NSW GOVERNMENT
Department of Planning

MAJOR PROJECT ASSESSMENT: Hume Highway Duplication

Southern Segments – Yarra Yarra to Holbrook and Woomargama to Mullengandra

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

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EXECUTIVE SUMMARY

The Hume Highway is and will continue to be a key interstate road passenger and freight corridor within the national transport network. The importance of this corridor is expected to continue over the next 20 years in conjunction with the expected growth in alternative modes of transport, with approximately 5,000 – 6,000 heavy vehicles forecasted to use the Hume Highway per day by 2025.

Sections of the Hume Highway within NSW remain as single carriageway. These sections pose a significant safety risk to all road users and impact on the overall road performance efficiencies of the Highway. With the continued importance of the Hume Highway, the predicted increase in passenger and heavy vehicle volumes will exacerbate current safety and performance conditions. This will have flow on-effects on the ability of this road corridor to cater for expected demands associated with its role within the national transport network.

To resolve these issues, the New South Wales State Government has committed under the Commonwealth Government's Auslink National Land Transport Plan to upgrade the remaining 108kms of single carriageway located between the Sturt Highway junction and Albury-Wodonga by 2012.

As part of this program of works, the NSW Roads and Traffic Authority (RTA) is proposing to duplicate five separate segments of the Hume Highway, totalling 45kms, by 2009. This proposal, referred to as the Hume Highway Duplication, was declared a critical infrastructure project under Part 3A of the *Environmental Planning and Assessment Act, 1979.* The RTA was also directed to submit a concept plan for the project by the Minister for Planning.

The Minister for Planning granted concept approval and project approval for the three northern segments of the project, referred to as Sturt Highway to Tarcutta (5km), Kyeamba Hill (9km) and Little Billabong (8km), on 20 July 2007 subject to conditions. The concept approval contained the overarching management strategies and mitigation measures that would be implemented across the total project corridor, such as the preparation of a Biodiversity Offsets Package to address the cumulative impacts the Hume Highway Duplication would have on endangered ecological communities and threatened fauna species.

The RTA has now sought project approval for the remaining two southern segments, referred to as Yarra Yarra to Holbrook (12km) and Woomargama to Mullengandra (10km). The project applications address the specific impacts of the proposed works associated with these individual segments.

The key issues associated with the two project applications relate to the local and regional impacts on flora and fauna, the impacts on Aboriginal and non-Aboriginal heritage, operational noise impacts, impacts on Mullengandra village and the shorter term impacts resulting from construction work, such as water extraction and demand management, construction noise and dust management. These issues were reflected within the seven submissions the Department received during the exhibition period for the Environmental Assessments. Submissions were received from the Department of Environment and Climate Change (DECC), the Department of Water and Energy (DWE), the Department of Primary Industries, Greater Hume Shire Council and three members of the community.

Following a thorough assessment of the Environmental Assessments and Response to Submissions, the Department accepts that the proposed alignments have been designed to minimise the impacts on the surrounding environment and local community, and that the extent to which these impacts can be minimised or avoided is limited by the proposed approach to the projects, being the duplication of the existing corridor and the governing road design and safety specifications that must be achieved. The Department is satisfied that an appropriate balance of these conflicting factors has been achieved and that the predicted impacts have been minimised wherever possible through the proposed alignments. The Department is also satisfied that the mitigation, management and monitoring measures, as recommended in the conditions of approval and the Statement of Commitments, will ensure that these impacts are minimised further during the detailed design, construction and operational phases of the projects.

The Department acknowledges that there will be some residual impacts on the surrounding environment and local community following the implementation of the recommended conditions of approval, particularly with respect to biodiversity and Aboriginal heritage. But it has been concluded that these residual impacts are acceptable given the benefits that the projects would provide to the general public, through significant improvements to road safety, and the benefits delivered to the region and State through improved road network capacity and performance for all motorists and the economic benefits delivered through improved road freight efficiencies.

Consequently, the Department recommends that the 'Yarra Yarra to Holbrook' and the 'Woomargama to Mullengandra' project applications be approved, subject to the recommended conditions of approval.

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1. BACKGROUND

1.1 The Hume Highway and AusLink

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 Federal Government's AusLink National Land Transport Plan, the Hume Highway has been progressively upgraded to improve road safety and efficiency with currently only 108 kilometres of the Hume Highway remaining as single carriageway in NSW. In 2004, the Federal Government announced its objective to complete the upgrade of the Hume Highway by 2012 in order to provide a continuous four-lane divided carriageway between Sydney and Melbourne.

To achieve this objective, the Federal Government allocated $800 million to the NSW Roads and Traffic Authority (RTA) in May 2006 to complete the upgrade of the Hume Highway between the Sturt Highway junction and Table Top. This includes:

- the completion of the remaining northern section of the Albury-Wodonga National Highway (Hume Highway) project (22km) by 2009. This was approved by the then Acting Minister for Urban Affairs and Planning in 1998;
- the duplication of 45km of the Highway located between the Sturt Highway junction and Mullengandra, referred to as the 'Hume Highway Duplication' project by December 2009.

At the completion of the above works, the remaining single carriageway segments of the Highway would be located at the settlements of Holbrook, Tarcutta and Woomargama. It is the intention of the RTA to construct town bypasses at these locations to achieve the AusLink objective by 2012. These projects would be the subject of future separate environmental assessment processes.

1.2 Locality

The 'southern segments' of the Hume Highway Duplication project are located within the Greater Hume local government area in south-west New South Wales.

The area surrounding the Hume Highway corridor is dominated by the surrounding agricultural uses and traverses fairly flat to undulating terrain with occasional low hills, valleys and granite outcrops. The regional landscape has been highly modified through agricultural uses, with remnant vegetation predominately restricted to road corridors and several Travelling Stock Reserves located adjacent to the Hume Highway. Beyond these areas, there are several protected nature areas including Woomargama National Park, Benambra National Park, Nest Hill nature reserve, Tabletop nature reserve and Mullengandra nature reserve as well as the Carabost State forest.

There are a number of residential dwellings and other sensitive receptors located adjacent to each project corridor, with the closest residence located 48 metres from the proposed Highway upgrade alignment. There are also a number of historic buildings and residences along the corridor, including hotels, homesteads, churches and schools that are associated with the historic alignment of the Hume Highway. These include Mullengandra Primary School and St Luke's Anglican Church, Mullengandra which are located adjacent to the Highway alignment.

The largest towns in the vicinity of the Highway upgrade corridor are at Holbrook (population of approximately 1,300) and Woomargama (population of approximately 150) and Albury-Wodonga. Smaller settlements are located at Mullengandra.

2. PROPOSED DEVELOPMENT

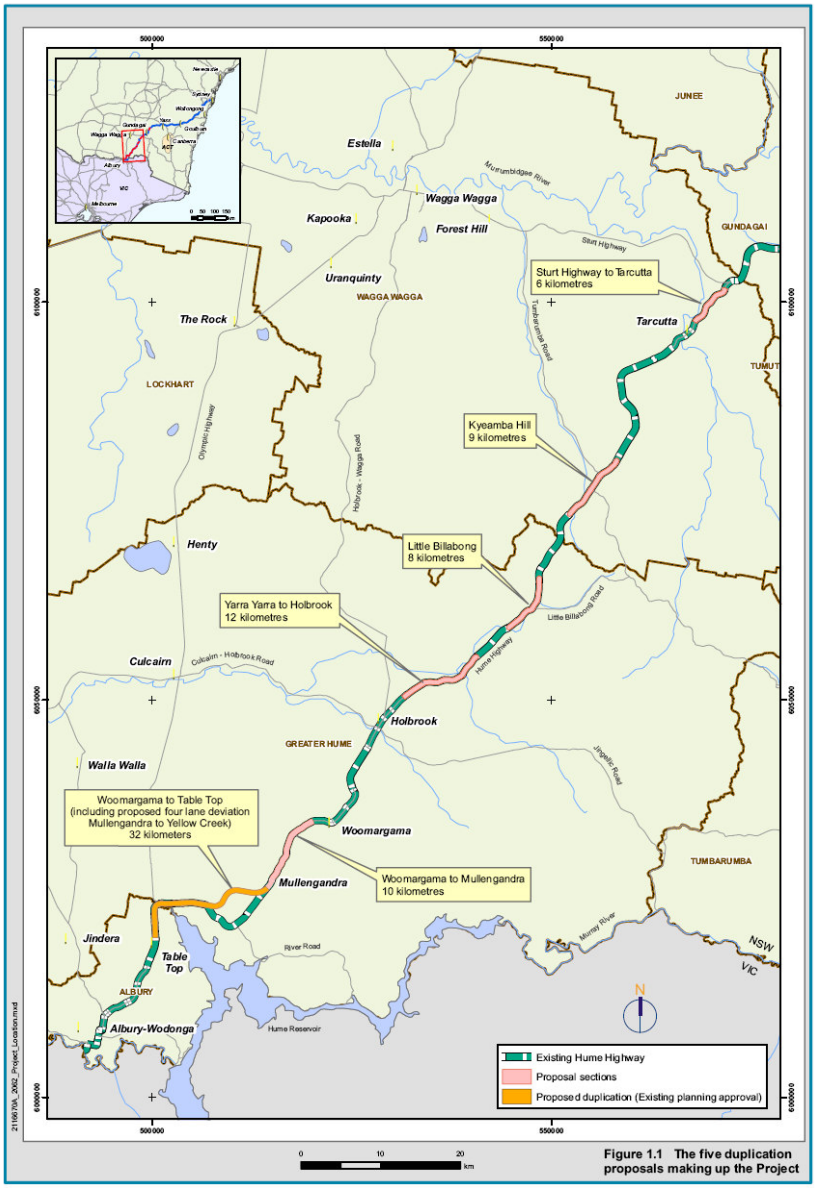
The proposed Hume Highway Duplication project is located between the Sturt Highway junction and Mullengandra within the Wagga Wagga and Greater Hume local government areas in south-west NSW. As illustrated in Figure 1, the proposed upgrade is not a continuous length but is divided into five individual segments, referred to as: 'Sturt Highway to Tarcutta'; 'Kyeamba Hill'; 'Little Billabong'; 'Yarra Yarra to Holbrook'; and 'Woomargama to Mullengandra'.

In order to obtain planning approval for the upgrade, the RTA has submitted a concept plan for the overall upgrade proposal (covering the extent of the five separate segments) and individual project applications for each segment.

On 20 July 2007, the Minister for Planning granted concept approval and project approval for the three 'Northern Segments', being Sturt Highway to Tarcutta (reference: 06_0245); Kyeamba Hill (reference: 06_0246); and Little Billabong (reference: 06_0247). The concept approval imposes conditions to address the cumulative issues across the total corridor, such as biodiversity, and management strategies that must be implemented across all project corridors.

This Director-General's report contains the assessment of the remaining two project applications for the 'Southern Segments': Yarra Yarra to Holbrook (reference: 06_0248) and Woomargama to Mullengandra (reference: 06_0249).

Figure 1 – The Hume Highway Duplication (Connell Wagner/ Parsons Brinckerhoff, March 2007)



2.1 Project Description

The proposed Southern Segments of the Hume Highway Duplication proposal involves the upgrade of 22 kilometres of the Hume Highway from a single carriageway to a dual carriageway. Wherever possible, the proposed duplication would involve the construction of an additional carriageway to complement the existing road corridor. However, where this cannot be achieved, either due to road design standards or environmental constraints, the proposed duplication would deviate from the existing road alignment with the construction of two new carriageways within or adjacent to the existing road corridor. In these circumstances, the redundant existing road carriageway would be reclassified as a local road in order to maintain property access or would be demolished.

The fairly flat to undulating topography of the road corridor would limit the need for substantial cut and fill activities, with the exception of the cutting required at Wright's Hill (Woomargama to Mullengandra).

Depending on the particular segment of the upgrade, the proposed works would also entail the construction of a number of culverts and bridges, as well as the realignment of local road intersections.

Ancillary infrastructure such as construction compounds and batching plants would be provided and potentially shared across each segment of the Upgrade proposal depending on the delivery timetable for the separate project segments. The sites for these facilities have not been committed to within the Environmental Assessments for the concept plan or project segments, although the minimum locational and environmental criteria for selecting sites for these ancillary facilities have been detailed by the RTA.

Subject to planning approval, construction work is scheduled to commence in late 2007 with the projects to be completed by December 2009. Construction work would be undertaken between 7:00 am and 7:00 pm Monday to Friday, and between 7:00 am and 4:00 pm on Saturdays.

Project Application – Yarra Yarra to Holbrook (Reference: 06_0248)

The project application seeks approval for the specific works associated with this segment of the upgrade, which is located between approximately 98 kilometres to approximately 110 kilometres south of Gundagai. The total length of the project is 12 kilometres. This project segment would cost approximately $92 million and would generate approximately 100 equivalent full-time positions during construction.

Figure 2 provides an overview of the proposed duplication works associated with the Yarra Yarra to Holbrook project segment. The key attributes of this section are as follows:

- the construction of a new single carriageway on the eastern side of the Highway alignment to duplicate the existing carriageway, to form a dual carriageway configuration in total;
- construction of a bridge at Yarra Yarra Creek, with a number of crossings (culverts) of Billabong Creek tributaries;
- traverses fairly flat terrain (floodplain), with occasional rises;
- clearance of approximately seven hectares of woodland, with the majority consisting of a critically Endangered Ecological Community.

Three residences are located adjacent to the project between 50 metres and 100 metres from the project alignment. There are no other sensitive receptors, such as schools, located adjacent to or in close proximity to the project alignment.

Project Applicant – Woomargama to Mullengandra (Reference: 06_0249)

The project application seeks approval for the specific works associated with this segment of the upgrade, which is located between approximately 131 kilometres to approximately 141 kilometres south of Gundagai. The total length of the project is ten kilometres. This project segment is estimated to cost $42 million and would generate approximately 70 equivalent full-time positions during construction.

Figure 3 provides an overview of the proposed duplication works associated with the Woomargama to Mullengandra project segment. The key attributes of this section are as follows:

- nine kilometres of a new single carriageway to duplicate the existing carriageway, to form a dual carriageway configuration in total;
- three kilometres of a new dual carriage way to replace the existing carriageway where road speed design standards could not be achieved by simply duplicating the existing infrastructure with a new carriageway;
- traverses fairly flat terrain (floodplain), with occasional rises with the exception of Wright's Hill which will require a substantial cutting;
- connects with the approved Albury-Wodonga National Freeway project south of Mullengandra;
- clearance of 10 hectares of woodland, with eight hectares consisting of a critically Endangered Ecological Community.

There are a number of residences located adjacent to the proposal ranging from 50 metres ("The Royal Oak Inn" and the 'Hermitage") to 175 metres from the project alignment. A number of non-residential receptors are also located approximately 30 metres from the alignment at Mullengandra, including Mullengandra Primary School, the school playground and St Luke's Church.

2.2 Project Need

The Hume Highway is and will continue to be the major interstate passenger and road freight corridor between Victoria and New South Wales, with the proposed duplication corridor currently carrying between 4,500 and 6,000 vehicles per day. A significant proportion of these are heavy vehicles (35 - 45%). It is also a vital component of the National Transport Network with approximately 40% of long-distance road freight movements on the network using the Hume Highway at some stage of their journey. The dominance of the Hume Highway as the key interstate and national road freight corridor will continue over the next 20 years, with approximately 5,000 to 6,000 heavy vehicles expected to be using the Hume Highway per day by 2025.

The current single carriageway sections of the Hume Highway currently pose a significant safety risk and are reaching operational capacity, particularly during the peak periods for road freight movements (between 8:00 pm and 1:00 am). This has a flow-on effect to the competitiveness and efficiency of the freight industry due to the increases in travelling times associated with congestion, reduced speeds and lack of overtaking opportunities. With both passenger and road freight traffic volumes expected to continue to grow, the RTA states that there is a need to upgrade the remaining sections of single carriageway to dual carriageway to resolve the current network deficiencies as well as ensuring the corridor has the capacity for catering for the future traffic volumes and demands associated with its role within the interstate and national transport network (refer to Table 1).

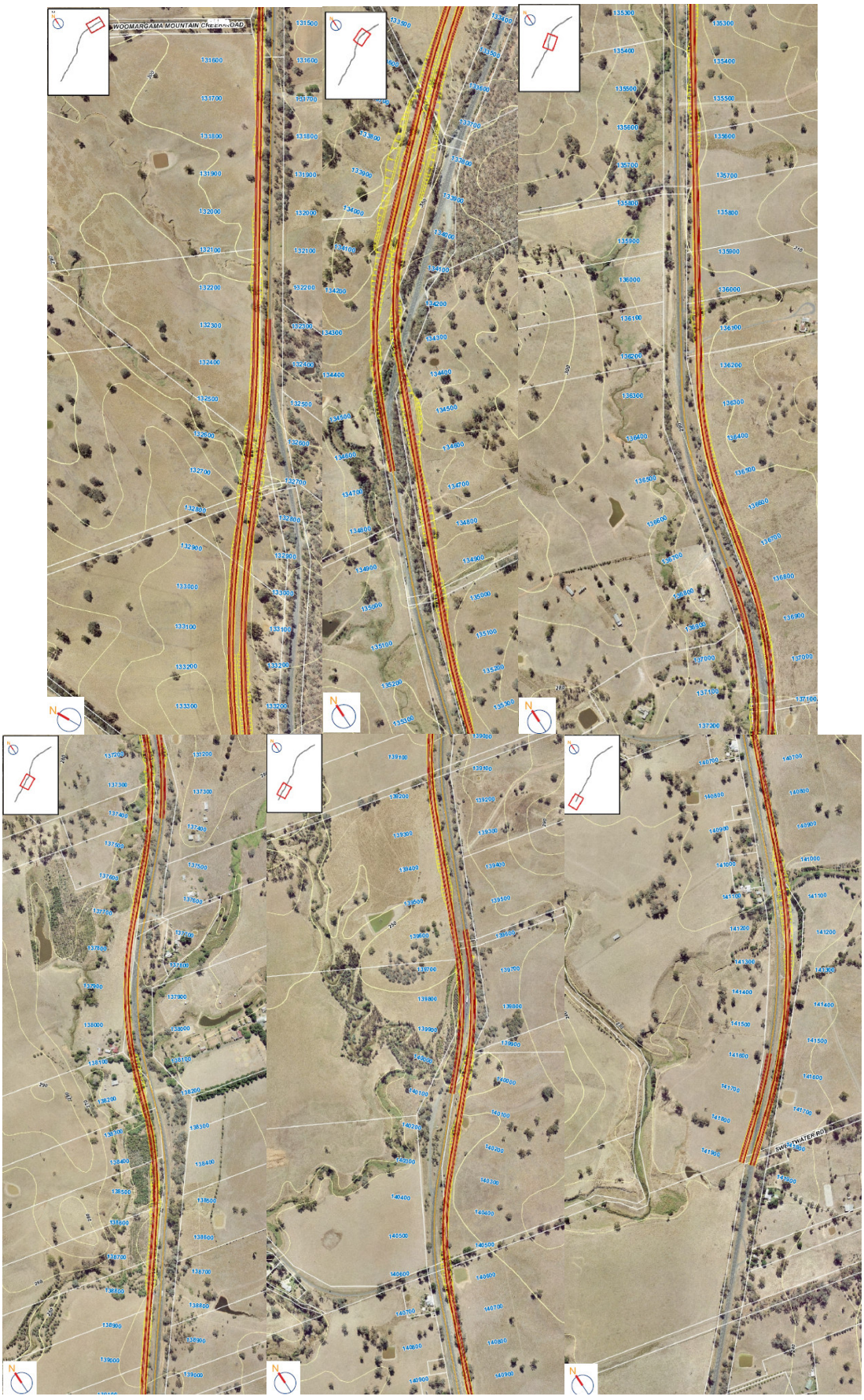
The proposed duplication works are also a fundamental component to the realisation of the State Government's commitments to the AusLink integrated National Network initiative, which focuses on achieving sustainable national and regional economic growth, development and connectivity.

Table 1 : Objectives of the Proposed Hume Highway Duplication

Road Safety	The duplication of the Hume Highway is required to address significant safety risks along the single carriageway sections of the Highway with these sections experiencing significantly higher crash rates in all categories (fatal, injury and total) when compared to dual carriageway sections. For example, the fatal and injury crash rate on single carriageway sections of the Highway are 85% and 40% higher respectively than the duplicated sections. Furthermore, with a high proportion of these crashes occurring as a result of head-on collisions, the duplication of the Highway will significantly reduce the risk of head-on collisions by up to 90%.
Road Capacity and Performance	The unduplicated sections are reaching capacity and have deteriorated to a level in which duplication is required (Level of Service (LOS) C and D). The proposed duplication is also required to ensure the Highway is able to provide the capacity and maintain satisfactory performance levels to cater for the predicted increases in passenger (2.7% p.a) and freight vehicle volumes.
Freight Competitiveness and Efficiency	The proposed duplication is required to significantly improve road freight competitiveness and efficiencies of this key freight corridor through reductions in travelling times and congestion along this section of the Hume Highway. With continued growth of road freight along the Hume Highway despite of growth in other transport modes (primarily rail); there is the need to improve road conditions of the Hume Highway in order for it to meet the performance expectations as a major freight corridor. It would also contribute towards the potential introduction of B-Triple vehicles into NSW, which is dependent on the provision of high standard dual carriageway conditions.

Figure 2 – Yarra Yarra to Holbrook Project (Connell Wagner/ Parsons Brinckerhoff, March 2007)

Figure 3 – Woomargama to Mullengandra Project (Connell Wagner/ Parsons Brinckerhoff, March 2007)



3. STATUTORY CONTEXT

3.1 Major Project

On 4 September 2006, the Minister for Planning formed the opinion that the Hume Highway Duplication proposal was of State and regional planning significance, and declared the Hume Highway Duplication to be a development to which Part 3A of the *Environmental Planning and Assessment Act 1979* (the Act) applies by way of a specific Order under section 75B(1) of the Act. The Order was gazetted on 8 September 2006.

3.2 Critical Infrastructure

On 5 December 2006, the Minister for Planning formed the opinion that the Hume Highway Duplication proposal is essential to the State for social and economic reasons, and declared the proposal to be a critical infrastructure project by way of a specific declaration under section 75C of the Act. The declaration was Gazetted on the 8 December 2006.

3.3 Concept Plan

On 12 October 2006, the Minister for Planning directed the NSW Roads and Traffic Authority to submit a concept plan for the Hume Highway Duplication project under section 75M of the Act.

The concept approval was granted by the Minister for Planning on 20 July 2007, subject to a number of conditions. The proposed Southern Segments must be consistent with this approval and must comply with the relevant management strategies imposed on the RTA through the concept approval. A copy of this approval is provided in Appendix A of this report.

3.4 Permissibility

Section 75J(3) of the Act permits the Minister for Planning to approve a critical infrastructure project regardless of the permissibility of that project. However, it is noted that the project is permissible under the *Hume Local Environmental Plan 2001* and the *Holbrook Shire Deemed Local Environmental Plan.*

3.5 Relevant Environmental Planning Instruments

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

3.6 Minister's Approval Power

The applications and environmental assessments for the project applications were placed on public exhibition from 2 May 2007 until 1 June 2007 and submissions invited in accordance with Section 75H of the Act. The Department has met all of its legal obligations so that the Minister can make a determination regarding the projects.

It is also noted that the Environmental Assessments submitted in support of the subject application adequately addressed the Director-General's requirements issued for the two project applications.

3.7 Commonwealth Legislation

The Commonwealth Department of Environment and Water Resources (DEW) formed the opinion that the Hume Highway duplication project (in its entirety) would likely have a significance impact on listed threatened species and communities and declared the project ('activity') to be a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Conditional approval was granted by DEW for the project on 2 August 2007 for the project in its entirety.

4. CONSULTATION AND ISSUES RAISED

4.1 Introduction

The Department received three submissions during the exhibition of the project applications, and four additional submissions following the close of exhibition period. Three submissions were received from the general public. The remainder were from Government agencies.

4.2 Submissions from the Public

The Department received three submissions, with one conditionally supporting the Woomargama to Mullengandra project application, and the other two objecting to the projects. Issues are as follows:

- ***flora and fauna***, specifically that the projects are supported if the flora and fauna mitigation measures are committed to and implemented, such as the retention of hollow bearing trees and offsets for the White Box – Yellow Box – Blakely's Red Gum Endangered Ecological Community as well as threatened flora and fauna;
- ***non-Aboriginal heritage***, specifically the impacts on the Royal Oak Inn insufficient assessment of the impacts on the heritage values of the original route of the Hume Highway (and associated structures) and the retention/preservation of significant representative sections of the original route;
- ***impacts on Mullengandra community****,* specifically the visual and noise impacts on the Royal Oak Inn, St Luke's Church and the Mullengandra Primary School, the severance of the community, the associated safety impacts, and the impacts on any future development within Mullengandra. One submission suggested that the median be widened with the new carriageway to be placed further away from the Inn and surrounds to maintain the setting of the buildings, whilst the other argued that Mullengandra should be bypassed (to the west);
- ***community consultation,*** specifically that certain members of the Mullengandra community had not been properly consulted with and that further consultation should be undertaken with respect to mitigation measures (visual and noise) and potential interpretation sites (i.e. Wrights Hill);
- ***project justification***, specifically that AusLink's funding allocation should focus on the removal of black spots and on energy efficient rail freight and shipping modes for long distance haulage; and
- ***greenhouse gases,*** specifically that the Environmental Assessment has not assessed the impacts on global warming as a result of the contributions from vehicle emissions and construction ancillary infrastructure.

4.3 Submissions from Government Agencies

The Department received submissions from the Department of Environment and Climate Change (DECC), the Department of Water and Energy (DWE) and the Department of Primary Industries (DPI). The DECC indicated its support for the proposed project applications, subject to recommended revisions to RTA's Statement of Commitments. DWE and DPI did not state an explicit position but identified a number of key issues for further consideration/information. Issues identified included: flora and fauna impacts; aboriginal heritage; water resources; riparian corridor impacts; flood management and noise impacts. Comments made by each agency are summarised below.

Department of Environment and Climate Change

The DECC provided advice that:

- the objectives of the proposed offset strategies should be detailed within the Statement of Commitments to provide certainty that the biodiversity values are maintained or improved (no net-loss);
- further survey work is required for threatened species including Squirrel Glider and woodland bird species to ensure appropriate and effective mitigation measures are implemented;
- expert advice should be sought on the need, location and design of highway crossings for the Squirrel Glider, particularly given the presence of this species within the Blue Metal Travelling Stock Reserve and that generic design measures may prove to be ineffective;
- a detailed monitoring program should be developed and implemented for threatened species to determine the effectiveness of mitigation measures and offset strategies and to enable mitigation measures to be modified if needed to achieve the mitigation objectives;

- the impacts on the Striped Legless Lizard should be assessed for the Woomargama to Mullengandra section given the presence of suitable habitat;
- insufficient assessment has been presented within the environmental assessment of both the significance and impacts on identified Aboriginal heritage, and that the discussion of the results of the test excavations (completed in late February) should be presented to inform improved conservation outcomes; and
- if the results of the test excavations cannot be presented then the Statement of Commitments must be revised to require the preparation of an Aboriginal Heritage Management Plan and other amendments to the Statement of Commitments to include consultation and stop-work measures if previously unidentified items are uncovered.

Department of Water and Energy

The DWE provided advice that:

- insufficient detail was provided to allow an adequate assessment of the potential impacts on surface and groundwater resources, and recommended a number of requirements for the Response to Submissions or relevant post-approval applications to address;
- any proposed groundwater works (new or replacement) or surface extraction works would require the necessary licences to be obtained, such as Garryowen;
- stated that the Department would need to be satisfied that any water extraction does not place pressure on the resource or its users, given the severity of the drought.
- any extraction that is exempt from requiring an approval must be consistent with the rules of the relevant Water Sharing Plan including the requirement to cease pump levels for surface waters;
- any in-river dams to extract surface water would not be supported;
- further information is required for any localised re-alignments of waterways;
- any capturing of surface waters that is in excess of Harvestable Rights Dam Capacity would require requiring licensing;
- further information is required with respect to impacts on adjacent watercourses from the proposed works (i.e. management of erosion, management of sediment);
- further investigation is required for the impacts of proposed culverts/drainage structures on increasing afflux and supports the recommendations that a full investigation be undertaken during detailed design;
- a flood assessment should be undertaken where flood flows may be obstructed and supports the actions outlined to manage the impacts of the vertical alignment;
- supports the location of the Yarra Yarra to Holbrook alignment (eastern) to avoid the impacts on the major drainage lines located on western side of the alignment;
- separation of any parcel of floodplain from any creek would require appropriate mitigation;
- any impact on flooding regimes should consider both built and natural environments and inhabitatants.
- the inclusion of a number of conditions of approval relating to licences, erosion management and control, flooding control and riparian corridor management.

Department of Primary Industries

The DPI provided advice that:

- the RTA must consult further with the DPI with respect to the mitigation measures at locations affecting any water course;
- the threatened species management measures, including those for the endangered ecological community, be prepared in consultation with DPI;
- the RTA to work closely with the DPI were remnant pools occur due to the possibility of pools acting as refuges for fish species;
- support is given to the revegetation of riparian zones to increase stability and stream water quality. Plans for these works should be prepared in consultation with DPI prior to construction;
- any snag reinstatement or 're-snagging' should be undertaken in consultation with DPI;
- support is given to the RTA's design principles for the proposed water crossings and the commitment to maintain fish passage at all times;
- it notes the potential threats to water quality and supports the proposed mitigation measures; and
- details the preferred methodology and requirements for the ongoing monitoring of the mitigation measures proposed by the RTA.

4.4 Submissions from Local Government

A submission on each project application was received from Greater Hume Shire Council. Council indicated that it has no objection should the objectives and commitments within the Environmental Assessments are met. However, Council did comment on a number of issues that it considered the Department should consider in its assessment. The key matters are as follows:

- ***Travelling Stock Reserves***, specifically the impacts on Travelling Stock Reserves during construction and operation;
- ***property access***, specifically the impacts on property access during construction and operation;
- ***noise impacts***, specifically that the RTA has an obligation to minimise the noise impacts on the local community;
- ***local heritage***, specifically that items on the former Hume Shire Development Control Plan had not been considered and that some items may be missing from the assessment; and
- ***consultation***, specifically that the RTA has an obligation to continue consultation with the affected community.

4.5 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 made to address some of the issues raised. The revised Statement of Commitments and the Response to Submissions are attached to this report as Appendix C and Appendix D respectively.

The DECC and DWE were given an opportunity to review the RTA's Response to Submissions, given the issues identified by these agencies. The DWE advised the Department that it had reviewed the Response to Submissions and had no further comment. The DECC identified a number of outstanding issues relating to biodiversity and Aboriginal heritage. These issues are discussed within section 5 of this report.

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

After consideration of the Environmental Assessments, submissions, Submissions Report and the Government agency response to the Submissions Report, the Department has identified the following key environmental issues associated with the proposal:

- flora and fauna impacts;
- Aboriginal and non-Aboriginal heritage impacts;
- hydrology; and
- noise impacts.

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

5.1 Flora and Fauna Impacts

Issues

Remnant vegetation and fauna habitat in the region is highly fragmented, with roadside vegetation and Travelling Stock Reserves located along the Hume Highway corridor containing important stands of remnant vegetation and habitat for a number of threatened fauna species in the region.

A substantial proportion of the vegetation located within the corridor of the proposed southern segments consists of White Box Yellow Box Blakely's Red Gum Woodland (Box Gum Woodland), which is classified as an Endangered Ecological Community (EEC) under the NSW *Threatened Species Conservation Act 1995* and as Critically Endangered under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). Given only 5% of the Box Gum Woodland community remains across the south-west slopes bioregion, all remaining remnants of this community (regardless of condition or patch size) are considered to be of high conservation significance.

A number of threatened species were detected or considered to occur within each of the project corridors (based on the presence of suitable habitat). The occurrence (or potential occurrence) of the threatened terrestrial species were not exclusively restricted to the areas containing the Box-Gum Woodland but correlated significantly with the areas deemed to contain high and medium quality habitat. These species include:

- the Squirrel Glider;
- a number of threatened woodland bird species, such as the Swift Parrot, Superb Parrot, the Brown Treecreeper and the Diamond Firetail;
- the Greater Long-Eared Bat; and
- threatened reptile species (Pink-tailed Worm Lizard).

Approximately 17 hectares of habitat would be cleared as a result of the southern segments, of which 15 hectares consists of the Box Gum Woodland community (refer to Table 2). This vegetation has been rated as being in moderate to poor condition. However, given the importance of remnant Box-Gum woodland and the role of roadside vegetation within the broader landscape, it has been concluded that that the removal of this habitat would generate a significant impact on the Box Gum Woodland community and fauna species in the region through direct clearance of native vegetation (and the nesting/feeding habitat it provides), habitat fragmentation, edge effects, and through increased risk of other threats such as weed infestation and hydrological changes.

The proposed Yarra Yarra to Holbrook and the northern aspects of the Woomargama to Mullengandra segment also have the potential to impact directly or indirectly on waterways that contain the 'Aquatic Ecological Community in the Natural Drainage System of the Lower Murray River Catchment', an Endangered Ecological Community. The Southern Pygmy Perch, a threatened fish species, was also detected within waterways located in and adjacent to the project corridors.

Table 2 : Total Area of Vegetation/ Habitat to be Cleared by the Southern Segments and the Total Concept

Segment	Total Vegetation Clearance (hectares)	Clearance of White Box, Yellow Box, Blakely's Red Gum Woodland (TSC Act) (hectares)	Clearance of White Box, Yellow Box, Blakely's Red Gum Woodland and Derived Grasslands (EPBC Act)* (hectares)
Yarra Yarra to Holbrook	7	6.9	6.9
Woomargama to Mullengandra	10	8.3	8.3
Hume Highway Concept Plan (total)	52	41.3	29.2

* - the classification of the Box Gum Woodland and derived grasslands community (Commonwealth) differs to the classification for the community under State legislation which creates the above discrepancy in the total hectares cleared by the projects. e.g. an area of Box Gum Woodland with a highly degraded understorey would be excluded from the Commonwealth listing but not from the community as classified under the NSW *Threatened Species Conservation Act 1995*.

To minimise the impacts of each project, the RTA has endeavoured, where feasible, to avoid areas of high to moderate quality habitat for threatened species and Box-Gum Woodland through the proposed highway alignments. However, given this has not been possible in all instances, the RTA has proposed to:

- implement construction management measures, such as provision of nest boxes and the relocation of fauna within adjoining areas;
- obtain expert advice on the need, location and design of underpasses (for reptile species) and aerial crossings for the Squirrel Glider;
- design culverts to assist in fauna passage for terrestrial and aquatic species;
- rehabilitate waterways disturbed by construction activities; and
- undertake a monitoring program to allow the effectiveness of mitigation measures to be assessed (and re-evaluated if needed).

The RTA also proposed as part of the Concept Plan to offset the residual impacts on the Box-Gum Woodland and threatened species habitats through an Offsets Package, which would include the revegetation of the road corridor, land offsets elsewhere in the region, and management measures to improve the remnant vegetation within the region. The proposed Southern Segments is included within this offsets package.

Issues Raised in Submissions

The DECC provided conditional support to the projects on the grounds that the RTA addressed a number of issues through the revised Statement of Commitments. Following the review of the Response to Submissions, the DECC stated that it supported the projects within its current format, subject to the imposition of three recommended conditions relating to:

- crossing measures for threatened woodland bird species;
- a hollow bearing tree clearing procedure; and
- a Threatened Species Monitoring Program that is prepared in consultation with DECC and which monitors the effectiveness of mitigation measures.

The Department of Primary Industries identified that the impacts on the aquatic endangered ecological community and the threatened fish species would need to be appropriately protected, minimised and rehabilitated during construction activities. The DPI also requested that management controls (for both aquatic species, riparian habitat and general water quality controls) be prepared in consultation with DPI. DPI also expressed support for the proposed contributions towards the re-snagging program currently underway in the region.

A submission from the general public (which focused on the Woomargama to Mullengandra project application) supported the project subject to the implementation of the mitigation measures proposed within the Environmental Assessment. The submission also stated that mitigation measures (such as fauna relocations) and the monitoring program should be determined in consultation with DECC and other specialist research bodies. The submission also commended the protection of the Blue Metal Travelling Stock Reserve/Wright's Hill and suggested the potential for interpretive sites to be established in consultation with the community.

Consideration

Terrestrial Ecology

The proposed Southern Segments of the Hume Highway duplication impact would have local and regional scale impacts on the Box-Gum Woodland community and threatened species in the region due to habitat destruction or disturbance, increased fragmentation, barrier effects and increased risk of road strike.

The Department recognises that the extent of this impact has been reasonably reduced through the design of the alignment, such as the avoidance of identified fauna corridors, the design of medians to retain roadside vegetation and the avoidance of the Blue Metal Travelling Stock Reserve/Wright's Hill, an important habitat component within the regional landscape.

However, given the complete avoidance of these impacts cannot be achieved due to other constraints in the project corridors, the Department considers that the proposed southern segments would continue to generate significant biodiversity impacts in isolation and as part of the broader duplication package which cannot be solely mitigated through the implementation of corridor-specific measures. Consequently, a combination of corridor-specific and regional offsets would need to be implemented to ensure the localised impacts are minimised wherever possible, and that the cumulative and longer-term impacts on biodiversity are appropriately addressed.

This approach was acknowledged in the Department's assessment and Minister's approval of the concept plan which imposed a Biodiversity Offsets Package 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 the total project. In this regard, the Department is satisfied that the delivery of regional offsets under the concept approval would address the contributions that the southern segments would have towards the cumulative impacts of the total project.

With respect to the corridor-specific measures, the Department considers that most of these measures primarily relate to the implementation of best-practice management procedures during construction activities, such as habitat clearing procedures to minimise the disturbance of fauna. In this respect, the Department is satisfied that these measures can be identified and implemented through a project-specific Flora and Fauna Construction Environmental Management Plan. This would be supported by a Threatened Species Monitoring Program that has been prepared in consultation with the DECC and DPI, which would not only monitor mitigation measures during construction but would also provide for the monitoring of longer-term mitigation measures, including fauna crossings, to ensure the biodiversity outcomes are achieved and, if necessary, improved.

However, it is noted that further consideration and investigations are required to determine the most appropriate approach in delivering aerial crossing measures, fauna underpasses and threatened woodland bird crossing measures to ensure the desired ecological outcomes are achieved and maximised. 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.

This is particularly relevant to determining the crossing requirements for the threatened woodland bird species that occur or have the potential to occur along the project corridors. The Department agrees with the DECC that the RTA should give consideration to the requirements of these species when finalising the detailed road design, given these lower-flying and less powerful bird species would be more susceptible to barrier effects and vehicle strike as a result of the projects. However, the Department also acknowledges that the RTA may have other design requirements (such as road safety) that may conflict with the design requirements of the crossings. Consequently, the Department recommends, through each project approval, that:

- expert advice be provided to the RTA and DECC on the need, location and the design requirements for the threatened woodland bird crossing measures; and
- that 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 RTA and DECC 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.

In conclusion, the Department is satisfied that the finalisation of the fauna crossing measures, in conjunction with a management, monitoring and review regime for corridor-specific measures and the Biodiversity Offsets Package required by the Minister's concept approval would ensure that the local and regional impacts of the proposed Southern Segments of the Hume Highway Duplication project are appropriately mitigated and that the desired ecological outcomes are achieved over time.

Aquatic Fauna

The Department notes the concerns of the Department of Primary Industries (DPI) with respect to the potential impacts on threatened fish species and the 'Aquatic Ecological Community in the Natural Drainage System of the Lower Murray River Catchment'.

As the key impacts of the projects on threatened fish species and the EEC would occur as a result of the proposed crossings or works in proximity to watercourses, 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 all new or modified crossings. The Department also considers that improvements to current fish passage and habitat would be delivered through the southern segments as a result of the modification and/or replacement of existing culverts in line with current DPI standards, the proposed rehabilitation measures to riparian areas and the proposed contributions to the DPI re-snagging program.

Nevertheless, the Department has recommended within recommended Instrument of Approvals for each project application that the RTA must:

- consult with DPI 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;
- implement specific mitigation and management controls within the Flora and Fauna Construction Environmental Management Plan, prepared in consultation with DPI; and
- the implementation of a Riparian Construction Environmental Management Plan, prepared in consultation with DPI, to ensure the appropriate management and rehabilitation of these areas to reflect (where relevant) the structural composition of the Aquatic Ecological Community and to mitigate (and improve) fish habitat conditions.

The Department is satisfied that the above recommendations would address the comments made by DPI and ensure that any impact is appropriately mitigated and managed during all phases of the projects.

5.2 Aboriginal Heritage Impacts

Issues

A total of 37 sites, including scarred trees and Potential Archaeological Deposits (PAD), were recorded along the proposed Southern Segment corridors. Of these sites, 13 sites would be directly or partially impacted by the projects. Table 3 provides a summary of these sites.

Table 3 : Aboriginal Heritage Sites within the Project Application Corridors

Segment	Impact
Yarra Yarra to Holbrook	6 artefact scatters 3 isolated finds 1 scarred tree
Woomargama to Mullengandra	1 artefact scatter 2 PAD sites

The assessment found that all the sites located along the project corridors are considered to be of high cultural or social significance, and of moderate to high scientific significance. Although some of these sites are highly disturbed, the high level of significance is primarily attributed to the rarity of the identified sites given the absence of previously recorded sites in the surrounding area and region, as well as the high cultural values placed on these items by local Aboriginal communities.

The RTA has attempted to avoid these impacts through the proposed road design, and has indicated that the impacts may be minimised further through the detailed design process. However, where these impacts cannot be avoided, the RTA has proposed to salvage affected items and undertake further excavations of the PADs in order to confirm the integrity, extent and distribution of heritage items. Following the completion of these additional investigations and further consultation with the local Aboriginal communities, the RTA would liaise with the DECC to establish appropriate management measures for these sites through an Aboriginal Heritage Management Plan, which may include the avoidance and/or salvage of identified items.

Issues Raised in Submissions

The DECC recommended a number of revised requirements for inclusion in the RTA's Statement of Commitments in its submission to the Environmental Assessments for each project application to ensure that the works that would directly or potentially impact on items of Aboriginal heritage are appropriately mitigated and/or managed. The DECC subsequently indicated its support for the revised Statement of Commitments, as updated by the RTA in response to submissions, but recommended additional conditions for inclusion in the recommended conditions of approval to assist in the management of information (and objects) arising from the completion of recommended studies and excavations.

Consideration

The Department acknowledges the importance of the heritage items and sites that would be impacted by the proposed projects, particularly the cultural significance of these items/sites to local Aboriginal communities. The Department considers that priority should be given to the protection of these items in situ. It is also recognised that the extent to which impacts can be minimised or avoided is limited by road design requirements and other key project corridor considerations or constraints that equally influence the final alignment, such as biodiversity issues.

The Department is satisfied that the RTA has adequately, through the proposed road design, minimised the number and extent of the potential impacts on Aboriginal heritage items and sites through the preliminary concept design and that there is opportunity through the final design process to further minimise these impacts. Ultimately the removal of the items and/or destruction of these sites would have a permanent impact on cultural heritage in the region. But it could be considered that some (albeit limited) benefit may be provided through the recommended salvage and investigations in conserving these items and furthering the knowledge of Aboriginal heritage and landscapes in the region. In this regard, both the Department and the DECC have recommended that the results of these works should be submitted for entry into the Aboriginal Heritage Information Management System to ensure this benefit is realised. This has been reflected in the recommended conditions of approval.

The Department notes that the RTA has progressed the proposed site excavations to a stage that has permitted the commencement of discussions between the RTA, DECC and the relevant Aboriginal stakeholders on the findings of these studies. Ideally, these results should be finalised and presented to the Department and the DECC for consideration prior to determination. However, the Department does not consider this should preclude the approval of the projects given the impacts of the project have been adequately identified, subject to the Department's recommended conditions of approval for the Project Applications, which include:

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

However, the Department does note that the RTA have identified that a scarred tree may be impacted as a result of the Yarra Yarra to Holbrook project and that it would attempt to avoid this impact. Given the importance of the scarred trees to Aboriginal groups within the region, the Department does not consider that this item should be subject to the above mitigation measures and should be avoided. This has been reflected within the recommended conditions of approval for this particular segment.

Consequently, the Department is satisfied that appropriate design and management measures have been taken and/or will be implemented during the final design and construction stages of the two project segments to ensure Aboriginal heritage across the corridors are appropriately protected and the impacts minimised wherever possible. The Department is also satisfied that sufficient weight has been given to Aboriginal heritage during the design of the proposed alignments with the impacts minimised wherever possible, and that the recommended salvage and recording of items and sites directly impacted by the project would provide some mitigation towards the permanent loss of these items within the cultural landscape.

5.3 Non-Aboriginal Heritage Impacts

Issue

There are approximately 66 identified items of non-Aboriginal heritage significance located along the alignment of the proposed Southern Segments. Of the 66 identified items, 31 would be directly or indirectly impacted by the proposed works (refer to Table 4). The majority of these sites consist of archaeological sites, landscape items and earthen dams, and reflect the history of the Hume Highway, past European settlements and the agricultural practices in the region. Of note are the impacts on the visual curtilage of The Royal Oak Hotel (Mullengandra), an item of State heritage significance and one of the earliest public houses along the Hume Highway and the impacts on a further three sites that are considered to be of potential State heritage significance. The remainder of the identified sites are of local heritage significance.

None of these items are listed on the State Heritage Register, Commonwealth and National Heritage Lists, the Register of the National Estate or the section 170 register maintained by the RTA, with the exception of The Royal Oak Hotel, which is recorded but not formally listed on the National Trust Register.

Table 4: Heritage Items Impacted by the Proposed Three Northern Segments

Segment	
Yarra Yarra to Holbrook (13 items)	**Woomargama to Mullengandra (18 Items)**
Disturbance to building remnants and cultural plantings associated with the 'Bubbling Spring Inn' ***potentially State significant***	Direct disturbance to building remnants (potential 'Wine Shanty', a late 19th or early 20th century licensed watering hole) ***potentially State significant***
	Indirect impact on The Royal Oak Inn due to impacts on visual curtilage (***State significant item***)
Disturbance to a platform scar associated with the gazetted 'Garryowen' historic settlement ***potentially State significant***	Moderate impact on the setting of 'The Hermitage'
Demolition of earthen dams	Potential impact on un-located burials associated with a memorial
Indirect (moderate) impacts on the setting of Beenly	Demolition of earthen dams
Loss of highway road remnants	
Impacts on cultural plantings/roadside vegetation	Impact on cultural plantings/roadside vegetation, and road remnants

The RTA has acknowledged that the local heritage items located along the project corridors are unique to the area and have attempted to avoid direct impact of these sites (and setting) where feasible through the proposed road alignment design. However, where these sites cannot be physically avoided, the RTA has proposed a number of measures to mitigate the impacts or the loss of these heritage items, including archival recording, excavations and supplementary landscape plantings. A number of road design objectives recommended within the Statement of Heritage Impact undertaken for The Royal Oak Inn have also been adopted by the RTA to ensure the heritage significance of this item is not adversely impacted by the proposed duplication within the Woomargama to Mullengandra project segment.

The RTA has concluded that this suite of measures will ensure that any impact on non-indigenous heritage during the construction and operations associated with the projects are adequately minimised or managed to an acceptable level.

Issues Raised in Submissions

Greater Hume Shire Council identified that that the local heritage listings were incomplete, but raised no concerns with the impacts as assessed.

One submission from the general public indirectly raised concerns with the impacts on The Royal Oak Inn with respect to the potential adaptive use of the Inn.

Consideration

The Department has reviewed the heritage assessments undertaken for the projects and considers that the proposed Southern Segments would have a local scale impact due to the permanent loss of a number local heritage items. However, the Department is satisfied that the low significance of the majority of the affected items and the proposed alignment and mitigation measures would ensure that the direct impacts are minimised and that the overall historic values of the Highway corridor are appropriately protected.

The duplication of the highway within Mullengandra would generate an impact on The Royal Oak Inn, a State significant item through direct impacts on the item curtilage (in this instance, the highway road reserve). However, the Department agrees with the RTA that the continuation of the direct connection between the property and the highway would best serve the preservation of the heritage values and the historic interpretation of this building with the recommended road design measures appropriately minimising the impact that the duplication would have.

The Department does acknowledge that the proposed duplication would generate amenity impacts at this site (primarily noise) that may detract from the setting of this item. This is also applicable to the Mullengandra Primary School and St Luke's Anglican Church (Mullengandra) and other historic homesteads of local heritage significance that are located in close proximity to proposed duplication (refer to Figure 5 and Figure 4). However, the Department considers that the landscaping measures and the noise treatments at these locations, to be determined in accordance with the recommended conditions of approval, would assist in minimising any impact the project may have on the setting of these items.

The Department does note that one submitter raised concerns that the duplication would impact on the commercial potential of The Royal Oak Inn, specifically as a Bed and Breakfast. However, given the current use of this building is as a residence, the Department accepts the assessment as presented within the Environmental Assessment.

Figure 4 – The location of Heritage Items within Mullengandra and the proposed Duplication Works

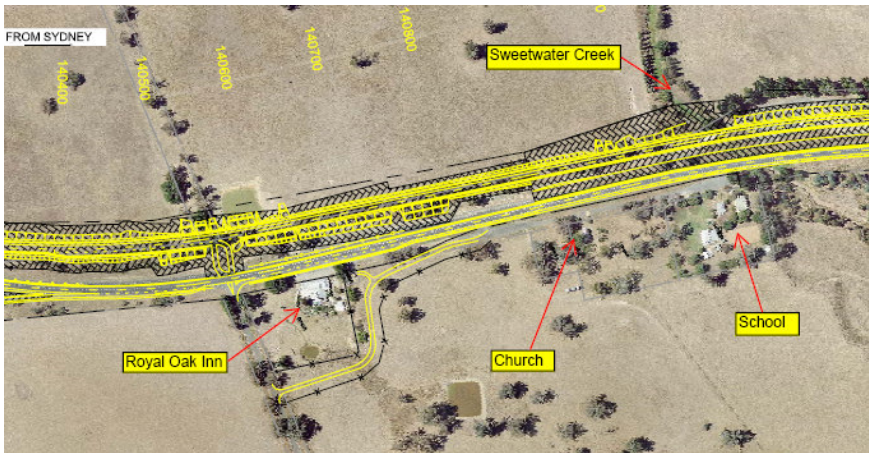


Figure 5 – The Royal Oak Inn, St Luke's Church and Mullengandra Primary School

The Department also notes that there are three archaeological sites that have the potential to be of State heritage significance that would be directly impacted by the project, and that the full extent of these impacts would not be understood until the completion of site-specific archaeological investigations. In particular, the remnants of the 'Wine Shanty' (a historic watering hole) and the 'Bubbling Spring Inn', which has an unconfirmed association with Cobb & Co. However, given these impacts would be largely confined to the proposed road corridor and are archaeological items rather than built or landscape items, the Department is confident that any impacts can be managed through the proposed archaeological investigation (and salvage) that would be conducted prior to the commencement of construction.

The Department's conclusions are supported by the review undertaken by the NSW Heritage Office (within the Department), which agreed with the findings of the RTA's assessment and indicated support for the proposed mitigation measures. However, the NSW Heritage Office did recommend that the RTA's proposed Statement of Commitments be strengthened through the recommended conditions of approval to ensure all investigations and archival recordings are completed in an appropriate manner and in accordance with the guidelines prepared by the Heritage Council of NSW. The Department agrees with the intent of the NSW Heritage Office recommendations and has recommended that the following conditions of approval be imposed on the two project applications:

- the completion of site-specific investigations for all potential State heritage sites prior to the commencement of construction with the methodologies for these investigations to be approved by the NSW Heritage Office;
- a requirement for the outcomes of these investigations to be considered in the final design of the road alignment to avoid or further minimise the extent of disturbance to these archaeological sites;
- the completion of all archival recordings/archaeological investigations prior to the commencement of construction work, with these results to be provided to the NSW Heritage Office, Council and the local historic group to further the local written historic record of the region; and
- the preparation of a Construction Heritage Environmental Management Plan to detail specific controls to ensure the appropriate protection and monitoring of heritage sites identified within the construction zone during construction.

In conclusion, the Department is satisfied that the alignment measures proposed by the RTA, combined with the above conditions, would appropriately mitigate and manage the predicted impacts on heritage items located along the proposed southern segments. The Department is also satisfied that the impacts on local heritage due to the permanent loss or removal of heritage items would be minimised through the historic recording of these sites, and would minimise the regional and cumulative loss of local heritage across the duplication corridor.

5.4 Water Supply Implications

Issues

The project corridors are located within two major catchments, the Upper Billabong Creek catchment and Mullengandra Creek catchment. There are no major rivers within these catchments; however, these systems are major drainage lines for the Murray River. As typical for the area, these catchments are currently under stress due to the prolonged drought conditions and have no or restricted water flows. Embargoes exist for ground and surface water resources, with water allocations in the region only provided to meet critical water supply needs for domestic, stock and industrial needs.

Approximately 140ML of water would be required during the construction period for the southern segments. Earthworks, concrete manufacturing and dust suppression are expected to be the key activities that would require significant volumes of water.

In the case of the Yarra Yarra to Holbrook project, the RTA has proposed to source water from a mix of surface and groundwater supplies, where feasible. Given the expectation that surface water flows within the catchment would be unreliable given the present drought conditions and/or that the impacts to the resource and its users would restrict access to this water, the RTA intends to source the majority of the water from groundwater reserves via existing or proposed bores and/or from Holbrook town water supplies. In-river dams may also be utilised, and would be operated in accordance with the Water Sharing Plan.

Neither surface nor groundwater resources within the Mullengandra to Woomargama segment would be reliable and viable sources of water. Consequently, the RTA has identified that water would likely be purchased and carted from Murray River sources; Holbrook town supplies and/or from privately licensed bores.

The RTA considers that the combination of the water sourcing methods would ensure that the projects would not significantly impact on the local water resources and users, but does acknowledge that it may have a regional short-term impact due the cumulative demands on water resources by these projects, the northern segments under the concept plan, and other road projects in the region. However, it is considered that this impact would be minimised through:

- adopting alternative dust suppression techniques, such as the use of surfactants;
- implementing a coordinated water management strategy across all five projects;
- sourcing water from multiple sources to restrict the pressure on any one particular source; and
- maintaining water extraction at a rate that would not impact on the recharge of groundwater reserves.

The RTA has also committed to obtain the necessary approvals from the Department of Water and Energy (DWE), and to consult with this agency were approvals are not necessary, with respect to the method, placement and extraction volumes for the project.

Issues Raised in Submissions

The Department of Water and Energy identified issues with the assessment undertaken for the potential impacts on water resources (through extraction) as a result of the projects. The DWE had particular concern that the RTA had not sufficiently demonstrated that that the projects would not place undue pressure on water resources and its users given the current drought conditions. The DWE stated that further assessment would be required before it would agree to provide access to water for the projects (through the issue of relevant licences/approvals). The DWE also stated that it would not support the use of in-river dams.

It is noted that the DWE subsequently advised the Department, following the review of the RTA's Response to Submissions, that it had no further comment on matters relating to licensing matters.

Consideration

In the Department's assessment of the concept plan, it was recognised that the construction works across the duplication corridors, including the southern segments, have the potential to place pressure on surface and groundwater resources, and the existing users of these resources, if not properly managed due to the current climate conditions in the region. It was also acknowledged that a degree of flexibility should be afforded to the RTA to enable it to implement a coordinated and adaptive approach to the sourcing and extraction of water to ensure that the water management practices across the corridor are suitable and capable of being responsive to changing water resource conditions throughout the construction period, which in turn would ensure that no local or cumulative regional impact would occur.

To address this issue, the Minister's approval of the concept plan imposed a requirement for the RTA to prepare and implement a Construction Water Management Strategy for all segments under the concept plan. This strategy requires the RTA to dictate the final methods of extraction (either for surface or groundwater) and the management and reporting systems that would be put into place to monitor extraction rates, water use and resource conditions across the five project corridors. The strategy would also need to include a review of current capacities of relevant water sources in the region, and dictate the conditions in which water will be extracted and water use minimised, either as specified through a Water Sharing Plan or required under any licences granted under the *Water Act 1912*.

The procedures required under this Strategy will apply to the construction activities associated with the proposed southern segments. Given these project applications were submitted prior to the Concept Plan approval, the Environmental Assessments do not detail how these activities would comply with the Strategy or provide the final details on the methods and the likely volumes to the extracted. Although the Department agrees with DWE that the lack of explicit commitments within the Environmental Assessments for the southern segments does not provide the certainty that these activities would be appropriately undertaken, the Department is confident that the Construction Water Management Strategy would ensure that the water extraction and minimisation activities

specific to the southern segments are undertaken in a manner that will ensure that no localised or regional impact occurs on water resources and its users as a result of an individual project or as a result of any cumulative pressure that may be placed on regional water sources as a result of the total project. Consequently, the Department has not recommended that any further conditions of approval be imposed on the RTA with respect to specific to the sourcing of water within each project application with the exception of the use of in-river dams within the Yarra Yarra to Holbrook segment.

The Department has concurred with the DWE with respect to the use of this sourcing method due to current environmental conditions in the region and has recommended a condition of approval that prohibits this activity. The Department has also recommended conditions of approval relating to the required relocation of two bores within each project alignment, being a privately licensed bore (Garryowen) and a water supply bore for Mullengandra. These conditions will require the RTA to ensure that the replacement bores are commissioned prior to the commencement of construction work that may impact on the use of these bores. This shall ensure no disruption of water supply to Mullengandra and the private residence.

5.5 Hydrological Impacts

Issues

The Hume Highway within the two project alignments crosses numerous drainage channels, tributaries and creeks, however does not cross the two major creeks in the region – Billabong Creek and Mullengandra Creek. The proposed works would require either the duplication of existing drainage structures and the construction of additional crossings and bridges which all have the potential to impact on afflux and flow velocities through alterations in flow behaviour. Both project corridors also traverse sections of floodplain associated with Mullengandra and Billabong Creeks. The increase in impervious surfaces and the construction of other structures associated with the projects have the potential to alter local flooding behaviour due to loss of flood storage area and through the changes to flood water behaviour.

The RTA have identified that no residences would be impacted by any potential impacts to flood afflux, and that any impact would be limited to land in the vicinity of the highway and local property access.

To minimise these impacts, the RTA has designed the alignments to minimise the intrusion into the floodways of major drainage lines and has incorporated a number of design requirements to be incorporated into the detailed design. This includes:

- placing the highway alignment upstream (eastern) of Billabong and Mullengandra Creek within the Yarra Yarra to Holbrook segment and the majority of the Woomargama to Mullengandra segment;
- ensuring that the duplicated road levels do not exceed existing levels to minimise flood flow redistribution;
- providing additional capacity to resolve identified deficiencies in the current cross-drainage infrastructure, such as at the crossing at Yarra Yarra Creek and within the southern end of the Yarra Yarra to Holbrook alignment; and
- providing scour protection and energy dissipation devices would also be provided where necessary.

The RTA have committed to undertaking further detailed hydraulic investigations as part of the detailed design phases of the projects to ensure the predictions and commitments contained within the Environmental Assessments are realised.

Issues Raised in Submissions

The Department of Water and Energy (DWE) has concerns with the potential impacts on afflux but noted and supported the design alignment decisions and the commitment to undertake further detailed investigations to ensure no increase in flooding impacts and downstream flows. In doing so, DWE identified that all impacts on property and the natural environmental should be addressed within these investigations.

Consideration

The Department considers that the impacts of flood behaviour and stream hydrology are manageable and that the duplication of highway structures would not have any adverse impact or worsen current conditions if the drainage structures and water crossings have been appropriately designed. In this respect, the Department

notes and supports the RTA's objective to ensure all hydraulic structures are designed to maintain and/or improve drainage flows and hydrology.

The Department appreciates the concerns of DWE, and supports the RTA's commitment to undertake further detailed modelling to confirm the findings of the initial assessment as part of the detailed design phase which shall ensure that the necessary mitigation measures to offset any loss of flood storage or hindrance to flood flows are suitably incorporated into the final road design.

It is noted that the RTA's commitments have not been reflected within the Statement of Commitments. Consequently, to ensure these matters are appropriately considered in the final design of the project, the Department recommends that the RTA must demonstrate to the Director-General that new or duplicated drainage structures have been designed, in consultation with DWE, to minimise changes in afflux and flooding behaviour in waterways that traverse the road alignment. This would have to ensure both impacts to property and biophysical environment are minimised.

The Department also recommends that a Riparian Construction Environmental Management Plan be prepared for the projects in consultation with DWE and Department of Primary Industries (Fisheries). This management plan would need to detail what environmental protection measures would be implemented and incorporated into the road design to minimise the risk of scour and bank instability as well as the protection and rehabilitation of riparian habitats, particularly in locations where existing culverts are to be modified or replaced by bridges.

The Department is satisfied that the above recommended conditions would ensure that changes to hydrology and riparian conditions along the proposed road alignments are appropriately minimised and address the concerns of DWE.

5.6 Noise and Vibration Impacts

Issues

Construction Noise

The construction of each proposed segment is expected to occur for at least 18 months, although construction activity is not expected to be located in any one area for this entire period of time. The level of noise emissions from the proposed projects would vary depending on the particular activity being undertaken and the proximity of receptors to the construction activities.

The RTA states that it would exceed the L_{A10} 45dB(A) objective set within the *Environmental Noise Control Manual* depending on the type and location of the construction activity. The RTA has also highlighted that L_{A10} noise levels at the receptors may already exceed the nominated noise objective, which is likely attributable to the existing road traffic noise.

The RTA also intends to undertake construction work outside standard construction periods, being 7:00 am to 7:00 pm Monday to Friday, and 7:00 am to 4:00 pm on Saturdays. This would provide an additional hour on either side of the standard construction hours on Monday to Saturday, and a further two hours on Saturday. No audible construction work would occur on Sundays or public holidays. The RTA has indicated that further work may be conducted outside these periods for safety/emergency periods, but only following consultation with the DECC and affected receptors.

To manage these impacts and reduce noise emissions to an acceptable level, the RTA has proposed to implement a construction noise strategy, which would determine the mitigation measures for on-site activities and at residential receptors in line with the RTA's *Environment Noise Management Manual* (2001). A noise monitoring program would complement this strategy and assist in determining compliance with noise goals.

Construction Vibration

The proposed construction works have the potential to generate vibration impacts on nearby residences and other building structures. The RTA state that the distance of buildings from the proposed works would largely reduce the risk of adverse impacts resulting from vibration, but identified that one dwelling (The Hermitage) may

be at risk of structural damage. Consequently, the RTA has proposed a strategy to minimise this risk and would undertake a building dilapidation report prior to the works commencing.

Operational (Traffic) Noise

Residences and other sensitive receptors, such as the Mullengandra Primary School and St Luke's (Mullengandra), located along the proposed Hume Highway corridor already experience high levels of traffic noise, particularly during night-time periods when heavy vehicles dominate traffic flows along the Hume Highway.

Eight sensitive receptors were identified along the alignment of the Woomargama to Mullengandra corridor, with the closest receptors located 30 metres from the proposed alignment (The Royal Oak Inn, school and church). Four sensitive receptors (all residences) were identified along the proposed alignment of the Yarra Yarra to Holbrook segment, with the closest residence located 50 metres from the alignment.

Road traffic noise impacts were assessed in accordance with DECC's *Environmental Criteria for Road Traffic Noise* (ECRTN), which sets traffic noise goals, and the RTA's *Environmental Noise Management Manual* (ENMM) which guides the methodology and application of noise criteria for road projects. Given the dominance of heavy vehicles during the night-time period (10:00pm to 7:00pm), the night-time criterion was considered to be the limiting criterion for the project with respect to the impacts on residential receptors and was used for the purposes of the assessment. As this period would not correspond with the usage of the primary school and church, the day-time period was also used for the purposes of the noise impact assessment.

The noise assessment found that nearly all receptors would exceed the ECRTN day-time and night-time noise criteria in 2009 without any noise mitigation measures and based on the current Highway alignment. In most circumstances, the predicted noise levels are approaching or already exceed the acute noise level ($L_{Aeq(9\ hour)}$ 60dB(A)) set within the ENMM (refer to Table 5). In all circumstances, these levels are predicted to increase when based on 2019 traffic volumes and the proposed upgrade alignments, with most residences predicted to be above the acute noise level.

With respect to the internal noise levels within St Luke's and Mullengandra Primary School, it has been predicted that each would exceed the recommended ECRTN criteria up to 5dBA and 10dBA respectively.

Table 5 : Predicted Noise Levels (Without Mitigation)

Segment		Criteria				Predicted Noise Levels					
		ECRTN		ENMM		Current		2009 (Opening)		2019 (Future)	
Woomargama to Mullengandra		**Day ($L_{Aeq(15h)}$)**	**Night ($L_{Aeq(9hr)}$)**	**Day ($L_{eq(15h)}$)**	**Night ($L_{Aeq(9hr)}$)**	**Day ($L_{Aeq(15h)}$)**	**Night ($L_{Aeq(9hr)}$)**	**Day ($L_{Aeq(15h)}$)**	**Night ($L_{Aeq(9hr)}$)**	**Day ($L_{Aeq(15h)}$)**	**Night ($L_{Aeq(9hr)}$)**
Receptor Number	1	60	55	65	60	*61*	***63***	*63 (2)*	***64 (1)***	*64 (3)*	***65 (2)***
	10					*62*	***64***	***66 (4)***	***67 (3)***	***67 (5)***	***68 (4)***
	14 (Montrose)					*62*	***64***	***66 (4)***	***67 (3)***	***67 (5)***	***68 (4)***
	6A					*62*	***64***	***66 (4)***	***67 (3)***	***67 (5)***	***68 (4)***
	14					*62*	***63***	***66 (4)***	***69 (6)***	***68 (6)***	***70 (7)***
	27 (Royal Oak Hotel)					66	***68***	***69 (2)***	***71 (3)***	***71 (5)***	***72 (4)***
	St Luke's Church (external)					***66***	***67***	***69 (3)***	***71 (3)***	***71 (5)***	***72 (4)***
	Mullengandra Primary School (external)	55	n/a			***65***	n/a	***66 (1)***	n/a	***67 (2)***	n/a
Yarra Yarra to Holbrook											
Receptor	8 (Jannali)	60	55	65	60	59	*60*	*63 (4)*	***63 (3)***	*64 (5)*	***64 (4)***
	9 (Woongalee)					57	*58*	*61 (4)*	***61 (3)***	*62 (5)*	***62 (4)***
	15 (Jerapoohl)					59	***61***	*62 (3)*	***62 (1)***	*63 (4)*	***63 (3)***
	20 (Beenley)					*62*	***62***	***66 (4)***	***67 (5)***	***67 (5)***	***68 (6)***

Issues Raised in Submissions

Greater Hume Shire Council reminded the RTA within its submission RTA of its obligation to minimise the noise impacts on the local community;

Consideration

Construction Noise

The Department is satisfied that construction noise impacts can be appropriately managed through the implementation of a construction noise strategy. The Department accepts that it would be difficult for the RTA to satisfy the *Environmental Noise Control Manual* objective of L_{A10} 45dB(A) during certain construction activities. However, the Department considers that the RTA, through the proposed noise strategy, would ensure that all reasonable and feasible measures are implemented to meet the construction noise criteria and/or appropriately minimise noise emissions throughout the duration of the construction period.

While the Department appreciates the RTA's need to have extended 'standard' construction hours, the Department considers that any activities conducted outside standard construction hours near sensitive receptors would need to be carefully managed in the noise strategy. This may include the exclusion of any particularly noisy activities during these extended hours when in proximity to residential and other sensitive receptors, respite periods and on-going consultation with the affected receptors to ensure the adequacy of the RTA's noise management approach. Any further extension of these hours would require the Director-General's approval and would only be considered on a case-by-case or activity-specific basis.

Consequently, the Department and the DECC recommended the following conditions of approval for the two project applications:

- the restriction of construction hours for audible construction work to 7:00 am to 7:00pm Monday to Friday, and 7:00 am to 4:00 pm on Saturdays, with the exception of work that is necessary for emergency or safety reasons;
- a requirement for the RTA to obtain the Director-General's approval for any other work conducted outside these hours if necessary to the completion of the project. This would include a requirement for the RTA to demonstrate that the DECC and any affected receptors have been appropriately consulted with all reasonable and feasible mitigation measures to be implemented during these periods;
- the implementation of a construction noise and vibration management plan and monitoring program within the Construction Environmental Management Plan for each segment. This would include details on how extended construction hours would be appropriately managed and monitored; and
- complaints handling and response program to ensure resident's concerns are appropriately addressed.

Construction Vibration

The Department is satisfied that the potential vibration impacts can be appropriately managed through a construction noise and vibration management plan. However, the Department notes that the assessment did not consider management strategies for non-residential receptors, such as Mullengandra Primary School. The Department considers that appropriate mitigation measures should be incorporated into the construction noise and vibration management plan to ensure all potential receptors are suitably considered. This has been reflected within the recommended conditions of approval.

The Department also notes that neither project has identified the need for blasting to be undertaken. Given the terrain located along the alignment, it is unlikely that substantial blasting would be required. Nevertheless, in the event of any unforseen blasting activities, the Department has recommends that ANZECC vibration overpressure and ground-borne vibration criteria be imposed on both applications and to require the construction noise and vibration management plan to provide appropriate procedures to manage blasting activities, such as a trail blast program.

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 (Traffic) Noise

The Department acknowledges that the receptors along the proposed corridor alignment are experiencing and will continue to experience significant levels of traffic noise that exceed the recommended ECRTN noise criteria.

These receptors along the proposed alignment would be exposed to elevated noise levels with or without the proposed project.

In circumstances where existing noise levels already exceed the criteria, the ECRTN provides for a 2dB increase ('allowance') but this should only be applied once all feasible mitigation measures have been assessed and all reasonable mitigation measures have been applied. However, the ENMN acute criteria would be exceeded in nearly all receptors during day and night time periods. This would automatically require, under RTA policy, for all reasonable and feasible mitigation measures to be investigated and applied for the project.

The continuation and exacerbation of elevated traffic noise levels at residences and other sensitive receptors along the highway segments is of concern to the Department, particularly the noise levels generated at 'Beenley', the Royal Oak Inn (a residence), St Luke's and Mullengandra Primary School. The approach undertaken by the RTA in delivering the project (being the duplication of the existing alignment) has limited the opportunity to address or improve current conditions, given the proximity of the residences and receptors to the road alignment. Furthermore, the design standards required for the alignments and other key constraints (namely biodiversity and heritage) have further limited this potential opportunity. Nevertheless, the Department supports the RTA's attempts to minimise noise contributions from the projects by distancing the new carriageways away from receptors where possible and considers that a reasonable outcome has been achieved within the project design that has appropriately balanced the conflicting project objectives.

To address the significant noise impacts that the southern segments would have that cannot be resolved through the proposed road alignment, the Department accepts that the RTA's recommended noise mitigation procedures would ensure that all reasonable and feasible mitigation measures, such as noise mounds, the use of noise-reducing road surfaces and architectural treatments, are implemented to reduce road traffic noise levels at affected residences and sensitive receptors. In particular, noise treatments at the school and church would provide an opportunity for internal noise levels to be reduced to meet ECRTN criteria and substantially improve the amenity within these buildings, with potential improvements also afforded to the playground of the school.

Consequently, the Department accepts that the proposed measures and noise mitigation strategy, as proposed by the RTA, should ensure that noise contributions from the project and the predicted existing noise levels can be reduced. But given the nature of traffic flows and the proximity of adjacent residences, the Department considers that it is unlikely that the proposed strategy would enable the base ECRTN criteria to be achieved at impacted residences. Nevertheless, the Department has agreed with the DECC that this should not negate the need for the RTA to set the ECRTN noise goals as the objective for the noise mitigation strategies, and this has been reflected in the Department's recommended conditions of approval, which include:

- the submission of a review of the operational noise mitigation measures for the approval of the Director-General which would detail what reasonable and feasible noise mitigation measures would be implemented to meet the ECRTN noise goals; and
- 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, with additional measures to be implemented if necessary.

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

5.7 Air Quality Impacts

The RTA has identified that in order to minimise water use across the projects that it may require a different approach to the traditional dust suppression management practices during construction. This may result in visible dust emissions occurring during construction work.

The DECC had concerns that any approach to dust control to minimise water consumption should not be at the sacrifice of the environment and residential amenity. The Department agrees that a balance must be achieved, and that any management practices must ensure that any impact on the receiving environment, including residents and road users, is minimised. Consequently, the Department has required a detailed Dust Construction

Environmental Management Plan to be prepared which would set out the protocol in which dust suppression techniques would be implemented, monitored and actively reviewed to ensure no adverse impact occurs as a result of RTA's proposed approach to dust suppression during construction activities.

5.8 Alternatives

Two submissions from the general public identified alternatives to the proposed duplication, being:

- the construction of two new carriageways west of existing highway at Mullengandra to avoid the severance of the Mullengandra community; and
- the upgrade of black-spots only, with the funds to be reallocated to more energy efficient options, such as rail and sea freight due to the contributions of greenhouse gases by vehicle emissions.

These are discussed separately below.

Mullengandra

The submission argued that the proposed duplication would sever the Mullengandra community and that the duplication should occur as two new carriageways to the west of the alignment (essentially at the rear of the primary school and church), which the community understood has been considered by the RTA as an alternative. The submission also argued that the proposed alignment would also generate safety impacts (given the need for movements from Sweetwater Road/Mountain Creek Road, including school bus movements), and would impact on the development potential within Mullengandra given improvements in travel efficiencies from Albury could encourage settlement within Mullengandra.

The RTA states that the proposed alignment is the preferred option and that the proposed duplication would not divide the community to any greater extent than what currently exists. The RTA also states that the proposed duplication would improve overall safety and that the duplication to the east of the existing alignment would minimise the extent of the impacts on the receptors located to the west (Royal Oak Inn, Mullengandra Primary School and St Luke's).

The Department notes that residents within Mullengandra are primarily located along Sweetwater Road and Mountain Creek Road, located to the west and east of the existing alignment of the Highway. Although the Department acknowledges that the primary school and church would provide a focus to the Mullengandra community, the Department considers that the western alternative, as suggested in the submission, would only serve to introduce or relocate impacts on local receptors (such as noise and Aboriginal heritage), and would not resolve the severance concerns of the submitter given the duplicated highway would still be located between residents located on Sweetwater Road and Mountain Creek Road. Furthermore, the safety design requirements for the highway would ensure that the turning and merging requirements of manoeuvres from either road are suitably catered for, with the service road to the school and church ensuring that direct access to the highway does not occur.

With respect to the future growth of Mullengandra, the Department notes that background planning studies undertaken as part of the preparation of the Greater Hume Local Environmental Plan suggests that Council's strategic direction for the region identifies that increased residential growth would be targeted at existing townships and villages, the closest being Woomargama located approximately 10km to the north. Consequently, should increased residential settlement occur within the immediate region as a result of improved travel efficiencies, the Department considers that it would likely focus on Woomargama rather than Mullengandra with any future growth within Mullengandra likely to remain at low densities and reflect zoning provisions.

Consequently, the Department considers that the duplication along the existing alignment is acceptable and that any impacts of this alignment within Mullengandra have been appropriately addressed though the proposed road design, the recommended Conditions of Approval and Statement of Commitments.

Duplication

The submission suggested that the complete duplication of the highway should not be funded (other than at black spots) and that the Government should focus on facilitating alternative freight transport modes. Although, the duplication would improve the efficiencies of the highway for the road freight industry, the projects also deliver significant improvements to road safety for all road users, including passenger vehicles, with single carriageway

generally posing relatively greater safety risks to all road users (as opposed to isolated black spots). Furthermore, whilst it is recognised that other options, notably rail, provide a more energy efficient option to freight transport, studies undertaken for the Sydney-Melbourne corridor generally suggests that demand for road traffic (and road freight) would continue to grow regardless of growth within other modes. Consequently, the Department accepts that there is a need for the completion of duplication and that longer term reductions in greenhouse gas emissions by vehicles is more appropriately addressed through National and State initiatives and policies, such as improvements to vehicle fuel standards and vehicle maintenance and emissions testing.

6. CONCLUSIONS AND RECOMMENDATIONS

The Department accepts that there is a pressing need to upgrade the Hume Highway to resolve current and future road safety and performance deficiencies, and that the proposed duplication of the existing highway corridor presents the best available option in resolving these issues and achieving the objectives of the Federal Government's AusLink National Land Transport Plan.

Following a detailed assessment of the Environmental Assessment, Response to Submissions and the submissions received during the exhibition period for the projects, the Department is satisfied that the proposed alignments provide an appropriate balance between the project environmental objectives and that the impacts of the southern segments can be appropriately mitigated or managed to acceptable levels. Consequently, the Department recommends that the project applications be approved subject to the recommended conditions of approval.

However, there are a number of significant constraints to the project segments when considered independently and within the context of the total duplication corridor.

Of particular note are flora and fauna impacts including the presence of significant remnant stands of the endangered ecological community, White Box Yellow Box Blakely's Redgum Woodland, and other important stands of habitat for several threatened fauna species. Although the proposed southern segments would only result in the removal of 17 hectares of remnant vegetation, the loss of these remnant stands within the immediately locality and contribution towards the total loss across the corridor would have measurable impacts on this habitat and the threatened species it supports. However, the Department accepts that this impact is unavoidable and the extent of the impact has been minimised as much as reasonably possible through the proposed project alignments. The Department is confident that the corridor-specific measures that would be complemented by the Biodiversity Offsets Package, as required by the Minister's approval of the concept plan, shall ensure that the predicted local and regional impacts on the Box-Gum Woodland and threatened species are appropriately minimised to acceptable levels, and that the required on-going monitoring shall ensure that the ecological objectives of the corridor-specific and wider offset measures are achieved overtime.

The Aboriginal heritage and non-Aboriginal heritage items and sites located along the project corridors have also presented significant constraints to the delivery of the project, particularly given the significance of a number of these items and sites. The RTA has given considerable attention to minimising the number and the extent of the impacts on these heritage items and sites, and the Department is satisfied that the proposed alignment and recommended conditions of approval shall ensure that the impact will be minimised as much as reasonably possible and that appropriate mechanisms are in place to ensure the appropriate salvage and historic recordings are undertaken where this impact is unavoidable. The Department acknowledges the destruction or removal of heritage items from the landscape is not ideal, but the Department considers that the historic recording of these sites and items shall ensure that some benefit is attained towards furthering the understanding the history of the Aboriginal and European occupation in the region.

Traffic noise impacts on the local community are already significant, and the proposed projects have the potential to exacerbate these impacts. The Department acknowledges that the approach undertaken by the RTA (being the duplication of the existing alignment) has limited the opportunity to address or improve upon the current noise environment, given the proximity of residences to the road alignment. Notwithstanding this, the Department considers that noise impacts have been minimised wherever possible through the proposed road design and that with the recommended conditions of approval, which require the RTA to consider the implementation of reasonable and feasible mitigation measures, such as noise mounds, noise-minimising road surfaces and acoustic treatment of residences, traffic noise impacts on residences will be further reduced.

The Minister's approval of the concept plan has ensured that there are suitable systems in place to ensure that the cumulative impacts of the Hume Highway Duplication project to which the southern segments would contribute towards, such as biodiversity and water resources, will be appropriately mitigated and addressed. To address the project-specific impacts of the southern segments, the Department has recommended a suite of conditions of approval for the projects to mitigate and manage these impacts, such as fauna crossings,

construction noise, flooding, water extraction and demand management, and visual amenity. The Department believes that these requirements shall provide for the implementation of best management practices during all phases of the projects, and shall ensure that the construction and operational impacts of the projects on the surrounding environment and the amenity of local residents and road users are managed to acceptable levels.

Regardless of the implementation of the recommended conditions of approval, the Department acknowledges that there will be residual impacts on the environment and local community, particularly with respect to the impacts on regional biodiversity and Aboriginal heritage. However, the Department has concluded that these residual impacts are considered to be acceptable given the benefits that the total project would provide to the general public, through significant improvements to road safety, and the benefits delivered to the region and State through improved network capacity, performance and connectivity for all road users.

Consequently, the Department recommends that the Minister for Planning approve the Southern Segments of the Hume Highway Duplication project, being 'Yarra Yarra to Holbrook' and 'Woomargama to Mullengandra'.

APPENDIX A – CONCEPT PLAN APPROVAL

APPENDIX B – RECOMMENDED CONDITIONS OF (PROJECT) APPROVAL

APPENDIX C – STATEMENT OF COMMITMENTS

APPENDIX D – RESPONSE TO SUBMISSIONS

APPENDIX E – ENVIRONMENTAL ASSESSMENT