

**Roads and Traffic Authority -
Proposed New Crossing of the
Murray River Between Corowa
(NSW) and Wahgunyah (Victoria)**

**Director-General's Report
Section 115C of the
Environmental Planning
and Assessment Act**

November 2001

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FOREWORD

The NSW Roads and Traffic Authority and Victorian VicRoads are proposing to construct a new route and crossing of the Murray River approximately 3 km upstream of the existing John Foord Bridge at Corowa. The proposed route would extend for 4.5 km from Main Road No. 86 (at the Corowa stock sale yards, Honour Avenue) to Rutherglen, Victoria (at Wahgunyah Road).

The proposed road would have an overall width of approximately 13 metres (increasing to approximately 37 metres when side embankments are included) with a single, two lane carriageway. A two metre wide shoulder on the road corridor would be used as a shared bicycle and vehicle breakdown lane.

The design speed would be 100 kph in Victoria and 80 kph on the bridge and north of the bridge. The design life of the road pavement is proposed to be 20 years. The proposal would provide for all modes of transport including cars, trucks, buses, bicycles, and pedestrians.

A combined Environmental Impact Statement (NSW) and Planning Scheme Amendment (Vic) was prepared and exhibited because the proposal extends across the border into Victoria.

The overall objectives of the proposal are to:

- provide a new flood-free crossing of the Murray River;
- remove heavy traffic from the heritage listed John Foord Bridge; and
- meet expected increases in traffic volumes crossing the river as a result of new industries on both sides of the Murray River and expanding tourism in the region.

This report has been prepared in accordance with Section 115C of the *Environmental Planning and Assessment Act* which requires that the Minister obtain a report from the Director-General of Urban Affairs and Planning prior to making a decision.

VicRoads is assessing that part of the proposal located within Victoria will need to make a decision on its acceptability.

This report assesses the environmental impact statement, the issues raised in the representations made in response to its exhibition, the submission from the Roads and Traffic Authority in response to the representations, and other relevant matters pertaining to the potential environmental impacts of the proposal. It concludes that with proper management, the proposal would:

- improve access across the Murray River for all vehicles, including heavy traffic B-doubles;
- decrease traffic volumes, and remove heavy vehicles on the heritage listed John Foord Bridge; and
- act both to improve the efficiency of regional transport and the amenity of the local area.

The potential environmental impacts associated with the project can be mitigated by adopting further measures and safeguards referred to in this report and in the recommended conditions of approval.

The proposal is recommended for approval subject to the recommended conditions.

Sue Holliday

Director-General

Department of Urban Affairs and Planning

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GLOSSARY OF TERMS

Department, the	Department of Urban Affairs and Planning
Director-General, the	Director-General of the Department of Urban Affairs and Planning or delegate
DLWC	Department of Land and Water Conservation
DUAP	Department of Urban Affairs and Planning
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMR	Environmental Management Representative
ENCM	Environmental Noise Control Manual
<i>EP& A Act</i>	<i>Environmental Planning and Assessment Act 1979</i>
EPA	Environment Protection Authority
Minister, the	Minister for Urban Affairs and Planning
NMSP	Noise Management Sub Plan
NPWS	National Parks and Wildlife Service
NVMSP	Noise and Vibration Management Sub Plan
PSA	Planning Scheme Amendment

Executive Summary

Background to the Proposal

The NSW Roads and Traffic Authority (RTA) and Victorian VicRoads jointly propose to construct a new crossing over the Murray River between the towns of Corowa in NSW and Wahgunyah in Victoria. The Commonwealth Government is funding the project under the Centenary of Federation Funding Program.

The RTA is managing the project and is therefore the proponent for the NSW components of the proposal.

A coordinated assessment and approval process has been agreed upon between NSW and Victorian agencies which requires that all the proposal located within NSW be determined by the Minister for Urban Affairs and Planning under Division 4, Part 5 of the *Environmental Planning and Assessment Act (EP&A Act)*. Those aspects of the proposal located in Victoria will be determined by VicRoads as an amendment to the Indigo Planning Scheme.

The Proposal

The proposal involves the construction of a new, 4.5 km long route connecting the townships of Corowa in NSW and Wahgunyah in Victoria with a new bridge over the Murray River. It is proposed to be located approximately 3 km upstream of the existing John Foord Bridge at Corowa (see **Figures 1 & 2**).

The main features of the proposal in NSW, from north to south, are:

- a two lane road with an overall width of 13 metres ie 9 metres wide with a two metre verge on either side;
- a roundabout intersection with Honour Avenue opposite the Corowa saleyards;
- a 37 metre wide embankment to elevate the road approximately six metres above the floodplain and to connect to a 95 metre bridge over the floodplain;
- a bridge, designed to withstand a 1-in-100-year-flood, located on the northern bank of the Murray River in the floodplain with an approximate length of 95 metres and width of 11 metres (ie no one metre verge as with the road);
- a second 37 metre wide embankment elevated above the floodplain, south of the floodplain bridge, to connect with the proposed bridge spanning the Murray River; and
- a bridge, designed to withstand a 1-in-100-year-flood, spanning the Murray River with a length of approximately 195 metres and width of 11 metres (ie. no one metre verge as with the road).

The main features of the proposal from north to south in Victoria are:

- linking the proposal to an existing road reservation, and crossing a section of the All Saints Vineyard towards Up River Road;
- widening to allow for turning bays and lanes in the vicinity of a new intersection with All Saints Road and the All Saints Winery entrance;
- constructing the proposal on a low embankment south of the All Saints Winery; and
- using the existing section of All Saints Road up to the proposed "T" style intersection with the Wahgunyah-Rutherglen Road ie. the main thoroughfare would be the road to Rutherglen and Corowa with a turn-off and slip lane to Wahgunyah.

The estimated capital cost of the proposal is \$14.5 million.

Need, Justification, and Benefits

The existing crossing of the Murray River at Corowa is via the heritage listed John Foord Bridge. This bridge was constructed in 1895. It forms part of a regional link between the Riverina, Murray Valley, and Hume Highways as well as providing a link for local traffic. These are important routes for long distance interstate transport of agricultural freight/goods and passengers. The John Foord Bridge is also the only

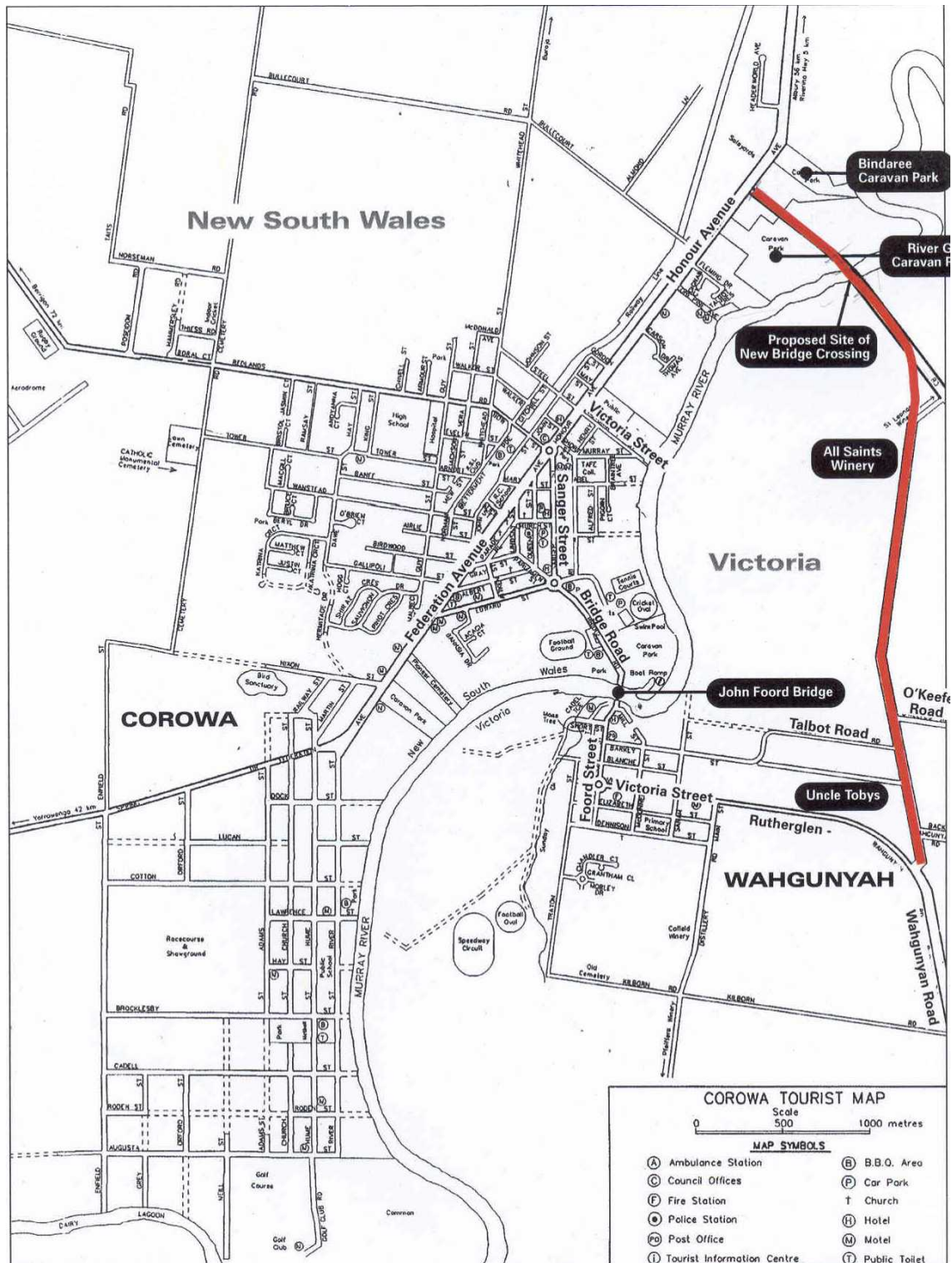
Figure 1

Regional Context Of The Proposal



Figure 2

Local Context Of The Proposal



road crossing of the Murray River between Howlong and Yarrawonga, a distance of approximately 71 kilometres by road.

It has been estimated in *The Murray River Crossing Transport Economic Study* (PPK Environment & Infrastructure 1998) that of the 30 crossings of the Murray River, Corowa ranked sixth in respect of the total tonnage carried. It is also anticipated that traffic volumes would increase from 5,120 vehicles per day in 1999 to about 7,140 vehicles per day in 2011.

If extensive improvements are not carried out to the John Foord Bridge, or traffic restrictions introduced, it would be necessary to close the route to heavy traffic in 10 years, thereby restricting its use to light vehicles only.

The proposal as outlined above is consistent with many of the aims and objectives of current New South Wales and Victorian strategic transport studies ie. *Action for Transport 2010 – The Integrated Transport Plan for NSW* (Department of Transport 1998, and *Traffic and Road Use Management Program* (VicRoads 1999). If constructed, the proposal would:

- ensure a flood-free crossing with improved safety and reduced delays;
- improve access across the Murray River for all vehicles, including heavy traffic B-doubles;
- decrease traffic volumes on the John Foord Bridge by 31 percent to 3,540 vehicles per day. All vehicles greater than 12 tonnes would be required to use the new bridge; and
- act both to improve the efficiency of regional transport and the amenity of the local area.

EIS/PSA Exhibition

The EIS/PSA was exhibited from 9 August to 15 September 2000. Eleven representations were received as a result of the exhibition of the proposal. There were various concerns raised with the proposal including afflux¹ and flooding, and noise and vibration.

Key Issues

Section 3 of the Report provides an overview of the main issues raised in the representations.

The Director-General's overall assessment of the proposal is provided in Sections 4 and 5 of this report. The key findings and conclusions are that the RTA will need to:

- develop a flood monitoring program in order to collect accurate data to verify modelled outcomes;
- contribute to any of any local flood plan that may be prepared by Council to the extent that the proposed bridge influences flood behaviour at this location;
- monitor erosion and sedimentation effects in the floodplain and within the main river channel from the structures associated with the proposal eg. the embankment, and pylons associated with the bridges;
- mitigate construction and operational noise and vibration; and
- prepare an Environmental Management Plan for construction activities that addresses sediment and erosion controls; in-stream ecology; stability of batter and slopes, haul routes, landscape rehabilitation; and water quality.

Request for Approval

The RTA initially sought the Minister's approval on 28 May 2001. The Department, in the early stages of its assessment, identified a lack of detail regarding the benefit and costs associated with the construction of a neutral afflux bridge over the floodplain. It sought further information from the RTA which was subsequently provided in October 2001.

¹ Afflux is a measure of the upstream flood levels created from water "backing up" because downstream flow is impeded by the proposal.

Conclusion

The justification for the project has been adequately substantiated through a balance between the key environmental impacts of the proposal and the identified benefits.

It is concluded that the environmental impacts associated with the proposal could be managed to an acceptable level.

1 INTRODUCTION

1.1 Purpose of the Report

The purpose of this report is to review the Roads and Traffic Authority's (RTA) environmental impact statement/planning scheme amendment (EIS/PSA) for the proposed new Murray River crossing between Corowa in New South Wales and Wahgunyah in Victoria, the issues raised in representations made in response to the exhibition of the EIS/PSA, and the RTA's consideration of these representations.

This report is prepared in accordance with Section 115C of the *Environmental Planning and Assessment Act 1979 (EP&A Act)* which requires the Director-General of the Department of Urban Affairs and Planning (Director-General) to assess and report to the Minister for Urban Affairs and Planning on the proposal. The Director-General's Report together with the Minister's decision are to be made publicly available.

1.2 Statutory Provisions

The RTA is the proponent and determining authority for the proposed bridge and its components located within NSW. However this is a cooperative proposal between the RTA and its Victorian counterpart, VicRoads. Those aspects of the proposal located in Victoria will be determined by VicRoads as an amendment to the Indigo Planning Scheme.

The environmental assessment of the proposal was addressed in one document – an Environmental Impact Statement (NSW) and Planning Scheme Amendment (Victoria).

In NSW the proposal is subject to Division 4, Part 5 of the *EP&A Act*. As such, the approval of the Minister for Urban Affairs and Planning is required.

1.3 Request for the Approval of the Minister for Urban Affairs and Planning

The RTA sought the approval of the Minister for Urban Affairs and Planning in a letter dated 28 May 2001, in accordance with Section 115B of the *EP&A Act*. The request for approval was accompanied by a Representations Report, which presented the RTA's response to the issues raised in submissions made during the public exhibition of the EIS/PSA.

The Department, in the early stages of its assessment, identified a lack of detail regarding the benefit and costs associated with the construction of a neutral afflux bridge over the floodplain². It sought further information from the RTA which was subsequently provided in October 2001.

1.4 Matters Under the Environment Protection and Biodiversity Conservation Act (Commonwealth)

This proposal was nominated as a matter that has been preserved under the *Environment Protection (Impact of Proposals) Act* under an agreement by the Commonwealth using the *Environmental Reform (Consequential Provisions) Act 1999*. Therefore an assessment of whether the proposal would have any significant impact on any matters of national environmental significance as identified in the *Environment Protection and Biodiversity Conservation Act*, was not required.

² Neutral afflux means there would be no measurable increase in upstream flood levels as a result of the proposal.

2 THE CURRENT PROPOSAL

This section provides a background to the proposal and a description of the project as outlined in the EIS/PSA. It also describes the current proposal for which the RTA is seeking the Minister's approval.

2.1 Background to the Proposal

There are 30 road, rail, or combined road and rail crossings of the Murray River between the Snowy Mountains and the South Australian border. The Corowa crossing ranks sixth in respect of total tonnage carried. This represents commodities to the value of approximately \$764 million.

The main commodities being freighted over the crossing are food stuffs, grains and stock feed. The economy of Corowa is traditionally based on agriculture and therefore the effective transport of these commodities is important to the economy of the Murray Valley region.

The crossing at the John Foord Bridge between Corowa (NSW) and Wahgunyah (Victoria) is strategically located being approximately 50 kilometres north of Wangaratta, 190 kilometres south-west of Wagga Wagga and 57 kilometres west of Albury-Wodonga. A crossing at this location is important for the maintenance of the regional road network providing a link between the Riverina, Murray Valley and Hume Highways. It is the only road crossing of the Murray River between Howlong and Yarrawonga, a distance of approximately 71 kilometres by road.

The John Foord Bridge is no longer providing an adequate level of service for traffic, particularly heavy vehicles. The John Foord Bridge, its approaches, and the local streets of both Corowa and Wahgunyah consist of narrow two-lane roads, a single-lane crossing along the John Foord Bridge, providing few opportunities for overtaking. In addition, the existing bridge is unlikely to be able to provide a level of service suitable for projected volumes of traffic, especially heavy vehicles, between Corowa and Wahgunyah unless major maintenance is undertaken. The maintenance work to reinforce the Bridge is likely to seriously diminish its heritage values.

The Commonwealth Government recognised the importance of the crossing and the need to preserve the heritage values of the John Foord Bridge and has committed \$12 million toward the construction of a new crossing.

2.2 Need, Benefit, Project Justification and Consequences of Not Proceeding

The John Foord Bridge was constructed in 1895 and has a significant heritage value in the local area. It is included on the Register of the National Estate.

An analysis of the population and traffic data indicated that traffic volumes on the existing John Foord Bridge would increase from 5,120 vehicles per day in 1999 to about 7,140 vehicles per day in 2011. It is anticipated that if traffic is not diverted, then the maintenance work required to keep the bridge operational would seriously diminish the heritage values of the Bridge. Even if the maintenance work were done it is anticipated that the life span of the John Foord Bridge would ultimately be decreased due to fatigue.

If no maintenance were undertaken, then within 10 years all heavy vehicles would need to be diverted through Albury, Howlong, and Yarrawonga in order to restrict the bridge to light traffic.

If a new crossing were to proceed then it is expected that by 2011, the John Foord Bridge would carry 4,660 vehicles per day, none of which would be classed as heavy. In other words, there would be less traffic on the Bridge in 2011 than currently recorded and all heavy traffic would be required to use the new crossing.

It is also likely that a new crossing would provide opportunities for development of an improved focus for the community as heavy traffic is diverted away from central Corowa.

2.3 Objectives

The objectives of the proposal as described in the EIS/PSA are to:

- recognise and protect the heritage values in relation to the John Foord Bridge;
- provide a crossing of the Murray River to a standard sufficient for the safe use of all road users;
- develop and manage the State's road and traffic systems so as to promote and support economic development and interstate trade;
- maintain adequate local access between the two communities of Corowa and Wahgunyah; and
- deliver a safe, efficient transport system which minimises environmental impacts.

2.4 Alternatives Considered

A number of alternatives to the preferred option were examined in the assessment process. These included:

- maintaining the existing crossing, the do nothing option;
- rehabilitating the existing crossing;
- closing the existing crossing to heavy traffic; and
- an examination of three routes - one three kilometres upstream (Western Town Route) and one approximately 0.4 kilometres downstream of the existing bridge (All Saints Route), and one adjacent and parallel to the existing bridge (John Foord Route).

The first three options were not considered feasible because of: on-going and high maintenance costs; ultimate failure of the structural integrity of the bridge; and the strategic importance of maintaining the link between the township and rural communities respectively.

The comparison of the three alternative route options considered traffic, engineering, cost, and environmental parameters. The assessment did not identify any major constraints or impacts for any of the three new route options.

The selection of the All Saints Route, the preferred option, ultimately stood out because it included the provision of a heavy vehicle by-pass route of both Corowa and Wahgunyah, a strategic link between the industrial area of Corowa and Wahgunyah, a connection between the Riverina, Murray Valley, and Hume highways, a high level of safety, and the option to retain the John Foord Bridge for local traffic³.

2.5 The Proposal as Described in the EIS

2.5.1 New South Wales

The main features of the proposal in NSW, from north to south, are:

- an entirely new two kilometre section of two lane road to the east of Corowa with an overall width of 13 metres ie 9 metres wide with a two metre verge on either side;
- a roundabout intersection with Honour Avenue opposite the Corowa saleyards;
- a 37 metre wide embankment to elevate the road approximately six metres above the floodplain and to connect to a 95 metre bridge over the floodplain;
- a bridge, designed to withstand a 1-in-100-year-flood, located on the northern bank of the Murray River in the floodplain with an approximate length of 95 metres and width of 11 metres ie no one metre verge as with the road;
- a second 37 metre wide embankment elevated above the floodplain, south of the floodplain bridge, to connect with the proposed bridge spanning the Murray River; and
- a bridge, designed to withstand a 1-in-100-year-flood, spanning the Murray River with a length of approximately 195 metres and width of 11 metres ie no one metre verge as with the road.

³ The RTA propose to rehabilitate the John Foord Bridge. This proposal will be considered under a separate environmental assessment proposal.

2.5.2 Victoria

The main features of the proposal from north to south in Victoria are:

- reconstruction of 2.5 kilometres of two lane road to the east of Wahgunyah (ie the All Saints Road) with an overall width of 13 metres ie 9 metres wide with a two metre verge on either side;
- linking the proposal to an existing road reservation and crossing a section of the All Saints Vineyard towards Up River Road;
- widening to allow for turning bays and lanes in the vicinity of a new intersection with All Saints Road and the All Saints Winery entrance; and
- using the existing section of All Saints Road up to the proposed "T" style intersection with the Wahgunyah-Rutherglen Road ie. the main thoroughfare would be the road to Rutherglen and Corowa with a turn-off and slip lane to Wahgunyah.

2.5.3 General

It is proposed to provide sufficient space within the road corridor to accommodate landscaping, noise reduction measures, water quality control measures, fencing and other environmental mitigation works. The two metre wide shoulder would serve as a shared bicycle and vehicle breakdown lane.

The construction of the embankments will involve filling of approximately 100,000 cubic metres along the northern (ie NSW) banks of the Murray River as well as within the northern floodplain. Similarly earthworks involving approximately 30,000 cubic metres would be required along the southern banks (ie Victoria) of the Murray River. It is proposed to source this material from two borrow pits. The environmental assessment and approval processes would be subject to separate development applications⁴.

The final designs for the bridges are proposed to be developed as part of the Design and Construct Contract. However it is proposed that the main bridge spanning the Murray River would consist of six column piers each spanning 33.5 metres, of which three would be located in the River. The approach bridge in the floodplain would also consist of six column piers each spanning 15.5 metres.

The bridges would either be concrete and/or steel construction with foundations driven and/or bored piles. The decks would be formed from pre-cast concrete planks or pre-cast concrete girders with concrete decking cast *in situ*.

Temporary platforms may be constructed in the Murray River in order to facilitate the construction of the piles and piers in the River. No placement of fill material would be permitted when constructing the piers in the river.

It is proposed to discharge run-off from the road through revegetated areas prior to any discharges entering the Murray River.

The proposal includes a landscape strategy and revegetation scheme which focuses on principles for mitigating visual impacts, re-planting with local species, and weed control.

2.5.4 Project Cost

The RTA estimated the capital costs for the proposal at \$14.5 million. This cost included concept development, management and project implementation, and land acquisition.

2.6 Changes to the Proposal Since the Exhibition of the EIS

The preferred route has been realigned near the proposed roundabout in Honour Avenue by shifting the centre line approximately 10 metres to the west. This was done to mitigate the anticipated noise levels for

⁴ It is noted that a request has been made for Director-General's requirements for the preparation of an EIS for extraction of material for the earthworks required on the northern side of the Murray River by SMEC on behalf of the RTA.

two affected Corowa residences, one located on the eastern side of the proposal and the other located on the western side of the proposal. The shift will give extra room for the provision of a noise mound between the residence located to the east of the new road.

It is proposed to buy the piece of affected land belonging to the western Corowa resident and either move the existing dwelling to another location for the land owner (ie. to an area outside of the noise impact zone), or retain the house for a site office and then remove it at the completion of works. This matter is currently subject to negotiations between the RTA and the landowner.

3 SUMMARY OF REPRESENTATIONS

3.1 *Categories of Representations Received*

A total of eleven representations were received in response to the exhibition of the EIS/PSA.

The source of the representations are categorised below:

Representation Type	Number of Representations
Individual	2
Action Group/Co-operative	2
Businesses	2
State Government	5
Total	11

3.2 *Overview of Issues Raised in Representations*

In accordance with the requirements of the *EP&A Act*, the RTA forwarded copies of all the representations after the close of the EIS/PSA exhibition period.

The RTA included a summary of the matters raised in each of the representations in its Representations Report. Three of the representations raised general support for the proposal. Five raised concerns regarding flooding and afflux, and three raised concerns regarding noise and vibration.

The Department has undertaken its own assessment of the representations and identified that the concerns regarding the effects of flooding and afflux on the existing use of a caravan park located near the proposal required further clarification. This was sought from the RTA and in late August 2001. This matter has been addressed in Section 4.1 below.

4 ASSESSMENT OF KEY ISSUES

This section outlines the Department's consideration of issues (other than those discussed in the next section) relating to the current proposal having regard to information presented in the EIS, representations received in response to its exhibition and other additional information obtained by the Department. The Roads and Traffic Authority has also provided the Department with its assessment of the issues raised in representations. This has been reviewed by the Department and, where required, further information has been sought and obtained.

Where considered appropriate, recommendations are made with regard to the manner in which a particular issue should be addressed during construction and/or operation.

4.1 Hydrology and Flooding

The potential hydraulic impacts associated with the proposal include an increase in:

- upstream flood levels (afflux);
- velocities through the structure and immediately downstream;
- the areal extent of inundation upstream; and
- duration of inundation upstream.

Afflux and flooding were the dominant issues raised in the representations. The Department engaged consultants to undertake a peer review of the hydraulic modelling results provided in the EIS/PSA (*Review of Flooding Issues for Proposed New Crossing of the Murray River Between Corowa NSW & Wahgunyah Vic*, Webb, McKeown & Associates, September 2001) (**Appendix 1**).

The review identified that of all the hydraulic/flooding factors to be considered, the most important focus was on the afflux anticipated by the proposal.

4.1.1 Elimination of Afflux

Any detailed examination of afflux effects requires a knowledge of the uses within the area of the floodplain that would be affected (identified in the EIS/PSA as extending up to 22 km and 8 km upstream for the 1 in 100 and 1 in 2 year flood events respectively). However this was not provided in the EIS/PSA.

The Representations Report identified that to completely eliminate any additional flooding effects as a result of the proposal for all floods up to and including the 1 in 100 year flood, an additional expenditure of \$5.5 million would be required in order to increase the bridge span by 400 metres. Similarly it was estimated in both the EIS/PSA and the Representation Report that \$2.5 million would need to be spent to increase the bridge span by 120 metres in order to eliminate any additional flooding effects as a result of the proposal from a 1 in 2 year flood.

Both the EIS/PSA and the Representation Report considered the expenditure for these additional works not to be justified on economic grounds. However a benefit/cost analysis that examined the cost saving from not extending the bridge, was not provided in the EIS/PSA.

The Department did not consider that enough details were provided in the EIS/PSA to be able to adequately assess whether there was a need to extend the proposed bridge in order to reduce anticipated afflux. The RTA subsequently undertook a benefit/cost analysis (*Economic Analysis of Floodplain Afflux From A Proposed New Bridge Crossing Of The Murray River At Corowa*, Gillespie Economics, October 2001) (**Appendix 2**). The analysis estimated the flooding costs of the proposal on the basis of the flood modelling that has been undertaken and described the uses within the affected floodplain.

The analysis estimated that, based on a range of assumptions, the economic costs (in present value terms) of incremental afflux from the proposed bridge crossing were small (ie. approximately \$36,000 to \$67,000 present value). It identified that these costs were mainly comprised of: forgone income to commercial operations associated with the caravan park; opportunity costs to grazing associated with

additional inundation areas and inundation times; and preparation and implementation of a flooding monitoring plan (a recommended Condition of Approval).

The analysis concluded that there would be a net benefit to the community in the order of \$5.33M to \$5.44M by proceeding with the proposed bridge design when compared to an afflux free bridge design.

The Department's consultant report on the hydrology and flooding (Webb, McKeown & Associates, September 2001) identified the general uncertainties in describing the accuracy of the modelled results. Therefore, as a matter of best practice, the Department considers that any modelling used to make predictions about likely future impacts, as is the case here, should be verified once the development becomes operational.

It would therefore be appropriate for the RTA to develop a flood monitoring program to verify the modelling. (See recommended Condition of Approval No. 57 as discussed in 4.1.3 below.)

4.1.2 Impact of Anticipated Additional Afflux

What level of afflux constitutes an adverse impact is largely dependent on the usage of the upstream properties. In situations where lives and/or property are directly at risk, it is preferable to have nil or negligible impact. Values up to 30mm may be acceptable and larger values may even be acceptable where there is no real threat of property damage.

The results presented in the EIS/PSA and benefit/cost analysis (Gillespie Economics, October 2001) indicate that the upstream floodplain area is effectively confined within definable steep banks and is largely undeveloped rural/agricultural land. However, immediately upstream of the proposal, on the western (NSW) bank is the Bindaree Holiday Park, a caravan park. The modelling indicates that this site would experience the maximum increase in afflux flood level⁵.ie. 70mm for the 1% event and 270mm for the Probable Maximum Flood (PMF)).

The additional inundation results in extra days of flooding and could mean some loss in business to the proprietor of the caravan park. However, it has not been clearly demonstrated that there is a real hazard from the estimated additional afflux. This arises because it is the existing practice of the proprietor of Bindaree Motel and Holiday Park to remove on-site vans from the park and temporarily relocate them onto an adjoining paddock above the floodplain during flood events.

The Department considers that if the flood investigations accurately depict afflux then the costs of the additional afflux, as presented in the EIS/PSA and benefit/cost analysis, is not significant. However, any uncertainties in the flood model will need to be examined in a monitoring program designed to test the output of the model.

Recommended Condition of Approval No. 59 addresses this matter. It requires the RTA to develop mitigation strategies, to the satisfaction of the DLWC and the Director-General, to reduce any impacts and hazards to an acceptable level if the monitoring program required under recommended Condition of Approval 57 indicates that the flood impacts are greater than those calculated by the flood model.

4.1.3 Velocities, Extent of Inundation, and Duration of Inundation

Velocity

Velocity impacts associated with the proposal will generally be experienced through the bridge openings and immediately downstream for up to 4 times the width of the bridge opening ie. within the main river channel and approximately 800 metres downstream. The consequences of increased velocity within the river channel would be to increase the erosive capacity of floodwaters on the river banks. It has been

⁵ The main reason for experiencing afflux values of the magnitude reported, is the significant change in available waterway area. An assessment of the design longitudinal profile suggests that the embankment occupies some 49% of the floodplain cross-section available at the design 1% flood level.

assumed, for the flood levels investigated (ie. 1 in 2 year and 1 in 100 year flood event), that there would be a significant increase in velocity within the main river channel in the vicinity of the proposal.

Similarly, the erosive capacity of higher velocity flows within the floodplain could also occur. However, the modelling presented in the EIS/PSA indicates that average flow velocities within the floodplain as a result of the proposal would be little changed from the existing (ie. 0.2 to 0.7 metres per second) and, therefore, within the erosive capacity of the floodplain vegetation⁶.

Extent of Inundation

Supplementary cross-section information provided by the RTA for the upstream reaches of the proposal indicates a well defined floodplain contained within relatively steep rising banks. It is therefore unlikely the lateral extent of inundation will change significantly even with moderate increase in flood level (ie. afflux).

Duration of Inundation

The duration of inundation experienced by an area has the potential to cause damage to crops, pasture and/or general land amenity due to the prolonged presence of floodwaters/wetness.

The EIS/PSA estimated a percentage increase of 11% (ie. 30 hours on top of 11 days) for the 20 year flood may not seem excessive, however, the additional 18 hours in a 2 year event may have a greater relative impact as it can be expected that areas will be inaccessible and/or unusable for longer periods even in the more frequent events. Over some time, and depending on the general prevailing climatic conditions, this could lead to some deterioration of land quality.

Modelling studies conducted for the EIS/PSA only provide an approximation of the possible impacts of flooding. It will therefore be necessary for the predictions made in the EIS/PSA regarding velocities, duration of inundation, and extent of inundation to be verified after commencement of operation.

Recommended Conditions of Approval Nos. 36-40 address these matters and require the RTA to prepare an Environmental Impact Audit Report. These conditions also require the RTA to comply with all requirements of the Director-General, EPA, DLWC and other relevant authorities with respect to any measure arising from, or recommendations in, the report.

In order to verify the modelled outcomes, flood monitoring is required. Recommended Condition of Approval No. 57 requires the RTA to develop a Flood Monitoring Program as a Sub-Plan to the Operational EMP in consultation with the DLWC, in order to obtain reliable flooding data to assist in the verification of the flood model and to accurately measure and record affects from the proposal on:

- the amplitude of all flood events;
- levels upstream of the proposal to check gradients;
- levels upstream and downstream of the embankments;
- flood velocities (both across the floodplain and within the main river channel);
- extent of inundation; and
- duration of inundation.

4.2 Erosion and Sedimentation

The majority of the proposed road corridor through the floodplain is underlain by alluvial deposits associated with the Murray River comprising unconsolidated alluvial deposits of sand, clay, and silt. Construction activities, including clearing of groundcover, has the potential to mobilise the soils during wet weather. This may cause an increase in turbidity within the River and contribute to erosion along the banks of the Murray River.

⁶ The Representations Report (p 40) identifies a value for the erosive capacity of vegetation cover of 2 to 2.5 metres per second.

Similarly, adverse impacts as a result of road drainage (either as diffuse run-off or from stormwater disposal to the ground) could result in an increase of soil and bank erosion along the Murray River.

The steep batters proposed for the embankments constructed to elevate the road above the floodplain (likely to be one vertical in two horizontal) will also need to be stabilised and provided with adequate surface and sub-surface drainage to mitigate any erosion and sedimentation impacts.

The EIS also identified the potential for Increased velocity of water within the River channel during flood events, as a result of the constriction to flows across the natural floodplain from the elevated embankment for the proposed road across the floodplain. This may increase the potential for erosion of the river banks.

Appropriate measures to control soil erosion would need to be implemented both during construction and operation of the proposal. Such measures could include, among others: maintaining vegetated buffer zones; using diversion banks and catch drains; timely re-vegetation; using energy dissipaters to protect banks from scouring; constructing sedimentation ponds; and regular monitoring of the effectiveness of all measures.

Recommended Conditions of Approval Nos. 77-84 require the RTA to prepare a detailed Soil and Water Quality Management Sub-Plan to the Construction and Operational Environmental Management Plans. The Sub-Plan would address the following matters:

- management of stormwater from the development on the quality of surface and groundwater;
- details of short and long term measures to be employed to minimise soil erosion and the discharge of sediment to land and/or waters, including the locations of suitably sized sedimentation basins;
- management of the impacts of the development on the Murray River;
- management of the impacts of the Murray River on the development;
- identification of all potential sources of water pollution and a detailed description of the remedial action to be taken or management systems to be implemented to minimise discharges of these pollutants from all sources within the subject site;
- detailed description of water quality monitoring to be undertaken during the pre-construction, construction and operation stages of the proposal including identification of locations where monitoring would be carried out;
- contingency plans for fuel spills; and
- a program for reporting on the effectiveness of the sediment and erosion control system against performance goals.

5 ASSESSMENT OF OTHER ISSUES

This section outlines the Department's consideration of issues (other than those discussed in the previous section) relating to the current proposal. Again, recommendations are made for conditions of approval, where appropriate, in order for particular issues to be satisfactorily addressed during construction and/or operation.

5.1 Groundwater

Construction is unlikely to impact on the local groundwater resources. However the sensitivities of irrigation uses of Murray River water to salinity call for precautionary measures to be in place to minimise any potential impacts if the groundwater is intercepted. These include consulting with the Department of Land and Water Conservation to identify the most appropriate measures and may include:

- evaluation of aquifer characteristics including conductivity and salinity;
- identification of suitable sites for the disposal of saline groundwater from dewatering activities; and
- installation of monitoring bores.

The recommended Conditions of Approval Nos. 23 to 28 and 85 address potential groundwater issues. These proposed conditions require the RTA to investigate and mitigate any potential impacts on the groundwater resources, or impacts which may arise from dewatering activities.

5.2 Noise and Vibration

5.2.1 Construction

Potential construction noise and vibration impacts depend on the type of construction activity being undertaken. For this proposal these activities include: construction of culverts, bridges, and elevated road structures; earthworks for road sections on fill; and laying of pavement.

All these activities require the use of major equipment working up to 30 metres from the closest resident. However, the proposal is unlikely to produce intensive construction activity at a particular location for a long-term period. That is, the period of noise exposure at any one location continually moves along as the road is constructed.

Nevertheless construction noise and vibration impacts should be addressed, prior to construction commencing, in a detailed Construction Noise and Vibration Management Sub Plan (NVMP Construction) prepared as part of the Construction EMP of recommended Condition of Approval No. 23 in consultation with the EPA. The Sub Plan shall include measures to ensure best practice is being followed and address, but not be limited to:

- compliance standards;
- community consultation;
- complaints handling monitoring/system;
- site contact person to follow up complaints;
- mitigation measures;
- the design/orientation of the proposed mitigation methods demonstrating best practice;
- construction times;
- contingency measures where noise complaints are received; and
- monitoring methods and program.

Recommended Conditions of Approval Nos. 62-74 addresses construction noise and vibration issues.

5.2.2 Operational Noise

Noise levels were calculated, measured, and modelled in order to generate noise contours for existing and future levels.

In NSW three receptors were identified as likely to be adversely affected. They are the:

- Western Corowa Residence (4 dBA increase on opening, and 5 dBA by 2011);
- Eastern Corowa Residence (6 dBA increase on opening, and 7 dBA by 2011); and
- Rivergum (Bindaree) Caravan Park (3 dBA increase on opening, and 4 dBA by 2011).

The RTA has proposed a number of noise mitigation measures for the affected receptors including reduction in speed limit, use of low noise pavement, and mounding to screen affected residences as well as individual treatments to residences.

Recommended Conditions of Approval Nos. 75 and 76 address operational noise issues.

5.3 Flora and Fauna

The area surrounding the proposal is characterised as having three vegetation types: River Red Gum forest; cleared land; and riparian vegetation.

The River Red Gum community is a relatively homogenous canopy with a poorly developed understorey mainly comprised of regenerating River Red Gum. The cleared land is mainly used for agriculture and is located adjacent to Honour Avenue on the NSW side of the Murray River. No riparian vegetation is found at the proposed bridge construction site on the NSW side of the River although it does occur on the Victorian side.

Birds are the dominant species in the area (39 species recorded) although seven mammals and six amphibians were recorded. No reptiles were observed.

From the literature review and field surveys, seven threatened fauna species and one threatened fish, as defined under schedules to the NSW *Threatened Species Conservation Act* and *Fisheries Management Act* respectively, are known or considered likely to occur in the study area. No threatened flora species or endangered ecological communities were recorded in the study area and none are considered likely to occur.

An Eight Part Test was undertaken for the seven fauna and one aquatic species. None of the species tested were considered to be subject to a threatening process.

The EIS (pp 8-14 to 8-15) identified a number of measures proposed to be undertaken to reduce the potential impacts of the proposal on the terrestrial and aquatic environments. The Department's own assessment of the flora and fauna report supports these measures and recommends they be included as conditions to any approval.

The Department has also identified the following three conditions it considers should apply to the proposal in order to further mitigate impacts on hollow bearing fauna and losses to the vegetation:

- Undertake a pre-clearance survey by a qualified ecologist to search, trap, and release fauna that may be impacted by construction activities. Any tree hollow roosts for bats in the cleared areas are to be relocated and if this is not possible then an artificial bat roost shall be provided in adjacent vegetation prior to clearing;
- Clearly mark remnant patches of native vegetation immediately adjacent to areas proposed to be disturbed and erect sediment fences to prevent accidental damage during construction in these areas; and
- Monitor the proposed vegetation rehabilitation for a minimum of three years and undertake weed management.

The recommended Conditions of Approval Nos 48 to 56 address potential flora and fauna issues.

5.4 Economic Impacts of By-passing

The Corowa/Rutherglen area is not located along a major corridor between regional centres. In most cases it is considered to be a destination for trips from outside of the local area, not a stopover point on a trip to another destination.

The origin and destination traffic data indicated that the majority of traffic using the John Foord Bridge is local traffic while only five to twelve percent is through traffic. Therefore it is unlikely that the diversion of through traffic from the town centre would have a significant impact on most parts of the economy of either Corowa or Wahgunyah.

The EIS examined Australian Bureau of Statistics population data over a 35 year period to 1996. This appeared to show an average linear growth rate of 2.8 percent per annum for Corowa. It was reasoned, therefore, that it is likely the growth in local population would help to offset any potential impacts of the loss of passing trade.

Nevertheless, it will be prudent to address the potential loss of business due to the proposal by providing a clear visual indication of the presence of both Corowa and Wahgunyah at the NSW Victorian intersection respectively, to alert traffic to these centres.

The EIS has proposed that a landscaped (ie. tree lined) approach along Honour Avenue (NSW) and Rutherglen Road (Victoria) from the bypass turn-off points, be provided to signal to drivers an attractive route through the two towns. It has also suggested that additional landscaping and some form of artwork or feature be constructed at the turn-off points.

Proposed Condition of Approval No. 41 addresses these matters.

5.5 Visual Impacts

The road corridor through NSW traverses three distinct landscape units: semi-urban; floodplain; and riverine. In all cases there will be some impacts on the visual environment due mainly to the visual nature of a new roadway, clearing of vegetation, and visual intrusion of urban elements into the river setting.

Visual impacts would be greatest in the short-term (ie. during clearing and construction activities) in the semi-urban and floodplain units, but would progressively be mitigated as proposed landscape screenings matured.

The visual impacts within the Murray River crossing are relatively high due to the proposed tree clearing and the permanent visual intrusion of the roadway and bridge. This impact would be especially felt by water craft users who would see both the proposed bridge and elevated embankments.

Sympathetic and dense landscape planting of large trees would allow mitigation of some of the impacts associated with the semi-urban and floodplain units. The use of guard rails would also permit plantings close to the roadway in the elevated sections. The landscaping proposed in recommended Condition of Approval No. 41 as mitigation measure to offset some of the impacts of by-passing, will also help to reduce visual impacts of the roadway.

Similarly, the use of bushland regeneration techniques and native landscape plantings (eg. River Red Gums) within the riverine unit should assist in mitigating visual impacts at this location. The RTA has also suggested a number of design elements in the final design of the bridge to help integrate the bridge into the surrounding landscape (see Section 6.2.4 of the EIS).

It would be appropriate for all visual impact mitigation measures to be addressed in a comprehensive Landscape and Rehabilitation Plan prepared in consultation with Council and the community.

Recommended Conditions of Approval Nos. 33, 41, and 86-88 address visual impact matters.

6 CONCLUSIONS AND RECOMMENDATIONS

This report assessed the EIS/PSA, the issues raised in the representations made in response to its exhibition, the submission from the Roads and Traffic Authority in response to the representations, and other relevant matters pertaining to the potential environmental impacts of the proposal.

The Department sought additional information from the RTA to make clear the costs and benefits of extending the bridge to reduce anticipated afflux. This was satisfactorily provided and clarified that the benefits of increasing the span of the bridge to reduce the anticipated increase in afflux during various flood frequencies could not be justified on economic grounds.

The Department engaged consultants to undertake a peer review of the flood modelling. This review identified the need to verify the modelled results by monitoring flood events.

A number of potential environmental impacts have been identified for which conditions of approval have been recommended. These include:

- construction and operational noise impacts to surrounding residences;
- the need to verify predictive flood models in order to determine if adequate flood mitigation measures are in place; and
- the need to control erosion and sedimentation both during construction and operation of the proposal.

The Department is now satisfied that with proper management, the proposal would:

- improve access across the Murray River for all vehicles, including heavy traffic B-doubles;
- decrease traffic volumes, and remove heavy vehicles on the heritage listed John Foord Bridge; and
- act both to improve the efficiency of regional transport and the amenity of the local area.

The potential environmental impacts associated with the project can be mitigated by adopting further measures and safeguards referred to in this report and in the recommended Conditions of Approval.

7 RECOMMENDED CONDITIONS OF APPROVAL

This section provides the Department's recommended conditions of approval for the project under Section 115B(2) of the EP&A Act. These are based on the Department's assessment of the EIS, the representations made to the Roads and Traffic Authority and supplementary information and advice provided.

It is noted that the EIS contains extensive information on procedures and mitigation strategies to be implemented to ameliorate impacts of the proposal. The recommended conditions should therefore be implemented in conjunction with those procedures and mitigation strategies specified in the EIS. Where there is an inconsistency with the recommendations in the EIS, the recommendations in this report would prevail.

The following acronyms and abbreviations are used in this section:

Department, the	Department of Urban Affairs and Planning
Director-General, the	Director-General of the Department of Urban Affairs and Planning or delegate
DLWC	Department of Land and Water Conservation
DUAP	Department of Urban Affairs and Planning
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMR	Environmental Management Representative
ENCM	Environmental Noise Control Manual
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority
Minister, the	Minister for Urban Affairs and Planning
NMSP	Noise Management Sub Plan
NPWS	National Parks and Wildlife Service
NVMSP	Noise and Vibration Management Sub Plan
Proponent, the	In these conditions, at the time of approval, the Proponent is the NSW Roads and Traffic Authority.
PSA	Planning Scheme Amendment

General

1. The proposal shall be carried out in accordance with:
 - i. the proposal contained in the Environmental Impact Statement (EIS) and Planning Scheme Amendment "New Crossing of the Murray River" prepared for the Roads and Traffic Authority (RTA) and Vic Roads by PPK, August 2000, and the Representations Report "New Crossing of the Murray River – Between Corowa and Wahgunyah" prepared by RTA Environmental Technology for the RTA and dated March 2001;
 - ii. all identified procedures, safeguards and mitigation measures identified in the EIS and Representations Report; and
 - iii. the Conditions of Approval granted by the Minister.
2. Despite the above, in the event of any inconsistency with the proposal as described in the EIS and/or Representations Report, the Conditions of Approval granted by the Minister shall prevail.
3. These conditions do not relieve the Proponent of the obligation to obtain all other approvals and licences from all relevant authorities required under any other Act. Without affecting the generality of the foregoing, the Proponent shall comply with the terms and conditions of such approvals and licences.

4. It shall be the ultimate responsibility of the Proponent to ensure compliance with all conditions of approval granted by the Minister.

Compliance

General

5. The Proponent shall comply with, or ensure compliance with, all requirements of the Director-General in respect of the implementation of any measures arising from the conditions of this approval.
6. The Proponent shall bring to the attention of the Director-General any matter that may require further investigation and the issuing of instructions from the Director-General. The Proponent shall ensure that these instructions are implemented to the satisfaction of the Director-General within such time that the Director-General may specify.

Pre-Construction Compliance Report

7. At least one month prior to commencement of substantial construction (or within such period as otherwise agreed by the Director-General), the Proponent shall submit for approval of the Director-General a compliance report detailing compliance with all relevant conditions that apply prior to commencement of substantial construction and shall address:
 - i. the dates of submissions of the various studies and/or requirements of various relevant conditions, and their approval and terms of approval; and
 - ii. action taken or proposed to implement the recommendations made in terms of approvals and/or studies.

Pre-Operation Compliance Report

8. At least one month prior to commissioning of the proposal⁷ (or discrete sections of the proposal as agreed by the Director-General), the Proponent shall submit for approval of the Director-General a compliance report detailing compliance with all relevant conditions that apply prior to commencement of operation and shall address:
 - i. the dates of submissions of the various studies and/or requirements of various relevant conditions, and their approval and terms of approval; and
 - ii. action taken or proposed to implement the recommendations made in terms of approvals and/or studies.

Dispute Resolution

9. The Proponent shall endeavour, as far as possible, to resolve any dispute with relevant public authorities arising out of the implementation of the conditions of this approval. Should this not be possible, the matter shall be referred to the Director-General and, if the matter cannot be resolved, then to the Minister for resolution. The Minister's determination of the disagreement shall be final and binding on all parties.

Contact Telephone Number

10. Prior to the commencement of construction, the Proponent shall institute, publicise and list with a telephone company a 24 hour complaints contact telephone number, which would enable any member of the general public to reach a person who can arrange for an appropriate response to the complaint.

Complaints Register

⁷ The Period of one month referred to in this condition may be altered as agreed by the Director-General.

11. The Proponent shall record details of all complaints received during construction and ensure that an initial response to the complaint is provided within 24 hours and a detailed response within 10 days. Information on all complaints received shall be made available on request to the Director-General and all relevant government agencies.
12. The Proponent shall nominate an appropriate person(s) to receive, log, track and respond to complaints within the specified timeframe. The name and contact details of this person(s) shall be provided to the relevant Council(s) and the Director-General upon appointment or upon any changes to that appointment.

Project Commencement

13. The Proponent shall notify the Director-General and all relevant authorities in writing of the project's:
 - i. commencement of construction; and
 - ii. commencement of operation.

Advertisement of Activities

14. Prior to the commencement of construction and then at three-monthly intervals, the Proponent shall advertise in relevant local newspapers the nature of the works proposed for the forthcoming three months, the areas in which these works are proposed to occur, the hours of operation and a contact telephone number.
15. The Proponent shall ensure that the local community is kept informed (by way of local newsletters, leaflets, newspaper advertisements, and community noticeboards, etc.) of the progress of the project, including any traffic disruptions and controls, construction of temporary detours and work required outside the nominated working hours, prior to such works being undertaken.
16. The Proponent shall establish a project internet site prior to the commencement of construction and maintain the internet site until 12 months after commencement of operation of the project. The internet site shall contain monthly updates of work progress and consultation activities, including but not be limited to:
 - i. a description of relevant approval authorities and their areas of responsibility;
 - ii. a list of environmental management reports that are publicly available and the executive summaries of those reports;
 - iii. minutes of community liaison group meetings;
 - iv. bi-monthly newsletters;
 - v. contract names and phone numbers of the project communications staff; and
 - vi. 24 hour toll-free complaints contact telephone number.Updates of work progress and construction activities shall be provided more frequently where significant changes in the noise impacts are expected.

Community Liaison Group

17. A Community Liaison Group (CLG) shall be formed prior to the commencement of construction to discuss detailed design issues and methods for minimising the impact on the local community and businesses during the construction stage. The CLG shall include, unless otherwise agreed by the Director-General, the Environmental Management Representative, representatives from the Proponent, the contractor, relevant local community and business groups, any relevant State agency, and Corowa Shire Council.

Issues for discussion shall include, but not be limited to: business impacts; flora and fauna controls; noise control measures; access arrangements; air and water quality; landscaping requirements; hydrology and flooding issues; and any other issues considered relevant by the Group.

Appropriate facilities and information shall be provided by the Proponent to assist the Group in carrying out its functions.

The Group may make comments and recommendations about the design and implementation of the proposal, which shall be considered by the Proponent. In the event of any dispute between the Group and the Proponent, the Proponent's decision shall be considered as final so long as it is not inconsistent with the Conditions of Approval.

Environmental Management Representative

18. The Proponent shall employ a Environmental Management Representative (EMR) who demonstrates compliance with AS/NZS ISO 14012:1996 *Guidelines for Environmental Auditing : Qualification criteria for environmental auditors*.
19. The EMR shall be approved by the Director-General prior to the commencement of construction.
20. The EMR shall be available during construction activity at the site and be present on-site during any critical construction activities as defined in the Environmental Management Plan (EMP).
21. The EMR shall:
 - i. have responsibility for considering and advising on matters specified in the conditions of approval and compliance with such;
 - ii. review and approve induction and training program for all persons involved in the construction activities and monitor implementation;
 - iii. periodically audit environmental activities to evaluate the implementation, effectiveness and level of compliance of on-site construction activities with the EMP and associated plans and procedures, including carrying out site inspections at least fortnightly;
 - iv. record and provide a written report of non-conformances with the EMP and require the Contractor to undertake mitigation measures to avoid or minimise any adverse impacts on the environment or report required changes to the EMP;
 - v. direct the contractor to stop work immediately where considered necessary, if in the view of the EMR an unacceptable impact on the environment is likely to occur, or require other reasonable steps to be taken to avoid or minimise any adverse impacts;
 - vi. review corrective and preventative actions to ensure the implementation of recommendations made from the audits and site inspections;
 - vii. report monthly;
 - viii. review and approve minor revisions to the EMP;
 - ix. provide information for community consultation, liaison with regulators, and respond to customer environmental complaints as required;
 - x. provide reports to DUAP on matters relevant to the carrying out of the EMR role as necessary including notifying DUAP of any stop work notices; and
 - xi. certify the Operational EMP in accordance with Condition of Approval No. 31.

Environmental Management System

22. The Proponent will only approve contractors that have a demonstrated capability and experience in the implementation of an Environmental Management System prepared in accordance with the AS/NZS ISO 14000 series or BS7750-1994 certified by an accredited certifier and/or have a proved environmental management performance record.

Construction Environmental Management Plan

23. Prior to the commencement of construction, a Construction Environmental Management Plan (EMP) shall be prepared, following consultation with the EPA, DLWC, NPWS, NSW Fisheries, and Corowa

Shire Council. Where construction activities may be undertaken in discrete stages, the Proponent may prepare individual EMPs relating to specific stages of construction.

24. The Construction EMP shall be prepared in accordance with the conditions of this approval and accepted best practice management procedures, and shall be made publicly available.
25. The Construction EMP shall be certified as being in accordance with the conditions of approval by the EMR prior to seeking approval of the Director-General.
26. The Construction EMP shall require approval by the Director-General prior to substantial construction works.
27. The Construction EMP shall be made publicly available after approval by the Director-General.
28. The Construction EMP shall:
 - i. address construction activities associated with all key construction sites, including staging and timing of the proposed works;
 - ii. cover specific environmental management objectives and strategies for the main environmental system elements and include, but not be limited to: noise and vibration; air quality; water; erosion and sedimentation; access and traffic; property acquisition and/or adjustments; heritage and archaeology; groundwater; contaminated spoil and acid sulfate soils, spoil stockpiling and disposal; waste/resource management; flora and fauna; flooding and stormwater control; geotechnical issues; visual screening, landscaping and rehabilitation; hazards and risks; energy use, resource use and recycling; and utilities⁸; and
 - iii. address, but not be limited to:
 - a. identification of the statutory and other obligations which the Proponent is required to fulfil during project construction, including all approvals and consultations/agreements required from other authorities and stakeholders, and key legislation and policies which control the Proponent's construction of the project;
 - b. definition of the role, responsibility, authority, accountability and reporting of personnel relevant to compliance with the EMP;
 - c. measures to avoid and/or control the occurrence of environmental impacts;
 - d. measures (where possible and cost effective) to provide positive environmental offsets to unavoidable environmental impacts
 - e. the role of the EMR;
 - f. environmental management procedures for all construction processes which are important for the quality of the environment in respect of permanent and/or temporary works;
 - g. monitoring, inspection and test plans for all activities and environmental qualities which are important to the environmental management of the project, including performance criteria, specific tests, protocols (eg. frequency and location) and procedures to follow;
 - h. environmental management instructions for all complex environmental control processes which do not follow common practice or where the absence of such instructions could be potentially detrimental to the environment;
 - i. steps the Proponent intends to take to ensure that all plans and procedures are being complied with;
 - j. consultation requirements with relevant government agencies; and
 - k. community consultation and notification strategy (including local community, relevant government agencies, and Corowa Shire Council), and complaints handling procedures.

Construction Environmental Monitoring

⁸ Specific requirements for some of the main environmental system elements shall be as required under the conditions of this approval and/or as required under any licence or approval.

29. The Proponent shall submit to the Director-General reports in respect of the environmental performance of the construction works and compliance with the Construction EMP and any other relevant conditions of this approval. The reports shall be prepared six months after the start of substantial construction and thereafter at six monthly intervals or at other such periods as requested by the Director-General to ensure adequate environmental performance over the duration of the construction works. The report(s) shall include, but not be limited to, information on:
- i. applications for consents, licences and approvals, and responses from relevant authorities;
 - ii. implementation and effectiveness of environmental controls and conditions relating to the work undertaken;
 - iii. identification of construction impact predictions made in the EIS and any supplementary studies and details of the extent to which actual impacts reflected the predictions;
 - iv. details and analysis of results of environmental monitoring;
 - v. number and details of any complaints, including summary of main areas of complaint, action taken, response given and intended strategies to reduce complaints of a similar nature; and
 - vi. any other matter relating to the compliance by the Proponent with the conditions of this approval or as requested by the Director-General.

The report(s) shall be provided to the EPA, DLWC and Corowa Shire Council, and any other relevant government agency nominated by the Director-General. The report(s) shall also be made publicly available.

Operational Environmental Management Plan

30. An Operational Environmental Management Plan shall be prepared prior to the commencement of operation. The Operational EMP shall be prepared in consultation with the EPA, DLWC, NPWS, Corowa Shire Council and any other relevant government agency nominated by the Director-General. The Operational EMP shall be prepared in accordance with the conditions of this approval, all relevant Acts and Regulations and accepted best practice management procedures.
31. The Operational EMP shall be certified as being in accordance with the conditions of approval by the EMR prior to seeking approval of the Director-General.
32. The Operational EMP shall be approved by the Director-General prior to commissioning.

The Director-General shall provide a response to the Operational EMP within one (1) month of receipt of all relevant information from the Proponent assuming receipt of adequate and sufficient information. If a request is made by the Director-General for additional information the period of time that elapses between the date on which the Proponent receives the request and the date on which the additional information is provided to the Director-General shall not be taken into account in the one (1) month period referred to above.

33. The Operational EMP shall include but not be limited to:
- i. identification of the statutory and other obligations which the Proponent is required to fulfil, including all licences/approvals and consultations/agreements required from authorities and other stakeholders, and key legislation and policies which control the Proponent's operation of the project;
 - ii. identification of environmental performance criteria;
 - iii. a description of the sampling strategies and monitoring protocols (eg. specific monitoring requirements, and sampling frequency and locations, including any requirements of the EPA, NPWS, and DLWC) proposed to be used to test the environmental performance criteria.
 - iv. steps the Proponent intends to take to ensure compliance with all plans and procedures;
 - v. description of the consultation requirements/arrangements with relevant government agencies, the local community, and relevant Councils including complaints handling procedures; and

- vi. management strategies for the environmental system elements including but not limited to: noise; water; air quality; erosion and sedimentation; access and traffic; groundwater; waste/resource management/removal/disposal; flora and fauna; hydrology and flooding; visual screening, landscaping and rehabilitation; and hazards and risks.

Specific requirements for some of the environmental system elements referred to in Condition of Approval No. 33 vi shall be as detailed under the conditions of this approval and/or as required under any licence or approval.

- 34. The Operational EMP shall be made publicly available after approval by the Director-General.
- 35. All sampling strategies and protocols undertaken as part of the Operational EMP shall include a quality assurance/quality control plan and shall be approved by the relevant regulatory agencies to ensure the effectiveness and quality of the monitoring program. Only accredited laboratories can be used for laboratory analysis.

Environmental Impact Audit Report

- 36. An Environmental Impact Audit Report shall be prepared by an independent person at the Proponent's expense and submitted to the Director-General, the EPA, DLWC, and, upon request by the Director-General, to any other relevant government authority after commissioning and operation of the proposal.
- 37. The Environmental Impact Audit Report shall be submitted 12 months after commissioning of the project and after the first 1 in 2 year, 1 in 20 year, and 1 in 100 year flood episode, or at any additional periods thereafter as the Director-General may require.
- 38. The Environmental Impact Audit Report shall:
 - i. assess the key impact predictions made in the EIS/PSA and any supplementary studies including upstream flood levels (afflux), the extent of inundation, duration of inundation, and velocity of flows within the floodplain and main river channel;
 - ii. detail the extent to which actual impacts reflect the predictions;
 - iii. provide details on actual versus predicted impact for all key impact issues identified in the EIS/PSA;
 - iv. assess the suitability of implemented mitigation measures and safeguards;
 - v. discuss results of consultation with the local community in terms of feedback/complaints on the construction and operation phases of the project and any issues of concern raised; and
 - vi. assess compliance with the Construction EMP.
- 39. The Proponent shall comply with all reasonable requirements of the Director-General, EPA, DLWC and other relevant authorities with respect to any reasonable measure arising from, or recommendations in, the report.
- 40. The Report shall be made publicly available.

Economic Impacts

- 41. The Proponent shall, in consultation with Corowa Shire Council, VicRoads, and the Community Liaison Group established in accordance with Condition of Approval No. 17:
 - i. provide advance signage at the NSW and Victorian intersection of the proposal to indicate the turn-off to both Corowa and Wahgunyah respectively;
 - ii. provide a boat entry facility to the Murray River for Rivergum Caravan Park residents and visitors, downstream of the proposal;
 - iii. at its own expense, prepare and undertake the planting of trees along Honour Avenue to provide an attractive gateway feature to the Corowa;

- iv. provide advance signage that describes a range of tourist facilities and services available in Corowa and Wahgunyah; and
- v. provide visual signals at the intersections with Honour Avenue and Rutherglen Road of the turn-off to Corowa and Wahgunyah by way of feature plantings.

Property and Land Use

- 42. The Proponent shall ensure that access to properties fronting the highway and the service road are maintained throughout the construction period. The Proponent shall ensure that any access way affected by the proposal is reinstated to an equivalent standard or that adequate compensation is negotiated with the relevant landowner(s).
- 43. The Proponent shall consult on a regular basis with all affected landowners regarding any practical and cost effective measures to minimise impacts which may be implemented prior to the commencement of construction or within such time as agreed with the relevant landowner.

Traffic and Access

- 44. The Proponent shall consult with Corowa Shire Council to develop management techniques for construction traffic on local roads, prior to commencement of construction.
- 45. The Proponent shall monitor the use of local roads by construction heavy vehicle traffic in consultation with Corowa Shire Council and shall consult with Council to develop measures to minimise and/or restrict the use of local roads by heavy vehicle traffic if so required.
- 46. A road dilapidation report shall be prepared for all non-arterial roads likely to be used by construction traffic prior to commencement of construction and after construction is complete. A copy of the report shall be provided to Corowa Shire Council. Any damage resulting from the construction of the project, aside from that resulting from normal wear and tear shall be repaired at the cost of the Proponent.

Note: Nothing in Condition of Approval No. 44 or Condition of Approval No. 46 shall be interpreted as restricting the Proponent from negotiating an alternative payment for damage to local roads with Corowa Shire Council, subject to the agreement of Council.

- 47. All local service roads affected by the proposal shall be brought to standards as negotiated with Corowa Shire Council. The Proponent shall negotiate with Council regarding contributions to costs for these works.

Flora and Fauna

- 48. If, during the course of construction, the Proponent becomes aware of the presence of any threatened species which are likely to be significantly affected and are not recognised in the flora and fauna studies presented in the EIS/PSA then the Proponent shall immediately advise the Director-General of the NPWS. No activity which places any of these species at risk shall be undertaken until advice has been received from the NPWS. All recommendations by the NPWS shall be complied with prior to any works likely to affect any threatened species.
- 49. The Proponent shall implement all mitigation measures identified in Chapter 8.2.5 of the EIS/PSA.
- 50. The Proponent shall employ a qualified ecologist to undertake a pre-clearance survey; and to search for, trap, and release fauna that may be impacted by construction activities.
- 51. Any tree hollow roosts for bats in the areas to be cleared are to be relocated. If this is not possible, then an artificial bat roost shall be provided in adjacent vegetation prior to clearing.

52. Remnant patches of native vegetation adjacent to the areas proposed to be cleared shall be clearly marked and sediment fences erected to protect against accidental damage during construction activities.
53. Where possible, seeds of locally native species shall be collected prior to the commencement of construction to provide seed stock for revegetation purposes. This shall be to the satisfaction of a qualified bushland regeneration officer acceptable to the NPWS. Topsoil and leaf mulch shall be stripped and stored for placement back in the vegetation zone from where it was removed.
54. The Proponent shall monitor and maintain the proposed vegetation rehabilitation for a minimum of three years and undertake measures to control weeds.
55. Weed infested topsoil, as identified by a qualified ecologist, shall not be used in the rehabilitation works unless it is sterilised or treated in an appropriate manner.
56. Cleared vegetation must be reused or recycled to the greatest extent practicable. Reuse option including removing millable logs, recovering fence posts, mulching and chipping unusable vegetation waste for on-site use. All reasonable measures to use any surplus vegetation shall be undertaken including donation to community groups, distribution to the local community, etc.

Hydrology and Flooding

Flood Monitoring Program

57. The Proponent shall as a Sub-Plan to the Operational EMP of Condition of Approval No. 30, develop at its own expense, an appropriate flood monitoring program, in consultation with Council and to the satisfaction of the DLWC, in order to obtain reliable flooding data to assist in the verification of the flood model (refer Condition of Approval No. 38 i) and to accurately measure and record:
 - i. the amplitude of all flood events;
 - ii. levels upstream of the proposal to check gradients;
 - iii. levels upstream and downstream of the embankments;
 - iv. flood velocities (both across the floodplain and within the main river channel);
 - v. extent of inundation; and
 - vi. duration of inundation.

Local Flood Plan

58. The Proponent shall, at the request of Council, consult with Council on the development of any local flood plan that may be prepared by Council to the extent that the proposed bridge influences flood behaviour at this location⁹.

Affects on Upstream Landowners

59. If the monitoring program required under Condition of Approval 57 indicates that the flood impacts are greater than calculated by the flood model, the Proponent shall develop, to the satisfaction of the DLWC and the Director-General, mitigation strategies to reduce any impacts and hazards to an acceptable level.

Bridge Design

60. The Proponent shall consult NSW Fisheries in relation to: the construction of temporary platforms for the construction of the piles and piers in the river; and the design and timing of bridge construction.

⁹ It is accepted practice to share the costs for the development of these plans.

61. The Proponent shall ensure that no earthen platforms are constructed or fill material placed in the River.

Noise and Vibration

Construction Noise and Vibration Management Sub Plan

62. A detailed Construction Noise and Vibration Management Sub Plan (NVMS Construction) shall be prepared as part of the Construction EMP in consultation with the EPA and to the satisfaction of the Director-General. The Sub Plan shall include, but not be limited to:
- i. compliance standards;
 - ii. community consultation;
 - iii. complaints handling monitoring/system;
 - iv. site contact person to follow up complaints;
 - v. mitigation measures;
 - vi. the design/orientation of the proposed mitigation methods demonstrating best practice;
 - vii. construction times;
 - viii. contingency measures where noise complaints are received; and
 - ix. monitoring methods and program.

Construction Hours

63. All construction activities, including entry and departure of heavy vehicles are to be restricted to the hours of 7:00 am to 6:00 pm (Monday to Friday); 8:00 am to 1:00 pm (Saturday) and at no time on Sundays and public holidays.
64. Blasting shall only be undertaken between the hours of 10:00 am and 3:00 pm (Monday to Friday) and 10:00 am to 1:00 pm (Saturday).
65. Works outside these hours that may be permitted include:
- i. any works which do not cause noise emissions to be audible at any nearby residential property;
 - ii. the delivery of materials which is required outside these hours as requested by police or other authorities for safety reasons;
 - iii. emergency work to avoid the loss of lives, property and/or to prevent environmental harm; and
 - iv. any other work as agreed through negotiations between the Proponent and potentially affected noise receptors or as otherwise agreed by the EPA through the NVMP (Construction) process.

Construction Noise Criteria

66. Where practical the Proponent shall ensure that construction noise is within the following criteria unless otherwise agreed by the Director-General following consultation with the EPA.
- i. For a construction period of four weeks or less, the L_{10} level measured over a period of not less than 15 minutes when the construction site is in operation shall not exceed the background level by more than 20dB(A).
 - ii. For a construction period of greater than four weeks but less than 26 weeks, the L_{10} level measured over a period of not less than 15 minutes when the construction site is in operation shall not exceed the background level by more than 10dB(A).
 - iii. For a construction period greater than 26 weeks, the L_{10} level measured over a period of not less than 15 minutes when the construction site is in operation shall not exceed the background level by more than 5dB(A).

67. Construction noise levels shall be monitored to verify compliance with the requirements specified in the NVMS (Construction). Should monitoring indicate exceedance the Proponent shall implement any additional mitigation measures as required by the Director-General following consultation with the EPA.
68. In order to minimise noise impacts during construction, the Proponent shall, where practicable or as advised by the Director-General in consultation with the EPA, erect operational noise mitigation measures detailed in Section 9.5 of the EIS prior to the commencement of construction.

Vibration and Blasting

69. Vibratory compactors and rock breakers shall not be used closer than 50 m from residential buildings.
70. The vibration level due to construction activities, including both above ground and underground work and blasting activities shall meet the requirements of the Director-General following consultation with the EPA.
71. The Proponent shall ensure that vibration resulting from construction of the project is limited to:
 - i. German Standard DIN 4150 and British Standard BS 7385: Part 2 – 1993 for structural damage vibration; and
 - ii. British Standard BS 6472 and Australian Standard AS 2670 for human exposure to vibration.

Where there is an inconsistency between these standards, the more stringent standard shall apply.

72. Dilapidation surveys shall be undertaken for all buildings located within 200 metres of the road construction area prior to the commencement of blasting or major vibration inducing construction activities. The Proponent shall be responsible for rectifying any damages occurring as a result of the construction with the cost to be borne by the Proponent.
73. For any section of the project where blasting is proposed, the Proponent shall undertake a series of initial trials at reduced scale prior to commencement of the proposed blasting to determine site-specific blast response characteristics and to define allowable blast sizes to meet EPA criteria.
74. Should blasting take place within 500 metres of residences, with at least 48 hours notice including a schedule of times, the Proponent shall make all reasonable attempts to notify the occupants.

Operational Noise Management Sub Plan

75. A detailed Operational Noise Management Sub Plan (NMSP Operation) shall be prepared as part of the Operational EMP in consultation with the EPA. The NMSP (Operation) shall include, but not be limited to:
 - i. details of noise mitigation measures to be implemented for the operation stage sufficient to address the technical requirements of the EPA's guideline – 'Environmental Criteria for Road Traffic Noise';
 - ii. location, type and timing of erection of any permanent noise barriers;
 - iii. specific physical and managerial measures for controlling noise and vibration;
 - iv. noise monitoring, reporting and response procedures; and
 - v. the urban design issues relating to noise control measures.

With respect to 75 iii above, the Proponent shall consider the use of a range of structural and non-structural measures including speed controls and the use of open graded asphalt.

Operation Noise Management

76. Monitoring of operational noise shall be undertaken in accordance with the NMSP (Operation). The Proponent shall, in consultation with the EPA, assess the adequacy of the traffic noise mitigation measures after two months of operation with regard to the EPA guideline '*Environmental Criteria for Road Traffic Noise*'. Should the assessment indicate a clear trend in traffic noise levels which are higher than the predictions made and exceed EPA noise criteria, the Proponent shall implement further mitigation measures including but not limited to consideration of inclusion of noise barriers, insulation of buildings and the potential for total acquisition of properties.

Notwithstanding the above, the proposal shall comply with the noise assessment criteria described in chapter 7.6 of the EIS.

Soil and Water Management

Soil and Water Management Sub Plan

77. As part of the Construction and Operational EMPs, a detailed Soil and Water Management Sub Plan shall be prepared in consultation with the EPA, DLWC, NSW Fisheries, and Corowa Shire Council. The Sub Plan shall be prepared in accordance with the Department of Housing's guideline *Managing Urban Stormwater - Soils and Construction* and where appropriate, DLWC's *Constructed Wetlands Manual*. The Sub Plan shall be prepared prior to construction or operation as appropriate.
78. The Soil and Water Management Sub Plan shall contain, but not be limited to:
- i. management of stormwater from the development on the quality of surface and groundwater;
 - ii. details of short and long term measures to be employed to minimise soil erosion and the discharge of sediment to land and/or waters including the locations of suitably sized sedimentation basins;
 - iii. management of the impacts of the development on the Murray River;
 - iv. management of the impacts of the Murray River on the development;
 - v. identification of all potential sources of water pollution and a detailed description of the remedial action to be taken or management systems to be implemented to minimise discharges of these pollutants from all sources within the subject site;
 - vi. detailed description of water quality monitoring to be undertaken during the pre-construction, construction and operation stages of the proposal including identification of locations where monitoring would be carried out;
 - vii. contingency plans for fuel and other spills; and
 - viii. a program for reporting on the effectiveness of the soil and water management system against performance goals.

Erosion and Sediment Control Works

79. The Soil and Water Management Sub Plan shall incorporate detailed erosion and sedimentation controls including a strategy to manage the extent of exposed ground surface during construction and progressive site rehabilitation requirements (in accordance with Conditions 86 and 91). The Sub Plan shall be prepared to the satisfaction of DLWC and in consultation with the EPA and NSW Fisheries and sufficient to address the technical requirements for obtaining relevant EPA approvals/licences.
80. The DLWC, or other appropriately qualified soil conservationist shall be consulted on a regular basis to undertake inspections of temporary and permanent erosion and sedimentation control devices to ensure that the most appropriate controls are being implemented and that they are being maintained in an efficient condition at all times and meet the requirements of any relevant approval/licence condition(s).
81. All water collected during construction which is likely to be contaminated, shall be tested, treated, handled and disposed of to the satisfaction of the EPA.

82. All runoff from disturbed areas shall be contained within sedimentation basins designed in accordance with the Department of Housing's guideline *Managing Urban Stormwater - Soils and Construction*.

Operation Stage Control Measures

83. All stormwater drainage, erosion, sedimentation and water pollution control systems and facilities of the proposal shall be located, designed, constructed operated and maintained to meet the requirements of the relevant authorities including the EPA and the DLWC. All facilities including wetland filters, grass filter strips, gross pollutant traps and sedimentation basins shall be inspected regularly and maintained in a functional condition for the life of the project. Construction stage water quality structures shall be maintained for a minimum of six months after commissioning of the proposal or until revegetation has provided groundcover to at least 70% of the exposed surface.
84. The Proponent shall provide appropriate detention systems for containment of spills and materials arising from accidents that are consistent with the RTA's "Code of Practice for Water Management – Road Development and Management" in consultation with the EPA.

Groundwater

85. The Proponent shall identify the most appropriate measures to safeguard and/or mitigate impacts on the groundwater, or impacts arising from any groundwater dewatering operations, in consultation with the Department of Land and Water Conservation, prior to the commencement of construction.
- Measures may include:
- i. evaluation of aquifer characteristics including conductivity and salinity;
 - ii. identification of suitable sites for the disposal of saline groundwater from dewatering activities; and
 - iii. installation of monitoring bores.

Landscaping

86. As part of the Construction and Operational EMPs, the Proponent shall prepare a detailed Landscape Sub Plan in consultation with Corowa Shire Council, all affected landowners and the Community Liaison Group. The Sub Plan shall include, but not be limited to the following:
- i. sections and perspective sketches;
 - ii. methodology of landscaping works;
 - iii. location and identification of existing and proposed vegetation including use of indigenous species;
 - iv. location of mounds, bunds, structures or other proposed treatments, finishes of exposed surfaces (including paved areas), measures to preserve bio-diversity, colours and specifications, staging of works, methodology of landscaping;
 - v. progressive landscape strategies incorporating other environmental controls such as erosion and sedimentation controls, dust mitigation, drainage, noise mitigation;
 - vi. lighting; and
 - vii. monitoring and maintenance procedures.

The Proponent shall also include landscape strategies incorporating other environmental controls such as erosion and sedimentation controls, noise mitigation measures, drainage structures and lighting.

87. All landscaping works shall be monitored and maintained by a suitably qualified landscape specialist at the Proponent's expense for a period of not less than three years.

88. The Proponent shall implement any required remediation measure(s) to maintain landscaping works to a high standard. Any landscaping within the road reserve shall be maintained by the Proponent for the life of the project.

Heritage and Archaeology

89. The Proponent shall implement all mitigation measures identified in Chapter 7.4.2 of the EIS/PSA.
90. If during the course of construction the Proponent becomes aware of any heritage items or archaeological material, all work likely to affect the site(s) shall cease immediately and the relevant authorities, including NPWS, NSW Heritage Office and the relevant Local Aboriginal Land Council shall be consulted to determine an appropriate course of action prior to the recommencement of work at that site. Appropriate supporting documentation would need to accompany any application for required permit/consent(s).

Air Quality

Construction Air Quality Sub Plan

91. As part of the Construction EMP, a specific Construction Air Quality Sub Plan shall be prepared in consultation with the EPA. The Sub Plan shall provide details of all dust control measures to be implemented during the construction stage, sufficient to address the technical requirements for any EPA approvals/licences. The Procedure shall include, but not be limited to:
- i. pro-active measures to reduce dust from stockpiles and cleared areas and other exposed surfaces; and
 - ii. progressive revegetation strategy for exposed surfaces in accordance with Conditions 79 and 95.
92. Where there is a risk of losing material, construction vehicles using public roads shall be maintained and covered to prevent any loss of load, whether in the form of dust, liquid, or soils. Construction vehicles shall be maintained in such a manner that they would not track mud, dirt or other material onto any street which is opened and accessible to the public. In the event of any spillage, the Proponent is required to remove the spilt material within 24 hours.
93. In accordance with the *Protection of Environment Operations (Control of Burning) Regulation 2000*, no open burning or incineration shall be permitted on site unless otherwise approved by the EPA.

Hazards and Risk Management

94. The Proponent shall ensure that the land owners and tenants of aquaculture businesses potentially affected by any spillage of pollutants (either surface or airborne) resulting from construction or operation of the project are notified as soon as practicable as to the nature and extent of pollution incidences. The Proponent shall undertake all reasonable steps required to ensure that the potential impacts on such businesses are minimised to the greatest extent possible.
95. As part of the Construction and Operational EMPs, the Proponent shall prepare and implement a Hazards and Risk Management Sub Plan. This Sub Plan shall include, but not be limited to the following:
- i. details of the hazards and risks associated with the proposal;
 - ii. pro-active and reactive mitigation measures including contingency plans to be implemented in the event of a pollution incident; and
 - iii. notification procedures in accordance with Condition 94.

Spoil Disposal

Spoil Management Sub Plan

96. As part of the Construction EMP(s), the Proponent shall prepare a Spoil Management Sub Plan. The Sub Plan shall identify how spoil would be handled, stockpiled, reused and disposed. The Sub Plan shall be prepared in consultation with the EPA and Council before the commencement of construction at relevant sites.
97. All clean and/or treated spoil shall be reused or recycled where possible and cost effective to do so. The Proponent shall ensure that spoil generated from construction activities is maximised in preference to any import of fill.

Waste Management and Recycling*Waste Minimisation and Management Sub Plan*

98. As part of the Construction and Operational EMP(s) as relevant, a detailed Waste Minimisation and Management Sub Plan shall be prepared in consultation with the EPA. The Sub Plan shall address the management of wastes during the construction and operation stages respectively in accordance with Government's *Waste Reduction and Purchasing Policy*. It shall be prepared prior to construction, and shall identify requirements for:
- i. waste avoidance;
 - ii. reduction;
 - iii. reuse; and
 - iv. recycling;
- and details of requirements for:
- v. handling;
 - vi. stockpiling;
 - vii. disposal of wastes: specifically contaminated soil or water, concrete, demolition material, cleared vegetation, oils, grease, lubricants, sanitary wastes, timber, glass, metal, etc.;
 - viii. implementation of energy conservation best practice; and
 - ix. identifying any site for final disposal of any material and any remedial works required at the disposal site before accepting the material.
99. Any waste material that is unable to be reused, reprocessed or recycled shall be disposed at a landfill licensed by the EPA to receive that type of waste. The Sub Plan shall be framed using the waste minimisation hierarchy principles of avoid-reduce-reuse-recycle-dispose. This shall also include the demand for water.

Utilities and Services

100. The Proponent shall identify the services potentially affected by construction activities to determine requirements for diversion, protection and/or support. This shall be undertaken in consultation with the relevant service provider(s). Any alterations to utilities and services shall be carried out to the satisfaction of the relevant service provider(s), and unless otherwise agreed to, at no cost to the service/utility provider(s).
101. The Proponent shall ensure that disruption to services resulting from the proposal are minimised and shall be responsible for advising local residents and businesses affected prior to any disruption of service.

Location of Construction Facilities

102. The Proponent shall only construct concrete and asphalt batching plants and construction compounds under this approval in those locations that satisfy the following criteria:

- i. sites to be located within the road reserve wherever possible;
- ii. sites to be located with ready access to the local road network;
- iii. sites on relatively level land;
- iv. sites to be separated from nearest residences by at least 200m unless it can be demonstrated to the satisfaction of the Director-General that there will be no adverse impacts on noise, visual and air quality impacts;
- v. sites are not to be located within 100m of waterways unless adequate erosion and sediment controls are implemented to protect water quality;
- vi. sites above the 100 ARI flood level;
- vii. sites are to have low conservation significance for flora, fauna or heritage and they are not to require any clearing of native vegetation beyond that which must be cleared for the proposal in any case; and
- viii. sites are to be selected so that the operation of the plants does not impact on the land use of adjacent properties.

The location of all concrete and asphalt batching plants shall be detailed in the Construction EMP which shall include demonstration that the above criteria have been met.

Appendix 1

Review of Flooding Issues for Proposed New Crossing of the Murray River Between Corowa NSW & Wahgunyah Vic

Appendix 2

Economic Analysis of Floodplain Afflux From A Proposed New Bridge Crossing Of The Murray River At Corowa