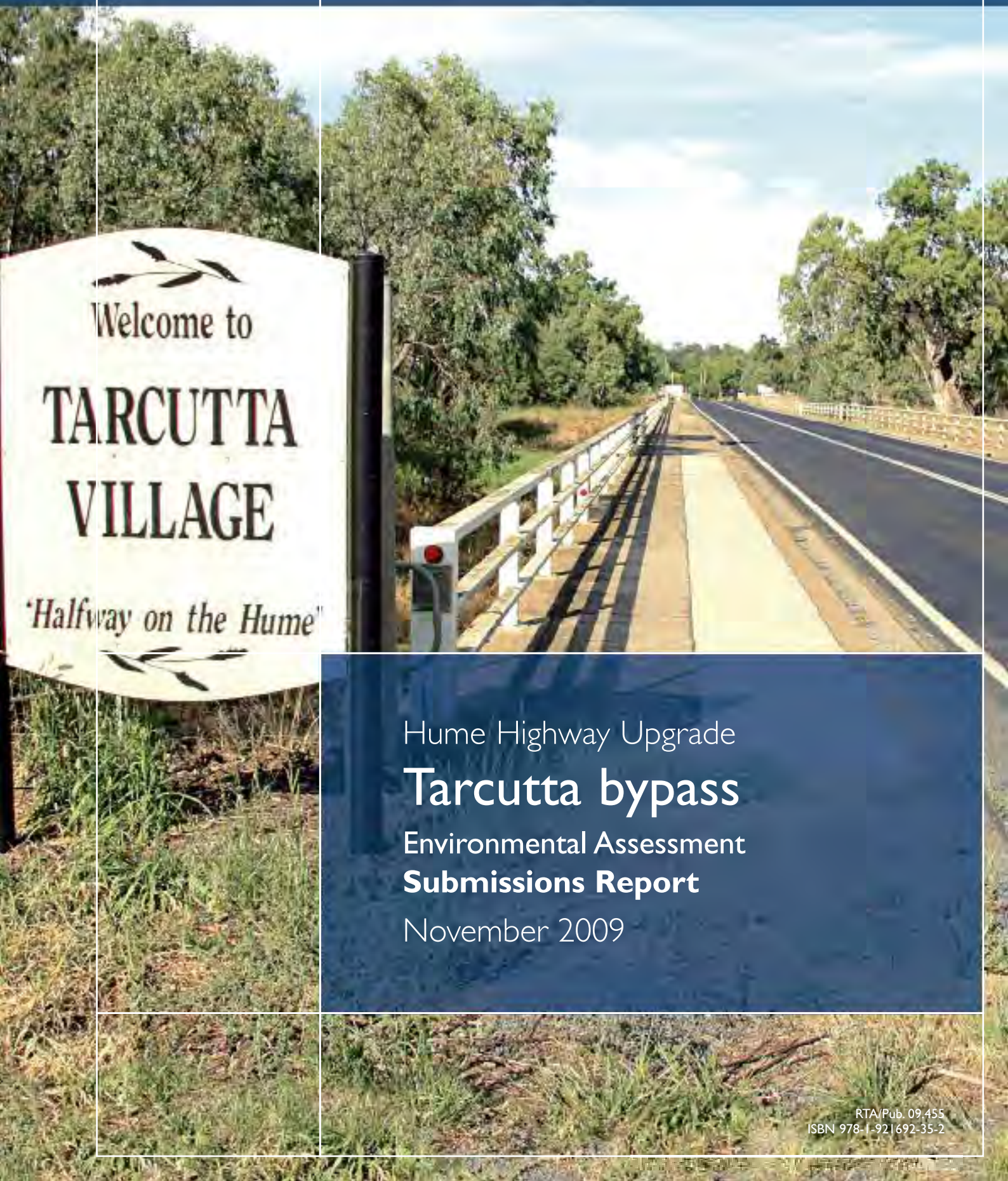

Hume Highway Upgrade

Tarcutta bypass

Environmental Assessment
Submissions Report

November 2009

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Submissions Report

November 2009

NSW Roads and Traffic Authority

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Contents

1 Introduction and background

1.1 The Project

The NSW Roads and Traffic Authority (RTA) proposes to construct a bypass of the village of Tarcutta located on the Hume Highway approximately 45 kilometres south of Gundagai and 30 kilometres south-east of Wagga Wagga. The project would include the construction of approximately seven kilometres of new dual carriageway from approximately two kilometres north of the village to two kilometres south of the village.

The project would include:

- Approximately seven kilometres of dual carriageway.
- A northern interchange in the vicinity of Mate Street, north of the village.
- Twin bridges over Tarcutta Creek.
- A southern interchange in the vicinity of Humula and Mates Gully roads, south of the village.
- Twin bridges over Keajura Creek.

A more detailed description of the project is provided in Chapter 5 of the *Hume Highway Upgrade Tarcutta Bypass Environmental Assessment* (the 'environmental assessment'; RTA August 2009).

A number of design changes have been made to the project as presented in the environmental assessment. The proposed design changes and an assessment of the impacts likely to be associated with the proposed design changes are described in Chapter 3.

1.2 Statutory context

The Minister for Planning has declared, by Order dated 20 December 2007 and published in the NSW Government Gazette (No 4 of 2008), that the Hume Highway bypass of Tarcutta is a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) applies. The Minister has also declared, by Order dated 4 March 2009 and published in the gazette (No 51 of 2009), that the Hume Highway bypass of Tarcutta is a critical infrastructure project under section 75B of the EP&A Act.

In accordance with the requirements of the EP&A Act, an environmental assessment was prepared to assess the potential impacts of the proposed bypass.

1.3 Environmental assessment exhibition

The environmental assessment was publicly displayed for 35 days from 2 September 2009 to 6 October 2009.

The environmental assessment was exhibited at the following locations:

- The Department of Planning (Information Centre, Bridge Street Sydney).
- Wagga Wagga City Council.
- Tarcutta Post Office.
- Halfway Café (Tarcutta).
- The Nature Conservation Council (Kent Street, Sydney).

An electronic copy of the environmental assessment was also available on the Department of Planning's website (www.planning.nsw.gov.au) and the project website (http://www.pb.com.au/humehighwaybypasses).

A staffed display was provided at the Tarcutta RSL Club on 17 September 2009. The objective of this staffed display was to provide the community with an opportunity to discuss aspects of the project with the project team.

A toll free project information line (1800 755 767) was available throughout the exhibition period.

1.4 Purpose of this document

During the exhibition of the environmental assessment, seven public submissions were made. The Director-General of the Department of Planning provided copies of the submissions to the RTA. In accordance with Section 75H(6) of the EP&A Act, by letter dated 15 October 2009, the Director-General required the RTA to address the issues raised in the submissions.

This report includes the RTA's responses to issues raised in submissions (Chapter 2), a description of proposed changes to the project (Chapter 3), and a revised statement of commitments (Chapter 4).

2 Response to issues

2.1 Respondents

The Department of Planning received a total of seven submissions in response to the exhibition of the environmental assessment, comprising one submission from the community and six submissions from government agencies.

Each submission has been examined individually to understand the issues being raised. The issues raised in the submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The RTA's response to these issues forms the basis of this chapter.

Due to the small number of submissions that were received on the project, government and community submissions have been considered together. The RTA's response to each of the submissions is provided in Sections 2.3 to 2.14.

2.2 Overview of issues raised

Submissions were received from the following government agencies:

- Department of Environment, Climate Change and Water.
- NSW Office of Water.
- Land and Property Management Authority.
- NSW Transport and Infrastructure.
- Industry and Investment NSW.
- Wagga Wagga City Council.

One submission was received from the community.

A summary of the key issues raised in government agency and community submissions is provided in Sections 2.2.1 and 2.2.2, respectively.

2.2.1 Government agency submissions

Six government agency submissions were received on the project, which predominately focused on the particular discipline areas of those agencies. Recommendations for conditions of approval were also made. The issues raised by each of the agencies is summarised below.

NSW Department of Environment, Climate Change and Water (DECCW)

The DECCW raised a number of issues related to environmental management, including biodiversity, Aboriginal heritage, noise and vibration, hydrology, quarrying and monitoring. The Department also made a number of recommendations to be included in the statement of commitments, and outlined recommendations for the conditions of approval. Issues raised in DECCW's submission are addressed in Sections 2.3 (*Flora and fauna*), 2.4 (*Aboriginal heritage*), 2.7 (*Noise and vibration*), 2.10 (*Planning and statutory requirements*), 2.11 (*Soils and water quality*) and 2.14 (*General support for the project*).

NSW Office of Water (NOW)

The NOW identified a number of project related activities that may require licences under the *Water Act 1912* and the *Water Management Act 2000*. NOW also made recommendations for the conditions of approval. Issues raised in the NOW's submission are addressed in Sections 2.10 (*Planning and statutory requirements*) and 2.14 (*General support for the project*).

NSW Land and Property Management Authority (LPMA)

The LPMA identified four parcels of crown land that it recommended the RTA acquire in accordance with the provisions of the *Land Acquisition (Just Terms) Compensation Act 1991*, and three areas that require safe access from the Hume Highway. The LMPA requested that the RTA provides a safe crossing area for the proposed Rail Trail located within the Wagga Wagga Tumbarumba Railway line where it crosses the Hume Highway. A number of recommendations were also made for the conditions of approval. Issues raised in the LMPA's submission are addressed in Sections 2.3 (*Flora and fauna*), 2.8 (*Socio-economic*) and 2.9 (*Traffic and transport*).

NSW Transport and Infrastructure (NSWTI)

The NSWTI noted that the environmental assessment had adequately addressed the NSWTI's previously raised comments and had no objections to the project proceeding.

Industry and Investment NSW (I&INSW)

The Aquatic Habitat Protection, Fisheries Conservation and Aquaculture Branch of I&INSW raised no objections to approval of the project, subject to the addressing of certain issues relating to aquatic habitats. The issues to be addressed included riparian vegetation, snags (woody debris) and assistance with the re-snagging initiative, fish passage, water quality and monitoring. A number of recommendations were also made for the conditions of approval. Issues raised in I&INSW's submission are addressed in Section 2.3 (*Flora and fauna*).

Wagga Wagga City Council (WWCC)

WWCC was supportive of the project. Council raised a number of issues relating to the environmental assessment, which included the loss of native vegetation, biodiversity offsets, fragmentation of habitat, pedestrian access, the stock route, severed agricultural land and economic impacts. Issues raised in WWCC's submission are addressed in Sections 2.3 (*Flora and fauna*), 2.9 (*Traffic and transport*) and 2.8 (*Socio-economic*).

2.2.2 Community submission

One submission was received from the community in response to the exhibition of the environmental assessment. The key issues raised in this submission primarily related to the project's impact on surrounding property, in particular operational traffic noise, amenity, flooding, privacy and property value. Concern was also raised in regard to the project's impact on biodiversity and the historical significance of the Old Tarcutta Inn. Issues raised in the community submission are addressed in Sections 2.3 (*Flora and fauna*), 2.6 (*Hydrology*), 2.7 (*Noise and vibration*), 2.5 (*Non-Aboriginal heritage*), and 2.8 (*Socio-economic*).

2.3 Flora and fauna

2.3.1 Habitat loss and vegetation clearing

Submissions

DECCW, LMPA, and community submission

Summary of issues

- The loss of 16 hectares of native vegetation as a result of road construction represents a significant reduction in available habitat for threatened species in the vicinity of the project and may result in vegetation cover falling below critical threshold values.
- The degradation of riparian vegetation is listed as a Key Threatening Process under the threatened species schedule of the *Fisheries Management Act 1994*.
- The proposal would result in the loss of habitat for flora and fauna which is portrayed as being of minor significance in the environmental assessment.

Response

The conservation value of and impact of the project on the native vegetation within the affected corridor is noted and acknowledged in the environmental assessment. Chapter 4 of the environmental assessment describes the selection of the preferred option (based on consideration of a range of issues) and the development of the concept design. This has included design refinements to reduce vegetation clearing to minimise the impact of the project on flora and fauna.

Technical Paper 1 (*Flora and Fauna*) of the environmental assessment discusses loss of habitat in relation to critical thresholds of vegetation cover. It concluded that the project would reduce the extent of vegetation cover from 20 per cent to 16 per cent. While the value is still above the 10 per cent threshold suggested by Bennett and Radford (2004) for woodland birds, it would remain below the 30 per cent level above which Reid (2000) suggested most organisms and ecological processes persist.

The RTA is aware that the degradation of native riparian vegetation is listed as a Key Threatening Process under the threatened species schedule of the *Fisheries Management Act 1994*. Detailed design would seek to avoid identified environmentally sensitive areas and significant species and communities wherever possible. As described in Chapter 3 of this report, the concept design has been refined in response to the identification of opportunities to further reduce the project's impact on the threatened ecological community Box-Gum Woodland. The proposed design changes, as described in Section 3.2, would reduce the amount of clearing of Box Gum Woodland by one hectare.

The RTA is committed to development of environmental management plans, which will incorporate (as a minimum) the mitigation and management measures in the environmental assessment to minimise impacts on flora and fauna. This will include identification of environmentally sensitive areas such as stands of riparian vegetation to be retained. These will be marked on sensitive area maps, and demarcated and signposted on-site where necessary, to limit vegetation disturbance during construction. See statement of commitments EM2 and EM3 in Table 4-1.

2.3.2 Managing impacts

Submissions

DECCW, I&INSW and community submission

Summary of issues

- Effective control of weeds is required within wildlife habitat revegetation areas until plantings become established.
- Areas mapped as moderate condition threatened reptile habitat needs to be surveyed prior to finalisation of the road design to allow for the development and implementation of mitigation measures where necessary.
- The removal of large woody debris (snags) from NSW rivers and streams is listed as a Key Threatening Process under the threatened species schedules of the *Fisheries Management Act 1994*.
- The environmental assessment did not consider a billabong outside of the project footprint. This billabong is the only water supply available in times of drought to fauna within the vicinity of the proposed Tarcutta Creek bridge.
- The project will result in the loss of critical and endangered vegetation and fauna, which includes species not identified by the environmental studies, such as wombats and platypus which have been sighted within the Tarcutta Creek precinct.

Response

The RTA is committed to undertaking landscaping within the project corridor with native plant species. Weed control will continue until all revegetation becomes established. See revised statement of commitment FF6 in Table 4-1. Weed control in offset areas will be detailed in the biodiversity offset package.

The reptile surveys undertaken in late 2008 and reported in Technical Paper 1 (*Flora and Fauna*) were extensive and covered all of the study area. In addition to targeted surveys for threatened species of reptile (survey sites S3c, S4, S5, S6, S7 and S8), numerous opportunistic surveys were undertaken during habitat assessments at all survey sites. These surveys did not identify the presence of the threatened reptile species. However, given potential habitat, further surveys will be undertaken prior to construction to allow refinement of mitigation measures where necessary. See revised statement of commitment FF5 in Table 4-1.

As part of the RTA's commitments to minimise impacts to aquatic habitat any snag management will be undertaken in consultation with I&INSW and will follow the principles described in *Policy and Guidelines for Aquatic Habitat Management and Fish Conservation* (NSW Fisheries 1999). See revised statement of commitment FF10 in Table 4-1.

The billabong was not discussed in detail in the environmental assessment due to its location outside the project study area. This habitat feature would not be directly affected by the project and its ecological function within the local landscape is unlikely to be impacted.

Neither wombats nor platypuses were detected during the fauna survey; however, the platypus is considered a cryptic species and can be difficult to identify during survey sampling. These species are not currently listed as threatened under State or Commonwealth legislation and, as such, were not specifically targeted in field surveys. However, potential habitats for these species were considered through the assessment of the impacts on each fauna habitat.

2.3.3 Wildlife crossings

Submissions

DECCW, I&INSW and WWCC

Summary of issues

- The loss of 16 hectares of native vegetation will negatively impact on connectivity with the potential for movement of wildlife both across and along the highway to be restricted.
- Wildlife crossing points need to be fully considered during the design stage to increase the likelihood of their effectiveness and long-term sustainability. Consideration should be given to actions required beyond the project corridor to ensure the effectiveness of these crossing points.
- Designs for all waterway crossings should be in accordance with *NSW Fisheries Policy* and Guidelines and to be in consultation with I&INSW.
- Fauna crossing treatments have not been finalised and the design requires further consultation prior to the commencement of works.

Response

Habitat fragmentation and wildlife corridor impacts were identified and assessed within the environmental assessment and Technical Paper 1 (*Flora and Fauna*). The barrier effect would be greatest for small and sedentary fauna, such as ground-dwelling/arboreal mammals, reptiles and amphibians. However, given the existing disturbances in the assessment area due to a history of agricultural land uses and the existing Hume Highway, the disrupted wildlife corridors are more likely to be used by highly mobile species, such as birds and bats, primarily as marginal foraging habitats within a greater foraging range. The project is unlikely to have a significant impact on these highly mobile species provided that the impacts to wildlife corridors are managed through the measures identified in the environmental assessment.

Crossing points will be developed further during detailed design with consideration given to effectiveness and long-term sustainability. Crossing points will target threatened species and the design and nature of the crossing treatments will be developed in consultation with DECCW and other relevant government agencies. See revised statement of commitment FF7 in Table 4-1.

As described in statement of commitment FF9, waterway crossings, including temporary works, will be developed in accordance with the fish habitat classification of each waterway and in consultation with I&INSW.

2.3.4 Monitoring

Submissions

DECCW and I&INSW

Summary of issues

- The lack of monitoring proposed regarding impacts of the proposal and the effectiveness of mitigation measures is a concern.
- The project will affect aquatic habitats and it will be important to monitor the effectiveness of mitigation measures beyond the completion date.

Response

All proposed mitigation measures are best practice management and are consistent with those implemented on the previous Hume Highway duplication projects, which have been developed with specialist advice and in consultation with DECCW. Mitigation measures targeted at threatened species will be subject to a monitoring program to be developed in consultation with DECCW and I&INSW. This will include a pre-construction survey for nominated threatened species to establish baseline data. See revised statement of commitment FF4 in Table 4-1.

2.3.5 Offsets

Submissions

DECCW, LPMA, I&INSW and WWCC

Summary of issues

- Separate to any biodiversity offset package, there is a need to ensure that the total area of vegetation along or adjacent to the road corridor is not reduced in the long term.
- An offset is required as a condition of the proposed acquisition of Reserve 71186 (part acquisition of the reserve) due to the loss of habitat values within this reserve. The offset should be applied to the remaining part of the reserve through the replanting of vegetation to obtain positive biodiversity outcomes. The habitat loss/vegetation replanting ratio should be determined in accordance with the *Native Vegetation Act 2003* and the *Threatened Species Conservation Act 1995*.
- There is a lack of detail available on the proposed biodiversity offsets. The offset strategy that has already been developed relates to the entire Hume Highway duplication project, and, for this reason, offsets may not occur within the Tarcutta locality. The offsets should be carefully sited to ensure connectivity between existing vegetation communities and to promote fauna movement corridors.
- The environmental assessment does not clearly define the exact location of vegetation clearing. It is suggested that this level of information is critical to the assessment of the project and for establishing the extent of the required offset planting works.
- I&INSW is currently running a re-snagging initiative of the Murray River. Tree trunks and root balls from trees cleared from the bypass alignment are potentially very valuable for this purpose. The I&INSW requested that potential trees are set aside for collection.

Response

The RTA is committed to developing a biodiversity offset package to offset the residual impacts on biodiversity, particularly on threatened ecological communities and habitat for threatened species. The objective of the offset package would be to maintain or improve biodiversity values in the area in the long term. The offset package would include a number of actions which would consider the issues raised in submissions. The package would be developed in consultation with DECCW, the Commonwealth Department of Environment, Water, Heritage and the Arts, and other relevant agencies.

The biodiversity offset package would have a number of objectives that would include habitat connectivity. Offset locations are subject to the availability of land, but would be located within the region. If offset areas become available in the Tarcutta locality, they would be considered. The project would, however, include landscaping with native plant species and crossing treatments within the project corridor. This work would have regard to habitat connectivity for fauna movement.

As detailed in Section 9.1.3 of the environmental assessment, the area of vegetation clearing has been determined based on the concept design. The biodiversity offset package is to be based on actual vegetation clearing undertaken for the project.

The RTA is committed to consulting with I&INSW regarding the use of cleared vegetation in the re-snagging program for the Murray River. However, the supply of the cleared vegetation in the re-snagging program would not compromise any of the other environmental objectives of the project, such as maintaining terrestrial habitat.

2.4 Aboriginal heritage

2.4.1 Cultural heritage

Submissions

DECCW

Summary of issues

- DECCW supports the proposed mitigation and management recommendations for Aboriginal Heritage values identified in the Aboriginal Cultural Heritage Assessment Report and draft statement of commitments.
- DECCW recommends that if any human remains are identified during the remote sensing survey and monitoring proposed within the 100 metre boundary of the Tarcutta General Cemetery, as identified in the draft statement of commitment NA5, they should also be considered under the requirements of the *National Parks and Wildlife Act 1974* and be consistent with the procedures identified in Section 9.8 of the *Hume Highway Town Bypass: Tarcutta Aboriginal Cultural Heritage Assessment Report*.
- The submission of salvage reports is a requirement of the *NPWS Aboriginal Cultural Heritage Standards and Guidelines Kit 1997*, which is required to be followed as part of the *Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation* (DEC July 2005).

Response

The above comments are noted. If any human remains are identified during the remote sensing survey near Tarcutta General Cemetery, they would be considered under the requirements of the *National Parks and Wildlife Act 1974* and managed in a way that is consistent with the procedures identified in Section 9.8 of the *Hume Highway Town Bypass: Tarcutta Aboriginal Cultural Heritage Assessment Report*.

The RTA is committed to the development of environmental management plans, which will incorporate (as a minimum) the mitigation and management measures in the environmental assessment. Additionally, the RTA has committed to managing Aboriginal heritage in accordance with the Aboriginal Cultural Heritage Assessment Report in Technical Paper 2 of the environmental assessment, which recommends the preparation of an Aboriginal Heritage Management Plan. See statement of commitments EM2 and AH1 in Table 4-1.

2.5 Non-Aboriginal heritage

Submissions

Community submission

Summary of issues

- The historical significance of the Old Tarcutta Inn appears to have been overlooked in the environmental assessment and this property should be protected.

Response

As part of the route selection process, preliminary environmental investigations, including archaeological and cultural heritage assessment of historic values, were undertaken to identify historic values within proximity to the proposed routes (refer to Section 4.1.3 of the environmental assessment). Preliminary environmental investigations identified the former Tarcutta Inn which, while not listed on any statutory register, is listed on the National Trust of Australia (NSW). An assessment of cultural significance was undertaken in accordance with the Australian International Council on Monuments and Sites (ICOMOS) Burra Charter (Burra Charter 1999) and NSW Heritage Council assessment criteria.

The former Tarcutta Inn was identified as having local heritage significance for its association with Thomas Mate, an early settler in the Tarcutta area, who established the former Tarcutta Inn in the 1830s (NSW assessment criterion B – associative).

The former Tarcutta Inn was not included in the Technical Paper 3 (*Non-Aboriginal heritage*) assessment in the environmental assessment, as this property is located outside the assessment area for the project (beyond the limits of potential impact). It should be noted that the proposed design changes detailed in Chapter 3 of this report shifts the alignment approximately 80 metres further west and away from the Tarcutta Inn. Notwithstanding this, along with other identified heritage items, the heritage values of the former Tarcutta Inn would be considered, in consultation with relevant landowner(s) and a suitably qualified heritage specialist, as part of the landscaping and urban design for the project.

2.6 Hydrology

Submissions

Community submission

Summary of issues

- The Old Tarcutta Inn will be seriously disadvantaged by the proposed bypass as a result of increased flood height levels.
- Agreement will be required between stakeholders and Tarcutta Hume Alliance to manage flooding impacts resulting from the project. Clarification is required as to what assistance will be provided to residents during negotiations.

Response

The project has been designed to minimise change in afflux (increased flood levels). The environmental assessment indicated that during a 20 year Average Recurrence Interval (ARI) event, the Old Tarcutta Inn (Residential Property 1) is currently inundated (floodwaters above floor level) and that the project would result in an afflux of 0.01 metres. For the 100 year ARI event, the project would result in an afflux of 0.04 metres.

As detailed in Section 3.3.4, a revised flood impact assessment has been prepared for the project to assess the proposed changes to the Tarcutta Creek bridge design. The proposed design change would result in a reduction in the afflux reported in the environmental assessment for the 20 year ARI event of 0.01 metres. The amended project would result in no change to flood levels under the 20 year ARI event at Old Tarcutta Inn, relative to the existing situation.

The proposed design change would result in an increase in the afflux reported in the environmental assessment under the 100 year ARI event from 0.04 metres at the Old Tarcutta Inn to 0.05 metres (compared to 0.01 metres under existing conditions).

As detailed in Table 9-20 of the environmental assessment, changes to flood levels would be managed during detailed design in consultation with affected landowners.

The RTA is committed to undertaking ongoing consultation with affected landowners during the pre-construction and construction phases of the project to resolve issues, including flood impacts. All consultation would be undertaken in accordance with the RTA's (2008a) *Community Involvement and Communications. Draft: A resource for staff*. The RTA recognises the importance of community involvement in its projects and decision-making, and is committed to upholding its responsibilities in a transparent and inclusive manner. These principles have been adopted for the project during the development phase and will continue during detailed design, construction and operation.

2.7 Noise and vibration

2.7.1 Working hours

Submissions

DECCW

Summary of issues

- It is premature to agree to the requested out-of-hours construction or a variation to standard construction hours. The project approval, as with normal practice, can include a post approval process to seek, and have determined, out-of-hours works and/or variation to standard construction times. The *Interim Construction Noise Guideline* (DECCW 2009) provides a framework for this process.
- The *Interim Construction Noise Guideline* (DECCW 2009) was recently released after extensive consultation, including with the RTA, and this document now provides a consistent and integrated framework of the assessment, management and monitoring of construction noise impacts.
- The temperature for ceasing concrete paving in accordance with the RTA temperature specification is now quoted as 32°C. In previous road projects the referenced critical temperature was 35 or 36°C. This change in specification may result in a significant increase in the number of out-of-hours paving activities, and as such should be confirmed with the RTA.

Response

The environmental assessment was undertaken in accordance with the Director General's Requirements (as clarified on 29 May 2009), which required the construction noise assessment to take into account Chapter 171 of the *Environmental Noise Control Manual* (EPA 1994). It also made use of the best available design and construction information at the time it was prepared.

The environmental assessment proposed extended daytime construction working hours (6am to 7pm), as well as activities that, due to technical considerations, climatic conditions and an accelerated construction program, would likely be undertaken during the evening and night-time periods. Previous experience on the Hume Highway duplication project has provided the RTA with an understanding of what activities are likely to be required outside standard construction hours. It was intended that the information presented in the environmental assessment would allow work outside of standard construction hours for nominated activities as part of the project approval process. The RTA's commitments to manage construction noise impacts would remain consistent.

The environmental assessment also provided an opportunity to make the community aware of the likely need to work outside standard construction hours, the nature of those activities and the likely impacts. It should be noted that no community submissions were received regarding the proposed construction working hours.

As noted by DECCW, the *Interim Construction Noise Guideline* (ICNG) (DECCW 2009) was released in July 2009 and the environmental assessment was submitted to the Department of Planning for adequacy review on 27 July 2009. However, and notwithstanding the assessment approach of the environmental assessment, RTA will undertake to use the ICNG during

construction of the project to manage construction noise impacts. See revised statement of commitment NV1 (Table 4-1).

Nevertheless, the RTA does see benefit in the proposed extended daytime working hours (6am to 7pm), particularly during the period of daylight saving. Extended work hours would make use of available light, while the additional cooler hours of the day would offer site personnel some respite. Longer working hours would facilitate better project quality outcomes, as longer runs of concrete paving would provide for improved quality, and would assist in achieving the maximum and most efficient use of equipment and resources. The potential increase in productivity, efficiency and quality may result in a more sustainable project overall and earlier project completion. Earlier project completion would provide benefits to the Tarcutta community through improved traffic safety outcomes, and reduced length of time of construction noise impacts, thereby enabling restoration of amenity and, in many respects, an increase in the quality of this amenity. These benefits would extend to the broader community of road users with the earlier availability of the upgraded highway.

It is considered that due to the location of the project within a predominantly agricultural area and adjacent to a rural village where the Hume Highway is the main street, extended daytime working hours would, with the implementation of management measures identified in the environmental assessment, be unlikely to result in significant impacts on the amenity of affected sensitive receivers. The environmental assessment identified that up to 20 sensitive receivers would potentially be affected by construction noise impacts.

For the Hume Highway bypass projects, the RTA has confirmed that the critical temperature for placement of a jointed concrete base pavement is 32°C. While ultimately the conditions controlling the quality outcomes for the placement of concrete pavement include a combination of temperature, humidity and wind speed, RTA has adopted 32°C as the upper ambient temperature, based on previous experience and technical advice provided on the Hume Highway duplication projects.

2.7.2 Acoustic treatment

Submissions

DECCW

Summary of issues

- 'In-corridor' acoustic treatments should be reconsidered as the preferred noise mitigation strategy for this project.

Response

Noted. In accordance with the *RTA Environmental Noise Management Manual* (RTA 2001), the RTA will consider 'in-corridor' acoustic treatments as the preferred treatment, where reasonable and feasible. See statement of commitment NV3 in Table 4-1.

2.7.3 Blasting

Submissions

DECCW

Summary of issues

- There was no specific reference to blasting in the statement of commitments. A commitment should be added.

Response

Statement of commitment NV2 in Table 4-1 has been amended to address blasting.

2.7.4 Operational noise

Submissions

Community submission

Summary of issues

- The Old Tarcutta Inn will be seriously disadvantaged by the proposed bypass as a result of the increased level of road traffic noise which would exceed the recommended limit.
- Clarification is required as to what assistance will be provided to residents during negotiations with the Tarcutta Hume Alliance with respect to noise mitigation measures.
- Noise impacts from decompression brakes were not adequately addressed in the noise assessment. Road signs requesting drivers to minimise the use of decompression brakes are ignored by drivers.

Response

Section 9.5.4 of the environmental assessment notes that the Tarcutta Inn (indicated as receiver number 50 in the noise and vibration assessment) is predicted to experience increased noise levels as a result of the project. As shown in Table 9-25 of the environmental assessment, it is predicted that noise levels at the Tarcutta Inn (western façade) would exceed the $L_{Aeq,9hr}$ night-time noise criterion of 50 dBA in 2022 by up to 6 dBA (56 dBA).

As stated in Table 9-43 of the environmental assessment, all reasonable and feasible mitigation measures would be developed and implemented to meet the noise criteria applicable to the project in consultation with sensitive receivers. This would be based on the final design and would take into account the proposed design changes (detailed in Chapter 3 of this report) which include shifting the alignment a further 80 metres to the west.

The project would provide free-flowing traffic conditions, and therefore, would be unlikely to result in noise from the use of compression brakes. Additionally, noise from compression braking on the existing highway would be likely to be reduced due to the lower volume of heavy vehicles entering Tarcutta.

The RTA is committed to undertaking ongoing consultation with affected landowners during the pre-construction and construction phases of the project. All consultation would be undertaken in accordance with the RTA's (2008a) *Community Involvement and Communications. Draft: A resource for staff.*

2.7.5 Monitoring

Submissions

DECCW

Summary of issues

- It is recommended that noise monitoring be included in the project approval.

Response

As stated in Table 9-42 of the environmental assessment, noise monitoring would be undertaken during construction to determine the effectiveness of noise mitigation measures.

2.8 Socio-economic

2.8.1 Privacy

Submission

Community submission

Summary of issues

- The haul road will impact on the privacy of Old Tarcutta Inn residents.

Response

Potential privacy impacts to properties surrounding the haul road would be short-term and temporary in nature as the haul road would only be used for construction. The haul road would be decommissioned following completion of construction of the project. The proposed design changes (detailed in Chapter 3 of this report) include a shift of the alignment a further 80 metres to the west. The location of the haul road would involve a similar shift to the west, potentially reducing the impact on properties to the east of the project, including the Old Tarcutta Inn.

Where use of the haul road is identified to significantly impact on the privacy and/or amenity of a surrounding property, the RTA would consider the provision of screening.

2.8.2 Property acquisition

Submissions

LPMA

Summary of issues

- Reserve 71186, Dedication 620161, Reserve 30375 and Non-notified Reserve 1006790 are recommended to be acquired under the provisions of the *Land Acquisition (Just Terms) Compensation Act 1991*.

Response

The above comment is noted. All land acquisitions would be undertaken in accordance with the provisions of the *Land Acquisition (Just Terms) Compensation Act 1991*. The RTA would further investigate the land acquisition requirements for the project during detailed design and will consult with the LPMA regarding the requested acquisition of the abovementioned land.

2.8.3 Amenity

Submissions

Community submission

Summary of issues

- The Old Tarcutta Inn will be seriously disadvantaged by the proposed bypass as a result of the disruption and loss of rural lifestyle.

Response

Section 12.1.2 of the environmental assessment acknowledged that, during construction, there would be some minor temporary disruptions to the rural lifestyle and community character in Tarcutta in the form of disruptions to local traffic and access, and impacts on amenity (eg noise, dust), and that these issues would be short-term in nature and managed through the implementation of standard management measures.

During construction, the community would be kept informed with measures such as letter-box drops, media releases, community updates and targeted consultation with affected individuals. All property access would be maintained for the duration of construction and, if required, temporary access would be provided in consultation with the affected landowner(s). This would aim to limit disruptions to surrounding residents.

Impacts to amenity would be minimised through urban and landscape design and construction and operational noise mitigation measures. These measures would be finalised during detailed design in consultation with affected landowner(s).

2.8.4 Access

Submissions

LPMA and WWCC

Summary of issues

- Safe access from the highway to Reserves 11521 (Camping and Travelling Stock), 70753 (Travelling Stock) and 41935 (Public Recreation and racecourse) is required for active management of the Crown land and also for access by the public.
- The environmental assessment identifies that the stock route will be maintained under the proposed bypass alignment; however, the arrangements have not yet been finalised. Final arrangement should be approved prior to the commencement of works to ensure the continued function of the route.
- Final arrangements for farm access between any severed lands should be approved prior to the commencement of works.

Response

Safe access to all property, including the reserves, would be maintained in consultation with landowners. See revised statement of commitment SE1 in Table 4-1.

2.8.5 Property value

Submissions

Community submission

Summary of issues

- The bypass will impact on surrounding property value and will limit the ability to sell the property during construction of the project.

Response

The perceived impacts in relation to the effects on property value are noted. However there are many influences on property value and it is not agreed that the project would, in itself, necessarily have this effect. During construction, impacts on amenity would be managed through the implementation of standard management measures.

2.8.6 Economic impacts

Submissions

WWCC

Summary of issues

- The commitment to provide appropriate signage near the interchanges is insufficient and needs to be broadened. An appropriate signage strategy should be developed and implemented prior to the completion of the project to achieve clear and legible signage for all road users and to promote the attributes of Tarcutta.

Response

The RTA is committed to providing Tarcutta with appropriate signage to denote the town's attributes and to ensure it is sufficiently clear and legible to motorists. A signage scheme will be developed to have regard to the continued viability of Tarcutta. This will be developed in consultation with WWCC. See statement of commitment SE4 in Table 4-1.

2.9 Traffic and transport

2.9.1 Pedestrian and cyclist facilities

Submissions

LPMA

Summary of issues

- The Wagga Wagga Tumbarumba Railway line crosses the Hume Highway. It is proposed that the old railway line will form Rail Trails to be utilised for bike riding and recreational activities. A safe crossing area will be required to be constructed for the Hume Highway upgrade.

- Opportunities for pedestrian movement should not be reduced on existing and new local roads. It is important that opportunities remain for pedestrian movement on all local roads.
- Will the new road alignment sever any existing pedestrian travel paths? The traffic study contains no information on this issue. It can only be assumed that pedestrians will be able to cross at the southern and northern overpasses; however, this is not clear. Is there a need for further pedestrian crossing points (eg for properties located to the west of Tarcutta)?

Response

The RTA has been consulting with the LPMA about the proposed rail trail and will continue to do so. It is noted that the rail corridor crosses the existing Hume Highway south of Humula Road in an existing dual carriageway section. It is also noted that the rail trail proposal has been in the planning stage for some time and is yet to be approved or funded. Notwithstanding this, the RTA acknowledges the need to develop safe access across the Hume Highway and will continue to consult with LPMA regarding the rail trail proposal and the design of the project, so as not to preclude any future connections.

The project would not alter conditions for pedestrian access on existing local roads. Access from the new local access road would be available from the northern interchange overpass bridge.

2.10 Planning and statutory requirements

Submissions

DECCW and NOW

Summary of issues

- The project will need an Environment Protection Licence for construction.
- Approvals and/or licences under the *Water Act 1912* or *Water Management Act 2000* are likely to be required for certain activities associated with the project, including groundwater works, realignment of waterways, flood control works, and capture of water in dams.

Response

The above comments are noted. All licences required for the project would be obtained prior to the commencement of construction.

2.11 Soils and water quality

Submissions

DECCW

Summary of issues

- Minor increases in flood levels and velocities are indicated as a result of the project; therefore, protection from erosion due to high velocities through bridge openings and culverts will need to be designed.

Response

Agreed. See revised statement of commitment SW4 in Table 4-1.

2.12 Quarrying

Submissions

DECCW

Summary of issues

- The quarry locations and corresponding impact assessment have not been detailed in the environmental assessment. DECCW recommends that the statement of commitments be amended to indicate that the quarries will be subject to future detailed assessment in accordance with guidelines and legislation.

Response

At this stage of project development, the location of and need for a potential quarry is still under investigation. Notwithstanding this, Section 6.3.1 of the environmental assessment includes earthworks volumes required for the project and environmental criteria for guiding the location of a quarry.

Schedule 1 of the Minister's Order that declared the project as subject to Part 3A includes clause (g) 'any winning or obtaining extractive material as part of the construction work for the project'.

Any quarry established or expanded to meet the needs of the project would be undertaken in accordance with all relevant environmental guidelines and legislation.

See revised statement of commitment Q1 in Table 4-1.

2.13 Monitoring

Submissions

DECCW

Summary of issues

- Appropriate environmental monitoring is required for the project. This should include on-site weather monitoring to monitor the parameters of rainfall, temperature, and wind speed/direction.

Response

The above comments are noted. The RTA will install an on-site weather station to monitor rainfall, temperature, and wind speed/direction. The weather station would remain on-site for the duration of the construction works.

2.14 General support for the project

Submissions

DECCW, NOW and NSWTI

Summary of issues

- The proposal is supported subject to the Department of Planning seeking the amendments to the draft statement of commitments.
- No objection is raised to the project, conditional to the inclusion of the recommended conditions of consent.
- Previous comments concerning potential disruptions to school bus routes during construction and opportunities for cycle access have been satisfactorily addressed.

Response

The above comments are noted.

3 Project changes

3.1 Introduction

A number of minor design changes have been made to the project since the exhibition of the environmental assessment. The proposed changes are described in Section 3.2 and are primarily associated with:

- A reduction in the skew of the northern interchange bridge (see Section 3.2.1).
- A westward shift in the bypass alignment by up to approximately 80 metres for approximately 2.5 kilometres between chainages 43500 and 46000 (see Section 3.2.2).
- Amendments to the southern interchange (see Section 3.2.3).

The revised concept design for the project is shown in Figure 3-1. For ease of comparison the concept design as proposed in the environmental assessment is also shown in Figure 3-1.

An assessment of the impacts likely to be associated with the proposed design changes is provided in Section 3.3. The assessment demonstrates that the impacts of the proposed changes are minor and on balance minimise the environmental impact of the project.

3.2 Description of design changes

Further development of the design has identified a number of engineering constraints and opportunities to optimise the design in response to the identification of opportunities to:

- Avoid the direct impact to the historic brick well and minimise impacts on the curtilage of the Hambledon Homestead Complex (refer Section 3.3.3).
- Potentially reduce the amenity impacts (noise, visual) of the project on sensitive receivers located to the east of the proposed bypass by providing a larger offset distance between the project and the Tarcutta township (refer Section 3.3.7).

The proposed design changes are indicated in Figure 3-1, and described in the following sections. For ease of identification, the proposed design changes have been divided into three sections — northern, middle and southern — that correspond with the information presented in the environmental assessment.

It should be noted that all of the proposed design changes are located within the corridor that was assessed for the environmental assessment (ie a 200 metre buffer around the project's centre line; refer to Section 1.2 of the environmental assessment).

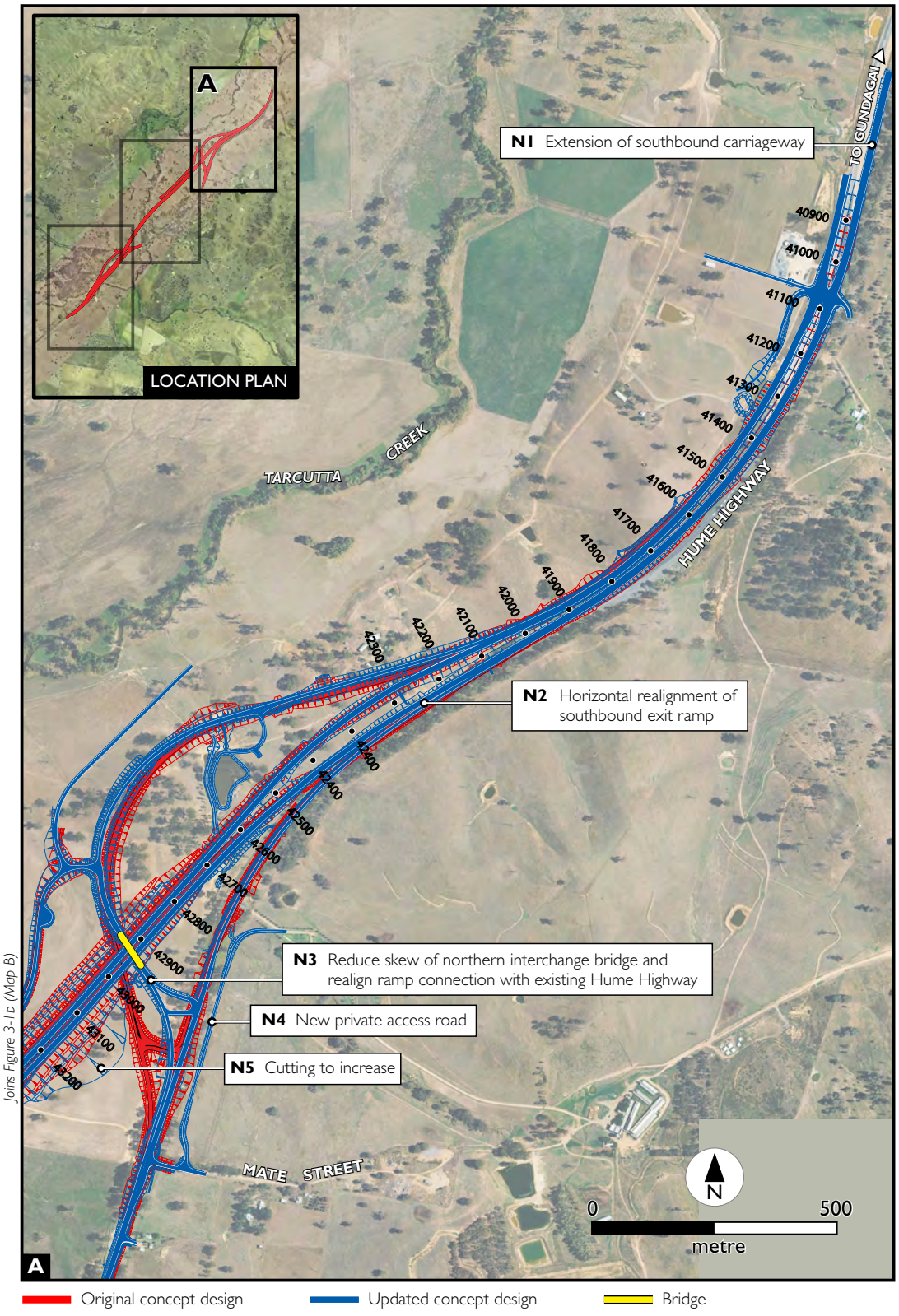

Figure 3-1a **Proposed design changes to the Tarcutta Bypass Project (northern section)**

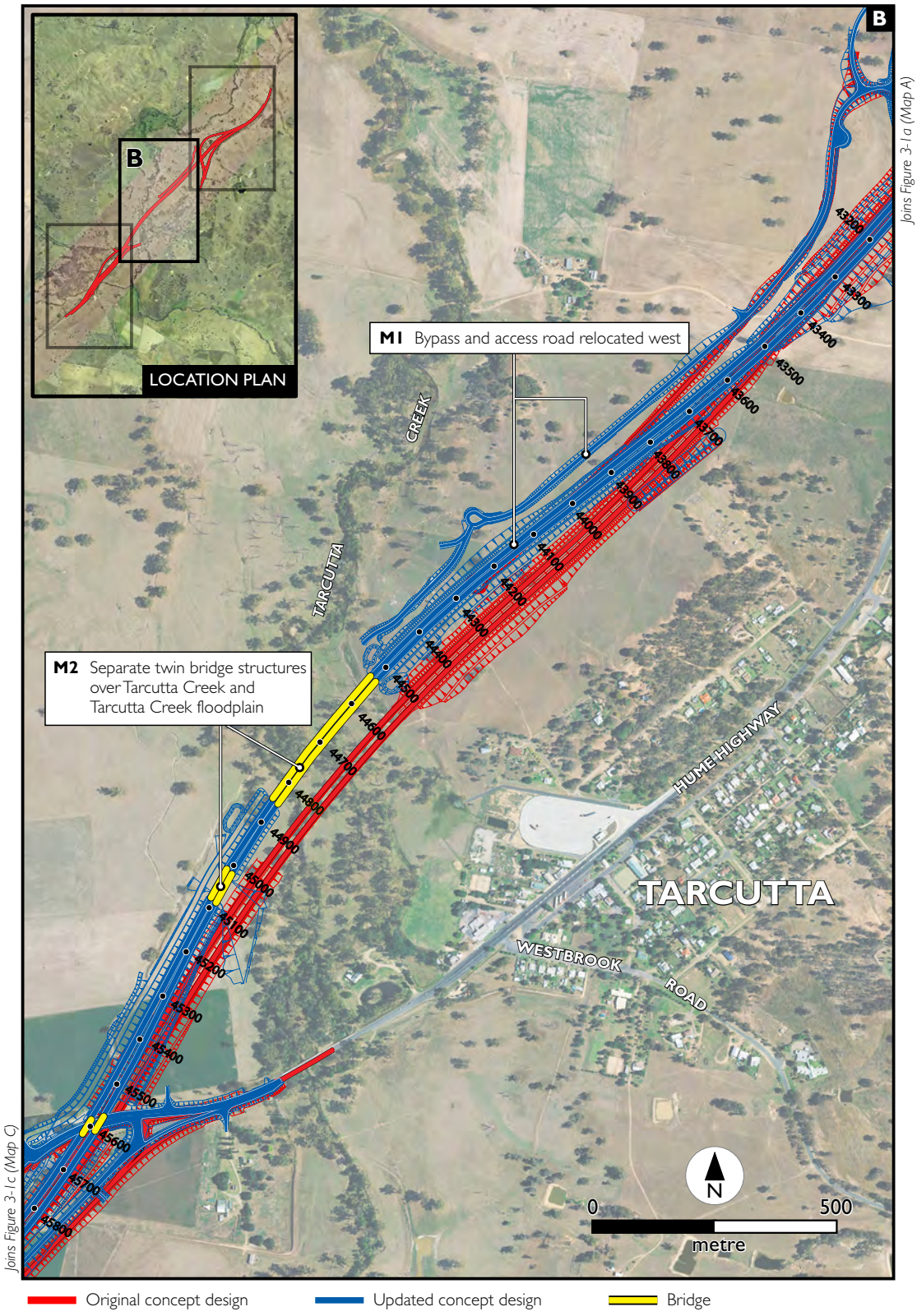

Figure 3-1b **Proposed design changes to the Tarcutta Bypass Project (middle section)**

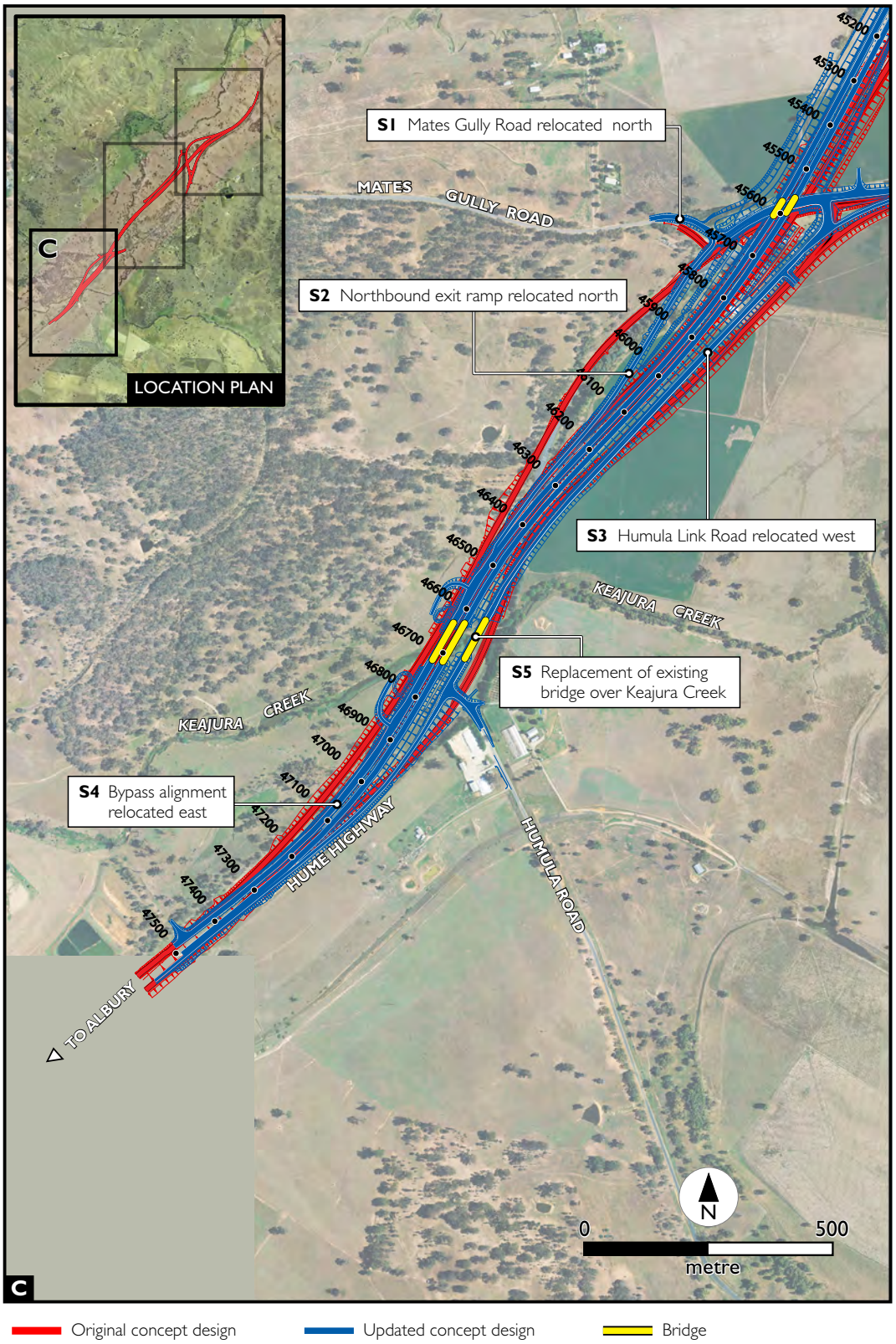

Figure 3-1c **Proposed design changes to the Tarcutta Bypass Project (northern section)**

3.2.1 Northern section

The proposed design changes are shown in Figure 3-1a and described below. For ease of identification, the design changes have been numbered.

Design change N1

The southbound carriageway would be extended at the northern end of the project to chainage 40600 to connect to the Sturt Highway to Tarcutta Hume Highway duplication project. This would involve construction of new pavement on the southbound carriageway on the alignment of the existing Hume Highway.

Design change N2

The southbound exit ramp would be horizontally realigned with a minor westward shift.

Design change N3

The skew of the northern interchange bridge would be reduced thereby reducing its length to approximately 66 metres from 90 metres, as proposed in the environmental assessment. The realignment associated with the skew reduction shifts the connection of the interchange ramp with the existing Hume Highway to the north.

Design change N4

Access to one private property on the east of the existing highway north of Mate Street would be relocated to Mate Street.

Design change N5

The cutting two, located immediately to the south of the northern interchange bridge would be increased to accommodate the reshaping of the existing hill as part of urban design and provide a better earthworks balance reducing the volume of material that would need to be imported.

3.2.2 Middle section

The proposed design changes are shown in Figure 3-1b and described below. For ease of identification, the design changes have been numbered.

Design change M1

The alignment has been shifted to the west by up to 80 metres between chainages 43500 and 46000 with a corresponding shift in the local access road. An access track would be provided from the end of the local road to provide permanent maintenance access to the bridges and water quality basins.

Design change M2

Bridging over Tarcutta Creek and floodplain has been rationalised to provide 330 metre long twin bridges over Tarcutta Creek between chainages 44524 and 44854 and 60 metre long twin bridges over Tarcutta Creek Floodplain between chainages 45016 and 45076.

3.2.3 Southern section

The design changes are shown in Figure 3-1c and described below. For ease of identification, the design changes have been numbered.

Design change S1

Mates Gully Road would be relocated north to accommodate the travelling stock route.

Design change S2

The northbound exit ramp would be relocated to the north to approximate chainage 46200.

Design change S3

The Humula Link Road would be relocated to the west and parallel to the proposed bypass main carriageway.

Design change S4

South of Keajura Creek the alignment would be shifted to the east to relocate the superelevation transitions from the twin bridges over Keajura Creek.

Design change S5

The bridge over Keajura Creek on the existing highway would be demolished and replaced with a new 70 metre long bridge constructed immediately to the west of the existing bridge. This new bridge would provide a crossing for the Humula Link Road.

3.3 Environmental assessment of proposed changes

The following sections provide an assessment of the impacts that are expected to occur as a result of the proposed design changes. It should be noted that the following sections do not include impacts that were assessed as being the same as those documented in the environmental assessment. For further discussion on the wider impacts of the project, refer to Chapters 9 and 10 of the environmental assessment.

3.3.1 Flora and fauna

The proposed design changes, as described in Section 3.2, would reduce the amount of clearing of Box-Gum Woodland (listed as an endangered ecological community under the *Threatened Species Conservation Act 1995* and a critically endangered ecological community under the *Environment Protection and Biodiversity Conservation Act 1999)*. One hectare of Box Gum Woodland would be retained. On the whole, the total vegetation clearing for the project would remain consistent with that presented in the environmental assessment (ie 16 hectares of native vegetation), as the proposed design changes would increase the amount of clearing River Red Gum Very Tall Open Forest by one hectare.

Table 3-1 outlines the clearing requirements for the revised concept design compared to the information presented in the environmental assessment (refer Section 9.1.3). It includes clearing requirements within each vegetation community, and the corresponding threatened ecological community and fauna habitat.

Table 3-1 Revised vegetation communities and fauna habitat to be cleared for the project

Vegetation community	Corresponding threatened ecological community[1]	Corresponding fauna habitat	Total clearing for original concept design (hectares	Total clearing for updated concept design (hectares)	Change in clearing (hectares)
Blakely's Red Gum – Yellow Box Grassy Woodland	Box-Gum Woodland[2] (TSC Act and EPBC Act)	Box-Gum Woodland	6	5	-1
Apple Box Grass-forb Open Forest	Box-Gum Woodland[2] (TSC Act and EPBC Act)	Box-Gum Woodland	1	1	0
Inland Grey Box Tall Grassy Woodland	Inland Grey Box Woodland[3] (TSC Act and EPBC Act (preliminary listing))	Box-Gum Woodland	4	4	0
River Red Gum Very Tall Open Forest	–	Riparian Woodland	4	5	1
Derived Native Grassland	Inland Grey Box Woodland[3] (TSC Act and EPBC Act (preliminary listing))	Grazed Pasture Land	1	1	0
Total	**–**	**–**	**16**	**16**	**0**

Notes: 1. TSC Act = *Threatened Species Conservation Act 1995*; EPBC Act = *Environment Protection and Biodiversity Conservation Act 1999*.

2. Whit Box, Yellow Box, Blakely's Red Gum Woodland.

3. Inland Grey Box Woodland in the Riverina, NSW South Western Slopes. Cobar Peneplain, Nandewar and Brigalow Belt South bioregions.

3.3.2 Aboriginal heritage

The proposed reconfiguration of the southern interchange including the relocation of the northbound exit ramp alignment (refer design changes S2 and S4 in Section 3.2.3) would reduce the impact of the project on artefact scatter T15 (refer Table 9-10 of the environmental assessment) which is of high archaeological significance. A reduced portion of this site would be subject to disturbance from construction of the main alignment and development of the travelling stock route (running parallel and west of the main alignment between Mates Gully Road and Keajura Creek), which would require some grading. The proposed design changes would not result in any additional impacts to Aboriginal heritage items.

3.3.3 Non-Aboriginal heritage

The realignment of the Humula Link Road (refer design change S3 in Section 3.2.3) would include a westward shift of the project within the curtilage of the State heritage listed Hambledon Homestead Complex THI5 (refer Table 9-12 of the environmental assessment). This proposed design change would avoid the direct impact to the historic brick well (and associated windmill) and reduce the impact to the heritage curtilage of the Hambledon Homestead Complex. The historic brick well (identified as THI5a in the environmental assessment) and surrounding paddocks are considered to be of moderate contributory significance to the overall heritage significance of the Hambledon Homestead Complex.

3.3.4 Hydrology

The reconfiguration of bridging over Tarcutta Creek and floodplain (refer design change M2 in Section 3.2.2) has been assessed for potential impacts on flooding. The proposed design change would not result in any changes to construction related flooding impacts (refer Section 9.4.3 of the environmental assessment).

The proposed design change would alter the operational flood impacts. The environmental assessment discussed flooding impacts in relation to:

- Afflux at flood affected properties and the existing Hume Highway bridges.
- Duration of inundation and frequency of flooding at flood affected properties.
- Peak velocities at bridge structures and at flood affected properties.

The change in flood impacts due to the reconfiguration of bridging over Tarcutta Creek and floodplain are discussed below.

Afflux

The environmental assessment reported that the project would result in some afflux in the Tarcutta Creek floodplain areas during the 20 year and 100 year ARI event. The proposed design change would also result in some afflux during these design events, however the proposed design change is considered to meet the objectives for afflux in the 100 year ARI event, which are as follows (refer Section 9.4.3 in the environmental assessment):

- Land without buildings or sensitive structures: minimise impacts.
- Land where buildings or sensitive structures are already below the 100 year ARI flood level: minimise and manage impacts.
- Land where buildings or sensitive structures previously not inundated in the 100 year ARI event would be at increased risk of inundation: no additional impacts.

Table 3-2 shows the change in afflux during the 20 year and 100 year ARI events at key locations in the Tarcutta Creek floodplain.

Table 3-2 Comparison of 20 year, and 100 year ARI afflux (metres) between the environmental assessment (EA) and proposed design change[1]

Location[2]	20 year ARI			100 year ARI		
	EA design	Proposed design change	Change in afflux	EA design	Proposed design change	Change in afflux
Property						
Residential Property 1 [3]	0.01	0.00	-0.01	0.04	0.05	0.01
Residential Property 2 [3]	Protected by levee	Protected by levee	n/a	0.01	0.01	0.00
Water treatment plant	Protected by levee	Protected by levee	n/a	0.03	0.07	0.04
Tarcutta Hotel [3]	0.01	0.01	0.00	0.10	0.16	0.06
No. 6 – Building 1	Protected by levee	Protected by levee	n/a	0.03	0.07	0.04
No. 8 – Building 2	Protected by levee	Protected by levee	n/a	0.03	0.07	0.04
No. 10 – Building 3	Protected by levee	Protected by levee	n/a	0.00	0.00	0.00
No. 12 – Building 6	Protected by levee	Protected by levee	n/a	Protected by levee	Protected by levee	n/a
Police House (Building 4)	Protected by levee	Protected by levee	n/a	Protected by levee	Protected by levee	n/a
Police Station (Building 5)	Protected by levee	Protected by levee	n/a	Protected by levee	Protected by levee	n/a
Service Station	Protected by levee	Protected by levee	n/a	Protected by levee	Protected by levee	n/a
Shop	Protected by levee	Protected by levee	n/a	Protected by levee	Protected by levee	n/a
Bridges						
Existing Hume Highway bridge over Tarcutta Creek	0.01	0.00	-0.01	0.02	-0.01	-0.03
Existing Hume Highway bridge over Tarcutta Creek floodway	0.01	0.00	-0.01	0.01	0.01	0.00
Existing Hume Highway bridge over Keajura Creek	0.00	0.00	0.00	-0.03	-0.03	0.00

Note: 1. Note that while values listed to the nearest 0.01 metres for the purpose of this assessment, the accuracy of the model is within the order of ± 0.1 metres.

2. Refer Figures 2-1 and 2-2 of Technical Paper 4 of the environmental assessment for key locations.

3. These properties are subject to above floor flooding for the existing 100 year ARI flood.

In the 20 year ARI event, the proposed design change would either result in no change or a reduction to afflux at properties. In the 100 year ARI event, the proposed design change would increase afflux at five properties. All five properties which would be subject to an increase in afflux due to the proposed design change are already inundated in the 100 year ARI event under existing conditions. With the implementation of management measures, the proposed design change is considered to meet the objectives for afflux in the 100 year ARI outlined above. At residential properties, afflux would be managed in consultation with the affected landowner(s).

Duration of inundation and frequency of flooding

The proposed design change would not result in any change to the duration of inundation as presented in the environmental assessment (refer Section 9.4.3). The environmental assessment noted that the project would not change the frequency of flooding at properties in the vicinity of Tarcutta. This statement is also true with the proposed design change.

Velocity

Changes to velocity impacts at bridge structures and flood affected properties are detailed in Tables 3-3 and 3-4 respectively.

Flood hazard within a floodplain is defined within the *NSW Floodplain Development Manual* (NSW Government 2005) and is based on flood depth and flood velocity and other relevant factors that affect the safety of structure and/or individuals. In relation to velocity, the flood hazard is considered to be high if the velocity is greater than two metres per second.

Table 3-3 identifies the existing velocity, the impact of the EA concept design and the impact of the proposed design change at bridge structures. Under the existing conditions at bridge structures in the Tarcutta Creek floodplain (during the 100 year ARI event) the flood hazard is considered to be high as velocity is generally greater than two metres per second. The proposed design change would not result in any significant increase in velocity at any bridge structure. However as the proposed flood velocities are generally high (greater than two metres per second), the project would incorporate appropriate scour protection measures around the proposed bridge piers and abutments (refer to revised statement of commitment SW4 in Table 4-1).

Table 3-4 identifies the existing velocity, the impact of the EA concept design and the impact of the proposed design change at residential properties. Under the existing conditions, the maximum velocity at any residential property (in the 100 year ARI event) is 0.65 metres per second (at Residential Property 1). The proposed design change would reduce the velocity at Residential Property 1 to 0.61 metres per second. The maximum increase in velocity as a result of the proposed design change would be 0.07 metres per second (No. 10 - Building 3). The proposed design change would not alter the velocity at residential properties to affect the flood hazard at these properties.

The proposed design change is not likely to change the existing flood hazard in the vicinity of Tarcutta.

Table 3-3 Change in velocity impacts at bridge structures (m/s)[1]

Location	Event	Existing velocity	EA design impact	Proposed design change impact	Change in impact
Existing Hume Highway bridge over Tarcutta Creek	20 year ARI	3.73	-0.04	0.00	0.04
	100 year ARI	4.85	-0.07	-0.03	0.04
Existing Hume Highway bridge over Tarcutta Creek floodway	20 year ARI	1.71	-0.01	0.04	0.05
	100 year ARI	2.40	-0.01	0.00	0.01
Existing Hume Highway bridge over Keajura Creek	20 year ARI	1.20	-0.05	-0.11	-0.06
	100 year ARI	1.92	-0.24	-0.13	0.11
Proposed Hume Highway bridge over Tarcutta Creek	20 year ARI	0.81	0.17	0.58	0.41
	100 year ARI	0.92	0.35	0.62	0.27
Proposed Hume Highway bridge over Tarcutta Creek floodway	20 year ARI	1.63	0.14	1.35	1.21
	100 year ARI	2.19	0.29	1.30	1.01
Proposed Hume Highway bridge over Keajura Creek	20 year ARI	0.98	0.54	0.04	-0.50
	100 year ARI	1.41	0.82	0.08	-0.74

Table 3-4 Change in velocity impacts at flood affected properties (m/s)[1]

Property	Event	Existing velocity	EA design impact	Proposed design change impact	Change in impact
Residential Property 1	20 year ARI	0.14	0.05	0.03	-0.02
	100 year ARI	0.65	0.14	0.10	-0.04
Residential Property 2	20 year ARI	Protected by levee	Protected by levee	Protected by levee	-
	100 year ARI	0.04	-0.01	-0.01	0.00
Water treatment plant	20 year ARI	Protected by levee	Protected by levee	Protected by levee	-
	100 year ARI	0.02	0.01	0.00	-0.01

Property	Event	Existing velocity	EA design impact	Proposed design change impact	Change in impact
Tarcutta Hotel	20 year ARI	0.09	-0.01	-0.02	-0.01
	100 year ARI	0.44	-0.10	-0.16	-0.06
No 6 - Building 1	20 year ARI	Protected by levee	Protected by levee	Protected by levee	-
	100 year ARI	0.02	0.01	0.00	-0.01
No. 8 - Building 2	20 year ARI	Protected by levee	Protected by levee	Protected by levee	-
	100 year ARI	0.03	0.02	0.00	-0.02
No. 10 - Building 3	20 year ARI	Protected by levee	Protected by levee	Protected by levee	-
	100 year ARI	0.00	0.01	0.08	0.07
No. 12 - Building 6	20 year ARI	Protected by levee	Protected by levee	Protected by levee	-
	100 year ARI	Not flood affected	Not flood affected	Not flood affected	-
Police House (Building 4)	20 year ARI	Protected by levee	Protected by levee	Protected by levee	-
	100 year ARI	Not flood affected	Not flood affected	Not flood affected	-
Police station (Building 5)	20 year ARI	Protected by levee	Protected by levee	Protected by levee	-
	100 year ARI	Not flood affected	Not flood affected	Not flood affected	-
Service Station	20 year ARI	Protected by levee	Protected by levee	Protected by levee	-
	100 year ARI	Not flood affected	Not flood affected	Not flood affected	-
Shop	20 year ARI	Protected by levee	Protected by levee	Protected by levee	-
	100 year ARI	Not flood affected	Not flood affected	Not flood affected	-

3.3.5 Resource consumption

The proposed increase in excavation at cutting two (refer design change N5 in Section 3.2.1) would result in an increased volume of spoil. This increase in excavation does provide an opportunity for the project to come closer to achieving an overall balance of earthworks. Where practicable, the additional spoil would be re-used on site as fill in accordance with the principles of the *Waste Avoidance and Resource Recovery Act 2001*. If suitable, reuse of the

additional spoil material would reduce the volume of imported material and reduce the impacts associated with transporting externally sourced fill material to the site (including fuel use, greenhouse gas emissions, air pollution, traffic and noise).

3.3.6 Water quality

The demolition of the existing Hume Highway bridge over Keajura Creek, and the construction of the new bridge immediately to the west (refer design change S5 in Section 3.2.3), would have the potential to result in short-term surface water quality impacts within Keajura Creek. As described in Section 10.1.3 of the environmental assessment, the soils within the vicinity of the proposed works – from the Umbango and Tarcutta Soil Landscape Units – have a very high erosion potential and shed run-off from most rainfall events. The dispersible nature of fine-particle silts and clays present in the soils means that the particles would remain in suspension for longer periods of time. Accordingly, there is a greater risk of sediment loads spreading considerable distance downstream of the proposed bridge works. Increased sedimentation of waterways can smother benthic habitat and organisms, and can increase levels of nutrients, metals and other potential toxicants that attach to the sediment particles.

It is anticipated that water quality impacts would be manageable through the application of the mitigation measures identified in Table 10-2 of the environmental assessment.

3.3.7 Amenity impacts

The revised alignment location (refer design change M1 in Section 3.2.2) would potentially reduce amenity impacts (noise, visual) of the project on sensitive receivers located to the east of the proposed bypass by increasing the offset distance between the road and the Tarcutta township by up to approximately 80 metres. The affect of the alignment shift on operational noise would likely be in the order of 0.5 – 1.0 dB for receivers located in 'Zone 2' to the east of the project (includes approximately 30 residences, refer to Section 9.5.1 of the environmental assessment). Around three sensitive receivers located to the west of the project may incur a similar increase in operational noise impact.

The revised concept design is unlikely to significantly change the construction noise impacts as identified in the environmental assessment. As outlined above, changes due to the revised alignment location (refer design change M1 in Section 3.2.2) would likely reduce construction noise impacts at most receivers. Some additional minor and temporary construction noise impacts may be incurred as a result of proposed design changes (refer design change N5 and S5, in Section 3.2.1 and 3.2.3 respectively). All construction noise impacts would be managed in accordance with the ICNG (DECCW 2009).

3.3.8 Overall impact of the proposed design changes

As demonstrated in Section 3.3, the proposed design changes are not expected to result in significant environmental impacts. Through amending the concept design proposed in the environmental assessment, the project would result in the following benefits/impacts:

- Reduce the amount of Box-Gum Woodland to be cleared by one hectare. Box-Gum Woodland is an endangered ecological community under the *Threatened Species Conservation Act 1995* and a critically endangered ecological community under the *Environment Protection and Biodiversity Conservation Act 1999*.

- Increase the amount of River Red Gum Very Tall Open Forest to be cleared by one hectare. On the whole, the total vegetation clearing for the project would remain consistent with that presented in the environmental assessment (ie 16 hectares of native vegetation).
- Reduce the impact to artefact scatter T15, which is considered to be of high archaeological significance.
- Avoid the direct impact to the historic brick well and minimise impacts on the curtilage of the Hambledon Homestead Complex.
- Increasing the afflux at five residential properties for the 100 year ARI. The proposed design change is considered to meet the objectives for afflux in the 100 year ARI and impacts would be managed in consultation with the affected landowner(s). No changes are noted to the duration of inundation or frequency of flooding and only minor changes have been noted in respect to velocity.
- Reducing the project's external fill requirements through excavating more spoil from cutting two to be reused onsite (where practicable), and thereby also reducing the impacts associated with transporting the externally sourced fill material to the site (including fuel use, greenhouse gas emissions, air pollution and noise).

The assessment demonstrates that the impacts of the proposed design changes are minor and can be adequately managed with the application of suitable mitigation measures. On balance, the proposed design changes minimise the environmental impact of the project.

4 Revised statement of commitments

The environmental assessment for the *Hume Highway Upgrade Tarcutta bypass* identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the draft statement of commitments for the *Hume Highway Upgrade Tarcutta bypass* (refer to Chapter 11 of the environmental assessment) has been revised. Should the project be approved, the revised commitments will guide the subsequent phases of the project.

The following definitions apply in relation to the revised statement of commitments:

Pre-construction	Work in respect of the project that includes design, 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 ancillary facilities, or other relevant activities determined to have minimal environmental impact.
Construction	All work in respect of the project other than that defined as a pre-construction activity/work.
Operation	The operation of the project, but not including commissioning trials of equipment, or temporary use of parts of the project during construction.

The revised statement of commitments is provided in Table 4-1. Additional and/or modified commitments to those presented in the draft statement of commitments have been italicised in blue and deleted commitments, or parts of commitments, have been struck out.

Table 4-1 Revised statement of commitments

Outcome	Ref. number	Key action	Timing	Reference document
Environmental management				
Compliance and continuous improvement in environmental management.	EM1	An environmental management system, including an environmental performance and compliance program, will be established and maintained for the project.	Pre-construction and construction.	ISO 14001:2004 Environmental Management Systems — requirements with guidance for use. ISO 19011:2003 Guidelines for Quality and/or Environmental Management Systems Auditing. RTA QA specification G36 — environmental protection.
	EM2	The environmental management plans will be developed and implemented by suitably qualified and experienced personnel and will incorporate as a minimum the mitigation and management measures in the environmental assessment.	Pre-construction and construction.	*Guideline for the Preparation of Environmental Management Plans* (DIPNR 2006).
Provide a consistent methodology to managing environmental issues.	EM3	Environmentally sensitive areas (such as native vegetation and cultural heritage) within the construction site boundary will be marked on sensitive area maps, demarcated and signposted where necessary. Maps will be made available during all on-site inductions to construction personnel.	Pre-construction and construction.	
	EM4	All construction personnel will receive training regarding environmental management.	Pre-construction and construction.	

Outcome	Ref. number	Key action	Timing	Reference document
Community consultation				
The community is informed about the project.	CC1	The community will be kept informed with measures such as: ▪ Letter box drops, media releases and community updates. ▪ An internet site established and maintained for the duration of the project. ▪ Variable message signs. ▪ Targeted consultation with affected individuals or groups. Information to be provided will include: ▪ Changes to access and traffic conditions. ▪ Details of future works programs. ▪ General construction progress.	Pre-construction and construction.	*Community Involvement and Communications. Draft: A resource manual for staff* (RTA 2008a).
Ensure effective management of community inquiries or complaints.	CC2	Communication management will include: ▪ A 24 hour toll-free contact telephone number. ▪ Directions on how to register a complaint or make an inquiry. ▪ Acknowledgement of complaints within 24 hours. ▪ A complaint recording and tracking system.	Pre-construction and construction.	*Community Involvement and Communications. Draft: A resource manual for staff* (RTA 2008a). AS 4269 Complaints Handling.

Outcome	Ref. number	Key action	Timing	Reference document
Flora and fauna				
Manage impacts on flora and fauna.	FF1	Areas of vegetation identified to be retained will be managed as environmentally sensitive areas.	Pre-construction.	Section 9.1 of the environmental assessment.
	FF2	A suitably qualified and experienced ecologist will conduct a pre-clearing fauna survey, including an inspection of tree hollows immediately prior to tree felling. Fauna with the potential to be harmed during clearing activities will be relocated into suitable adjacent habitat.	Pre-construction and construction.	
	FF3	A two-stage clearing process will be adopted for all hollow tree felling.	Construction.	
	FF4	*A threatened species monitoring program will be developed in consultation with DECCW and I&INSW. This program will allow the effectiveness of mitigation measures targeted at threatened species to be assessed.*	*Pre-construction, construction and operation.*	
	FF5	*All areas mapped as moderate or good condition threatened reptile habitat will be surveyed prior to construction to allow for the refinement of appropriate mitigation measures where necessary.*	*Pre-construction.*	
Manage the spread of weeds.	FF~~4~~*6*	*Weed control will continue until the vegetation in all revegetation areas becomes established. Techniques will vary depending on the species targeted. This will be in consultation with the* ~~Wagga Wagga City Council~~ *WWCC.* ~~Weed control will be carried out, and techniques will vary depending on the species targeted and the area to be treated. This will be in consultation with the Wagga Wagga City Council~~	Pre-construction, *construction and operation.*	*Noxious Weeds Act 1993*.

Outcome	Ref. number	Key action	Timing	Reference document
Mitigate impacts on wildlife corridors.	FF~~5~~*7*	*Crossing treatments will be established along the project corridor, be based on clear objectives and developed in consultation with DECCW and other relevant government agencies. Treatments will target threatened species. A monitoring program to determine their effectiveness will be implemented.* ~~Natural and artificial crossing treatments will be developed in consultation with DECCW.~~	Pre-construction, construction *and operation.*	
Minimise impacts on fish and aquatic habitat.	FF~~6~~*8*	Works within the main watercourse of Tarcutta Creek will be avoided during the breeding season of the Southern Pygmy Perch (September to January) unless mitigation measures are developed in consultation with *I&INSW* ~~the Department of Industry and Investment.~~	Pre-construction and construction.	
	FF~~7~~*9*	Waterway crossings, including temporary works, will be developed in accordance with the fish habitat classification of each waterway and in consultation *I&INSW* ~~the Department of Industry and Investment.~~	Pre-construction and construction.	*Policy and Guidelines for Aquatic Habitat Management and Fish Conservation* (NSW Fisheries 1999). *'Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings'* (Fairfull and Witheridge 2003).
	FF10	*Snag management will be undertaken in consultation with I&INSW and will follow the management principles of lopping as the first priority followed by realignment, then relocation with removal as the last resort.*	*Construction.*	*Policy and Guidelines for Aquatic Habitat Management and Fish Conservation (NSW Fisheries 1999).*
Enhance existing habitat.	FF~~8~~*11*	Natural and artificial habitat features and resources (such as felled logs and nest boxes) will be placed in suitable areas to provide alternative habitat for displaced fauna.	Pre-construction and construction.	
Offset loss of vegetation and fauna habitat.	FF~~9~~*12*	A biodiversity offset package will be developed in consultation with DECCW and other relevant government agencies.	Pre-construction and construction.	

Outcome	Ref. number	Key action	Timing	Reference document
Aboriginal heritage				
Manage impacts on Aboriginal heritage.	AH1	Any Aboriginal heritage items will be managed in accordance with the Aboriginal Cultural Heritage Assessment Report (CHAR), which identifies mitigation measures, developed in consultation with Aboriginal stakeholders and DECCW.	Pre-construction and construction.	
	AH2	Aboriginal sites identified to be conserved will be managed as environmentally sensitive areas.	Pre-construction and construction.	Section 9.2 of the environmental assessment.
	AH3	If any skeletal remains are encountered, all works that would potentially impact the find will stop immediately. Works will not re-commence until appropriate clearance has been received.	Construction.	*Skeletal remains — Guidelines for the management of human skeletal remains under the Heritage Act 1977* (NSW Heritage Office 1998).
Non-Aboriginal heritage				
Minimise impacts on non-Aboriginal heritage.	NA1	Mitigation (archival record, test/salvage excavation) will be completed for impacted heritage items.	Pre-construction.	*How to prepare archival records of heritage items* (NSW Heritage 1998). Section 9.3 of the environmental assessment.
	NA2	Non-Aboriginal sites identified to be conserved will be managed as environmentally sensitive areas.	Pre-construction and construction.	Section 9.3 of the environmental assessment.
	NA3	Detailed design will seek to minimise impacts to the State Heritage Register listed Hambledon Homestead Complex (and historic brick well). There will be no impact to the main homestead building complex.	Pre-construction and construction.	
	NA4	Assistance for the development of a conservation management plan for Hambledon Homestead Complex will be provided. This would be in consultation with the landowner and relevant government agencies.	Construction and operation.	

Outcome	Ref. number	Key action	Timing	Reference document
	NA5	A remote sensing survey and monitoring of topsoil stripping within 100 metres of the formal Tarcutta General Cemetery boundary will be undertaken by a suitably qualified heritage specialist.	Pre-construction and construction.	
	NA6	If any unknown non-Aboriginal heritage items are encountered, all works that would potentially impact the find will stop immediately. Works will not recommence until appropriate clearance has been received.	Pre-construction and construction.	
Noise and vibration				
Minimise construction noise and vibration impacts.	NV1	*Best practice mitigation and management measures will be used to minimise construction noise and vibration at sensitive receivers.* ~~Monitoring will be undertaken to determine the effectiveness of mitigation measures. Should construction noise generate complaints and the monitoring confirm noise is above predicted levels, additional feasible and reasonable mitigation measures will be implemented.~~	Construction.	Section 9.5 of the environmental assessment *Interim Construction Noise Guideline* (DECCW 2009). *Assessing Vibration: A Technical Guide* (DEC 2006). NSW *Industrial Noise Policy* (EPA 2000). *RTA Environmental Noise Management Manual* (2001). *NSW Government's Environmental Criteria for Road Traffic Noise* (EPA 1999). ~~AS 2436-1981 Guide to noise control on construction, maintenance and demolition sites.~~
	~~NV2~~	~~Where noise impacts from evening and night-time construction activities are predicted to be above criteria, a notification and negotiation procedure will be implemented. This will involve consultation with sensitive receivers.~~	~~Construction.~~	~~NSW *Industrial Noise Policy* (EPA 2000).~~ ~~RTA *Environmental Noise Management Manual (2001).~~

Outcome	Ref. number	Key action	Timing	Reference document
	NV2	*Blasting will be designed and undertaken so as to comply with the recommended vibration and overpressure limits.*	*Construction.*	*Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration (ANZECC 1990)*
Minimise operational noise impacts.	NV3	All reasonable and feasible mitigation measures will be developed and implemented to meet the noise criteria applicable to the project in consultation with the sensitive receiver.	Operation.	*NSW Government's Environmental Criteria for Road Traffic Noise* (EPA 1999). *RTA Environmental Noise Management Manual* (2001).
	NV4	Measurement of operational noise will be undertaken along the project between six months and one year after opening. Should the monitoring indicate traffic noise impacts exceeding levels predicted, further reasonable and feasible mitigation measures will be implemented in consultation with the sensitive receiver.	Operation.	*NSW Government's Environmental Criteria for Road Traffic Noise* (EPA 1999). *RTA Environmental Noise Management Manual* (2001).
Hydrology				
Minimise flood impacts.	H1	The project will be designed to minimise change in peak flood levels (afflux) in the 1 in 100 year ARI event.	Pre-construction.	Section 9.4 of the environmental assessment.
Minimise the impact of groundwater extraction.	H2	Groundwater monitoring of water level and water quality will be undertaken. Where levels and/or quality indicate that the project is potentially having an adverse impact, mitigation measures will be implemented.	Construction.	
Conservation of water.	H3	Water efficient work practices, such as water reuse and recycling for road construction and revegetation irrigation will be implemented.	Construction.	

Outcome	Ref. number	Key action	Timing	Reference document
Social and economic				
Property access is maintained.	*SE1*	~~Property access will be maintained for the duration of the construction. If required, temporary or alternative access would be provided in consultation with the affected landowner(s).~~ *Property access will be maintained in consultation with the affected landowner(s). If required, temporary or alternative access during construction will be provided.*	Construction and operation.	*Community Involvement and Communications. Draft: A resource manual for staff* (RTA 2008a).
Manage impacts to directly affected properties.	SE2	Negotiations for property acquisition will include consideration of property adjustments where required to maintain farm management practices.	Pre-construction and construction.	
Minimise economic impacts on Tarcutta.	SE3	Appropriate signage will be provided near to interchanges.	Operation.	
	SE4	Consultation with ~~Wagga Wagga City Council~~ *WWCC* will continue through detailed design and construction regarding assistance towards the development of strategies to address the continued viability of Tarcutta.	Pre-construction and construction.	
Traffic and transport				
Avoid or minimise impacts on traffic and the road network.	TT1	Pre- and post-construction road dilapidation reports will be prepared for local roads likely to be used for construction. Any damage resulting from construction (not normal wear and tear) will be repaired unless alternative arrangements are made with the relevant road authority.	Pre-construction and operation.	
	TT2	Construction vehicle movements and works programs will incorporate traffic control measures to minimise traffic and transport impacts on local roads and the existing highway.	Pre-construction and construction.	*RTA Traffic Control at Work Sites* (RTA 2003c). RTA QA Specification G10 Control of Traffic.

Outcome	Ref. number	Key action	Timing	Reference document
Minimise impacts on the operation of travelling stock routes.	TT3	The design of the project will adopt reasonable and feasible measures in consultation with Hume Livestock Health and Pest Authority to maintain the travelling stock route between Mates Gully Road and Humula Road.	Pre-construction and construction.	
Air quality				
Minimise dust impacts to sensitive receivers.	AQ1	Standard dust and emission control measures will be implemented to manage construction air quality impacts at sensitive receivers.	Construction.	
Soils and water quality				
Minimise erosion and sedimentation.	SW1	Management measures will be designed, installed and maintained to minimise erosion and sedimentation from construction activities.	Pre-construction and construction.	*Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom 2006). *Managing Urban Stormwater: Soils and Construction, Volume 2D, Main Road Construction* (DECC 2008a).
	SW2	A soil conservation specialist will be engaged to provide advice on erosion and sedimentation control.	Pre-construction and construction.	
	SW3	Stabilisation of exposed areas will be undertaken progressively.	Construction.	RTA QA Specification R178 Vegetation.
	SW4	*Scour protection will be installed in waterway areas at risk of erosion as necessary.*	Construction.	

Outcome	Ref. number	Key action	Timing	Reference document
Avoid contamination of waterways.	SW~~4~~5	Spills will be contained immediately. Bunded areas will be used for storage of potentially hazardous and/or contaminating materials and activities.	Construction.	AS 1940 The storage and handling of flammable and combustible liquids. *Storing and handling liquids: Environmental protection — participants manual* (DECC 2007). *Environmental compliance report: Liquid chemical storage, handling and spill management — Part B Review of best practice and regulation* (DECC 2005). *RTA Code of Practice for Water Management* (RTA 1999c).
	SW~~5~~6	The project will incorporate structural and non-structural measures to control road run-off pollutants entering Tarcutta and Keajura creeks.	Operation.	*Procedure for Selecting Treatment Strategies to Control Road Run-off* (RTA 2003a).
Contaminated land				
Manage contaminated sites.	CL1	Sites identified as containing a moderate to high risk of contamination will be analysed and managed in accordance with relevant guidelines.	Construction.	Section 10. 6 of the environmental assessment *Waste Classification Guidelines: Parts 1 and 2* (DECC 2008a). *Contaminated Land Management Guideline* (RTA 2005).
	CL2	If any unknown contaminated sites are encountered, all works at that site will stop immediately. Works will not recommence until the material is analysed and management measures are developed.	Pre-construction and construction.	*Waste Classification Guidelines: Parts 1 and 2* (DECC 2008c). *Contaminated Land Management Guideline* (RTA 2005).

Outcome	Ref. number	Key action	Timing	Reference document
Sustainable management				
Minimise greenhouse gas emissions and energy use.	SM1	Energy efficient work practices will be implemented, including consideration of: ▪ Energy efficient design of site buildings. ▪ Design of construction work sites to minimise unnecessary vehicle movement. ▪ Regular servicing of site plant and equipment. ▪ Training of construction personnel in energy efficient plant operation. ▪ The use of accredited GreenPower. ▪ Use of locally sourced materials where available and of suitable quality.	Pre-construction and construction.	
Minimise waste.	SM2	The waste minimisation hierarchy principles of avoid, reduce, reuse, recycle or dispose will apply to all aspects of the project.	Construction.	*Waste Avoidance and Resource Recovery Strategy* (DECC 2006). NSW Government's Waste Reduction and Purchasing Policy. *Environmental guidelines — assessment, classification and management of liquid and non-liquid waste* (DECC 1999).

Outcome	Ref. number	Key action	Timing	Reference document
Visual amenity and landscape				
Minimise visual amenity impacts.	VL1	Built elements and landscapes will be in accordance with the urban and landscape design objectives for the project. ~~Wagga Wagga City Council~~ *WWCC* and the community will be consulted.	Pre-construction.	Section 10.3 of the environmental assessment. *Hume Highway Urban Design framework: Prestons (WM7) to Albury* (RTA 2009b). *Beyond the Pavement Urban and Regional Design Practice Notes* (RTA 1999b, 2004 update). *RTA Bridge Aesthetics* (RTA 2003b), *Noise Wall design Guideline* (RTA 2006), and *Landscape Guideline* (RTA 2008b).
	VL2	Landscaping treatments will include native plant species endemic to the local area.	Pre-construction and construction.	Section 10.3 of the environmental assessment.
Hazards and risks				
Minimise risks and hazards on the environment and community.	HR1	Hazardous materials will be stored in bunded areas within the construction site. Hazardous materials will not be stored on the floodplain below the 1 in 20 year ARI flood level.	Pre-construction and construction.	AS 1940 The Storage and Handling of Flammable and Combustible Liquids. *DEC Bunding and Spill Management Guidelines* (in DEC Environmental Protection manual for Authorised Officers). *RTA Code of Practice for Water Management* (RTA 1999c).
	HR2	Potentially hazardous and contaminating activities will be in bunded areas or in other areas where suitable containment measures are in place to prevent discharge into watercourses.	Pre-construction and construction.	AS 1940 The Storage and Handling of Flammable and Combustible Liquids.

Outcome	Ref. number	Key action	Timing	Reference document
Ancillary facilities				
Minimise impacts of ancillary facilities.	AF1	Ancillary facilities (excluding temporary stockpiles) not identified in the environmental assessment will be located in areas: ▪ More than 40 metres from waterways. ▪ Of low ecological and heritage conservation significance. ▪ Where there is no significant clearing of native vegetation beyond that already required for the project. ▪ That minimise impact on amenity of the closest sensitive receiver (unless a negotiated agreement is in place). ▪ Of relatively level ground.	Pre-construction and construction.	Section 6.6 of the environmental assessment.
	AF2	Temporary stockpiles will be located in areas: ▪ Of low ecological and heritage conservation significance. ▪ Constructed on the contour at least 40 metres from waterways. ▪ Outside the 1 in 10 year ARI floodplain. ▪ Of relatively level ground.	Construction.	Section 6.6 of the environmental assessment. *Managing Urban Stormwater. Soils and Construction, Volume 1* (Landcom 2006).

Outcome	Ref. number	Key action	Timing	Reference document
Quarrying				
Minimise impacts of quarrying.	Q1	*Any quarry established or expanded to meet the needs of the project will be undertaken in accordance with all relevant environmental guidelines and legislation.* ~~Potential quarry locations would be guided by the following criteria:~~ ~~▪ More than 40 metres from waterways.~~ ~~▪ Areas of low ecological and heritage conservation value.~~ ~~▪ Greater than 100 metres from closest sensitive receiver (unless a negotiated agreement is in place).~~	Pre-construction and construction.	Section 6.3 of the environmental assessment. *Managing Urban Stormwater. Soils and Construction, Volume 1* (Landcom 2006). *Managing Urban Stormwater. Soils and Construction, Volume 2E, Mines and Quarries* (DECC 2008b). NSW *Industrial Noise Policy* (EPA 2000).
Manage long-term impacts of quarrying.	Q2	If required, a site rehabilitation plan would be developed in consultation with relevant stakeholders.	Construction.	

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