

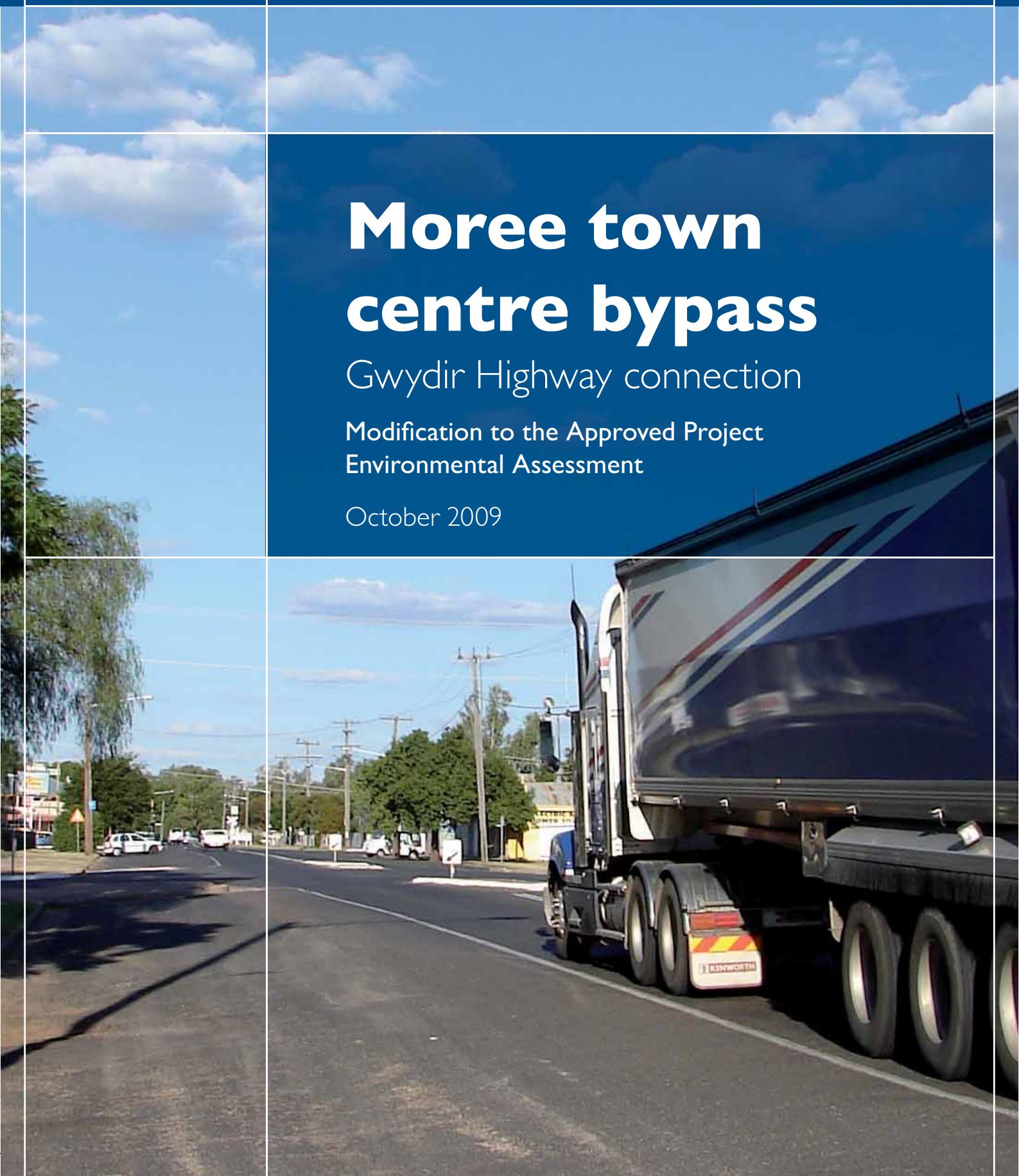


Moree town centre bypass

Gwydir Highway connection

Modification to the Approved Project
Environmental Assessment

October 2009



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Executive summary

Background

In July 2004, following consideration of the *Proposed Newell Highway Bypass of the Moree Town Centre: Environmental Impact Statement* (2002) (EIS (2002)), the then NSW Minister Assisting the Minister for Planning granted approval under Part 5 of the *Environmental Planning and Assessment Act 1979* ('the EP&A Act') for the NSW Roads and Traffic Authority (RTA) to construct and operate the Moree town centre bypass. The approved Moree town centre bypass (the Moree Bypass Project) realigns the existing Newell Highway around the eastern side of the town centre via a new 4.4 kilometre length of two lane road and a new bridge over the Mehi River.

Construction of the northern section of the bypass is currently underway and is due for completion by the third quarter of 2009. This section includes the new bridge over the Mehi River and new road towards the north of the river.

The RTA will be proceeding with the bypass construction from the bridge over the Mehi River to the Gwydir Highway. The remainder of the southern section to Bullus Drive has been delayed due to issues associated with contaminated land required for roadworks between Gosport Street and the rail corridor.

To avoid further delays to the project and to remove traffic from the Moree town centre, the RTA proposes to build an interim connection to enable the option for a staged opening of the Moree Bypass Project while the contamination issues are resolved. This will allow vehicles to use the northern section of the bypass and then travel along the Gwydir Highway (Alice Street), reconnecting to the existing Newell Highway (Frome Street) at the Newell/Gwydir Highway roundabout.

The approval for the Moree Bypass Project was granted under Part 5 of the EP&A Act before the introduction of Part 3A to the EP&A Act in August 2005. Accordingly, for the proposed modification to the approved project, the RTA is seeking a modification to the Minister's approval under Section 75W of Part 3A of the EP&A Act to allow for the option of staged opening for the Moree Bypass Project.

Purpose of the report

As part of the application for modification of the current approval under Section 75W of the EP&A Act to allow for the option of staged opening, the RTA must prepare an Environmental Assessment (EA). This modification to the approved project EA has been prepared to satisfy this requirement. The Director-General's requirements for the modification to the approved project EA were issued by the NSW Department of Planning (DoP) on 25 May 2008 (see **Appendix A**). The understanding

of the Director-General's requirements was subsequently confirmed with the DoP via the submission of a Preliminary Environmental Report in August 2008.

The proposed modification

The proposed modification to the approved project involves using the existing Gwydir Highway (Alice Street) to facilitate a staged opening and the operation of the Moree Bypass Project. It will allow the bypass north of Alice Street to open in advance of the bypass south of Alice Street. The modification to the approved project is referred to as the Gwydir Highway connection (GHC).

Minor modifications to the affected section of the existing Gwydir Highway (Alice Street) and the Gwydir Highway-Newell Highway intersection would be required to accommodate the expected increased volumes of traffic. These works would be contained within the existing road corridor and include:

- Partial pavement reconstruction along the Gwydir Highway between the approved bypass route and the Newell Highway.
- Minor modification of the existing roundabout at the Gwydir Highway-Newell Highway intersection to improve turn movements for B-double, B-triple and road train vehicles.
- Changes to existing street parking along the affected section of the Gwydir Highway, including changing the existing 45 degree (rear to kerb) parking arrangements to parallel parking.
- Construction of a new cul-de-sac on Gosport Street near the intersection with Frome Street.
- Traffic management measures designed to control the use of local roads by heavy vehicles.
- Noise mitigation measures to properties adjacent to the Gwydir Highway.

Findings

The environmental issues associated with the proposed modification have been identified and are summarised below.

- It is expected that noise impacts would result from operation of plant and machinery during the construction period. The hours of construction would be restricted, where possible, to ensure the protection of acoustic amenity of noise sensitive receivers.
- The noise assessment found that the operation of the proposed GHC would result in acute noise exposure for nearby residential receivers during both the daytime and night-time. Low noise pavements have been considered, however architectural treatments are the recommended form of noise mitigation for the GHC.
- There would be no substantial changes to the road conditions, although the volume of traffic will change in some locations. Due to the increase in traffic volume on Alice Street, there is a

risk that a small increase in crashes may occur. By contrast, a reduction in crashes is expected on Balo Street, north of Alice Street, once the northern section of the bypass is opened. There is no change expected on the Newell Highway south of Alice Street. It is expected that there would be an overall decrease in accidents due to the GHC. Directional signage through Moree would inform drivers of the changes to the route of Balo Street through Moree. Minor modifications of the existing roundabout at the Gwydir Highway / Newell Highway intersection would ensure the intersection operates at a good Level of Service for at least ten years after the work is completed. Similarly, the new junction of the Bypass and Gwydir Highway (Alice Street) would operate at a satisfactory Level of Service for at least ten years after opening.

- Local area traffic management treatments (Phase One measures) would be implemented for the GHC. Treatments include restricting heavy vehicle access from Alice Street (left and right hand turns into Warialda Street and Dover Street), reversing priority arrangements at intersections along Warialda Street such that north south traffic movements give way to east west traffic movements, constructing a cul-de-sac at the southern end of Gosport Street and measures for the proposed bypass / Alice Street intersection including allowing left turn in/out only from Gosport Street on northern and southern approaches to Alice Street and signposting detailing the altered access arrangements for Gosport Street north of Alice Street.
- Classified traffic counts would be collected in the residential area prior to commencement of construction. The RTA would monitor complaints from residents with regard to heavy vehicle traffic in the residential area. Further traffic counts would be undertaken in the event there are a number of complaints from residents. If the counts confirm an increase greater than 50 percent in legal heavy vehicle through traffic, Phase Two of the local area traffic management measures would be implemented.
- The conversion to parallel parking in Alice Street will result in an overall reduction in the number of available spaces. Only in exceptional circumstances would demand for parking in Alice Street exceed supply, but during these times sufficient parking spaces are available in streets off Alice Street. During normal operation, the proposed parking will be sufficient.
- The proposed modification would have minor environmental impacts on soils, water quality, air quality, land use, social environment and Aboriginal and cultural heritage. The existing environmental requirements in the conditions of approval would be adequate to manage or minimise these and other minor impacts.
- The proposed modification would be unlikely to adversely affect terrestrial ecology, topography, geology and soils and hydrology, as the proposal uses the existing Gwydir Highway. These issues have been excluded from this environmental assessment as they are considered to be adequately detailed and addressed in the *Proposed Newell Highway Bypass of the Moree Town Centre: Environmental Impact Statement 2002* (EIS (2002)) and the *Newell*

Highway Bypass of Moree Town Centre, Representations Report 2003(Representations Report (2003)).

Environmental safeguards

Subject to minor changes, the environmental safeguards and conditions of approval that apply to the approved project would apply to the proposed GHC. Environmental safeguards for the Moree Bypass Project will be augmented by the additional safeguards proposed in this Environmental Assessment for the management of noise and traffic impacts.

Process for assessing the project

The RTA is seeking a modification to the Minister's approval under Section 75W of Part 3A of the EP&A Act to allow for the option of staged opening for the Moree Bypass Project. This document presents the environmental assessment of the GHC and has been prepared in accordance with the process and requirements of Part 3A of the EP&A Act. All potential environmental issues identified during the planning and assessment of the proposed modification are addressed in this document, including the environmental assessment requirements issued by the Director-General of the Department of Planning.

During the public exhibition of this environmental assessment, any person (including a public authority) may make a written submission to the Department of Planning.

Following public exhibition, the Director-General will consider the submissions received. The Minister for Planning will determine whether or not to approve the GHC, and the conditions to be attached to any approval.

1. Introduction

1.1. Background

In July 2004, following consideration of the *Proposed Newell Highway Bypass of the Moree Town Centre: Environmental Impact Statement* (EIS, (2002)), the NSW Minister Assisting the Minister for Planning granted approval under Part 5 of the *Environmental Planning and Assessment Act 1979* (the EP&A Act) for the NSW Roads and Traffic Authority (RTA) to construct and operate the Moree town centre bypass. The approved Moree town centre bypass (the Moree Bypass Project) realigns the existing Newell Highway around the eastern side of the town centre via a new 4.4 kilometre length of two lane road and a new bridge over the Mehi River.

Construction of the northern section of the bypass is currently underway and is due for completion by the third quarter of 2009. This section includes the new bridge over the Mehi River and new road towards the north of the bypass.

The RTA will be proceeding with the bypass construction from the bridge over the Mehi River to the Gwydir Highway. The remainder of the southern section to Bullus Drive has been delayed due to issues associated with the remediation of contaminated land required for roadworks between Gosport Street and the rail corridor.

The NSW Department of Environment and Climate Change (DECC) has determined that some of this contamination poses a significant risk of harm to human health and the environment. Remediation work has begun, and DECC is continuing to investigate contamination and monitor remediation in this area.

To avoid further delays to the project and to remove traffic from the Moree town centre, the RTA proposes to provide an interim connection and the option for a staged opening of the Moree Bypass Project while the contamination issues are resolved. This will allow vehicles to use the northern section of the bypass and then travel along the Gwydir Highway (Alice Street), reconnecting to the existing Newell Highway (Frome Street) at the Newell/Gwydir Highway roundabout.

The RTA must seek approval for the proposed modification as it is not considered to be consistent with the current approval. The proposed modification is intended to enable the completed portion of the bypass to become operational. The advantage of this strategy is that the central project objective of diverting traffic from the central business district of Moree will be achieved while contamination issues in Gosport Street are resolved.

The approval for the Moree Bypass Project was granted under Part 5 of the EP&A Act before the introduction of Part 3A to the EP&A Act in August 2005. Part 3A applies to the assessment of 'major projects', including Part 5 projects that would have previously required an EIS (Schedule 6

s.88(3) of the EP&A Act). As such, any proposed changes to a project approved via an EIS under Part 5 must now be considered in terms of Part 3A.

Under Section 75W(2) of Part 3A of the EP&A Act, a proponent, such as RTA, may request the Minister for Planning to modify the Minister's approval for a project. The EP&A Act defines a modification to an approval as revoking or varying a condition of the approval or imposing any additional condition of approval. The Minister for Planning's approval is not required if the project as modified would be consistent with the existing approval.

RTA will request the Minister to modify condition no. 1 of the approval granted on 20 July 2004. This Modification Report will accompany the request.

1.2. Purpose of this report

As part of the application for modification of the current approval to allow for the option of staged opening of the Moree Bypass Project, the RTA must prepare an Environmental Assessment (EA). This modification to the approved project EA has been prepared to satisfy this requirement. The Director-General's requirements for the modification to the approved project EA were issued by the NSW Department of Planning (DoP) on 25 May 2008 (see **Appendix A**). The understanding of the Director-General's requirements was subsequently confirmed with the DoP via the submission of a Preliminary Environmental Report in August 2008.

This EA has been prepared in support of the application to amend the Minister's approval. This followed a consistency assessment which was undertaken by the RTA which determined that the proposed Gwydir Highway connection which was not consistent with the approved project. It will be necessary to amend the conditions of approval. **Appendix D** includes the suggested amendments to the conditions of approval.

The amendment of the conditions will need to reflect the inclusion of the procedures, safeguards and mitigation measures identified in this EA.

This EA describes the proposed modifications, assesses the environmental issues associated with the construction and operation of the GHC and identifies specific mitigation measures over and above those already required by the current conditions of approval. Specifically, the consistency of the proposed modification with the current conditions of approval and the commitments made in the EIS (2002) and Representations Report (2003) is reviewed for each identified issue (refer to **Chapter 6**). The Minister may modify the project approval (with or without conditions) or disapprove of the modification in accordance with Section 75W of the EP&A Act.

2. Description of the proposed modification

2.1. The approved project

The Moree Bypass Project involves construction and operation of a 4.4 kilometre length of two-lane road that diverts Newell Highway traffic around the Moree town centre. The approved route realigns the existing Newell Highway to the east of the town centre, between a point just north-east of the Moree racecourse and a point just north of Bullus Drive (**Figure 2-1**).

The bypass realigns the Newell Highway by constructing a new road parallel to Gosport Street and building a new bridge across the Mehi River. From the bridge, a new section of road will be constructed to connect to the existing Newell Highway north of the racecourse.

Construction of the portion of the bypass to the north of the Mehi River and the bridge over the Mehi River commenced in August 2007, and it is anticipated will be completed by the third quarter of 2009.

For ease of reference, distinction is made between the northern section and southern section of the bypass. The northern section refers to that portion of the bypass to the north of the Mehi River including the bridge over the Mehi River, and the southern portion refers to that portion south of the Mehi River.

2.2. The proposed modification

The proposed modification to the approved project involves constructing a connection along the existing Gwydir Highway that would facilitate staged opening and operation by allowing the bypass north of the Gwydir Highway to open in advance of the bypass south of the Gwydir Highway. The proposed modification is referred to as the Gwydir Highway connection (GHC). The GHC will provide an alternative to the existing Newell Highway route along Balo Street. Balo Street is the centre of retail and commercial activity in Moree, with a high level of both pedestrian and vehicular activity.

The proposed GHC does not require construction of any new roads. The route uses the section of the bypass north of the Gwydir Highway and then travels along the Gwydir Highway (Alice Street), reconnecting to the existing Newell Highway (Frome Street) at the Newell/Gwydir Highway roundabout (**Figure 2-2**). It should be noted that the Gwydir Highway is an existing road train and B-double route.

Minor modifications to the affected section of the existing Gwydir Highway and the Gwydir Highway-Newell Highway intersection would be required to accommodate the increased volumes of traffic. These works would be contained within the existing road corridor and include:

- Partial pavement reconstruction along the Gwydir Highway between the approved bypass route and the Newell Highway.
- Minor modification of the existing roundabout at the Gwydir Highway-Newell Highway intersection to improve turn movements for B-double, B-triple and road train vehicles.
- Changes to existing street parking along the affected section of the Gwydir Highway including changing the existing 45 degrees (rear to kerb) parking arrangements to parallel parking.
- Construction of a new cul-de-sac on Gosport Street near the intersection with Frome Street.
- Traffic management measures designed to control the use of local roads by heavy vehicles.
- Noise mitigation measures to properties adjacent to the Gwydir Highway.

In this report, the Gwydir Highway between the Newell Highway (Frome Street) and the bypass is also referred to as Alice Street.

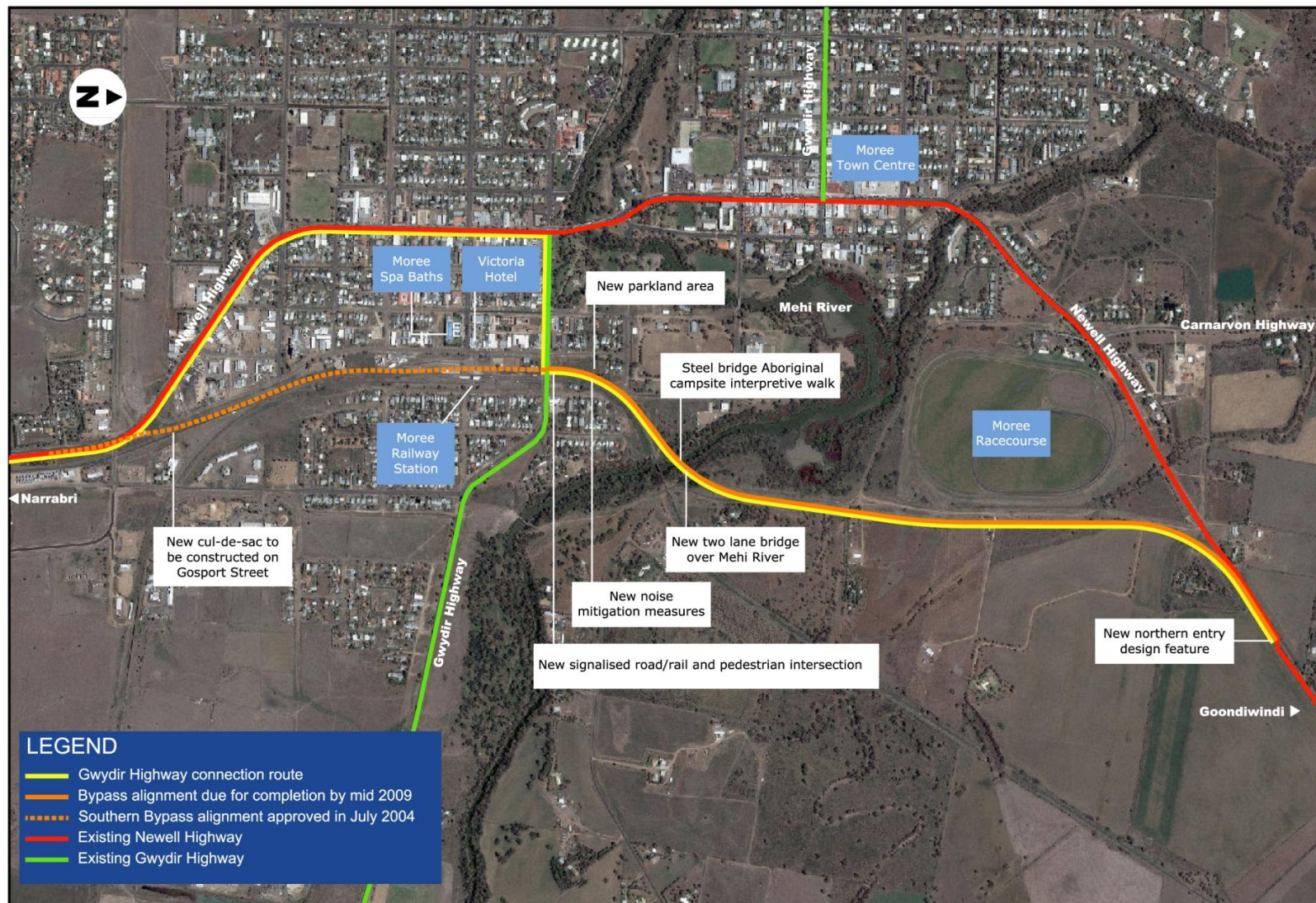


Figure 2-1: Overview of the approved bypass route and the proposed Gwydir Highway connection route



Figure 2-2: Concept design of the proposed Gwydir Highway connection

3. Need for the proposed modification

The section of the approved project to the north of and including the new Mehi River Bridge is currently under construction. Works for the remainder of the approved project have been placed on hold following the discovery of contaminated land near the Gosport Street fuel depots. Some of this contaminated land has been determined by DECC to present a significant risk of harm to human health and the environment and has been declared a remediation site under Section 21 of the *Contaminated Land Management Act 1997*. To proceed with the acquisition required for the remainder of the approved project, the contamination issues need to be resolved.

While some remediation work has been carried out, ongoing investigation and further remediation is likely. Given the complexity involved, the remediation works will delay the acquisition of the land by the RTA, the construction of the bypass south of the Gwydir Highway and delay the opening of the full bypass.

The RTA has identified the GHC as a feasible modification to the approved project that would facilitate staged opening and operation, with the bypass north of the Gwydir Highway opening in advance of the bypass south of the Gwydir Highway. This would allow remediation works to be completed without delaying the use of the bypass north of the Gwydir Highway and the removal of a significant volume of traffic from the town centre.

The RTA proposes ultimately to construct the entire approved bypass route, including the bypass south of the Gwydir Highway. The proposed modification is regarded as a proposal to enable a staged opening. The RTA is progressing with the works associated with the southern portion of the bypass as far as possible. These works could include the acquisition of uncontaminated properties, the relocation of utilities, the demolition of buildings, landscaping and signage. It is the RTA's intention to proceed with the construction of the bypass south of the Gwydir Highway when the contaminated land has been satisfactorily remediated and acquired, and adequate funding has been secured to facilitate the completion of the remaining works.

3.1. Ecologically sustainable development

Ecologically sustainable development entails using, conserving and enhancing the community's environmental resources in a manner that sustains and improves ecological processes, and hence the quality of life, for present and future generations. The basis for achieving ecologically sustainable development involves the application of four principles:

- The precautionary principle.
- Intra and inter-generational equity.
- Conservation of biological diversity and ecological integrity.
- Improved valuation and pricing of environmental resources.

The RTA is committed to ensuring that its projects are consistent with the principles of ecologically sustainable development. The principles of ecologically sustainable development, including the consistency of the GHC with each principle, are discussed in the following sections.

3.1.1. Precautionary principle

The precautionary principle deals with uncertainty in decision making. It requires that planning for the project adopts best practice environmental assessment techniques, and that implementation of the project adopts best practice environmental standards and measures to minimise the risks associated with the potential environmental impacts, even where there is uncertainty surrounding the likelihood or significance of those potential environmental impacts.

This environmental assessment has been prepared for the RTA by environmental specialists and has relied on the best technical information available. Specifically, adherence to the precautionary principle is implicit in the following areas:

- Identifying potential impacts and avoiding these where possible.
- Ensuring community concerns have been considered and addressed in the development of the GHC.

Best practice management measures are included throughout this environmental assessment.

3.1.2. Intra and inter-generational equity

The principle of intra and inter-generational equity requires that the diversity, health and productivity of the environment are maintained or enhanced for the benefit of both current and future generations. Furthermore, the principle requires that the social and economic benefits and impacts of the project are distributed appropriately and equitably among all members of the community, at local, regional, State and national levels.

The project is consistent with the principle of intra and inter-generational equity. It is primarily a plan that allows an interim solution for traffic to be removed from the Moree town centre, while contamination issues are being resolved. Without the GHC, both current and future generations would be exposed to increasing levels of traffic congestion and associated reductions in road safety as the road continues through the town centre.

3.1.3. Conservation of biological diversity

The GHC allows vehicles to use the northern section of the bypass and then travel along the Gwydir Highway (Alice Street) to reconnect to the existing Newell Highway (Frome Street). As works would be confined to existing roadways and pavements, the proposed modification to the approved project is unlikely to impact biodiversity. There are no significant vegetation or fauna communities adjacent to work areas.

3.1.4. Improved valuation, pricing and incentive mechanisms

The principle of improved valuation and pricing of environmental resources requires that the economic value of environmental resources be considered in decision making. Environmental and social issues were considered in the strategic planning and establishment of the need for the GHC, and in the consideration of the options. The values placed on environmental resources by the RTA, were reflected in the different options aimed at avoiding or minimising potential impacts. The extent of avoidance of impacts on important social attributes in particular reflects a significant consideration of the value of the environmental resources in a non-monetary sense.

4. Alternatives considered

Given the construction delays associated with the bypass south of the Gwydir Highway, a number of alternatives for connection of the town centre bypass route were examined as shown in **Figure 4-1**. These alternatives involved using the northern section of the approved route (which is already under construction) but avoided the area of contaminated land located on the southern section of the approved route. All alternatives were assessed in the context of the ‘do nothing’ option as described below.

4.1. The ‘do nothing’ alternative

The ‘do nothing’ option involves not implementing the proposed GHC or any other alternative modification to the existing approved project. Under this option, the opening of the bypass route for Newell Highway traffic would be delayed because of contaminated land issues. This would have the following adverse effects:

- Construction of the approved project south of the Mehi River would need to be placed on hold for an indefinite period during which time the Newell Highway traffic would continue to pass through Moree town centre.
- Without completion of the bypass south of the Gwydir Highway or an alternative bypass connection route, the section of the bypass north of the Mehi River (currently under construction) would be an unused section of road infrastructure.

Doing nothing is not considered to be a feasible alternative.

4.2. The ‘EIS alignment’

The ‘EIS alignment’ is presented in the *Proposed Newell Highway Bypass of the Moree Town Centre Environmental Impact Statement 2002* (EIS (2002)). This alignment was presented in the EIS as the preferred route for the bypass, however during detailed design the EIS alignment was modified to resolve technical and environmental issues. As a result, a modification to the EIS alignment between Frome Street and the Gwydir Highway intersection (Option 4) was adopted. This option shifted the alignment to the east, passing through the rail corridor, Caltex, Mobil, Fluid Rail and Guy Roberts Commodities. In comparison to the EIS alignment, this Option 4 modification (current bypass southern section alignment) was found to have the following advantages:

- Improved access to western properties between Gosport Street, Frome Street and Anne Street.
- Acquisition of five residential properties owned by the State Rail Authority (SRA) thereby avoiding noise mitigation.
- Improved pavement drainage.
- Better separation of local and bypass traffic.
- Safer geometric design.

- Improved safety and traffic management issues during construction as the alignment avoids Gosport Street.
- Reduced disruption to businesses and residences on Gosport Street.
- Reduced impacts upon utility services.
- Improved access to Barwon Timbers.
- Increased open spaces areas and opportunities to implement urban design and landscaping features.
- Improved stormwater drainage as stormwater can avoid the existing Council stormwater system.

However, the Option 4 alignment also had the following disadvantages in comparison to the EIS alignment:

- Increased time and costs required for property acquisition.
- Contamination associated with current and former fuel depots.
- Demolition, relocation and/or disposal of tanks and structures within the Caltex and Fluid Rail sites.
- Potential need to revisit the EIS (2002) and re-inform the public.
- Increased traffic noise to approximately 20 eastern residences along Morton Street which would necessitate further noise mitigation measures.

Due to the environmental and technical issues identified, the EIS alignment is not considered to provide a feasible alternative.

4.3. EIS hybrid alignment

An EIS hybrid solution was also considered which blends the current bypass southern section alignment (Option 4) with an interim connection to part of the 'EIS alignment'. This proposal generally follows the current bypass southern section alignment (Option 4), however between Jones Avenue and Anne Street the alignment diverts onto Gosport St, than follows the EIS alignment to avoid the contaminated areas (refer to **Figure 4-1**).

The issues presented above for the EIS alignment would also apply for this hybrid alternative, in addition to the following issues:

- Stage 2 of the works (bypass southern section) would need to be constructed piece meal therefore resulting in increased construction costs.
- The cost to construct the hybrid as compared to the GHC is more expensive and the significant amount of new connection works required to connect the hybrid alignment to Gosport Street would be abandoned when the permanent bypass southern section is constructed.
- Increased noise mitigation measures will be required along the length of the hybrid alignment adjacent to existing premises along Gosport Street.

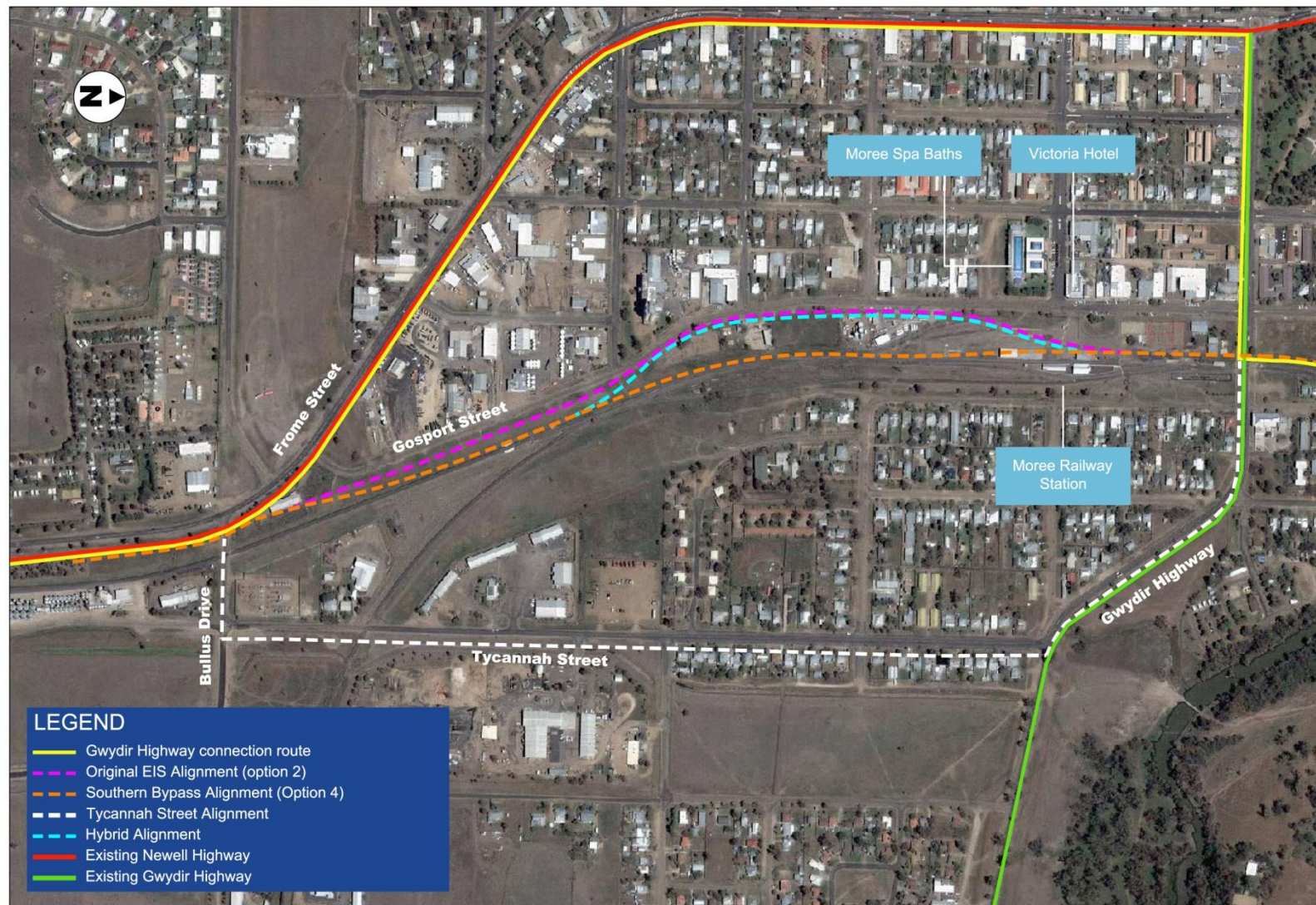


Figure 4-1: Overview of the alternatives considered

4.4. Tycannah Street alignment

As seen in **Figure 4-1**, the Tycannah Street Alignment starts (from its southern end) at the Newell Highway-Bullus Drive intersection, crosses the existing Bullus Drive rail level crossing, continues northwards along Tycannah Street, then west along the Gwydir Highway, re-crosses the rail line, then connects with the proposed bypass at the Gwydir Street intersection. There are safety risks associated with Newell Highway traffic negotiating two rail level crossings in this manner and accordingly the Tycannah Street alignment is not considered to provide a satisfactory solution to the construction delay risk presented by the current land remediation works.

4.5. Gwydir Highway connection (preferred)

The GHC has been selected as the preferred option for connecting the bypass north of the Gwydir Highway in the short-term. This option is the subject of this modification to the approved project EA and is described in **Section 2.2**.

The GHC was selected as the preferred option and responds to the adverse impacts associated with the 'do nothing' alternative. As seen in **Figure 4-1** the proposed GHC uses a section of the existing Gwydir Highway and does not involve construction of any new roads. As the Gwydir Highway is an existing road train and B-Double route, the proposed use of this road for connection of the bypass will not result in significant changes to the existing roadway environment.

The proposed GHC would facilitate staged opening and operation of the approved town centre bypass by allowing the bypass north of the Gwydir Highway to open in advance of the bypass south of the Gwydir Highway. This would allow the current contaminated land remediation works along the southern section of the approved route to be completed without delaying the use of the northern section (already under construction).

During the development of the EIS (2002) a similar option to that proposed here was identified, but was not selected as the preferred option since the approved project performed better in terms of a range of technical and environmental considerations. The GHC is not regarded as a permanent solution however, it is recognised as the most feasible interim solution to address the contamination and associated construction delay risks. It ultimately remains the RTA's intention to proceed with construction of the bypass south of the Gwydir Highway as originally approved.

5. Legislative and planning framework

5.1. Environmental Planning and Assessment Act 1979

5.1.1. Overview

The requirements for environmental assessment and planning approval of development proposals in NSW are established by the *Environmental Planning and Assessment Act 1979* (EP&A Act), the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), and environmental planning instruments (EPIs) made under the EP&A Act. Part 3A of the EP&A Act, which was introduced in August 2005, establishes the assessment and approval requirements for major projects, being projects that have been declared to be a Part 3A project by either an EPI or Ministerial Order.

Development that has been declared by Ministerial Order to fall under Part 3A includes development that would have previously (before the introduction of Part 3A) required the preparation of an EIS and approval by the Minister under Part 5. Activities that would have previously required the preparation of an EIS and approval by the Minister under Part 5 of the EP&A Act include activities undertaken by or on behalf of public authorities (such as the RTA) that are considered, by the proponent, likely to significantly affect the environment or threatened species, populations or ecological communities or their habitats.

5.1.2. The approved project context

The Moree Bypass Project is a public authority undertaking that was approved by the Minister for Planning under Part 5 of the EP&A Act on 20 July 2004. As the project was considered to have a significant environmental impact, an EIS was required as part of the assessment process. The EP&A Act was amended in August 2005 to incorporate a new Part 3A, which relates to major projects. Under item 88(3) of Schedule 6 of the amended Act, the Minister of Planning's approval of the Moree bypass is taken to be an approval under Part 3A, and as such modifications to that approval are subject to assessment under Part 3A of the EP&A Act. As such any proposed changes to the Moree Bypass Project must be approved by the Minister for Planning under Section 75W(2).

5.1.3. Requirements for the proposed modification to the approved project

The proposed modifications to the approved project are not consistent with the current conditions of approval. Accordingly, the RTA must seek a modification of the Minister's approval under Section 75W of the EP&A Act. As part of this process, the RTA must prepare an EA for the proposed modifications. This modification to the approved project EA has been prepared to satisfy this requirement.

The RTA notified the DoP of its intention to seek a modification of the Minister's approval under Section 75W of the EP&A Act at a meeting held 2 April 2008 and in a letter dated 2 May 2008. The Director-General of the Department of Planning issued the RTA with the requirements for the EA of the proposed modification on 25 May 2008. The Director-General's requirements are

attached in **Appendix A**. The RTA's understanding of the Director-General's requirements has since been confirmed by the preparation and submission of a preliminary environmental report to the DoP. The RTA must satisfy the Director-General's requirements before the proposed modification to the approved project will be considered by the Minister. Under Section 75W of the EP&A Act, the Minister may modify the existing approval (with or without conditions) or disapprove of the modification.

This EA report has been prepared in accordance with the Director-General's requirements and the DoP guidelines for assessment of major projects under Part 3A of the EP&A Act. **Table 5-1** presents a summary of the Director General's Requirements and identifies where they have been addressed in this EA.

Table 5-1: Summary of the Director-General's requirements and where they have been addressed in this EA

Item to be Addressed	Requirement	Chapter of EA
General requirements	The environmental assessment of the modification must include the following: i. a detailed description of the proposed modification ii. the justification/need for the proposed modification iii. the identification of any commitments within the EIS (2002)/Representations Report (2003) and the requirements of the Minister's approval for the project that will be affected and/or require amendment iv. an assessment of key issues consistent with relevant standards and guidelines, including (but not necessarily limited to) (1) noise and vibration, (2) traffic and transport, and (3) construction impacts.	Chapter 2 Chapter 3 Chapter 6 Chapter 6
Noise and vibration	Assessment of the impacts on neighbouring roads as a result of the proposed re-direction of Newell Highway traffic onto the Gwydir Highway (Alice Street). The assessment must be conducted in accordance with Environmental Criteria for Road Traffic Noise (EPA 1999) and must outline the noise mitigation measures that would be implemented to mitigate the potential impacts on sensitive receivers.	Section 6.5 Appendix B
Traffic and transport	Assessment of the impacts on the temporary redistribution of traffic and the associated impacts on the safety, performance and efficiencies of the road network, including the Gwydir and Newell Highways, the surrounding local streets and the level crossing. This assessment must also give consideration to potential impacts on businesses and recreational facilities as a result of alterations to the road and pedestrian network, and access arrangements.	Section 6.6 Appendix C
Construction impacts	Assessment of the potential impacts on the environment and surrounding receivers during any construction works associated with the approved project, and details on how these would be mitigated and/or managed.	Section 6.5, 6.6, 6.7
Consultation	An appropriate and justified level of consultation with local and State public authorities (including the Department of Environment and Climate Change, Moree Shire Council and the relevant rail authorities) and service providers; special interest groups, and the public, including the project Community Liaison Group and affected landowners.	Chapter 7

5.2. Other environmental legislation

The additional environmental legislative requirements for the proposed modification to the approved project have been examined and it has been confirmed that there are no additional legislative requirements over and above those already identified in the EIS (2002) and Representations Report (2003) for the approved project and the conditions of approval.

6. Environmental assessment

6.1. Context

The EIS for the approved project, prepared by Egis Consulting on behalf of the RTA in 2002 (EIS 2002), and the Review of Environmental Factors (REF) prepared by SKM on behalf of the RTA for the Option 4 alignment in 2005 (REF 2005), details the potential environmental impacts of the Moree Bypass Project and the proposed impact mitigation and management measures. The requirements for impact mitigation and management for the approved project are specified in the conditions of approval. These conditions of approval, once amended, would apply to both the approved project and the proposed GHC.

This modification to the approved project EA focuses on areas of difference between the approved project and the proposed modification. This EA focuses only on environmental impacts associated with the GHC that are not addressed in the EIS (2002), REF (2005) or current conditions of approval. Where the potential environmental aspects and impacts of the proposed modification are the same as those of the approved project, the RTA does not propose to implement additional impact mitigation measures. Rather, it would implement the existing requirements specified in the conditions of approval for the approved project. For new impacts specific to the proposed GHC that are not addressed within the EIS (2002), REF (2005) or current conditions of approval, additional requirements for impact mitigation have been identified within this EA.

6.2. Scope of environmental assessment

The environmental issues associated with the proposed modification to the approved project have been identified from the EIS (2002) for the approved project, the REF (2005) for the Option 4 alignment, and additional information gained from investigation of the GHC proposal. The modification to the approved project EA addresses all environmental matters, excluding those components of the environment that are unlikely to be affected by the proposed modification. Using this approach, the following environmental matters are not considered to be impacted on by the proposed modification and are not subject to an assessment in this modification to the approved project EA:

- Terrestrial ecology – the proposed modification to the approved project is unlikely to impact terrestrial flora or fauna as works would be confined to existing roadways and pavements, and there are no significant vegetation communities adjacent to work areas.
- Topography, geology and soils - the proposed modification to the approved project will not involve deep excavation, disturbance of soil profiles or changes in topography.
- Hydrology – the proposed modification to the approved project involves pavement reconstruction within an existing road and reconfiguration of an existing intersection and will not result in any changes to surface or subsurface hydrology or present any new issues with respect to drainage or flooding.

Other relevant environmental issues have been grouped into two categories:

- Key environmental issues, which are addressed in **Section 6.3**.
- Other environmental issues, which are addressed in **Section 6.7**.

6.3. Key environmental issues

The following factors have been identified as the key environmental issues for the proposed modification to the approved project:

- **Construction impacts**, especially the potential impacts on the environment and surrounding receivers during any construction works associated with the GHC, and details on how these would be mitigated and/or managed.
- **Noise and vibration**, specifically the impacts on neighbouring roads as a result of the proposed re-direction of Newell Highway traffic onto the Gwydir Highway (Alice Street). The assessment must be conducted in accordance with Environmental Criteria for Road Traffic Noise (EPA 1999) and must outline the noise mitigation measures that would be implemented to mitigate the potential impacts on sensitive receivers.
- **Traffic and transport**, specifically the impacts on the temporary redistribution of traffic and the associated impacts on the safety, performance and efficiencies of the road network, including the Gwydir and Newell Highways, the surrounding local streets and the level crossing. This assessment must also give consideration to potential impacts on businesses and recreational facilities as a result of alterations to the road and pedestrian network, and access arrangements.

6.4. Construction impacts

The Director-General's requirements identified construction phase impacts as a key issue that needed further consideration in the modification to the approved project EA Report. To facilitate a holistic understanding of the various issues (i.e. from construction through to operation) and to improve the readability of this document, construction phase impacts are discussed together with the operational impacts identified for each of the key environmental issues (**Sections 6.5 and 6.6**) and other issues (**Section 6.7**). A summary of the construction impacts is provided in **Table 6-1** below.

Table 6-1: Summary of construction impacts

Issue	Construction Impacts	Mitigation measures	Section
Noise and vibration	- Noise impacts from the operation of plant and machinery. - Vibration impacts at residential dwellings may occur.	- Construction works would follow standard construction times. - Where there is potential for vibration impacts to occur, a dilapidation survey and/or monitoring should be carried out in accordance with relevant DECC and RTA standards and guidelines.	Section 6.5.3
Traffic and transport	- Traffic disruption during removal and replacement of the pavement. - Small increase in traffic volumes from construction work vehicles and haulage of materials to and from the construction site.	A Construction Staging and Traffic Management Strategy would be implemented to minimise disruption to traffic.	Section 6.6.3
Soil and water management	Soil erosion and sedimentation into nearby Mehi River.	- Temporary erosion and sediment controls would be installed prior to the commencement of any construction works. Controls would be regularly maintained and inspected. - Soil and water management sub-plan would be updated to reflect any changes for the GHC.	Section 6.7.1
Air quality	Generation of dust through the use of equipment and earthworks have the potential to impact sensitive receivers including residential dwellings, hotels, businesses and users of Jellicoe Park.	Use of standard dust control measures including dampening unsealed roads and stockpiles, covering truck loads transporting spoil and fill and avoiding dust generating work during windy conditions.	Section 6.7.2
Land use and social impacts	- Increased noise levels during construction. - Increased movement of vehicles along the Gwydir Highway associated with delivery of materials. - Access disruptions along the Gwydir Highway during re-paving works. - Visual impacts associated with equipment and construction site.	Mitigation measures for noise, traffic and visual impacts are provided in this table.	Section 6.5.3, 6.6.3, 6.7.3 and 6.7.6
Aboriginal heritage	No Aboriginal heritage items or sites are likely to be affected by the GHC.	As no Aboriginal heritage items would be impacted, no mitigation measures are proposed.	Section 6.7.4
Non-Aboriginal heritage	No non-heritage Aboriginal heritage item or site are likely to be affected by the GHC.	As no non-Aboriginal heritage items would be impacted, no mitigation measures are proposed.	Section 6.7.5
Urban landscape design	Visual impacts from the presence of construction equipment, plants and vehicles.	All construction activities would be completed as quickly as possible to minimise the duration of visual impacts.	Section 6.7.6

Issue	Construction Impacts	Mitigation measures	Section
		- On completion of works, all construction equipment, materials and refuse relating to the works would be removed. - Work sites would be restored as close to their original condition as possible following the completion of construction works.	
Hazards	- Potential hazards include spills of hazardous goods such as fuel, oils, grease, lubricants, bitumen and paint. - Potential minor leaks of lubricants and hydraulic fluid from construction equipment, vehicle and plant.	Appropriate storage, handling and use of materials in accordance with the <i>Occupational Health and Safety Act 2000</i> and Workcover's Code of Practice for Storage and Handling of Dangerous Goods.	Section 6.7.7
Waste generation and disposal	Generation of approximately 1600 m³ tonnes of waste during construction. Waste would consist predominantly of excavation pavement material and spoil.	The GHC would adhere to the waste management hierarchy principles of avoidance, reuse, recycling and reprocessing and disposal.	Section 6.7.8

6.5. Noise and vibration

An assessment of potential noise and vibration impacts for the construction and operation of the proposed GHC has been undertaken. The results of this noise and vibration assessment are summarised below. The full report from the noise and vibration impact study is attached in **Appendix B**.

6.5.1. Assessment methodology

Traffic noise impacts were assessed in accordance with Environmental Criteria for Road Traffic Noise (ECRTN) guideline, published by the Department of Environment and Climate Change (DECC), and the RTA's Environmental Noise Management Manual (ENMM). The assessment of airborne noise has in the past been guided by the DECC's Environmental Noise Control Manual. Vibration impacts were assessed against criteria taken from the German Standard DIN 4150 and the British Standard BS6472.

Road traffic noise impacts associated with the operation of the GHC were assessed by comparing the predicted noise levels at sensitive receiver locations 10 years after the opening of the GHC against the ECRTN noise criteria. This approach accounts for the projected traffic growth over a 10 year period. The results of the assessment were used to determine the extent of any noise impacts and whether or not noise mitigation measures would be required for the proposal.

Although it is recognised that the GHC is intended to serve only as a connection using the 10 year project growth ensures that the approach is consistent with the standard DECC methodology and provides a "worst case" scenario for the noise assessment. In any event, it is anticipated that any

change in noise levels will be primarily related to the changed traffic mix travelling along the GHC rather than the increase in traffic over time.

Change in traffic mix is discussed in detail in **Section 4.1.3** of the Traffic and Transport Assessment (see **Appendix C**) and in **Section 6.6.3** of this report.

To estimate noise levels experienced at sensitive receiver locations, a noise model was developed using projected day and night time traffic counts for the year 2020. The traffic data used in the model was provided by the RTA from studies undertaken in 2008. The model was based on vehicle speeds of 50 km/hr and a spray seal road surface. Traffic noise at each receiver was predicted using the Calculation of Road Traffic Noise (CoRTN) method applied through a SoundPLAN noise modelling program.

The traffic and transport assessment for the GHC (see **Section 6.5**) used Average Annual Daily Traffic (AADT) data collected in May 2008. This traffic data has been measured for the Newell Highway and Gwydir Highway for the current year and these numbers have then been factored up to provide the estimated levels for the 2010 and 2020 traffic flows. The traffic flow forecasts for the GHC assessment for the years 2008, 2010 and 2020 used in the noise model represent the validation, future existing and design year scenarios respectively and are presented in **Figure 6-1**, **Figure 6-2** and **Figure 6-4**. **Figure 6-3** shows the traffic forecasts for the 2010 future bypass scenario. While this is not used in the noise assessment, it is one of the critical scenarios explored in the traffic assessment (see **Section 6.6**).

Further detail on the noise assessment methodology is provided in the noise working paper included in **Appendix B**.

6.5.2. Existing environment

Sensitive receivers

Residential dwellings are the primary classification for sensitive receivers although non residential land uses such as schools, hospitals and churches are also considered as sensitive receivers for the purposes of assessment. The locations of all identified receivers along Alice Street were confirmed by visual identification during the noise monitoring survey. Residences are generally located in the central section of Alice Street, between the Newell Highway and Gosport Street. There are also 3 motels that may be affected by the operation of the GHC. Motels have previously been classified as noise sensitive receivers in the EIS (2002) and therefore were identified under the same category for this assessment.

The potentially affected receivers (including sensitive receivers) adjacent to the proposed GHC are identified in **Table 6-2** and **Figure 6-5**.

Table 6-2: Potential receivers adjacent to the proposed Gwydir Highway connection route

Property Reference No.	Address	Land Use	Sensitive Receiver (Y/ N)
1	62 Alice Street	Alexander Motor Inn	Y
2	54 Alice Street	Caltex service station	N
3	50 Alice Street	Freedom Fuels service station	N
4	44 Alice Street	Protect Auto Electricians	N
5	38 Alice Street	Residential	Y
6	36 Alice Street	Residential	Y
7	34 Alice Street	Residential	Y
8	32 Alice Street	Residential	Y
9	30 Alice Street	Residential	Y
10	28 Alice Street	Residential	Y
11	26 Alice Street	Shop front/ residential	Y
12	Corner Warialda Street and Gwydir Highway	Vacant land	N
13	300 Warialda Street	Spa Village Travel Inn	Y
14	20 Alice Street	Baileys Electric Motor Rewinding and Repairs	N
15	18 Alice Street	Post Office/ Gwydir Coin-Op Laundry	N
16	16 Alice Street	Moree Furniture Barn/ TV Service Shop	N
17	14 Alice Street	The Bridge take-away shop	N
18	29 Alice Street	North West Car and Caravan Centre	N
19	21 Alice Street	Moree Spa Motor Inn	Y

Background noise levels

The daily noise profile identified from background noise monitoring at the Spa Village Travel Inn (Property Reference #13) is summarised in **Table 6-3**. The reported level for the monitoring location was measured at the building facade and incorporates any increases in noise levels resulting from building facade effects.

Table 6-3: Daily noise profile - Spa Village Travel Inn [dB(A)]

Monitoring Location	L _{A10} 18 hour	L _{Aeq} 15 hour	L _{Aeq} 9 hour	L _{Amax} Day	L _{Amax} Night
Spa Village Travel Inn (#13)	67	64	56	78	74

Note: Results rounded to nearest dB(A)

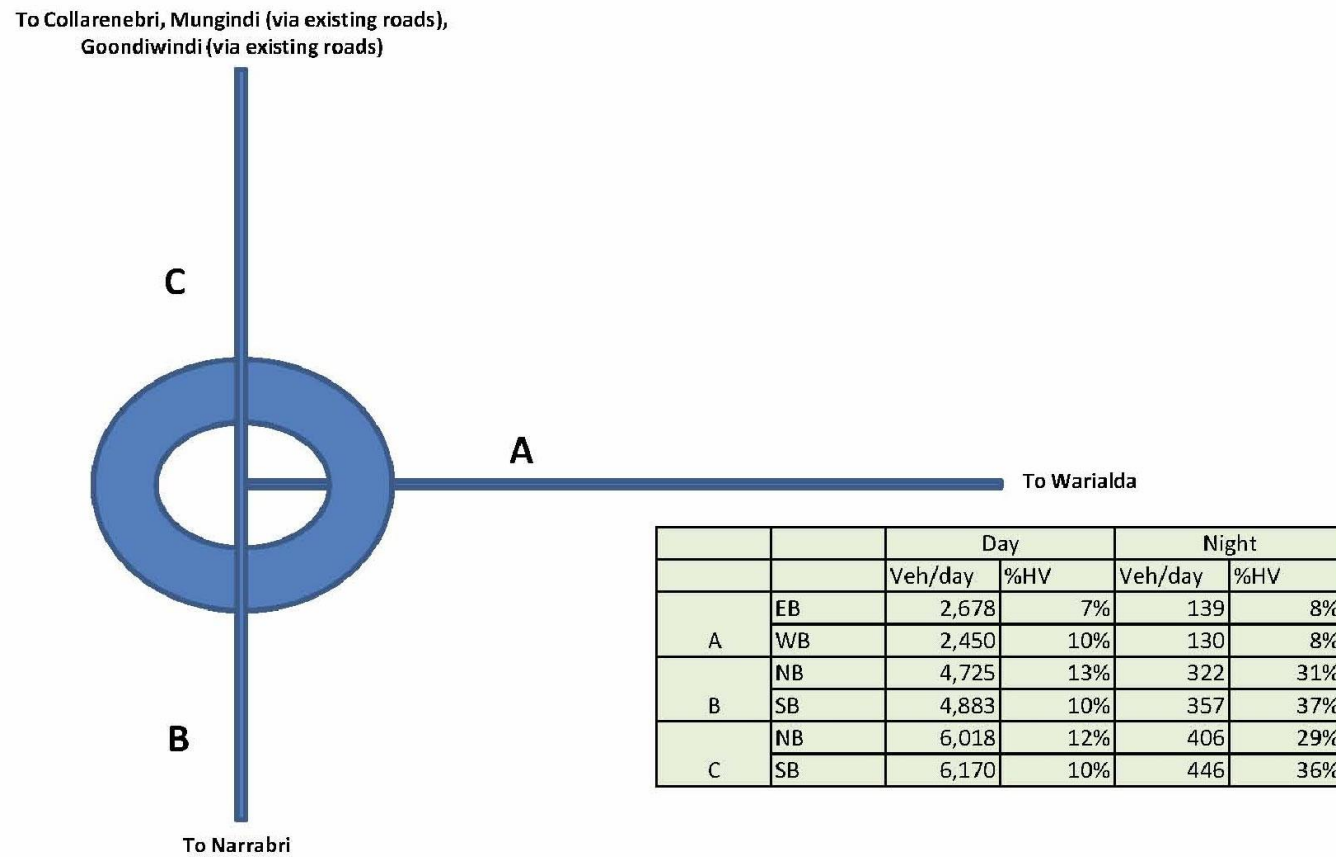
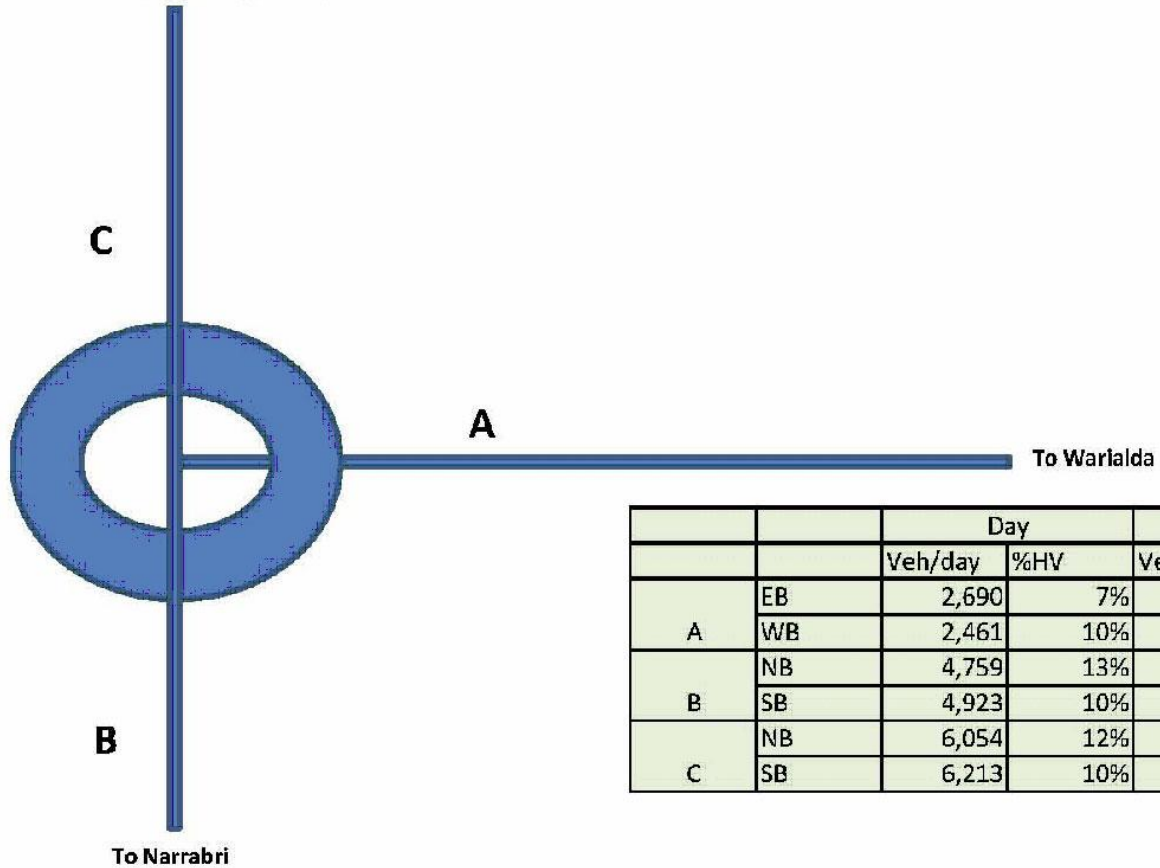


Figure 6-1: Traffic Flow Data Year 2008 – No bypass

To Collarenebri, Mungindi (via existing roads),
Goondiwindi (via existing roads)



		Day		Night	
		Veh/day	%HV	Veh/day	%HV
A	EB	2,690	7%	140	8%
	WB	2,461	10%	130	8%
B	NB	4,759	13%	325	31%
	SB	4,923	10%	363	38%
C	NB	6,054	12%	408	30%
	SB	6,213	10%	452	36%

Figure 6-2: Traffic Flow Data Year 2010 – No bypass

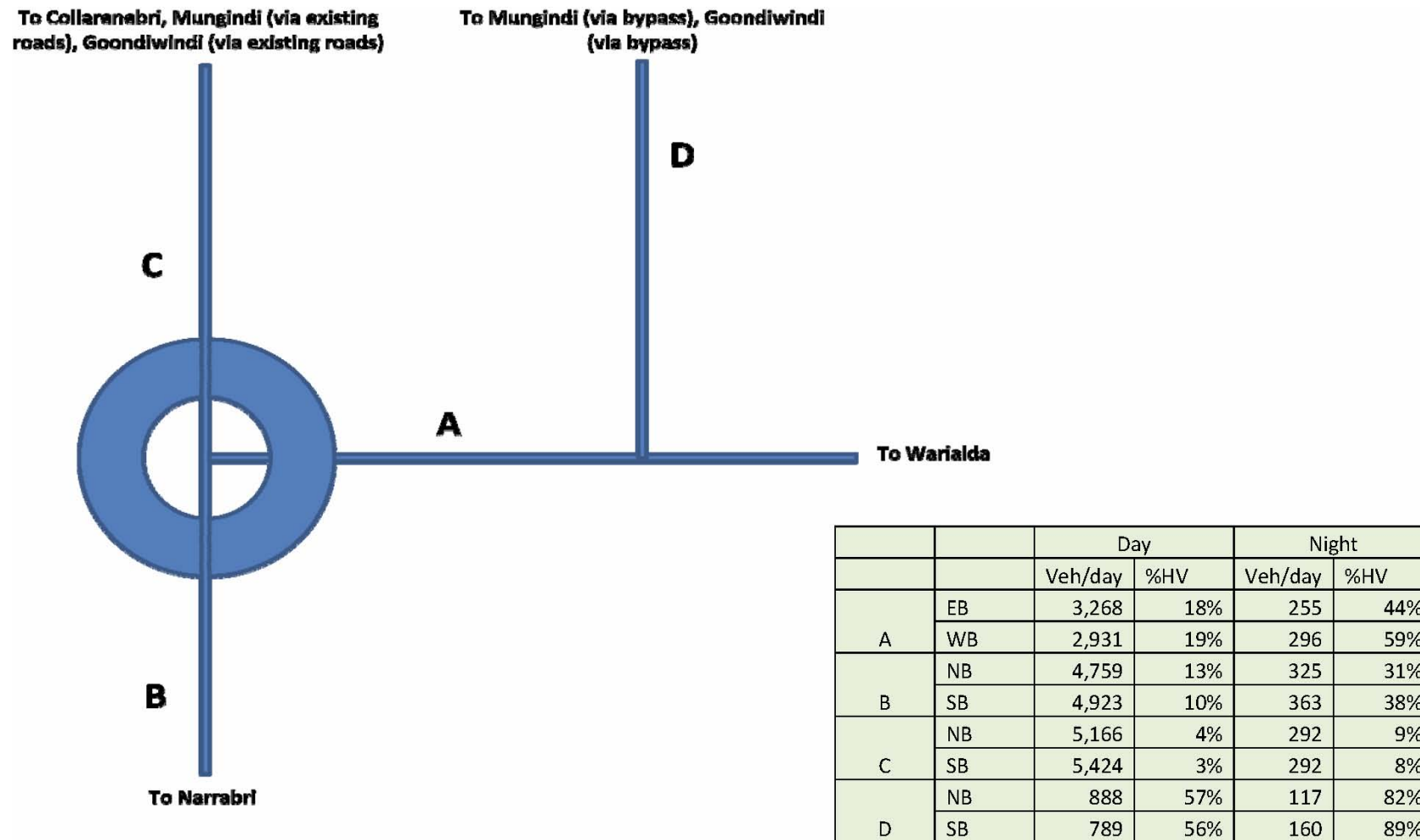


Figure 6-3: Traffic Flow Data Year 2010 –With bypass

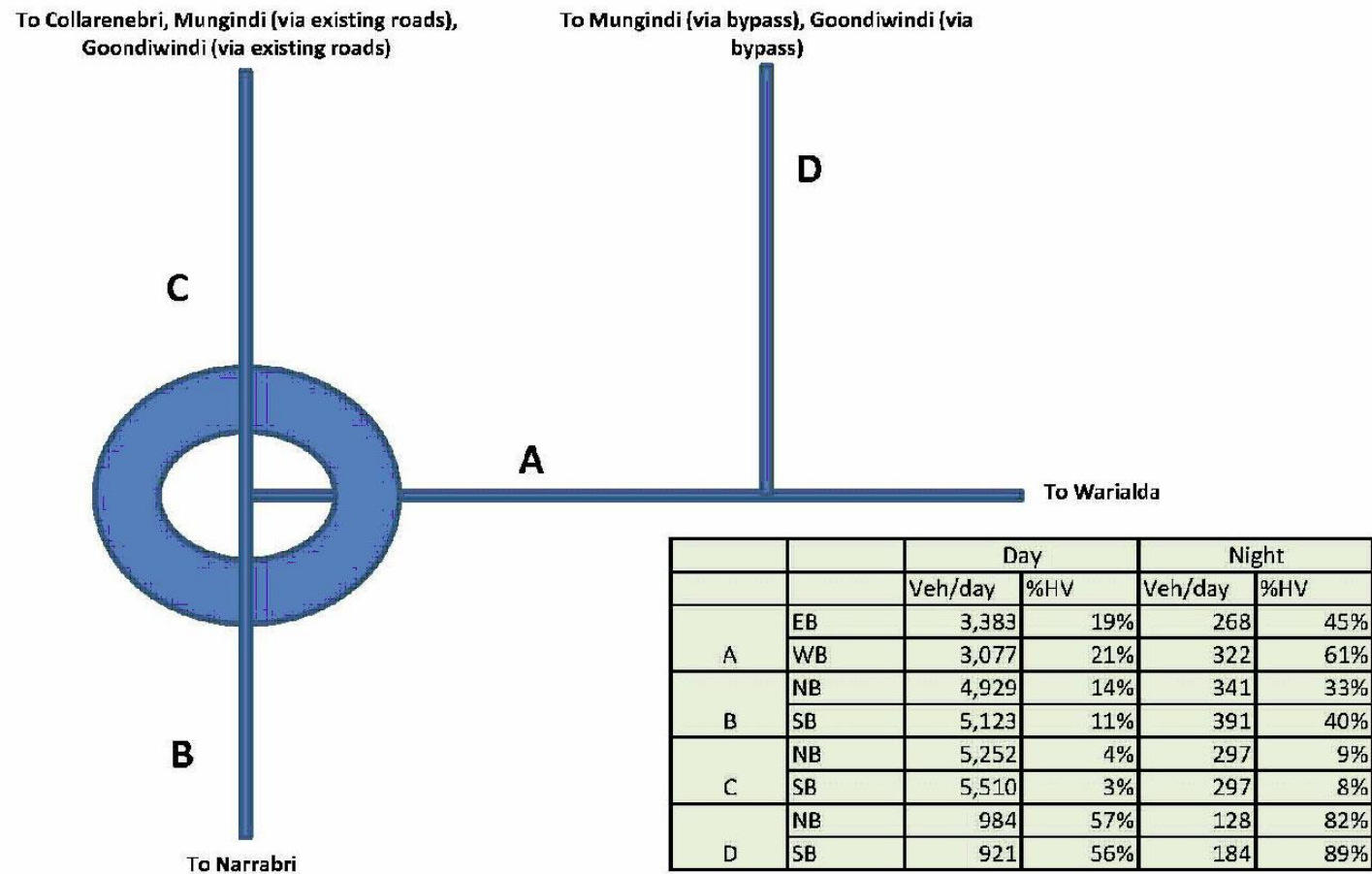


Figure 6-4: Traffic Flow Data Year 2020 –With bypass



Figure 6-5: Receivers adjacent to the route of the proposed Gwydir Highway connection (Refer to Table 6-2 for the Property Reference, Noise logger was located adjacent to 13)

The results of monitoring are typical of locations influenced by road traffic noise. The analysis of the daily noise levels indicate constant background noise levels during the day and variable noise levels at night. Night time traffic profiles along the Gwydir Highway indicate a significant reduction in total vehicle movements and very few heavy vehicles, with the majority of heavy vehicle movements occurring between 6am and 7am. The data show a steady increase in noise levels during the very early morning periods, reaching a background level of 64 dB(A) between 6am and 8am. The current ambient noise levels indicate that day time traffic noise at sensitive receivers along the Gwydir Highway are within 1 dB(A) of the acute noise criterion for road traffic.

Table 6-4 presents summary data for day, evening and night time monitored noise levels. The L_{A90} 10th percentile monitoring data provides the basis for setting noise goals for the construction activity in accordance with the DECC's noise criteria. While the L_{A10} 50th percentile is not used in the setting of noise criteria, the assessment of construction noise levels should recognise influences from the existing environment.

Table 6-4: Unattended noise monitoring – Spa Village Travel Inn (Property Reference #13)

Date	Day		Evening		Night	
	L_{A90} #	L_{Aeq}	L_{A90} #	L_{Aeq}	L_{A90} #	L_{Aeq}
Friday 27 June 2008	49	66	40	62	33	57
Saturday 28 June 2008	44	64	39	62	31	56
Sunday 29 June 2008	42	63	36	60	32	56
Monday 30 June 2008	50	65	41	60	34	57
Tuesday 1 July 2008	49	65	39	62	33	56
Wednesday 2 July 2008	49	67	42	62	31	57
Thursday 3 July 2008	48	65	41	62	32	57
Friday 4 July 2008	48	66	39	62	32	56
Saturday 5 July 2008	43	64	38	61	28	54
Sunday 6 July 2008	42	63	34	61	29	55
Monday 7 July 2008	49	65	40	66	30	55
Tuesday 8 July 2008	52	65	38	62	31	56
Wednesday 9 July 2008	51	65	41	62	35	56
Thursday 10 July 2008	50	66	45	63	34	57
Friday 11 July 2008	47	65	41	62	31	56
Saturday 12 July 2008	44	64	40	61	31	54
Sunday 13 July 2008	43	62	36	60	32	55
Monday 14 July 2008	48	65	39	60	29	55
Median	48	65	39	62	31	56

L_{A90} 10th percentile

6.5.3. Potential environmental impacts

Construction impacts

Due to the small section of road and the existing use, the construction phase of the project would be of limited duration. It is expected that noise impacts will result from the operation of plant and machinery during road works construction from the following typical sources:

- Trucks and graders.
- Excavators.
- Backhoe and front-end loaders.
- Cold milling machines.
- Vibratory and standard rollers.
- Air compressors.

These activities have the potential to create noise and/or vibration for nearby locations at higher levels than would normally be experienced. The assessment of airborne noise is guided by the DECC, Environmental Noise Control Manual (ENCM), Chapter 171 Construction Site Noise.

Vibration impacts are assessed against criteria taken from the German Standard DIN 4150 and the British Standard BS6472 as detailed in the DECC vibration technical guideline.

Restrictions are placed on the hours of construction to ensure that the acoustic amenity of noise sensitive receivers is protected. Hours of operation for construction works associated with the upgrade would follow standard construction times listed below. An allowance for negotiated variations to these times with DoP will be necessary where construction works will need to take place at times outside these hours for safety and access reasons.

- Monday to Friday: 7am to 6pm.
- Saturday: 8am to 1pm.
- No audible construction work to take place on Sundays or public holidays.

The construction activities identified for the project are expected to be limited to the daytime construction hours. These works would include cold milling of the existing road pavement, removal and replacement of the base layer using rolling/ compaction techniques and application of a sprayed bitumen seal. **Table 6-5** outlines the typical activities and related noise levels that would be associated with the construction phase.

Table 6-5: Construction equipment sound power levels

General Activity	Equipment Description	Estimated L_{A10} Sound Power Level dB(A)	Sound Pressure Level at 20m dB(A)
General Road Works	Cold milling machine	115	81
	Vibrating / compaction roller	113	79
	Excavator	112	78
	Generator	111	77
	Pneumatic-tyred roller	111	77
	Grader	111	77
	Backhoe	110	76
	Dump truck	110	76
	Water cart	107	73
	Bobcat	104	70

The noise from construction works would be at their greatest when plant and equipment is operating in close proximity to a noise sensitive receiver location. At the closest point, the road upgrade would be approximately 12 metres from the nearest residences. A worst case assessment scenario for construction noise has been assumed to include at least two pieces of equipment which may be operating within 12 metres of a residential dwelling. The range of the $L_{A10 \text{ } 15 \text{ min}}$ noise impact expected at this distance would be between 81 dB(A) and 88 dB(A) depending on the combination of equipment operating at any one time. The estimated noise impact at these distances would exceed the recommended construction noise levels when compared to the project noise goals although at further distances the estimated noise levels would reduce proportionally.

The effects of vibration in buildings can be divided into three main categories:

- Circumstances where occupants or users of the building are disturbed or inconvenienced.
- Circumstances in which the building contents may be affected.
- Circumstances in which the integrity of the building or the structure may be affected.

Once a construction methodology has been established, areas where vibration impacts may be encountered would be identified. The activity most likely to cause vibration impacts at residential dwellings would be the use of vibratory rollers. Where there is potential for vibration impacts to occur, a dilapidation survey and/or monitoring should be carried out in accordance with relevant DECC and RTA standards and guidelines.

Operational impacts

The potential operational noise impacts of the proposed GHC are associated with road traffic noise resulting from the re-direction of Newell Highway traffic along the Gwydir Highway. Road traffic noise is influenced by many factors relating to the characteristics of the receiving environment, the physical characteristics of the road, and the type, size and behaviour of vehicles that use it. **Table 6-6** lists some important variables that have been considered as part of the noise impact assessment.

Table 6-6: Summary of modelling inputs

Variable	Modelled Data
Traffic numbers	Traffic numbers forecast for the years 2010 (no bypass) and 2020 (with bypass) see Table 6-15
Ground topography	Available data from LPI
Gradient of roadway	Taken from a 3D model of the design alignment
Air and ground absorption	Ground absorption as per SoundPLAN implementation of the CoRTN Algorithm
Height of receivers	1.5 m above ground terrain
The acoustic properties of the road pavement surfaces	Spray seal assumed for the GHC
Traffic Speed	50 km/h through the GHC
Attenuation due to building structures	Building structures have been included in the noise model due to the proximity of the structures near the GHC. These buildings provide shielding for subsequent rows of properties.
Facade Reflection	+2.5 dB(A)
L _{A10} to L _{Aeq} conversion	A reduction of 3 dB(A)

The predicted noise levels resulting from the implementation of the GHC at noise sensitive receivers adjacent to the approved project are identified in **Table 6-7**. The existing traffic noise levels indicate daytime noise levels are currently just below the acute noise criterion for the L_{Aeq 15hr} period. The existing L_{Aeq 9hr} night time traffic noise levels are already at the criterion for an upgraded highway but below the acute noise criterion.

This assessment has identified the L_{Aeq 9hr} night time noise levels as being the critical assessment period. With the advent of the GHC traffic, Alice Street would experience an increase in traffic numbers during the night with a significant growth in the percentage of heavy vehicles at this time. The increase in the L_{Aeq 9hr} over existing noise levels is expected to be approximately 9 dB(A), with the resulting noise impact being above the 60 dB(A) acute noise level criterion. While both the daytime and the night time noise levels are expected to be in the acute range, the increase in night time noise levels will be more significant than the daytime. It should be noted that regardless of which period is used in the assessment of noise impacts, the requirements for noise mitigation measures would be the same. As stated earlier, although they are not classified as a residential receiver, motels adjacent to the GHC have been assessed using residential receiver noise criteria in accordance with the EIS (2002).

Table 6-7: Predicted noise levels L_{Aeq 15 hr} year 2010 and year 2020

Property Reference	Predicted Noise levels		Difference (2020 – 2010)
	Yr 2010 Future Existing (Without GHC)	Yr 2020 Design Year (With GHC)	
1	62	63	+1
5	54	63	+9
6	54	63	+9
7	52	60	+8

Property Reference	Predicted Noise levels		Difference (2020 – 2010)
	Yr 2010 Future Existing (Without GHC)	Yr 2020 Design Year (With GHC)	
8	53	62	+9
9	53	62	+9
10	53	61	+8
11	49	58	+9
13	53	62	+9
19	54	62	+8

The modelling results indicate that the implementation of the proposed GHC would result in an acute noise exposure for both day and night time receivers at nearby residential receivers (**Table 6-8**). In accordance with RTA policy, sensitive receivers that are affected by noise impacts from the GHC would be considered for mitigation measures.

Table 6-8: Predicted $L_{Aeq\ 9\ hr}$ night time noise levels at sensitive receivers - 2020

Property Reference	Predicted Noise levels dB(A) (Unmitigated)	Night Time Noise Criterion dB(A)	Noise Level Exceeds Criteria Base (Y/N)	Noise level is Acute (Y/N)
1	63	55	Y	Y
5	63	55	Y	Y
6	63	55	Y	Y
7	60	55	Y	Y
8	62	55	Y	Y
9	62	55	Y	Y
10	61	55	Y	Y
11	58	55	Y	N
13	62	55	Y	Y
19	62	55	Y	Y

At all locations, with the exception of Location 1, the predicted noise level increase between the 2010 and the 2020 modelled results is greater than 2 dB(A) and with the exception of Location 11 all would exceed the acute noise level criterion. At Location 1 the increase in traffic noise is from normal growth in vehicle numbers and is not related to the GHC. In addition, at the intersection of the Newell and Gwydir Highways, adjacent to Location 1, only minor construction works would be undertaken to widen the roundabout. Where only minor roadwork is to be undertaken the ECRTN notes the following exceptions,

‘..redevelopment does not cover minor road works designed to improve safety, such as straightening curves, installing traffic control devices or making minor road re-alignments.’

While a large proportion of the existing traffic stream will be turning through an additional 90 degrees at the intersection of the Newell and Gwydir Highways, noise levels are not expected to change significantly because of this.

However, given the nature of the traffic mix on the Newell Highway during the evening hours, there is potential for the character of the traffic noise emissions at this location to change. Any change is expected to be the result of vehicles slowing to turn the corner, which may affect the occurrence of maximum noise levels in the vicinity of the roundabout. It should be noted that in any event the maximum noise impacts would only be used to prioritise and rank mitigation strategies, rather than as a decisive criterion *per se* (RTA ENMM, 2001).

An assessment of sleep disturbance has not been undertaken for these receivers as the requirement for noise mitigation comes from the assessment of night time L_{Aeq} noise impacts. Residences in Dover Street and Warialda Street, immediately behind the front row of houses on the Gwydir Highway, may experience noise levels that exceed the sleep disturbance guidelines. It is recommended that these residences are assessed after the opening of the GHC if the proposal is approved in order to identify the actual noise impacts and the necessity for noise mitigation.

Figure 6-6 presents the results of the year 2020 modelling scenario for the night time $L_{Aeq\ 9hour}$ road traffic noise contours.

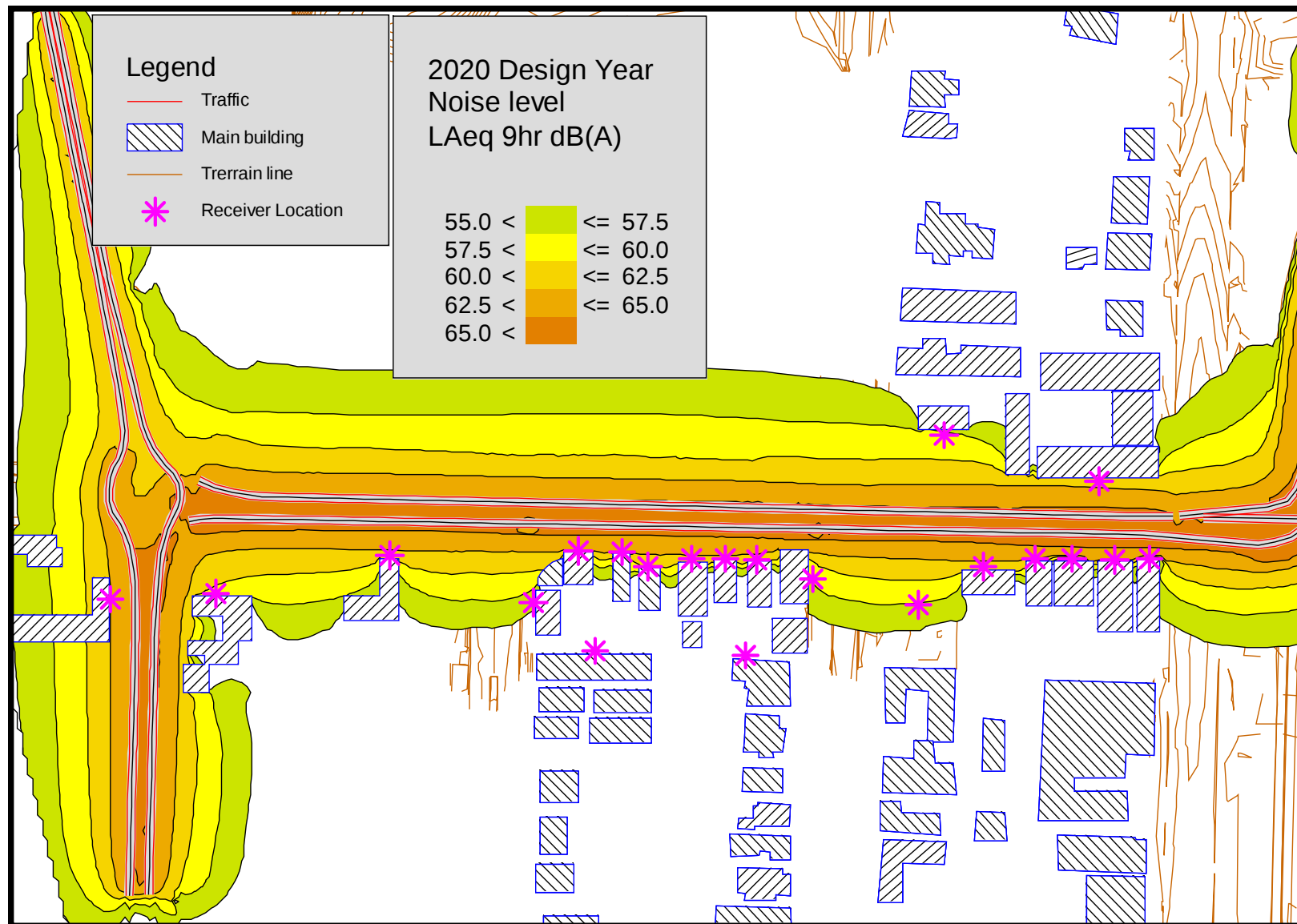


Figure 6-6: Predicted 2020 noise contours (L_{Aeq} 9 hr)

6.5.4. Identification of commitments within EIS and Representations Report

Noise mitigation and management measures were developed as part of the EIS (2002) and subsequent Representations Report (2003). These measures include the incorporation of noise and vibration measures into the Construction Environmental Management Plan and other standard measures such as regular inspection of plant and equipment, undertake noise monitoring during and post construction and keeping residents informed of the works.

Conditions of approval 14 and 15 in Schedule 3 contain provisions for operational noise and vibration management. Accordingly, these conditions would apply to the GHC.

6.5.5. Additional impact mitigation and management requirements

The options for reducing noise impacts can be applied to the source of emissions, the transmission path or at the receiver location. These methods are best explained through the following examples:

- Emission source - reduced vehicle noise emissions, low noise pavements, reduced speed zones.
- Transmission path - noise walls or mounds between the receiver location and the noise source.
- Receiver location - architectural acoustic treatments such as upgraded windows.

These impact mitigation methods are general and are not always applicable to individual road projects. It should be noted that for the upgraded section of road along Alice Street, the proposed pavement reconstruction would generally assist in mitigation of existing noise emissions by providing a smoother riding surface. For the GHC low noise pavements would also provide some benefit but due to the restriction to speed in this zone of 50 km/h, the extent of this benefit is difficult to quantify. It is expected that the reduction in overall noise levels would be in the order of approximately 2 dB(A) and would be dependent on the type of low noise pavement used.

Solid continuous barriers can provide benefits in noise reduction between 5-15 dB(A), depending on the circumstances and application. For the residences adjacent to the Gwydir Highway, the preliminary assessment of noise barriers indicates that the implementation of a noise wall as a primary mitigation method would not be possible as there would be significant issues with property access and aesthetics. Initial discussions with the local community indicate that the implementation of noise walls would not be desirable. Disadvantages associated with installation of barriers include:

- Obstruction to residences' current view of Jellicoe Park.
- An obstruction to natural light (overshadowing).
- Limited access to individual property driveways.
- Creation of a surface that could be subject to graffiti.

As a result of the disadvantages associated with the barriers, the use of architectural treatments to reduce noise impacts inside a dwelling is the recommended form of mitigating noise for the GHC.

Treatments to individual dwellings will be dependent on the age and construction of the property and may comprise of one or more of the following noise reduction techniques:

- Air-condition the living areas and sleeping quarters (allows windows to be closed).
- Install replacement windows or doors.
- Insulate walls.
- Floor treatments (generally older houses).
- Seal exterior wall penetrations.
- Caulk windows, window frames.
- Apply weather strip to exterior doors and interior operable window frames.

Architectural acoustic treatments are the recommended form of mitigation for existing dwellings. The purpose of architectural treatments is to allow the residences to keep the road facing windows and doors closed and thereby effectively “shut out” traffic noise. In these circumstances it could be anticipated that a 10 dB decrease in noise levels within the residence would be achieved.

In terms of the potential approach to specific architectural treatments for the current project, each of the potentially affected residences (as identified in **Table 6-2**) have been individually reviewed for construction type to enable the initial identification of the most likely approach to architectural treatment. The details of the building construction have been summarised in **Table 6-9** along with a preliminary indication of potential mitigation strategies that might be applied to these buildings. It should be noted that the suggested mitigation measures are based on a visual inspection of the properties only. A detailed assessment by a qualified builder or building inspector will be required to confirm the suitability of proposed measures. It should also be noted that the recommendations for mitigation are not exhaustive for each dwelling. Where alternative measures are identified, these options should also be considered in any offer of noise mitigation to these residents.

■ **Table 6-1 Building construction and suggested architectural treatments**

ID	Property Address	Building construction	Suggested mitigation measures	Expected Outcome
5	38 Alice Street	This is a residential dwelling comprising of a weather board facade, Fibrous cement/ panelled front gable and a corrugated iron roof. The dwelling has wooden framed windows with a front verandah and front window awning.	Treatments to this property could include: ■ Relocation of front roof cavity vent. ■ Acoustic seals for windows and doors on affected facades. ■ Mechanical ventilation to allow windows and doors to remain closed. ■ Potential upgrade of windows and doors to higher R_w rating.	Based on the external construction of the building and the assumption that walls are internally lined, additional mitigation measures are expected to achieve the minimum noise reduction of 10 dB(A) from outside to inside for the dwelling.
6	36 Alice	This is a residential dwelling with a	Treatments to this	Based on the external

ID	Property Address	Building construction	Suggested mitigation measures	Expected Outcome
	Street	weather board cladding and gable and a corrugated iron roof. The windows appear to be an aluminium framed construction behind a security grill. Doors and windows on the western facade form a high percentage of the facades area. There is also a single window in the front facade at the edge of the property boundary.	property could include: ■ Mechanical ventilation to allow windows and doors to remain closed. ■ Acoustic seals for windows and doors on affected facades. ■ Potential upgrade of windows and doors to a higher Rw rating.	construction of the building and the assumption that walls are internally lined, additional mitigation measures are expected to achieve the minimum noise reduction of 10 dB(A) from outside to inside for the dwelling.
7	34 Alice Street	This is a two storey residential dwelling with a weather board cladding and a tiled roof. The windows appear to be an aluminium framed construction behind a security grill. The entrance to the property is from the adjacent laneway on the eastern side of the building. The eastern side of the second storey has a window and sliding glass doors that open on to a deck. The building is set back from the front boundary by approximately 5-6 metres.	Treatments to this property could include: ■ Mechanical ventilation to allow windows and doors to remain closed. ■ Acoustic seals for windows and doors on affected facades. ■ Potential upgrade of windows and doors to higher Rw rating.	Based on the external construction of the building and the assumption that walls are internally lined, additional mitigation measures are expected to achieve the minimum noise reduction of 10 dB(A) from outside to inside for the dwelling.
8	32 Alice Street	This is a residential dwelling with a weather board cladding and a combination of weatherboard and fibrous cement front gable. The roof is corrugated iron sheeting. The windows appear to be an aluminium framed construction behind a security grill. The building is set back from the front boundary by approximately 2-3 metres.	Treatments to this property could include: ■ Mechanical ventilation to allow windows and doors to remain closed. ■ Acoustic seals for windows and doors on affected facades. ■ Potential upgrade of windows and doors to higher Rw rating.	Based on the external construction of the building and the assumption that walls are internally lined, additional mitigation measures are expected to achieve the minimum noise reduction of 10 dB(A) from outside to inside for the dwelling.
9	30 Alice Street	This is a residential dwelling comprising of a weather board facade, Fibrous cement/ panelled front gable and a corrugated iron roof. The front windows are a significant percentage of the front facade. The dwelling has a mixture of window types with leadlight, operable windows on the eastern side of the building. The dwelling has an air-conditioning condenser visible on the roof. The building is set back from the front boundary by approximately 3-	The building appears to be air-conditioned (has a condenser unit on roof). Treatments to this property could include: ■ Sealing gaps between ground and the underside of the front of the house. ■ Relocation of front roof cavity vent. ■ Acoustic seals for windows and doors on affected facades. ■ Potential upgrade	Based on the external construction of the building and the assumption that walls are internally lined, additional mitigation measures are expected to achieve the minimum noise reduction of 10 dB(A) from outside to inside for the dwelling. Particular attention will need to be paid to the glazing at the front of the building.

ID	Property Address	Building construction	Suggested mitigation measures	Expected Outcome
		4 metres.	of windows and doors to higher Rw rating.	
10	28 Alice Street	This is a residential dwelling comprising of a weather board facade, Fibrous cement/ panelled gable and a corrugated iron roof. The windows in the front facade appear to be an aluminium framed construction behind a security grill. The dwelling has an air-conditioning condenser visible on the roof. The building is set back from the front boundary by approximately 2-3 metres.	The building is already air-conditioned which means that windows and doors can remain closed where necessary. Additional treatments may include: - Relocation of ceiling vent. - Acoustic seals for windows and doors on affected facades. - Potential upgrade of windows and doors to higher Rw rating.	Based on the external construction of the building and the assumption that walls are internally lined, additional mitigation measures are expected to achieve the minimum noise reduction of 10 dB(A) from outside to inside for the dwelling.
11	26 Alice Street	This is a commercial shop front with a residential dwelling at the rear. The residence is a masonry construction with a corrugated iron roof. The dwelling/ shop has an air condition condenser visible from the roof.	The building is already air-conditioned which means that windows and doors can remain closed where necessary. Additional treatments may include: - Acoustic seals for windows and doors on affected facades. - Potential upgrade of windows and doors to higher Rw rating.	Based on the external construction of the building implementation of additional mitigation measures are expected to achieve the minimum noise reduction of 10 dB(A) from outside to inside for the dwelling.
13	300 Warialda Street Moree Spa Motor Inn	Single storey building comprising of rendered brick facades and a tile roof. The facades have aluminium framed windows facing the street, with entrances to the rooms facing the inner courtyard. The building facade is set back approximately 1-2 metres from the boundary fence. The rooms do not appear to be air conditioned.	Treatments to this property could include: - Mechanical ventilation to allow windows and doors to remain closed. - Acoustic seals for windows on affected facades. - Potential upgrade of windows to higher Rw rating.	Based on the external construction of the building implementation of additional mitigation measures are expected to achieve the minimum noise reduction of 10 dB(A) from outside to inside for the dwelling.
19	21 Alice Street Spa Village Travel Inn	Double storey brick building with a tile roof. The facades have aluminium framed windows facing the street, with entrances to the rooms on the far side of the building. The building facade is set back approximately 3-4 metres from the boundary fence. The rooms do not appear to be air conditioned.	Treatments to this property could include: - Mechanical ventilation to allow windows and doors to remain closed. - Acoustic seals for windows on affected facades. - Potential upgrade of windows to higher Rw rating.	Based on the external construction of the building implementation of additional mitigation measures are expected to achieve the minimum noise reduction of 10 dB(A) from outside to inside for the dwelling.

6.6. Traffic and transport

An assessment of potential traffic and transport impacts for the construction and operation of the proposed GHC has been undertaken. This section will address the potential traffic and transport impacts and specifically the impacts on the temporary redistribution of traffic and the associated impacts on the safety, performance and efficiency of the road network, including the Gwydir and Newell Highways, the surrounding local streets and the level crossing. The assessment also gives consideration to potential impacts on businesses and recreational facilities as a result of alterations to the road and pedestrian network, and access arrangements. The full report arising from the traffic and transport study is attached in **Appendix C**.

6.6.1. Assessment methodology

To determine the current traffic volumes in the study area, 7-day traffic volume counts were conducted at various locations on the Newell Highway and the Gwydir Highway during April and May 2008. Traffic forecasts presented in the EIS (2002) were devised using growth rates based on historic AADT data from the RTA. It should be noted that the traffic volumes in the EIS (2002) were revised in the Representations Report (2003).

The SIDRA Intersection (Version 3.2) analytical modelling software (SIDRA) was used to analyse the existing operation of the Gwydir Highway / Newell Highway intersection and the bypass / Alice Street intersection. SIDRA calculates the amount of delay experienced by vehicles using an intersection and gives a Level of Service (LoS) rating. The LoS rating indicates the relative performance of that intersection with regard to the average delay (seconds per vehicle) experienced by vehicles at the intersection. The LoS criteria set by the RTA is outlined in **Table 6-10**.

Table 6-10: Level of Service (LoS) criteria

Level of Service	Average Delay (seconds / vehicle)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays	At capacity, requires other control mode
F	More than 70	Roundabouts require other control mode	

Source: Guide to Traffic Generating Developments, EIS 2002

Parking occupancy surveys were also carried out to gauge existing supply and demand of parking spaces along the Gwydir Highway and surrounding local streets, and to determine the potential

impacts of the GHC on parking. Assessment of road safety was based on RTA crash records for the Newell Highway (between Bullus Drive and Albert Street) and Gwydir Highway (between the Newell Highway and Morton Street) from 2003 to 2007 inclusive.

6.6.2. Existing environment

Road network

Between the Newell Highway (Frome Street) and Morton Street the Gwydir Highway is also known as Alice Street.

Alice Street runs east-west between Frome Street and the Werris Creek to Mungindi railway line. Alice Street is a main thoroughfare for vehicles wishing to cross the railway, one of two railway crossings in the town. It has one lane in each direction with 45 degree angled (rear to kerb) parking on both sides of the road.

Pedestrian activity along Alice Street was observed to be low, with some activity at the post office and the bakery on the corner of Warialda Street. Pedestrians were observed crossing Alice Street in order to access these facilities from their parked cars. Pedestrian refuges are located in the median of Alice Street, on the eastern and western approaches to Warialda and Dover Streets and the eastern approach to Frome Street. Observations suggest that the majority of pedestrians do not utilise these refuges, instead crossing the road in the vicinity of their vehicles.

Streets connected to the GHC include Dover Street, Warialda Street and Gosport Street which run in a north-south direction. All of these local streets have a wide pavement, operating as two-lane two-way streets with parking on either side. Median islands and kerb blisters have been provided at some intersections to improve delineation and safety.

Traffic volumes

The traffic volumes analysed in the EIS (2002) used the RTA permanent count stations shown in **Figure 6-7**. They were:

- Newell Highway, east of Mungindi Road, station number 91.382 (site 1).
- Gwydir Highway, three kilometres east of the Newell Highway, station number 91.173 (site 2).

- Newell Highway, south of Airport Road, station number 91.601 (site 3).



Figure 6-7: Traffic volume comparison locations

The traffic volumes identified in the EIS (2002) were revised in the Representations Report (2003) for the Newell Highway bypass of Moree town centre. Using the forecast volumes in the Representation Report (2003), traffic volumes have been calculated to allow comparison with current traffic volumes.

A comparison between the traffic volumes presented in the Representations Report (2003) and current traffic volumes, seasonally adjusted to estimate AADT, is presented in **Table 6-11**.

Table 6-11: Traffic volume comparison

Station Number	Representations Report Traffic Volumes (interpolated to 2008)	2008 Traffic Volumes (from 7-day RTA tube counts)
91.382 (Newell Highway north)	7,762 (axle pairs ¹ per day)	5,897 (axle pairs per day)
91.601 (Newell Highway south)	4,508 (vehicles per day)	3,183 (vehicles per day)
91.173 (Gwydir Highway east)	2,933 (vehicles per day)	1,546 (vehicles per day)

¹ A two-axle car is one axle pair; a three-axle truck is 1.5 axle pairs.

The current observed traffic volumes are significantly lower than those forecast in the Representations Report (2003). The differences can be attributed to the methodology used in the predictions of future traffic volumes and the effect of drought.

The adjusted growth rates used in the forecast of future traffic is presented in **Table 6-12**. Note that these growth rates apply only to external traffic travelling to or from Moree. A growth rate of zero has been adopted for local traffic with origins and destinations in Moree, based on RTA historic data. Traffic at RTA Count Station 91.385, on Frome Street south of Alice Street, has grown at a rate of 0.06 per cent, or eight vehicles, per annum between 1980 and 2008. Local traffic accounts for the bulk of traffic on the Newell and Gwydir Highways through Moree.

Table 6-12: Adjusted growth rates

Highway	Growth Rate Adopted in EIS(1972-1999)	Adjusted Growth Rate (1972-2008)
Newell Highway north	2.5%	1.7%
Newell Highway south	2.5%	1.06%
Gwydir Highway east	1.4%	1.08%
Gwydir Highway west	1.9%	1.66%
Carnarvon Highway	1.9%	1.7% ¹

Existing (2008) daily traffic volumes in the vicinity of the approved project, based on the seasonally adjusted 7-day tube counts, are presented in **Table 6-13**.

Table 6-13: Existing (2008) daily traffic volumes

Location	Light Vehicles	Heavy Vehicles		Total
		Rigid	Articulated	
Newell Highway (south of Alice Street roundabout) (Stn. 91.385)	8,970 (87%)	484 (5%)	832 (8%)	10,286
Alice Street (east of roundabout) (Stn. 91.377)	4,934 (91%)	382 (7%)	80 (2%)	5,396
Alice Street (west of roundabout) (Stn. 91.388)	2,155 (95%)	102 (5%)	4 (0%)	2,261
Alice Street (east of roundabout, between Gosport Street and railway crossing) (Stn. 91.376)	4,199 (92%)	308 (7%)	68 (1%)	4,575

Intersection operation

The results of the SIDRA analysis for the roundabout intersection between the Newell Highway / Gwydir Highway intersection and the bypass / Alice Street intersection under existing traffic volumes are shown in **Table 6-14** below. The results show that the Gwydir Highway / Newell Highway intersection is operating at a good LoS in both the morning and afternoon peak hours. Vehicles arriving at the intersection from west of the Gwydir Highway and needing to turn right into the Newell Highway experienced the highest average delay. The bypass / Alice Street intersection would also operate at a good LoS (if it were operational today), with acceptable delays and spare capacity.

¹ Year 2008 volumes for Carnarvon Highway were not available. Table 4.1 of the EIS shows Carnarvon Highway volumes to be similar to Newell Highway north, so the growth rate of Newell Highway north has been used as a proxy.

Table 6-14: Existing intersection operation- 2008

Intersection	AM Peak		PM Peak	
	LoS	Average Delay (seconds)	LoS	Average Delay (seconds)
Gwydir Highway / Newell Highway	A	11	A	12
Bypass / Alice Street	B	27	B	27

LoS = Level of Service

Parking

The area of the parking occupancy survey is shown in **Figure 6-8**. The Gwydir Highway and Warialda Street (north of the Gwydir Highway) contain 45 degree angled parking (rear to kerb) on both sides of the road. Warialda Street (south of the Gwydir Highway) and Dover Street contain parallel parking. A number of 45 degree angle (rear to kerb) parking spaces are provided on the eastern verge of Gosport Street near the tennis courts, and on the western verge between the tennis courts and Anne Street. Parallel parking is provided on both sides of the roads for the section of Gosport Street north of the Gwydir Highway. It is estimated that approximately 125 parking spaces are available along the affected section Alice Street.

The demand for parking spaces along the Gwydir Highway, Warialda Street, Dover Street and Gosport Street was observed at various intervals throughout the day. The parking demand was very low, with a maximum of four cars observed in Warialda Street adjacent to Jellicoe Park, four cars on the Gwydir Highway adjacent to Jellicoe Park and opposite the bakery, four cars on the Gwydir Highway adjacent to the post office, and six cars on Gosport Street in the vicinity of the Victoria Hotel. Parked cars were also observed on Warialda Street south of the Gwydir Highway and Dover Street.

Parking spots are exhausted along the Gwydir Highway and Warialda Street (north of the Gwydir Highway) on the first Sunday each month due to the markets held at Jellicoe Park. There is also some overflow on Warialda Street (south of the Gwydir Highway) and Dover Street.



Figure 6-8: Parking occupancy survey area

Pedestrian access and mobility

In the vicinity of the GHC, the provision of concrete footpaths is concentrated on the southern side of Alice Street between Frome Street and Gosport Street, west of the railway corridor. In addition, there are three formalised pedestrian crossings of the rail corridor – one on either side of the Gwydir Highway and one at the northern end of Moree railway station platform. This is shown in **Figure 6-9**.

There are no formalised pedestrian crossing facilities across Alice Street, however, refuge islands are provided on either side of the intersection with Warialda Street. It was observed that the majority of pedestrians crossing Alice Street in the vicinity of Warialda Street did not use the refuge islands.

Recently constructed median islands in some side streets obstruct pedestrian, wheelchair and stroller access as they do not allow level access through the median island.



Figure 6-9: Existing footpaths in the vicinity of the proposed Gwydir Highway connection

Cyclist accessibility

No formalised bicycle facilities exist on Alice Street, with cyclists utilising either the footpath or the formed shoulder alongside parked vehicles. Currently, cyclists sharing the road with vehicles are required to merge into the travel lane on the approach to and egress from the roundabout at the western end of Alice Street and in order to negotiate kerb blisters installed for pedestrian safety.

Road safety

Crash records for the Newell and Gwydir highways through Moree were obtained from the RTA for the five years 2003 to 2007 inclusive. For the purpose of assessment, only crashes that occurred on the Newell Highway between Bullus Drive and the Carnarvon Highway, and on the Gwydir Highway between the Newell Highway and the railway line, were included.

For the section of the Newell Highway south of Alice Street, 16 crashes were recorded in the period including one fatality involving a cyclist and a truck. In three crashes a heavy vehicle was recorded as being the key vehicle. Calculation of a crash rate allows comparison of locations with different traffic volumes and other characteristics. Crash rates are usually expressed in terms of crashes per 100 million vehicle kilometres travelled (100MVKT). Crashes on this section of the Newell Highway occur at a rate of 47 per 100MVKT. To provide some context, the NSW state average crash rate is approximately 75 crashes per 100MVKT.

On the Newell Highway between Alice Street and the Carnarvon Highway, 20 crashes were recorded. There were no fatalities and three crashes where a truck was the main vehicle. The crash rate of this section of road has been estimated at 42 per 100MVKT.

Alice Street between the Newell Highway and the railway line was the scene of three crashes in the five year period. There were no fatalities and one crash where a truck was the key vehicle. A crash rate of 55 per 100MVKT was estimated.

6.6.3. Potential environmental impacts

Construction impacts

There is the potential for traffic disruption during construction, particularly along Alice Street during the removal and replacement of the pavement. Potential traffic impacts during construction would also be due to small increases in traffic volumes from construction work vehicles and haulage of materials to and from the construction site.

The GHC would be constructed in stages and a Construction Staging and Traffic Management Strategy is provided in **Section 6.6.5**. The staging plan would minimise disruption to traffic travelling along the Gwydir Highway. Pedestrian access to businesses will be maintained at all times, as will access to properties along Alice Street. Construction activities will also maintain safety for cyclists utilising Alice Street.

Operational impacts

Traffic volumes

The EIS (2002) and the Representations Report (2003) were used as the primary sources of information regarding traffic patterns and forecast volumes in the study area. These were supplemented with traffic count data collected in May 2008, as described previously. Traffic volumes were forecast for the anticipated year of opening (2010) and 10 years after opening (2020), at the following locations (see **Figure 6-10**):

- Alice Street, between Frome Street and the proposed bypass (site A).
- Newell Highway (Frome Street), south of the Alice Street roundabout (site B).
- Newell Highway (Frome Street), north of the Alice Street roundabout (site C).
- The bypass north of Alice Street (site D).



Figure 6-10: Traffic volume forecasting locations

Table 6-15 shows the forecast light and heavy vehicle average daily volumes for 2008 (existing) and with the section of the bypass north of the Gwydir Highway open in 2010 and 2020. A 2010 with-bypass scenario is also included to illustrate the change in traffic that would eventuate when the section of the bypass south of the Gwydir Highway is opened.

Table 6-15: Annual average daily traffic data

Location	Vehicle Type	Gwydir Highway (Site A)		Newell Highway (Site B)		Balo Street (Site C)		Bypass north of the Gwydir Highway (Site D)	
		EB	WB	NB	SB	NB	SB	NB	SB
2008 Existing	Light	2,613 (93%)	2,321 (90%)	4,353 (86%)	4,617 (88%)	5,596 (87%)	5,860 (89%)	n.a.	n.a.
	Heavy Rigid	163 (6%)	219 (8%)	267 (5%)	217 (4%)	319 (5%)	264 (4%)	n.a.	n.a.
	Heavy Articulated	40 (1%)	40 (2%)	426 (8%)	406 (8%)	508 (8%)	492 (7%)	n.a.	n.a.
	Total	2,817	2,580	5,047	5,240	6,422	6,616	n.a.	n.a.
2010 No bypass	Light	2,623 (93%)	2,330 (90%)	4,375 (86%)	4,643 (88%)	5,620 (87%)	5,888 (88%)	n.a.	n.a.
	Heavy Rigid	166 (6%)	220 (9%)	273 (5%)	224 (4%)	324 (5%)	271 (4%)	n.a.	n.a.
	Heavy Articulated	41 (1%)	40 (2%)	436 (9%)	419 (8%)	517 (8%)	506 (8%)	n.a.	n.a.
	Total	2,830	2,591	5,084	5,286	6,462	6,665	n.a.	n.a.
2010 With bypass	Light	2,813 (80%)	2,484 (77%)	4,375 (86%)	4,643 (88%)	5,217 (96%)	5,521 (97%)	404 (40%)	367 (39%)
	Heavy Rigid	170 (5%)	171 (5%)	273 (5%)	224 (4%)	196 (4%)	157 (3%)	128 (13%)	114 (12%)
	Heavy Articulated	540 (15%)	574 (18%)	436 (9%)	419 (8%)	44 (1%)	38 (1%)	473 (47%)	468 (49%)
	Total	3,523	3,228	5,084	5,286	5,458	5,716	1,005	949
2020 With bypass	Light	2,876 (79%)	2,562 (75%)	4,486 (85%)	4,769 (86%)	5,298 (95%)	5,602 (96%)	446 (40%)	428 (39%)
	Heavy Rigid	191 (5%)	198 (6%)	302 (6%)	260 (5%)	205 (4%)	165 (3%)	149 (13%)	143 (13%)
	Heavy Articulated ¹	585 (16%)	638 (19%)	482 (9%)	485 (9%)	46 (1%)	40 (1%)	518 (47%)	535 (48%)
	Total	3,651	3,399	5,270	5,514	5,549	5,807	1,112	1,105

1. Articulated trucks on Balo Street once the GHC is opened will include only semi trailers. B-Doubles and road trains will not be permitted to remain on Balo Street.

In 2010 when the proposed GHC is likely to be opened, there will be a decrease in traffic in Balo Street north of Alice Street of around 15 per cent, including a reduction of over 95 per cent in articulated heavy vehicles. Traffic in Alice Street between Frome Street and the bypass will increase by 25 per cent, including a more than doubling of heavy vehicles. No change is expected on Frome Street south of Alice Street. The section of the bypass north of the Gwydir Highway would carry around 1,000 vehicles per direction, including a large proportion of heavy vehicles (approximately 60 per cent).

It is expected that the GHC will provide a travel time saving on average of 2.7 minutes for through traffic, compared to the existing route through the Balo Street CBD precinct, with associated delays from intersections (including signal and roundabout controlled intersections), pedestrian crossings,

school zones, and parking manoeuvres. The speed limit on the bypass would be predominately 80 km/h compared to the 50 km/h speed limit in the Moree town centre and even lower actual speed.

Intersection operation

The intersection of Alice Street / Frome Street and Alice Street and the Bypass were analysed with the future traffic volumes expected once the bypass north of the Gwydir Highway and the GHC are in operation. The results of the SIDRA analysis are shown in **Table 6-16**.

The SIDRA analysis indicates that the traffic generated by the proposed redevelopment will have very little impact on the operation of the intersection of Alice Street and Frome Street, with Level of Service (LoS) remaining at “A” for both the morning and the afternoon peaks. There is no change in average delay at the intersection. The bypass / Alice Street intersection is also operating at a good Level of Service, with acceptable delays and spare capacity.

Table 6-16: Intersection operation analysis for the Gwydir Highway / Newell Highway intersection

Year	AM Peak		PM Peak	
	LoS	Average Delay (seconds)	LoS	Average Delay (seconds)
2008 (existing)	A	11	A	12
2010	A	12	A	12
2020	A	12	A	12

LoS = Level of Service

The intersection of the bypass / Alice Street was analysed with the future traffic volumes to quantify the impact that the intersection would have on local traffic and operation of the rail level crossing. The results of the SIDRA analysis are shown in **Table 6-17**.

Table 6-17: Intersection operation analysis for the bypass / Alice Street intersection

Year	AM Peak		PM Peak	
	LoS	Average Delay (seconds)	LoS	Average Delay (seconds)
2008 (existing)	B	27	B	27
2010	C	29	C	29
2020	B	27	B	27

The results show that there is only a marginal difference of two seconds in the average delay between each of the years evaluated. The resultant Level of Service for the operation of the intersection is either B or C at the time of opening and in future years. Both the average delay experienced and the resultant Level of Service are the same for both the AM and PM peak traffic periods. The marginal difference in average delay is likely to be due to small variations between each iteration of the analysis and is not statistically significant.

The signalised intersection of the proposed bypass and Alice Street will be linked to the operation of the railway level crossing to ensure that vehicles have sufficient time to clear the rail corridor and are not prevented from exiting the crossing by queued vehicles held on “stop” at the signalised intersection.

Road safety

As there will be no substantial changes to the road conditions, it can be assumed that crashes will continue to occur at the same rate. However, the volume of traffic will change in some locations, and this will impact on the number of crashes.

Table 6-18 shows the expected change in crash frequency in 2010, with and without the northern section of the bypass and GHC. Due to the increase in traffic volume on Alice Street, a small increase in crashes may occur. Similarly, a reduction in crashes is expected on the Newell Highway north of Alice Street. There is no change expected on the Newell Highway south of Alice Street.

Table 6-18: Change in expected crash frequency resulting from the GHC

Location	Crash Rate per 100MVKT	Expected crashes per year (2010)		
		No GHC	With GHC	Change
A	55	0.6	1.1	+0.5%
B	47	3.2	3.2	0%
C	42	4.0	3.4	-0.6%
Total		7.8	7.7	

The Safety performance of the intersection of Alice Street / Bypass and the rail level crossing was assessed through a safety audit, undertaken in accordance with the *Accident Reduction Guide Part 2 Road Safety Audits (RTA, 2005)*. This resulted in the following traffic management recommendations:

- To minimise the impact of the proposed bypass / Alice Street intersection on the rail level crossing, the following measures are proposed which would improve safety at the intersection by simplifying traffic movement and reducing potential queuing at the intersections of Alice Street with Gosport Street and the bypass, and the railway level crossing:
 - Allow only left turn in/out movements from Gosport Street on northern and southern approaches to Alice Street.
 - The right turn into Gosport Street south will be retained, facilitating access from Alice Street to the Caltex fuel depot, other businesses and the Moree railway station.
 - Signposting, detailing altered access arrangements for Gosport Street north of Alice Street, will be installed to inform drivers that they are required to utilise Warialda Street and River Street to access the childcare centre and Moree Spa Motel as the right turn from Alice Street into Gosport Street north is restricted.

Further safety features, developed with the rail authorities, will be incorporated into the final intersection design including boom gates, flashing lights and bell, passive pedestrian crossing facilities, signage and line-marking, and traffic light coordination will be implemented to provide full coordination between the rail level crossing protection and adjacent roadway intersection signals.

Parking

The conversion to parallel parking in Alice Street will result in an overall reduction in the number of available spaces (from approximately 125 spaces to approximately 45 spaces). Only in exceptional circumstances (for instance, during the monthly markets at Jellicoe Park) would demand for parking in Alice Street exceed supply. During these times sufficient parking spaces are available in streets off Alice Street. During normal operation, the proposed parking will be more than sufficient. There will be no change to parking provision in Warialda Street, River Street, Gosport Street and Dover Street.

Pedestrians

It is proposed to install pedestrian refuges at five locations in Alice Street to assist pedestrians to safely cross Alice Street (refer to **Figure 2.2**). Pedestrian refuges provide an opportunity for a road to be crossed in two stages, where it would be difficult and/or dangerous to cross in a single movement. Similar facilities are currently installed along Frome Street, where there are kerb ramps and pedestrian refuges at most intersections.

The main reason for nominating pedestrian refuges over other facilities is that the forecast volume of traffic on Alice Street and the number of pedestrians likely to cross Alice Street do not warrant provision of pedestrian (zebra) crossings. Sight distance along Alice Street is very good, due to the straight alignment, and vehicles speeds will be relatively low due to the proximity of the Alice Street / bypass and Alice Street / Frome Street intersections.

Kerb extensions will be used in conjunction with refuge islands to minimise the distances that pedestrians are required to cross. A signalised crossing facility will be provided as part of the signalised intersection Alice Street and the bypass. Dedicated pedestrian phases will allow pedestrians to cross safely.

Cyclist accessibility

No formalised bicycle facilities are to be installed as part of the GHC, with cyclist facilities to remain unchanged. The installation of additional pedestrian refuges and kerb blisters will result in cyclists utilising more of the roadway and less of the shoulder as they navigate along the length of Alice Street. Cyclists will continue to use the existing off road path along Jellicoe Park connecting Warialda Street to the Newell Highway.

Although additional traffic is expected to utilise Alice Street as a result of the GHC's construction, the proposed arrangement will satisfy the relevant design standards, this arrangement along with the gaps in traffic provided by the traffic signals will result in continued safe operation for cyclists. The level of safety afforded to cyclists is not expected to change.

Bicycle safety along Balo Street is expected to improve as a result of the GHC, as vehicle volumes (especially heavy vehicle volumes) are expected to decrease. The proposed decrease in speed along Balo Street will serve to further increase safety for cyclists.

Businesses and recreational facilities

Balo Street

As the majority of heavy vehicles utilising Balo Street are passing through the town and do not stop, the reallocation of these vehicles to the GHC and northern bypass is not expected to result in a decrease in patronage to businesses and facilities along Balo Street. The reduced volumes of heavy vehicles should instead result in an increase in safety and accessibility for those businesses.

While a number of light vehicles will also be diverted onto the GHC and northern bypass, it is estimated that approximately 85 per cent of existing traffic would still utilise Balo Street. A high proportion of the 15 per cent reduction of existing traffic passing through the town centre area does not stop. As a result, the impact of the GHC on the businesses and facilities along Balo Street is expected to be minimal.

Alice Street

Access to businesses and recreational facilities along Alice Street are to be maintained throughout the construction period, with parking to be maintained on one side of Alice Street during construction. Current and proposed off-road cycle provision would not be impacted.

It is anticipated that those businesses located along Alice Street, and on Frome Street south of the GHC, may experience a slight increase in patronage following the opening of the GHC as through vehicles stop here due to ease of parking. The increased number of pedestrian refuges and designated crossing points along Alice Street will result in increased accessibility to these facilities despite the anticipated increase in traffic.

6.6.4. Identification of commitments within EIS and Representations Report

Traffic and transport mitigation and management measures were developed as part of the EIS (2002) and subsequent Representations Report (2003). These measures include the incorporation of traffic and transport measures into the construction environmental management plan, such as the construction of temporary accesses and, where necessary, notifying residents and businesses of potential traffic and access disruptions. Traffic management would be provided during construction and would include manual traffic control and provision of temporary barriers and markers.

Condition of approval 17 in Schedule 3 requires the implementation of traffic measures as outlined within **Section 6.6.5** of this EA.

6.6.5. Additional impact mitigation and management requirements

Construction traffic management

A Construction Staging and Traffic Management Strategy has been produced to identify the broad staging of construction works with special consideration of the site-specific and project specific constraints. The strategy identifies the following staging:

- Phase 1 Construction Staging: All heavy vehicles are diverted around the intersection of the Newell Highway and Gwydir Highway using the approved heavy vehicle routes, while traffic on Alice Street will be confined to the southern half of the carriageway to facilitate construction of the northern half of the carriageway. Temporary traffic signal control will be used at the Newell Highway and Gwydir Highway roundabout to allow partial construction of the roundabout.
- Phase 2 Construction Staging: Heavy vehicles will be permitted to use the intersection of the Newell Highway and Gwydir Highway, while traffic on Alice Street will be confined to the northern half of carriageway to facilitate construction of the southern half of the carriageway. Temporary traffic signals will be in operation at the Newell Highway and Gwydir Highway roundabout.
- Phase 3 Construction Staging: Traffic will operate in the final configuration along the GHC and the roundabout, with construction of finishing works (such as pedestrian refuges) to be carried out under traffic control.

This staging plan aims to minimise the impacts of construction on passing traffic. Pedestrian access to businesses will be maintained at all times, as will access to properties along Alice Street. Construction activities will maintain safety for cyclists utilising the GHC. A comprehensive community consultation and awareness plan will support construction operations to ensure that the community is aware of the works.

A Traffic Management Plan will be prepared by the construction contractor which will outline the finer details of construction. This document will generate relevant Traffic Control Plans and detailed traffic management procedures.

Local area traffic management

To minimise the impact of the bypass on the residential area to the south of Alice Street, it is necessary to minimise the number of vehicles (especially heavy vehicles) utilising Gosport Street, Warialda Street, and to a lesser extent Dover Street, as a short cut between the southern part of the Newell Highway and the GHC.

Directional signage throughout Moree will inform drivers of the changes to the route of the Newell Highway through Moree. However, there is the possibility that some vehicles will attempt to utilise Warialda and Gosport Streets as a short cut and to avoid the Alice Street / Frome Street roundabout.

To encourage through traffic to use Frome Street and the GHC, a number of management options are available, ranging from 'soft' treatments such as access restrictions and changes in speed limits, to 'hard' measures involving construction of infrastructure. In developing a local area traffic management (LATM) scheme, consideration was given to a number of competing objectives, including the maintenance of local access to residents and businesses and limiting opportunities for through traffic to use Gosport, Warialda and Dover streets.

A significant local traffic issue to be addressed is access to the Caltex fuel depot and other commercial/industrial premises in Gosport Street. Access from these facilities will be affected by the changes to Alice Street, with right turns out of Gosport Street being denied once the GHC is built. The right hand turns out of Gosport Street have been denied due to safety issues associated with the close proximity of the signalised intersection to the east of the Gosport Street/Alice Street intersection. It is also proposed to close Gosport Street at Frome Street, creating a cul-de-sac, although access into Gosport Street via a one-way link to the existing Gosport Street / Frome Street intersection would be maintained to allow northbound movements. This route is currently used by heavy vehicles to access the fuel depot and industrial area. There are alternative accesses including B-double access via Warialda, Thompson and Adelaide streets.

A two-stage approach is proposed for implementing local area traffic management treatments. Traffic conditions after the opening of the GHC and the implementation of Phase 1 LATM measures should be monitored. If necessary, further treatments (Phase 2) will be investigated in consultation with council and the community.

Phase 1 Local area traffic management measures

The initial traffic management scheme will comprise the following (also shown in **Figure 6-11**):

- Establish a restriction on heavy vehicle activity in Dover and Warialda streets between Alice Street and Adelaide Street through the imposition of a local traffic zone.
- Reverse the priority arrangements at the intersections of Warialda Street with Anne Street, Adelaide Street, Thompsons Street and Jones Avenue, so that north-south traffic must give way to east-west traffic. This would increase travel times along Warialda Street and create a stop-start environment which will make the route less attractive to through vehicles.
- Restrict left turns being made by heavy vehicles from Alice Street into Warialda and Dover Streets through the installation of signage reinforcing the local area traffic zone.
- To prevent vehicles using Gosport Street as a short-cut to avoid the GHC, a cul-de-sac would be constructed on Gosport Street south at its intersection with Frome Street which would allow northbound movements only via a one way road. Vehicle access to Gosport Street would also be provided via Joyce Avenue or Warialda Street and Jones Avenue. Consideration may also be given to the construction of an additional cul-de-sac on Gosport Street, north of Alice Street.
- Ban the right turn from Alice Street into Gosport Street north and the right turn out of Gosport Street north and south into Alice Street.

The above measures are consistent with the current heavy vehicle route restrictions and balance the needs of traffic with a legitimate reason for accessing the residential and industrial areas with the amenity of local residents. The above measures would be implemented with the cooperation of council and in consultation with the community.

Phase 1 traffic arrangement options are displayed in **Figure 6-11**, with traffic movements at the Gosport Street / Alice Street shown in greater detail in **Figure 6-12**. The cul-de-sac and northbound access are shown in greater detail in **Figure 6-13**.



Figure 6-11: Phase 1 Traffic arrangements

[illegible]

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Phase 2 Local area traffic management measures

Part of the Phase 1 scheme will include monitoring of traffic activity when the bypass north of the Gwydir Highway and the GHC is opened. If the observed level of through traffic on local streets is found to increase relative to existing conditions, then additional measures may be necessary. The nomination of specific treatments will depend on the nature of the problem, and will be determined in consultation with council and the community. Treatments may include:

- Installing physical deterrent devices such as chicanes or speed humps in Dover, Warialda and Gosport streets to reduce vehicle speeds, or entry treatments to demarcate the local traffic zone.
- Constructing physical devices to slow traffic in Warialda, Dover and Gosport Streets. The devices could be located north of Adelaide Street. The need for some heavy vehicles to access businesses and the railway station on Gosport Street from the north should be considered when selecting a treatment. A U-turn facility for trucks, as proposed in the design for the southern section of the bypass, may be required immediately north of the Caltex depot.
- Removing the current B-double approved status of Gosport Street between the Caltex depot (located between Anne Street and Adelaide Street) and Alice Street, allowing the installation of physical devices as mentioned above in Gosport Street. Heavy vehicles would then access Gosport Street via Thompson Avenue, which is a current B-double route.

Likely Phase 2 traffic management options are displayed in **Figure 6-14**.

Phase 1 measures would be implemented upon opening of the GHC. Prior to commencement of construction, classified traffic counts would be collected in the residential area (on side streets accessing Alice and Frome Streets) to quantify the baseline traffic demands. The RTA would then monitor complaints from residents with regard to heavy vehicle traffic in the residential area. In the event that a number of complaints are received from these residents, the RTA would complete further classified traffic counts to assess the increase in heavy vehicle traffic through the area. If these counts confirm a significant increase (total increase greater than 50 percent) in legal heavy vehicle through traffic, Phase 2 of the LATM measures would be triggered.

Implementation of the Phase 2 LATM measures would be preceded by consultation with Moree Plains Shire Council regarding the implications of the proposed measures and their subsequent support for their implementation tested. If traffic counts identify any illegal heavy vehicle movements then the issue will be raised with enforcement authorities.

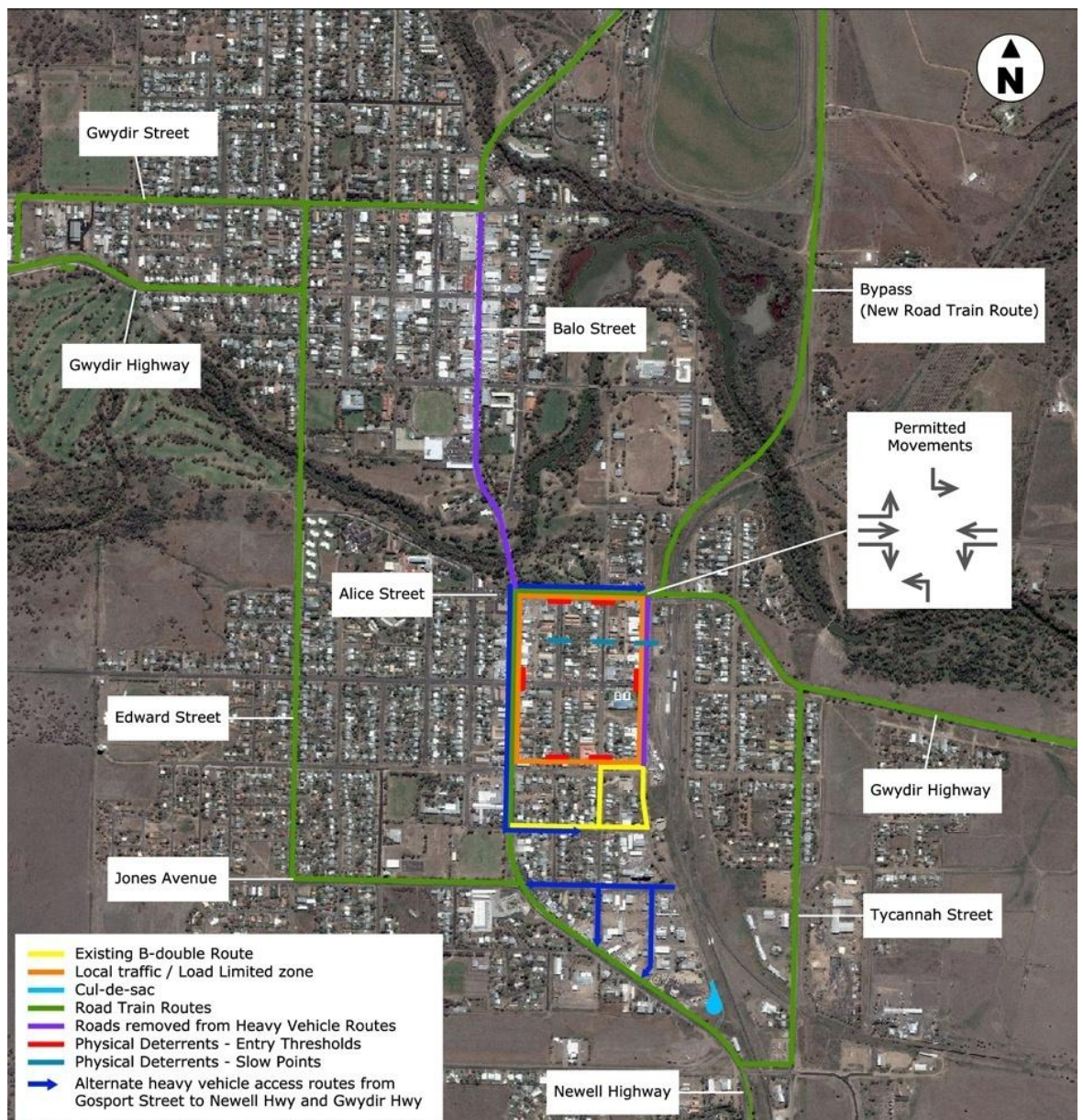


Figure 6-14: Phase 2 Traffic arrangements

The traffic impacts of the LATM phases have been identified and quantified based on the *Guide to Traffic Generating Developments* (RTA, 2002). The current peak hour trip generation numbers were estimated using the *Guide to Traffic Generating Developments* (RTA, 2002) and were based on households and industry types in the area bounded by Frome Street, Gosport Street and Alice Street. The 2008 traffic count data along Alice Street and Frome Street was also incorporated into the assessment. The trips generated and attracted to the LATM area were then distributed based on land-use in the Moree area. The current level of service of operation of the intersections along Alice Street and Frome Street were then assessed.

Subsequently, the impact of the Phase 1 and Phase 2 LATM measures were assessed. This involved re-distributing the traffic as a result of the LATM measures while maintaining the total number of trips generated and attracted to the area. The level of service of operation of the intersections along Alice Street and Frome Street were then assessed for Phase 1 and Phase 2 of the LATM measures.

It should also be noted that the trip rates used in this analysis were those defined in the *Guide to Traffic Generating Developments* (RTA, 2002) as no other data is available for Moree. The trip rates in this document are based on surveys completed in the Sydney metropolitan area and as such the trip rates are higher than those experienced in Moree. Therefore any increase in delays at intersections is a worst case scenario and that in reality less delays will be experienced at these intersections.

The results for the AM and PM peak intersection analysis resulting from the Phase 1 LATM measures are detailed in **Table 6-19**.

Table 6-19: AM and PM Peak Intersection Analysis – Phase 1 LATM

Intersection	Existing - AM		Phase 1 LATM - AM		Existing - PM		Phase 1 LATM - PM	
	LoS	Avg Delay	LoS	Avg Delay	LoS	Avg Delay	LoS	Avg Delay
Alice Street / Gosport Street	A	10	A	9	A	11	A	9
Alice Street / Warialda Street	A	9	A	9	A	8	A	9
Alice Street / Dover Street	A	8	A	7	A	8	A	7
Frome Street / Anne Street	A	10	A	9	A	10	A	9
Frome Street / Adelaide Street	A	9	A	9	A	8	A	9
Frome Street / Thompsons Avenue	B	15	B	23	B	15	B	15
Frome Street / Jones Avenue	B	17	B	17	B	15	B	15
Frome Street / Warialda Street	A	10	A	10	A	12	A	10
Frome Street / Joyce Avenue	A	8	A	8	A	9	A	8

The results for the AM and PM peak intersection analysis resulting from the Phase 2 LATM measures are detailed in **Table 6-20**. There are minor increases in delays at some intersections but there are no changes in the level of service of operation of these intersections. The worst resultant level of service is 'B' for the Frome Street and Thompsons Avenue intersection and the Frome Street and Jones Avenue intersection. Level of Service 'B' is defined in the *Guide to Traffic*

Generating Developments (RTA, 2002) as a good operation, with acceptable delays and spare capacity.

Table 6-20: AM and PM Peak Intersection Analysis – Phase 2 LATM

Intersection	Existing - AM		Phase 2 LATM - AM		Existing - PM		Phase 2 LATM - PM	
	LoS	Avg Delay	LoS	Avg Delay	LoS	Avg Delay	LoS	Avg Delay
Alice Street / Gosport Street	A	10	A	9	A	11	A	9
Alice Street / Warialda Street	A	9	A	9	A	8	A	8
Alice Street / Dover Street	A	8	A	7	A	8	A	7
Frome Street / Anne Street	A	10	A	9	A	10	A	9
Frome Street / Adelaide Street	A	9	A	9	A	8	A	8
Frome Street / Thompsons Avenue	B	15	B	27	B	15	B	19
Frome Street / Jones Avenue	B	17	B	23	B	15	B	20
Frome Street / Warialda Street	A	10	A	10	A	12	A	11
Frome Street / Joyce Avenue	A	8	A	8	A	9	A	8

Balo Street

The GHC will provide an alternative to the existing Newell Highway route along Balo Street. Balo Street is the centre of retail and commercial activity in Moree, experiencing a high level of both pedestrian and vehicular activity. There are several pedestrian crossing points which, when combined with frequent interruptions to traffic flow from parking manoeuvres, result in a relatively slow travel speed particularly during the day. The travel time for through traffic using Balo Street is anticipated to be almost three minutes slower than traffic using the GHC and bypass north of the Gwydir Highway. Despite this, there is the possibility that some through traffic will continue to use Balo Street instead of the bypass. Although a large proportion of heavy vehicles will be removed from Balo Street as a result of the construction of the bypass, this assessment indicates that some trucks may continue using Balo Street. The removal of B-double and road train status of Balo Street between Alice Street and Gwydir Street would have a large impact on reducing truck activity in Balo Street. This measure will be implemented as soon as the bypass north of the Gwydir Highway is opened.

Some heavy vehicles are not restricted by the B-double and road train route designations, and it is possible that other measures will be needed for Balo Street to deter these vehicles. Should monitoring of traffic volumes once the bypass is opened indicate heavy vehicles are using Balo Street as a through route, options to be considered and implemented as appropriate would include:

- Weight restrictions.
- A reduced speed limit, such as a 40km/hr high pedestrian activity area.
- Raised pedestrian crossings through the shopping centre, which would improve pedestrian amenity and reduce vehicle speeds.

These measures may also be considered and implemented where appropriate independent of any monitoring of traffic volumes, as the construction of the bypass provides an opportunity to improve amenity in the centre of Moree. The success of any traffic management measures will depend on the bypass being viewed as a reliably faster route through Moree than Balo Street, at all times of the day and night. Enforcement of any restrictions on particular vehicles may also be necessary if heavy vehicles are found to be disregarding the schemes. If this occurs, a request may be submitted by Local Traffic Committee to the NSW Police for additional enforcement.

6.7. Other environmental issues

6.7.1. Soil and water management

Existing environment

The geology underlying the GHC comprises quaternary sediments that extend up to 20 metres in depth. The EIS (2002) indicates that the quaternary sediments generally consist of highly compacted grey alluvial clays and gravels overlain by softer alluvium derived from weathered basalt.

The original soil types underlying the GHC route comprise cracking clays, which form from the chemical weathering of material such as basic igneous rocks (e.g. basalt and dolerite), basic sedimentary rocks (e.g. calcareous mudstone, clayey sandstone and lithic sandstone) and clayey alluvium. Cracking clays have the potential to shrink or swell, with dry soils being of high strength (albeit with wide cracks) and wet soils being weak and very plastic. As a result of their shrink/swell properties, these soils are highly reactive to large movements. The EIS (2002) indicates that the soils may also be highly dispersive with a high erosion potential.

The original soil types underlying the GHC route would have been previously disturbed during the construction of the Gwydir Highway. As such, a large portion of the sub-surface material underlying the GHC route may consist of imported road base.

Stormwater runoff from the GHC route would drain via the existing local urban stormwater system to the Mehi River. The Mehi River lies to the north of the GHC route, passing within 125 metres of the route at its closest point.

The EIS (2002) indicates that the water quality in the Mehi River is generally poor due to the effects of agricultural and urban stormwater runoff, water extraction and poor land management practices. Vegetation removal has occurred along the river as a result of cropping and grazing

practices and has contributed to bank erosion. This in turn has contributed to elevated sediment loads and turbidity.

Potential environmental impacts

Construction impacts

There would be no significant impacts on soils or water quality as a result of construction of the GHC. The main potential impact would be soil erosion and sedimentation into the nearby Mehi River. Excavation would be required for the pavement reconstruction of Alice Street and for the pavement reconstruction of the roundabout at the Gwydir Highway-Newell Highway intersection. The south-eastern kerb line of the roundabout would be moved back away from the roundabout and restored. Excavation would be needed to adjust the existing sewer and water mains which cross the Gwydir Highway. The excavation works could potentially result in the generation of sediment laden runoff, which could result in transport of sediment into the Mehi River.

Soils would only be exposed for a short time during construction as the road would be re-paved immediately after excavation of the existing pavement. Excavation is unlikely to result in significant erosion and sedimentation. In addition, temporary erosion and sediment controls would be installed prior to commencement of any construction works, and the controls would be regularly maintained and inspected. The soil and water management sub-plan for the approved project would be updated to manage impacts of the GHC on soil and water quality.

Operational impacts

There would be no significant impacts on soils during the operation of the GHC.

Operation of the GHC may potentially impact water quality. Emissions including particulates, heavy metals and sulphates from vehicles travelling along the GHC could potentially enter the Mehi River from the road runoff. However, the conversion of the existing section of the Gwydir Highway into a bypass route would not result in a significant increase in water pollution, given that the Gwydir Highway is an existing road.

Identification of commitments within EIS and Representations Report

Soil and water mitigation and management measures were developed as part of the EIS (2002) and subsequent Representations Report (2003). These measures include the preparation of an erosion and sediment control plan, progressive stabilisation and revegetation of disturbed areas, and regular monitoring and maintenance of erosion, sediment and pollution controls.

Condition of approval 38 in Schedule 2 requires the RTA to prepare a soil and water management sub-plan as part of the construction environmental management plan. The soil and water management sub-plan must identify construction activities likely to cause soil erosion or sediment/pollutants from the site and methods and measures to manage these impacts.

Conditions of approval 39 and 40 in Schedule 2 contain provisions for the construction phase, to consult an appropriately qualified soil scientist to inspect and check erosion and sedimentation control devices, and provide an appropriate detention system.

Condition of approval 41 in Schedule 2 requires that stormwater drainage and water pollution controls during operation must meet the requirements of relevant government departments and relevant councils.

These conditions of approval would apply to the GHC.

Additional impact mitigation and management requirements

The soil and water management requirements for the GHC are considered to be adequately covered by the existing conditions of approval and commitments made within the EIS (2002) and Representations Report (2003) for the approved project. No additional impact mitigation measures are proposed, although the soil and water management sub-plan would be updated to reflect any changes for the GHC.

6.7.2. Air quality

Existing environment

The air quality in Moree is generally good, being typical of that found in an Australian rural setting. Existing sources of air pollution in the Moree area include vehicle emissions, domestic wood burning and from the agricultural and manufacturing industries. Existing sources of odour in the area include cattle industries.

Potential environmental impacts

Construction impacts

Construction works may result in the generation of dust through the use of equipment and earthworks. Sensitive receivers that may be affected by dust emissions include the residential dwellings and hotels previously identified in **Section 6.5**, as well as businesses and users of Jellicoe Park on the Gwydir Highway. Dust emissions would be minor and localised, given that minor excavation would be required. Excavation would be limited to the pavement reconstruction of the Gwydir Highway and roundabout, drainage trenches, adjustment of existing services and new road signage. The construction of the GHC is unlikely to significantly affect air quality given that the GHC is an existing road and would require minor earthworks. The use of standard dust control measures would minimise the amount of dust generated and include dampening unsealed roads and stockpiles, covering truck loads transporting spoil and fill, and avoiding dust generating work during windy conditions. The proposed construction of the GHC also has the potential to impact the local air quality through exhaust emissions from construction vehicles, plant and equipment. All plant and equipment will be properly maintained to ensure that emissions are reduced, and would not have any significant impact on air quality.

Operational impacts

During the operation of the GHC, vehicle emissions comprising carbon monoxide, nitrous oxides (including nitrogen dioxide and nitrogen monoxides) and other pollutants would result in some decline in local air quality. The proposed GHC would result in an increase in vehicle emissions along the affected section of the Gwydir Highway due to the higher volume of traffic travelling along the existing road. Vehicle emissions are unlikely to have a significant effect on the local air quality, given that the Gwydir Highway is an existing road.

The proposed GHC would result in increased odour emissions from cattle trucks travelling along the affected section of the Gwydir Highway. Odour emissions are unlikely to significantly impact residential dwellings, recreational users or hotels adjacent to the GHC given that the odour emissions would be minor and transient.

Identification of commitments within EIS and Representations Report

Air quality mitigation and management measures were developed as part of the EIS (2002) and subsequent Representations Report (2003). These measures include notifying potentially affected residents prior to any dust generating works occurring, covering trucks transporting spoil and fill to and from the site and inspection and maintenance of construction equipment and plant to reduce excessive emissions.

Conditions of approval 46-48 provide the requirements for air quality, including the need to prepare a dust management sub-plan as part of the construction environmental management plan. The sub-plan must identify potential sources of dust, management objectives and a monitoring program to assess compliance with the objectives, mitigation measures and a revegetation strategy. The conditions of approval also require maintenance of construction vehicles to prevent losses of load and ensure all construction plant and equipment are maintained and operated in a proper and efficient condition.

Additional impact mitigation and management requirements

The air quality management requirements for the GHC are considered to be adequately covered by the existing conditions of approval and commitments made within the EIS (2002) and Representations Report (2003) for the approved project. No additional impact mitigation measures are proposed.

6.7.3. Land use and social impacts

Existing environment

The proposed GHC is located within the Moree Plains Local Government Area (LGA). The LGA has a population of 13,976, with almost 60 per cent of this population (8,083 persons) residing

within the town of Moree (ABS data, 2006 census). The LGA contains a high percentage of Aboriginal persons (19.4 per cent) when compared to the total percentage of Aboriginal persons within Australia (2.3 per cent). The main industries in Moree are agriculture (cotton, wheat, pecan nuts, sheep and cattle) and manufacturing.

The main land uses are mainly located along Alice Street and comprise of business and residential uses as detailed in **Table 6-21** and **Figure 6-15**, including six residential dwellings located between Dover Street and Warialda Street. An area of public open space (Jellicoe Park) is located at the western end of the proposed connection route, on the northern side of the existing Gwydir Highway. The Werris Creek – Mungindi railway line is located to the east of the proposed GHC route. The Gwydir Highway, which would be used for the proposed GHC, is an existing road train and B-double transport route.



Figure 6-15: Land uses adjacent to the proposed Gwydir Highway connection (refer to Table 6-21 for description of land use)

Table 6-21: Land uses adjacent to the Gwydir Highway connection route (see Figure 6-15)

Property Reference No.	Address	Land Use
1	62 Alice Street	Alexander Motor Inn
2	54 Alice Street	Caltex service station
3	50 Alice Street	Freedom Fuels service station
4	44 Alice Street	Protect Auto Electricians
5	38 Alice Street	Residential
6	36 Alice Street	Residential
7	34 Alice Street	Residential
8	32 Alice Street	Residential
9	30 Alice Street	Residential
10	28 Alice Street	Residential
11	26 Alice Street	Shop front/ residential
12	Corner Warialda Street and Alice Street	Vacant land
13	300 Warialda Street	Spa Village Travel Inn
14	20 Alice Street	Baileys Electric Motor Rewinding and Repairs
15	18 Alice Street	Post Office/ Gwydir Coin-Op Laundry
16	16 Alice Street	Moree Furniture Barn/ TV Service Shop
17	14 Alice Street	The Bridge take-away shop
18	29 Alice Street	North West Car and Caravan Centre
19	21 Alice Street	Moree Spa Motor Inn

Potential environmental impacts

Construction impacts

Direct land use impacts associated with the GHC would be limited as no land acquisition would be required and as there would be no change in the type of land use in the study area. However, business and residents along Alice Street raised various concerns relating to commercial opportunities and impacts (increased trade and reduced trade) traffic related impacts (parking, access, traffic flow), impacts related to noise, vibration, dust and odour, devaluation of properties and lost amenity.

Construction of the GHC would generate increased noise levels, particularly during pavement reconstruction works which would require machinery. There would be increased movement of vehicles associated with the delivery of materials, and there may be temporary access disruptions along the Gwydir Highway during the re-paving works. Potential noise and traffic impacts have been assessed and are detailed in **Section 6.5** and **Section 6.6**. Additionally, there would be some temporary visual impacts associated with the construction of the GHC. The presence of equipment and stockpiles on site would slightly alter the visual landscape. The visual impacts during construction would be minor and transient and are not considered to be significant.

Operational impacts

The operation of the GHC is not expected to have significant impacts on land use or the social environment given that the Gwydir Highway is an existing road. There would be an increased movement of traffic along the affected section of the Gwydir Highway and an associated increase in noise levels and vehicle emissions. The properties located on Alice Street may be affected by the increased traffic, noise and vehicle emissions. These impacts are discussed in **Section 6.5 and Section 6.6**. Additionally, there would be minor urban design impacts that would affect adjacent residences and other users of the affected section of the Gwydir Highway. Further information on urban design impacts is provided in **Section 6.7.6**.

There would be additional vehicles and potential additional customers for businesses located along the Gwydir Highway. Shops and service stations along the Gwydir Highway may experience increased trade, as passing traffic may stop for a break. Motels could initially experience a decline in patronage during construction as customers perceive potential noise issues. However, some patrons might welcome the ease of access into and out of Moree facilitated by the proximity of the motels to the bypass route. Since the properties on Alice Street already front the Gwydir Highway, any concerns relating to residing close to a major traffic thoroughfare should be reflected in the existing property values and are unlikely to be significantly affected by the proposed GHC.

The amenity of Jellicoe Park, which is located adjacent to the proposed GHC route, may also be affected as a result of the reduction in parking spaces and increased in traffic flows. The shoulder on the northern side of Alice Street is currently used for parking, predominantly servicing Jellicoe Park. The widening of the traffic lanes on Alice Street would require a change from angle parking to parallel kerb parking arrangements and would result in reduction in the number of parking spaces (from approximately 125 to 75 spaces). This is discussed in traffic and transport (**Section 6.6**).

Identification of commitments within EIS and Representations Report

Land use and social impact management measures were developed as part of the EIS (2002) and subsequent Representations Report (2003). Measures for land use relate to land acquisition which is not required for the GHC. Measures to address social impacts include informing residents of potentially disruptive activities well in advance and informing the community of the likely timeframe for construction activities.

There are no conditions of approval that specifically address land use impacts. Noise and traffic impacts are covered by the existing conditions of approval as outlined in **Sections 6.1 and 6.2**. No land acquisition would be required for the proposed modification. Socio-economic issues are addressed in property damage and access, traffic, urban design and landscaping and business and traffic in conditions of approval 51 to 72 in Schedule 2 and in Property Damage and Access and Traffic in Schedule 3. The existing conditions of approval are comprehensive and would be adequate to manage the socio-economic impacts that would result from the proposed modification.

Additional Impact Mitigation and Management Requirements

No further mitigation and management requirements are needed for land use, as no land acquisition would be required and there would be no change in any land uses. The social management requirements for the GHC are considered to be adequately covered by the combination of the existing conditions of approval and commitments made within the EIS (2002) and Representations Report (2003) for the approved project and the additional mitigation recommendations outlined in **Section 6.4** for noise related issues. No additional impact mitigation measures are proposed.

6.7.4. Aboriginal heritage

Existing environment

As part of the EIS (2002), a field survey was undertaken by Jim Kelton in July 2000 (Kelton, 1999) to identify Aboriginal objects and potential archaeological deposits. Kelton (1999) identified five items/sites of potential archaeological significance along the route of the approved project. Only three of these sites are located in the vicinity of the proposed modification to the approved project, namely Moree Spa Baths, Steel Bridge Aboriginal Fringe Campsite and Mehi River banks potential archaeological deposits.

The Moree Spa Baths, located at the intersection of Gosport Street and Anne Street, are listed on the Register of the National Estate. The baths have significance for the Aboriginal people as they are associated with the Freedom Ride civil rights movements of the 1960s. Charles Perkins successfully challenged racial discrimination in Moree, in particular, the bans placed on Aboriginal people using the spa baths during that time.

The Steel Bridge Aboriginal Fringe Campsite is located on the eastern and western banks of the Mehi River, north of the existing railway bridge. Assessment of the campsite indicated that it was of moderate to high cultural significance, with a high social significance to the Aboriginal community. The campsite arose as a result of the enactment of the *NSW Aborigines Protection Act 1909*, which allowed Aboriginal people to be forcibly removed from Aboriginal reserves. This resulted in Aboriginal people creating unofficial reserves, including the Steel Bridge Aboriginal Fringe Campsite.

The banks of Mehi River in the vicinity of Steel Bridge Aboriginal Fringe Campsite have also been identified as an area of potential archaeological deposits. This area has been found to have low to moderate archaeological potential.

A search of the Aboriginal Heritage Information Management System (AHIMS) database administered by the DECC was undertaken as part of this modification to the approved project EA. There were no items of Aboriginal heritage significance in the vicinity of the proposed modification recorded in the AHIMS database at the time of preparation of this document (September 2008).

Potential environmental impacts

Construction impacts

No known Aboriginal sites or objects are located on or directly adjacent to the GHC route. The proposed modification would not impact the Moree Spa Baths, Steel Bridge Aboriginal Fringe campsite or Mehi River banks potential archaeological deposits. Construction works would be confined to within the existing kerb lines of the Gwydir Highway, and is unlikely to affect any Aboriginal site or object.

Operational impacts

There would be no impacts to Aboriginal sites or objects during the operation of the GHC.

Identification of commitments within EIS and Representations Report

Aboriginal heritage mitigation and management measures were developed as part of the EIS (2002) and subsequent Representations Report (2003). These measures include ceasing works in the immediate area where an artefact or relic is uncovered until the National Parks and Wildlife Services (NPWS) and Moree Local Aboriginal Land Council are advised of the works and the artefact or relic is assessed.

The RTA must prepare an Aboriginal heritage management sub-plan as part of complying with condition of approval 70 in Schedule 2. The sub-plan must be prepared in consultation with relevant Aboriginal groups and the DECC. The sub-plan must detail archaeological investigations and any licences or approvals required, procedures for discovering previously unidentified Aboriginal objects and an education program for personnel specifying obligations for Aboriginal objects.

Additional impact mitigation and management requirements

The Aboriginal heritage management requirements for the GHC are considered to be adequately covered by the existing conditions of approval and commitments made within the EIS (2002) and Representations Report (2003) for the approved project. No additional impact mitigation measures are proposed.

6.7.5. Non-Aboriginal heritage

Items of non-Aboriginal heritage significance in the vicinity of the approved project were identified in the Moree Bypass Preliminary Heritage Assessment Gosport Street Option report (2002) as part of the proposed Newell Highway bypass of the EIS (2002). An additional review of the Register of the National Estate, State Heritage Register, State Heritage Inventory and the heritage schedule of the *Moree Plains Local Environmental Plan 1995* (Moree Plains LEP) was undertaken for this modification to the approved project EA to identify any additional listings since the EIS (2002).

Existing environment

The Moree Bypass Preliminary Heritage Assessment (2002) identified 32 listed non-Aboriginal heritage items in and around Moree. Four of these heritage-listed items are located in the vicinity of the proposed GHC and are identified in **Table 6-22**.

Table 6-22: Listed non-Aboriginal heritage items in the vicinity of the Gwydir highway connection

Item	Register(s) on which Item is Listed
Moree Spa Baths	Register of the National Estate
Moree Railway Station Group	State Heritage Register
Moree Showground Pavilion	Moree Plains LEP National Trust
Victoria Hotel	Moree Plains LEP National Trust

The Moree Bypass Preliminary Heritage Assessment (2002) identified that the Moree Spa Baths have rare national social significance, rare regional technical/research significance, and rare local historical significance. The construction of the Moree Spa Baths arose as a result of an artesian bore being sunk for irrigation in 1895. The bore water quality was found to be unsuitable for irrigation purposes, although it was discovered to contain medicinal properties. The baths were constructed and continue to be used for health and recreational purposes.

The Moree Bypass Preliminary Heritage Assessment (2002) also identified that the Moree Railway Station Group is of rare State historical significance, representative State aesthetic/creative significance, and rare regional social significance. The state heritage listing was updated in December 2008 and this item is also considered to be architecturally rare. Moree Station is the only site in NSW to have two island platform buildings constructed end to end on the same platform.

The Moree Bypass Preliminary Heritage Assessment (2002) identified that the Moree Showground Pavilion has rare State historical significance, rare State aesthetic/creative significance, rare State technical/research significance, and rare Regional social significance. The pavilion is a good example of a distinctive Australian architectural mode.

The Moree Bypass Preliminary Heritage Assessment (2002) identified that Victoria Hotel has representative local historical significance, representative local/aesthetic/creative significance, and representative local social significance. The Local Environmental Plan listing states that the hotel was constructed in 1918 and is the most significant building in the vicinity of the railway station. The hotel is an example of a building constructed immediately after the end of World War I.

The Moree Bypass Preliminary Heritage Assessment (2002) identified 16 unlisted items of potential heritage significance in and around Moree. 12 of these items are located in the vicinity of the approved project. These items are as follows:

- Railway Institute Tennis Courts, Gosport Street.

- Small weatherboard residence, corner of Alice Street and Gosport Street.
- Weatherboard cottage, 284 Gosport Street.
- Weatherboard cottage, 288 Gosport Street.
- Weatherboard cottage, 290 Gosport Street.
- Weatherboard cottage, 292 Gosport Street.
- Weatherboard cottage, 294 Gosport Street.
- Weatherboard cottage, 8 River Street.
- Weatherboard cottage, 10 River Street.
- Weatherboard cottage, 12 River Street.
- Weatherboard cottage, 14 River Street.
- Stationmaster's cottage, Morton Lane.

The heritage register search undertaken for this modification to the approved project EA identified an additional listed heritage item located in the vicinity of the proposed GHC, namely the Moree District Hospital. This item is located on Victoria Terrace, approximately 125 metres west of the proposed GHC route, and is listed on the Section 170 Department of Health Register (and the State Heritage Inventory). This item was heritage listed in July 2005, after the preparation of the EIS (2002).

Potential environmental impacts

Construction impacts

Construction works would be confined to the existing kerb lines of the Gwydir Highway, and therefore would not directly affect any heritage items. No heritage listed items are located on or directly adjacent to the GHC.

A small weatherboard house on railway land was identified in the EIS (2002) as having potential heritage significance. The house has been acquired and demolished as part of the approved project. No other items of potential heritage significance are located on or directly adjacent to the GHC.

Operational impacts

No non-Aboriginal heritage items would be impacted during the operation of the GHC as no heritage items are located on or directly adjacent to the GHC.

Identification of commitments within EIS and Representations Report

No heritage mitigation and management requirements provided in the EIS (2002) and Representations Report (2003) would be applicable to the GHC, as no heritage listed items are located on or directly adjacent to the GHC.

Condition of approval 71 in Schedule 2 requires the preparation of a heritage management sub-plan by the RTA as part of the construction environmental management plan. The sub-plan must include a description of heritage items, details of licence or approvals required and management measures to prevent impacts on heritage items and sites, particularly Moree Spa Baths and Victoria Hotel. The sub-plan also requires procedures for discovering previously unidentified historical relics and an education program for personnel specifying obligations for historic relics.

Additional impact mitigation and management requirements

The non-Aboriginal heritage management requirements for the GHC are considered to be adequately covered by the existing conditions of approval and commitments made within the EIS (2002) and Representations Report (2003) for the approved project. No additional impact mitigation measures are proposed.

6.7.6. Urban landscape design

Existing environment

The topography along and surrounding the GHC route is generally flat. The flat topography is associated with the alluvial flood plains of the Gwydir River system. The Mehi River, a tributary of the Gwydir River, is located approximately 125 metres from the western end of the GHC. The GHC route passes through an urban residential area consisting predominantly of single storey properties, with some fast food outlets, service stations and tourist facilities such as motels. Jellicoe Park is also located on the northern side of the GHC route and is used for recreational purposes. There is little vegetation located adjacent to the route. Vegetation is limited to planted street trees, groundcover, planted trees and shrubs within Jellicoe Park.

Potential environmental impacts

Construction impacts

During the construction phase, there would be some visual impacts associated with the presence of construction equipment, plant and vehicles. Construction activities would be visible from nearby areas, including from the adjacent businesses and residences. These visual impacts would be minor, and are not considered to be significant. All construction activities would be completed as quickly as possible and in so doing minimise the duration of visual impacts. On completion of works, all construction equipment, materials and refuse relating to the works would be removed from work sites and any adjacent affected areas. Work sites would be restored as close to their original condition as possible following the completion of the proposed works.

Operational impacts

The proposed GHC would follow the existing Gwydir Highway and would have minimal impact on the existing landscape. There would be no changes to the physical landscape as no vegetation removal would be required and no alterations to the existing landform or topography would be made. The existing landscape would, however, be slightly affected with increased traffic and truck movements along the Gwydir Highway. Avenue tree planting from the eastern end of the Gwydir Highway to Jellicoe Park as part of the approved project would ameliorate urban design impacts from the traffic along this section of the Gwydir Highway.

There would be no significant changes to the existing urban landscape of the Gwydir Highway. Changes would be limited to minor alteration of parking arrangements along the Gwydir Highway, minor alterations of the intersection at the junction of Gwydir Highway and Newell Highway and the construction of a cul-de-sac on Gosport Street at its intersection with Frome Street. Further changes could also arise from the potential construction of an additional cul-de-sac on Gosport Street, north of Alice Street. If Phase 2 traffic management measures are required, treatments may include the construction of physical devices such as chicanes or speed humps which would have a minor impact on the visual environment. No land acquisition or demolition of buildings would be required. There would be slight visual alterations with the addition of new road signage and line-marking of the road. Signs would be provided to prohibit trucks from diverting off the Gwydir Highway through the local residential streets. Stop or give way signs would also be provided at Dover Street and Warialda Street, at the intersections with Anne Street. The design of the signs would be consistent with RTA standard signage.

Overall, as the Gwydir Highway is an existing road, impacts on the existing landscape and visual character of the area would be minimal. The GHC would be integrated into the existing urban landscape.

Identification of commitments within EIS and Representations Report

Urban landscape design mitigation and management measures were developed as part of the EIS (2002) and subsequent Representations Report (2003). These measures include developing and implementing a detailed landscape design.

Condition of approval 62 in Schedule 2 requires the preparation of an urban design and landscape report prior to construction. The report must present an integrated urban design for the proposed development and describe built elements, existing vegetation, pedestrian and cyclist elements, fixtures, and signage and gateway treatments. The report must be consistent with relevant council policies or plans, and requires the inclusion of a heritage precinct strategy, an Aboriginal heritage strategy, a pedestrian access strategy, a revegetation strategy and a local streets strategy.

Additional impact mitigation and management requirements

The urban landscape design requirements for the GHC are considered to be adequately covered by the existing conditions of approval and commitments made within the EIS (2002) and Representations Report (2003) for the approved project. No additional impact mitigation measures are proposed.

6.7.7. Hazards

Existing environment

Hazards are defined as a source or situation that has the potential to cause harm to the health and safety of the human population, property or the environment. Road traffic accidents may potentially impact the health and safety of road users and other persons including occupants of nearby properties. Hazards and risks identified with traffic volumes, heavy vehicles, accident records, traffic and road conditions and road safety have been discussed in **Section 6.6**. This section focuses on hazards associated with transport, handling and storage of hazardous materials. Existing hazards associated with the current operation of the Gwydir Highway includes the transport of hazardous materials.

Potential environmental impacts

Construction impacts

Potential hazards associated with the construction of the GHC include spills of hazardous goods used for construction. Dangerous goods that may be used for construction include fuel, oils, greases, lubricants, bitumen and paint. There is also the potential for minor leaks of lubricants, hydraulic fluid or similar material from construction equipment, vehicle and plant. The small quantities of hazardous materials used during construction are unlikely to cause significant impacts off-site. Appropriate storage, handling and use of the materials would be undertaken in accordance with the *Occupational Health and Safety Act 2000* and the WorkCover Codes of Practice Storage and Handling of Dangerous Goods to minimise impacts to people and the environment.

Operational impacts

The sources of hazards during operation of the GHC would be the same as the approved project and include transportation of hazardous goods. The proposed GHC would result in an increased hazard exposure to the affected section of the Gwydir Highway due to higher traffic volumes along the existing road. The hazards include load spillage of corrosive substances, liquefied petroleum gases (LPG), flammable petroleum products (petrol and diesel), pesticides, and nitrogen-based fertilisers. Potential impacts to humans and property include injury or damage from fire, corrosives and toxic gases, and potential impacts to the environment include contamination or increased nutrient levels into nearby waterways. The GHC will discharge to the Mehi River via existing underground stormwater drainage pipes.

Identification of commitments within EIS and Representations Report

Mitigation and management measures for hazards were developed as part of the EIS (2002) and subsequent Representations Report (2003). These measures include the inclusion of hazard and risk management and contingency measures into the construction and operational environmental management plans, and appointed contractors needing to be appropriately accredited and carry out work in accordance with the accepted OH&S Management Plan.

Condition of approval 73 in Schedule 2 requires that a hazard and risk management sub-plan be prepared and implemented as part of both the construction and operational environmental management plans. The sub-plans must detail the hazards and risks associated with the proposed development, and provide mitigation measures including contingency plans to be implemented in the event that a hazard occurs.

Additional impact mitigation and management requirements

The hazard management requirements for the GHC are considered to be adequately covered by the existing conditions of approval and commitments made within the EIS (2002) and Representations Report (2003) for the approved project. No additional impact mitigation measures are proposed.

6.7.8. Waste generation and disposal

Existing waste policies

The relevant *Waste Avoidance and Resource Recovery Act 2001*, as identified in the EIS (2002) would apply to the GHC. Amendments to NSW waste legislation including the *Protection of the Environment Operations Act 1997* and the Protection of the Environment Operations (Waste) Regulation 2005 on 28 April 2008 were made under the Protection of the Environment Operations Amendment (Scheduled Activities and Waste) Regulation 2008 and would also apply to the GHC. These changes have resulted in fewer waste licensing categories, a streamlined waste classification system, new resource recovery licensing categories and resource recovery exemptions. In addition, DECC's Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes has been replaced with the Waste Classification Guidelines which simplifies the classification of waste.

Types of wastes generated

Construction impacts

The GHC would result in the generation of the same types of waste materials as the approved project during the planning, construction and operation phase. It is anticipated that approximately 1600 m³ tonnes of waste would be generated during construction. This would consist predominantly of excavated pavement material and spoil, and would be reused where appropriate.

Operational impacts

There would be minimal waste generated from the operation of the GHC. Wastes are likely to include landscaping waste such as trimming of tree branches and litter from road users.

Waste disposal methods

The same waste disposal methods used for the approved project would be followed for the GHC. The GHC would adhere to the waste management hierarchy principles of avoidance, reuse, recycling and reprocessing, and disposal.

Identification of commitments within EIS and Representations Report

Waste mitigation and management measures were developed as part of the EIS (2002) and subsequent Representations Report (2003). These measures include the preparation of a detailed Waste Management Plan as part of the construction environmental management plan, transportation of waste material by a licensed waste contractor and segregation of different waste materials following the waste hierarchy principles.

Condition of approval 75 in Schedule 2 requires the RTA to prepare a waste management and reuse sub-plan for the construction and operation of the GHC, in accordance with the Waste Reduction and Purchasing Policy. The sub-plan must identify the waste minimisation hierarchy principles, and must provide requirements for waste handling, storage and disposal of wastes. Any waste material that cannot be re-used, re-processed or recycled must be disposed at a DECC licensed facility or other approved site.

Additional impact mitigation and management requirements

The waste management requirements for the GHC are considered to be adequately covered by the existing conditions of approval and commitments made within the EIS (2002) and Representations Report (2003) for the approved project. No additional impact mitigation measures are proposed. Secondary waste materials such as fly ash, steel slags and recycled aggregates will be used, where possible and compliant with RTA specifications, instead of quarried construction materials. Use of these materials will be dependent on the proximity of the site to sources of recycled materials to avoid excessive transport costs and transport related greenhouse gases.

6.7.9. Cumulative impacts

The potential cumulative effects with other existing and likely future activities were taken into consideration in determining the overall impacts of the proposed GHC. The potential cumulative impacts have been examined at both a local and regional scale.

Local scale considerations

The potential adverse impacts of the proposed GHC would be minor and localised in extent. Specifically, the adverse effects are expected to be limited to the affected section of the Gwydir Highway and nearby land uses, with the main adverse effects being local noise and traffic impacts during operation.

To identify any major future development activities within the Moree township locality that may coincide with the construction schedule for the GHC, a search was made of both the Moree Plains Shire Council and the Department of Planning's online databases of development proposals and notices of determination. This search did not identify any additional development activities that would coincide with the proposed GHC. The only other known development within the subject study area that would coincide with the proposed GHC is the approved bypass project. The proposed GHC is part of the bypass. The potentially adverse effects of the GHC are similar to those of the existing approved bypass route and would not compound the effects of the bypass construction or operation. The proposed GHC provides an option for staged operation of the bypass as due to contaminated land, there is potential delay to construction of the southern section of the approved route. The local benefits of the GHC are expected to outweigh its potential adverse effects. Specifically, by diverting Newell Highway traffic to the east of the town centre, the operation of the bypass, via either the approved route or the proposed GHC, is anticipated to have a positive impact on the local community amenity of the Moree town centre precinct. The GHC will be crucial to achieving the objective to divert heavy vehicles away from the Moree town centre.

Regional scale considerations

The only impact of the proposed GHC that is expected to extend beyond the immediate locality of Moree is on traffic flows and potentially travel times for traffic travelling from south to north, or north to south, using the Newell or Carnarvon Highways. The proposed GHC provides a feasible alternative option for the connection of the approved bypass. The net effects of the GHC on north-south traffic will be positive with an expected three minutes reduction in travel time as compared to the current route along Balo Street. There would be no cumulative adverse effects at a regional scale. Changes to traffic flow and management for the Gwydir Highway is expected to be minimal, and isolated to the vicinity of the GHC (Alice Street).

7. Consultation

7.1. Consultation background

Since the inception of the Moree Town Centre Bypass project in 2004, community consultation has been undertaken as per the bypass conditions of approval and the agreed community involvement plan. The purpose of the community involvement plan is to ensure effective and transparent communication with the local community and management of any issues that arise throughout the life of the project.

A second community involvement plan has been specifically developed for the proposed GHC. This second community involvement plan focuses on communicating with, and addressing the concerns of all landholders impacted by the GHC. The community involvement plan also ensures that the wider Moree community is kept informed of the proposed modification.

7.2. Consultation with the broader community

As part of the original community involvement plan consultation with the broader Moree Community has included:

- Affected land owners.
- Affected businesses.
- Special interest groups including the Moree Chamber of Commerce and Moree Markets.

A variety of communication tools have been used to inform the community about the project and give the community indicative timelines for construction and completion of the bypass, including a community liaison group, community updates, website updates, establishment of a community and stakeholder database and a telephone information hotline.

Community liaison group

The conditions of approval require the RTA to establish a community liaison group (CLG), comprised of community representatives identified and selected from relevant community and business groups, individual members of the community adjoining the project and representatives from Moree Plains Shire Council.

The CLG has been the primary vehicle for communication with the public regarding the project. The CLG has now met over 20 times throughout the project with the most recent meeting occurring on 2 December 2008.

Meeting notes from the CLG Meetings are available on the project website.

Community updates

The RTA has produced three community updates, these were distributed to the township by letter drop, outlining details of the bypass. The first community update was issued in December 2004, the second was issued in July 2007 and the third in October 2008. The community update issued in October 2008 was posted to the broader Moree community. These documents are available on the project website.

Project website

Material developed for the consultation program is accessible to the community via the internet. The RTA has a web-site for the bypass project where project updates are placed.

The web address is www.rta.nsw.gov.au/moreetowncentrebypass

Since the announcement of GHC the website has been updated with the latest community update.

Community and stakeholder database

A community and stakeholder database, Community Management System (CMS) has been established to record all forms of communication and interaction with the community. The CMS has enabled the communication and consultation team to distribute information efficiently to the community and accurately record information and comments received from the community.

Telephone information line

A free-call community telephone information line (**Freecall 1800 052 425**) has been established for the project so that the community can call for information about the project or to register their opinion. The 1800 number is staffed during working hours by the community liaison assistant. After working hours a recorded message operates, with all calls logged and messages responded to. All calls are responded to personally within one working day. Details of calls and response times are reported on as part of the regular CMS reports.

7.3. Consultation with stakeholder organisations

Since 2004 the following stakeholder organisations have been consulted primarily regarding construction related issues. Issues raised by these organisations have been addressed throughout the detailed design process and in relevant management plans.

- NSW Department of Environment and Climate Change (DECC) including National Parks and Wildlife Service (NPWS).
- NSW Department of Water and Energy, (formerly Department of Infrastructure, Planning and Natural Resources (DIPNR) .
- NSW Department of Primary Industries (DPI) (letter and email correspondence).
- NSW Department of Primary Industries (Fishing and Aquaculture).

- NSW Heritage Office.
- NSW Department of Planning (DoP).
- Moree Plains Shire Council.
- Moree Local Aboriginal Land Council.
- Moree Police.
- Telecommunications:
 - Optus.
 - Telstra.
 - Visionstream Network Control Centre (NCC).
- Rail representatives:
 - Rail Infrastructure Corporation (RIC).
 - Countrylink.
 - Australian Rail Track Corporation (ARTC).
- Country Energy.

7.4. Recent consultation associated with the GHC

The RTA has been in regular discussions with the Moree Plains Shire Council, who are also represented on the CLG. The RTA also met with DECC on 23 October 2008 specifically to discuss contamination issues and with rail representatives to discuss potential impacts to the rail system. The RTA has also been in regular discussion with DoP to clarify legal requirements and confirm progress with environmental reporting.

Most recently the RTA met with DoP on 1 August 2008 regarding the GHC EA requirements. The latter was also discussed with rail representatives on 18 June 2008 and 4 September 2008. Presentations were also given by the RTA at the Council meetings on 19 June 2008 and 16 October 2008. In addition, RTA met with the Moree Chamber of Commerce on 2 December 2008 to discuss the GHC.

7.5. Consultation with the community liaison group (CLG) for the GHC

The CLG was told of the potential delay to the bypass project at CLG Meeting No.17 on 27 November 2007. The CLG was informed that contamination issues at the Gosport Street fuel depots had delayed the tender process for construction of the southern portion of the bypass. The possibility of the GHC was first raised at CLG Meeting No. 19 on 29 April 2008. The CLG was advised that this connection may be necessary should remediation be required for the identified contaminated land.

The possibility of the GHC was again raised at CLG Meeting No. 20 on 24 June 2008 where attendees at the meeting gave 'in principle' support for the GHC should the contamination issues not be able to be resolved in a timely manner. At the CLG Meeting No. 21, the RTA advised that

the GHC was considered to be a feasible interim modification to the project and an environmental assessment would be prepared and submitted to the DoP.

7.6. Community update for the GHC

The broader Moree community was notified of the proposed GHC via a press release and community update in October 2008. The press release and update highlighted the various ways that members of the community could engage with the project team.

Since the release of the community update in October 2008 the following community contacts have been received:

- Email (4) .
- Fax (2).
- Letters (2).
- Telephone Information Line (14).

The issues raised in these contacts have included:

- General project information (13).
- Requests for information on bypass traffic impacts (3).
- Property access related to flooding (1).
- Add to mailing list (1).
- CLG nomination (1).
- Enquiry about construction dates (1).
- Enquiry about design (2) .

7.7. Community contact since October 2008

Since the release of the community update in October 2008 the following community contacts have been received:

- Email (4).
- Fax (2).
- Letters (2).
- Telephone Information Line (14).

The issues raised in these contacts have included:

- General project information (13).
- Requests for information on bypass traffic impacts (3).

- Property access related to flooding (1).
- Add to mailing list (1).
- CLG nomination (1).
- Enquiry about construction dates (1).
- Enquiry about design (2).

7.8. Doorknocks

Prior to the announcement of the GHC the following doorknocks were undertaken:

Doorknock No.1 occurred in April 2005, approaching 52 properties for their comments on the modification of the EIS alignment on the southern section of the bypass.

Doorknock No. 2 in June 2008 advised landholders along the Gwydir Highway (Alice Street) of the need for the proposed GHC should construction be delayed on the southern stage of the bypass and sought to capture their concerns and issues. The door knock targeted 20 potentially affected residents and business owners/tenants along the 400 metres length of the Gwydir Highway (Alice Street).

A third doorknock was undertaken following the announcement of the GHC:

Doorknock No. 3 In October 2008 over 80 residents and special interest groups (such as business owners and business tenants) were notified of the proposed GHC through a focused series of community door knocks and letter box drops. This doorknock covered landholders along Alice Street, Frome Street and Gosport Street about the need for the GHC and the environmental assessment process.

Other stakeholders contacted included government agencies, utility authorities, emergency services, Moree Plains Shire Council and the organisers of the Moree Markets.

Issues raised during doorknocks

Business owners/tenants generally responded positively to the potential for the GHC, believing the through traffic would be beneficial for business. While the majority of the residents appreciated the need for the proposed GHC, many expressed specific concerns. For the businesses and residences along Alice Street, concerns raised included:

- Loss of parking along Alice Street and the associated nuisance to residents, and potential negative impacts on commercial activities.
- Constraints on access for deliveries to business along Alice Street.
- Lost opportunity impacts since some properties along Alice Street were purchased for commercial redevelopment after the bypass was completed.

- Noise from compression braking, vehicle acceleration and cornering will impact negatively on residents and businesses.
- Implication of increased vibration for properties along Alice Street.
- Constraints on access to individual properties.
- Impact on the local road network.
- Devaluation of properties.
- Impact on amenity opportunities.
- Noise, dust and vibration emanating from construction activities.
- Odour emanating from cattle trucks using GHC.
- Concern that the interim connection will become permanent

The issues raised by the community and agencies have been taken into consideration in the environmental assessment presented in this report. The key issues of construction impacts, noise and traffic are addressed in **Section 6.4, 6.5 and 6.6.**

8. Conclusion and Recommendations

8.1. Conclusion

Contaminated land issues discovered during property acquisition along the bypass south of the Gwydir Highway are continuing to delay the opening of the bypass. As an option to resolve this issue, the RTA has identified the Gwydir Highway connection (GHC) as a feasible modification to the approved project.

The GHC would facilitate staged opening and operation of the approved bypass by allowing the bypass north of the Gwydir Highway to open in advance of the bypass south of the Gwydir Highway. This would allow remediation works of the contaminated land to be completed without delaying the use of the northern section of the approved route (which is already under construction) and the staged opening of the bypass so that traffic can be redirected from the Moree town centre.

The GHC is consistent with the overall objectives of removing traffic from the Moree town centre and improving road safety and allows for consideration of public interest. The modification is also consistent with the principles of ecologically sustainable development.

The proposed GHC uses a section of the existing Gwydir Highway and does not involve construction of any new roads. As the Gwydir Highway is an existing road train and B-double route, the proposed use of this road for connection of the bypass would not result in significant changes to the existing environment. This modification to the approved project EA indicates that the main potential adverse impact associated with the proposed GHC is increased traffic noise, which would affect sensitive receivers (including residents and motels) along the affected section of the Gwydir Highway. To address this impact, additional noise mitigation measures, in addition to those specified in the current conditions for the approved project, would be required. The remainder of adverse impacts, including the potential temporary impacts of construction activities, would be minor and localised and would be adequately addressed by the existing conditions of approval for the approved project.

The proposed modification is regarded as the preferred option for an interim solution. The RTA is progressing with the works associated with the portion of the bypass to the south of the Gwydir Highway as far as possible and it is proposed to construct the southern portion of the bypass once the contaminated land has been satisfactorily remediated and acquired.

8.2. Recommendations

This modification to the approved project EA indicates that the key issues are noise and vibration, traffic and transport and construction activities. The modification to the approved project would result in the amendment of Condition 1 of the current approved project Newell Highway bypass of Moree town centre.

Condition 1 outlined in Schedule 2 of the current approved project states that:

The Activity must be carried out consistent with:

- a) the procedures, safeguards and mitigation measures identified in the EIS (2002), as modified by the Representations Report (2003); and*
- b) these Conditions.*

It is proposed that Condition 2 would be amended in Schedule 3 to reflect the inclusion of the measures in this modification to the approved project EA, and therefore should be modified as follows:

The GHC must be carried out consistent with:

- a) the procedures, safeguards and mitigation measures identified in the Modification EA; and*
- b) these Conditions.*

These conditions prevail in the event of any inconsistency with the requirements of the construction and operation of the Activity arising out of the documents described in (a) above.

The proposed additional management and mitigation measures would be required for the key and other issues and these have been summarised below.

8.3. Noise and vibration

Architectural acoustic treatments are the recommended form of mitigation for existing impacted dwellings. Treatments to individual impacted dwellings will be dependent on the age and construction of the property and may comprise of one or more of the following noise reduction techniques:

- Air-condition the living areas and sleeping quarters (allows windows to be closed).
- Install replacement windows or doors.
- Insulate walls.
- Floor treatments (generally older houses).
- Seal exterior wall penetrations.
- Caulk windows, window frames.
- Apply weather strip to exterior doors and interior operable window frames.

If the proposed architectural treatments have the desired outcomes of enabling the residences to keep the road facing windows closed, it could be anticipated that a 10 dB(A) decrease in noise levels within the residence would be achieved.

8.4. Traffic and transport

A two-phase approach is proposed for implementing the traffic management treatments. Phase 1 measures will be implemented initially. If complaints are received from residents and traffic counts assess an increase (greater than 50 percent) in legal heavy vehicle through traffic, Phase 2 of the LATM measures would be triggered.

Phase 1 Local area traffic management measures

- Impose local traffic zone in Dover and Warialda Streets between Alice Street and Adelaide Street.
- Reverse priority arrangements at the intersections of Warialda Street with Anne Street, Adelaide Street, Thompsons Street and Jones Avenue.
- Install signage restrict left turns by heavy vehicles from Alice Street into Warialda and Dover Streets.
- Construct a cul-de-sac at the southern end of Gosport Street to prevent access to Frome Street/Newell Highway. A one-way access from Frome Street would also be constructed to facilitate the northbound movement from Frome Street.
- Allow left turn in/out only from Gosport Street on northern and southern approaches to Alice Street.
- Retain the right turn into Gosport Street south, facilitating access from Alice Street to the Caltex fuel depot, other businesses and the Moree railway station
- Install signposting detailing altered access arrangements for Gosport Street north of Alice Street.

Phase 2 Local area traffic management measures

Treatments may include:

- Install physical deterrent devices such as chicanes or speed humps in Dover, Warialda and Gosport Streets.
- Construct physical devices to slow traffic in Warialda, Dover and Gosport Streets.
- Remove the current B-double approved status of Gosport Street north of the Caltex depot and Edward Street.

In addition, for Balo Street, removal of B-double and road train status between Alice Street and Gwydir Street will be implemented once the bypass north of the Gwydir Highway is opened. Further mitigation measure to deter heavy vehicles may include:

- Weight restrictions.
- Reduced speed limit, such as a 40km/hr high pedestrian activity area.
- Raised pedestrian crossings through the shopping centre, which would improve pedestrian amenity and reduce vehicle speeds.

8.5. Other issues

The other issues comprise soil and water, air quality, land use and social impacts, Aboriginal heritage, non-Aboriginal heritage, urban landscape design, hazards, waste generation and disposal and cumulative impacts. The GHC management requirements for the minor issues are considered to be adequately covered by the existing conditions of approval and commitments in the EIS (2002) and Representations Report (2003) for the approved project. No additional impact mitigation or management measures are proposed for the other issues.

9. References

Moree Bypass - Preliminary Heritage Assessment Gosport Street Option (2002). Prepared by Conybeare Morrison and Partners for the NSW Roads and Traffic Authority.

An Archaeological Survey of the Proposed Newell Highway, Moree Bypass (survey for Aboriginal sites) (1999). Prepared by Kelton, J for Egis on behalf of the NSW Roads and Traffic Authority.

Proposed Newell Highway Bypass of the Moree Town Centre: Environmental Impact Statement (EIS). (2002). Prepared by Egis Consulting for the NSW Roads and Traffic Authority on behalf of the Commonwealth Department of Transport and Regional Services (DOTARS).

Newell Highway Bypass of Moree Town Centre, Representations Report (2003). Prepared by NSW Roads and Traffic Authority.

The Newell Highway Bypass of the Moree Town Centre, Alignment Option 4: Review of Environmental Factors (2005). Prepared by Sinclair Knight Merz for the NSW Roads and Traffic Authority on behalf of the Commonwealth Department of Transport and Regional Services (DOTARS).

Guide to Traffic Generating Developments (2002). Prepared by NSW Roads and Traffic Authority.

Appendix A The Director-General's requirements



NSW GOVERNMENT
Department of Planning

Contact: Caitlin Bennett
Phone: 02 9228 6197
Fax: 02 9228 6355
Email: caitlin.bennett@planning.nsw.gov.au

Mr Jeffery Hall
Senior Project Manager
NSW Roads and Traffic Authority
PO Box 334
PARKES NSW 2870

Dear Mr Hall

Moree Town Centre Bypass (Newell Highway) – Proposed Modification

I refer to your letter dated 2 May 2008 regarding the proposed modification to the Moree town centre bypass project under Section 75W of the *Environmental Planning and Assessment Act 1979* (the Act) to enable the option of staging the operation of the project.

In accordance with section 75W(3) of the Act, please find attached the Director-General's requirements (DGRs) for the environmental assessment (EA) of the proposed modification. These requirements must be addressed within the future modification request before the matter will be considered by the Minister for Planning.

I would appreciate it if you would contact the Department at least two weeks before you propose to submit the modification request to determine:

- the fees applicable to the modification request;
- consultation and public exhibition arrangements that may apply;
- options available in publishing the modification request via the Internet; and
- number and format (hard-copy or CD-ROM) of the modification request (and supporting assessment) that will be required.

It is noted that the NSW Roads and Traffic Authority intends to exhibit the preliminary EA of the modification and seek public comment on the proposed modification prior to submitting the request to the Department for consideration. Whilst consultation with the community during the preparation of the EA is supported, the Department is responsible for the exhibition of proposals subject to Part 3A of the Act and reserves the right to place the future modification request on public exhibition once submitted with the Department. Should the RTA proceed with the public exhibition of the preliminary EA, the Department stresses that the RTA must clearly articulate the purpose of the exhibition and explain the process that will apply to the modification under Part 3A of the Act once it has been submitted with the Department.

If you have any enquiries about these requirements, please contact Caitlin Bennett, A/ Manager (Transport), on 02 9228 6197 or via email (caitlin.bennett@planning.nsw.gov.au).

Yours sincerely

27.5.08

Chris Wilson
Executive Director
Major Project Assessments
As delegate for the Director-General

Director-General's Requirements

Section 75W of the *Environmental Planning and Assessment Act 1979*

Modification	Proposed modification to the Moree Town Centre Bypass (Newell Highway) to enable the option to stage operations.
Location	Newell Highway, Moree
Proponent	NSW Roads and Traffic Authority
Requirements	The environmental assessment of the modification must include the following: • a detailed description of the proposed modification during the construction, operational and decommissioning stages of the proposed interim connection, this includes a description of the upgrades and alterations to the existing road network (and associated land acquisitions) would be undertaken as part of the modification • the justification/need for the proposed modification; • the identification of any commitments within the original Environmental Impact Statement (EIS)/Representations Report and the requirements of the Minister's approval for the project that will be affected and/or require amendment; • an assessment of key issues consistent with relevant standards and guidelines, including (but not necessarily limited to): ▪ noise and vibration, specifically the impacts on neighbouring roads as a result of the proposed re-direction of Newell Highway traffic onto the Gwydir Highway (Alice Street). The assessment must be conducted in accordance with <i>Environmental Criteria for Road Traffic Noise</i> (EPA 1999) and must outline the noise mitigation measures that would be implemented to mitigate the potential impacts on sensitive receivers. ▪ traffic and transport, specifically the impacts on the temporary redistribution of traffic and the associated impacts on the safety, performance and efficiencies of the road network, including the Gwydir and Newell Highways, the surrounding local streets and the level crossing. This assessment must also give consideration to potential impacts on businesses and recreational facilities as a result of alterations to the road and pedestrian network, and access arrangements. ▪ construction impacts, specifically the potential impacts on the environment and surrounding receivers during any construction works associated with the proposed interim connection, and details on how these would be mitigated and/or managed. • an appropriate and justified level of consultation with local and State public authorities (including the Department of Environment and Climate Change, Moree Shire Council and the relevant rail authorities) and service providers; special interest groups, and the public, including the project Community Liaison Group and affected landowners.

Appendix B Noise and vibration assessment

Appendix C Traffic and transport assessment

Appendix D Proposed amendments to CoAs

Activity Approval

Section 115B of the *Environmental Planning & Assessment Act 1979*

I, the Minister Assisting the Minister for Infrastructure and planning (Planning Administration) approve under s.115B of the *Environmental Planning and Assessment Act 1979* the Activity referred to in Schedule 1, subject to the conditions in Schedule 2.

Diane Beamer MP
**Minister Assisting the Minister
for Infrastructure and Planning
(Planning Administration)**

Dated this 20 day of July 2004

S01/00191

SCHEDULE 1: DESCRIPTION OF ACTIVITY

The Activity is the Newell Highway bypass of Moree Town Centre as described in the:

1. environmental impact statement (EIS) for the Proposed Newell Highway bypass of Moree Town Centre prepared by egis Consulting dated, August 2003; as modified by the
2. Representations Report for the Newell Highway bypass of Moree town Centre prepared by the Roads and Traffic Authority (RTA), dated October 2003.

The Activity does not include any remediation works required on land previously zoned as Special Uses (Railway) under the *Moree Plains Local Environmental Plan (LEP) 1995*

SCHEDULE 2: CONDITIONS OF APPROVAL – NEWELL HIGHWAY BYPASS OF MOREE TOWN CENTRE

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ABBREVIATIONS

ARI	Average Recurrence Interval
CLG	Community Liaison Group
CEMP	Construction Environmental Management Plan
dB(A)	Decibel, "A" weighted scale
DEC	Department of Environment and Conservation
DIPNR	Department of Infrastructure, Planning and Natural Resources
ECRTN	Environmental Criteria for Road Traffic Noise (EPA 1999)
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMR	Environmental Management Representative
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	Former Environmental Protection Authority (now. Department of Environment and Conservation).
L _{A90}	The noise level exceeded for 90% of a monitoring period, also referred to as the background noise level
L _{Aeq} (9hour)	Equivalent continuous (constant) sound. pressure level over a 9 hour period from 10pm to 7am
L _{Aeq} (15 hour)	Equivalent continuous (constant) sound pressure level over a 15 hour period from 7am to 10pm
L _{Aeq} (15 mins)	Equivalent sound pressure level over a 15 minute interval
LA1 (1 minute)	Sound pressure level exceeded for 1 per cent of the time measured over a 1 minute interval
L _{A10} (15 mins)	Sound pressure level exceeded for 10 per cent of the time over a 15 minute period
OEMP	Operation Environmental Management Plan
PAD	Potential Archaeological Deposit
RTA	Roads and Traffic Authority

DEFINITIONS

Activity	The activity described in Schedule 1 of this Approval.
Affected Landowner	Property owner identified in any of the EIS, Representations Report or CEMP to require a mitigation measure to ameliorate an identified impact to their property.
Ancillary Facility	Temporary facility for Construction such as office and amenities compound, concrete batch plant, materials storage compound.
Approved Activity Area	The footprint of the Activity covered by the Conditions of Approval.
Carbeen Open Forest	Areas identified in the EIS as the endangered ecological community 'Carbeen Open Forest in the Darling Riverine Plains and Brigalow

	Belt South Bioregions' under the Threatened Species Conservation Act 1995.
Conditions of Approval	The Minister's Conditions of Approval for the Activity
Construction	Includes all work in respect of the Activity other than survey, acquisitions, fencing, investigative drilling or excavation, building/road dilapidation surveys, minor clearing (except where threatened species, populations or ecological communities would be affected), establishing site compounds (in locations meeting the criteria of the Conditions), or other activities certified by the EMR to have minimal environmental impact (e.g. minor access roads, minor adjustments to services/utilities, etc.).
Definition of times	Daytime is 7am to 6pm Monday to Saturday, and 8am to 6pm Sundays and Public Holidays Evening is 6pm to 10pm Night-time is 10pm to 7am Monday to Saturday, and 10pm to 8am Sundays and Public Holidays
Department, the	Department of Infrastructure, Planning and Natural Resources
Director General, the	Director General of the Department or delegate
Director General's Agreement	A written advice from the Director General (or delegate).
Director General's Approval	A written approval from the Director General (or delegate). Where the Director General's Approval is required under a Condition the Director General will endeavour to provide a response within one month of receiving an approval request. The Director General may ask for additional information if the approval request is considered incomplete. When further information is requested the time taken for the Proponent to respond in writing will be added to the one month period.
Director General's Report	The report provided to the Minister by the Director General of the Department under section 115C of the <i>Environmental Planning and Assessment Act 1979</i> .
EIS	Means the environmental impact statement (EIS) for the Proposed Newell Highway bypass of Moree Town Centre prepared by egis Consulting dated, August 2003
GHC	Means the Gwydir Highway Connection as described in the Modification EA
GHC Conditions	Means the conditions in Schedule 3
Minister, the	Minister for Infrastructure and Planning.
Modification EA	The Modification to the Approved Project Environmental Assessment - Moree Town Centre Bypass, Gwydir Highway Connection prepared by Sinclair Knight Mertz dated April 2009.

Operation	Means the Operation of the Activity, but does not include commissioning trials of equipment or temporary use of parts of the Activity during Construction.
Proponent	Roads and Traffic Authority (RTA)
Publicly Available	Available for inspection by a member of the general public (for example available on an internet site or at a display centre)
Reasonable and Feasible	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and nature and extent of potential improvements. This definition is consistent with the ECRTN.
Relevant Aboriginal Groups	Moree Local Aboriginal Land Council
Relevant Councils	Moree Plains Shire Council
Relevant Government Departments	A government authority with a licensing or approval role for the Activity's construction or operation. These would generally be one or more of NSW Agriculture, the DEC, NSW Fisheries, the Heritage Office, the DIPNR.
Representations Report	Representations Report for the Newell Highway bypass of Moree Town Centre. prepared by the Roads and Traffic Authority (RTA), dated October 2003.
River	Has the meaning given under the <i>Water Management Act 2002</i> . In summary this is "any watercourse, whether perennial or intermittent and whether comprising a natural channel or a natural channel artificially improved". A detailed description of river or waterway types is available in the classification provided in the NSW Fisheries Guideline <i>Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings</i> (February 2004)
Sensitive Receiver	Residence, education institution (e.g. school, TAFE college), health care facility (e.g. nursing home, hospital) and religious facility (e.g. church)
Stage 1 of the Activity	That part of the Moree Bypass north of the Gwydir Highway (also known as Alice Street)
Stage 2 of the Activity	That part of the Moree Bypass south of the Gwydir Highway (also known as Alice Street), being that part not already included in Stage 1
Structure	Any fixed, artificial object including residence, farm shed, fence, dam, cable support structure, etc.
Town Centre	The commercial zoned area on either side of Balo Street and Frome Street (north) between the Mehi River Bridge and the Broadwater

ADMINISTRATIVE CONDITIONS

The Activity

1. The Activity must be carried out consistent with:
 - (a) the procedures, safeguards and mitigation measures identified in the EIS, as modified by the Representations Report; and
 - (b) these Conditions.

These Conditions prevail in the event of any inconsistency with the requirements for the Construction and Operation of the Activity arising out of the documents described in (a) above.
2. These Conditions of Approval do not relieve the Proponent of the obligation to obtain all other approvals and licences required under any other Act. The Proponent must comply with the terms and conditions of such approvals and licences.

Compliance

General

3. The Proponent must notify in writing the Director General, Relevant Government Departments and Relevant Councils of the start of the Activity's Construction and Operation. Such notification must be provided at least four weeks before the relevant start date unless otherwise agreed to by the Director General.
4. It is the responsibility of the Proponent to ensure compliance with all of these Conditions and to implement any measures arising from these Conditions of Approval.
5. The Proponent must comply with any requirements of the Director General arising from the Department's assessment of:
 - (a) any reports, plans or correspondence that are submitted to satisfy these Conditions of Approval; and
 - (b) the implementation of any actions or measures contained in such reports, plans or correspondence.

Staging Report

6. The Proponent may elect to construct the Activity in discrete work packages or defined stages provided that such stages or work packages are consistent with these Conditions of Approval. Where discrete work packages or defined stages are proposed, the Proponent must submit a Staging Report to the Director General at least four weeks before Construction commences (or within any other time agreed to by the Director General). The Staging Report must:
 - (a) describe the work packages or defined stages; and

- (b) identify how the Conditions will be addressed in each work package or defined stage.

Staged Opening

6a The Proponent may elect to open that portion of the Activity north of the Gwydir Highway (Alice Street) (**Stage 1**) prior to completion of Stage 2 of the Activity.

6b If the Proponent elects to open Stage 1 prior to completing Stage 2 of the Moree Bypass, the RTA will implement the Gwydir Highway Connection (GHC) in accordance with:

- (c) the Modification to the Approved Project Environmental Assessment - Moree Town Centre Bypass, Gwydir Highway Connection prepared by Sinclair Knight Mertz dated January 2009 (**Modification EA**); and
- (d) the additional conditions in Schedule 3 (the **GHC Conditions**).

The proponent shall only be required to comply with the additional conditions in Schedule 3 (the **GHC Conditions**) if it elects to open Stage 1 of the Activity prior to completion of Stage 2 of the Activity.

Pre-Construction Compliance Report

- 7. The Proponent must submit a Pre-Construction Compliance Report to the Director General at least four weeks before Construction commences (or within any other time agreed to by the Director General).

The Pre-Construction Compliance Report must include:

- (a) details of how the Conditions of Approval required to be addressed before Construction were complied with;
- (b) the date of compliance with each condition, including dates of submission of any required reports and/or approval dates; and
- (c) details of any approvals or licences required to be issued by Relevant Government Departments before Construction commences.

Pre-Operation Compliance Report

- 8. The Proponent must submit a Pre-Operation Compliance Report to the Director General at least four weeks before Operation commences (or within any other time agreed to by the Director General).

The Pre-Operation Compliance Report must include:

- (a) details of how the Conditions of Approval required to be addressed before Operation were complied with;
- (b) the date of compliance with each condition, including dates of submission of any required reports and/or approval dates; and
- (c) details of any approvals or licences issued by Relevant Government Departments for the Activity's Operation.

Construction Compliance Reports

9. The Proponent must provide the Director General, Relevant Councils and any other government department nominated by the Director General with Construction Compliance Reports. The EMR must review the Construction Compliance Reports before they are submitted to the Director General and bring to the Director General's attention any shortcomings.

The first Construction Compliance Report must report on the first six months of construction and be submitted a maximum six weeks after expiry of that period and subsequent reports at intervals of a maximum six months thereafter (or at any other time interval agreed to by the Director General) for the duration of Construction.

The Construction Compliance Reports must include information on:

- (a) compliance with the CEMP and the Conditions of Approval;
- (b) compliance with any approvals or licences issued by Relevant Government Departments for the Construction phase of the Activity;
- (c) the implementation and effectiveness of environmental controls. The assessment of effectiveness should be based on a comparison of actual impacts against performance criteria identified in the CEMP;
- (d) environmental monitoring results, presented as a results summary and analysis;
- (e) the number and details of any complaints, including a summary of main areas of complaint, action taken, response given and intended strategies to reduce complaints of a similar nature;
- (f) details of any review and amendments to the CEMP resulting from Construction during the six months; and
- (g) any other matter relating to compliance with the Conditions of Approval or as requested by the Director General.

The Construction Compliance Reports must also be made Publicly Available.

Environmental Impact Audits

Environmental Impact Audit Report - Construction

10. An Environmental Impact Audit Report - Construction must be prepared and submitted to the Director General a maximum three months after the Activity begins Operation. The Environmental Impact Audit Report - Construction must also be submitted to other government departments upon the request of the Director General.

The Environmental Impact Audit Report - Construction must:

- (a) identify the major environmental controls. used during Construction and assess their effectiveness;
- (b) summarise the main environmental management plans and processes implemented during Construction and assess their effectiveness;

- (c) identify any innovations in Construction methodology used to improve environmental management; and
- (d) discuss the lessons learnt during Construction, including recommendations for future projects.

Environmental Impact Audit Report - Operation

11. An Environmental Impact Audit Report - Operation must be submitted to the Director General a maximum 24 months after the Activity begins Operation and at any additional periods that the Director General may require. The Environmental Impact Audit Report - Operation must also be submitted to other government departments upon the request of the Director General.

The Environmental Impact Audit Report - Operation must:

- (a) be certified by an independent person at the Proponent's expense. The certifier must be advised to the Director General before the Environmental Impact Audit Report - Operation is prepared;
- (b) compare the Operation impact predictions made in the EIS, Representations Report and any supplementary studies with the actual impacts;
- (c) assess the effectiveness of implemented mitigation measures and safeguards;
- (d) assess compliance with the systems for operational maintenance and monitoring;
- (e) discuss the results of consultation with the local community particularly any feedback or complaints; and
- (f) be made Publicly Available.

ENVIRONMENTAL MANAGEMENT

Environmental Management Representative

12. The Proponent must request the Director General's Approval for the appointment of an Environmental Management Representative (EMR) at least three months before Construction commences (or within any other time agreed to by the Director General). In its request the Proponent must provide the following information, the:
 - (a) qualifications and experience of the EMR including demonstration of relevant Australian standards for environmental auditors;
 - (b) role and responsibility of the EMR;
 - (c) authority and independence (from the Proponent or its contractors) of the EMR including details of the Proponent's internal reporting structure; and
 - (d) resourcing of the EMR role.

The EMR must be available:

- (i) for sufficient time to undertake the EMR role. This timing shall be agreed between the Proponent and the EMR and advised to the Department in the request for approval;
 - (ii) at any other time requested by the Department; and
 - (iii) during any Construction activities identified in the CEMP to require the EMR's attendance.
- 13. The Director General may at anytime immediately revoke the approval of an EMR appointment by providing written notice to the Proponent. Interim arrangements for EMR responsibility following the cancellation notice must be approved by the Director General.
- 14. The EMR is authorised to:
 - (a) consider and advise the Department and the Proponent on matters specified in these Conditions of Approval and compliance with such;
 - (b) determine whether work falls within the definition of Construction where clarification is requested by the Proponent;
 - (c) certify the CEMP;
 - (d) certify the OEMP (if required);
 - (e) review the Proponent's induction and training program for Construction personnel and monitor its implementation;
 - (f) periodically monitor the Proponent's activities to evaluate compliance with the CEMP. Periodic monitoring must involve site inspections of active work sites at least fortnightly;
 - (g) provide a written report to the Proponent of non-compliance with the CEMP. Non compliance must be managed as identified in the CEMP;
 - (h) direct the Proponent to stop work immediately if, in the view of the EMR, an unacceptable impact on the environment is occurring or is likely to occur. The stop work notice may be limited to specific activities causing an impact where the EMR can easily identify those activities. The EMR may also require that the Proponent initiate reasonable actions to avoid or minimise adverse impacts;
 - (i) review corrective and preventative actions to ensure the implementation of recommendations made from audits and site inspections;
 - (j) certify that minor revisions to the CEMP are consistent with the approved CEMP; and
 - (k) provide regular (as agreed with the Department) reports to the Department on matters relevant to carrying out the EMR role including notifying the Director General of any stop work notices.

The EMR must immediately advise the Proponent and the Director General of any incidents relevant to these Conditions resulting from the Construction or Operation of the Activity that were not dealt with expediently or adequately by the Proponent.

Construction Environmental Management Plan

15. A Construction Environmental Management Plan (CEMP) must be prepared and implemented in accordance with these Conditions of Approval and all relevant Acts and Regulations. The Proponent must obtain the Director General's Approval for the CEMP before Construction commences or within any other time agreed to by the Director General. The CEMP must be certified by the EMR to comply with the Conditions of Approval before the Proponent seeks the Director General's approval for the CEMP.

The Proponent must ensure that the mitigation measures identified in the EIS, Representations Report and in these Conditions are incorporated into the CEMP.

The CEMP must:

- (a) identify the Construction activities associated with the Activity including Construction sites and the staging and timing of proposed works;
- (b) cover any relevant environmental elements identified by the Proponent, or its contractor, from their environmental due diligence investigations;
- (c) contain the Construction Sub Plans required by the Conditions of Approval;
- (d) be prepared following consultation with Relevant Government Departments and Relevant Councils;
- (e) be Publicly Available;
- (f) include a community consultation and notification strategy (including local community, Relevant Government Departments, Relevant Councils), and complaint handling procedures;
- (g) include environmental management details such as:
 - (i) identification of statutory obligations which the Proponent is required to fulfil during Construction, including all approvals and licences;
 - (ii) an environmental management structure indicating the responsibility, authority and accountability for personnel relevant to the CEMP;
 - (iii) the role of the EMR and activities requiring EMR attendance;
 - (iv) details of the Construction personnel induction and training program;
 - (v) emergency response procedures;
- (h) include implementation details such as:
 - (i) identification of relevant environmental elements;
 - (ii) measures to avoid and/or control environmental impacts;
 - (iii) the tools to be used to implement the CEMP such as plans, schedules and work instructions;

- (i) include monitoring and review details such as:
 - (i) performance criteria;
 - (ii) performance criteria monitoring methods for all environmental elements;
 - (iii) auditing and corrective actions procedures;
 - (iv) CEMP review procedures.

Operation Environmental Management Plan

16. An Operation Environmental Management Plan (OEMP) must be prepared and implemented in accordance with these Conditions and all relevant Acts and Regulations. The Proponent must submit the OEMP to the Director General before Operation commences or within any other time agreed to by the Director General. The OEMP must be certified by the EMR to comply with the Conditions of Approval.

The OEMP must:

- (a) identify the Operation activities;
- (b) include the Operation Sub Plans required under these Conditions of Approval;
- (c) be prepared in consultation with Relevant Government Departments and Relevant Councils;
- (d) cover any relevant environmental elements identified by the Proponent either from its environmental due diligence investigations or 'required to satisfy any other licence or approval';
- (e) be made Publicly Available;
- (f) include environmental management details such as:
 - (i) identification of statutory obligations which the Proponent is required to fulfil during the Activity's Operation, including all approvals and licences;
 - (ii) an environmental management structure indicating the responsibility, authority and accountability for personnel relevant to the OEMP;
 - (iii) details of a personnel induction and training program;
 - (iv) emergency response procedures;
- (g) include implementation details such as:
 - (i) identification of relevant environmental elements;
 - (ii) measures to avoid and/or control environmental impacts;
 - (iii) the tools to be used to implement the OEMP such as plans, schedules and work instructions;

- (h) include monitoring and review details such as:
 - (i) performance criteria;
 - (ii) performance criteria monitoring methods for all environmental elements;
 - (iii) auditing and corrective actions procedures;
 - (iv) OEMP review procedures.

If the Proponent has an Operation Environmental Management Plan (or similar system) for its other activities which is applicable to this Activity then that system may be proposed as the OEMP. Details of the existing system must be provided to the Director General demonstrating its application to this Activity.

COMMUNICATION AND CONSULTATION

Advice of Construction Activities

17. Before Construction commences, and then at maximum three monthly intervals, the Proponent must advertise in relevant newspapers the: nature of the works proposed for the next three months; areas in which these works are proposed; Construction hours; and a contact telephone number.

The Proponent must ensure that the local community and businesses are advised of Construction activities that could cause disruption. Methods to disseminate this information must be identified in the CEMP. Information to be provided must include:

- (a) details of any traffic disruptions and controls;
 - (b) construction of temporary detours; and
 - (c) work approved to be undertaken outside the normal Construction hours, in particular noisy works, before such works are undertaken.
18. The Proponent must establish an Activity internet site before construction commences and maintain the internet site until 12 months after opening the Activity. This internet site must contain:
 - (a) periodic updates of work progress, consultation activities and planned work schedules. The site must indicate the date of the last update and the frequency of the Internet site updates;
 - (b) a description of relevant approval authorities and their areas of responsibility;
 - (c) a list of reports and plans that are publicly available under this Approval and details of how these can be accessed;
 - (d) meeting notes of community liaison group meetings;
 - (e) contact names and phone numbers of the Activity communications staff; and
 - (f) the 24 hour toll-free complaints contact telephone number.

Updates of work progress, construction activities and planned work schedules must be provided where significant changes in noise or traffic impacts are expected.

Community Liaison Group

19. A Community Liaison Group (CLG) must be formed and hold its first meeting before Construction commences. The CLG must include the EMR and representatives from the Proponent and its contractor. Community representatives should be identified and selected from relevant community and business groups, individual members of the community adjoining the Activity and representatives from Relevant Councils. The Director General must be advised of the CLG membership following its formation.

The Proponent must, at its own expense:

- (a) nominate a chairperson for the CLG. The chairperson must be independent of the Proponent;
- (b) nominate two (2) representatives to attend all CLG meetings;
- (c) provide to the CLG regular information on the progress of work and monitoring results;
- (d) promptly provide to the CLG such other information as the Chair of the CLG may reasonably request concerning the environmental performance of the Activity;
- (e) provide access for site inspections by the CLG;
- (f) provide meeting facilities for the CLG, and take meeting notes of CLG meetings. These meeting notes, once endorsed by the Chair, must be available to CLG members within 14 days of the meeting;
- (g) where reasonably required by the Chair, arrange consultant(s) to explain technical information to the CLG; and
- (h) where reasonably required by the Chair, invite representatives from relevant Government departments or other individuals to attend CLG meetings.

Issues for discussion may include, but not be limited to detailed design, the CEMP, Construction activities and any other issue considered relevant by the CLG.

The CLG may make comments and recommendations about the design and implementation of the Activity, which must be considered by the Proponent. The Proponent must report back to the CLG on its considerations. In the event of any dispute between the CLG and the Proponent, the Proponent's decision is final provided it is consistent with these Conditions of Approval.

20. The Proponent must consult all Affected Landowners regarding the implementation of mitigation measures identified in the EIS or Representations Report (as relevant) and the CEMP. Mitigation measures should be implemented according to a program discussed with the Affected Landowner and the Proponent if consistent with the Conditions of Approval.

Complaints Management System

21. The Proponent must implement a Complaints Management System before Construction commences. The System must include:
- (a) the name and contact details of the person(s) responsible for implementing and maintaining the Complaints Management System;
 - (b) adequate resources including people, communication facilities, transport etc.;
 - (c) a 24 hour, toll free telephone number listed with a telephone company and advertised. This telephone number must enable any member of the public to reach a person who can arrange a response to their complaint;
 - (d) a system to receive, record, track and respond to complaints within the specified timeframe. When a complaint cannot be responded to immediately, a follow-up verbal response on what action is proposed must be provided to the complainant within two hours during night-time works and 24 hours at other times;
 - (e) a process for the provision of a written response to the complainant within 10 days, if the complaint cannot be resolved by the initial or follow-up verbal response; and
 - (f) a mediation system for complaints unable to be resolved. Where external or independent mediation is required the mediator must be approved by the Director General.

Information on all complaints received, including the means by which they were addressed and whether resolution was reached with or without mediation, must be included in the Construction Compliance Reports and must be made available to the Director General on request.

FLORA AND FAUNA

Construction

22. A Flora and Fauna Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must be prepared in consultation with DEC and Relevant Councils and include:
- (a) methods to reduce and manage impacts on flora and fauna species (terrestrial and aquatic) and their habitat which may be directly or indirectly affected by the Activity;
 - (b) performance goals against which to measure the success of the methods;
 - (c) ecological details including:
 - (i) any necessary licences required from DEC;
 - (ii) plans showing: vegetation communities highlighting important fauna habitat areas and threatened species locations; areas to be cleared; and a clearing program. The plan must cover the Approved Activity Area and extend to vegetation in adjoining areas where this is both

- contiguous with the Construction footprint and contains important fauna habitat areas and/or threatened species;
 - (iii) procedures for vegetation clearing and soil management during Construction;
 - (iv) strategies for minimising vegetation clearance within the Approved Activity Area and protection of vegetated areas outside that area;
 - (v) methods to ensure topsoils, and where relevant subsoils, are stripped, stored and placed back in their original sequence;
 - (vi) a habitat tree management program including fauna recovery procedures, potential for relocation of hollow bearing trees, compensatory management measures (such as replacement of lost hollows with nesting boxes);
 - (vii) where possible, strategies for re-using in rehabilitation works individuals or populations of any threatened plant species that would be otherwise be destroyed by the Activity;
 - (d) a Weed Management Plan including:
 - (i) weed identification;
 - (ii) weed eradication methods and protocols for the use of herbicides;
 - (iii) methods to treat and re-use weed infested topsoil;
 - (iv) strategies to control seed invasion (such as vehicle wash down);
 - (e) a program for reporting on the effectiveness of terrestrial and aquatic flora and fauna management measures against performance goals. Management methods must be reviewed where found to be ineffective.
23. Cleared vegetation must not be bulldozed into adjacent bushland.
24. The Proponent must ensure that vegetation disturbance below the bridge deck, between the piers, is consistent with Figure 9.7 of the EIS.
25. If during the course of Construction, the Proponent becomes aware of the presence of threatened species not identified and assessed in the EIS or Representations Report and which are likely to be affected, the Proponent must:
- (a) immediately cease all work likely to affect the threatened species;
 - (b) inform the Director General of the DEC and/or Director of NSW Fisheries as relevant; and
 - (c) not recommence work likely to affect the threatened species until receiving advice from the DEC and/or NSW Fisheries to do so.

NOISE AND VIBRATION

Construction Noise and Vibration Management Sub Plan

26. A Construction Noise and Vibration Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must be prepared in consultation with the Relevant Councils and the CLG and include:
- (a) education of Construction personnel about noise minimisation.
 - (b) identification of each Construction site and Ancillary Facility;
 - (c) identification of the specific activities that will be carried out and associated noise sources for each Construction site and Ancillary Facility;
 - (d) identification of all potentially affected Sensitive Receivers;
 - (e) the Construction noise objective specified in the Conditions of Approval;
 - (f) the Construction vibration criteria specified in the Conditions of Approval;
 - (g) determination of appropriate noise and vibration objectives for each identified Sensitive Receiver;
 - (h) noise and vibration monitoring, reporting and response procedures;
 - (i) assessment of potential noise and vibration from the proposed Construction methods including noise from Construction vehicles and any traffic diversions;
 - (j) analysis of reasonable and feasible noise mitigation measures such as;
 - (i) maximising the offset distance between noisy plant items and Sensitive Receivers;
 - (ii) Construction timetabling, in particular for works outside standard hours, to minimise noise impacts. This may include time and duration restrictions and respite periods;
 - (iii) avoiding using noisy plant simultaneously and/or close together, adjacent to Sensitive Receivers;
 - (iv) orienting equipment away from Sensitive Receivers; •
 - (v) carrying out loading and unloading away from Sensitive Receivers;
 - (vi) use of dampened tips on rock breakers;
 - (vii) use of portable enclosures around mobile and fixed plant where noise impacts are likely to exceed noise objectives;
 - (viii) using noise source controls, such as the use of residential class mufflers, to reduce noise from all plant and equipment including bulldozers, cranes, graders, excavators and trucks;
 - (ix) selection of plant and equipment based on noise emission levels;

- (x) use of alternative Construction methods;
- (xi) alternative arrangements with Affected Landowners (or residents of such properties) such as temporary relocation;
- (xii) selecting site access points and roads as far as possible away from Sensitive Receivers; and
- (xiii) use of alternatives to reversing alarms such as spotters, closed circuit television monitors and 'smart' reversing alarms;
- (k) a description of management methods and procedures and specific noise mitigation treatments that will be implemented to control noise and vibration during Construction;
- (l) justification for any activities outside the Construction hours specified in the Conditions of Approval. This includes identifying areas where Construction noise would not be audible at any Sensitive Receiver;
- (m) procedures for notifying residents of Construction activities that are likely to affect their noise and vibration amenity; and

contingency plans to be implemented in the event of non-compliances and/or noise complaints.

Construction Hours

27. Construction must be restricted to between 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.

Works may be undertaken outside these hours where:

- (a) the delivery of materials is required outside these hours by the Police or other authorities for safety reasons;
- (b) it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or
- (c) the work is identified in the Construction Noise and Vibration Management Sub Plan and approved as part of the CEMP.

Local residents should be informed of the timing and duration of work approved under item (c) at least 48 hours before that work commences.

Construction Noise Objective

28. The Construction noise objective for the Activity is to manage noise from Construction activities (as measured by a $L_{A10(15\text{minute})}$ descriptor) so it does not exceed the background L_{A90} noise level by more than 10 dB(A).

Background noise levels are those identified in the EIS or Representations Report or otherwise identified in the Construction Noise and Vibration Management Sub Plan.

Any activities that have the potential for noise emissions that exceed the objective must be identified and managed in accordance with the Construction

Noise and Vibration Management Sub Plan. The Proponent must implement all Reasonable and Feasible noise mitigation and management measures with the aim of achieving the Construction noise objective.

If the noise from a Construction activity is substantially tonal or impulsive in nature (as described in Chapter 4 of the *NSW Industrial Noise Policy*), 5dB(A) must be added to the measured Construction noise level when comparing the measured noise with the Construction noise objective.

Construction Noise Management

29. The Proponent must ensure that public address systems used at any Construction site are not used outside the Construction hours detailed in the Conditions of Approval unless otherwise approved through the Construction Noise and Vibration Management Sub Plan. Public address systems must be designed to minimise noise spillage off-site (for example by using directional speakers, volume control with background noise adjustments, locating and pointing speakers away from Sensitive Receivers etc.).
30. The Proponent must schedule rock breaking, rock hammering, sheet piling, pile driving and any similar activity only between the following hours unless otherwise approved in the Construction Noise and Vibration Management Sub Plan:
 - (a) 9 am to 12 pm and 2 pm to 5 pm, Monday to Friday; and
 - (b) 9 am to 12 pm, Saturday.
31. The Proponent must ensure that wherever reasonable and feasible, and where Sensitive Receivers may be affected, piling activities are completed using bored piles. If driven piles are required they must only be installed where approved in the Construction Noise and Vibration Management Sub Plan.
32. The Proponent must consult with Affected Landowners and, where feasible, erect Operation noise mitigation measures at the start of Construction (or at other times during Construction) to minimise Construction noise impacts.
33. The Proponent must consult with education institutions and minimise the impact of noise generating Construction works in their vicinity. The Proponent must ensure that Construction works audible at an institution are not timetabled during important events, such as major examination periods, unless arrangements acceptable to the affected institutions are made at no cost to the affected institutions.

Vibration Criteria

34. Vibration caused by Construction and received at any residence or Structure outside the Approved Activity Area boundaries must:
 - (a) for structural damage vibration be limited to German Standard DIN 4150 Part 3 *Structural Vibration in Buildings. Effects on Structures*; and
 - (b) for human exposure to vibration be limited to the evaluation criteria presented in British Standard BS 6472- *Guide to Evaluate Human Exposure to Vibration in Buildings* (1Hz to 80 Hz) for low probability of adverse comment.

These limits apply unless otherwise approved in the Construction Noise and Vibration Management Sub Plan.

Operation Noise Management

Operational Noise Criteria

35. Operational traffic noise must aim to achieve the operational noise criteria below, unless otherwise agreed to by the Director General through the Operational Noise Management Report:
- (a) for new freeway or arterial road sections as defined in Section 6.4 of the EIS:
 - (i) $L_{Aeq15\text{ hour}}$ 55 dB(A) (7:00 am to 10:00 pm);
 - (ii) $L_{Aeq9\text{ hour}}$ 50 dB(A) (10:00 pm to 7:00 am);
 - (b) for redevelopment of an existing freeway or arterial road as defined in Section 6.4 of the EIS:
 - (i) $L_{Aeq15\text{ hour}}$ 60 dB(A) (7:00 am to 10:00 pm); and
 - (ii) $L_{Aeq9\text{ hour}}$ 55 dB(A) (10:00 pm to 7:00 am).

Operational Noise Management Report

36. The Proponent must prepare an *Operational Noise Management Report* detailing its investigation of Reasonable and Feasible Operation noise mitigation methods. The Proponent must obtain the approval of the Director General for the Report before Construction commences or within any other time agreed to by the Director General. The report and investigation must be conducted in accordance with the NSW Government's *Environmental Criteria for Road Traffic Noise* and the RTA's *Environmental Noise Management Manual*. The report must include:
- (a) Identification of operational noise criteria in accordance with the Conditions of Approval;
 - (b) predictions of noise levels at all Sensitive Receivers;
 - (c) details of specific physical and managerial measures that could be used to control Operation noise from the Activity;
 - (d) details of Reasonable and Feasible noise mitigation measures. To assist in selecting noise mitigation options for road traffic noise an analysis for the entire Activity must be undertaken in accordance with Practice Note IV of the RTA *Environmental Noise Management Manual*. The importance applied to aesthetic impacts (visual, shadowing etc.) and noise mitigation along the Activity must be determined in consultation with the CLG and owners of directly affected land;
 - (e) the urban design issues relating to noise control measures;
 - (f) identification of which noise mitigation measures will be implemented, including their location, type and when they are to be implemented; and
 - (g) details of noise monitoring, reporting and complaint response procedures.

Operational Noise Monitoring

37. Monitoring of Operational noise must be undertaken in accordance with Practice Note VIII of the RTA's *Environmental Noise Management Manual*. The Proponent must assess the adequacy of the implemented traffic noise mitigation measures between six months and one year after opening the Activity. Should the assessment indicate traffic noise levels exceeding those predicted in the Operation Noise Management Report, the Proponent must:
- (a) immediately advise the Director General; and
 - (b) investigate and implement further Reasonable and Feasible mitigation measures in accordance with the NSW Government's *Environmental Criteria for Road Traffic Noise* and RTA's *Environmental Noise Management Manual*. The selection of these measures must be undertaken in consultation with Affected Landowners and/or occupiers and be consistent with the Operation Noise Management Report.

PHYSICAL ISSUES

Soil and Water Management

Soil and Water Quality Management Sub Plan

38. A Soil and Water Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must be prepared in consultation with Relevant Government Departments and Relevant Councils. The Sub Plan must:
- (a) where relevant, be consistent with the Department of Housing's guideline *Managing Urban Stormwater - Soils and Construction*, the RTA's *Guidelines for the Control of Erosion and Sedimentation in Roadworks* and the DIPNR *Constructed Wetlands Manual*;
 - (b) identify the Construction activities that could cause soil erosion or discharge sediment or water pollutants from the site;
 - (c) describe management methods to minimise soil erosion or discharge of sediment or water pollutants from the site including a strategy to minimise the area of bare surfaces during Construction (such as progressive site rehabilitation and protecting slopes with geotextile fabric), including strategies to address the properties of the 'Moree black soils';
 - (d) describe the location and capacity of erosion and sediment control measures;
 - (e) identify the timing and conditions under which Construction stage controls will be decommissioned;
 - (f) include contingency plans to be implemented for events such as fuel spills; and
 - (g) identify how the effectiveness of the sediment and erosion control system will be monitored, reviewed and updated.

Construction

39. An appropriately qualified soil scientist must be consulted according to a schedule identified in the Soil and Water Management Sub Plan to:

- (a) undertake inspections of temporary and permanent erosion and sedimentation control devices;
- (b) ensure that the most appropriate controls are being implemented;
- (c) check that controls are being maintained in an efficient condition; and
- (d) check that controls meet the requirements of any relevant approval/licence condition(s).

The results of these inspections and any follow-up actions must be reported in the Construction Compliance Reports required by the Conditions of Approval.

40. The Proponent must provide appropriate detention systems for containment of spills and materials consistent with the RTA's *Code of Practice for Water Management - Road Development and Management*.

Operation

41. All Operation stage controls for stormwater drainage and water pollution must be located, designed, constructed, operated and maintained to meet the requirements of Relevant Government Departments and Relevant Councils. All controls, including wetland filters, grass filter strips and gross pollutant traps must be inspected regularly and maintained in a functional condition for the life of the Activity.

Bridge and Culvert Design

42. The Proponent must consult with DIPNR, DEC and NSW Fisheries regarding the design and construction of bridges and culverts. In undertaking bridge design and construction, the Proponent must:
- (a) investigate designing bridge structures suitable for fauna use in consultation with the DEC;
 - (b) not construct earth or rock fill platforms for driving piles unless otherwise agreed by NSW Fisheries;
 - (c) not include street lighting that may disturb fauna movements of nocturnal species along the Mehi River;
 - (d) ensure that no temporary or permanent barriers to fish passage are erected across the Mehi River;
 - (e) locate bridge abutments located away from the edge of a river unless otherwise agreed by NSW Fisheries;
 - (f) ensure that there is no drop or 'waterfall' effect at the discharge from a structure;

- (g) set the base of culverts into (rather than on) the floodplain so that natural sediments can cover the bottom, providing a less alien habitat for fish passage; and
- (h) provide a low flow channel' in the main flow cell of a box culvert to facilitate fish passage during periods of low flow in important (as defined by NSW Fisheries Guidelines) fish streams.

Flooding

- 43. The Proponent must endeavour to resolve amicably any dispute between itself and any landowner about alterations to flooding characteristics caused by the Activity. If the parties cannot reach a mutually satisfactory resolution then the dispute resolution requirements of the Conditions of Approval (the complaints management system) shall apply.

Spoil and Fill Management

- 44. A Spoil and Fill Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must include:
 - (a) details of the movement of site generated spoil and fill within the Activity;
 - (b) the source of imported fill material and where it will be stockpiled and used; and
 - (c) methods to re-use or dispose excess or unsuitable spoil material including volumes and disposal sites.
- 45. All material excavated from the Construction must be re-used or recycled unless otherwise approved in the Spoil and Fill Management Sub Plan. The Proponent must ensure that the re-use of material generated from Construction is maximised in preference to importing fill.

Air Quality

- 46. A Dust Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must identify:
 - (a) potential sources of dust;
 - (b) dust management objectives consistent with EPA guidelines;
 - (c) a monitoring program to assess compliance with the identified objectives;
 - (d) mitigation measures to be implemented, including measures during weather conditions where high level dust episodes are probable (such as strong winds on hot, sunny days); and
 - (e) a progressive revegetation strategy for exposed surfaces with the aim of minimising exposed surfaces.
- 47. Construction vehicles using public roads must be maintained to prevent any loss of load, whether dust, liquid or soils. Facilities must be provided at exit points of all Construction sites/compounds to minimise tracking mud, dirt or other material onto a public road or footpath.- In the event of any spillage, the Proponent must remove the spilled material as soon as practicable within the working day of the spillage.

48. The Proponent must ensure that all Construction plant and equipment are:
- (a) maintained in a proper and efficient condition; and
 - (b) operated in a proper and efficient manner.

Greenhouse Gases and Sustainable Energy

49. The Proponent must promote the reduction of greenhouse gases during Construction by adopting energy efficient work practices including:
- (a) developing and implementing procedures to minimise energy use;
 - (b) conducting awareness programs as part of induction for all site personnel regarding energy conservation methods; and
 - (c) conducting regular energy audits during the Activity to identify and address energy waste.
50. The Proponent must use electrical energy derived from a renewable energy source accredited by SEDA for the supply of at least 50% of the electrical energy requirements for the Activity's Construction. Power consumption (green power or other) must be reported in the Construction Compliance Reports.

SOCIAL AND ECONOMIC ISSUES

Property Damage and Access

51. Subject to landowner agreement, building condition surveys must be conducted on all Structures within:
- (a) 200 metres of blasting;
 - (b) 30 metres of the Activity; or
 - (c) any other locations identified by the EMR.

Building condition surveys must be undertaken at least 30 days before Construction occurs within the distance limits described in this condition.

The owners of all properties on which building condition surveys are to be conducted must be advised at least 14 days before the survey of its scope and methodology and of the process for making a property damage claim. A copy of the survey must be given to each affected owner at least three weeks before Construction that could affect the property commences. A register of all properties surveyed must be maintained by the Proponent indicating whether the owner accepted or refused the offer. A copy of the register must be provided to the Director General upon request.

52. Building condition surveys need not be undertaken if a risk assessment indicates structures will not be affected. The risk assessment must be undertaken before Construction commences by geotechnical and construction engineering experts with appropriate registration on the National Professional Engineers Register.
53. Any property damage caused directly or indirectly by the Activity's construction (including vibration and groundwater changes) must be rectified at no cost to the owner(s).

54. Where a licensed bore, dam or other property water supply is adversely affected by the Activity the Proponent must reinstate a water supply of equivalent quality and quantity. Alternatively the Proponent may negotiate compensation for the loss with the landowner.
55. The Proponent must ensure that access to properties is maintained throughout Construction. The Proponent must ensure that any legal property access affected by the Activity is reinstated to an equivalent standard or that alternative arrangements are negotiated with the relevant landowner(s).

Traffic

56. Road dilapidation reports must be prepared for all roads likely to be used by Construction traffic before Construction commences and after Construction is complete. Copies of the reports must be provided to the Relevant Councils. Any damage resulting from Construction, except that resulting from normal wear and tear, must be repaired at the Proponent's cost.

Nothing in this Condition shall be taken as restricting the Proponent from negotiating an alternative arrangement for road damage with the Relevant Councils.

57. The Proponent must undertake full classified traffic counts in the Moree Town Centre (at the locations described in Attachment 1) and on Alice Street (west of the rail line) before the opening of the Activity to traffic; and then six months and twelve months from opening the Activity to traffic. Monitoring must be undertaken for a minimum of one week outside of school holidays, cotton and wheat harvests. The results of monitoring must be compared to levels predicted in Attachment 1. The results must be forwarded to the Department within one month of each monitoring period and be made publicly available.
58. Should the monitoring required as part of Condition 57 indicate actual articulated heavy vehicle traffic levels within the town centre are above those shown in Attachment 1, the Proponent must develop and implement measures, in consultation with Moree Plains Shire Council, that aim to achieve the predicted outcomes to the satisfaction of the Director General.
59. During detailed design of the Gwydir Highway/Bypass/railway crossing intersection, the Proponent must consider and document consideration of the recommendations of the Australian Transport Safety Bureau Investigation report into the Salisbury Interchange Level Crossing Accident (Report No. 2002/002). A copy of the document must be submitted to the Director General.
60. A Construction Traffic Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must be prepared in consultation with the Relevant Councils and include:
 - (a) identification of all public roads to be used by Construction traffic, in particular roads proposed to transport large quantities of Construction materials. The timing and duration of road usage must be stated; •
 - (b) management methods to ensure Construction traffic uses identified roads;
 - (c) identification of all public roads that may be partially or completely closed during Construction and the timing and duration of these closures.

Consideration must be given to programming Construction works to minimise road closures during peak hours and/or holiday periods;

- (d) impacts on existing traffic (including pedestrians, vehicles, cyclists and disabled persons);
- (e) temporary traffic arrangements including property access;
- (f) access to Construction sites including entry and exit locations and measures to prevent vehicles queuing on public roads;
- (g) a response plan for any Construction traffic incident; and
- (h) monitoring, review and amendment mechanisms.

61. All sections of State Highway transferred to a Relevant Council must:

- (a) be provided to a standard negotiated with the Relevant Council; and
- (b) have a negotiated arrangement covering maintenance costs.

Urban Design and Landscaping

Pre-Construction Report

62. The Proponent must prepare an *Urban Design and Landscape Report* in consultation with Relevant Councils and the CLG before Construction commences. The Report must present an integrated urban design for the Activity, applying design principles established in the EIS and Representations Report. The Proponent must obtain the approval of the Director General for the Report before Construction commences or within any other time agreed to by the Director General. The Report must:

- (a) identify the location and type of existing vegetation and proposed landscaped areas;
- (b) describe built elements including retaining walls, bridges and noise walls;
- (c) describe pedestrian and cyclist elements including footpath location, paving types and pedestrian crossings;
- (d) describe fixtures such as seating, lighting, fencing and signs;
- (e) be consistent with the Moree Township Street Tree Planting Sketch Plan and any other relevant Council policies or plans. The Proponent must justify in the report any inconsistency with relevant plans or policies in consultation with Relevant Councils;
- (f) describe signage and gateway treatments at the new Frome Street/Gosport Street intersection and the intersection of the Activity with the Old Newell Highway (Boggabilla Road);
- (g) include graphics for key elements such as sections, sketches, perspective views etc.;
- (h) be integrated with and include:

- (i) a Heritage Precinct Strategy (Condition 63);
- (ii) an Indigenous Heritage Strategy (Condition 64);
- (iii) a Pedestrian Access Strategy (Condition 65);
- (iv) a Revegetation Strategy (Condition 66); and
- (v) a Local Streets Strategy (Condition 67).

Heritage Precinct Strategy

63. The Proponent must prepare a **Heritage Precinct Strategy** as part of the *Urban Design and Landscape Report*. The Strategy must define the boundaries of the Heritage Precinct and identify:
- (a) landscaping and urban design elements;
 - (b) signage and/or interpretive information; and
 - (c) integration with pedestrian routes.

Indigenous Heritage Strategy

64. The Proponent must prepare an **Indigenous Heritage Strategy** in consultation with Local Aboriginal Groups as part of the *Urban Design and Landscape Report*. The Strategy must identify:
- (a) the proposed landscaping elements for the Steel Camp area;
 - (b) signage and/or interpretive information;
 - (c) an implementation strategy detailing funding for maintenance and ongoing consultation with Relevant Councils and Relevant Aboriginal Groups.

Pedestrian Access Strategy

65. The Proponent must prepare a **Pedestrian Access Strategy** as part of the *Urban Design and Landscape Report*. The Strategy must identify and describe:
- (a) key origins and destinations;
 - (b) the formal and informal pedestrian routes in the vicinity of the Activity and use of these routes;
 - (c) the pedestrian facilities to be provided as part of the Activity and how they relate to key origin and destinations; and
 - (d) pedestrian safety and crime prevention measures.

Revegetation Strategy

66. The Proponent must prepare a **Revegetation Strategy** as part of the *Urban Design and Landscape Report*. The Strategy must be prepared by a suitably qualified ecologist or experienced bush regenerator and include:

- (a) principles for revegetation and restoration of riparian vegetation and Carbeen Open Forest;
- (b) identification of the locally native species to be used in rehabilitation and landscaping works, including flora species suitable as a food resource for threatened fauna species;
- (c) the source of all seed or tubestock to be used in revegetation works including the identification of seed sources within the Approved Activity Area. Seed of locally native species within the Approved Activity Area should be collected before Construction commences to provide seed stock for revegetation;
- (d) methods to re-use topsoil and cleared vegetation; and
- (e) a program for the active management and maintenance of all preserved, planted and rehabilitated vegetation (including aquatic vegetation) including watering regimes, fencing, replacement of vegetation that may have died and weed management.

Local Streets Strategy

67. The Proponent must prepare a **Local Streets Strategy** as part of the *Urban Design and Landscape Report*. The Strategy must:
- (a) investigate landscaping and urban design elements consistent with the existing street beautification program on Frome Street and Balo Street to be implemented prior to being transferred to a Relevant Council;
 - (b) describe landscaping elements required on local streets that intersect with the Activity between the Southern Interchange and the Northern Interchange to ensure the Activity is integrated with landscaping and urban design being undertaken by Relevant Councils.

Operation

68. Landscape or rehabilitation works which, following Construction, are not the responsibility of the Proponent must be monitored and maintained by a landscape specialist at the Proponent's expense for a period of three years following completion of any landscaping stage or as otherwise identified in the *Urban Design and Landscape Report*. The Proponent must implement any required remedial measures to maintain landscaping works to the design standard established in the *Urban Design and Landscape Report*.
69. Any landscaping within the road reserve must be maintained by the Proponent to its design standard for the life of the Activity.

Heritage (Construction)

70. An Indigenous Heritage Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must be prepared in consultation with all Relevant Aboriginal Groups and the DEC and include:
- (a) details of any archaeological investigations to be undertaken and any associated licences or approvals required;

- (b) an education program for all personnel on their obligations for Aboriginal cultural materials; and
 - (c) procedures to be implemented if previously unidentified Aboriginal objects are discovered during Construction.
71. A Heritage Management Sub Plan must be prepared as part of the CEMP. The Sub Plan must be prepared in consultation with the Heritage Office and Relevant Councils and include:
- (a) description of heritage items in the vicinity of the Activity;
 - (b) details of any licences or approvals required;
 - (c) details of management measures to be implemented to prevent Construction impacts on heritage items and sites including the Moree Spa Baths and Victoria Hotel;
 - (d) procedures to be implemented if previously unidentified historical relics are discovered during Construction; and
 - (e) an education program for all personnel on their obligations for historic relics.

Business and Tourism

72. No commercial advertising must be allowed within the road reserve during Construction or Operation.

MISCELLANEOUS REQUIREMENTS

Hazards and Risk Management

73. As part of the Construction and Operational EMPs, the Proponent must prepare and implement Hazards and Risk Management Sub Plan(s). These Sub Plans must include:
- (a) details of the hazards and risks associated with the Activity; and
 - (b) pro-active and reactive mitigation measures including contingency plans to be implemented in the event an identified hazard occurs.

Contaminated Land

74. A Contamination Investigation Report must be prepared in consultation with the DEC and Relevant Councils to determine the nature, extent and degree of any contamination within the Approved Activity Area. The Report must:
- (a) be prepared in accordance with the EPA Guideline *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes*; and
 - (b) include a contingency plan to be implemented in the case of the unanticipated discovery of contaminated material during Construction.

Waste Management and Recycling

75. As part of the Construction and Operational EMPs the Proponent must prepare Waste Management and Reuse Sub Plan(s). The Sub Plans must address the management of wastes during the Construction and Operation stages respectively in accordance with the NSW Government's Waste Reduction and Purchasing Policy. The Sub Plan(s) must identify requirements for:
- (a) the application of the waste minimisation hierarchy principles of avoid-reduce-reuse-recycle-dispose;
 - (b) waste handling and storage;
 - (c) disposal of wastes. Specific details must be provided for cleared vegetation, contaminated materials, glass, metals and plastics, hydrocarbons (lubricants and fuels) and sanitary wastes;
 - (d) any waste material that is unable to be re-used, re-processed or recycled must be disposed at a facility licensed by the DEC to receive that type of waste; and
 - (e) implementation of energy conservation best practice.

Utilities and Services

76. Alterations to utilities and services must be determined by negotiation between the Proponent and the service providers. The Proponent in consultation with service providers must ensure that disruption to services resulting from the Activity are minimised and advised to customers.

Location of Ancillary Facilities

77. The sites for Ancillary Facilities, such as construction compounds and temporary concrete batching plants, must satisfy the following criteria unless otherwise identified in the CEMP:
- (a) be located within the Approved Activity Area;
 - (b) have ready access to the road network;
 - (c) be located to minimise the need for heavy vehicles to travel through residential areas;
 - (d) be sited on relatively level land;
 - (e) be separated from nearest residences by at least 200 m (or at least 250 m for a temporary concrete batching plant);
 - (f) not be located within 100 m of a river;
 - (g) be located above the 20 ARI flood level unless a contingency plan to manage flooding is prepared and implemented;
 - (h) have low conservation significance for flora, fauna or heritage and must not require vegetation clearing beyond that already required for the Activity; and
 - (i) not affect the land use of adjacent properties.

The location of the Ancillary Facilities must be identified in the CEMP and must include an analysis against the above criteria.

SCHEDULE 3: GWYDIR HIGHWAY CONNECTION - CONDITIONS OF APPROVAL

Note: refer to Schedule 2 condition no. 6

ADMINISTRATIVE CONDITIONS

1. The Abbreviations and Definitions in Schedule 2 apply to these GHC Conditions in Schedule 3.

The GHC

2. The GHC must be carried out consistent with:

- (a) the procedures, safeguards and mitigation measures identified in the Modification EA; and
- (b) these conditions.

These conditions prevail in the event of any inconsistency with the requirements for the construction and operation of the Activity arising out of the documents described in (a) above.

3. These Conditions of Approval do not relieve the Proponent of the obligation to obtain all other approvals and licences required under any other Act. The Proponent must comply with the terms and conditions of such approvals and licences.

Compliance

General

4. The Proponent must notify in writing the Director General, relevant government departments and relevant local councils of the start of the construction and operation of the GHC. Such notification must be provided at least four weeks before the relevant start date unless otherwise agreed to by the Director General.
5. It is the responsibility of the Proponent to ensure compliance with all of the conditions in this Schedule 3 and to implement any measures arising from the conditions in this Schedule 3.
6. The Proponent must comply with any requirements of the Director General arising from the Department's assessment of:
 - (a) any reports, plans or correspondence that are submitted to satisfy these conditions; and
 - (b) the implementation of any actions or measures contained in such reports, plans or correspondence.

Addendum to the Pre-Construction Compliance Report

7. The Proponent must submit an Addendum to the Pre-Construction Compliance Report (required in Condition 9 of the conditions in Schedule 2) to the Director General at least four weeks before construction of the GHC commences (or within any other time agreed to by the Director General).

The Addendum to the Pre-Construction Compliance Report must include:

- (a) details of how the GHC conditions required to be addressed before construction of the GHC were complied with;
- (b) the date of compliance with each condition, including dates of submission of any required reports and/or approval dates; and
- (c) details of any approvals or licences required to be issued by relevant government departments before construction of the GHC commences.

Construction Compliance Reports

8. The Proponent must provide the Director General, relevant local councils and any other government department nominated by the Director General with a Construction Compliance Report on completion of the construction of the GHC. The Environmental Management Representative (EMR) must review the Construction Compliance Report before it is submitted to the Director General and bring to the Director General's attention any shortcomings.

The Construction Compliance Report for the GHC should address as relevant those of the matters listed in Condition 9 in Schedule 2 as are relevant to the GHC.

ENVIRONMENTAL MANAGEMENT

Environmental Management Representative

9. The EMR appointed to for the purposes of the conditions in Schedule 2 is to also be the EMR and have the same roles and obligations for the purposes of the GHC in this Schedule 3.

Construction Environmental Management Plan

10. A Construction Environmental Management Plan for the GHC (the **GHC CEMP**) must be prepared and implemented in accordance with these GHC conditions and all relevant Acts and Regulations. The Proponent must obtain the Director General's Approval for the GHC CEMP before construction commences or within any other time agreed to by the Director General. The GHC CEMP must be certified by the EMR to comply with these GHC conditions before the Proponent seeks the Director General's approval.

The Proponent must ensure that the mitigation measures identified in the Modification EA and in these GHC conditions are incorporated into the GHC CEMP.

The GHC CEMP should address those of the matters identified in Condition 15 in Schedule 2 as are relevant to the GHC.

COMMUNICATION AND CONSULTATION

Advice of Construction Activities

11. At least 2 weeks before construction of the GHC commences, the Proponent must advertise in relevant newspapers the: nature of the works proposed; areas in which these works are proposed; construction hours; and a contact telephone number.

The Proponent must ensure that the local community and businesses are advised of construction activities that could cause disruption. Methods to disseminate this information must be identified in the GHC CEMP. Information to be provided must include:

- (a) details of any traffic disruptions and controls;
- (b) construction of temporary detours; and
- (c) work approved to be undertaken outside the normal construction hours, in particular noisy works, before such works are undertaken.

12. The internet site required by Condition 18 in Schedule 2 must be modified to include as relevant information in relation to the GHC,

Complaints Management System

13. The Complaints Management System implemented as part of Condition 21 in Schedule 2 must be extended before construction commences to apply to the GHC.

NOISE AND VIBRATION

Operational Noise Management

14. The Proponent must implement the operational noise measures outlined in the Modification EA, including those identified in section 6.5.

Operational Noise Monitoring

15. Monitoring of operational noise must be undertaken in accordance with Practice Note VIII of the RTA's *Environmental Noise Management Manual*. The Proponent must assess the adequacy of the implemented traffic noise mitigation measures between six months and one year after opening the GHC. Should the assessment indicate traffic noise levels exceeding those predicted in the Modification EA, the Proponent must:

- (a) immediately advise the Director General; and
- (b) investigate and implement further reasonable and feasible mitigation measures in accordance with the NSW Government's *Environmental Criteria for Road Traffic Noise* and RTA's *Environmental Noise Management Manual*. The selection of these measures must be undertaken in consultation with affected landowners and/or occupiers and be consistent with the Modification EA.

SOCIAL AND ECONOMIC ISSUES

Property Damage and Access

16. Unless a building condition survey has already been prepared under Condition 51 of Schedule 2, building condition surveys must be conducted subject to landowner agreement on all Structures within:

- (a) 30 metres of the GHC; or
- (b) any other locations identified by the EMR.

Building condition surveys must be undertaken at least 30 days before construction of the GHC occurs within the distance limits described in this condition.

The owners of all properties on which building condition surveys are to be conducted must be advised at least 14 days before the survey of its scope and methodology and of the process for making a property damage claim. A copy of the survey must be given to each affected owner at least three weeks before construction that could affect the property commences. A register of all properties surveyed must be maintained by the Proponent indicating whether the owner accepted or refused the offer. A copy of the register must be provided to the Director General upon request.

Traffic

17. The Proponent shall implement the traffic measures outlined in the Modification EA, including those identified in section 6.6.

Attachment 1 – Predicted total daily traffic volumes within the Moree Town Centre

PREDICTED TOTAL DAILY TRAFFIC VOLUMES WITHIN THE MOREE TOWN CENTRE (Vehicles per day)								
Balo Street - North of Heber Street								
	Without Bypass				With Bypass			
Year	2005	2010	2015	2020	2005	2010	2015	2020
Cars & Rigid Trucks	10890	11755	12546	13262	8375	8875	9252	9497
Articulated Heavy Vehicles	1448	1631	1839	2072	81	87	95	103
Total	12338	13386	14385	15334	8456	8962	9347	9600
Balo Street - South of Heber Street								
	Without Bypass				With Bypass			
Year	2005	2010	2015	2020	2005	2010	2015	2020
Cars & Rigid Trucks	16856	18603	20275	21874	14589	16005	17302	18473
Articulated Heavy Vehicles	1448	1631	1839	2072	81	87	95	103
Total	18304	20234	22114	23946	14670	16092	17397	18576

Notes: Heber Street is the Gwydir Highway west of Moree

Balo Street is the existing Newell Highway through Moree Town Centre