitive receivers.	AQ1	Standard dust and emission control measures will be implemented to manage construction air quality impacts at sensitive receivers.	Construction.	

Outcome	Ref. number	Key action	Timing	Reference document
<i>Soils and water quality</i>				
Minimise erosion and sedimentation.	SW1	Management measures will be designed, installed and maintained to minimise erosion and sedimentation from construction activities.	Pre-construction and construction.	<i>Managing Urban Stormwater: Soils and Construction Volume 1</i> (Landcom 2006). <i>Managing Urban Stormwater: Soils and Construction, Volume 2D, Main Road Construction</i> (DECC 2008a).
	SW2	A soil conservation specialist will be engaged to provide advice on erosion and sedimentation control.	Pre-construction and construction.	
	SW3	Stabilisation of exposed areas will be undertaken progressively.	Construction.	RTA QA Specification R178 Vegetation.
	<i>SW4</i>	<i>Scour protection will be installed in waterway areas at risk of erosion as necessary.</i>	Construction.	
Avoid contamination of waterways.	SW 4 5	Spills will be contained immediately. Bunded areas will be used for storage of potentially hazardous and/or contaminating materials and activities.	Construction.	AS 1940 The storage and handling of flammable and combustible liquids. <i>Storing and handling liquids: Environmental protection — participants manual</i> (DECC 2007). <i>Environmental compliance report: Liquid chemical storage, handling and spill management — Part B Review of best practice and regulation</i> (DECC 2005). <i>RTA Code of Practice for Water Management</i> (RTA 1999c).
	SW 5 6	The project will incorporate structural and non-structural measures to control road run-off pollutants entering Mountain and Sandy creeks.	Operation.	<i>Procedure for Selecting Treatment Strategies to Control Road Run-off</i> (RTA 2003a).

Outcome	Ref. number	Key action	Timing	Reference document
<i>Contaminated land</i>				
Manage contaminated sites.	CL1	Sites identified as containing a moderate to high risk of contamination will be analysed and managed in accordance with relevant guidelines.	Construction.	<i>Section 10. 6 of the environmental assessment Waste Classification Guidelines: Parts 1 and 2 (DECC 2008b). Contaminated Land Management Guideline (RTA 2005).</i>
	CL2	If any unknown contaminated sites are encountered, all works at that site will stop immediately. Works will not recommence until the material is analysed and management measures are developed.	Pre-construction and construction.	<i>Waste Classification Guidelines: Parts 1 and 2 (DECC 2008c). Contaminated Land Management Guideline (RTA 2005).</i>
<i>Sustainable management</i>				
Minimise greenhouse gas emissions and energy use.	SM1	Energy efficient work practices will be implemented, including consideration of: • Energy efficient design of site buildings. • Design of construction work sites to minimise unnecessary vehicle movement. • Regular servicing of site plant and equipment. • Training of construction personnel in energy efficient plant operation. • The use of accredited GreenPower. • Use of locally sourced materials where available and of suitable quality.	Pre-construction and construction.	

Outcome	Ref. number	Key action	Timing	Reference document
Minimise waste.	SM2	The waste minimisation hierarchy principles of avoid, reduce, reuse, recycle or dispose will apply to all aspects of the project.	Construction.	<i>Waste Avoidance and Resource Recovery Strategy</i> (DECC 2006). NSW Government's Waste Reduction and Purchasing Policy. <i>Environmental guidelines — assessment, classification and management of liquid and non-liquid waste</i> (DECC 1999).
Visual amenity and landscape				
Minimise visual amenity impacts.	VL1	Built elements and landscapes will be in accordance with the urban and landscape design objectives for the project. Greater Hume Shire Council <i>GHSC</i> and the community will be consulted.	Pre-construction.	Section 10.3 of the environmental assessment. <i>Hume Highway Urban Design framework: Prestons (WM7) to Albury</i> (RTA 2009b). <i>Beyond the Pavement Urban and Regional Design Practice Notes</i> (RTA 1999a, 2004 update). <i>RTA Bridge Aesthetics</i> (RTA 2003b), <i>Noise Wall design Guideline</i> (RTA 2006), and <i>Landscape Guideline</i> (RTA 2008b).
	VL2	Landscaping treatments will include native plant species endemic to the local area.	Pre-construction and construction.	Section 10.3 of the environmental assessment.
Hazards and risks				
Minimise risks and hazards on the environment and community.	HR1	Hazardous materials will be stored in bunded areas within the construction site. Hazardous materials will not be stored on the floodplain below the 1 in 20 year ARI flood level.	Pre-construction and construction.	AS 1940 The Storage and Handling of Flammable and Combustible Liquids. DEC Bunding and Spill Management Guidelines (in DEC Environmental Protection manual for Authorised Officers). <i>RTA Code of Practice for Water Management</i> (RTA 1999b).

Outcome	Ref. number	Key action	Timing	Reference document
	HR2	Potentially hazardous and contaminating activities will be in bunded areas or in other areas where suitable containment measures are in place to prevent discharge into watercourses.	Pre-construction and construction.	AS 1940 The Storage and Handling of Flammable and Combustible Liquids.
Ancillary facilities				
Minimise impacts of ancillary facilities.	AF1	Ancillary facilities (excluding temporary stockpiles) not identified in the environmental assessment will be located in areas: • More than 40 metres from waterways (excluding pipelines, temporary haul roads, creek crossings and access roads). • Of low ecological and heritage conservation significance. • Where there is no significant clearing of native vegetation beyond that already required for the project. • That minimise impact on amenity of the closest sensitive receiver (unless a negotiated agreement is in place). • Of relatively level ground.	Pre-construction and construction.	Section 6.6 of the environmental assessment.
	AF2	Temporary stockpiles will be located in areas: • Of low ecological and heritage conservation significance. • Constructed on the contour at least 40 metres from waterways. • Outside the 1 in 10 year ARI floodplain. • Of relatively level ground.	Construction.	Section 6.6 of the environmental assessment. <i>Managing Urban Stormwater. Soils and Construction, Volume 1</i> (Landcom 2006).

5 References

- ANZECC 1990, *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration*
- Department of Environment and Conservation (DEC) 2006, *Assessing Vibration: A Technical Guide*
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