NSW GOVERNMENT | Planning

MAJOR PROJECT ASSESSMENT
Hume Highway Duplication Project
Woomargama Bypass

Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

December 2009

Published December 2009
NSW Department of Planning
www.planning.nsw.gov.au

EXECUTIVE SUMMARY

The Woomargama Bypass is proposed by the NSW Roads and Traffic Authority, forming part of the Hume Highway Duplication Project, a government commitment to upgrade the existing highway between Sturt Highway junction and Table Top (north of Albury). The proposal consists of approximately nine kilometres of dual carriageway highway as an alternative to the existing Hume Highway through the town, commencing approximately three kilometres west of the village to 7.5 kilometres north of the village. The proposal would link to the existing Hume Highway at the northern and western extents.

The key benefits of the proposal include an expected reduction in accident rates of approximately 34 percent, improvements to local and regional transport efficiency, road safety, and increase infrastructure handling capacity and efficiency between Melbourne and Sydney.

The key issues associated with the project relate to impacts on flora and fauna, Aboriginal heritage, surface water and groundwater, noise and vibration, social and economic and traffic and transport. These issues were reflected within the seven submissions the Department received during the exhibition period for the Environmental Assessment. Submissions were received from the Department of Environment, Climate Change and Water, including the Office of Water, the Department of Industry and Investment, Department of Transport and Infrastructure, Land and Property Management Authority, Greater Hume Shire Council and one member of the community.

Based on its assessment, the Department is satisfied that the Proponent has adequately assessed the impacts of the project and these impacts can be managed and mitigated to achieve acceptable environmental outcomes. In relation to biodiversity impacts, the Department considers that clearing of the Endangered Ecological Community (Box Gum Woodland) and impacts to threatened species are to be appropriately managed with the implementation of the Biodiversity Offsets Strategy and Package.

On balance, the Department considers the project to be justified and in the public's interest and should be approved. The Department has recommended a suite of conditions of approval for the project to mitigate and manage these impacts, such as fauna crossings, construction noise and vibration management plan, flooding management, visual screening and maintenance of property access. The Department considers these conditions to be adequate in ensuring measures are in place at different phases of the project, and that construction and operation impacts on the surrounding environment and amenity of local residents, sensitive receivers and road users are managed to acceptable levels.

Notwithstanding, the Department acknowledges that there will be residual impacts on the environment and local community, which will need to be considered at the detailed design stage. However, the Department has concluded that residual impacts are considered minor and given the benefits that the project would provide to the general public, the Department recommended that the Minister for Planning approve the project, subject to the imposition of the recommended conditions of approval.

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1. BACKGROUND

1.1 Hume Highway Upgrade Program

The Hume Highway is the major interstate passenger and road freight corridor between Sydney and Melbourne, carrying over 40,000 vehicles daily and over 20 million tonnes of road freight per year.

Under the AusLink White Paper, the Australian Government's formal policy statement on land transport, a National Land Transport Plan was established, which defines a National Transport Network that includes the Hume Highway. The AusLink strategic priorities for the Hume Highway are to improve performance, capacity and safety, with an objective of achieving dual carriageway conditions along the entire highway by 2012.

Currently, 89 kilometres of the Hume Highway in NSW has yet to be duplicated. Of this, 67 kilometres is contained within projects currently under construction, which are due to be completed by late 2009. In 2004, the Australian Government announced its objective to complete the upgrade of the remaining single carriageway at Woomargama, Holbrook and Tarcutta by 2012 in order to provide dual carriageway conditions between Sydney and Melbourne.

In December 2008, as part of the Nation Building Plan, the Australian Government announced an advance payment of $265 million to be provided to NSW to accelerate the construction of the Woomargama bypass, to complete duplication of the Hume Highway by 2012. To meet this timeframe, the Federal Government has brought forward the completion date of the Woomargama bypass from 2012 to late 2011.

1.2 Location and Land Use

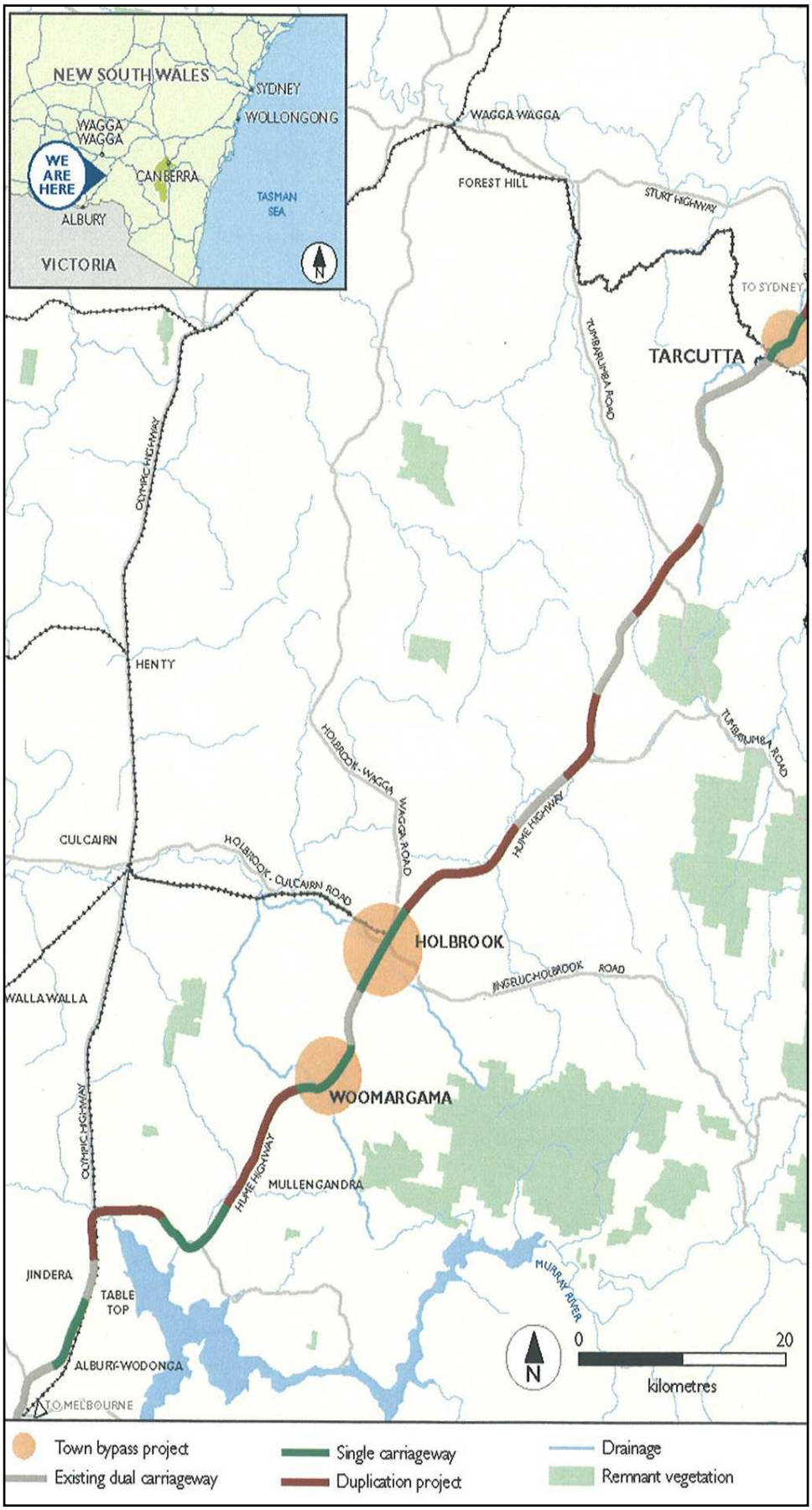
Woomargama is located on the Hume Highway approximately 50 kilometres north of Albury and 15 kilometres south of Holbrook (refer to Figure 1, over). Woomargama is a small, rural village with a population of approximately 80 residents (ABS, 2006) within the Greater Hume local government area.

The Hume Highway is currently the main street of Woomargama. Adjacent to the highway are land uses comprising of residential and commercial. The village's main residential area is located to the south and along the existing Hume Highway. Immediately to the north-west of the existing highway are rural-lifestyle and hobby farm properties, adjoined by larger rural properties further up north. To the west of the existing highway is Mount McKenzie, which is clearly visible from the existing highway.

Businesses in the village of Woomargama include a petrol station, hotel/motel, post office and an earthworks company. Other businesses include agribusiness enterprises on both large and small rural properties in the immediate area.

The landform of the area immediately surrounding Woomargama is undulating to hilly, with the village located at a local low point with the floodplain of Mountain Creek and other creeks. The landscape gradually steepens to Mount McKenzie to the west and Woomargama Gap to the north. Native vegetation surrounding Woomargama has been extensively cleared, as land in the locality is used primarily for agricultural purposes

Figure 1 - Hume Highway Upgrade Program (RTA, 2009)



2. PROPOSED DEVELOPMENT

2.1 Project Description

The Roads and Traffic Authority (the Proponent) proposes to construct a bypass of the village of Woomargama (the project) located on the Hume Highway, approximately 50 kilometres north of Albury, 15 kilometres south of Holbrook and approximately 95 kilometres south of Wagga Wagga. The project would include the construction of a new dual carriageway highway three kilometres west of the village to 7.5 kilometres north of the village, encompassing a total length of approximately nine kilometres (refer to Figure 2).

Key components of the project are:

- approximately nine kilometres of dual carriage;
- an at-grade intersection with the existing Hume Highway approximately 6.5 kilometres north of Woomargama village;
- bridges over Sandy Creek;
- six deep cuttings;
- twin bridges over Mountain Creek;
- an at-grade intersection with the existing Hume Highway approximately two kilometres south of Woomargama village; and
- an upgrade to the at-grade intersection at Fairbairn Road.

The project will be located to the west of the Woomargama village at a maximum distance of three kilometres from the existing highway.

The primary objective of the project is to provide a dual carriageway bypass of Woomargama. The project-specific objectives are to:

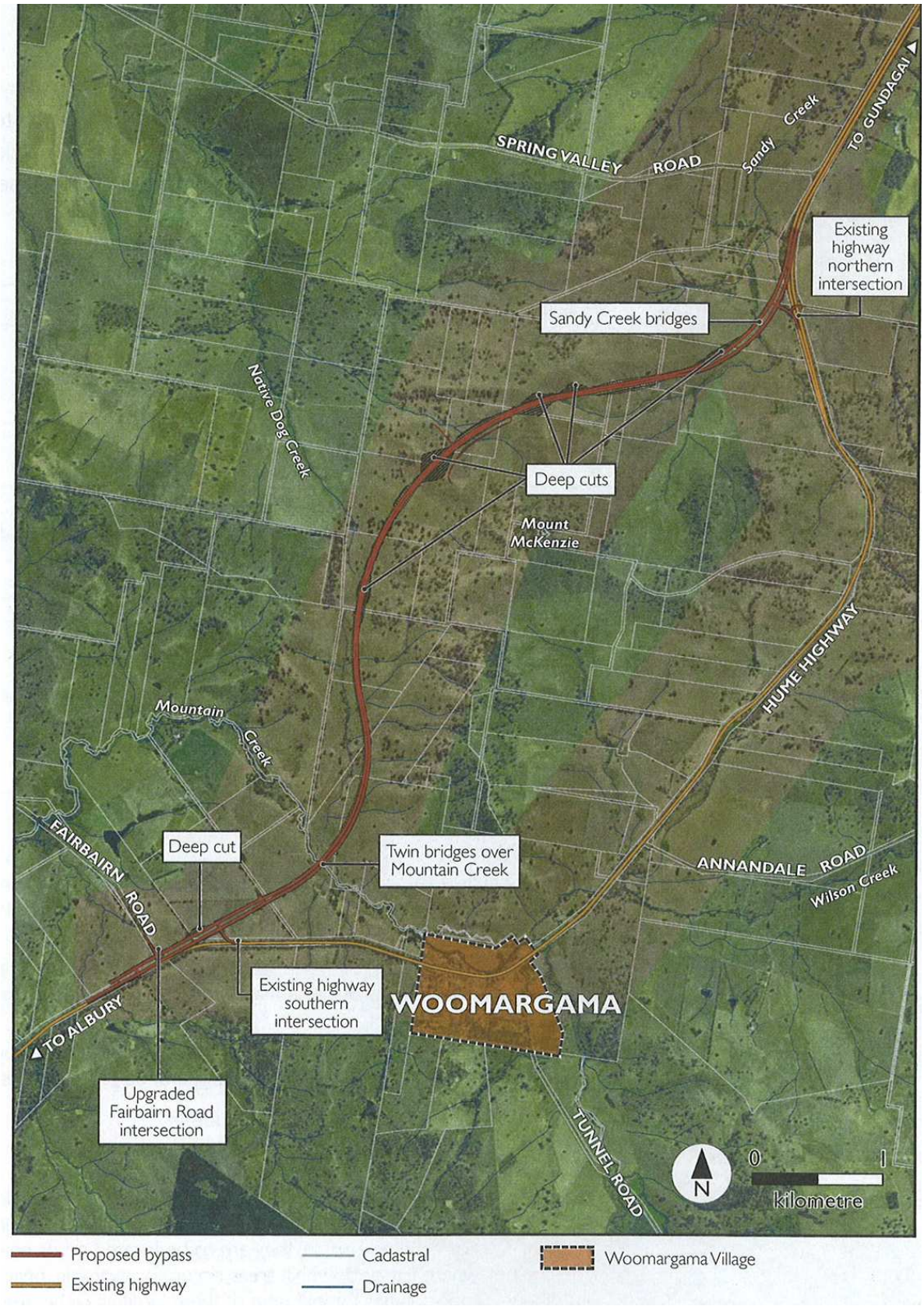
- improve safety and traffic and travel efficiency;
- meet community needs for the long term;
- minimise adverse impacts on the environmental values of the area; and
- cost effective and affordable outcome.

2.2 Project Need and Context

Traffic volumes on the Hume Highway in the vicinity of the project have risen significantly over the past 10 years at a rate of approximately three to four per cent per annum (linear). In 2006, traffic volumes on the Hume Highway at the RTA count station to the south of Woomargama were 5,120 vehicles per day, of which 40 percent were heavy vehicles. In the same year, traffic volumes just north of Woomargama at the traffic count station to the south of Holbrook were 4,900 vehicles per day, of which 40 percent were heavy vehicles, whilst traffic volumes further north along the Hume Highway, to the south of Tarcutta were recorded at 4,470 vehicles, of which 45 percent were heavy vehicles.

The *Hume Highway Strategic Planning Study Final Report*, conducted by Connell Wagner in 2004 identified that traffic volumes on the highway would continue to increase. By 2021, traffic volumes to the south of the Sturt Highway would reach a maximum of 9,000 vehicles per day, of which 3,600, or 40 percent are heavy vehicles. The Study concluded that if the Hume Highway was upgraded to dual carriage, its performance south of the Sturt Highway would be acceptable until 2021 and beyond. The Study also concluded that future investment in rail would only marginally reduce traffic volumes along the highway and would not offset the need to upgrade the Hume Highway to dual carriage. In light of this, the need for the proposal is based on a combination of factors relating to travel efficiency and road safety.

Figure 2 – Proposed Upgrade Alignment (RTA, 2009)



Travel Efficiency

The existing dual carriage sections of the Hume Highway are currently operating at a level of service (LoS) of A (well above the acceptable performance of LoS of D), with significant capacity to accommodate traffic growth. Should the Hume Highway in NSW be upgraded completely to dual carriage, the performance of the highway to the south of Sturt Highway would not exceed an LoS of C by 2021.

In contrast, existing traffic conditions on the highway through Woomargama during the weekday peak hour conditions are acceptable (LoS of B), with conditions worsening during the night-time period due to high volume of truck traffic. Traffic delays and congestion are expected, in particular during high traffic times, including the long weekends and school holidays. Based on the Hume Highway Strategic Planning Study, it was identified that the existing highway through Woomargama would experience an LoS of D by 2012, and would continue to deteriorate to LoS of E or F in the years of 2022 and 2032.

Upgrading to dual carriageway would result in network improvements to transport efficiency and traffic safety, as limitations due to lane capacity, speed restrictions and pedestrian interaction could be reduced.

Road Safety

A total of eight crashes were reported at the single carriageway section of the highway around Woomargama between 2002 and 2006. Whilst this crash rate is lower than the typical rate for a single carriageway two lane rural main road, and the measured rate on the divided carriageway sections of the Hume Highway, the crash rate is likely to increase in the future if the highway remains as a single carriageway. This is due to inconsistencies in driving conditions where drivers may not react accordingly.

Based on recent crash history data, the project is expected to reduce crashes at Woomargama by 34 percent. When projected over a 20-year time frame from the time of opening, the project is expected to reduce four injury crashes and 26 tow-away crashed. This is achieved by:

- reducing conflicts between local traffic and through traffic in the village;
- providing improved clear zones and sealed shoulders on the project to reduce the incidence and impact of any run-off road crashes;
- providing a central median on the project to reduce the incidence and impact of head-on crashes; and
- controlling access to and from the project.

Strategic Need

The Hume Highway is the main freight corridor between Melbourne and Sydney, carrying over 20 million tonnes of road freight every year. Further, the corridor is part of the Auslink National Network and provides link for road freight transport goods within the state and regional road network.

The existing single carriageway sections of the Hume Highway are located between Sheahan Bridge at Gundagai and Albury, where construction for the dual carriageways in this area is near completion. The proposed town bypasses at Woomargama, Tarcutta and Holbrook (currently assessed by the Department), would provide consistent dual carriageway conditions along the entire Hume Highway from Melbourne and Sydney.

Under the *AusLink White Paper: Building Our National Transport Future* (Federal Government, 2004), the paper identified seven national objectives for the AusLink investment program, which aims to promote sustainable national and regional economic growth, development and connectivity. The bypasses, which form part of the Hume Highway duplication project, would contribute to the objectives for the AusLink National Network in the following manner:

- increase infrastructure handling capacity and efficiency;
- improve safety and security;
- improve transport productivity; and
- improve the reliability of travel.

The Department considers the bypasses at Woomargama, Tarcutta and Holbrook to be vital to the State. The Australian Government's 2007 *Sydney-Melbourne Corridor Strategy* stated that road freight will continue to dominate the corridor for the foreseeable future with a projected increase to around 25 million tonnes by 2009

and approximately 70 percent over the next 20 years. Completion of the bypasses will enhance road freight competitiveness by contributing to the completion of a continual dual carriageway highway and improving the level of service of the highway through reductions in travel times and congestion. The bypasses would also deliver significant improvements to road safety for all drivers along the corridor across all categories (fatal, injury and total). As a result, the Hume Highway bypasses would deliver significant economic and social benefits to the State and regional businesses as well as improving the amenity and lifestyles of these localities and providing potential for town centre improvements.

Duplication of the Hume Highway (including the bypasses) is one of the projects identified under the *State Infrastructure Strategy – New South Wales 2008-2009 to 2017-18* (NSW Government 2008), which provides strategic direction for planning and delivery of infrastructure in NSW. Related to the Strategy is the *State Plan 2006: A New Direction for NSW*, which identifies the duplication of the Hume Highway at Woomargama by 2012 as a major road upgrade that would contribute to an effective transport system in NSW.

The project is consistent with the aims and objectives of the above NSW State Government policy and strategies and provides social and economic benefits to the State.

3. STATUTORY CONTEXT

3.1 Major Project

On 20 December 2007, the then Minister for Planning declared the Woomargama bypass (as well as the Tarcutta and Holbrook bypasses) to be projects to which Part 3A of the *Environmental Planning and Assessment Act 1979* applies.

3.2 Critical Infrastructure Project

On 4 March 2009, the then Minister for Planning declared the Woomargama bypass (as well as the Tarcutta and Holbrook bypasses) to be critical infrastructure projects under Part 3A of the *Environmental Planning and Assessment Act 1979*.

3.3 Relevant Environmental Planning Instruments

There are no State Environmental Planning Policies that substantially govern the carrying out of the project.

3.4 Minister's Approval Power

Pursuant to sections 75H and 75I(2)(g) of the Act, the Director-General was satisfied that the Environmental Assessment documentation prepared for the application had addressed the environmental assessment requirements issued for the proposal on 10 December 2008. A copy of the Environmental Assessment is attached (see Appendix D).

The application and Environmental Assessment for the project application were placed on public exhibition from 23 September 2009 to 26 October 2009 and submissions invited in accordance with Section 75H of the Act. The Environmental Assessment was also made publicly available on the Department's website.

The Department has met all its legal obligations so that the Minister can make a determination regarding the project.

4. CONSULTATION AND ISSUES RAISED

The Department received seven submissions during the exhibition of the Environmental Assessment. One submission was received from the general public and the remainder were from Government agencies.

The public submissions raised concerns over the justification project. The submission stated that in light of future oil and energy supplies and the climate change challenge, traffic increase between 2011 and 2031 which form part of the project justification will not materialise. Funds should instead be spent on upgrading rail lines, rail sidings and the purchase of new rolling stock.

Issues raised in submissions from Government agencies are summarised below.

Department of Environment, Climate Change and Water (DECCW)

Flora and Fauna

- A number of amendments to the draft Statement of Commitments are recommended in order to ensure that impacts on biodiversity and threatened species are minimised.

Noise and Vibration

- The *Interim Construction Noise Guidelines* should be adopted as the appropriate construction noise mitigation framework reference document for the project.
- Best practice blast preparation and design should be used to ensure compliance with ground vibration and air blast overpressure limits. Monitoring should be undertaken at the most impacted residence for all blasts.
- Conditions of approval relating to construction and blasting activities have been recommended.
- The Noise Impact Assessment undertaken may have under-predicted by 3-4.5 dB(A). A 'review of operational noise mitigation measures' should be submitted for approval of the Director-General within six months of commencing construction.

Monitoring

- Conditions requiring appropriate environmental monitoring should be included in the Project Approval.
- Installation of a weather station is recommended to monitor the parameters of rainfall, temperature and wind speed and direction.

NSW Office of Water (NoW)

- Approvals and/or licences under the *Water Act 1912* or *Water Management Act 2000* may be required for certain activities. The Proponent is recommended to liaise with the NoW to ascertain information required to obtain any necessary approvals.

Greater Hume Shire Council

- Council commented on a number of issues that it considered the Department should consider in its assessment. The key matters are as follows:
  - $\Rightarrow$ intersection and property accesses – Council requests that a grade separated intersection be considered at the southern entrance to Woomargama; and
  - $\Rightarrow$ social and economic – the economic impact of the project on businesses located in the Woomargama village. Further measures beyond that suggested in the Environmental Assessment should be provided to ensure the ongoing viability of the Woomargama community.

Department of Industry & Investment (DII)

- The DII noted areas of interest previously raised have been included in the Environmental Assessment.
- There are no outstanding issues of interest to the agency.

Land and Property Management Authority (LPMA)

- The preferred route may impact on Crown land and Crown roads. The LPMA requires continued access to the identified Crown Roads and Crown land, and the sites be restored to their original states.
- Adherence to the advice and recommendations by DECCW in regards to threatened species and habitat preservation.

- Consent and/or adherence to all other statutory requirements of this project. Concurrence from any identified Reserve Trusts.
- Minimal environmental disturbance to Crown land. Avoid the unnecessary removal of any native trees and shrubs.
- Do not cause damage or increase soil erosion.
- Appropriate sediment and dust control measures are to be provided.
- Management of noxious weeds.
- Remediation works on Crown land will be responsible by the Proponent.

Department of Transport and Infrastructure (NSWTI)

- No objection to the proposal.
- Previous comments raised in regard to potential disruptions to school bus rotes during construction and opportunities for cycle access have been satisfactorily addressed.

4.1 Submissions Report

On review of the issues identified in submissions, the Department required the Proponent to prepare a Submissions Report to address each of the issues raised in those submissions. As part of this process, the Proponent reviewed each submission and made specific comment in relation to each issue identified. Some changes to the Statement of Commitments were also made. The revised Statement of Commitments and the Response to Submissions are attached to this report as Appendix C and Appendix D respectively.

The DECCW and Greater Hume Shire Council were provided copies of the Submissions Report for review. No further comments/issues were raised subsequent to this review process.

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

After consideration of the Environmental Assessment, submissions, Preferred Project Report and Statement of Commitments, the Department has identified the following key environmental issues associated with the proposal:

- Ecological impacts;
- Aboriginal heritage impacts;
- Hydrological impacts;
- Noise and vibration impacts;
- Social and economic impacts; and
- Traffic and transport impacts

All other issues are considered to be minor and have been adequately addressed as part of the Statement of Commitments.

5.1 Ecological Impacts

Issues

The construction of the project would result in the clearance of eight hectares of native vegetation. This clearing would comprise the following:

- eight hectares of vegetation assumed to be Box-Gum Woodland (an endangered ecological community (EEC) under the *Threatened Species Conservation Act 1995*), four hectares of which fits the definition of the critically endangered ecological community under the *Environment Protection and Biodiversity Conservation Act 1999*; and
- one hectare of riparian vegetation.

The extent of Box-Gum Woodland has been conservatively estimated by the Proponent based on the spatial extent of individual species (ie scattered vegetation), and would be confirmed with more detailed survey work prior to the commencement of construction. Given the conservatism of the estimate, it is expected that survey data will in fact reduce the total extent of endangered ecological community to be removed.

Habitat fragmentation has been identified as an issue relevant to the project. Habitat fragmentation can result in significant adverse impacts upon fauna, with specific impacts including:

- barrier effects: where particular species are either unable or unwilling to move between suitable areas of fragmented habitat;
- genetic isolation: where individuals from a population within one fragment are unable to interbreed with individuals from populations in adjoining fragments; and
- edge effects: where a zone of changed environmental conditions (i.e. altered light levels, wind speed and/or temperature) occurs along the edges of habitat fragments.

The project may also have the potential to impact on waterways, including Mountain Creek which is classed as Class 1 Major Fish Habitat under the Department of Industry and Investment (DII) guidelines on fish passage requirements. Whilst the riparian bank vegetation of Mountain Creek is dominated by weeds, and water quality within the creek is considered generally poor with some variables outside the relevant Australian and New Zealand and Conservation Council's guidelines, the Southern Pygmy Perch, a threatened fish species, has a high likelihood of occurrence in the Creek. The project will require the construction of waterways crossings, which may modify the natural hydrology of the watercourses, resulting in excessive flow velocities, modified water depths, and increased water turbulence. Other impacts may occur, such as decreased light levels and blocked debris, which would restrict fish passage.

Due to past agricultural clearing, remnant vegetation and fauna habitat in the region is highly fragmented and modified. Targeted flora and fauna assessment confirmed the presence of three threatened species (Squirrel Glider, Brown Treecreeper, Gang-gang Cockatoo), one listed migratory species (Rainbow bee-eater) and one species that has received a preliminary determination for inclusion under the schedules of the *Threatened Species Conservation Act 1995* (Little Eagle). Five additional bird species (listed under a preliminary

determination for inclusion under the schedules of the *Threatened Species Conservation Act 1995*) were considered to have a moderate likelihood of occurrence.

No individual threatened flora species were recorded within the assessment area, although potential habitat does occur for a range of threatened species, including three threatened species of plant (small surf-pea, Mountain Swainson-pea and Austral Pilwort).

There will be cumulative impacts as a result of the Hume Highway duplication projects. The cumulative impacts would include a greater extent of clearing of native vegetation and habitats, including threatened ecological communities, as well as further fragmentation of habitats, including habitat for threatened flora and fauna. It is estimated that a total of approximately 128 hectares of native vegetation has been or would be cleared for the five current duplication projects and the three town bypass projects on the Hume Highway. The current project would contribute 6 percent of this clearing. The total extent includes an estimated 93 hectares of endangered ecological community, of which the Woomargama bypass project contributes up to eight hectares. The loss of 93 hectares of endangered ecological communities is considered significant in the context of cumulative regional impacts.

The Proponent proposes to develop a biodiversity package to offset residual impacts on biodiversity, including threatened species and populations, as a result of the three proposed town bypass projects (Woomargama, Tarcutta and Holbrook). The package would be developed in consultation with the DECCW and other relevant stakeholders, guided by the Proponent's *Hume Highway Duplication Biodiversity Offset Strategy* prepared for the broader Hume Highway upgrade program.

To mitigate and minimise impacts on native flora and fauna, the Proponent has endeavoured, where feasible, to avoid areas of high to moderate quality habitat in the planning and route selection process. However, in areas where total avoidance of impacts is not possible, the Proponent has proposed to:

- implement construction management measures, such as a two stage clearing protocol for all hollow-bearing tree clearing;
- develop fauna crossings in consultation with relevant government agencies;
- implement strategic revegetation works in the highway corridor to increase fauna habitat linkages and enhance riparian areas;
- avoid works within the main watercourse of Mountain Creek during breeding season of the Southern Pygmy Perch unless mitigation measures are developed in consultation with the Department of Industry and Investment;
- design waterway crossings, including temporary works, in accordance with the fish habitat classification of each waterway and in consultation with the DII; and
- maintain natural flow of all water bodies in accordance with DII guidelines.

Submissions

The submission from the DECCW raised concerns regarding the impacts of the project on threatened species habitat, and increased habitat fragmentation, as the area of habitat to be clear contains significant areas of Box-Gum Woodland which provides habitats for a range of threatened species, in particular woodland birds and squirrel gliders. The DECCW also raised concerns that the area of habitat to be cleared may have be underestimated where woodland communities may not have been mapped. The DECCW provided conditional support to the project subject to the Proponent addressing a number of issues through the revised Statement of Commitments.

The LPMA identified the need to minimise environmental disturbances to Crown land, avoidance of unnecessary removal of native trees and shrubs and the need to undertake management measures for noxious weeds.

Consideration

Terrestrial Ecological

The Department acknowledges that impacts on biodiversity values of the area have been minimised through careful route selection, as the landscape traversed by the preferred project alignment is extensively cleared of native vegetation, and a minimal number of creek crossings is required, thus lessening impacts on aquatic flora

and fauna. The Department considers that the residual loss of vegetation necessary for the implementation of the project is unavoidable, based on acceptance of the need to improve road safety and efficiency. Notwithstanding, given the extent of clearing resulting from the project, together with the broader Hume Highway upgrade program, vegetation loss is considered significant (for the Hume Highway upgrade program in total, an estimated total of 128 hectares of native vegetation will be cleared, of which 98 hectares are endangered ecological communities). In this context, a combination of corridor-specific and regional offsets is needed to ensure impacts on threatened species are minimised and addressed adequately.

The then Minister, as a condition of the concept plan approval granted to the previous five Hume Highway duplication projects, required a Biodiversity Offsets Strategy to offset the cumulative and longer-term impacts on the Box-Gum Woodland community and the regional populations for the relevant threatened fauna species as a result of those projects. As the Strategy was developed in consultation with DECCW (including the Office of Water) and approved by the Department, it is considered appropriate to adopt the Strategy with revisions to be made to include biodiversity offsets required for this (and other) Hume Highway bypass projects. In determining the suite of biodiversity measures for the bypasses (Woomargama, Tarcutta and Holbrook), the Department has recommended a condition of approval requiring the Proponent to develop a Biodiversity Offset Package, based on the revised Strategy, to be prepared, in consultation with the DECCW and the Department of the Environment, Water, Heritage and the Acts, and submitted for the approval of the Director-General prior to construction of the project.

Whilst the Package will ensure that the delivery of regional offsets would address the contributions that the project would have towards the cumulative impacts of the Hume Highway upgrade program, the Department considers that localised impacts will also need to be addressed through the implementation of management and mitigation measures. The Proponent has proposed to implement corridor-specific measures during the pre-construction and construction periods, such as habitat clearing procedures to minimise the disturbance of fauna. The Department supports the proposed measures to minimise and avoid biodiversity impacts resulting from the project. Nonetheless, to ensure due consideration is given to the biodiversity impact during the construction state, the Department has recommended conditions of approval requiring a Construction Flora and Fauna Environmental Management Plan and a Threatened Species Monitoring Program, which will monitor mitigation measures during the construction phrase to ensure the biodiversity outcomes are achieved and modified if necessary. Further, a condition is recommended to ensure the implementation of effective weed control in all revegetated area which may have potential value as wildlife habitats.

With respect to the provision and effectiveness of crossing points for threatened species, the Department considers that further investigation is required to determine the most appropriate approach in delivering aerial crossing measures, fauna underpasses and threatened woodland bird crossing measures. This would require expert advice from an appropriately qualified ecologist on the need, location and design of the crossing measures prior to the commencement of construction to ensure that these measures reflect the needs of the targeted species. On the above basis, the Department recommends the imposition of the following conditions:

- expert advice be provided to the Proponent and DECCW on the need, location and the design requirements for the threatened woodland bird crossing measures; and
- construction work be prohibited in proximity to the agreed threatened woodland bird crossing points until the need and design requirements for the crossings points are agreed by the Proponent and DECCW to ensure that the requirements are duly considered within the context of the governing road safety requirements and are incorporated (where relevant) into the final road design.

Aquatic Fauna

The key impacts of the projects on threatened fish species and an EEC could result from the proposed crossings or works for the project if those works affect flow velocities, water depths in creeks and water turbulence. The Department is satisfied that any potential impact on threatened fish species and the EEC could be effectively minimised through the implementation of construction management controls and the appropriate design of water crossings and temporary works in accordance with relevant guidelines. The project does not require realignments of drainage lines and/or overflow channels. This would avoid the overall disturbance regime in creeks and waterways.

Nonetheless, the Department has recommended the following conditions to ensure any impacts on aquatic fauna

is appropriately mitigated and managed:

- consult with DII on the design of all water crossings;
- monitor for threatened fish species as part of the Threatened Species Monitoring Program, including pre-construction monitoring to confirm the presence of these species within the adjoining waterways; and
- implement specific mitigation and management control within the Flora and Fauna Construction Environmental Management Plan, prepared in consultation with DII.

5.2 Aboriginal Heritage Impacts

Issues

A total of 24 Aboriginal archaeological sites, four Potential Archaeological Deposit (PAD) areas, five locations of specific Aboriginal cultural value and one scarred tree were identified within the assessment area. The majority of sites are located in association with the Sandy and Mountain Creeks. The assessment found that the majority of sites are considered to be of moderate to high archaeological and cultural significance, with the exception of two cultural places, which are considered to be of very high significance. Of all the identified sites, 18 sites would be directly or partially impacted by the project (but not the cultural places and scarred tree)

The Proponent has endeavoured to avoid impacts on Aboriginal heritage through the proposed road design where possible. However, where these impacts cannot be avoided, the Proponent has proposed to salvage affected items. The Proponent has also committed to undertaking further excavations of two PADs in order to confirm the significance of the archaeological deposit identified, but also to determine the subsurface integrity, extent, spatial distribution and nature of the cultural deposits. Salvage activities and investigations will be carried out in accordance with the Proponent's Cultural Heritage Assessment Report (CHAR). An Aboriginal Heritage Management Plan will be prepared prior to construction to establish appropriate procedures for the management and maintenance of Aboriginal cultural heritage, which may include consultation with Aboriginal stakeholders and the DECCW in relation to the avoidance and/or salvage of identified items and storage locations.

Under the CHAR, the Proponent proposes to salvage-excavate a portion of two archaeological sites (W23 and W24), whilst the undisturbed portions would be conserved through the placement of a geo-fabric protective layer over the sites, which would be removed upon completion of construction. Aboriginal stakeholders were consulted by the Proponent on the CHAR and specifically, the proposed conservation strategy at these sites.

Submissions

The DECCW is satisfied with the Environmental Assessment in relation to Aboriginal cultural heritage requirements, including Aboriginal stakeholder consultation and participation, archaeological assessment and impact assessment, mitigation strategies and management outcomes.

Consideration

The Proponent has committed to a program of archaeological subsurface testing and salvage at a number of sites having moderate to high Aboriginal heritage significance. To reflect this approach, the Department recommends that the Proponent be required to undertake subsurface testing for sites W-PAD-2 and W-PAD-4, as recommended in the Environmental Assessment. The Proponent's commitment to involve Aboriginal stakeholders in salvage excavation and surface collection as encouraged by DECCW's guidelines is supported by the Department. The Proponent has also committed to the preparation of an Aboriginal Heritage Construction Management Plan to be prepared prior to the commencement of construction, which would provide, *inter alia*, the outcomes of PAD excavations. The Department is satisfied that the commitments made would ensure the Aboriginal community is adequately consulted at the time that PAD excavations are undertaken.

With regards to PAD investigations, the Department considers that the findings and results of these works should be submitted to the DECCW for entry into the Aboriginal Heritage Information Management System, but also incorporated into the Aboriginal Heritage Construction Management Plan. This process ensures that adequate information is gathered prior to construction, thus enabling changes in detailed design or planned construction processes to be incorporated if necessary. A condition of approval has been recommended to give effect to this outcome.

The Department is generally satisfied that the proposed measures listed in the Environmental Assessment and CHAR are adequate and appropriate, and that Aboriginal heritage across the corridor is appropriately protected and the impacts minimised wherever possible. The Department is also satisfied that the road design and route selection has adequately considered the impacts on Aboriginal heritage. Mitigation measures including the recommended salvage and recording could provide some benefits to the general community through the conservation of items and provision of knowledge of Aboriginal heritage and landscapes in the region. Nonetheless, the Department recommends the following conditions of approval with respect to consultation and reporting of findings from surface testings and excavations:

- consideration of findings of the excavations during the final design stages of the project shall be in consultation with DECCW in order to avoid these sites or minimise the extent of any direct impacts to the PADs;
- identification and implementation of the required mitigation and management controls in consultation with the DECCW and the relevant Aboriginal stakeholders, which would be implemented through a Construction Heritage Management Plan; and
- implementation of a monitoring program to ensure items or places are being appropriately protected and managed during construction.

Whilst the impact of the project on potential subsurface deposits carries with it a minor level of uncertainty until detailed design is completed, based on the fact that quartz has been the dominant raw material identified (approximately 97% of all artefact scatters identified during the surface survey of the bypass corridor), with several artefacts of chert and quartzite also found, the Department considers it unlikely that other object types, apart from stone artefacts would be uncovered. Should unexpected finds, specifically any objects or remains of high significance which are not anticipated in the Environmental, the Department has recommended that the Proponent develop strategies should such instances occur. This will ensure that the Aboriginal community have sufficient opportunity to provide input into the management of uncovered objects, and in the case of unexpected finds, adequate level of engagement and participation of the Aboriginal community.

5.3 Surface Water and Groundwater Impacts

Issues

The project will cross the Mountain and Sandy Creeks and their tributaries, involving the construction of bridges, culverts and water quality basins. These structures have the potential to impact on afflux, flood levels, inundation times and velocity through changes in flow behaviour. The Proponent does not propose any physical alteration and/or realignment of Mountain and Sandy Creeks. However, Mountain Creek has a history of flooding where significant events were recorded in 1974, 1975, 1981, 1983, 1986, 1990 and 1991. Flooding events after 1994 have not been recorded due to the decommissioning of a stream gauging station.

An increase in impervious areas and the establishment of structures for ancillary and drainage works during construction have the potential to alter the local catchment by temporarily blocking or diverting drainage lines, which could create areas of flooding or ponding on the upstream side of the project and prevent flows to the downstream.

The Proponent has identified that during the construction phase, the project could affect flooding behaviour and change flood flow distribution across the Mountain Creek floodplain, causing temporary, though minor, impacts on adjacent properties. The project could also impact on unconfined alluvial aquifers which may result in aquifer compaction.

To minimise the impacts of the project, the Proponent aims to ensure major flow paths are maintained and adequate planning of construction activities are undertaken. Specific measures to be implemented include:

- maintain major flood flow paths during construction activities (Mountain Creek);
- ensure material stockpiles and storage areas are not located within the 10 year ARI flood plain;
- design ancillary facilities (ie haul roads) to overtop in a flood event;
- use diversion bunds to divert flows around construction works; and
- use erosion sediment control practices to manager erosion potential and water quality impacts.

The project may also potentially impact on water through generate of sediment, pollutants from roads and additional nutrients from rehabilitation of exposed soils. Water quality can also be affected by fill embankments, cuttings, excavations and activities involving land disturbance which would readily transport exposed soils and other pollutants such as fuel, oil or other chemicals, to nearby dams and waterways.

Submissions

The Department of Environment, Climate Change and Water (Office of Water) did not raise any objection to the project, subject to the inclusion of the recommended conditions, including a commitment to undertake a geotechnical investigation to assess the risk of aquifer compaction from road construction through areas of shallow groundwater, preparation of a Surface Water Management Plan and licensing requirements pertaining to the *Water Act 1912*.

Consideration

The Department is satisfied that the Proponent has demonstrated that impacts of flood behaviour and hydrology would be minor and that there will be no adverse impacts to hydrology subject to the drainage structures and water crossings being appropriately designed during the detailed design process, and implementation of the proposed mitigation measures. In this respect, the Department concurs with the Proponent's objective to ensure major flow paths are maintained and its commitment to undertake groundwater monitoring should geotechnical investigations determine necessary. Notwithstanding, the Department recommends a number of conditions of approval, including a condition requiring the design of the project to maintain existing hydrological characteristics to the greatest extent possible. The Department considers that these matters can be readily addressed through careful detailed design and acceptable and appropriate outcomes achieved that do not adversely alter existing hydrological characteristics.

In relation to water quality, due to the proximity of works to watercourses, preventative sedimentation and runoff measures are considered paramount at the construction stage. As such, the Department recommends a condition of approval requiring the preparation of a Construction Soil and Water Quality Management Plan, which is to detail how excavated and disturbed surfaces will be managed and water courses protected. This plan is to be developed in consultation with the DECCW and shall include details on how soil erosion, discharge of sediment or water pollutants from the site will be managed. Further, to prevent the exacerbation of pollutant levels entering into watercourses, a condition of approval has been recommended, which prohibits the pollution of waters.

The Department has also recommended conditions of approval in accordance with DECCW's (Office of Water) recommendations, which include requirements for the design of waterway crossings, culverts and other instream works.

5.4 Noise and Vibration Impacts

Issues

Construction Noise and Vibration

General construction of the bypass would involve earthworks, bridge works and paving which could generate significant noise emissions during construction period, which is expected to occur for approximately two years. Noise generating ancillary facilities involved may include concrete batching plants, hammers and saw cutters. As construction activity is not expected to be stationary for the entire construction phrase, the level of noise received at any residence would vary depending on a number of factors, including the particular activity being undertaken, proximity of receivers to the construction activities and shielding between the site and the residence.

In relation to general construction activities (site preparation, earthworks, piling, bridge structure and paving), the Proponent has predicted only one exceedance of construction noise goals at one receiver if those works are undertaken between during the day (7:00am and 7:00pm). This predicted exceedance is expected to be no more than 3 dB(A). In contrast, the Proponent has predicted several exceedances of construction noise goals by up to 6 dB(A) if construction activities are undertaken during the early morning period (6:00am to 7:00am)

The Proponent has sought blanket approval to undertake construction works, particularly paving and sawcutting, outside standard construction hours. During the evening period (7:00pm to 10:00pm), the Proponent has predicted exceedances of noise goals by up to 3 dB(A) for paving and up to 12 dB(A) for sawcutting. Similarly during the night time period, exceedances of up to 20 dB(A) for paving and 22 dB(A) for sawcutting are expected for some receivers.

To manage these impacts and reduce noise emissions to an acceptable level, the Proponent has proposed to prepare a Construction Management Plan which includes procedures to manage on-site activities and residential receptors. A noise monitoring program would also complement this plan and assist in determining compliance with noise goals.

The proposed construction works will generate vibration which may impact on nearby residences. However, since the separation distance of buildings from the construction site is more than 250m, no vibration impact is predicted by the RTA.

Operational Noise

There are approximately 63 residential receivers potentially exposed to traffic noise from the existing highway and/or the bypass project, including 47 residential receivers in the Woomargama village and 16 isolated residential receivers. Non-residential sensitive receivers potentially affected by the project include a community hall used as a childcare centre, a playground and park, and Saint Marks Church.

The assessment of operational noise was undertaken by the Proponent using the criteria for road traffic noise as it is set out in the *Environmental Criteria for Road and Traffic Noise* (ECRTN) (EPA 1999). The ECRTN classifies various road developments depending on the type of road and nature of development. The project is considered a 'new freeway or arterial road corridor' except for approximately one kilometre at the southern end of the project, where it is considered a 'redevelopment of existing freeway/arterial road' (and affecting two of the 63 receiver locations subject to the noise assessment).

The Proponent indicates that most residential receivers in Woomargama village are affected by traffic noise above traffic noise assessment thresholds. With the implementation of the project, this noise impacts are expected to be reduced by around 10 dB(A), bringing noise impacts to below assessment thresholds and therefore not requiring any further assessment of noise mitigation measures.

In relation to the 12 isolated residential receivers considered in the assessment, the Proponent predicts that six will experience traffic noise impacts above assessment thresholds. The table below summarises the outcomes of the Proponent's noise impact assessment, with predicted exceedances of the traffic noise assessment threshold being highlighted in bold.

Table 1 - Predicted Road Traffic Noise

Receiver	Existing Highway 2011 (no project)	Combined Project and Existing Highway 2011	Project 2021	Combined Project and Existing Highway 2021
107	**52**	**54**	**55**	**55**
108	50	**53**	**53**	**54**
109	49	**51**	**52**	**52**
116	50	**52**	**53**	**53**
102	44	48	49	49
103	43	47	48	48
105	41	44	45	45
117	46	**55**	**56**	**56**
126	**54**	**52**	**52**	**53**
127	**54**	49	49	50
125	52	53	53	54
168	55	53	54	54

Note: assessment threshold for receivers is 50 dB(A), except for 125 and 168 (road redevelopment segment) for which it is 55 dB(A).

Taking into consideration the noise the receivers would be subject to from the existing Hume Highway, it can be deduced that in 2021:

- four receivers would experience an increase in noise levels (102, 103, 105 and 125), but these increases would not cause an exceedance of the traffic noise assessment thresholds;
- two receivers would experience a decrease in noise levels (127 and 168) and would remain (or become in the case of 127) below traffic noise assessment thresholds;
- one receiver would experience a decrease in noise levels (126) and would remain above traffic noise assessment thresholds by 3 dB(A);
- five receivers would experience an increase in noise levels (107, 108, 109, 116 and 117), leading to an exceedance of traffic noise assessment thresholds.

Consistent with the requirements in *Environmental Criteria for Road Traffic Noise*, the Proponent considered further mitigation for those five receivers that would experience an increase in noise levels leading to an exceedance of traffic noise assessment thresholds. Of these, four receivers would experience a minor increase in noise levels (3-4 dB(A)) above existing traffic noise impacts and no more than 5 dB(A) above assessment thresholds. Receiver 117 will experience a significant increase (10 dB(A)) in traffic noise *relative to existing traffic noise impacts*, although the future traffic noise predictions indicate that the traffic noise assessment threshold would be exceeded by no more than 6 dB(A).

The Proponent argues that a mix of at-source and at-receiver mitigation measures are available to address the predicted exceedances of traffic noise thresholds. It has indicated that a final decision on which of these reasonable and feasible measures will be implemented will be decided during detailed design.

Submissions

The DECCW raised concerns regarding noise and vibration, specifically in relation to variation of standard construction hours and the need for refinement of noise modelling based on detailed design. The DECCW recommended conditions of approval with respect to both the construction and operation stages of the project, including construction and blasting hours, operational noise review and monitoring requirements.

Consideration

Construction Noise and Vibration

The Department is satisfied that the Proponent has undertaken an appropriate level of assessment of potential noise impacts associated with the construction of the project. Relevantly, construction noise goals are predicted to be met at all but one receiver, provided that works are undertaken during daylight hours (7:00 am to 7:00 pm). The one receiver at which noise goals are predicted to be exceeded is expected to receive no more than 3 dB(A) above the applicable goal. In this context, the Department considers that construction noise impacts with the daytime period are acceptable and can generally be managed within acceptable environmental limits.

The Proponent has identified that it may require three concrete batch plants to be installed and operated during construction of the project. In some cases, noise from theses batch plants is predicted to exceed construction noise goals. During daytime operations, these exceedances are expected to be marginal (2-4 dB(A)) and within the scope of reasonable and feasible mitigation and management measures to address. In the case of receivers 116 and 177, exceedances are expected to be significant (up to 27 dB(A)) and the Proponent has committed to negotiating relocation of the affected residences for the duration of such exceedances. The Department considers this approach to be appropriate, and highlights that the Proponent will need to undertake further consideration of noise mitigation and management for ancillary facilities such as the concrete batching plants during detailed design. To ensure that appropriate consideration is given to these matters, the Department has recommended conditions of approval that require noise mitigation and management measures to be clearly articulated in a Construction Noise and Vibration Management Plan for the project.

With respect to extension to standard construction hours, the Proponent has argued the proposed hours are required to provide an accelerated construction program to ensure timely delivery of the project. Potential problems which may impact on the program include technical and climatic constraints. Given that construction works outside of standard construction hours have been predicted to not only exceed construction goals for various works, but to do so at several receivers, the Department does not consider it appropriate to support a

blanket extension of construction hours, as sought by the Proponent. Further, the Proponent has not adequately demonstrated and justified the need for extended hours for all construction works, taking into account a reasonable scheduling of activities based on noise intensity, receiver sensitivity and proactive management of construction noise issues. Notwithstanding, the Department does accept that there may be genuine circumstances when flexibility is required given climatic and other constraints, and as such supports consideration and approval of out-of-hours construction works on a case-by-case basis or activity-specific basis, with any applications to be supported by a risk assessment process that involve consideration of mitigation measures to minimise noise and vibration impacts. Advice from the DECCW supports the Department's view. Consequently, the Department has recommended the following conditions of approval:

- the restriction of construction hours to 7am to 6pm, Monday to Friday, and 8am to 1pm on Saturday;
- a requirement for the Proponent to obtain either approval from the Director-General or Environmental Representative for any out-of-hours work if necessary. The out-of-hours work protocol shall detail standard assessment, mitigation and notification requirements;
- the implementation of a Construction Noise and Vibration Management Plan and monitoring program within the Construction Environmental Management Plan;
- out-of-hours work may be considered where a negotiated agreement has been reached with affected receivers; and
- implementation of a complaints handling and response program to ensure residents concerns are appropriately addressed.

With respect to construction vibration, the Department is satisfied that the potential impacts can be appropriately managed through a Construction Noise and Vibration Management Plan. The Department considers that appropriate mitigation measures should be incorporated into the Construction Noise and Vibration Management Plan to ensure any residual vibration impacts on receivers are assessed and suitably managed. This has been reflected within the recommended conditions of approval.

Blasting which may be undertaken for construction in deep cuts is located at a distance ranging from 310 metres to 3000 metres from the nearest receivers. To ensure air blast overpressure generated by blasting associated with the project does not cause a nuisance to sensitive receivers, the Department has recommended vibration overpressure and ground-borne vibration criteria to be imposed and to require the Construction Noise and Vibration Management Plan to provide appropriate procedures to manage blasting activities and a restriction of blasting hours to 9am to 5pm, Monday to Friday and 9am to 1pm on Saturday.

The Department is satisfied that the procedures and mitigation measures as recommended within the conditions of approval and the Statement of Commitments would ensure the appropriate management of construction noise and vibration throughout the construction period.

Operational Noise

The Department acknowledges that the project will generally lead to a decrease in traffic noise for receivers within the Woomargama village. Of the 12 isolated residences considered as part of the assessment of the project, it is also noted that at least three of these will experience a reduction in road traffic noise, and although one of these is predicted to exceed traffic noise assessment thresholds in future, this exceedance is considered minor (no more than 3 dB(A)). A further four residences, while experiencing an increase in road traffic noise as a consequence of the project, would not be subject to an exceedance of the traffic noise assessment thresholds. The Department considers the traffic noise impacts at each of these receivers to be acceptable, and the Proponent's consideration of impacts at these locations to be appropriate and consistent with road traffic noise assessment policy.

With respect to the remaining five receivers, exceedances of noise traffic assessment thresholds are predicted to be in the range 2-6 dB(A). The Department considers that there are reasonable and feasible noise mitigation measures that may be readily applied at-source and/ or at-receiver which could reduce traffic noise levels to within acceptable levels.

The Proponent proposes to provide architectural treatments at the five residences based on current traffic modelling. Since the noise modelling is based on assumptions and is necessarily predictive at the preliminary design stage, the Department considers necessary for the Proponent to assess the predicted outcomes and

assess the adequacy of the implemented traffic noise mitigation measures to ensure that further improvements may be afforded to the sensitive receivers. In order to provide further project specific detail of how traffic noise will be managed based on the detailed design of the project, the Department recommends that the Proponent submit a Review of proposed operational noise mitigation measures within six months of commending construction and in consultation of the DECCW,. The Review would detail the investigations of operational noise mitigation measures, which may include low noise pavements, roadside noise barriers and architectural acoustic treatments, and detail model validation that compares traffic noise measurements against modelled noise levels.

Further, the Department requires the submission of an operational noise audit within 12 months of opening to confirm the noise predictions and performance of the implemented noise mitigation measures, detailing any additional measures that may be required to ensure compliance.

The Department is satisfied that the recommended conditions of approval would provide the necessary mitigation measures to minimise the operational noise impacts generated by the project, and that appropriate mechanisms are in place to confirm and re-evaluate the need for any further mitigation measures for these impacted receivers once the project is operational.

5.5 Social and Economic Implications

Issues

The project is expected to have social and economic impacts on Woomargama from several perspectives. The existing highway, with high traffic volumes and heavy vehicles, causes impact on noise, vibration, air quality and public safety concerns. The proposed bypass is expected to reduce existing impacts but may result in different impacts, including:

- connectivity and severance; and
- viability, profitability, productivity and sustainability of business, including agribusinesses.

Woomargama is located in proximity to the larger towns of Holbrook and Albury, and its commercial activities comprise a service station, hotel/motel, post office and an earthworks contractor. The service station and hotel/motel are considered to be more dependent on passing traffic than the post office and earthworks contractor, with approximately 60 to 90 per cent of their businesses derived from passing trade. Previous studies on the impacts of highway bypasses have indicated that there is a reduction in stopping traffic following the opening of a bypass. This could potentially result in short-term impacts on businesses including a decrease in the value of highway-generated trade, the closure of highway-related businesses, loss of jobs and flow-on effects for other businesses and the community as a whole. However, during construction, the project is likely to have positive economic benefits for local and regional businesses, brought by construction personnel (up to 300 workers) which may provide localised economic stimulus and increase business turnover.

During construction, the project could cause temporary inconveniences to the community and interrupt traffic, as there will be an increase in heavy vehicles on the road network and diversions. The project would also result in both temporary and permanent changes to some property access arrangements, with some severance of existing rural landholdings.

Another socio-economic impact associated with the project relate to the impact to agribusinesses. The project directly affects three large rural properties that are approximately 1400 hectares in size. These properties are commercial agricultural businesses where agricultural activity provides the majority of the income. The extent of impact to these rural properties varies, with two of the three affected properties considered to experience substantial severance impacts, whilst the remain agribusiness is considered to experience minor edge effects. In total, there will be a loss of around 85 hectares of productive land ranging from land capability Class 2 (most suitable for cropping) to Class 6 (grazing land) required for the final road corridor, equating to around 0.1 per cent of the agricultural land in the Greater Hume Shire. The Proponent has proposed to acquire these land in preference to severing the affected properties to minimise fragmentation impacts on agribusiness operations.

There are no travelling stock routes located in Woomargama, although there are stock reserves along the existing Hume Highway which would not be affected by the project.

Submissions

The Land and Property Management Authority identified that Crown Public Roads and Crown Land may be impacted, and continued access to these areas is required.

The Greater Hume Shire Council raised concerns on the economic impact of the project, stating the environmental assessment presented a superficial review of the impact of the bypass on businesses in Woomargama. Council requires significant assistance from the Proponent, ensuring the ongoing viability of the Woomargama community, including funding for the installation of highway signage and the development of infrastructure in Woomargama to encourage travellers visiting the village.

Consideration

The Department identifies and acknowledges that the project will have an impact on the local economy once it is operational. The project will divert traffic away from the town and therefore lead to a reduction in stopover traffic and business. This is an unavoidable impact associated with most road bypass projects, which is ultimately offset by other benefits and needs, such as improved safety and reduced traffic congestion.

The local business impacts in Woomargama are expected to be noticeable, and can be partly attributed to the relatively small population of Woomargama and the lack of self-reliance on local business. As has been demonstrated by the Proponent, Woomargama has a reasonable dependence upon passing traffic. The Department agrees that it is not possible to avoid these impacts, however, the expected economic impacts should be mitigated as much as practicable. The Proponent has committed to working with the local council to develop and implement a signage strategy to remind passing traffic of the presence of Woomargama and its local businesses. This would assist, to some degree, in mitigating the expected reduction in 'spontaneous' traffic stops in the town. There would, however, remain some residual level of traffic prepared to exit the highway bypass and enter the town for a service stop, noting that there is little opportunity to do so along the highway outside of the town. The Department notes that the construction period is for two years, within which it is expected that local business will prosper from increased trade, and will allow affected businesses to plan for the future by considering relocation or other changes as deemed appropriate by the business owners.

With respect to the severance and acquisition of agricultural land, the Department considers that there will be significant impacts but also notes that the affected people will be duly compensated for the loss of any land. Furthermore, the Department accepts that no prime agricultural land would be impacted by the project, with the impacted land consisting of land suitable for cropping and grazing. This would limit the impacts and therefore have minimal impact on the viability, profitability and sustainability of agribusiness in the region.

The Department notes that the project has the potential to isolate certain properties from the village of Woomargama and to general access requirements which may be needed to provide continued use of properties for their intended function. In order to ensure that these impacts are not extensive, including the following requirements:

- ensuring that access is maintained to provide continued use of the surrounding properties existing functions;
- the Proponent is to design and construct the project in a manner that mitigates indirect and direct impacts to property and property infrastructure, including fencing, landscaping, walls, dams, bores and the like; and
- the Proponent is to identify utilities and services potentially affected by construction to determine requirements for diversion, protection and/or support.

The Department is satisfied that the socio-economic impacts will be mitigated as far as practicable. Whilst it is acknowledged that some economic impacts are likely as a result of this project, on balance, the benefits to the wider community are significant and therefore the Department considers that the socio-economic impacts of the project are acceptable.

5.6 Traffic and Transport Impacts

Issues

Construction Traffic

The Proponent has estimated construction-related traffic comprising 350 staff vehicles, 50 equipment deliveries, 650 material deliveries, and 100 other movements.

Traffic conditions on the existing Highway through Woomargama are currently generally acceptable in the context of levels of service (LoS) and road capacities, as summarised in the table below.

Table 2 - Existing Highway Traffic Performance

	Northbound Vehicles	Southbound Vehicles	Capacity Saturation	Level of Service
50th highest hourly volume	342	437	0.45	D
Weekday peak hour	178	182	0.20	B
Weekday night-time truck peak	136	99	0.18	B

50th highest hourly volume = the 50th largest hourly traffic volume recorded across the entire year, ranked from highest to lowest. This measure is often used as an upper bound for road design.

Based on the number of construction vehicle trips estimated, construction activities would generate up to 350 light vehicle and 800 heavy vehicle trips per day on public roads. This represents an 11 per cent and 24 per cent increase in light and heavy vehicle volumes of average weekday traffic respectively.

Operation Traffic

As part of the assessment of the operational traffic implications of the project, the Proponent has estimated the capacity saturation and levels of service for current and future scenarios, both with and without the project, as summarised below.

Table 3 – Operational Traffic Implications

Scenario	Without Bypass Project		With Bypass Project			
	Traffic on Existing Highway		Traffic on Existing Highway		Traffic on Bypass Route	
	Capacity Saturation	Level of Service	Capacity Saturation	Level of Service	Capacity Saturation	Level of Service
2008						
50th highest hourly volume	0.43	D	-	-	-	-
Weekday peak hour	0.2	B	-	-	-	-
Weekday night-time truck peak	0.18	B	-	-	-	-
2011						
50th highest hourly volume	0.49	D	0.03	A	0.30	A
Weekday peak hour	0.22	B	0.01	A	0.11	A
Weekday night-time truck peak	0.20	B	0.00	A	0.11	A
2021						
50th highest hourly volume	0.65	E	0.04	A	0.39	B
Weekday peak hour	0.28	C	0.02	A	0.14	A
Weekday night-time truck peak	0.26	C	0.01	A	0.14	A
2031						
50th highest hourly volume	0.90	E	0.05	A	0.52	C
Weekday peak hour	0.40	D	0.02	A	0.19	A
Weekday night-time truck peak	0.36	C	0.01	A	0.18	A

As indicated in the forecasts above, traffic volumes on the existing highway will continue to increase if the project is not implement and would eventually reach unacceptable conditions (LoS E or F) during peak traffic times through the year, including long weekends and school holidays in the years 2021 and 2031. However, if the project proceeds, the majority of traffic would travel on the bypass, and sufficient capacity would be provided to accommodate traffic up to at least 2031.

Submissions

A submission from the public raised concern regarding the concept of peak oil and subsequent decrease in demand for road transport.

Consideration

Construction Traffic

The Department notes that the additional traffic generated by construction activities would utilise both the local roads and existing highway, thus creating impacts on the existing road network where travel times may consequently increase with potential delays. To mitigate construction traffic impacts of the project, the Proponent has committed in the Statement of Commitments that construction vehicle movements and works programs will incorporate traffic control measures to minimise traffic and transport impacts on local roads and the existing highway. The Department is satisfied that the proposed measures can adequately manage construction traffic impacts of the project and minimise potential conflicts with non-project related traffic.

Operation Traffic

The Department is satisfied that the Proponent has undertaken a robust and comprehensive operation traffic assessment, taking into account future LoS at the 50th highest hourly volume. The Department considers that issues associated with operation traffic and concerns raised in submissions received have been adequately addressed as part of the Proponent's Submissions Report and Statement of Commitments.

6. CONCLUSIONS AND RECOMMENDATIONS

The Woomargama Bypass forms part of the Hume Highway Duplication Project, a project committed by the NSW and Federal governments in achieving the objectives of the AusLink National Land Transport Plan.

The project would result in improved safety for both motorists using the bypass and pedestrians travelling through the township of Woomargama by removing traffic and heavy vehicles from passing through the township. It would also reduce traffic noise and vehicle emission levels in the centre of the township, thus improving amenity levels that are of great benefit to the public.

Following assessment of the Environmental Assessment, Submissions Report and the submissions received during the exhibition period, the Department is satisfied that the proposed bypass is justified and impacts of the project can be appropriately mitigated or managed to acceptable levels. Consequently, the Department recommends that the project be approved subject to the recommended conditions of approval.

The environmental impacts that would result from the proposed bypass include impacts on threatened flora and fauna species, including the Squirrel Glider, and remnant stands of the endangered ecological community, Box-Gum Woodland. The Proponent has committed to minimising impact through design, clearing methodology, replacement of lost habitat where feasible, the provision of aerial crossings for the purpose of Squirrel Glider populations and the preparation and implementation of a Construction Flora and Fauna Management Plan developed in consultation with the DECCW and DII. The Department is satisfied that the proposed measures, complemented by the Biodiversity Offsets Strategy and Package, shall ensure that the predicted local and regional impacts on the Box-Gum Woodland and threatened species are appropriately managed and minimised, and that the required on-going monitoring shall ensure the long-term viability of the threatened species.

The proposal would also result in direct and indirect impact on sites and objects of indigenous and non-indigenous heritage along the project. The Proponent has given considerable consideration to minimising the number and extent of the impacts, and the Department is satisfied that the recommended conditions of approval shall ensure that the impact will be minimised and appropriate mechanisms are in place to ensure appropriate salvage and historic recordings are undertaken where this impact is unavoidable. Whilst the Department is generally not supportive of the removal of heritage items or associated landscape, however, since complete avoidance of impacts is not achievable, the Department has accepted these impacts but requires the Proponent to implement measures, including archival recordings and the engagement of a suitably qualified archaeologist to oversee any excavation work.

The project would alter the distribution of flow within the Mountain Creek floodplain both upstream and downstream of the proposed bridge over Mountain Creek. Changes in flow distribution may affect existing flooding characteristics, with consequential impacts to access and properties likely to occur. The Proponent has committed to minimise afflux at the detailed design development stage and ensure major flow paths are maintained. The Department of Environment, Climate Change and Water (Office of Water) has indicated its support of the proposal and commitments made by the Proponent subject to the imposition of the recommended conditions. The Department is satisfied that there will be no adverse impacts to hydrology, and impacts on water quality is protected through the Environment Protection Licence, which prohibits the pollution of waters under the *Protection of the Environment Operations Act 1997.*

Construction and operation noise is predicted to be exceeded at a number of sensitive receivers, in particular isolated residences that are in proximity to the project. The Department acknowledges that the Proponent has sought extended construction hours to expedite construction works to meet the completion date set by the Federal Government in their recent announcement on the Nation Building Package. However, given the extended construction hours would have an impact on amenity as receivers would be exposed to longer periods of construction during the week and the construction program has a prolonged time span of 24 months, the Department is not supportive of this element of the project. Nonetheless, the Department has recommended a condition of approval which allows the Proponent to seek out of hours work if necessary, subject to the approval of the Director-General or Environmental Representative. This condition provides a mechanism for the Proponent to seek extended construction hours if necessary to ensure timely completion of the project. Further,

the Department has recommended a number of conditions of approval in order to minimise and mitigate the impact of noise and vibration, including application of noise and vibration criteria and processes for monitoring and reporting of operational noise levels. The Department considers that with the implementation of these conditions and the Proponent's commitments, the potential noise and vibration impacts of the proposal would be mitigated to an acceptable level, such that the proposal is of benefit to the general public.

Social-economic impacts include potential loss of trade resulting from the bypassing of Woomargama village by the highway and both positive and negative impacts on access and amenity. Of particular concern is impact to local businesses dependent on trade from motorists using the existing highway. To mitigate direct economic impacts, the Proponent has undertaken to provide signage near the northern and southern intersections to denote the town's attributes, and consultation with Greater Hume Shire Council regarding assistance towards the development of strategies to encourage the continued viability of Woomargama. To ensure a comprehensive plan is in place to manage the social and economic impacts of the project, the Department has recommended a condition requiring the preparation and implementation of a Social and Economic Management Plan in developing short and long term mitigation measures for those social and economic impacts identified by Council and the affected stakeholders.

Traffic impacts are expected primarily during the construction phase of the project and relate to changes to access arrangements and construction vehicle traffic, which can be adequately managed through the implementation of a vehicle movements and works program. In relation to operational traffic impacts, the Department considers that the bypass would provide significant advantages of minimising traffic flow through the Woomargama village whilst the LoS of the bypass would remain in the acceptable range at least to the year 2031.

Finally, the Department has recommended conditions requiring the Proponent to undertake ongoing monitoring of environmental factors both during construction and periods during operation, and to track and report on compliance with the Minister's approval. The Proponent must also implement a system to ensure ongoing consultation with stakeholders, including the local community.

The Department is satisfied that, with the implementation of the Proponent's commitments and the recommended conditions of approval, the benefits of the project to the local and regional community would outweigh known and potential environmental impacts, particularly with respect to the impacts on biodiversity and Aboriginal heritage. Consequently, the Department recommends that the Minister for Planning approves the project.

Chris Wilson
Executive Director

Marcus Ray
A/ Deputy Director General

Sam Haddad
Director General

APPENDIX A – RECOMMENDED CONDITIONS OF APPROVAL

APPENDIX B – STATEMENT OF COMMITMENTS

APPENDIX C – RESPONSE TO SUBMISSIONS

APPENDIX D – ENVIRONMENTAL ASSESSMENT