NSW GOVERNMENT
Department of Planning

MAJOR PROJECT ASSESSMENT:
Hume Highway Duplication

Concept Plan and Northern Segments

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

July 2007

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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. Consequently, the RTA has sought 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).

The concept plan for the Hume Highway Duplication seeks an approval for the proposed duplication and encompasses all five segments of the upgrade, being Sturt Highway to Tarcutta, Kyeamba Hill, Little Billabong, Yarra Yarra to Holbrook (12km) and Woomargama to Mullengandra (10km). The concept plan focuses on the broader-scale impacts and the management strategies that would be implemented across the five segments to minimise these impacts. The three project applications address the specific impacts of the proposed works associated with these individual segments.

The key issues associated with the concept and the three project applications relate to the significant local and regional impacts on flora and fauna, the impacts on Aboriginal and non-Aboriginal heritage, operational noise impacts 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 five 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, Wagga Wagga City Council and a member 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 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 road network capacity and performance for all motorists and the economic benefits delivered through improved road freight efficiencies.

Consequently, the Department recommends that the Hume Highway Duplication concept plan, and the three project applications for the northern segments of the project, being 'Sturt Highway to Tarcutta', 'Kyeamba Hill' and 'Little Billabong', be approved subject to the recommended conditions of approval.

CONTENTS

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 separate environmental assessment processes in future.

1.2 Locality

The Hume Highway Duplication project is located within the Wagga Wagga and Greater Hume local government areas 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, Nest Hill nature reserve and Livingstone nature reserve as well as two State forests (Carabost and Murraguldrie).

There are approximately 50 residential dwellings and other sensitive receptors located adjacent to the project corridor, ranging from 20 to 600 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.

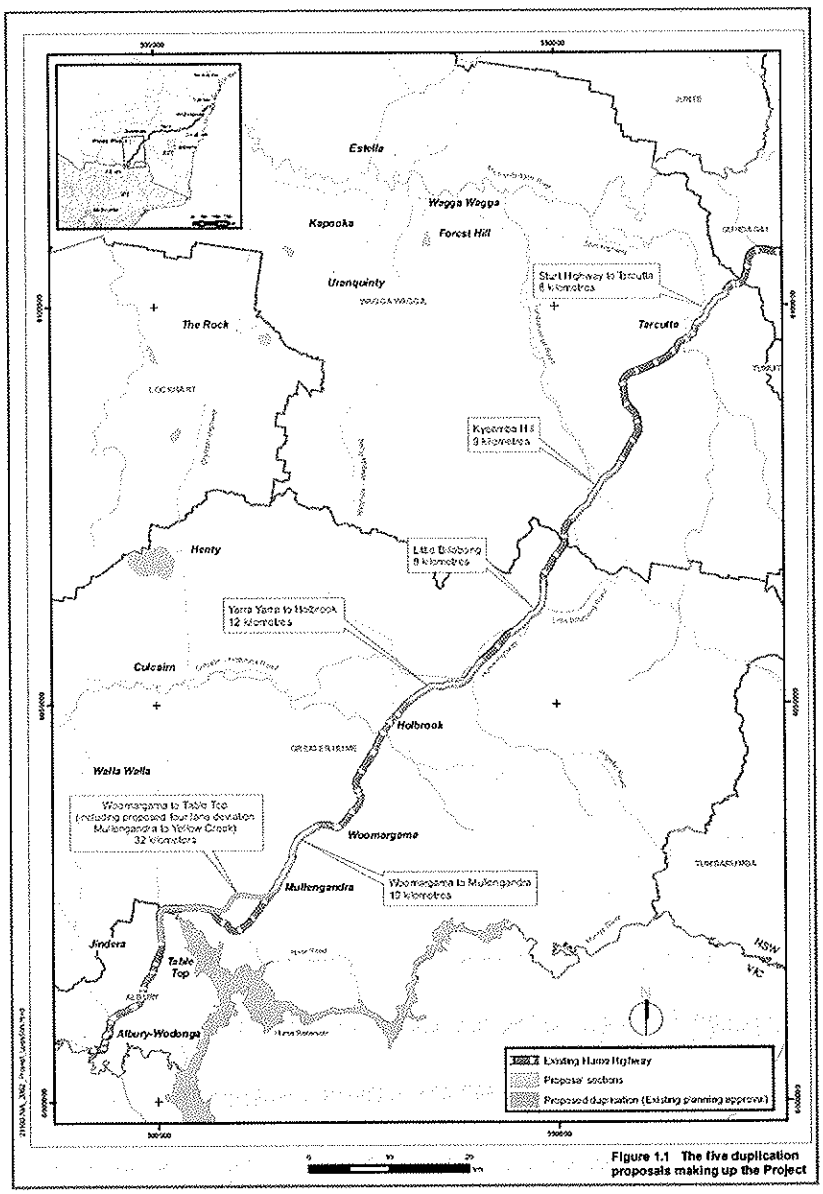
The largest towns in the vicinity of the Highway upgrade corridor are at Tarcutta (population of approximately 260), Holbrook (population of approximately 1,300) and Woomargama (population of approximately 150). Smaller settlements are located at Kyeamba, Little Billabong and Mullengandra.

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. This Director-General's report contains the assessment of the Hume Highway Duplication Concept Plan (reference: 06_0314) and the three 'Northern Segments' project applications: Sturt Highway to Tarcutta (reference: 06_0245); Kyeamba Hill (reference: 06_0246); and Little Billabong (reference: 06_0247). The remaining two project applications for the 'Southern Segments' ('Yarra Yarra to Holbrook' and 'Woomargama to Mullengandra') were lodged and exhibited later than the Northern Segments and will be considered in a separate assessment report.

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



2.1 Project Description

The Hume Highway Duplication proposal involves the upgrade of 45 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, however cut depths across the corridor would range from 10 metres to a maximum of 25 metres (at Little Billabong) with fill depths generally ranging from three to five metres with a maximum seven metres.

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 and the construction of new local roads to grade separate local and highway traffic flows (e.g. Tumbarumba Road).

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 all five project segments 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. The construction costs associated with the total Upgrade proposal is estimated to be $338 million. Approximately 400 equivalent full-time positions would be generated during construction.

Concept Plan – Sturt Highway to Mullengandra (Reference: 06_0314)

The concept plan for the Hume Highway Upgrade presents the total proposal for the duplication of the Hume Highway and encompasses all five segments of the upgrade, being Sturt Highway to Tarcutta (5 kilometres), Kyeamba Hill (9 kilometres), Little Billabong (8 kilometres), Yarra Yarra to Holbrook (12 kilometres) and Woomargama to Mullengandra (10 kilometres). Figure 1 illustrates the scope of the concept plan and the extent and interrelation of the separate project segments.

The concept plan focuses on the broader-scale impacts, and the management strategies that would be implemented across the five segments to address these impacts. The concept plan sets the strategic framework under which the Northern Segments would be located, and under which the Southern Segments will be considered in future.

Project Application – Sturt Highway to Tarcutta (Reference: 06_0245)

The project application seeks approval for the specific works associated with this segment of the upgrade, which is located between approximately 37 kilometres to 42 kilometres south of Gundagai. The original designs for the project indicated that this segment was to be six kilometres in length. However, changes to the project during the preparation of the Environmental Assessment have reduced the length of this segment to five kilometres through minor refinements to the project alignment. This project segment would cost approximately $65 million.

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

- two kilometres of a new single carriageway to complement 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 complementing the existing infrastructure with a new carriageway;

- reconstruction/ realignment of the Toonga Settlement and Lower Tarcutta Roads to provide a cross intersection with the Hume Highway with left and right turning bays;
- crossing of Dellateroy Creek four times (culverts) with the proposed carriageway located east of the corridor to minimise the impact on this creek; and
- clearance of approximately five hectares of woodland, with 2.3 hectares consisting of a critically Endangered Ecological Community.

Three residences are located adjacent to the project between 140 metres ("Inmarna") and 400 metres ("Toonga") 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 – Kyeamba Hill (Reference: 06_0246)

The project application seeks approval for the specific works associated with this segment of the upgrade, which is located between approximately 67 kilometres and approximately 76 kilometres south of Gundagai. The total length of the project is nine kilometres. This project segment is estimated to cost $111 million.

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

- construction of two new carriageways for nearly half of the proposed alignment;
- grade separation of Tumbarumba Road and the Hume Highway to enable the separation of highway traffic and Tumbarumba – Wagga Wagga (east-west) traffic flows. This would require the construction of an overpass and works within the Kyeamba Travelling Stock Reserve which contains high quality habitat comprising of an Endangered Ecological Community;
- a significant cut in proximity to Tumbarumba Road due to prominent granitic outcrops located on either side of the Highway corridor;
- construction of a bridge at Kyeamba Creek channel to replace the current culvert; and
- clearance of 16 hectares of woodland, with 11 hectares consisting of a critically Endangered Ecological Community.

There are a number of residences located adjacent to the proposal ranging from 30 metres ("Koingla") to 200 metres from the project alignment. There are no other sensitive receptors, such as schools, located adjacent to or in close proximity to the proposed alignment.

Little Billabong (Reference: 06_0247)

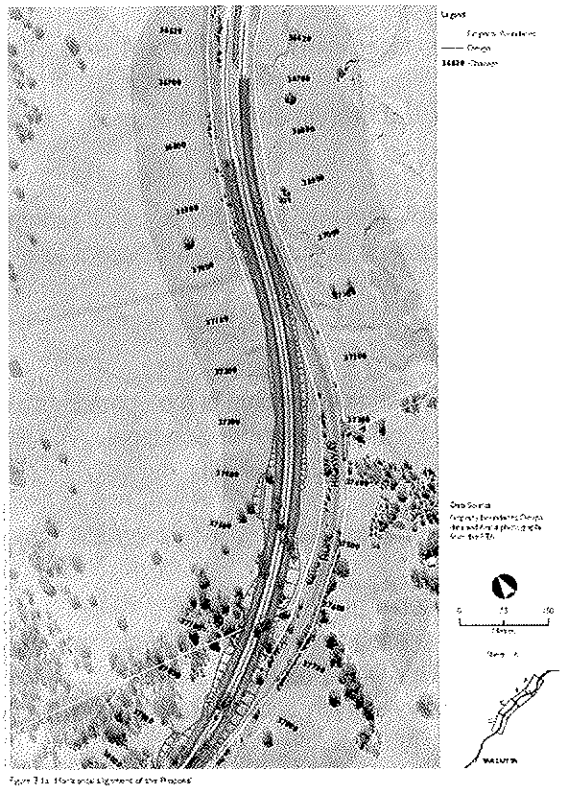
The project application seeks approval for the specific works associated with this segment of the upgrade, which is located between approximately 85 kilometres and approximately 93 kilometres south of Gundagai. The project would have a total length of nine kilometres. This project segment is estimated to cost $49 million.

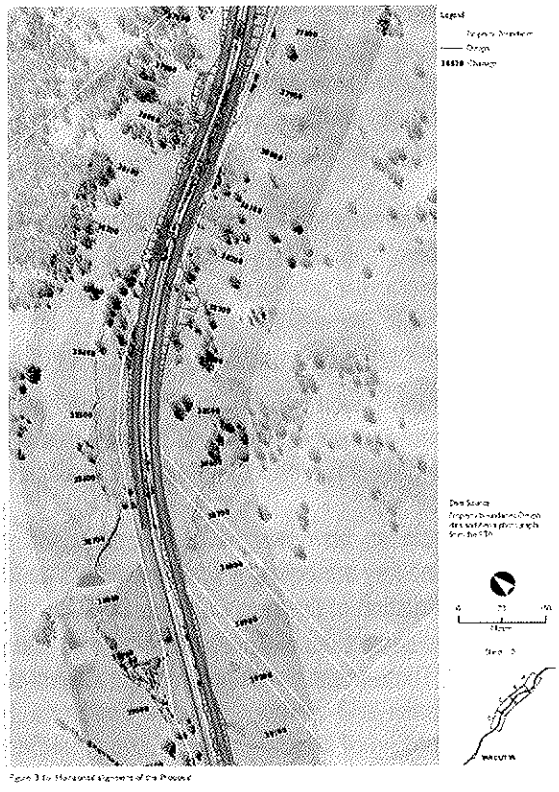
Figure 4 provides an overview of the proposed duplication works associated with the Little Billabong project segment. The key attributes of this section are as follows:

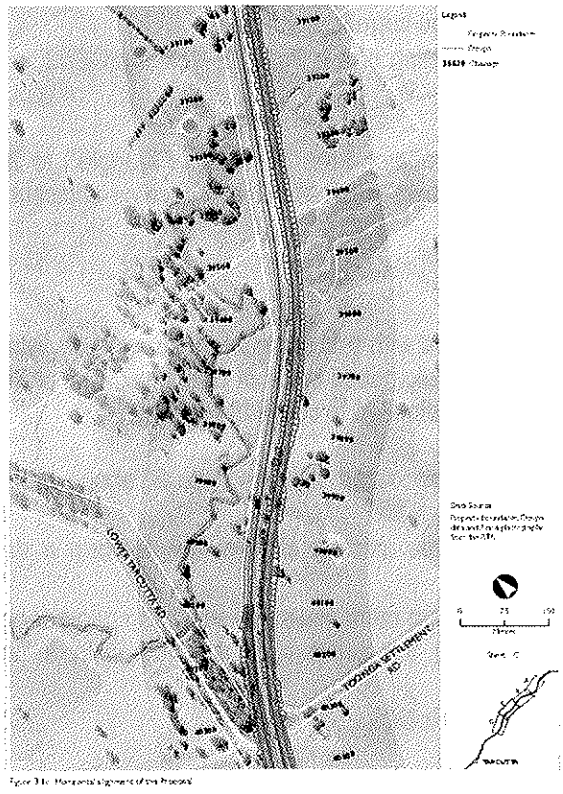
- six kilometres of a new single carriageway to complement the existing carriageway, to form a dual carriageway configuration in total;
- two kilometres of a new dual carriage way to replace the existing carriageway where road speed design standards could not be achieved by simply complementing the existing infrastructure with a new carriageway;
- upgrade of two intersections, Westby Lane and Little Billabong Road;
- a substantial cut (15-metre depth) south of Little Billabong Road;
- Little Billabong Creek follows the alignment of the proposed corridor but does not cross the proposed road corridor (excluding drainage lines); and
- clearance of 14 hectares of woodland and riparian vegetation, with 11 hectares consisting of a critically Endangered Ecological Community.

There are a number of residences located adjacent to the proposal ranging from 170 metres ('Wirruna') to over 250 metres from the project alignment. There are no sensitive other receptors, such as schools, adjacent or in close proximity to the proposed alignment.

Figure 2 – The Sturt Highway to Tarcutta Project (Connell Wagner/ Parsons Brinckerhoff, March 2007)







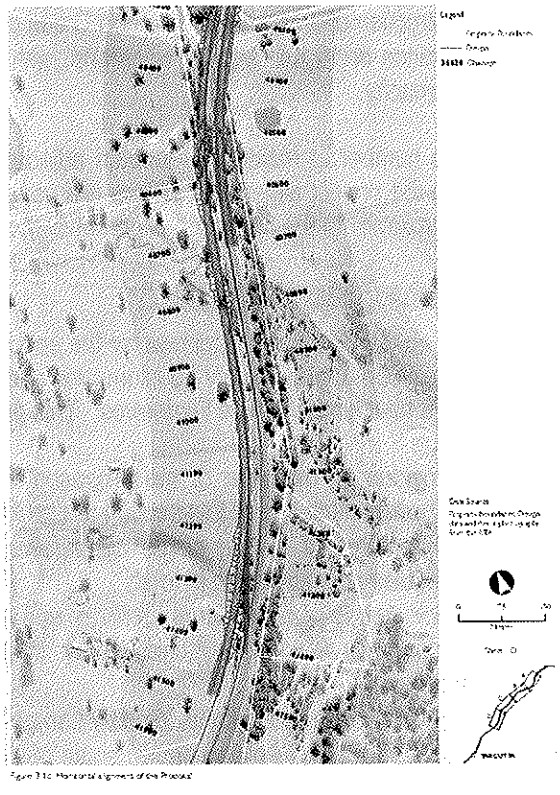


Figure 3 – The Kyeamba Hill Project (Connell Wagner/ Parsons Brinckerhoff, March 2007)

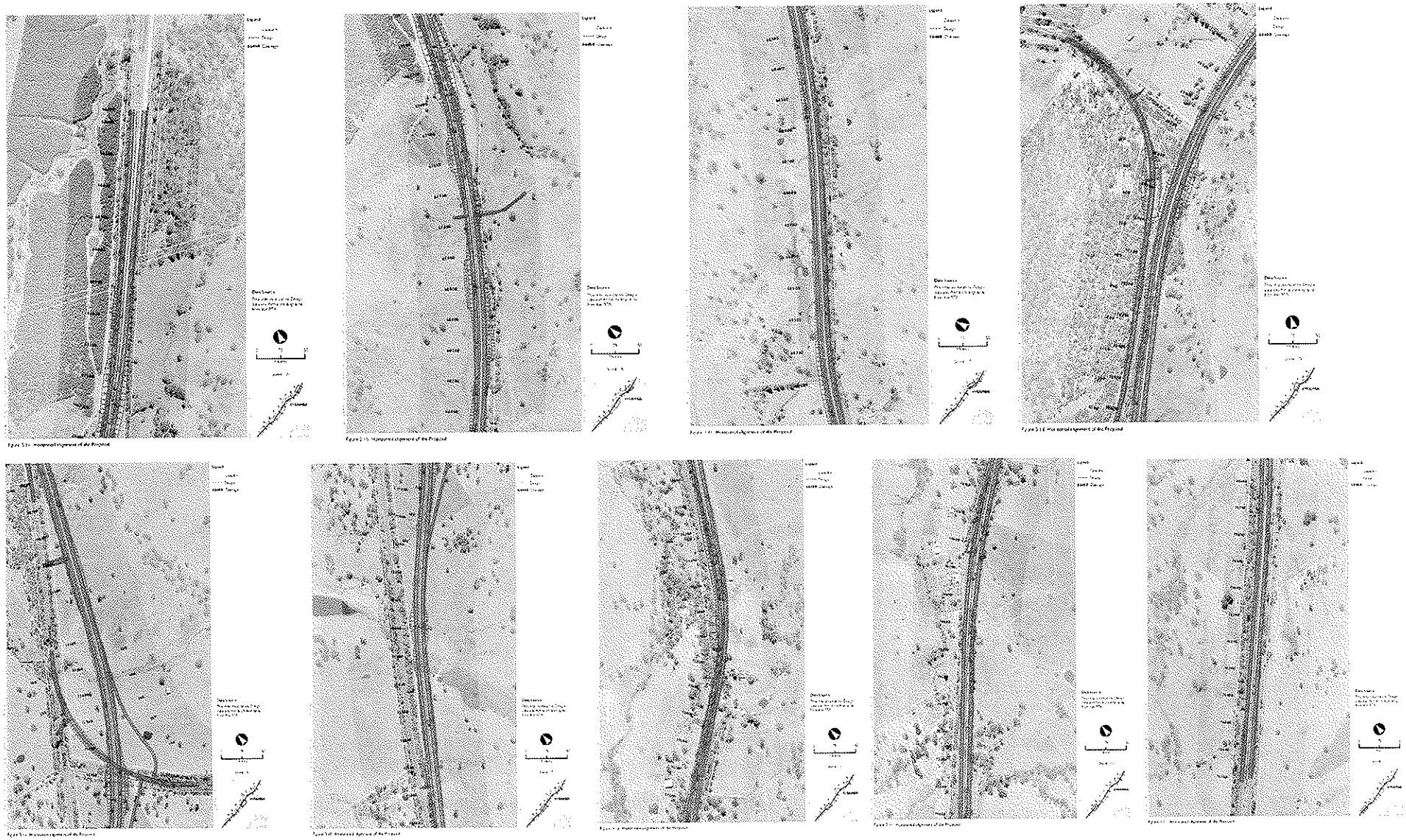
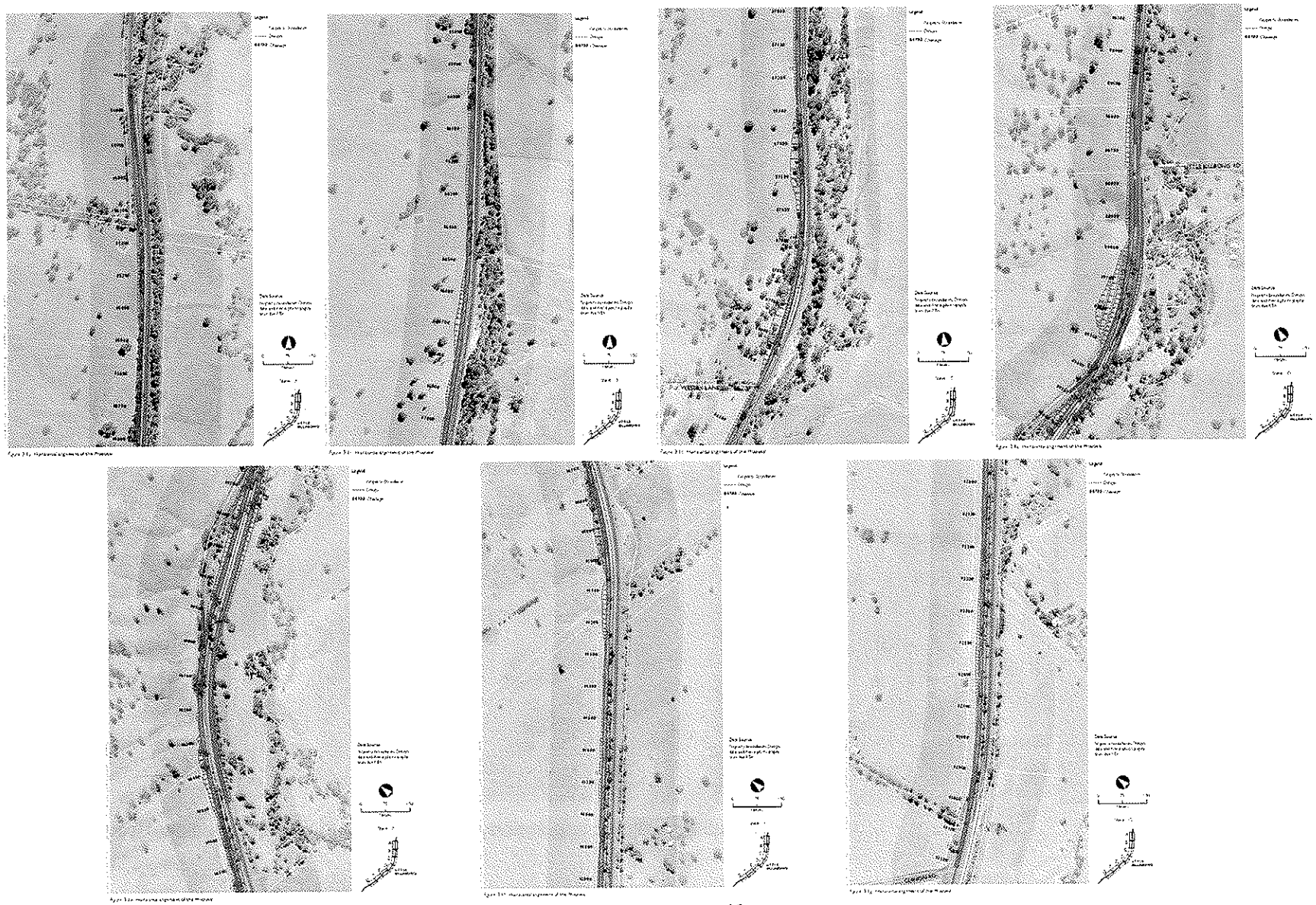


Figure 4 – The Little Billabong Project (Connell Wagner/ Parsons Brinckerhoff, March 2007)



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.

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.

3.4 Permissibility

Section 76J(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 *Wagga Wagga Rural Local Environmental Plan 1991*, 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 concept plan and the three project applications were placed on public exhibition from 12 March 2007 until 13 April 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 project.

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 concept plan and the three project applications.

3.7 Nature of the Recommended Approval

Upon declaring the Hume Highway Duplication proposal as a major project, the Minister for Planning subsequently directed the RTA to submit a concept plan for the project to ensure the broader strategic planning and cumulative environmental impacts of the total project were appropriately considered. Furthermore, it was considered that the concept plan approach would provide an opportunity for a flexible staged-approvals scheme for the individual project segments.

However, the RTA has progressed the design and assessment of all segments to a level that permits the Minister to consider granting project approval for the project segments in conjunction with, or immediately following, the submission of the concept plan Environmental Assessment. As such, the Concept Plan focuses on the strategic justification and broader cumulative impacts associated with the overall duplication proposal, such as biodiversity and water supply. The concept plan seeks the Minister's recognition of the RTA's intention to submit project applications for each segment of the total project which would contain the specific environmental assessment for each segment.

Accordingly, the RTA submitted the concept plan Environmental Assessment and the Environmental Assessment for the three northern segments of the overall proposal, being 'Sturt Highway to Tarcutta', 'Kyeamba Hill' and 'Little Billabong'. These have been assessed within this Director-General's report and it is recommended that these be determined concurrently with the concept plan. The RTA has also since submitted the Environmental Assessments for the remaining two segments, being 'Yarra Yarra to Holbrook' and 'Woomargama to Mullengandra' projects. These Environmental Assessments were publicly exhibited between 2 May 2007 and 1 June 2007, and will be subject to a separate assessment and recommendation by the Department.

The Department therefore recommends that the Minister exercise his power under the *Environmental Planning and Assessment Act 1979* to:

1. grant concept plan approval to the Hume Highway Duplication proposal, with the approval requiring Part 3A project approvals to be sought for the five individual segments;
2. grant 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); and
3. require further assessment and approval for the 'Yarra Yarra to Holbrook' (reference: 06_0248) and 'Woomargama to Mullengandra' (reference: 06_0249) projects under Part 3A of the Act.

To reflect this approach, the Department has drafted four recommended instruments of approval that relate to the recommendations made within this Director-General's report, being the concept plan instrument and three separate project approval instruments.

The concept plan approval has been drafted to allow the approval to the concept plan for the Hume Highway Duplication proposal in its entirety and describes the subsequent assessment and approval requirements for the five individual segments. These requirements are the Director-General's requirements that were issued for each project segment prior to the Minister's direction to submit a concept plan and are referenced to remove any doubt in relation to the need for further assessment requirements for each of the five projects. The recommended concept plan approval also specifies the broader management strategies and plans that would apply across the five segments, including a biodiversity off-sets program and water management strategy.

Three separate project approval instruments have been recommended for the three Northern Segments. These instruments would grant full project approval under Part 3A of the Act to the particular works associated with these segments of the Hume Highway Duplication proposal and detail conditions that establish the environmental standards, mitigation measures, environmental controls and monitoring requirements for the projects. The interaction between the concept approval and the project approvals is outlined in Table 2 below.

Table 2 – Recommended Condition Matrix for the Concept Plan and Project Applications

CONCEPT PLAN CONDITIONS	PROJECT APPLICATION CONDITIONS
Project Applications and Specific Requirements	
The identification of the environmental assessment requirements for the subsequent project applications.	Not applicable – the requirements have been addressed through the relevant project application Environmental Assessment.
Specific Environmental Conditions	
No specific environmental conditions imposed as part of the concept plan instrument of approval.	• ecological management and mitigation conditions • heritage management and mitigation conditions • construction and operational noise management and mitigation conditions • air quality management condition • hydrology management and mitigation conditions • visual amenity management/mitigation conditions
Environmental Monitoring, Auditing and Reporting	
Compliance Tracking Program, including construction and operational auditing requirements for project(s)	To be implemented across all projects in accordance with the concept plan conditions of approval
Specific issued-based monitoring requirements deferred to project approval(s).	• ecological monitoring • operational noise auditing
Community Monitoring and Tracking	
• provision of information • complaints procedures • community communication strategy	To be undertaken separately or collectively across projects

Table 2 (cont) – Recommended Condition Matrix for the Concept Plan and Project Applications

CONCEPT PLAN CONDITIONS	PROJECT APPLICATION CONDITIONS
Environmental Management	
• Compensatory Habitat Offsets Program • Construction Water Management Strategy • Construction Site Compound Requirements	• to be implemented across all projects in accordance with the concept plan instrument of approval • to be identified in the project Construction Environmental Management Plan • Environmental Representative
Management Plans	
Construction Environmental Management Plan framework for each project	• Construction Ecological Management Plan • Construction Heritage Management Plan • Construction Riparian Management Plan • Construction Dust Management Plan
Operational Environmental Management Plan for the entire project corridor	All operational management requirements set within the concept plan instrument of approval

3.8 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). Consequently, the project will require an additional approval for the project from the Commonwealth.

There is an assessment bilateral agreement between the Commonwealth and NSW Governments with respect to certain environmental assessments undertaken within NSW. However, the assessment processes for the Hume Highway Duplication had commenced prior to the implementation of the bilateral agreement, and as such, the RTA will be following separate assessment (and approval) processes at the Commonwealth level.

4. CONSULTATION AND ISSUES RAISED

4.1 Introduction

The Department received two submissions during the exhibition of the concept plan and project applications, and three additional submissions following the close of exhibition period. All but one of the submissions were from Government agencies.

4.2 Submissions from the Public

The Department received one submission from a representative of a public institution (Charles Sturt University), which raised a number of concerns with respect to the Concept Plan application. These issues are as follows:

- ***flora and fauna***, specifically with respect to the impacts to the White Box – Yellow Box – Blakely's Red Gum Endangered Ecological Community as well as threatened flora and fauna (Squirrel Glider) species resulting from the loss of roadside vegetation, impacts on TSRs and habitat removal. Concerns were also raised with respect to the mitigation measures, particularly the use of an off-sets strategy;
- ***non-Aboriginal heritage***, specifically the 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;
- ***consideration of alternatives*** for the duplication of the Hume Highway. Specifically, the consideration of greenfield options to avoid impacts on biodiversity and route options to avoid high quality habitat and historic items.

It should be noted that the above submitter has since advised that the concerns (subject to certain conditions) have been addressed following the review of the Environmental Assessment exhibited for the Woomargama to Mullengandra project application.

4.3 Submissions from Government Agencies

The Department received submissions from the then Department of Environment and Conservation (now the Department of Environment and Climate Change (DECC)), the then Department of Natural Resources (now 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. It is highlighted that only DWE provided comment on the concept plan application (as distinct from the project applications).

Department of Environment and Climate Change

The DECC provided advice that:

- insufficient detail was provided to determine the extent to which the offset strategy would offset the impacts of the development. Consequently, a revised SOC was recommended to set out the principals pf the package and links with the NSW Property Vegetation Plan Developer to ensure the RTA's offset objective is met;
- further survey work is required to develop the most appropriate mitigation and offset measures for threatened species and that additional investigations and expert advice is need in relation to the location of fauna crossing points;
- the RTA must monitor the impacts of the development on biodiversity;
- further changes to the Statement of Commitments are required to ensure mitigation measures are appropriately designed and implemented;
- 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;

- the RTA must ensure that water resource conservation should not compromise other environmental objectives (i.e. dust suppression);
- mitigation measures will be required to manage dust management/mitigation, including dust disposition monitoring;
- impacts on certain receptors as a result of high impact construction activities for prolonged periods have not been considered or mitigation approaches to minimise these impacts have been provided;
- concern with construction noise mitigation measures, particularly the location criteria used for construction compounds. Also recommends that blasting conditions be imposed to manage this potential impact;
- the RTA must comply with the Environmental Criteria for Road Traffic Noise (ECRTN) and must demonstrate neither feasible and reasonable mitigation measures are able to satisfy the applicable criteria prior to applying the allowance criteria. The Statement of Commitments should commit to the noise goals detailed in the ECRTN.
- the future existing noise levels used in the operational noise assessment should only consider organic traffic growth;
- the use of the draft Managing Urban Stormwater – Soil and Construction, Volume 2 – Book 4 – Main Road Construction is supported subject to the recommended revised Statement of Commitments;
- an Environmental Protection Licence for the concrete batching plant will be required as well as any crushing plant. This would apply to any other activity ancillary to construction of the project which are scheduled activities under the *Protection of the Environment Operations Act 1997*; and
- insufficient detail is provided on the extent and impact of after hours work.

Department of Water and Energy

The DWE provided advice that:

- insufficient detail is provided to allow an adequate assessment of the potential impacts on surface and groundwater resources, and has recommended a number of requirements for the Response to Submissions or relevant post-approval applications to address;
- 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;
- 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 will 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.
- a flood assessment should be undertaken for the Little Billabong section of thw works to ensure minimal affect on downstream flood levels;
- insufficient assessment on the loss of flood plain storage and the flood model may be inappropriate in adequately assessing the potential impacts; and
- 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;
- fish surveys were not completed with the assessment based on habitat characteristics. DPI requires the RTA to work closely with the DPI were remnant pools occur due to the possibility of these pools acting as refuges for fish species;
- the conclusions for threatened fish species impacts are not supported given these species are relativity small and can remain in small pools during dry conditions;
- 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;
- notes the potential threats to water quality and supports the proposed mitigation measures;
- 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 was received from Wagga Wagga City Council which did not explicitly state a position on the proposed concept plan or project applications but provide comment on two issues that it considered the Department should consider in its assessment. The key matters are as follows:

- ***water resources***, specifically the need for the implementation of water conservation measures during construction due to the potential impact on other local water users.
- ***local roads***, specifically the need for RTA to consult and report to the local Councils regarding road dilapidation.

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 supported the revised Statement of Commitments and had no further comment. The DECC identified a number of outstanding issues relating to biodiversity, Aboriginal heritage and noise. 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;
- water impacts; 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 proposed Hume Highway corridor 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 all or some 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; and
- threatened reptile species (Striped Legless Lizard and the Pink-tailed Worm Lizard).

Threatened fish species (Purple Spotted Gudgeon and the Southern Pygmy Perch) were not considered likely to be present within the project corridors given the current conditions of the impacted waterways and total catchments.

Approximately 41 hectares of the Box Gum Woodland community and 52 hectares of habitat would be cleared as a result of the total project. Table 3 provides further details of areas affected by each project segment. Given the importance of the remaining remnants of this community, it has been concluded that the proposed duplication project would generate a significant impact on the Box Gum Woodland community in the region and the species which it supports, through direct clearance of the community (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. It was also concluded that the removal of other habitat that does not form part of the Endangered Ecological Community would further contribute towards the cumulative impact on threatened fauna species within the region.

Table 3 – Total Area of Vegetation/ Habitat to be Cleared by Project

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)
Sturt Highway to Tarcutta	5	2.3	0.3
Kyeamba Hill	16	12.2	11.3
Little Billabong	14	11.6	2.4
Yarra Yarra to Holbrook	7	6.9	6.9
Woomargama to Mullengandra	10	8.3	8.3
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 and the total concept, 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:

- 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;
- 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; and
- undertake a monitoring program to allow the effectiveness of mitigation and offset measures to be assessed (and re-evaluated if needed).

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 identified a number of outstanding issues and recommended that these matters be addressed through the Department's recommended conditions of approval. These issues related to:

- providing greater detail on the content of the Offsets Package;
- the need for further pre-construction monitoring for threatened fauna species to aid in the implementation of the proposed mitigation measures and offsets, and to ensure effective monitoring results to be achieved;
- imposing a number of management controls to minimise the loss and disturbance of native vegetation and fauna habitat, including the relocation and reuse of felled timber; and
- the provision of expert advice for threatened fauna crossings.

The Department of Primary Industries stated in its submission that it did not concur with the conclusions of the RTA with respect to threatened aquatic species within the Little Billabong segment. The DPI recommended that monitoring should occur during construction periods to ensure these species are not present within the impacted tributaries of Billabong Creek. The DPI also requested that management controls (for both aquatic species, riparian habitat and general water quality controls) be prepared in consultation with DPI. The 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 concept plan Environmental Assessment) identified a number of concerns relating to the assessment of impacts and the consideration of alternatives (to the project itself and offsets). Specifically, the submission argued that offsets should only be considered following the elimination of other options, that further detail should be provided for mitigation measures associated with the projects, and that monitoring should be undertaken to assess the real impacts of the project and provide for the design of future mitigation measures.

Consideration

Terrestrial Ecology

The Department considers that the RTA has reasonably attempted to avoid or minimise the extent of disturbance to the Box-Gum Woodland community, high and/or medium quality fauna habitat, and the key habitat corridors connecting these areas, through the proposed road alignments. The Department also accepts that the complete avoidance of these areas cannot be achieved in the delivery of the projects given the other constraints to the project corridor, such as road safety design requirements and Aboriginal heritage.

Although this disturbance has been minimised, the projects, in total and as individual segments, would still have a significant impact on the Box-Gum Woodland and threatened fauna species in the region – not only due to habitat destruction or disturbance but also due to increased fragmentation, barrier effects and increased risk of road strike.

Given the significance of the impact, and the limitations to mitigating this impact within the project corridors, the Department supports the proposed combination of both corridor-specific mitigation measures, such as the revegetation of the road corridor and aerial crossings, and the implementation of regional offset measures. The Department is satisfied that this approach would ensure that localised impacts are minimised wherever possible, and that the cumulative and longer-term impacts on the Box-Gum Woodland community and the regional populations for the relevant threatened fauna species are appropriately addressed.

Generally, the Department considers that most of the corridor-specific mitigation measures to ensure the loss and disturbance of vegetation (and fauna) primarily relate to implementation of best-practice management during construction activities. 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 that is supported by the Threatened Species Monitoring Program that has been prepared in consultation with the DECC and DPI.

However, the Department notes that further consideration and investigations are required to determine the most appropriate approach in delivering the offset package and fauna crossings to ensure that the desired ecological outcomes are achieved and maximised. Essentially, the Department recognises that:

- the need, location and design of fauna crossings will require expert advice from an appropriately qualified ecologist prior to the commencement of construction to ensure that these measures reflect the needs of the relevant species; and
- the composition of the final offsets package requires further negotiation between the DECC and the Commonwealth Department of Environment and Water Resources (DEW), which may take up to 12 months to finalise.

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 these crossings; and
- that construction work be prohibited in proximity to the agreed 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.

With respect to the Biodiversity Offsets Package, the Department is satisfied that this does not have to be finalised prior to the commencement of construction given the lead times associated with selecting the final offset measures and securing the available land to provide the offsets. However, the Department does consider that a Biodiversity Offset Strategy should be finalised and approved by the Director-General prior to works commencing to ensure the ecological impact of the total project can be offset. Consequently, the Department recommends that the Strategy, which would form part of the concept approval, must establish:

- the objectives and biodiversity outcomes that would be achieved through the Biodiversity Offsets Package;
- the offset measures that have been short-listed to deliver a neutral or net beneficial outcome for the region; and
- the decision-making framework that would dictate how the final suite of identified options would be selected, including the ranking of available measures.

The final Biodiversity Offsets Package would need to be consistent with the above requirements. Both the Strategy and the Package would need to be finalised with the involvement of the DECC and the Commonwealth DEW. This has been reflected within the recommended conditions of approval for the concept plan, given the package and impact to be offset relates to the duplication proposal in its totality.

In conclusion, the Department is satisfied that the finalisation of the species-specific mitigation and offset measures, in conjunction with a management, monitoring and review regime for both corridor-specific and regional offset measures would ensure that the local and regional impacts of the Hume Highway Duplication proposal 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 for threatened fish species to be present within the tributaries of the Little Billabong. However, given that the key impacts on these species 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 could be effectively minimised through the implementation of construction management controls and the appropriate design of all new or modified crossings. In particular, the Department highlights that the proposed modification and/or replacement of existing culverts would improve current fish passage conditions within all three project segments, and that the proposed contributions to the DPI re-snagging program would assist in improving fish habitat across the broader region.

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 mitigate (and improve) fish habitat conditions.

The Department is satisfied that the above recommendations would address the concerns of 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 78 sites, including scarred trees and Potential Archaeological Deposits (PAD), were recorded along the Hume Highway duplication proposal corridor. Of these sites, 24 sites would be directly or partially impacted with a further five sites that may be impacted depending on the outcomes of the final detailed design of the alignment.

The RTA has included the assessment of Aboriginal heritage to the individual project applications and Table 4 provides a summary of the sites located within the three northern segments of the upgrade that are the subject of this report.

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.

Table 4 : Aboriginal Heritage Sites within the Project Application Corridors

Segment	Direct Impact	Possible Impact*
Sturt Highway to Tarcutta	1 PAD site (PAD-1)	1 isolated find (K4)
Kyeamba Hill	1 artefact scatter (K6) 2 isolated finds (K3 & K10) 3 PAD sites (PAD 6,8 & 9)	1 scarred tree (K12) 1 artefact scatter (K4) 1 isolated find (K5)
Little Billabong	2 artefact scatters (LB3 & 4) 1 isolated find (LB2) 1 PAD site (PAD 3)	1 PAD site (PAD 1)

* Possible Impact refers to items/sites that may be impacted depending on outcomes of the final detailed design of the alignment

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 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.

With respect to sites which the RTA have only identified as having a potential possible impact, the Department considers that the RTA should prioritise the avoidance of these sites/items during the final design of the alignment to minimise the overall impact on indigenous heritage across the project corridors. To ensure this priority is given to these items, the Department has recommended that these sites should only be disturbed if it is demonstrated to the Director-General that the sites cannot be avoided. A condition of approval has been imposed on all three project applications to reflect this requirement/approach.

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 three project segments to ensure Aboriginal heritage across the corridors are appropriately protected and the impacts minimised wherever possible. The Department is also satisfied that 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 95 identified items of non-Aboriginal heritage significance located along the alignment of the proposed duplication proposal that would be directly or indirectly impacted. These consist of built, archaeological and landscape items, and reflect the history of the Hume Highway, past European settlements and the agricultural practices in the region. Two of these items are of State heritage significance (Traveller's Joy Inn, Kyeamba and The Royal Oak Inn, Mullengandra) and nine sites are considered to be of potential State heritage significance. The remainder 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.

The assessment of the potential impacts of non-Aboriginal heritage items were deferred to the individual project applications. Of the 75 items along the alignment of the three northern projects that are the subject of this report, 35 would be directly or indirectly impacted by the proposed works (refer to Table 5). As indicated in Table 5, the majority of the sites impacted by the proposed segments consist of archaeological sites, landscape items and earthen dams. Of note are the impacts on the visual curtilage of the Traveller's Joy Inn, which is one of the earliest inns and public houses along the Hume Highway and the impacts on archaeological sites associated with the historic Little Billabong settlement.

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 Traveller's Joy 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 Kyeamba Hill 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.

Table 5: Heritage Items Impacted by the Proposed Three Northern Segments

Segment		
Sturt Highway to Tarcutta (5 Items)	**Kyeamba Hill (19 Items)**	**Little Billabong (11 Items)**
Disturbance to building remnants (potential dairy) ***potentially State significant***	Disturbance to the site of the demolished 'John Bell's Accommodation House' (archaeological) ***potentially State significant***	Archaeological scatter ***potentially State significant***
		Disturbance to the curtilage of remnants of St Paul's Churchmount ***potentially State significant***
Demolition of dam		Partial disturbance to the Little Billabong historic settlement (archaeological site) ***potentially State significant***
Partial impact to gravel road associated with historic construction of Highway (1960's)		Impact on the landscape component of the former Little Billabong settlement ('Cricket Pitch')
Removal and relocation of stockyards	Loss or damage to farm buildings and plantings associated with Kyeamba Park homestead	
Loss of three segments of highway road remnants		
Diminished heritage landscape views from Dead Man's Hill	Indirect impact on Kyeamba South Homestead/Traveller's Joy due to impacts on visual curtilage (***State significant item***)	Impact on cultural plantings/roadside vegetation, and road remnants
Partial impacts on cultural plantings/roadside vegetation	Partial impacts on cultural plantings/roadside vegetation, earthen dams and road remnants	

Issues Raised in Submissions

A submission from the general public identified concerns with the cumulative loss of non-Aboriginal heritage across the project corridors, and that the old sections of the highway and other heritage items should be retained to preserve the historic significance of these items.

Consideration

The Department has reviewed the heritage assessments undertaken for the projects and considers that the proposed duplication would have a local scale impact across three corridors through 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. In particular, the Department highlights that the proposed design of the road alignment adjacent to the Traveller's Joy Inn (Kyeamba South Homestead), an item of State heritage significance, has largely prevented any significant or direct impacts on the heritage values and setting of the building while ensuring that the visual historic connections between the highway and the homestead are adequately maintained.

However, the Department does acknowledge that there are a number of 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 collective items associated with the historic Little Billabong settlement site (Little Billabong) and the demolished 'John Bell's Accommodation House' (Kyeamba Hill). However, given these impacts would be largely confined to the proposed road corridor and are predominately 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 three 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, the local Council(s) 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 measures proposed by the RTA, combined with the above conditions, would appropriately mitigate and manage the predicted impacts on heritage items located along the three segment alignments. 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 Tarcutta Creek catchment and the Upper Billabong Creek catchment. There are no major rivers within these catchments; however these systems are major drainage lines for the Murrumbidgee and Murray Rivers. As typical for the area, these catchments are currently under stress due to the prolonged drought conditions and have no flows or restricted water flows.

Approximately 390 megalitres of water would be required over a 30-36 month construction period for the total duplication proposal. Earthworks, concrete manufacturing and dust suppression are expected to be the key activities that would require significant volumes of water.

The RTA has proposed to source water for the projects 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. The RTA has also proposed to use existing and temporary farm dams to collect surface water flows in proximity to the project corridors, as well as purchasing town water from Riverina Water County Council.

The RTA considers that the combination of the above measures 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 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).

It is noted that the DWE subsequently advised the Department, following the review of the RTA's Response to Submissions, that is supports the revised Statement of Commitments and supports the RTA's commitment to obtain the necessary licences and approvals from the DWE (such as under the *Water Act 1912*). It is understood from discussions with the DWE that the construction alliances have commenced the required consultation with DWE and that procedures to obtain the necessary licences have well advanced.

Consideration

The Department considers that the sourcing of water for the project is manageable and, that under normal conditions, the required demand by the projects would not be a significant issue in the delivery of the Hume Highway Duplication projects. However, the Department recognises that the current climate conditions require caution to be applied to how water is supplied to the project given the pressure that the volumes extracted across multiple project corridors could place on surface and groundwater resources, and the regional users of these resources, if not properly managed.

To some extent, the Department agrees with the DWE that the lack of explicit commitments with the concept plan and project applications with respect to the final methods of sourcing the water and the volumes that would be extracted does not provide the Department with the full assurance that these activities would be appropriately undertaken. However, the Department considers 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 final water management practices 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.

In taking this approach, the Department considers that there must be an appropriate evaluation of the finalised extraction methods to verify that the practices are suitable, and that a responsive and coordinated monitoring and reporting system on the resource conditions is implemented across the project corridors to ensure that the RTA's management practices are performing adequately and that no unacceptable impact is occurring. Consequently, the Department has recommended through the concept plan approval that a Construction Water Management Strategy be prepared for the total project, in consultation with DWE. This will require the RTA to implement a detailed strategy to ensure the methods of extraction (either for surface or groundwater) are undertaken appropriately and that the RTA has appropriate management and reporting systems in place to monitor extraction rates, water use and resource conditions across all 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 Department is confident that this matrix of coordinated management, monitoring and reporting systems on water extraction and minimisation will ensure that no localised or regional impact occurs on water resources and its users as a result of concurrent construction activities associated with the Hume Highway duplication projects.

5.5 Hydrological Impacts

Issues

The Hume Highway within the three project alignments crosses numerous drainage channels, tributaries and creeks, with Kyeamba Hill alone involving over 40 crossings. The proposed works would require either the duplication of existing drainage structures, the construction of additional crossings and the conversion of crossings from culvert to bridges (e.g. Kyeamba Creek). All have the potential to impact on afflux and flow velocities through alterations in flow behaviour. All three project corridors also traverse short sections of floodplain. 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.

Other than the Little Billabong segment, the RTA identified that the proposed segments would not change flood behaviour, inundation and afflux given that:

- the percentage of floodplain affected (typically 0.2% of the total catchment);
- drainage structures and crossings would be designed to maintain or improve current drainage/flows, including works to enable the natural channel of Kyeamba Creek to be reinstated; and
- scour protection and energy dissipation devices would also be provided where necessary.

With respect to the Little Billabong segment, the RTA identified that a 600-metre section of the Highway that would require a steep embankment would impact on the flow velocities of Little Billabong Creek and would increase afflux downstream of the crossing resulting in only marginal increases in extent of the floodplain. However, the RTA considers these changes to be acceptable with no residential properties affected by the predicted changes in flood flow distributions.

Issues Raised in Submissions

The Department of Water and Energy (DWE) identified that further investigations should be undertaken with respect to the duplication of all drainage structures due to the impacts on afflux. DWE also stated that it was unable to comment on the appropriateness of the hydraulic model used for the Little Billabong segment and that further work should be undertaken to ensure the loss of floodplain storage as a result of the Little Billabong segment is fully quantified.

The RTA responded to the concerns of DWE (within its Response to Submissions) that the loss of floodplain storage would not have any impact on any developed land, with the increase in flood levels generally restricted by the stream banks and that this increase would not significantly alter the existing flood width during a 1 in 100 year flood. The predicted impacts of the flooding, and detailed design of all water crossings and associated structures, would be confirmed with additional modelling during the final detailed design of the project.

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 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 should 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:

- submit for the approval of the Director-General a final hydraulic investigation report for the Little Billabong segment, prepared in consultation with DWE, confirming that the final project alignment and associated structures have been designed to minimise changes in flood behaviour and afflux; and
- demonstrate to the Director-General that new or duplicated drainage structures have been designed, in consultation with DWE, to minimise changes in afflux in waterways that traverse the road alignment (Kyeamba Hill and Sturt Highway to Tarcutta).

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 more than 26 weeks. 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. However, the major sources of construction noise would be associated with earthworks, drainage and bridging due to the equipment used in these works.

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, largely as a result of blasting activities. The RTA has indicated that at least two locations would require blasting, both being within the Kyeamba Hill duplication segment. One of these locations, located at the Tumbarumba Road intersection, has the potential to impact on a nearby residence located 400 metres north of the proposed blasting location. The RTA has indicated that blasting would not occur within any other segment.

To manage these impacts, the RTA has committed to undertake any blasting activities in accordance with the relevant guidelines and Australian Standards, including ANZECC *Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration*. The RTA have proposed to undertake a number

of trial blasts to ensure that nearby residences and other structures are not exposed to vibration levels above the ANZECC criteria.

Operational (Traffic) Noise

Residences located along the proposed Hume Highway corridor already experience high levels of traffic noise, particularly during night-time periods when heavy vehicles represent an estimated 75-85% of traffic flows along the Hume Highway. The closest residences to the proposed Highway upgrade for each segment vary from between 30 metres within the Kyeamba Hill segment, 140 metres within the Sturt Highway to Tarcutta segment and 170 metres within the Little Billabong segment.

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. The night-time period (10:00 pm to 7:00 am) was considered to be the limiting criterion for the project and was used for the purposes of the assessment.

The noise assessment found that nearly all residences would exceed the ECRTN 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 6). 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.

Table 6 : Predicted Noise Levels (Without Mitigation)

Segment	Receptor	Noise Criteria (ECRTN)	Predicted L_{Aeq} Noise Levels (2009)	Project Specific Criteria*	Predicted L_{Aeq} Noise Levels (2019)
		Night ($L_{Aeq(9\ hour)}$)			
Sturt Highway to Tarcutta	TC_1	55	59	60	64
	TC_2		59	60	59
Kyeamba Hill	KY_1		67	60	69
	KY_2		60	60	64
	KY_3		64	60	68
	KY_4		56	58	60
Little Billabong	LB_1		57	59	61
	LB_2		49	55	53
	LB_3		55	57	60

* Given the existing noise levels (in column 4) already exceed the ECRTN noise criteria with the exception of one residence; the 'project specific criteria' reflects addition of the allowable 2dB increase under the ECRTN or upper limit of 60dB(A) which reflects the acute noise level of the ENMN .

Issues Raised in Submissions

Construction Noise

The DECC recommended measures that there should be performance feedback mechanisms included in any construction noise management strategy to ensure there are no unacceptable impacts on sensitive receivers along the project corridors. The DECC has also recommended a specific noise study should be conducted for a particular residence located within the Little Billabong segment that may be exposed to cumulative noise impacts.

Construction Vibration

The DECC recommended management and monitoring requirements for blasting activities, such as test blasting regime and minimum distances for monitoring vibration and overpressure levels generated by these activities.

Operational (Traffic) Noise

The DECC had concerns regarding the application of the 2dB(A) allowance criterion within the RTA's assessment and that the project assessment should not include traffic noise increases that have been induced by increased road capacity from other Hume Highway projects. The DECC also considered that the RTA should clearly

commit to achieving the ECRTN criteria in order to minimise operational noise levels. The RTA clarified the methodology applied in the assessment undertaken for operational noise within the Response to Submissions.

Following the review of the Response to Submissions, the DECC identified no further issues with the assessment but reiterated the need for the ECRTN criteria to be the objective for the RTA to achieve in the delivery of the project.

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 residential 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 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 three 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.

It is also noted that the DECC has raised concerns with the potential impact on 'Murrumbung' (LB_3), a residence located south of Little Billabong Road due to the potential for the prolonged exposure to construction related noise impacts resulting from road construction and major resource extraction activities directly west of the highway alignment. The DECC has recommended the inclusion of a detailed study to address these potential impacts. The Department supports this recommendation and has incorporated this requirement into the construction noise and vibration management plan for the Little Billabong project application.

Construction Vibration

The Department is satisfied that the potential vibration impacts, particularly those generated by blasting activities, can be appropriately managed through a construction noise and vibration management plan. This plan would include a monitoring program to ensure the mitigation measures are satisfying the ANZECC vibration overpressure and ground-borne vibration criteria, which would be specified within the recommended Conditions of Approval. This has been applied to all project applications to ensure that any unforseen blasting activities are appropriately managed within all project segments. This is consistent with the recommendations made by the DECC with respect to vibration management.

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 night-time noise criteria. These residences 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. The Department and the DECC have noted that the RTA has applied the 2dB allowance in its assessment but has not provided a detailed justification for applying the allowance. Notwithstanding, the Department acknowledges that the current 'future' noise levels and the dominance of the heavy vehicles during night-time periods would restrict the ability for the RTA to achieve the ECRTN criteria regardless of applying a reasonable or feasible test. Furthermore, given the acute noise criterion has or would be exceeded in most cases, the allowance would not apply and would automatically require all reasonable and feasible mitigation measures to be investigated and applied for the project. Consequently, the Department is satisfied with the assessment undertaken by the RTA.

The continuation and excerebration of elevated traffic noise levels at residences located along the highway segments is of concern to the Department, particularly along the Kyeamba Hill segment. The approach undertaken by the RTA (being the duplication of the existing alignment) has limited the opportunity to address or improve current conditions, given the proximity of these residences to the road alignment. However, the Department recognises that within the design limitations (such as road safety specifications) and other key constraints, the RTA has attempted to minimise noise contributions from the projects by distancing the new carriageways from existing residences where possible. The Department also notes that mitigation measures, such as noise mounds, the use of noise-reducing road surfaces and architectural treatments (if deemed to be reasonable and feasible) have been proposed to minimise road traffic noise levels at affected residences.

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 should provide the necessary mitigation measures to minimise wherever possible the operational noise impacts generated by the proposed projects, and that any appropriate mechanisms are in place to confirm and re-evaluate the need for any further mitigation measures for these impacted residences 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.

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.

To achieve these objectives in an environmental sustainable manner, the Department supports the approval of a concept plan for the Hume Highway Duplication project. The concept plan, if approved, provides a framework that ensures broader environmental impacts can be addressed across the wider corridor, thus enhancing the outcomes of the imposed mitigation and management measures. The benefits associated with the concept approval would be further maximised through the subsequent project approvals for the individual segments, given it would reinforce these measures and address project-specific matters.

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 impacts of the overall concept and individual applications can be appropriately mitigated or managed to acceptable levels and therefore recommends that the concept plan and the three project applications be approved subject to the recommended conditions of approval.

However, this does not imply that there are not significant environmental constraints to the proposed concept corridor and individual project segments.

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 medium and high quality habitat for several threatened fauna species. With the proposed concept plan requiring the removal of 52 hectares of habitat, of which 42 hectares would consist of the Box-Gum Woodland, the proposed Hume Highway Duplication project in its totality and individually, will have a significant impact on the this habitat and the threatened species that 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 and the Biodiversity Offsets Package, as committed to the RTA and required through the recommended conditions of approval 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 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 recommended conditions of approval for the concept and three project applications also provide for the mitigation and management of other key impacts associated with the delivery of the projects during the detailed road design, construction and operational phases of the projects, such as 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.

The Department is satisfied that the proposed concept plan provides the appropriate framework to ensure a sustainable outcome is achieved in the delivery of the project segments of the duplication project. Following a thorough consideration of all the key constraints to the Concept and project corridors, the Department is also satisfied that the proposed alignments for the three northern project segments provide an appropriate balance between the project environmental objectives in delivering the project in a manner that has minimised the impacts on the surrounding environment. The Department acknowledges that there will be residual impacts on the environment and local community regardless of the implementation of the recommended conditions of approval, 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 Hume Highway Duplication Concept Plan and the three Project Applications for the northern segments of the project, being 'Sturt Highway to Tarcutta', 'Kyeamba Hill' and 'Little Billabong'.

APPENDIX A – RECOMMENDED CONDITIONS OF (CONCEPT) APPROVAL