Roads & Maritime

Realignment of the Newell Highway at Grong Grong

Submissions Report

September 2015

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Executive summary

Roads and Maritime Services proposes to realign (build) a section of the Newell Highway to the west of Grong Grong (the proposal) about 22 kilometres east of Narrandera.

Key features of the proposal would include:

- Bypassing Grong Grong to the west of the town.
- Building about 2.4 kilometres of new two lane highway (one lane in each direction).
- Building a cutting around 940 metres long and up to 4.5 metres deep.
- Building a north and west access between the highway and Grong Grong. The accesses would include intersections with unrestricted turning movements in all directions, protected right turn lanes and deceleration lanes at the highway exit and entry points.
- Removing around 175 metres of existing road and then replanting between the north access and the new section of highway.
- Removing about 640 metres of existing road and then replanting between the west access and the new section of highway.
- Building a one metre wide painted centre median.
- Changing Angle Road and its connection with the existing highway.
- Adjusting public utility services, including relocating the Nextgen optic fibre cable.
- Building temporary ancillary facilities, including a work site compound, stockpile sites, construction water quality basins and haulage roads

In accordance with the requirements of the *Environmental Planning and Assessment Act 1979*, an environmental impact assessment was prepared to assess the potential impacts of the proposal.

The environmental impact assessment was documented in a review of environmental factors, which was publicly displayed for 19 days from Monday 27 April 2015 to Friday 15 May 2015. During the display of the review of environmental factors, five submissions were received, consisting of two from government agencies and three from the community. A letter was also received from the local member for Cootamundra, The Hon Katrina Hodgkinson MP, supporting a submission from one of the community members.

Submissions generally raised issues relating to:

- Stock movements and safety.
- Property access.
- Property acquisition.
- Town access and traffic safety.
- Signage.
- Biodiversity offsets.
- Carbon emissions and offsets.
- Soil quality of adjoining lands.

Since the REF was displayed Roads and Maritime has revised the concept design of the proposal and the environmental management measures to respond to submissions made, to minimise impacts on the environment and to improve constructability of the proposal.

Key revisions to the proposal include:

- Revised north and west town access designs to provide more direct, clearer and free flowing connection between the highway and Grong Grong.
- Amended road levels (height of road) to provide for more efficient, safer and cost effective construction methods.
- Access across the highway for a local farmer to move large agricultural machinery between properties, improving safety for the farmer and motorists using the highway.
- Revised construction footprint (area of construction) to accommodate the design changes, to provide appropriate access to the site compound and to minimise clearing of the Inland Grey Box Woodland Endangered Ecological Community.

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Appendices

1 Introduction and background

1.1 Purpose

This submissions report relates to the review of environmental factors (REF) prepared for the Realignment of the Newell Highway at Grong Grong and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by Roads and Maritime Services (Roads and Maritime). This submissions report summarises the issues raised and provides responses to each issue (Chapter 2) and describes and assesses the environmental impact of changes to the proposal (Chapter 4).

1.2 The proposal

Roads and Maritime proposes to realign (build) a section of the Newell Highway to the west of Grong Grong (the proposal) about 22 kilometres east of Narrandera.

Key features of the proposal would include:

- Bypassing Grong Grong to the west of the town.
- Building about 2.4 kilometres of new two lane carriageway (one lane in each direction).
- Building a cutting around 940 metres long and up to 4.5 metres deep.
- Building north and west accesses between the highway and Grong Grong. The accesses would include intersections with unrestricted turning movements in all directions, protected right turn lanes and deceleration lanes at the highway exit and entry points.
- Removing around 175 metres of existing road and then replanting between the north access and the new section of highway.
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- Building a 1 metre wide painted centre median.
- Changing Angle Road and its connection with the existing highway.
- Adjusting public utilities, including relocating the Nextgen optic fibre cable.
- Building temporary ancillary facilities, including a work site compound, stockpile sites, construction water quality basins and haulage roads.

1.3 REF display

Roads and Maritime prepared an REF to assess the environmental impacts of the proposed works. The REF was publicly displayed between Monday 27 April and Friday 15 May at the Grong Grong General Store and Narrandera Shire Council Offices, as detailed in Table 1.1. The REF was also placed on Roads and Maritime's website.

The display locations and website link were advertised in the Daily Advertiser and the Narrandera Argus. Electronic and printed copies were made available to members of the public on request.

A letter with the REF executive summary attached was sent to 123 households within the Grong Grong area. The letter provided information about the display locations and timeframes for submissions.

In addition to the above public display, a copy of the REF and invitation to comment was sent directly to several identified stakeholders. They included:

- NSW Trade & Investment, Crown Lands South West Region
- Office of Environment and Heritage (OEH)
- Narrandera Shire Council

Table 1.1: Display locations

Location	Address
Grong Grong General Store	34 Junee Street, Grong Grong
Narrandera Shire Council	141 East Street, Narrandera

2 Response to issues

Roads and Maritime received five submissions, accepted up until 5pm Friday 15 May 2015. A letter was also received from the local member for Cootamundra, The Hon Katrina Hodgkinson MP, supporting a submission from one of the community members.

Table 2.1 lists the respondents and each respondent's allocated submission number. The table also indicates where the issues from each submission have been addressed in this chapter of the report.

Table 2.1: Respondents

Respondent	Submission No.	Section number where issues are addressed
Individual	1	2.3.1
Individual	2	2.2, 2.6
Individual	3	2.4.1, 2.5.1
NSW Trade and Investment - Crown Lands	4	2.3.2, 2.3.3, 2.7, 2.9
Office of Environment and Heritage	5	2.7, 2.8
Local Member of Parliament	6	2.6

2.1 Overview of issues raised

A total of five submissions were received in response to the display of the REF consisting of two from government agencies and three from community members. A letter was also received from the local member for Cootamundra, The Hon Katrina Hodgkinson MP, supporting a submission from one of the community members.

Each submission has been examined individually to understand the issues being raised. The issues 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 issues raised and Roads and Maritime responses form the basis of this chapter.

The main issues raised in community submissions include:

- Safety concerns around stock movements along and across the Newell Highway.
- Carbon emissions and offsets.
- Safety concerns with current town access intersection arrangements.
- Town and business signage.

The submissions received from the two government agencies, NSW Trade & Investment, Crown Lands (Griffith) and Office of Environment and Heritage raised the following issues:

- Ownership and acquisition of Narran Street.
- Access arrangements for adjoining Crown Land.
- Access arrangements for adjoining agricultural lands.
- Potential soil and water impacts on Crown Land adjacent to the proposal and the need for appropriate mitigation measures.

- Completion of a biodiversity offset strategy as part of the proposal.
- Aboriginal cultural heritage.

2.2 Community consultation

Submission number 2

Issue description

The respondent commented that the consultation process has been well conducted and that the community has had adequate opportunities to respond to the Roads and Maritime plans.

Response

The comment is noted.

2.3 Property and land use

2.3.1 Stock movements

Submission number 1

Issue description

In the submission relating to property and land use the respondent raised the issue of increased safety risk to family and livestock when moving stock across and along the Newell Highway upon completion of the proposal.

The respondent currently moves stock between a property on the east side of the Newell Highway and a property to the west of the Newell Highway for shearing and crutching. The livestock are moved along Angle Road, across and along the Newell Highway to Bogolong Road. The livestock are returned via the same route. The respondent is concerned that these movements would be made more dangerous as a result of the proposal for the following reasons:

- Currently northbound vehicles approaching the respondent's livestock are coming out of Grong Grong at 60km/h. The 60km/h speed zone is in place until vehicles are over the hill and have a clear view of the highway past Bogolong Road. If any livestock are in view motorists can maintain a slower speed or stop if necessary.
- The proposal would result in northbound vehicles travelling up to 110km/h with restricted views around a bend that is cut into the hill.

The respondent stated that the proposed stock crossing signage would not satisfactorily address the issue because only a small percentage of road users respond to road signage until they can see the obstruction.

The respondent stated that an alternative stock route between the properties that was suggested by Roads and Maritime was not viable because it became impassable for long periods after rain. It is usually impassable for most of winter, which is the main shearing period.

The respondent suggested two options for Roads and Maritime to safely address these issues:

- To erect fencing, a holding yard and highway underpass somewhere between

Angle and Bogolong roads.
- To contribute to a shearing shed at the respondent's property east of the highway.

Response

Roads and Maritime has had detailed conversations with the respondent to gain a better understanding of the situation. Roads and Maritime and the respondent both agree and understand the risk of moving stock under the existing and proposed conditions.

Roads and Maritime has calculated the sight distances available along the northern end of the proposal where the stock is moved. These calculations confirmed sight distances available for northbound vehicles to see the stock on the highway and stop, or slow down, if required. From these calculations the following was noted:
- Minimum sight distance required for cars to stop is 240m.
- Minimum sight distance available for cars at the northern end of the proposal is 300m.
- Minimum sight distance required for trucks to stop is 220m.
- Minimum sight distance available for trucks at the northern end of the proposal is 320m.

These calculations show that although the traffic is travelling at up to 110km/h through this area the sight distance available is sufficient for them to stop for livestock crossing the highway.

Roads and Maritime acknowledges the risk of stock crossing a rural highway but also understands this is common practise around rural areas of NSW. Roads and Maritime considers the signage (both standard Roads and Maritime stock crossing signs and the farmer's temporary signs which are placed on the road prior to moving stock across) and the sight distance available through the area are sufficient for vehicles to see the stock and take any necessary action.

Roads and Maritime has worked with the respondent to try to find a suitable alternative solution to the issue. Options investigated have included:
- Contribution to a shearing shed on the respondent's property – Roads and Maritime believes that the sight distances available as outlined above are sufficient and the contribution to a shed is not necessary or appropriate.
- Stock underpass – the topography in and around the area does not permit the installation of a stock underpass. The proposal would be in a cutting and would transition into an area of shallow fill through the area where stock are moved.
- Alternative stock route – this would involve moving the stock along a different route to minimise stock movements along the Newell Highway. This would include improved fencing and installation of additional gateways along the existing lane network around the shearing shed to limit stock movements to a single highway crossing location. The respondent indicated that during winter the suggested route is impassable and is difficult to do with limited workers. The respondent believes this arrangement would be of little to no benefit.
- Improved signage at crossing locations – the respondent stated that only a small percentage of motorists respond to signage. Roads and Maritime still considers that there is a benefit in providing signage in advance of the highway areas where stock are moving or crossing to assist in notifying motorists.

In all cases across rural NSW the practise of moving stock along and across a highway remains the responsibility of the farmer. Farmers must ensure they have adequate signage and workers to control the stock while undertaking this movement. Roads and Maritime has designed the proposal so there would be no sight restrictions and has included additional signage to assist in this movement. The practise of moving stock across any road within the state has associated risks due to mixing stock and moving vehicles. Roads and Maritime understands this and would provide improved signposting measures to accommodate the movement.

2.3.2 Property acquisition

Submission number 4 (NSW Trade and Investment – Crown Lands)

Issue description

The respondent stated that Narran Street is registered as Crown Land. They identified that because the street is to be used for access for the bypass either:

- Sections of the street need to be transferred to Narrandera Shire Council to develop and manage, or
- The REF should be amended to reference the 'required acquisition' of Crown Land.

The respondent noted that the REF did not identify whether a road transfer process has been requested from Crown Lands.

Response

The REF incorrectly identified that Narran Street is council owned. Narran Street is currently registered as Crown Land. Figure 2.1 shows the correct ownership details.

There would be no direct access to the Newell Highway from Narran Street. The western extent of Narran Street would be at the intersection with Boree Street. The area of Narran Street to the west of the Boree Street intersection (Area 3.1 on figure 2.1) would no longer be required to operate as a public road. As a result Roads and Maritime would acquire Area 3.1 as part of the proposal. This area would not be used or impacted during construction and likely would be on-sold for agricultural purposes.

An official road transfer process for the section of Narran Street (Area 3.0 on figure 2.1) has not yet been formally requested from Crown Lands. Roads and Maritime has discussed the transfer of ownership of Narran Street with Crown Lands and Narrandera Shire Council. Roads and Maritime has indicated a preference for all this section of Narran Street to be vested in the local Council as the roads authority. Roads and Maritime has been in consultation with Council during the development of the proposal and they are aware of the impacts. There are a few administrative steps to complete such as registration of the Deposited Plan and obtaining a formal agreement from council before the road transfer process can be requested. The road transfer process would be completed prior to the commencement of construction.

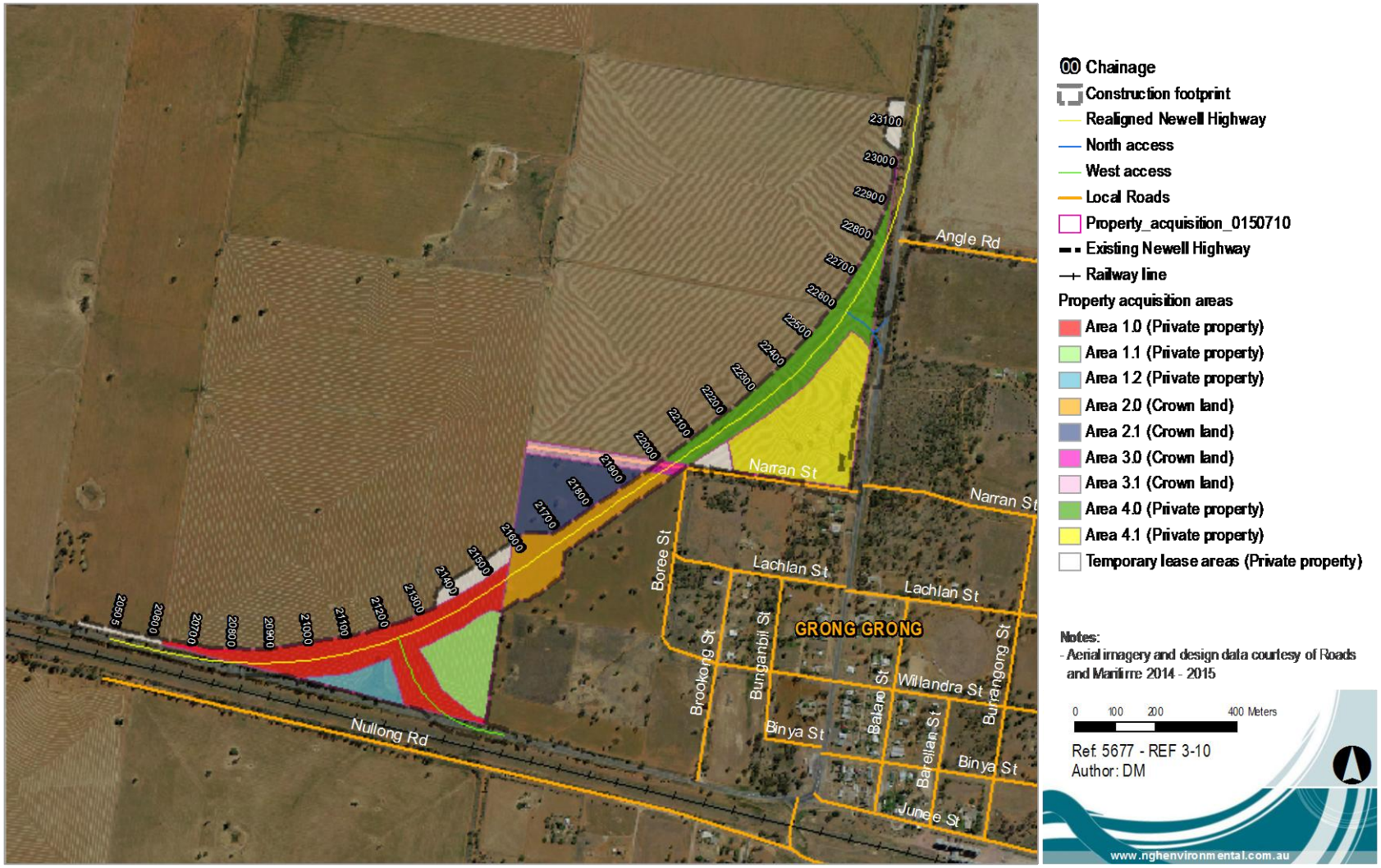

Figure 2.1 – Updated property acquisition plan

2.3.3 Property Access

Submission number 4 (NSW Trade and Investment – Crown Lands)

Issue description

The respondent raised the issue of property access into Crown Land and the smaller rural blocks (Areas 1.1, 1.2 and 4.1 on figure 2.1) that Roads and Maritime would need to acquire as part of the proposal.

In summary the respondent raised the following issues:

- Suggested the new access into the Crown Land would be via either Boree Street (which would require formation of 'track in use'), Willandra or Lachlan streets.
- Questioned where the access would be located for the agricultural land (Area 1.1, 1.2 and 4.1) that would be acquired as part of the proposal.
- Questioned whether Areas 1.1, 1.2 and 4.1 would have direct highway access.

Response

The existing access into the Crown Land is via a gate off Narran Street. The proposed road boundary would be located about 20 metres to the west of the existing gate. The existing access would be retained under the proposal and would continue to provide access to the south eastern section of Crown Land (Figure 2.2).

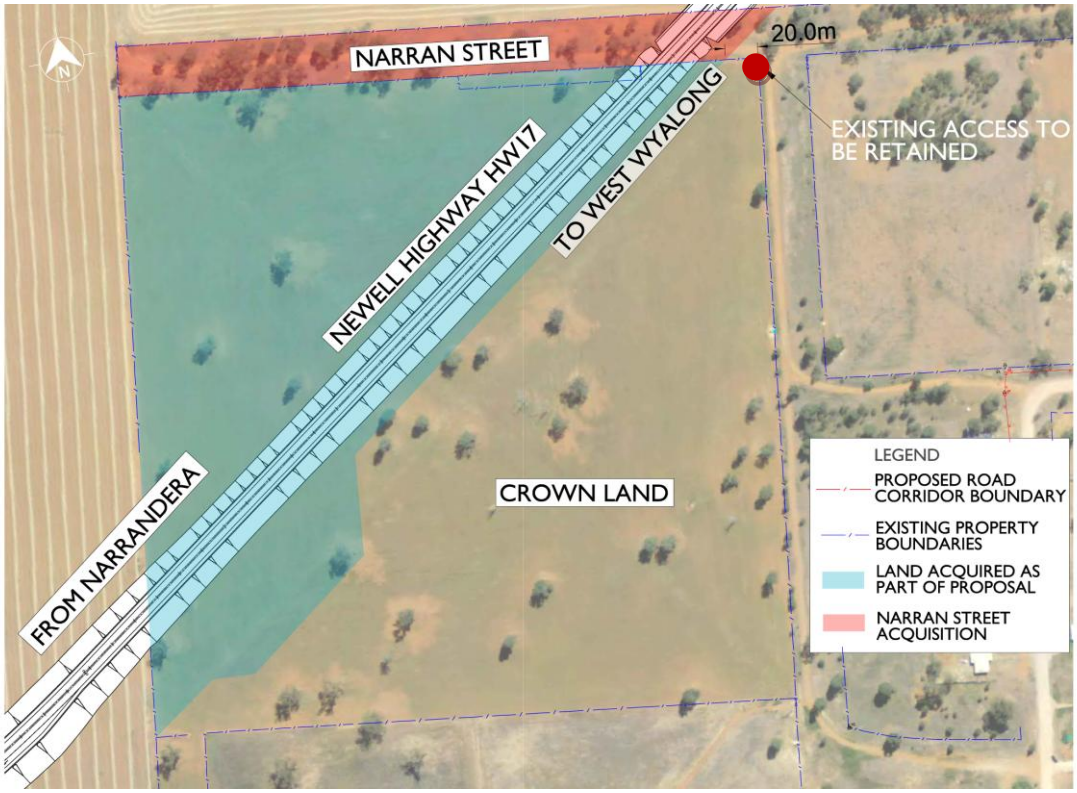

Figure 2.2 – Crown land access (access gate indicated by red dot)

Roads and Maritime would continue to own and maintain Area 1.2 during operation of the proposal. This area would not be fenced and no formal access would be required.

Areas 1.1 and 4.1 would not have direct highway access. Access into Area 1.1 would be via the western access road. Area 4.1 would be access via the bypassed Newell Highway.

2.4 Traffic and transport

2.4.1 Town access

Submission number 3

Issue description

The respondent raised issues with the type of intersections proposed to connect both the north and west accesses with the Newell Highway.

In summary, the respondent raised the following issues:

- Slip lanes (on/off ramps) are essential where practical. T-intersections may be safe but all recently built modern highways use slip lanes for exits and entrances where practical.
- Risk of incidents as slow moving heavy vehicles turn onto the highway after stopping at a T-Intersection, taking considerable time to reach the speed of other Newell Highway traffic. Some incidents may result in injury.
- A third of heavy vehicles on the Newell Highway at this point turn into or out of Grong Grong to use the Canola Way connection to Junee. These are mainly servicing the agricultural industry (eg trucks carrying livestock and grain products) and number about 214 heavy vehicles.
- The risk rating of T-intersections may be low across the State but if a collision happens the cost will be high.

Response

The design of both the north and west town accesses have been completed to current design practise and meet current design standards including safety in design requirements. The designs take into account current and future traffic volumes, community feedback and harvest volumes.

The features of the north access would include:

- Deceleration lane for southbound vehicles exiting the Newell Highway to access Grong Grong. The deceleration lane then goes into a curved entry access which can be negotiated at about 20km/h.
- Protected right turn lane for northbound traffic entering Grong Grong from the Newell Highway.
- Street lighting to assist motorists to see the intersection configuration in low light conditions.
- Raised concrete medians to assist in controlling the intersection.

The features of the west access would include:

- Deceleration lane for southbound vehicles exiting the Newell Highway to access Grong Grong. The deceleration then goes into a curved entry access which can be negotiated at about 40km/h.
- Protected right turn lane for northbound traffic entering Grong Grong from the Newell Highway.
- Lighting to allow motorists to see the intersection configuration in low light conditions.
- Acceleration lane for vehicles exiting Grong Grong and heading west towards Narrandera. The acceleration lane would have an entry speed of about 40km/h.

- Raised concrete medians to assist in controlling the intersection.

Traffic volumes off the Newell Highway onto the Canola Way are currently around 500 vehicles a day. Of this, 100 are heavy vehicles, which is 20 per cent of total traffic. These volumes, and the concentrated volumes during harvest have been considered when designing the intersection arrangement at both locations.

The slip lane arrangements which are referred to by the respondent are currently only common practise on higher volume roads with a large proportion of turning vehicles. The current design practise for lower volumes roads are at grade intersections with turning lanes where required. An example is the intersections provided for town access from the Woomargama bypass on the Hume Highway which was opened in 2011. It has been designed with two at grade intersections with deceleration and acceleration lanes, similar to the proposal at Grong Grong.

The T-Intersections are considered a safe arrangement for exiting and entering the highway. The designs for the intersections provide the following features:

- Sufficient sight to make a judgement on when to enter and exit the highway.
- Sufficient overtaking sight distance for vehicles to overtake slower moving vehicles that have entered the highway from Grong Grong.
- Wide centreline treatment to assist in the separation of the two lanes of traffic.
- Wide shoulders through the intersection to allow for any misjudgement made by turning vehicles.
- Deceleration lanes and protected right turn lanes to assist in removing turning vehicles from the through lanes of the highway.
- Acceleration lane for vehicles travelling towards Narrandera from the west access to allow them to reach highway travel speeds before merging.

The project team met with the respondent and the local Progress Association at their meeting on Tuesday 9 June 2015 to discuss the submission and talk through the current designs. Some refinements were made to the design after the display of REF which considered the community's concerns (these are detailed in Chapter 4 – Changes to the proposal). A detailed discussion was held about the issues and concerns of the community and the merits and design principles of the designs. After all the information was supplied the Progress Association agreed to accept the current designs as presented. Noted from the meeting were their continuing concerns for the safety of vehicles entering the high speed environment of the Newell Highway.

As part of the ongoing review process an independent external design review and road safety audit will be undertaken during detailed design. This review and audit would identify any potential safety concerns with the project. Any issues identified through the review and audit would be addressed in the detailed design.

Overall the proposal would have a positive impact on safety on the Newell Highway. It would remove the majority of vehicles from the town and eliminate a right angle bend which has a continuing crash history.

2.5 Socio-economic

2.5.1 Signage

Submission number 3

Issue description

The respondent made the request that advanced signage for the turn off to Grong Grong be installed at 10km, 5km, 2km, 1km and 500m on the Newell Highway approaching Grong Grong from both directions.

In addition to the standard Roads and Maritime highway signage the respondent also added the need for specific business signage for the General Store, Motel, Hotel, roadside rest park and Earthpark. They suggested the impacts of the bypass would have an effect on the town and this signage would complement the Roads and Maritime signage in notifying passing motorists of the services available in town.

Response

The signage plan for the proposal is yet to be developed and will be completed as part of the detailed design. Roads and Maritime understands the importance of signage to encourage vehicles to stop in Grong Grong and use the facilities available.

Roads and Maritime is proposing a series of signs from each direction which will include 'Grong Grong *x*km ahead', 'Grong Grong' with symbols of the services available in town, 'Stop Revive Survive' and diagrammatic bypass signage showing the bypass distances and the option to return to the Newell Highway through Grong Grong without back tracking. This signage would provide adequate information for a motorist to make a decision to turn off the highway into Grong Grong. Direction signage would also be installed within Grong Grong to guide people around the town and also direct vehicles back onto the highway

In addition to the Roads and Maritime signage it is proposed to work with the businesses (General Store, Motel, and Hotel) to provide advertising signage for the businesses. This signage will be included as part of the proposal as identified in the mitigation measures in the REF. The businesses would be responsible for the ongoing maintenance of the signage. Roads and Maritime will continue to work with the community and businesses in finalising the signposting scheme. The signage would be designed and located to appropriately fit with the surrounding landscape with advice from a landscape architect/designer.

2.6 Carbon emissions and offsets

Submission number 2 and 6

Issue description

In the submission relating to carbon emissions and offsets the respondent raised the issue of carbon emissions produced by the proposal and more broadly across Roads and Maritime and the measures in place to minimise, manage and offset carbon emissions.

In summary, the respondent raised the following issues:

- In its quarterly environmental report Roads and Maritime committed to 'delivering its services to the community in a more environmentally sustainable manner' (Roads and Maritime, Dec 2014). Along with other road traffic and transport

authorities in Australia and New Zealand it has also 'committed to minimising greenhouse gas (GHG) emissions' (Transport Authorities Greenhouse Group, 2013).

- Roads and Maritime has previously demonstrated this commitment. For example by replacing 50,000 incandescent lamps in traffic signals with efficient LED lamps. This delivered substantial electricity and cost savings and also reduced GHG emissions by 10,000 tonnes per year.
- The REF does not include details of Roads and Maritime's commitment to offsetting or reducing carbon dioxide emissions produced from the design, building and operation of the proposal, including materials used.
- The NSW Government has an ongoing commitment to increased infrastructure with a focus on new and improved roads. It has a corresponding commitment to reducing its carbon emissions.
- Questioned what management processes and planned responsibilities are in place, or could be put in place for the reduction, capture and offset of carbon emissions for the proposal, and more broadly across Roads and Maritime.
- The proposal provides an opportunity for Roads and Maritime, in partnership with the community, to trial a 1 megawatt (MW) solar array on land acquired by Roads and Maritime as part of the proposal. Benefits would include a reduction in carbon emissions, energy and cost savings, potential participation in the Renewable Energy Target Scheme, community benefits and a low-risk pilot opportunity.

The Hon Katrina Hodgkinson MP, member for Cootamundra provided a letter in support of this submission. The letter outlined her support for the trial of a solar array at Grong Grong.

Response

The majority of carbon emissions generated by construction of the proposal would be indirect emissions. Emissions would be produced by the offsite excavation, processing and transport of materials used in construction. Other emissions generated would be those emitted during construction of the proposal for example burning fuels in machinery used on-site, construction related transport and vegetation clearing. There would be some electricity use for the site office.

Carbon emissions generated during operation of the proposal would include the use of electricity to power street lights at each of the town access intersections and road maintenance requiring the use of fuels and materials. Carbon emissions would also be generated by the vehicles using this section of the Newell Highway during its operation.

Roads and Maritime aims to first avoid and minimise carbon emissions ahead of end of line solutions like carbon offsetting. Avoiding and minimising impacts in general results in better outcomes for the environment as well as being more cost effective than end of line solutions. As a result Roads and Maritime's priority is on improving road designs and improving the construction of projects.

The design of the proposal includes a number of measures that would help minimise carbon emissions during operation of the proposal. These are:

- Removing the low speed 90 degree bend in the highway and replacing it with a highway speed bypass that would reduce travel times by around 70 seconds for cars and up to 90 seconds for trucks. It would also remove the need for highway traffic to break and accelerate at this intersection. This would reduce the carbon emissions of vehicles using this section of the highway.
- Levelling out this section of the highway by using flatter grades, would reduce the

need for breaking and accelerating and create more fuel efficient driving conditions.

Carbon emissions produced during construction would be minimised through the following design and mitigation measures outlined in the REF:

- Vegetation clearing has been minimised through design by intentionally narrowing the width of the construction footprint at tie in areas.
- Project planning to minimise haulage and disposal of spoil by balancing the cut and fill requirements for the proposal.
- Requiring the appropriate maintenance of plant and equipment used on-site.
- Using recycled products in construction where cost and performance competitive.
- Planning and carrying out construction activities to minimise vehicle emissions.

In response to this submission Roads and Maritime has included additional safeguards and management measures to further address carbon emissions during construction. The additional measures are identified in Chapter 5. They focus on the following (where feasible and reasonable):

- Selecting fuel efficient plant, equipment and vehicles.
- Using local goods and services.
- Seeking innovative opportunities to reduce the amount of material used in construction.
- Planning earthworks to reduce spoil and minimise haulage of materials.
- Re-using road materials.

Refer to Chapter 5 for these additional measures.

A 1MW solar system would go considerably beyond mitigating carbon emissions for the proposal and is therefore outside the scope of the assessment of the Grong Grong realignment proposal. Being outside that scope it would be considered as a separate project for planning approval purposes and would most likely be categorised as an energy generation project.

Roads and Maritime assesses its corporate greenhouse gas emissions, including carbon emissions and reports them annually through Roads and Maritime's annual report. Some initiatives which Roads and Maritime have done recently include:

- Continued roll out of energy reduction initiatives across Roads and Maritime office and operational buildings such as the installation of energy efficient high-bay lights in heavy vehicle inspection stations.
- Inclusion of energy efficiency requirements in the specifications for new office fit outs.
- Trialling energy efficient street and tunnel lighting.

Measures to reduce Roads and Maritime's carbon emissions more broadly are outside the scope of this proposal so have not been considered further by this submissions report.

2.7 Biodiversity assessment and offsets

Submission number 4 (NSW Trade and Investment – Crown Lands) and 5 (Office of Environment and Heritage)

Issue description

One of the respondents acknowledged that the biodiversity assessment for the proposal was appropriate and agreed the proposal would be unlikely to have a significant effect on threatened species and communities under State legislation. The respondent stated that this was based on the offsetting of unavoidable and residual loss to biodiversity. The respondent raised concern that although the REF referenced the need for biodiversity offsets for the proposal, none of the details of the offsets had been provided in the REF.

Both respondents requested future information and consultation about the biodiversity offset strategy for the proposal. One of the respondents specifically requested the details of any offsets as they are implemented. This was to include the calculation of the area and community composition of the offset, its location, the mechanism for its protection in-perpetuity and the management actions to be undertaken.

Response

Roads and Maritime is currently preparing the brief for the biodiversity offset strategy for the proposal. The REF stated that the strategy would be finalised prior to any construction works starting. Due to the required time to complete the strategy and the project timelines the timing for the completion of the strategy has now been amended. Roads and Maritime currently aim to have to a Biodiversity Offset Strategy well progressed and suitable land identified prior to commencement of full construction. Any early works such as utility relocation, fencing and establishment of Roads and Maritime site compound can start once the REF is determined. Roads and Maritime has consulted with OEH on this change. Roads and Maritime will continue to consult with both OEH and NSW Trade and Investment – Crown Lands throughout the process and inform them of the details of the strategy upon completion.

2.8 Aboriginal cultural heritage

Submission number 5 (Office of Environment and Heritage)

Issue description

The respondent noted that the Aboriginal cultural heritage assessment within the REF followed Roads and Maritime's 'Procedure for Aboriginal cultural heritage consultation and investigation' (Roads and Maritime, 2012).

The respondent noted that at this stage the REF identifies no known or potential Aboriginal objects within the proposal footprint and no further assessment is required.

The respondent advised that if any potential Aboriginal objects (including skeletal remains) are discovered during the course of the project all works in the vicinity of the find must cease, the relevant OEH office should be contacted for advice and Roads and Maritime's standard management procedure for unexpected archaeological finds should be implemented.

Response

The REF included a specific measure to follow Roads and Maritime's standard management procedure for unexpected archaeological finds. The procedure has been updated and is now called the 'Standard management procedure: Unexpected heritage items' (Roads and Maritime, 2015). This reference has been updated in the management measures in Chapter 5. The measure has also been updated to refer to potential Aboriginal objects.

2.9 Contaminated lands

Submission number 4 (NSW Trade and Investment – Crown Lands)

Issue description

The respondent raised issues with the risk of contamination to the adjoining Crown Lands should an incident occur during construction of the proposal. They raised the issue of liabilities for the management or saleability of the land if such an event were to occur.

The respondent requested more information on the mitigation measures proposed to avoid [contamination] impact on soil quality. They noted that this information had been expanded on for water quality but not soil quality. Further the respondent requested that a contamination study/report be produced by the Roads and Maritime at the end of the works to confirm the contamination status of the adjoining Crown Lands.

Response

The potential for the proposed construction activities to cause soil contamination from accidental spills was identified in section 6.7.2 of the REF. The REF then referred to proposed mitigation measures to avoid and manage potential impacts on soil and water quality as a result of the proposal. Section 6.7.3 and Chapter 7 of REF identify the safeguards and environmental management measures in table form. There is a typographical error in the tables. Where the tables refer to 'Water quality' impacts, this should instead read 'Soil and water quality' impacts as the measures identified will apply to both. This has been amended in Table 5.1 of this submissions report for clarity.

These mitigation measures are supported by other measures outlined in Chapter 7 of the REF that are not specifically assigned to address soil/land impacts but would further minimise the risk and impacts of soil/land contamination. Measures such as the appropriate management of stockpiles and waste, the preparation and implementation of a construction environmental management plan (CEMP), including a soil and water management plan and a Roads and Maritime audit and inspection program for the works.

Land contamination of the adjoining Crown Lands as a result of the proposal is considered unlikely, especially with the implementation of the safeguards and environmental management measures. However, in response to NSW Trade and Investment's concerns an additional safeguard has been included in Table 5.1 of this submissions report to provide a course of action to address any land contamination that may result from construction of the proposal. The additional measure requires a Phase 2 detailed site investigation if contamination is known to have occurred as a result of the proposal or where there is uncertainty. The Phase 2 investigation would inform subsequent actions to address any contamination issues identified.

3 Additional assessment

An update of the Biodiversity Assessment was undertaken on the proposal. This included the updated construction footprint to incorporate:

- Design changes at the north access. The north access was updated to allow better accessibility and safety for motorists entering and exiting Grong Grong.
- Access into adjoining agricultural land. The access and acquisition has been updated to allow easier and safer access for the farmer to cross the highway to enter their property.
- Minor adjustments for construction purposes. The footprint has been adjusted in some areas to provide enough width beside the proposal for construction purposes. The footprint has also been extended on the northern end of the proposal and Angle Road allowing the design to tie back into the existing road.

The updated biodiversity assessment is included in Appendix A.

Details of the changes to the proposal and the environmental assessment in this area are outlined in Chapter 4.

No additional studies were undertaken in relation to the submissions received or the design changes.

4 Changes to the proposal

This chapter describes changes to the proposal that have been made in response to submissions received, to minimise impacts on the environment and to provide for more efficient and safer construction. The revised design is shown in figures 4.1 - 4.3. Specific details and environmental assessment of the design changes are provided in sections 4.1 - 4.5.

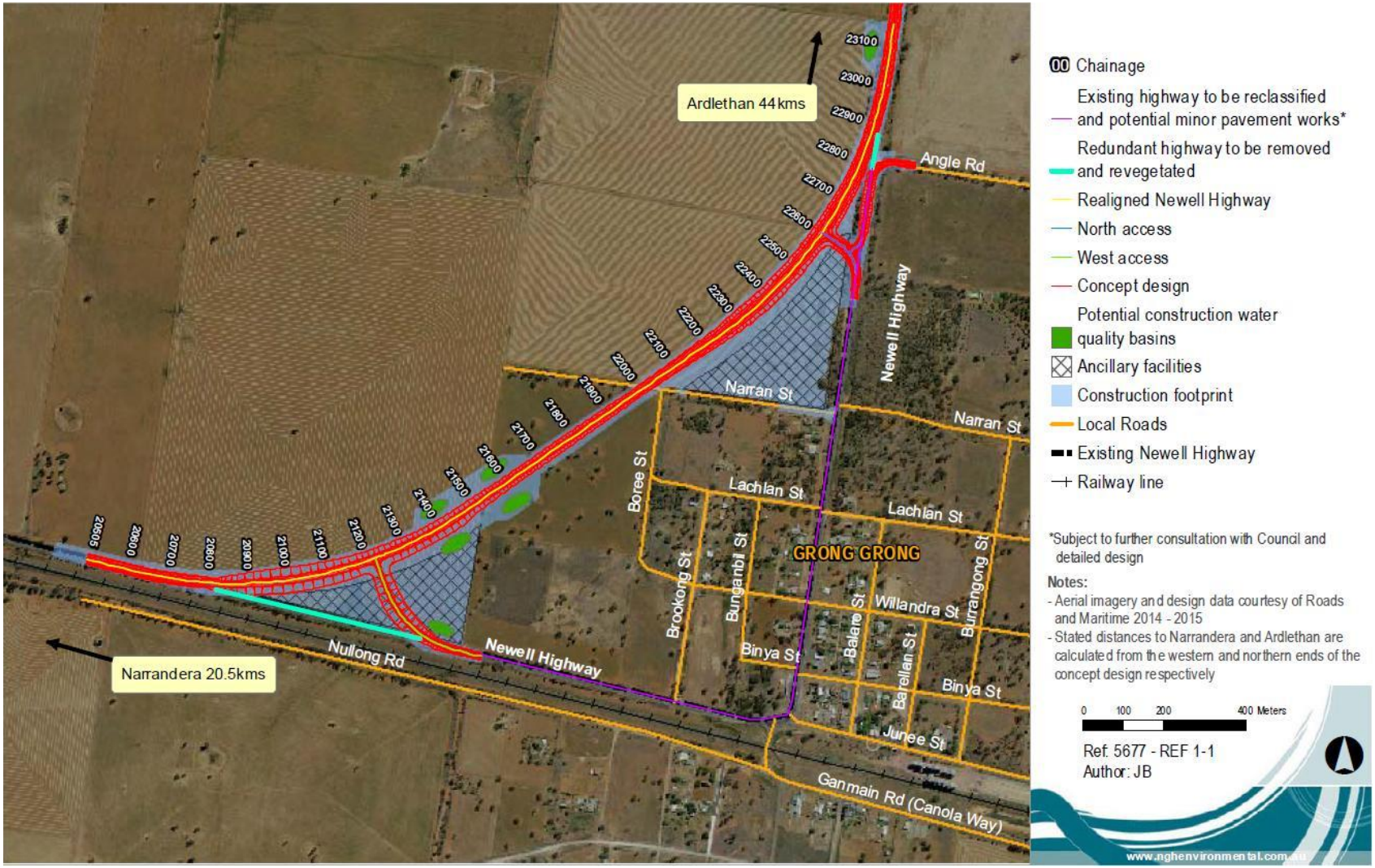

Figure 4.1 - The proposal

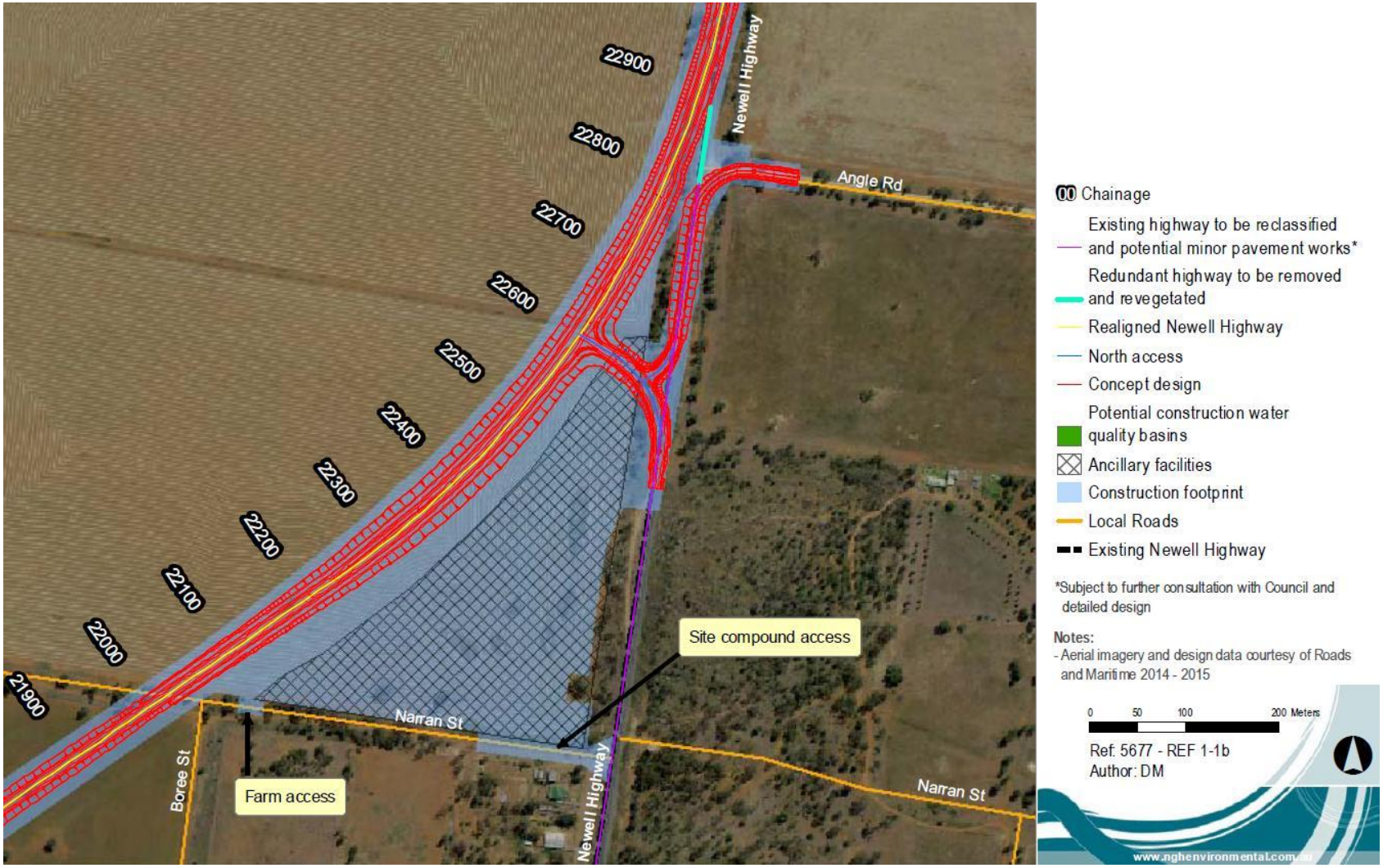

Figure 4.2 - Key features of the proposal - Northern end

Figure 4.3 - Key features of the proposal - Western end

4.1 Change 1 - North access

4.1.1 Description

Roads and Maritime has revised the design of the north access to allow more direct and clearer connection between the Newell Highway and Grong Grong.

The original design presented in the REF consisted of a T-intersection between the bypassed Newell Highway and the north access (as shown in Figure 4.4).

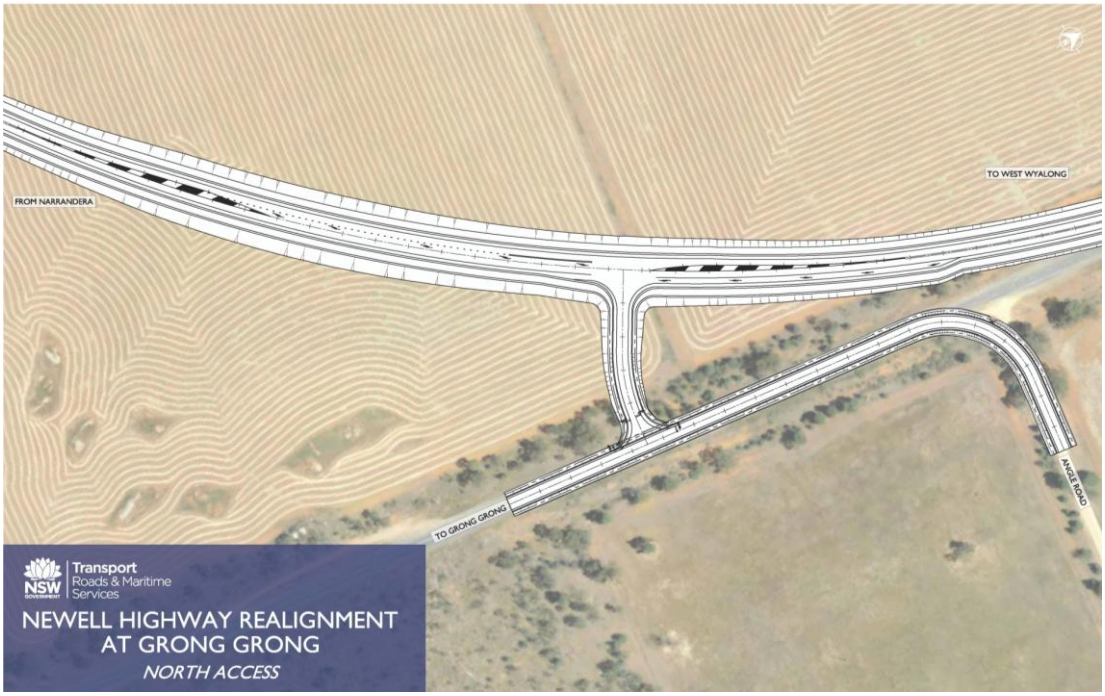

Figure 4.4 – North access as shown in REF

The revised design would provide a curved north access that would connect directly between the Newell Highway and the bypassed section of the Newell Highway. A T-intersection would connect Angle Road onto the back of the curved north access.

The north access intersection with the Newell Highway would include both raised and painted medians. This is to help control the intersection and assist motorists when making turning movements in and out of Grong Grong.

The revised design is shown in Figure 4.5.

Figure 4.5 – Revised north access design

4.1.2 Environmental assessment

Traffic and socio-economic

The revised design is expected to have a positive outcome for motorists and the local community by improving accessibility and safety for motorists entering and exiting Grong Grong via the north access. Benefits of the revised design would include:

- Directs all vehicles straight into Grong Grong or onto the Newell Highway depending on the direction of travel. This would make access and navigation more straight forward.
- Heavy vehicles would find it easier to negotiate the north access route between Grong Grong and the Newell Highway.
- Reduces the likelihood of vehicles making a wrong turn, particularly those entering the Newell Highway.
- Enables low speed continuous travel through the intersection for vehicles turning into Grong Grong or travelling from Grong Grong.

Biodiversity

The revised design has increased the construction footprint marginally and has slightly changed the areas of vegetation to be cleared. The Biodiversity assessment has been updated to assess the impacts of all changes to the design. The updated assessment is provided in Appendix A.

Total clearing of native vegetation and habitat for the proposal would increase from about 4.3 hectares (in the REF) to 4.7 hectares (based on the revised design, including all changes). The areas of vegetation to be cleared would also change slightly, which means that the proposal would result in clearing:

- 4.7 hectares of Inland Grey Box Woodland Endangered Ecological Community (EEC) listed under the *Threatened Species Conservation Act 1995* (compared to 4.3 hectares assessed in the REF)
- 3.9 hectares of Inland Grey Box Woodland EEC listed under the *Environment Protection and Biodiversity Conservation Act 1999* (compared to 3.2 hectares assessed in the REF).

The assessment maintains the conclusion that significant impacts to threatened species or EECs would be unlikely.

The Biodiversity Offset Strategy to be prepared for the proposal would use the revised clearing areas.

4.2 Change 2 - West access

4.2.1 Description

Roads and Maritime has revised the design of the west access to allow more direct and free flowing connection between the Newell Highway and Grong Grong.

The original design presented in the REF consisted of a T-intersection between the bypassed Newell Highway and the west access (as shown in Figure 4.6). The intersection also included a deceleration lane on the highway into Grong Grong from the north.

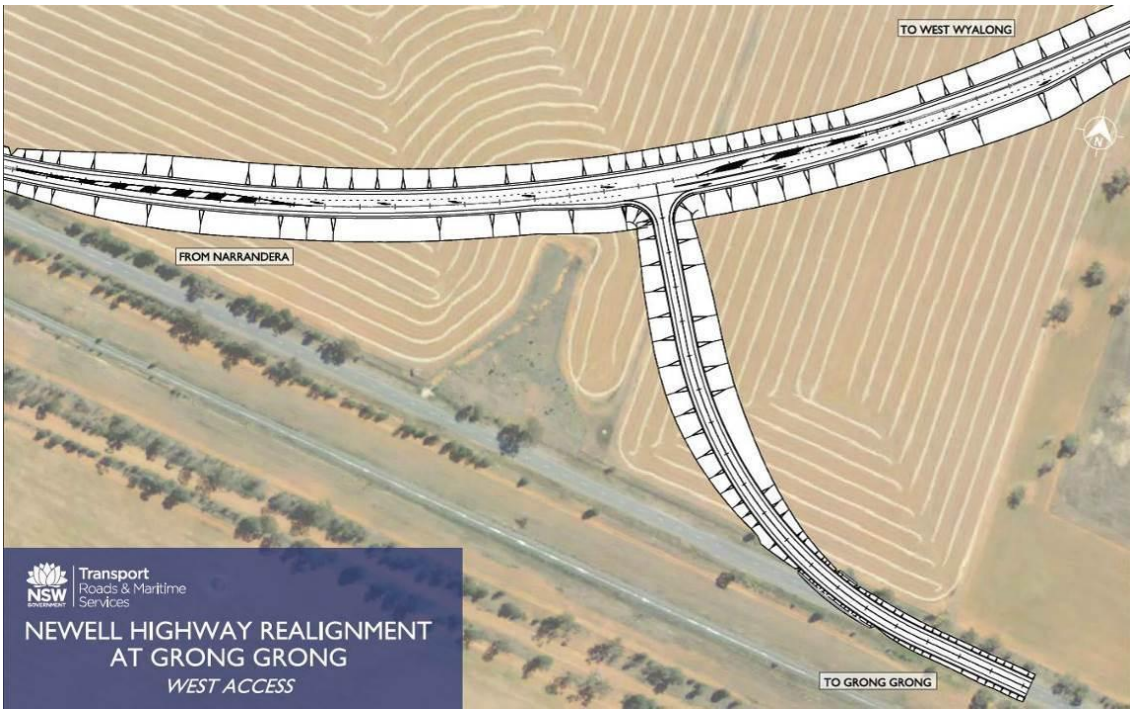

Figure 4.6 – West access as shown in REF

An acceleration lane has been added for westbound traffic entering the highway from Grong Grong. The intersection design has also been changed to allow an exit speed into the acceleration lane of about 40km/h. There would be sufficient storage length for a truck to be parked at the intersection turning right onto the highway and still allow westbound vehicles to access the acceleration lane.

The west access intersection with the Newell Highway would include both raised and painted medians. This is to help control the intersection and assist motorists when making turning movements in and out of Grong Grong.

The revised design is shown in Figure 4.7.

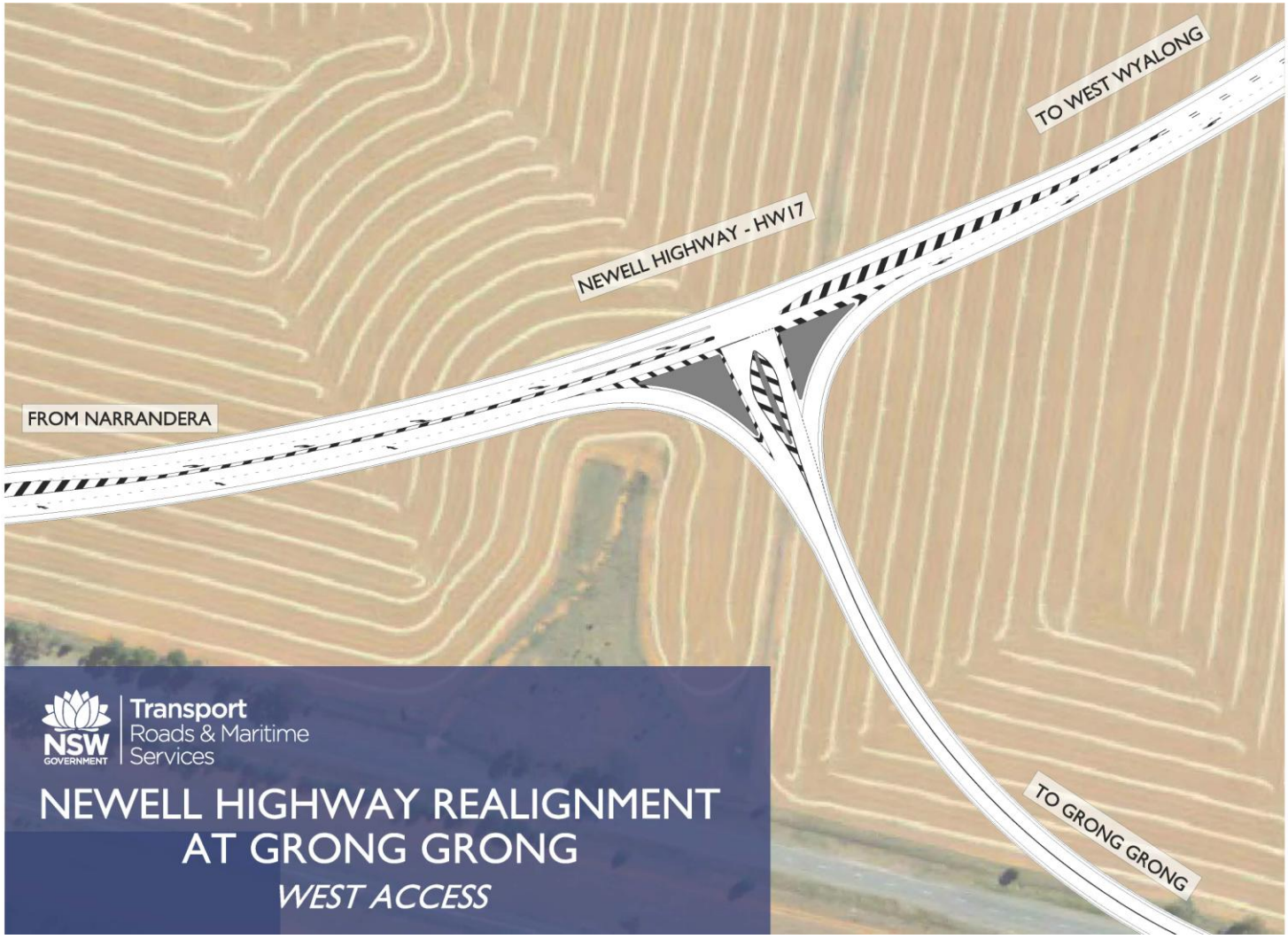

Figure 4.7 – Revised west access design

4.2.2 Environmental assessment

The revised design is expected to have a positive outcome for motorists and the local community by improving accessibility and safety for motorists entering and exiting Grong Grong via the west access. Benefits of the revised design would include:

- Allows vehicles exiting Grong Grong heading west to accelerate in a designated lane before merging. This would decrease the likelihood of collisions between slower turning vehicles and high speed highway traffic.
- Entry speed of 40km/h allows vehicles to get to speed faster than with a T-intersection
- Deceleration lane allows left turning vehicles to exit the highway and turn at about 40km/h.
- Enables low speed continuous travel through the intersection for vehicles turning into Grong Grong or travelling from Grong Grong and turning towards Narrandera.

The change to the west access intersection has moved the location of the proposed highway slightly. The updated footprint was within the construction footprint of the proposal as assessed in the REF.

There would be negligible changes to vegetation clearing as a result of this change. Changes to vegetation clearing have been assessed for all design changes and are outlined in section 4.1.2 and Appendix A.

4.3 Change 3 – Changes to Newell Highway road levels

4.3.1 Description

Roads and Maritime has revised the levels of the proposed Newell Highway at two locations (refer to Figure 4.8). These changes are to reduce impacts of the proposal, to allow for more efficient and safer construction methods and to minimise construction costs.

Figure 4.8 – Location of changes to road levels (location of changes shown in brown)

The design presented in the REF included a cutting through a crest located in the west. The cutting was about 1.5 metres beneath the level of the existing Newell Highway. This was to allow sufficient sight distance along the highway at this location.

Geotechnical investigations undertaken since the REF was displayed have revealed the presence of hard rock through this area. Constructing the cutting through the hard rock would likely require a large sidetrack, create difficulties during construction, traffic delays, increased impacts on vegetation, additional cost and would be avoided for these reasons.

The revised design would lift the vertical alignment (road level) through this area to remove or minimise the cutting. The cutting would not be completely removed but the depth of the cutting would be reduced to about 0.5metres. Appropriate sight distances would still be achieved.

The design changes in the west increase the amount of fill material required in that area. For this reason the depth of the cutting at the northern end of the proposal (refer to Figure 4.8) would be increased from up to 4.5 metres (as described in the REF) to up to 5.0 metres to balance the required cut and fill quantities for the proposal.

4.3.2 Environmental assessment

The adjustments to the alignment are expected to have a positive environmental outcome by making the road easier and safer to construct and reducing the construction time. It also removes the need for a large side track to construct the western tie in under traffic so would also further minimise the impact on the adjacent Inland Greybox Woodland EEC.

The changes to the vertical alignment are within the construction footprint assessed in the REF. No further environmental impacts are likely as a result of these changes.

4.4 Change 4 - Access into adjoining agricultural land

4.4.1 Description

The design presented in the REF did not specify access into the adjoining agricultural land to the west of the proposal. Roads and Maritime has been in consultation with the land owner to gain an understanding of their operation and future needs. These conversations have now been finalised and access arrangements have been agreed.

The landowner currently runs large farm machinery to undertake their broad acre cropping program across several properties in and around Grong Grong. This means they are required to move this machinery across and along the Newell Highway. This machinery is long and slow moving and takes considerable time to move between properties and to turn in and out of the farm access.

The property owner currently uses Narran Street to access the land to the west of the proposal. Roads and Maritime and the property owner both agreed it would be best to try and limit the exposure of this machinery to Newell Highway traffic and design access arrangements accordingly. As a result a small triangle of land which was previously to be acquired as part of Area 4.1 in Figure 2.1, would remain under its current private ownership and would instead be leased by Roads and Maritime for the construction period. This area would be used as access from Narran Street across the highway. The access across the highway and the change in property acquisition is shown below (Figure 4.9).

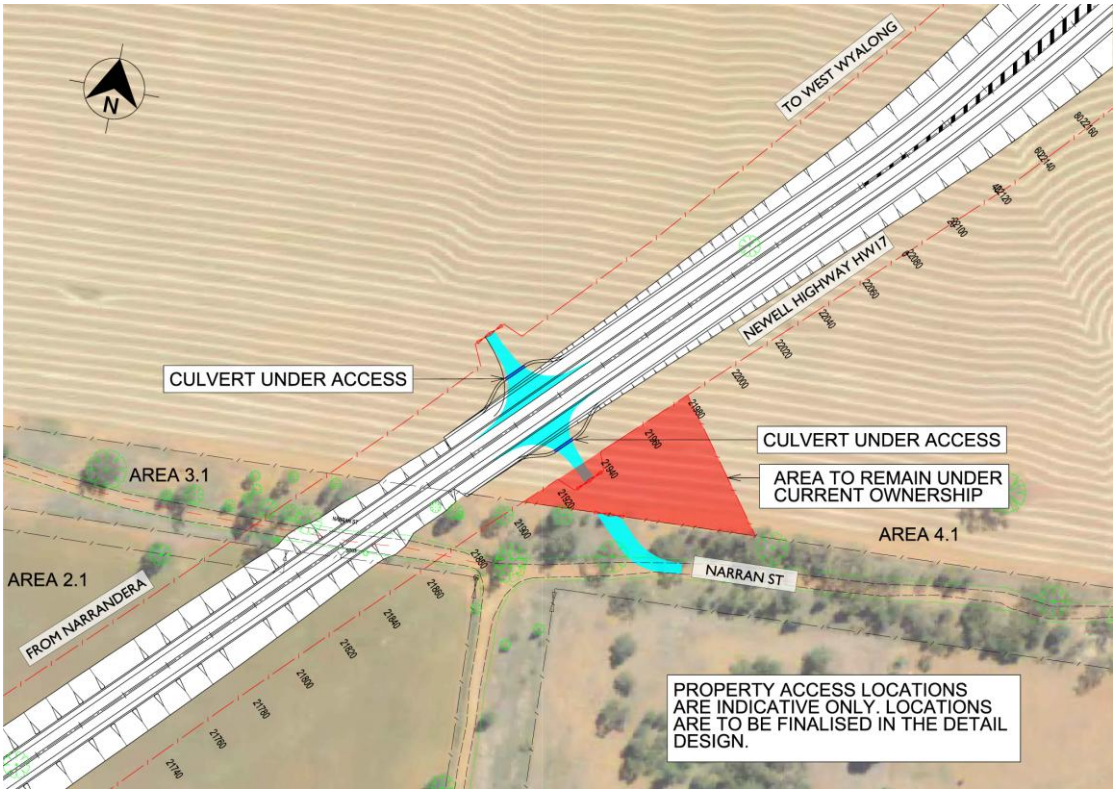

Figure 4.9 – Property access details

This arrangement allows a controlled access across the highway at a single location. This location was chosen as the lay of the land would be suitable and there would be sufficient sight distance in both directions. This arrangement allows the farmer to pull up from either side of the highway, open the gates on both sides of the highway, and then cross in one movement when it is safe to do so.

4.4.2 Environmental assessment

The access off Narran Street into the farmers property is through the Inland Grey Box Woodland EEC. The additional area which is impacted for the access is minor and has been assessed in section 4.1.2 and the update of the Biodiversity Assessment (Appendix A). The assessment maintains the conclusion that significant impacts to threatened species or EECs would be unlikely.

These adjustments are expected to have a positive impact for the farmer, highway traffic and the broader community. This access has a positive safety impact by reducing the exposure between the highway traffic and the slow moving machinery. The access also gives good connectivity and accessibility for the farmer to move between properties efficiently. The area for acquisition has been reduced to allow this area to be retained by the landowner to cross the highway.

4.5 Change 5 - Revised construction footprint

4.5.1 Description

The construction footprint has been revised to accommodate the design changes identified above, to provide for more efficient and safer construction and to minimise impacts on the Inland Grey Box Woodland EEC. Overall the increase in the construction footprint is minor.

The revised construction footprint is shown in figures 4.1- 4.3. The changes include minor increases in the construction footprint to accommodate:

- Design changes to the north town access and tie-in.
- Design changes to provide safer access across the highway for a local farmer.
- Construction access for the temporary site compound.

There has been a minor reduction in other areas of the construction footprint to minimise clearing of Inland Grey Box Woodland EEC. The main reduction has been to the western end where the extent of the proposal has been reduced and a potential construction sediment basin proposed in the REF (which is no longer required) has been removed.

4.5.2 Environmental assessment

Overall the increase in the construction footprint would be minor compared to the footprint included in the REF. The revised construction footprint would result in additional clearing of Inland Grey Box Woodland EEC. The changes are considered minor and have been assessed in section 4.1.2 and in Appendix A. The assessment concludes that the proposal would be unlikely to result in significant impacts on threatened species or EEC. An additional safeguard has been included to require appropriate revegetation of the temporary accesses to the construction compound.

The revised construction footprint would enable the design changes described in sections 4.1 to 4.4 to be accommodated. The environmental impacts of those changes have been assessed above.

5 Environmental management

The REF for the Realignment of the Newell Highway at Grong Grong identified the framework for environmental management, including management and mitigation measures that would be adopted to avoid or reduce environmental impacts (section 7 of the REF).

Should the proposal proceed, environmental management would be guided by the framework and measures outlined below.

5.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Construction Environmental Management Plan (CEMP) would be prepared to describe safeguards and management measures identified. This plan would provide a framework for establishing how these measures would be implemented and who would be responsible for their implementation.

The plan would be prepared prior to construction of the proposal and must be reviewed and certified by environment staff, South West, prior to the commencement of any on-site works. The CEMP would be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with the specifications set out in the QA Specification G36 – Environmental Protection (Management System), QA Specification G38 – Soil and Water Management (Soil and Water Plan) and the QA Specification G40 – Clearing and Grubbing.

5.2 Summary of safeguards and management measures

Environmental safeguards outlined in this document would be incorporated into the detailed design phase of the proposal and during construction and operation of the proposal, should it proceed. These safeguards would minimise any potential adverse impacts arising from the proposed works on the surrounding environment. The safeguards and management measures are summarised in Table 5.1.

Table 5.1: Summary of site specific environmental safeguards.

Impact	Environmental safeguards	Responsibility	Timing

General	• All environmental safeguards must be incorporated within the following:
	  ○ Detailed design stage
	  ○ Contract specifications for the proposal
	  ○ Construction Environmental Management Plan
		Roads and Maritime Project Manager
		
		Contractor
			Pre-construction

General	• A risk assessment must be carried out on the proposal in accordance with the Roads and Maritime Project Pack and RMS risk assessment procedures to determine an audit and inspection program for the works. The recommendations of the risk assessment are to be implemented. • A review of the risk assessment must be undertaken after the initial audit or inspection to evaluate if the level of risk chosen for the project is appropriate. • Any work resulting from the proposal and as covered by the REF may be subject to environmental audit(s) and/or inspection(s) at any time during their duration	Roads and Maritime Project Manager	Pre-construction After first audit
General	• The environmental contract specification G36 must be forwarded to the Roads and Maritime Environment Officer South West Region for review at least 10 working days before the tender stage. • A contractual hold point must be maintained until the CEMP is reviewed by the Roads and Maritime Environment Officer South West Region.	Roads and Maritime Project Manager	Pre-construction
General	• The Roads and Maritime Project Manager must notify the Roads and Maritime Environment Officer South West Region at least five working days before work commences.	Roads and Maritime Project Manager	Pre-construction

Impact	Environmental safeguards	Responsibility	Timing
General	• All businesses and residents likely to be affected by the proposal must be notified at least five working days before the commencement of the proposed activities.	~~Roads and Maritime Project Manager~~ Contractor	Pre-construction
General	• Environmental awareness training must be provided, by the contractor, to all field personnel and subcontractors.	Contractor	Pre-construction and during construction as required.
Pre-clearing	• If unexpected threatened fauna or flora species are discovered, works will stop ~~works~~ immediately and the *Roads and Maritime Unexpected Threatened Species Find Procedure* in the *Biodiversity Guidelines– Guide 1 (Pre-clearing process)* will be followed. • The extent of the construction footprint would be clearly marked and the movement of vehicles and plant outside of these areas would be avoided. Any trees and native vegetation to be retained on-site will be protected and managed through the use of clearly marked exclusion zones. Exclusion zones will be implemented in accordance with the *Biodiversity Guidelines– Guide 2 (Exclusion zones)* (RTA, 2011). • Prior to any vegetation clearing the pre-clearance process outlined in *Biodiversity Guidelines – Guide 1 (Pre-clearing process)* (RTA, 2011) will be implemented.	Contractor	Pre-Construction

Impact	Environmental safeguards	Responsibility	Timing
Clearing of native vegetation	• Undertake vegetation clearance in accordance with *Biodiversity Guidelines– Guide 4 (Clearing of vegetation and removal of bushrock)* (RTA, 2011). • Restrict vegetation clearing to those areas where it is necessary. • Trees will be removed in such a way as not to cause damage to surrounding vegetation. This will ensure groundcover disturbance will be kept to a minimum. • Utilise areas already impacted by previous clearing or disturbance and minimise clearing where feasible. Trimming will be preferred over removal where feasible. • Hollow bearing tree removal is to be undertaken in a two stage clearing process as stated in the *Biodiversity Guidelines – Guide 4 (Clearing of vegetation and removal of bush rock)* (RTA, 2011). Large trunks and logs would be placed into adjacent habitat.	~~Roads and Maritime Project Manager~~ Contractor	Construction
Fauna and habitat impacts	• Fauna handling must be carried out in accordance with the requirements the *Biodiversity Guidelines - Guide 9 (Fauna Handling)* (RTA, 2011). • Details of the local veterinary and/or wildlife carer (WIRES) would be available onsite.	Contractor	Construction
Weed spread and establishment	• Weeds will be managed in accordance with the *Biodiversity Guidelines – Guide 6 (Weed Management)* (RTA, 2011). Priority will be given to the control of noxious weeds such as African Boxthorn (*Lycium ferocissimum*). • Machinery will be cleaned prior to coming to site to ensure that weed seeds and propagules are not imported.	Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
Disturbance to fallen timber, dead wood and bush rock	• Re-use coarse woody debris on-site in accordance with the management requirements of the *Biodiversity Guidelines - Guide 5 (Re-use of woody debris and bushrock)* (RTA, 2011). • Avoid bushrock disturbance where practical. Where disturbance cannot be avoided remove the bushrock in accordance with the management requirements of *Biodiversity Guidelines - Guide 4 (Clearing of vegetation and removal of bushrock)* (RTA, 2011). • Bushrock will be re-used on-site where possible. Re-use bushrock in accordance with the management requirements of the *Biodiversity Guidelines - Guide 5 (Re-use of woody debris and bushrock)* (RTA 2011).	~~Roads and Maritime Project Manager~~ Contractor	Construction
Loss of mature trees including hollow bearing trees	• Hollow bearing trees to be removed are to be clearly marked prior to removal. • Hollow bearing tree removal is to be undertaken in a two stage clearing process as stated in the *Biodiversity Guidelines – Guide 4 (Clearing of vegetation and removal of bush rock)* (RTA, 2011).	~~Roads and Maritime Project Manager~~ Contractor	Construction
Removal of redundant highway areas	• Revegetation of the two areas of redundant highway to be removed will be undertaken in accordance with *Biodiversity Guidelines – Guide 3* (*Re-establishment of native vegetation)* (RTA, 2011).	~~Roads and Maritime Project Manager~~ Contractor	Construction and post-construction
Revegetation of disturbed or cleared areas of EEC	• Areas of Inland Grey Box Woodland EEC that are cleared for temporary ancillary facilities (eg for compound access) and are not required for the operation of the proposal will be revegetated in accordance with *Biodiversity Guidelines – Guide 3* (*Re-establishment of native vegetation)* (RTA, 2011).	Contractor	Post-construction

Impact	Environmental safeguards	Responsibility	Timing
Loss of quality soil from construction (ancillary sites)	• Strip and stockpile topsoil during the preparation of any ancillary sites. • Reinstate topsoil as part of the rehabilitation of these areas for ongoing agricultural use.	Contractor	Construction
Changes to property areas / accesses	• Roads and Maritime will continue negotiations with landowners in relation to property access and acquisition to enable establishment of works zones and location of ancillary facilities • Roads and Maritime will continue to consult with affected landowners and residents where temporary and permanent property access changes would be required • Provide landowners and residents with advanced notification of construction schedules and any changes to local roads and property access • Provide community updates on changes to the local road network during construction, in accordance with a Traffic Management Plan. • Roads and Maritime will work with the owner of the 'Woodlands' property to plan for and enable safe stock movements in the vicinity of the highway. This may include the installation of stock crossing signage. Details will continue to be developed in consultation with the landowner during detailed design.	Roads and Maritime Project Manager Permanent - Roads and Maritime Project Manager Temporary - Contractor Contractor Contractor Roads and Maritime Project Manager	Pre-construction Construction
Permanent loss of farm land	• Carry out property acquisition in accordance with Roads and Maritime's *Land Acquisition Information Guide* (Roads and Maritime, 2014) and the *Land Acquisition (Just Terms Compensation) Act 1991*. • Continue consultation with all affected property owners regarding property acquisition during the detailed design of the proposal.	Roads and Maritime Project Manager	Pre-construction Detailed design phase

Impact	Environmental safeguards	Responsibility	Timing
Traffic and Access	• Prepare and implement a traffic management plan (TMP) in accordance with Roads and Maritime QA Specification G10 Traffic Management. The TMP would be implemented in consultation with key stakeholders. • The local community would be notified in a timely manner prior to any works that may affect access to local roads and property accesses. • Private property access would be maintained at all times during the construction works.	~~Roads and Maritime Project Manager~~ Contractor	Construction
Potential loss of passing trade and potential cumulative impacts on the community identity and sense of place	• Roads and Maritime will continue consultation and working with affected business owners, the Grong Grong Progress Association, the Earth Park coordinator, Narrandera Rotary Club, other interested community members and Narrandera Shire Council during detailed design and construction phases of the proposal to develop and implement measures to minimise and mitigate business and community impacts. • Roads and Maritime will undertake traffic counts on the Newell Highway to the north and west of Grong Grong and in the town centre at specified periods, such as one year and five years after opening, to help evaluate the effectiveness of the signage in attracting visitors to the town. • Roads and Maritime will conduct follow-up discussions with highway-dependent business operators (the motel, general store and hotel) and key community members at 6 months and 1 year after opening, to evaluate the effectiveness of the proposal's socio-economic management and mitigation measures. • Implement urban design and landscape measures identified in section 6.5 (REF).	Roads and Maritime Project Manager Contractor <u>Contractor</u>	Pre-construction, Construction and Operation

Impact	Environmental safeguards	Responsibility	Timing
Construction impacts (traffic delays, noise, dust, changed access)	• Roads and Maritime and its contractors will implement construction noise mitigation measures as outlined in section 6.6.5 of the REF. • Roads and Maritime will keep the local community informed about the construction process, including project timing and periods when there will be changes to local traffic conditions.	Roads and Maritime project manager and contractor Contractor	Pre-construction and Construction
Socio-economic impacts to businesses, the town and agriculture – town access	• In consultation with the Grong Grong community, Roads and Maritime will provide signposting to encourage highway traffic to visit Grong Grong. Signage would be consistent with Roads and Maritime signposting guidelines. • In addition, Roads and Maritime will provide business signage visible from the Newell Highway for the general store and the motel, to mitigate against loss of trade and for the hotel, to contribute towards the town's ongoing viability.	Roads and Maritime Project Manager	Pre-construction and operation
Reduced visual amenity	• Prepare and implement a detailed urban design plan based on the urban design concept outlined in Section 5.3 of the Urban Design Strategy (PAA, 2014) and in consultation with the Grong Grong community and Narrandera Shire Council. • The urban design plan shall include a landscape plan to revegetate the road reserve areas and reduce visual impacts to residences located to the east.	Prepare - Roads and Maritime Project Manager Implement - Contractor	Pre-construction Operation
Signage	• Roads and Maritime will install town entrance signage at both the west and north accesses in consultation with Narrandera Shire Council and the local community.	Consult - Roads and Maritime Project Manager Install - Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
Construction noise impacts on sensitive receivers	• Revise the noise and vibration assessment based on the final detailed design.	Roads and Maritime Project Manager	Detailed design
Construction noise impacts on sensitive receivers	• Prepare and implement a construction Noise and Vibration Management Plan (CNVMP) in accordance with Practice Note VI of the ENMM (RTA, 2001) and include as a minimum: ○ identification of nearby residences and sensitive land uses ○ description of approved hours of work and what work will be undertaken ○ description of what work practices will be applied to minimise noise ○ description of the complaints handling process ○ description of monitoring that is required	Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
Construction noise impacts on sensitive receivers	• Consult with residential noise sensitive receivers within 1.2 kilometres of the proposal prior to and during construction. This includes the majority of residential receivers within the town of Grong Grong, those south of the rail line. • Implement a 24-hour hotline and complaints management procedure for noise and other construction related complaints. • Turn down radios when not in use and no yelling on site. • ~~No slamming of doors.~~ • ~~Prohibit the use of air brakes and~~ Speed limit enforcement and prohibit the use of exhaust brakes. • Drive all plant in a conservative manner (no over-revving). • Obtain site access via entry points most remote to noise sensitive receivers, where possible. • Do not permit plant to 'warm-up' before the nominated working hours. • Where possible, machinery is to be orientated to direct noise away from the closest noise sensitive receivers. • Undertake regular maintenance of machinery to minimise noise emissions. Maintenance would be completed away from noise sensitive receivers where possible. • Select the quietest suitable machinery reasonably available for each work activity. • Maximise the offset distance between noisy items of plant/machinery and nearby noise sensitive receivers, where possible; • Where practicable, ensure the coincidence of noisy plant/machinery working simultaneously in close proximity to noise sensitive receivers is avoided.	Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
Construction vibration impacts on sensitive receivers	• Where construction activities involving impulsive vibration from excavator buckets or intermittent vibration from tracked equipment (eg. excavators, dozers) are undertaken close to sensitive receivers, an offset distance of at least five metres from buildings will be maintained to comply with the structural vibration criteria.	Contractor	Construction
Soils and water quality – erosion and sedimentation	• Prepare and implement a Soil and Water Management Plan (SWMP) and site specific erosion and sediment control plans (ESCPs) as part of the CEMP. • Prepare and implement SWMP and ESCPs in accordance with Managing Urban Stormwater - Soils and Construction, Volume 2D (Landcom 2004). • Erosion and sediment control measures adopted will be designed to achieve short and long term stability of embankments and cuttings and other disturbed areas. • Erosion and sediment controls will be maintained on a regular basis during construction and until the works are complete and disturbed areas are revegetated. • Disturbed areas will be stabilised progressively during the works. • The maintenance of established stockpile sites during construction will be in accordance with the *Stockpile Site Management Procedures* (RTA, 2011a).	Contractor	Pre-construction Construction

Impact	Environmental safeguards	Responsibility	Timing
Soil and Water quality	• Refuelling of plant and equipment will occur in impervious bunded areas away from waterway and drainage lines. • Emergency spill kits for the management of accidental dry and wet chemical spills will be made available at the compound area. All personnel shall be made aware of their availability and trained in their use. • Vehicle wash down is to occur in a designated bunded area. • All staff shall be appropriately trained in the minimisation and management of accidental spills. • Roads and Maritime's Environmental Incident Classification and Management Procedure will be followed in the event an accidental spill occurs. • The Roads and Maritime Project Manager must be notified of the spill immediately after the person becomes aware of the spill.	Contractor	Pre-construction Construction
Potential contamination of any land, including adjoining lands	• Carry out a Phase 2 detailed site investigation if construction of the proposal causes contamination of any land or it is uncertain whether construction of the proposal has caused contamination of any land. The Phase 2 detailed site inspection is to confirm the status of the affected land and to inform any subsequent action required. In the case of adjoining lands it is to be carried out in consultation with the land owner.	Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
Water extraction	• Roads and Maritime would carry out further consultation about potential water extraction at Bundidgerry Creek with NOW prior to the commencement of construction. A Works Approval licence would be obtained where necessary. • If water is extracted from Bundidgerry Creek, minimise scour and creek instability at the extraction point at Bundidgerry Creek through minimising clearing and amount of bank disturbance, in accordance with the *Biodiversity Guidelines - Guides 4 and 10* (RTA, 2011). Water extraction methods used will aim to minimise impacts to aquatic ecology, surrounding land uses and the visual amenity of the area.	~~Roads and Maritime Project Manager~~ Contractor	Pre-construction
Discovery of unexpected items of Aboriginal cultural significance	• Follow the *Standard Management Procedure: Unexpected ~~Archaeological~~ ~~Finds~~ Heritage Items* (~~RMS, 2012~~ Roads and Maritime, 2015) in the event that construction related disturbance results in the discovery of potential Aboriginal objects or suspected human remains. • The site induction for the proposal must include an overview of the procedure for unexpected archaeological finds.	Roads and Maritime Project Manager and Contractor Contractor	Construction
Accidental discovery of items of Non-Aboriginal cultural significance	• Follow the *Standard Management Procedure – Unexpected ~~Archaeological Finds~~* Heritage Items (~~RMS, 2012~~ Roads and Maritime, 2015) in the event that unexpected heritage/archaeological finds are encountered during construction of the proposal. • The site induction for the proposal must include an overview of the procedure for unexpected archaeological finds.	Roads and Maritime Project Manager and Contractor Contractor	Construction
General air quality impacts	• Construction activities will be managed to minimise dust and fuel emissions.	~~Roads and Maritime Project Manager~~ Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
Vehicle and other equipment emissions	• Plant and machinery will be maintained in accordance with manufacturer's specification. • Vehicles will not be left running when idle. • Vehicles transporting waste or other materials that may produce dust are to be covered during transportation.	Contractor	Construction
Dust	• Dust minimisation measures (including watering or covering exposed areas) will be used to minimise or prevent air pollution with dust from disturbed areas, if required and especially during hot and windy conditions. • Visual surveillance for visible dust generation will occur at all times. Works must cease when high levels of air-borne dust cannot be controlled. • Clearing of natural vegetation will be minimised where practicable. • Vegetation or other materials are not to be burnt on site. • Disturbed areas will be stabilised progressively during the works. • Stockpiles or areas that may generate dust are to be managed to suppress dust emissions in accordance with the *Stockpile Site Management Guideline* (Roads and Maritime, 2011b).	Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
Management of waste	• Manage and dispose of waste in accordance with applicable legislation and government policies, including: o *Waste Avoidance and Resource Recovery Act 2001* (WARR Act). o *Waste Avoidance and Resource Recovery Strategy 2007* (DECC, 2007). o *Waste Reduction and Purchasing Policy* (WRAPP) (RTA, 2010b). o Compliance with relevant EPA resource recovery exemptions. • Use recycled products in construction to reduce the demand on resources, in instances where the use of such material is cost and performance competitive (for example, where quality control specifications allow).	Contractor	Pre-construction Construction

Impact	Environmental safeguards	Responsibility	Timing
Reduction of carbon emissions	• Energy efficiency will be assessed in selecting plant and equipment. Where reasonable and feasible, plant and equipment with higher energy efficiency ratings will be selected.	Contractor	Construction
	• To reduce transport fuel emissions locally produced and sourced goods and services will be used where feasible and reasonable.	Contractor	
	• Seek opportunities to reduce the quantity of construction materials used through innovative design and construction methodologies.	Design – Roads and Maritime Construction - Contractor	
	• Plan earthworks to minimise long haulage distances and reduce excess spoil.	Contractor	
	• Reuse of excavated road materials will be maximised as far as possible where they are cost, quality and performance competitive	Contractor	

5.3 Licensing and approvals

The proposal may require an Environment Protection Licence (EPL) if it meets the definition of 'extractive activities' under clause 19 of Schedule 1 of the POEO Act. The need for an EPL for 'extractive activities' would be confirmed during detailed design.

Prior to construction Roads and Maritime would consult with NOW regarding a Works Approval to extract water from Bundidgerry Creek for dust suppression and construction works.

6 References

Roads and Maritime Services NSW (Dec, 2014) *Environmental Sustainability Performance Report October – December 2014*.

Transport Authorities Greenhouse Group Australia and New Zealand (2013) *Greenhouse Gas Assessment Workbook for Road Projects.*

Appendix A – Updated Biodiversity Assessment

10 September 2015

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Dear Dean,

RE – Updates to Biodiversity Assessment for the Newell Highway Realignment at Grong Grong (our ref. 5677) for the revised proposal

A Biodiversity Assessment (BA) was prepared for the Newell Highway Realignment at Grong Grong (the proposal) by NGH Environmental in March 2015. It is understood that there have been subsequent revisions to the design and construction footprint for the proposal and that a review of the impact assessment and conclusions reached in the BA is required. Specifically this letter:

- Outlines the key changes in the proposal design.
- Provides a revised assessment of the impacts to biodiversity.
- Includes an updated map set reflecting the revised design and construction footprint.
- Outlines any changes to the conclusions reached or mitigation measures recommended in the BA.

The components described above are detailed overleaf. If you have any questions regarding the information provided herein, please do not hesitate to contact me.

Yours sincerely,

Fiona McKay
Senior Consultant

Ph 02 4969 4910

NGH Environmental

KEY CHANGES IN THE PROPOSAL DESIGN

The following changes have been made to the original proposal design which have resulted in the need to update the Biodiversity Assessment (BA).

Change 1 – North access into Grong Grong

Roads and Maritime has revised the design of the north access to allow more direct and clearer connections between the Newell Highway and Grong Grong.

The original design presented in the REF consisted of a T-intersection between the bypassed Newell Highway and the north access. The revised design would provide a curved north access that would connect directly between the Newell Highway and the bypassed section of the Newell Highway. A T-intersection would connect Angle Road onto the back of the curved north access.

The intersection with the Newell Highway has been upgraded to include both raised and painted medians. This is to help control the intersection and assist motorist when making turning movements in and out of Grong Grong.

Change 2 – West access into Grong Grong

Roads and Maritime has revised the design of the west access to allow more direct and free flowing connection between the Newell Highway and Grong Grong.

The original design presented in the REF consisted of a T-intersection between the bypassed Newell Highway and the west access. The intersection also consisted of a deceleration lane into Grong Grong from the north.. The revised design includes an acceleration lane for westbound traffic entering the highway from Grong Grong. The acceleration lane would include a raised median to allow an exit speed into the acceleration lane of about 40km/h. A median has also been included for southbound vehicles exiting the Newell Highway to enter at 40km/h also. This will assist in a free flowing and clearly defined intersection.

Change 3 – Changes to Newell Highway road levels

Roads and Maritime has revised the levels of the proposed Newell Highway at two locations. The vertical alignment (road level) of the highway has been revised. These changes are to reduce impacts of the proposal, to allow for more efficient and safer construction methods and to minimise construction costs.

The design presented in the REF included a cutting through a crest located in the west. The cutting was about 1.5 metres beneath the level of the existing Newell Highway. This was to allow sufficient sight distance along the highway at this location. Geotechnical investigations undertaken since the REF was displayed have revealed the presence of hard rock through this area. Constructing the cutting through the hard rock would likely create difficulties during construction as well traffic delays and added cost and would be avoided for these reasons. The revised design would lift the vertical alignment (road level) through this area to remove or minimise the cutting. The cutting would not be completely removed but the depth of the cutting would be reduced to about 0.5metres. Appropriate sight distances would still be achieved.

The design changes in the west increase the amount of fill material required in that area. For this reason the depth of the cutting at the northern end of the proposal (refer to Figure 4-3) would be increased from up to 4.5 metres (as described in the REF) to up to 5.0 metres to balance the required cut and fill quantities for the proposal.

Change 4 – Access into adjoining agricultural land

Roads and Maritime has revised the required land acquisition for Area 4.1.(refer to Figure 1-5).. The landowner operates large farm machinery to undertake broad acre cropping across several properties in and around Grong Grong. The proposed access would allow for a single controlled access point across the highway, with sufficient sight distances in both directions. The access would reduce the exposure of large slow moving machinery to Newell Highway traffic.

The revised land acquisition is a triangle of land that was to be acquired, which is now to remain in private ownership. The area of land will be leased by Roads and Maritime during construction.

Change 5- Western sedimentation basin and drainage tie-in

Roads and Maritime has revised drainage at the western end of the proposal. During further investigations, it has been identified that a sediment basin is no longer required. The drainage works will tie in with the existing table drain. This revision has reduced the impact area at the western end.

Change 6 – Northern end extension

Roads and Maritime have revised the northern tie-in with existing highway. Drainage works would be connected to an existing table drain. The construction footprint has been extended to allow drainage tie-in.

Change 7 – Angle Road upgrade design and optic fibre relocation

Roads and Maritime has revised the Angle Road design. The design has been extended to allow for a suitable curve radius. The works would also involve the relocation of optic fibre cable within the area. The construction footprint has been increased to account for the proposed disturbances within the area and along Angle Road.

Change 8 – Site compound on Narran Street

The establishment of the site compound on Narran Street requires upgrades to the road and construction of accesses. The access will be made an all weather access with two access points in/out of the compound site. The construction footprint has been widened along Narran Street to account for this new access. This section of Narran Street is Crown Land and a licence has been obtained from NSW Trade and Investment (Crown Lands).

Change 9 – Widened construction footprint

Roads and Maritime has revised the construction footprint to allow for suitable offset from the toe of the batter or table drainage for construction purposes. It has resulted in a marginally wider construction footprint in some areas.

Revised figures from the BA showing the revised design and construction footprint are included as Attachment A. The study area for the BA included these additional areas; no additional surveys are considered to be required.

REVISED IMPACT ASSESSMENT

Vegetation types and Endangered Ecological Communities

The changes to the proposal and resulting construction footprint are considered to be relatively minor. A revision of Table 5-1 in the BA detailing the approximate area of each vegetation type and Endangered Ecological Community (EEC) within the revised construction footprint is provided as Table 1 below.

Total clearing of native vegetation and habitat has increased from approximately 4.3 hectares to 4.7 hectares (an increase of 0.4 of a hectare). This translates to an additional 0.4 hectares of direct impact to the Inland Grey Box Woodland EEC listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act). However, with regards to the EEC listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) there has been an increase in 0.7 hectares. This is largely due to an increased area of impact to the Bimble Box and Dwyer's Red Gum community at the northern access (0.4 hectares) and a minor increase in the Inland Grey Box Woodland (0.3 hectares) at the same location. The reason why impacts to the TSC listed community have not increased by the same measure as the EPBC listed community is that there has been a reduction of 0.3 hectares in impact to low condition, highly modified Inland Grey Box Woodland and the impact to the Bimble Box and Inland Grey Box Woodland hasn't changed (0.3 hectares), which are considered to meet the EEC criteria for the TSC listed EEC, but not the EPBC listed EEC.

Revised assessments of significance pursuant to the TSC Act and EPBC Act have been completed for the Inland Grey Box Woodland EEC (refer to Attachment B). These assessments concluded a non-significant impact to the Inland Grey Box Woodland EEC as a result of the modified proposal.

Table 1 Approximate area of each vegetation type and EEC within the revised construction footprint

Vegetation Community	Biometric vegetation type	Biometric vegetation condition	Total area of vegetation communities impacted (hectares). REF figures are included in brackets	Impacts to Inland Grey Box Woodland EEC (hectares). REF figures are included in brackets	
				TSC Act (NSW)	EPBC Act (Cwth)
Inland Grey Box Woodland	MR565	Moderate to good	2.8 (2.5)	2.8 (2.5)	2.8 (2.5)
Inland Grey Boy Woodland (highly modified)	MR565	Low	0.5 (0.8)	0.5 (0.8)	Does not qualify
Bimble Box and Inland Grey Box Woodland	MR564	Moderate to good	0.3 (0.3)	0.3 (0.3)	Does not qualify
Bimble Box and Dwyer's Red Gum (*Eucalyptus dwyeri*) with Grey Box	MR568/ MR564	Moderate to good	1.1 (0.7)	1.1 (0.7)	1.1 (0.7)
Total Area of vegetation communities impacted			***4.7***	***4.7***	***3.9***
Total Area of vegetation communities impacted (as stated in the BA for the REF)			***4.3***	***4.3***	***3.2***
Difference			***+ 0.4***	***+ 0.4***	***+ 0.7***

Habitat trees

As stated in the BA (Appendix F of the displayed REF), a total of 26 habitat trees (ie. hollow-bearing trees) were recorded within the study area, with an additional three potential habitat trees and this remains the case. In the BA 13 habitat trees were located within the original construction footprint displayed in the REF; one additional habitat tree is located in the revised construction footprint. All potential habitat trees are outside of the construction footprint, as was the case in the BA.

As stated in the BA there are approximately eight habitat trees that would be directly impacted by the proposal. An additional tree is also mapped as occurring in close proximity to the revised northern access alignment. A worst case scenario would be to assume that this tree would also likely be directly impacted, which would bring the total to nine habitat trees affected by the revised proposal.

There were no additional important habitat features impacted by the revised design.

Threatened flora and fauna species

Revised assessments of significance pursuant to the TSC Act and EPBC Act for threatened flora and fauna species identified as having the potential to be impacted in the BA were completed (refer to Attachment B). The assessments concluded a non-significant impact for:

- Sand-hill Spider Orchid (*Caladenia arenaria*) - Endangered TSC Act and EPBC Act
- Pine Donkey Orchid (*Diuris tricolor*) - Vulnerable TSC Act
- Superb Parrot (*Polytelis swainsonii*) - Vulnerable TSC act and EPBC Act
- Brown Treecreeper (*Climacteris picumnus victoriae*) - Vulnerable TSC Act
- Grey-crowned Babbler (*Pomatostomus temporalis temporalis*) - Vulnerable TSC Act

The potential for all other threatened species considered in Appendix B of the BA to occur at the site remains unlikely and no further assessment for these species is required.

Offset Strategies

As discussed in the BA, The Roads and Maritime *Guideline for Biodiversity Offsets* sets out a set of criteria to determine if the residual impacts of the proposal are sufficient to warrant the consideration of offsets. The Guideline states offsets should be considered for works involving the clearing of vegetation of high conservation value, including Threatened Ecological Communities in moderate to good condition, where clearing exceeds 1 hectare. The revised proposal would involve impacting on 4.7 hectares of Inland Grey Box Woodland EEC, 4.2 hectares of which is in moderate to good condition.

As recommended in the BA and committed to in the REF, offsets shall be considered for the Inland Grey Box woodland EEC and a Biodiversity Offset Strategy would be prepared to identify the suitable land and mechanism for offsetting as soon as practicable.

CHANGES TO CONCLUSIONS AND MITIGATION MEASURES

Given the minor changes in the impacts to flora and fauna habitats including EECs and hollow-bearing trees, the conclusions reached in the BA are still considered to apply. Significant impacts to threatened flora, fauna and EECs are considered unlikely. No safeguards or mitigation measures additional to those described in the BA are considered to be required.

ATTACHMENT A – UPDATED MAP SET

The following attachment provides an updated set of all the figures in the BA that reflected the redundant design and construction footprint and includes:

- Figure 1-2: The proposal. An additional Figure 1-2b is also presented here to show the detail of the changes to the northern access.
- Figure 1-3: Location of potential water extraction point
- Figure 1-4: Location of ancillary facilities
- Figure 1-5 Proposed property acquisition areas
- Figure 3-1: General flora and fauna survey efforts in the study area in 2014
- Figure 3-2: Targeted Orchid survey areas
- Figure 4-1: Vegetation Communities identified through NSW VIS (OEH, 2014)
- Figure 4-2: Vegetation types within the construction footprint
- Figure 4-3 Distribution of the Inland Grey Box Woodland EEC within the construction footprint
- Figure 4-4: Location of habitat features within the study area

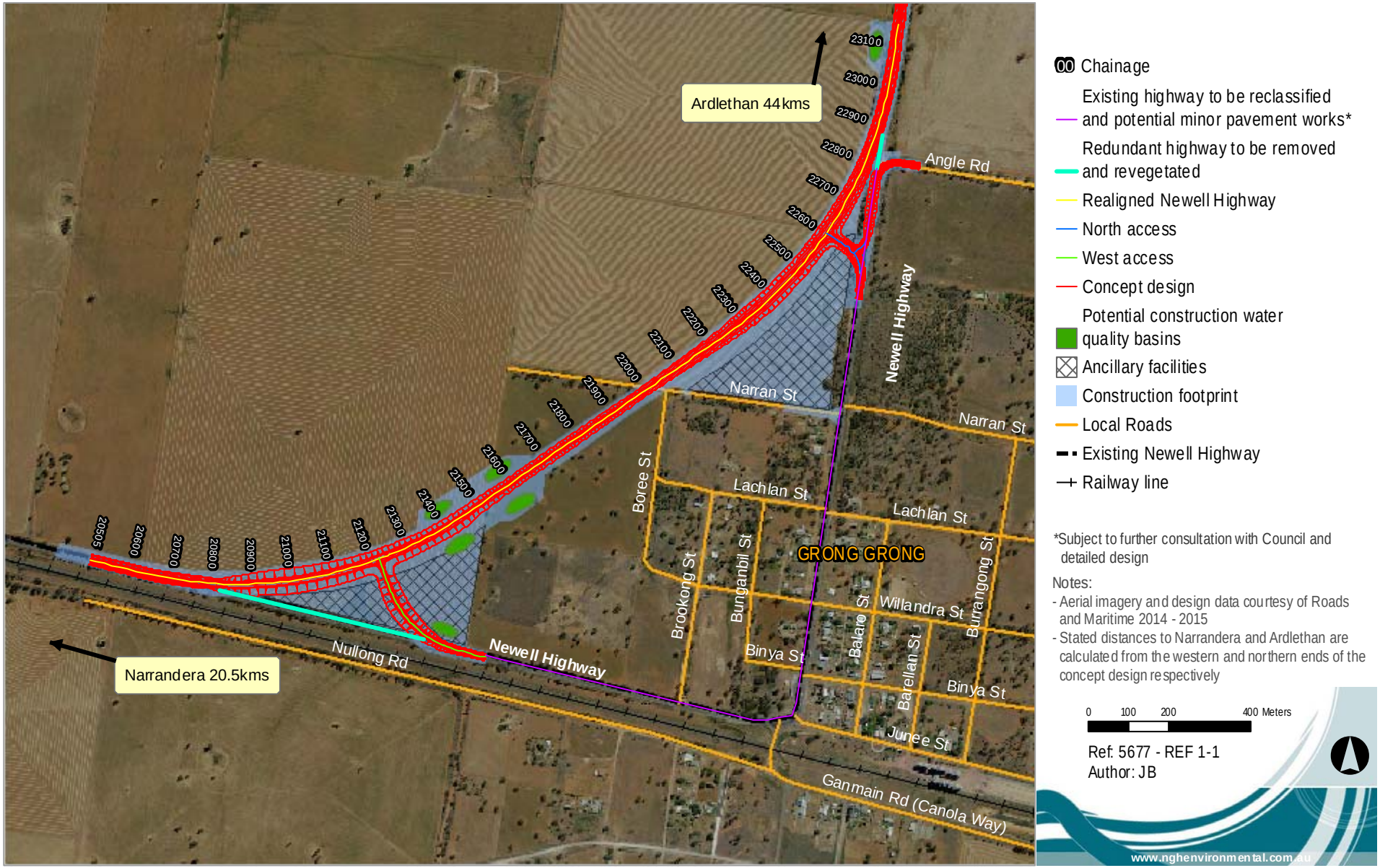

Figure 1-2: The proposal

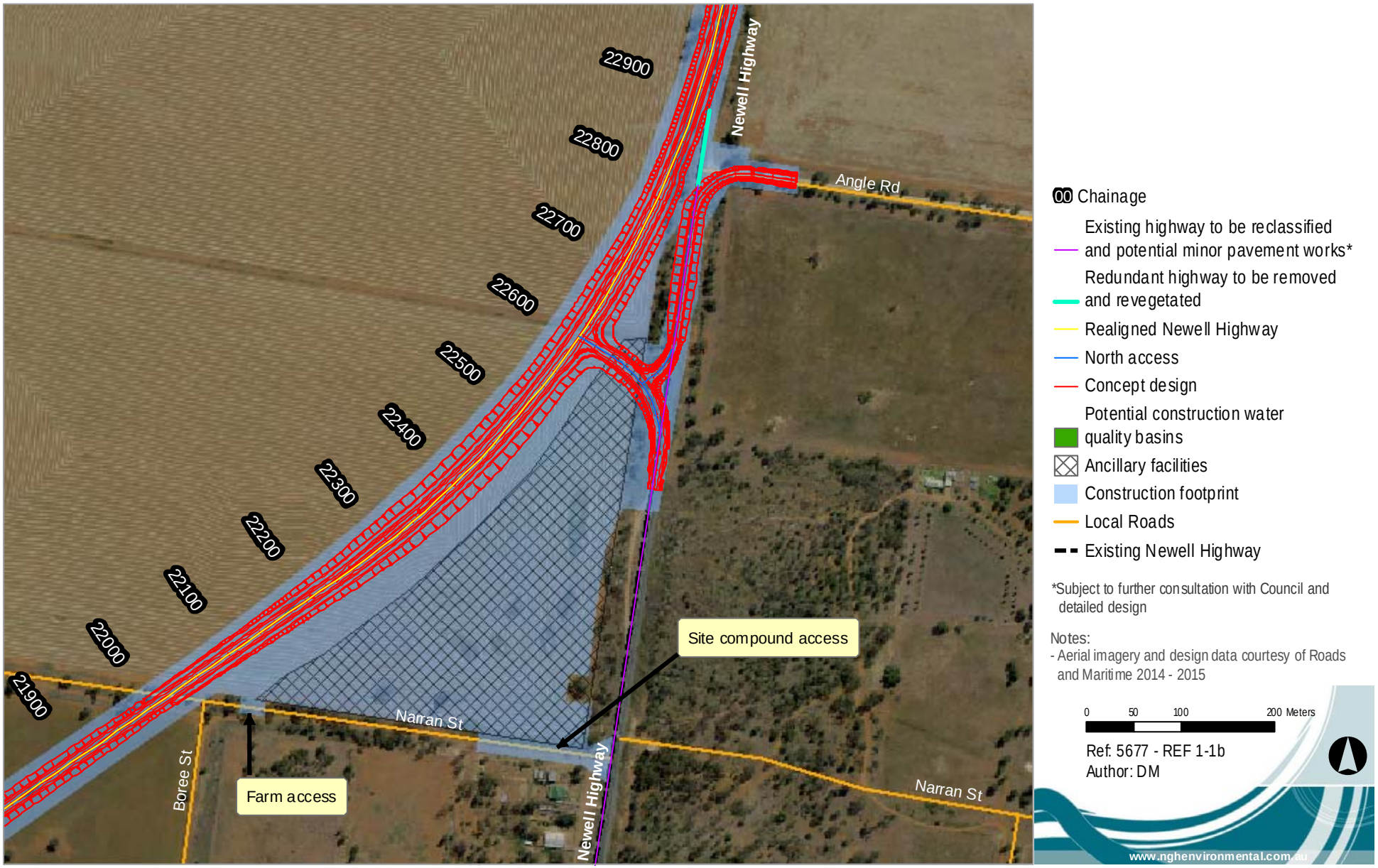

Figure 1-2b: Northern access detail

Figure 1-2c: Western access detail

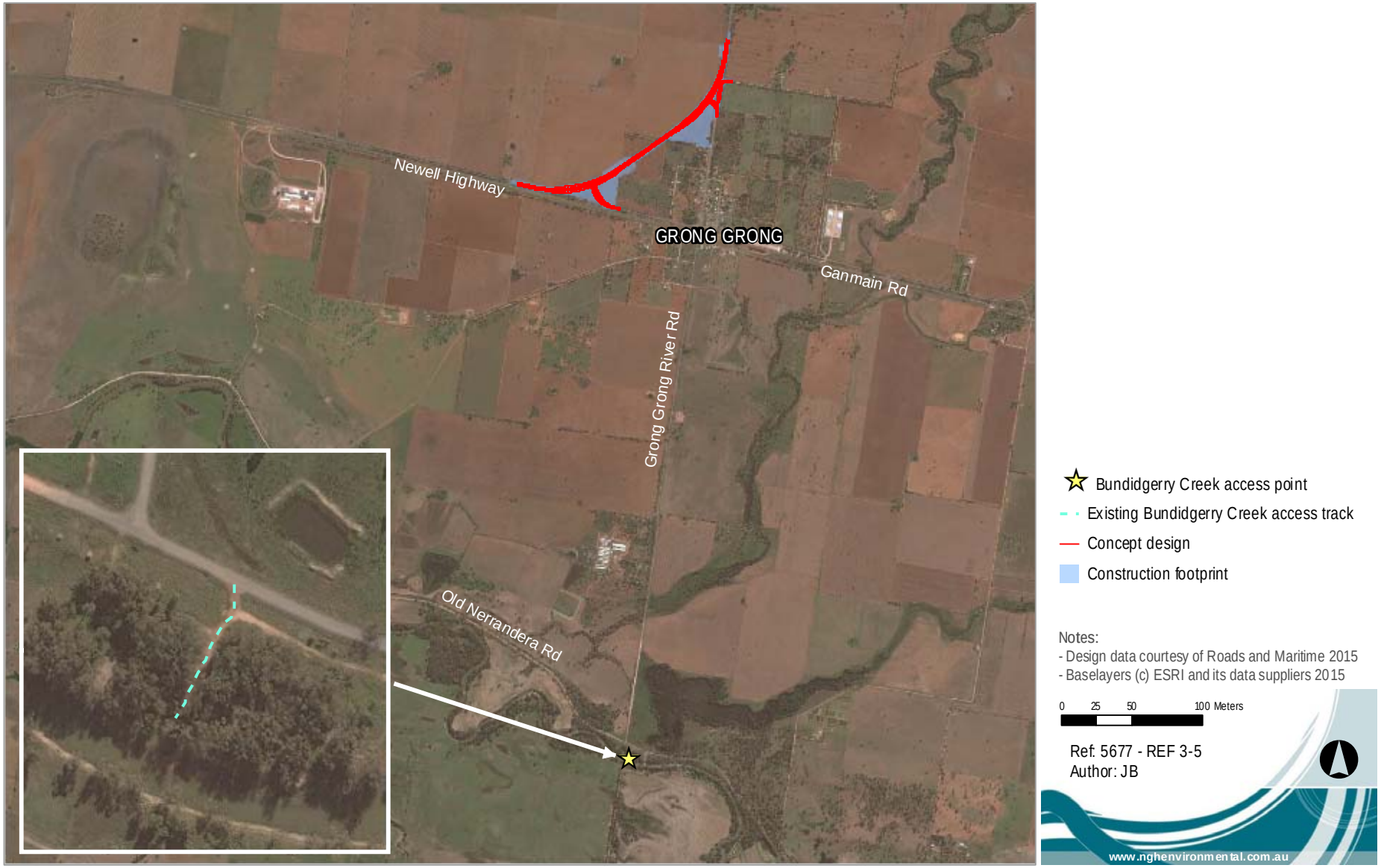

Figure 1-3: Location of potential water extraction point

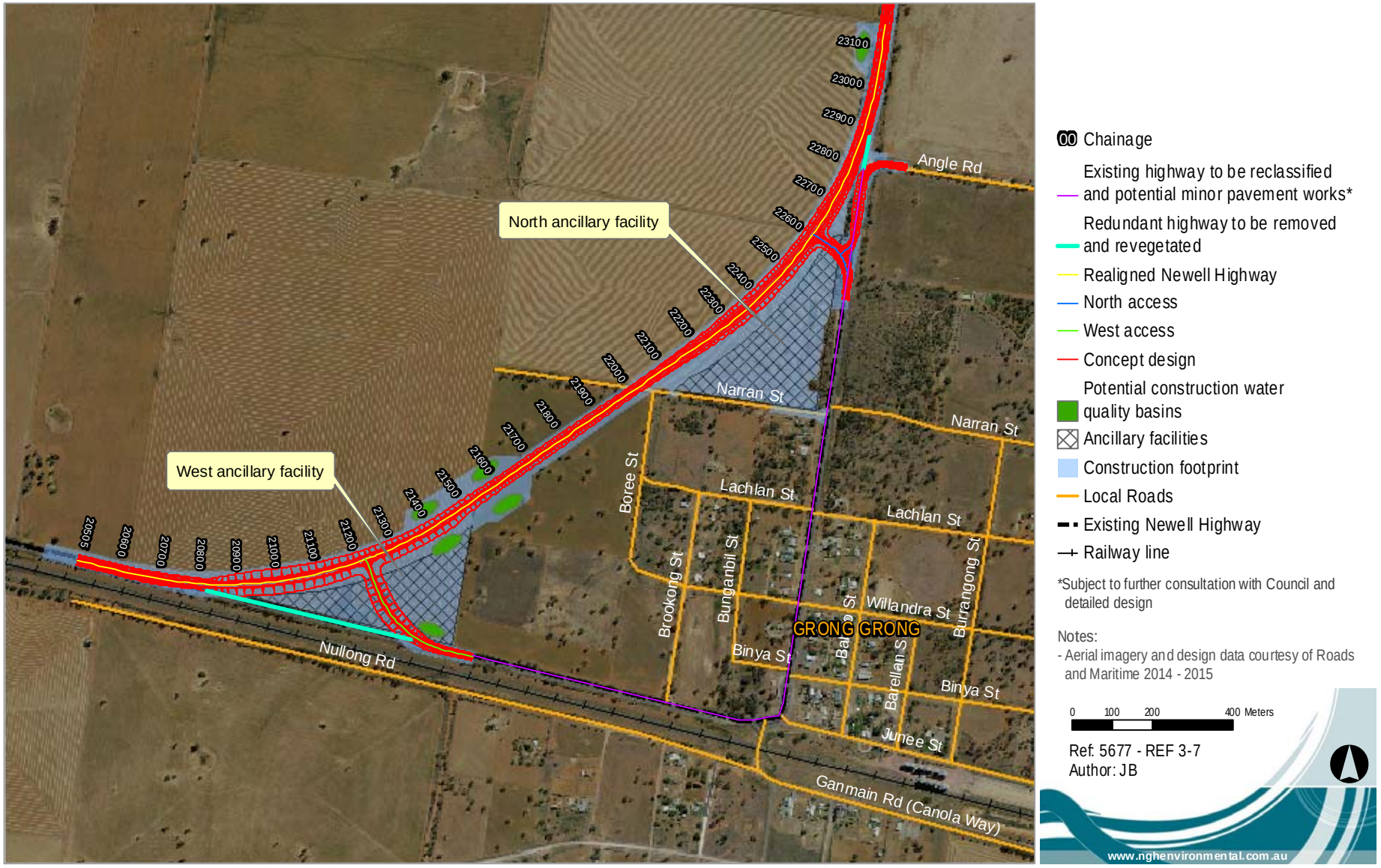

Figure 1-4: Location of ancillary facilities

Figure 1-5: Proposed property acquisition areas

Figure 3-1: General flora and fauna survey efforts in the study area in 2014

Figure 3-2: Targeted Orchid survey areas

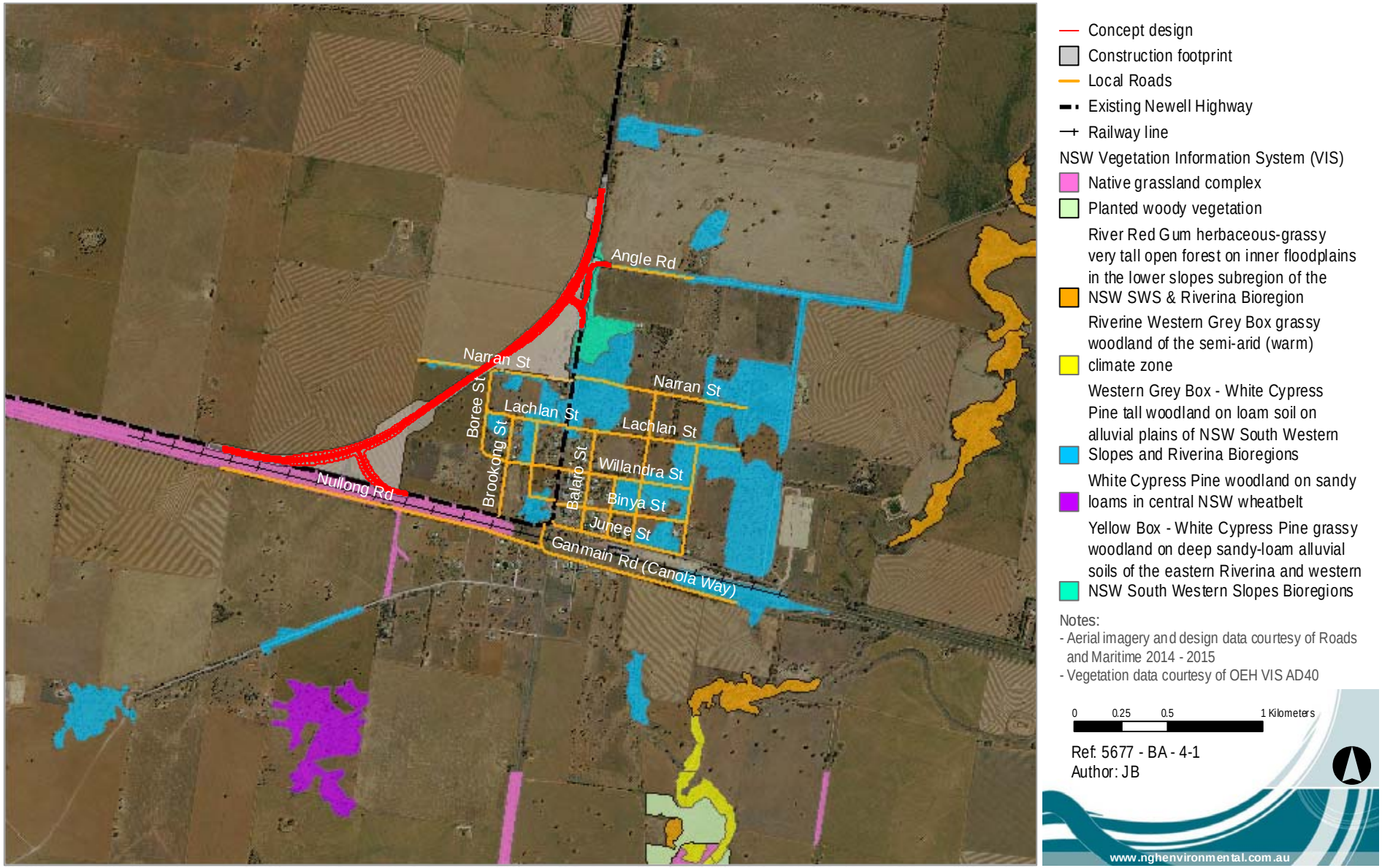

Figure 4-1: Vegetation Communities identified through NSW VIS (OEH, 2014)

Figure 4-2: Vegetation types within the construction footprint

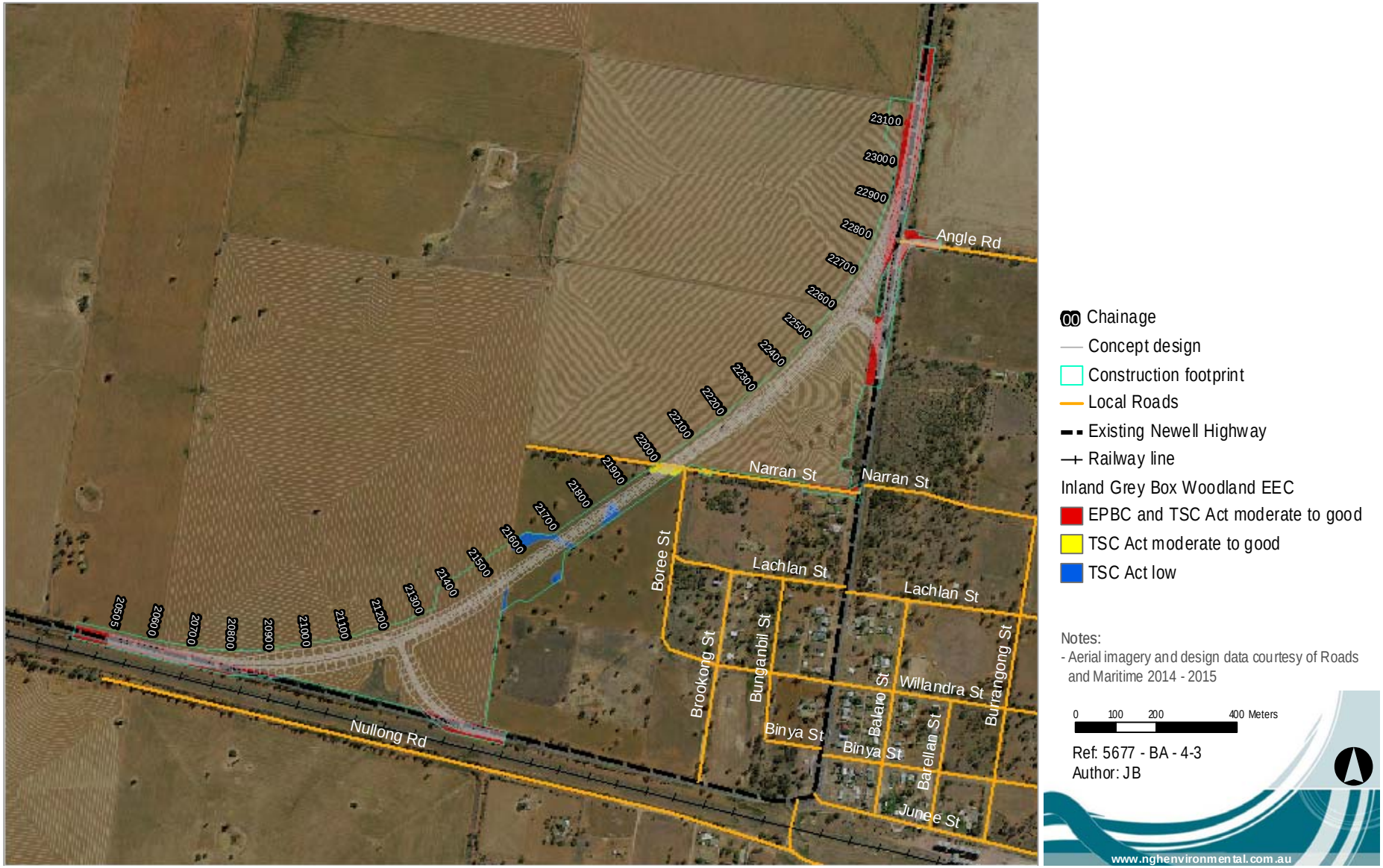

Figure 4-3: Distribution of the Inland Grey Box Woodland EEC within the construction footprint

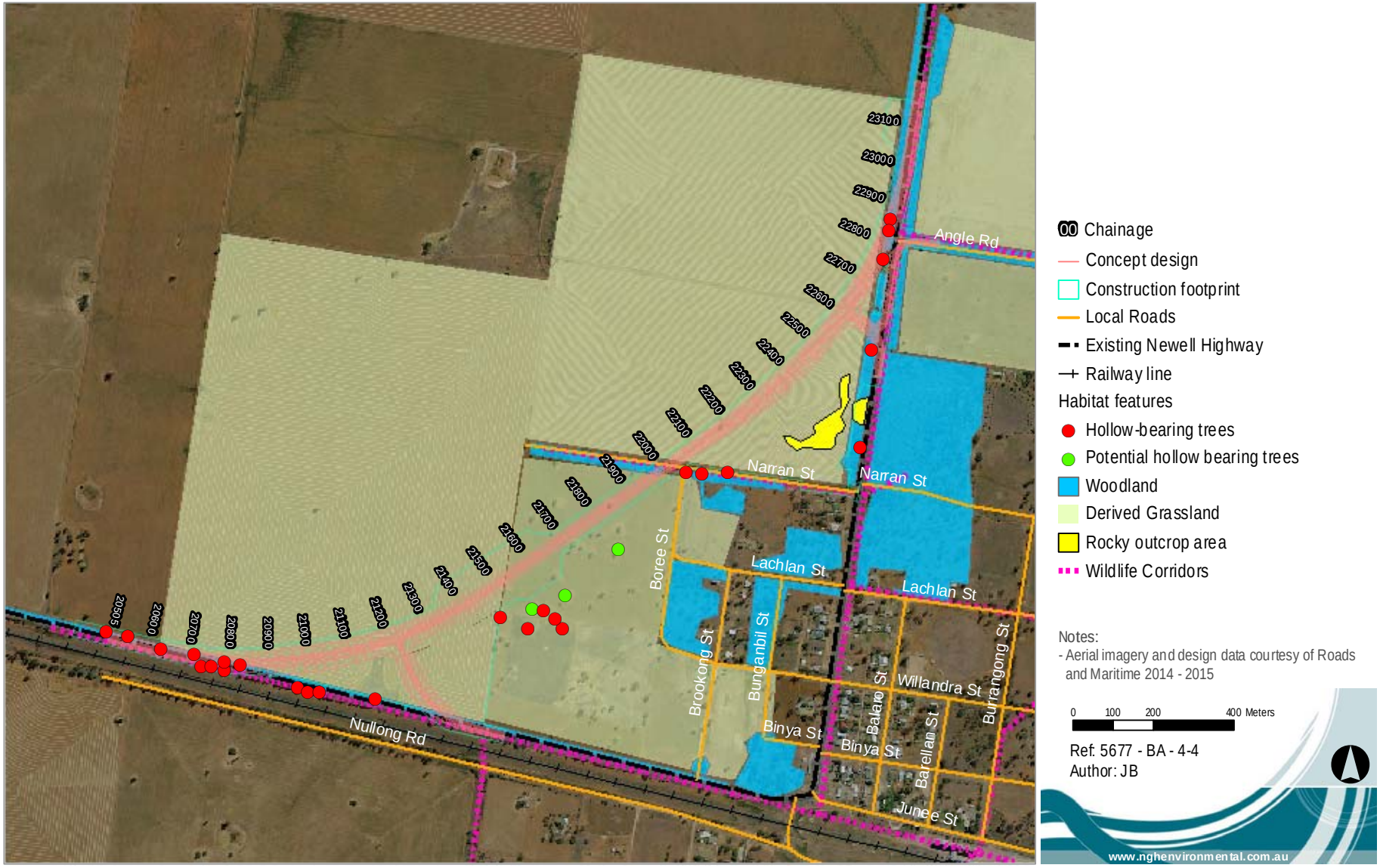

Figure 4-4: Location of habitat features within the study area

ATTACHMENT B – UPDATED ASSESSMENTS OF SIGNIFICANCE

THREATENED SPECIES CONSERVATION ACT

The *Threatened Species Conservation Act 1995* (TSC Act) specifies a set of seven factors which must be considered by decision makers in assessing the effect of a proposed development or activity on threatened species, populations or ecological communities, or their habitats. These factors are collectively referred to as the 'seven part test' or assessments of significance.

The following seven factors have been used to determine whether there would be a significant impact as a result of the revised proposal (as described in the document this assessment is appended to) on any of the TSC-listed threatened species and vegetation communities found at or likely to occur at the proposal site including:

Endangered Ecological Communities (EEC)

- *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions - Endangered*

Flora Species

- Sand Hill Spider Orchid *(Caladenia arenaria) TSC – Endangered*
- Pine Donkey Orchid *(Diuris tricolor) TSC - Vulnerable*

Birds

- Superb Parrot *(Polytelis swainsonii) TSC - Vulnerable*
- Brown Treecreeper *(Climacteris picumnus) TSC - Vulnerable*
- Grey Crowned Babbler *(Pomatostomus temporalis temporalis) TSC - Vulnerable*

Endangered Ecological Communities

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

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Not Applicable

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

Not Applicable

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

I. Grey Box Woodlands are scattered along the 2.4 kilometre section of works within the road reserve. The proposal would require the removal of woodland vegetation, isolated trees and groundcover vegetation from along the construction footprint and proposed tie in areas.

Areas of moderate to good quality Inland Grey Box EEC as defined under the TSC Act are present within the study area. Grazed paddock areas with scattered remnant Grey Box trees are likely to also fall within the definition of this EEC although this area is of very poor quality. The proposal would require the removal of approximately 4.2 hectares of Inland Grey Box Woodland EEC in moderate to good condition with a further 0.5 hectares of scattered Inland Grey Box Woodland within cropping paddocks considered to be in low condition.

Not taking into account modified cropping land, Inland Grey Box EEC is the dominant vegetation community present within the study locality. A large area of similar vegetation is also present east of the highway to the north of the Grong Grong Township. The proposed area of impact is considered minor in terms of the extent of this vegetation community in similar condition throughout the surrounding road reserve areas.

The removal of 4.7 hectares of Inland Grey Box Woodland would not place the local occurrence of this community at risk of extinction.

II. The proposal would not remove this community in entirety from the study area, nor change the composition of the community in the locality. Areas of Grey Box Woodland still occur in the road reserve and adjacent lands and would not be impacted. The community within the study area has already been subject to varying levels of disturbance from agricultural practices and edge effects. It is

not likely that the removal of Grey Box woodland vegetation within the already disturbed road reserve would substantially and adversely modify the composition of the ecological community as such that its local occurrence is likely to be placed at risk of extinction. While the proposal is likely to result in some soil disturbance which could lead to the spread or introduction of additional exotic species, it is considered unlikely that this would change the composition of the community to the point where its local occurrence would be placed at risk of extinction. Soil disturbance to areas outside of the construction footprint would be avoided in order to reduce any associated impacts to these areas.

(d) in relation to the habitat of a threatened species, population or ecological community:

i. the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality

i. The proposal would require the removal of approximately 4.7 hectares of EEC. This includes 4.2 hectares of moderate to good quality EEC located within the road reserve and along Narran Street. These areas contain a diversity of native species and good structural integrity. In addition, approximately 0.5 hectares of low quality EEC would also require removal. This area consists of exotic pasture with scattered remnant trees including Grey Box, White Cypress Pine and Yellow Box. This is not considered significant in relation to the distribution of this community in the locality.

ii. The vegetation to be removed is currently considered to be highly fragmented as a result of road construction and rural development. From a landscape context the vegetation provides low to moderate connectivity from woodland to the west of the study site, Bundidgerry Creek and the Murrumbidgee River to the south, road reserves adjacent to the Newell Highway, and vegetation north of Grong Grong. The works would have a minor impact upon connectivity where the proposed deviation would tie in with the existing road. Vegetation on the southern and eastern sides of the existing highway would be maintained which are likely to reduce the potential impacts of fragmentation. The proposal would not create a barrier to seed dispersal such that the community would be isolated from surrounding areas.

iii. Inland Grey Box is common throughout the study area locality in similar condition to that within the study area. Vegetation mapping from the NSW VIS (OEH 2014) indicates that within a three kilometre radius, about 125 hectares of this EEC is present. Larger areas of this EEC have also been mapped in the wider locality. It should be noted however, that this mapping is approximate only. The proposal would mostly remove narrow linear strips of the community that is in moderate to good condition and adjacent vegetation would remain intact. The proposed vegetation removal is not considered important in relation to the distribution of this community or its survival in the locality.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No areas of critical habitat have been declared for these species.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

There are no recovery plans or threat abatement plans relevant to the proposal.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

Key threatening processes relevant to the proposal include:

Clearing of native vegetation

The clearing of native vegetation is considered a major contributor to the loss of biodiversity. In its determination, the NSW Scientific Committee found that 'clearing of any area of native vegetation, including areas less than two hectares in extent, may have significant impacts on biological diversity'. Clearing can lead to direct habitat loss, habitat fragmentation and associated genetic impacts, habitat degradation and off-site impacts such as downstream sedimentation.

Inland Grey Box Woodland is present along the Newell Highway and Narran Street. The proposal would require the removal of 4.7 hectares of low to moderate quality native vegetation from these areas. Due to this vegetation removal the proposal can be considered to result in the operation of this key threatening process at a minor scale.

Conclusion

The proposal would remove 4.7 hectares Inland Grey Box Woodland, 4.5 ha of which is in moderate to good condition and 0.5 hectares in low condition. Most of the community to be impacted occurs within an existing road reserve and modified cropping land that is surrounded by a largely cleared agricultural landscape. An estimated 125 hectares of the community occurs within 3 kilometres of the study area. The proposal is considered unlikely to reduce the extent, modify the community or remove habitat such that the local occurrence would be placed at risk of extinction. The habitat to be removed is not considered important to the long-term survival of the community in the locality nor is it considered likely to result in increased fragmentation.

The proposal is considered unlikely to have a significant effect on the Inland Grey Box Woodland EEC. Therefore, further assessment is not required, however, safeguards and mitigation measures have been recommended. This includes an offset strategy with the objective of enhancing remnant patches, and their connectivity within the road corridor and the locality through revegetation, regeneration and management.

Flora Species

Sand-hill Spider Orchid (Caladenia arenaria)

Pine-Donkey Orchid (Diuris tricolor)

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Caladenia arenaria

Only a total of approximately 25 plants of *Caladenia arenaria* are known to occur in NSW. The species is only known from two populations, north of Narrandera and near Lake Urana. A single record of the species is listed on the OEH Wildlife Atlas as occurring in a paddock (i.e. unsuitable habitat) south of the railway line near Grong Grong. The species prefers dense stands of Callitris woodland and is associated with a male thynnid wasp for pollination. Little is known of the habitat requirements for the wasp.

The habitats in the study area are heavily disturbed, particularly the understorey vegetation, and dense stands of Callitris do not occur extensively in the area. It is therefore considered unlikely that any individuals or a viable population of this species would be present in this study area.

The proposal would require the clearing of an area approximately 0.5 hectares of potential marginal habitat along Narran Street. Potentially suitable marginal habitat for these species is present in adjacent areas along Narran Street and would not be affected by the proposal (approx. 0.5ha). The habitat that would be affected is located along a road and evidence of grazing along the road was noted. The site also contains a number of weed species and no orchid species (common or threatened) were noted in the area at the time of the targeted survey. The proposal would also not affect the movement of the associated pollinating wasp.

Given these factors, it is considered unlikely that the proposal would place a viable local population at risk of extinction.

Diuris tricolor

Diuris tricolour has a sporadic distribution and is known from an area extending south of Narrandera to the far north of NSW. Localities include the Condobolin-Nymagee road, Wattamondara towards Cowra, Cooyal, Adelong, Red Hill north of Narrandera, Coolamon, near Darlington Point, Eugowra, Girilambone, Dubbo, Muswellbrook, and several sites west of Wagga Wagga. Typically this species is recorded as common or locally frequent in populations. The Pine Donkey Orchid (formerly known as *Diuris sheaffiana*) is a terrestrial species (it grows from the ground rather than from rocks or vegetation). The Pine Donkey Orchid grows in sclerophyll forest among grass, often with native Cypress Pine (*Callitris spp*.). It is found in sandy soils, either on flats or small rises. It is also recorded from a red earth soil in a Bimble Box community in western NSW. Disturbance regimes are not known, although the species is usually recorded from disturbed habitats. Associated species include *Callitris glaucophylla*, *Eucalyptus populnea*, *Eucalyptus intertexta*, and Ironbark and Acacia shrubland. The understorey is often grassy with herbaceous plants such as *Bulbine* species.

The closest record of the species is around the Narrandera area approximately 17 kilometres from the proposal site. Potentially suitable habitat is located in the study area both within and outside the proposal

footprint. Targeted searches for this species in spring failed to find any evidence of its presence. Given the past and ongoing disturbances in the area, and given the lack of any evidence of its presence, it is considered that the species is not likely to occur in the study area.

The proposal would affect approximately 0.5 hectares of suitable habitat for this species, with a further 0.5 hectares of suitable habitat in the immediate locality not being affected. Furthermore, more extensive tracks of similar vegetation occur immediately to the east of the study area, although these areas too are subject to ongoing disturbances such as grazing and clearing.

Given these factors, it is unlikely that a viable local population of this species occurs in the study area and would be placed at risk of extinction by the proposal.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

Not Applicable

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not Applicable

(d) in relation to the habitat of a threatened species, population or ecological community:

i. the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality

I. The proposal would require the removal of approximately 0.5 hectares of suitable habitat from along Narran Street. This habitat is at best marginal for these species given the presence of exotic species, past soil disturbance and evidence of grazing. No orchids were found in the area although a number of Bulbine Lily individuals were present. Approximately 0.5 hectares of suitable habitat would not be affected by the works in this area.

II. The vegetation to be removed is already in a fragmented state as a result of road construction and urban development. From a landscape context the vegetation provides little connectivity and is isolated by agricultural activities, mostly broad-acre cropping. Vegetation along Narran Street would be fragmented however given the low likelihood of occurrence of these species, it is not expected that this would affect the life cycle of these orchids.

III. Habitat to be removed as part of the works is of poor quality and suffering weed invasion and previous soil disturbance in areas. Given that these species have not been recorded in the study area previously and are considered unlikely to occur the habitats are not considered to be important to the long-term survival of either species.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No areas of critical habitat have been declared for these species.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

No current Recovery Plans or Threat Abatement Plans have been prepared for *Diuris tricolor*. A recovery plan for *Caladenia arenaria* was approved in February 2004 and this assessment has been undertaken in accordance with this plan. The overall objective of the plan is to ensure all populations of *Caladenia arenaria* persist and that declines in population numbers attributable to threatening processes are reversed. Specific objectives include:

- Population demographic factors influencing recoverability are understood.
- The impact of threatening processes affecting populations is minimised.
- Long-term management strategies are developed for each *C. arenaria* population.
- The possibility of stochastic events eliminating a population are reduced

The proposal is unlikely to impact upon a population of this species and so would not contradict the objectives of the plan.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

Key threatening processes relevant to the proposal include:

- Clearing of native vegetation.

The clearing of native vegetation is considered a major contributor to the loss of biodiversity. In its determination, the NSW Scientific Committee found that 'clearing of any area of native vegetation, including areas less than two hectares in extent, may have significant impacts on biological diversity'. Clearing can lead to direct habitat loss, habitat fragmentation and associated genetic impacts, habitat degradation and off-site impacts such as downstream sedimentation.

The proposal would require the removal of 0.5 hectares of native vegetation from along Narran Street which is considered to be marginal habitat for the Sand-hill Spider Orchid and Pine Donkey Orchid. Due to this vegetation removal the proposal can be considered to result in the operation of this key threatening process. However, the vegetation to be removed as part of this proposal is considered minor in terms of the local

extent of native vegetation in surrounding areas as well as the fragmented nature of the vegetation. As such the proposal is not likely to contribute significantly to the operation of clearing as a threatening process.

Conclusion

It is considered unlikely that viable populations of the Spider Sand-hill Orchid or the Pine Donkey orchid occur within the study area given the levels of disturbance and absence of orchid species during the targeted surveys. As such, the proposal is considered unlikely to result in the extinction of any viable populations. The removal of a very small area of habitat (0.5ha) would not be removing habitat important to the survival of these species in the context of similar habitat within the study area and locality. The proposal would not result in any substantial increases to the fragmentation of habitat for these species. Significant impacts to the Sand-hill Spider Orchid or the Pine Donkey Orchid are considered unlikely as a result of the proposal.

Bird Species

Superb Parrot (Polytelis swainsonii)

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

The woodland within the study locality is known to provide foraging habitat for the Superb Parrot. Hollow-bearing trees are present within the study area that could be utilised for breeding however, this is considered unlikely as Superb Parrots are known to favour River Red Gum trees for breeding and this resource is abundant along Bundidgerry Creek and the Murrumbidgee River to the south of the study area.

As such, the woodland to be removed predominantly provides movement and foraging habitat for the Superb Parrot. The proposed removal of 4.7 hectares of habitat would reduce the amount of foraging habitat available within the study area however the Superb Parrot is a highly mobile species and suitable foraging habitat is abundant in the locality. Considering this, the proposal is unlikely to place a viable local population at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

Not Applicable

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not Applicable

(d) in relation to the habitat of a threatened species, population or ecological community:

i. the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality

i. Approximately 4.7 hectares of Superb Parrot foraging habitat, would be removed as a result of the proposal. Nine hollow-bearing trees may be removed that provide potential breeding habitat.

ii. Habitat is unlikely to be fragmented as a result of the proposal. The removal of vegetation from a linear corridor of vegetation would likely increase the fragmented nature of the road reserve, as well as further increase the distance between existing patches in the landscape. However, habitat connectivity is unlikely to change substantially as the remaining vegetation would still be traversable for the Superb Parrot which is a highly mobile species.

iii. The proposal site and surrounding areas may provide breeding habitat, and definitely provide foraging habitat, for the Superb Parrot. In the context of extensive similar and more highly preferred habitat in the locality, it is considered unlikely that the habitat to be removed is of considerable importance to this species. The removal of 4.7 hectares of native vegetation, including up to nine hollow-bearing trees that are unlikely to be preferred for breeding, is not considered to be important habitat for the long-term survival of the Superb Parrot in the locality.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No areas of critical habitat have been declared for these species.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

There is a National Recovery Plan for the Superb Parrot (DECC 2008b). Two of the four objectives of the recovery plan are relevant to this proposal which include:

- *Increase the level of knowledge of the Superb Parrot's ecological requirements.* This includes identifying and mapping areas used for foraging during the non-breeding season, and identifying flight corridors used in the non-breeding season.

The proposal would not interfere with this objective, as information on the sighting of this species during surveys will be submitted to OEH as part of our licence agreement.

- *Develop and implement threat abatement strategies.* This includes developing and implementing a Superb Parrot 'Habitat Retention and Enhancement' policy which uses all administrative avenues (e.g. native vegetation retention Acts), to protect box-gum woodland from clearing and degradation within the range of the Superb Parrot. Also, identify and revegetate critical breaks in flight corridors.

The proposal is not consistent with this objective, as 4.7 hectares of Inland Grey Box woodland would be removed as a result of the proposal. In addition, the removal of this native vegetation may also contribute somewhat to the fragmentation of flight corridors albeit at a very minor scale.

The importance of the proposal site to this species is considered negligible, however it does provide potential breeding and foraging habitat, therefore the proposal has the potential to be inconsistent with this objective.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

A number of key threatening processes are relevant to the Superb Parrot including:

- Clearing of native vegetation;
- Removal of dead wood and dead trees; and
- Loss of hollow-bearing trees.

The clearing of native vegetation is considered a major contributor to the loss of biodiversity. In the determination, the NSW Scientific Committee found that 'clearing of any area of native vegetation, including areas less than two hectares in extent, may have significant impacts on biological diversity'. Clearing can lead to direct habitat loss, habitat fragmentation and associated genetic impacts, habitat degradation and off-site impacts such as downstream sedimentation. The removal of 4.7 hectares of moderate to good condition native vegetation in a largely cleared landscape has the potential to increase the operation of this key threatening process.

Dead trees and dead wood that occur within the proposal site are also likely to be removed or at least relocated as part of the proposal. This may remove potential breeding habitat for the Superb Parrot however as discussed above this is unlikely to be preferred habitat. As part of the mitigation measures, it has been recommended that fallen timber is retained and placed in adjacent areas.

The proposal would remove up to nine hollow-bearing trees along the 2.4 kilometre length of the Newell Highway. This has some potential to remove breeding resources, for the Superb Parrot but again these resources are unlikely to be preferred given the close proximity of mature River Red Gum trees along Bundidgerry Creek and the Murrumbidgee River to the south of the study area. The proposal is considered to have a low potential to increase the impact of this key threatening process with regard to the Superb Parrot.

Conclusion

The Assessment of Significance has concluded that the proposal is unlikely to significantly impact the Superb Parrot. The proposal site provides foraging habitat and potentially breeding habitat for the Superb Parrot in a region which has been impacted by historical clearing. However, there are numerous patches of vegetation in the locality (10 kilometre radius) that provide similar or higher quality habitat, which is likely to be preferentially utilised by the Superb Parrot. The proposal site is also used, to an unknown degree, as a

movement corridor for the species. The proposal site is likely to remain traversable by the species. Therefore the proposal is unlikely to impact the movement patterns of the species.

Brown Treecreeper (Climacteris picumnus victoriae)

(a) In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

The Brown Treecreeper is found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range. Fallen timber is an important habitat component for foraging. Hollows in standing dead or live trees and tree stumps are essential for nesting, with breeding extending from June to January.

No Brown Treecreepers were recorded within the study area during the site visit, however there is on record of this species located in Grong Grong town centre from 1978. The majority of the study area comprises of isolated paddock trees with minimal fallen timber or foraging habitat for this species. A number of hollow bearing trees would be removed as part of the proposal, however there is an abundance of hollows present within the study locality at Bogolong Hills, along the Murrumbidgee River, and within the existing road reserve areas. This species is highly flight mobile and can traverse to other adjacent habitats within the study locality.

Given the relatively small area (4.7ha) of habitat to be removed the proposed activity is considered unlikely to have an adverse effect on the life cycle of the Brown Treecreeper such that a viable local population of the species would be placed at risk of extinction by the proposed activity.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

Not applicable

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

- **i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- **ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction**

Not applicable

(d) in relation to the habitat of a threatened species, population or ecological community:

- **i. the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**

ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality

i. Approximately 4.7 hectares of Brown Treecreeper foraging habitat, would be removed as a result of the proposal. Nine hollow-bearing trees may be removed that provide potential breeding habitat.

ii. Habitat is unlikely to be fragmented as a result of the proposal. The removal of vegetation from a linear corridor of vegetation would likely increase the fragmented nature of the road reserve, as well as further increase the distance between existing patches in the landscape. However, habitat connectivity is unlikely to change substantially as the remaining vegetation would still be traversable for the Brown Treecreeper which is a highly mobile species.

iii. The Brown Treecreeper was not recorded in the study area and there are no recent records in adjacent habitats. It is considered unlikely that this species relies on the habitats present within the study area. The small area of foraging habitat and number of hollow-bearing trees to be removed as a result of the proposal is considered minor in the context of extensive similar habitat in the locality. Habitats to be removed are highly fragmented and disturbed. The habitat to be removed is not considered important to the long-term survival of the Brown Treecreeper.

(e) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

No areas of critical habitat have been declared for the Brown Treecreeper.

(f) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

No Recovery plans or Threat abatements plans have been prepared for the Brown Treecreeper.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

A number of key threatening processes are relevant to the Brown Treecreeper including:

- Clearing of native vegetation;
- Removal of dead wood and dead trees; and
- Loss of hollow-bearing trees.

The clearing of native vegetation is considered a major contributor to the loss of biodiversity. In the determination, the NSW Scientific Committee found that 'clearing of any area of native vegetation, including areas less than two hectares in extent, may have significant impacts on biological diversity'. Clearing can lead to direct habitat loss, habitat fragmentation and associated genetic impacts, habitat degradation and off-site impacts such as downstream sedimentation. The removal of 4.7 hectares of moderate to good condition

native vegetation in a largely cleared landscape has the potential to increase the operation of this key threatening process.

Dead trees and dead wood that occur within the proposal site are also likely to be removed or at least relocated as part of the proposal. This may remove potential foraging and breeding habitat for the Brown Treecreeper. As part of the mitigation measures, it has been recommended that fallen timber is retained and placed in adjacent areas.

The proposal would remove up to nine hollow-bearing trees along the 2.4 kilometre length of the Newell Highway. This has some potential to remove breeding resources, for the Brown Treecreeper however, this species has not been recorded within the study area or adjacent habitats and is unlikely to rely on these habitat resources. The proposal is considered to have a low potential to increase the impact of this key threatening process with regard to the Brown Treecreeper.

Conclusion

The Assessment of Significance has concluded that the proposal is unlikely to significantly affect the Brown Treecreeper should they occur in the study area. This species has not been recorded within the study area or recently in adjacent habitats. The habitat to be removed is minor in the context of extensive similar habitat in the locality and given the likely low utilisation of the habitat by this species, is unlikely to be important. The proposal is considered unlikely to fragment habitat for this species or place a viable population at risk of extinction.

Grey-crowned Babbler (Pomatostomus temporalis temporalis)

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Grey-crowned Babblers live and breed in co-operative territorial groups of two to fifteen individuals. They are sedentary and territorial. The breeding season extends from June to February. Nests are located in shrubs or the lower canopy of trees, usually less than six metres above the ground (Parsons Brinckerhoff 2005). Often old nest sites are renovated and re-used from year to year (Parsons Brinckerhoff 2005). A viable population is likely to contain more than 10 family groups, while populations with less than 10 groups are likely to have a high rate of extinction (Parsons Brinckerhoff, 2005). The Grey-crowned Babbler appears to be relatively disturbance tolerant as this species has been observed foraging in gardens, parks and small remnants, along fence boundaries and man-made structures near major roads (Parsons Brinckerhoff 2005). The species is a laborious flyer and is known to feed on the ground, placing it at risk of being killed by oncoming traffic.

Grey-crowned Babblers were observed in the north of the study area with four individuals observed. These individuals are likely to be part of a greater family group occurring within the broader area. No nests were observed within the study area. The ability of this species to utilise degraded roadside vegetation suggests that the proposal would not inhibit the movement of Grey-crowned Babblers through the landscape. As no nests were observed within the study area the impacts of the proposal are likely to be restricted to the removal of foraging habitat and connecting habitat. The local population would extend well beyond the small area to be impacted by the proposal.

The proposal is not considered likely to increase the risk of extinction of a local population of the species.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

Not applicable

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable

(d) in relation to the habitat of a threatened species, population or ecological community:

i. the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality

i. Approximately 4.7 hectares of poor to moderate condition native vegetation, providing suitable foraging and breeding habitat, would be removed as a result of the proposal.

ii. The removal of vegetation from a linear corridor of vegetation would likely increase the fragmented nature of the road reserve, as well as further increase the distance between existing patches in the landscape. The species is reluctant to traverse large areas of cleared land in the landscape (Parsons Brinckerhoff 2005), however the minor fragmentation as a result of the proposal would be unlikely to present a barrier to the species.

iii. The lack of active or past nests suggests the proposal site has not been used very recently for breeding. The study area is likely to be mostly used by this species for foraging and movement only. The minor additional fragmentation as a result of the proposal is considered unlikely to restrict movement of the species. Considering these factors and the occurrence of extensive similar habitats in the locality the habitat to be removed is not considered important to the long-term survival of the Grey-crowned Babbler in the locality.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No areas of critical habitat have been declared for this species.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

The Action Plan for Australian Birds 2000 lists the Grey-crowned Babbler as near threatened. The recommendations that are relevant to the proposal include:

- Protect all woodland in which Grey-crowned Babblers are known to be resident from clearing, monitoring compliance biennially.
- Secure all Grey-crowned Babbler subpopulations found on public land through conservation management, particularly those in timber reserves or transport corridors or on local government land
- Within the Babbler's range, manage at least 15% of the pre-European area of all woodland communities on public or private land for nature conservation, using incentives where necessary
- Using appropriate incentives, undertake extension with land-holders that have suitable woodland habitat to promote sound management of remnants and encourage greater connectivity between sub-populations.
- Undertake long-term monitoring of remnant sub-populations

Offsets of suitable habitat for the Grey-crowned Babbler have been recommended as part of this Biodiversity Assessment.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The Proposal would result in the operation of the following key threatening processes relevant to the Grey-crowned Babbler:

- Clearing of native vegetation.
- Removal of dead wood and dead trees.
- Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners.

The clearing of native vegetation is considered a major contributor to the loss of biodiversity. In the determination, the NSW Scientific Committee found that 'clearing of any area of native vegetation, including areas less than two hectares in extent, may have significant impacts on biological diversity'. Clearing can lead to direct habitat loss, habitat fragmentation and associated genetic impacts, and habitat degradation. Given that 4.7 hectares of endangered ecological communities would be cleared as a result of the proposal, where the majority of the surrounding landscape has been historically cleared, the proposal is likely to increase the impact of this key threatening process.

Dead trees and dead wood that occur within the proposal site are also likely to be removed or relocated as part of the proposal. As part of the mitigation measures, it has been recommended that fallen timber is retained and placed in adjacent areas. The presence of scattered dead standing trees and fallen dead wood in surrounding farmland means that the removal of dead wood within the proposal site is unlikely to have a significant impact on the Grey-crowned Babbler.

The Grey-crowned Babbler has been identified as a threatened species that is adversely affected by aggressive exclusion by Noisy Miners. The Noisy Miner favours open, lightly timbered areas and habitat edges. The habitat within the study area is already highly modified and suitable for this species. The proposal is unlikely to increase the suitability of habitat. Therefore the impact of this key threatening process is unlikely to be exacerbated.

Conclusion

The Assessment of Significance has concluded that the proposal is unlikely to have a significant impact on the Grey-crowned Babbler. The habitat in the study area is unlikely to be currently utilised for breeding by this species with the habitat being used mostly for foraging and movement. Extensive foraging habitat occurs in the locality and the minor degree of additional fragmentation as a result of the proposal would not inhibit the movement of this species to these areas. The local population would extend across the broader area of habitat outside of the study area which would not be impacted by the proposal. As such, the proposal would be unlikely to reduce the long-term viability of the species or place it at risk of extinction in the locality.

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT

The *Environment Protection and Biodiversity Conservation Act 1999* specifies factors to be taken into account in deciding whether a development is likely to significantly affect Endangered Ecological Communities, threatened species and migratory species, listed at the Commonwealth level. The following assessment assesses the significance of the likely impacts associated with the proposal on:

Endangered Ecological Communities (EECs)

- *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia – EPBC – Endangered Ecological Community*

Flora Species

- Sand Hill Spider Orchid *(Caladenia arenaria) EPBC – Endangered*

Birds

- Superb Parrot *(Polytelis swainsonii) EPBC - Vulnerable*

Assessments of Significance under the TSC Act for these communities and species have already been undertaken. Detailed information has been provided in these assessments and will be summarised here. The assessments below should be read in conjunction with the TSC Act assessments of significance.

Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

Reduce the extent of an ecological community

The proposal would remove approximately 3.9 hectares of the community. Approximately 125 hectares has been mapped in the NSW VIS as occurring within three kilometres of the study area. The small extent (3%) of the community to be removed in the local area is not considered substantial.

Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines

The 3.9 hectares of the community in the proposal site is separated from other patches of the same community by exotic-dominated vegetation, other native vegetation communities, and manmade features. The proposal is likely to increase the fragmentation of this community by widening the road impact zone and removing vegetation from this community. This will further minimise the width of these patches and cause additional fragmentation between the road-side vegetation and surrounding remnant patches of this community. This fragmentation is however, considered minor in the context of existing fragmentation across the landscape.

Adversely affect habitat critical to the survival of an ecological community.

Approximately 3.9 hectares of the community would be cleared or highly modified as a result of the proposal. Most of this vegetation consists of mature trees with an understorey of shrubs and groundcover species. Although some vegetation would be lost, this loss of habitat will not be critical to the survival of this community within the locality. With an offset strategy in place that has an objective of enhancing remnant patches, and their connectivity within the road corridor and locality through revegetation, regeneration and management, losses of this EEC due to the proposal would largely be compensated.

Modify or destroy abiotic (non-living) factors (such as water, nutrients or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns.

The proposal would modify the abiotic factors necessary for the survival of the patches of this community where direct habitat removal occurs, and where direct modification to drainage features occurs within the proposal site. However, these impacts are unlikely to affect the survival of the ecological community in the local area.

Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.

The proposal would cause a substantial change in the species composition of this community occurring within the proposal footprint through the clearing of the vegetation within it. The composition of the community in the impact zone would be substantially and adversely modified, however, this composition would be preserved north and south of the proposal site where the community extends.

Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:

- **Assisting invasive species, that are harmful to the listed ecological community, to become established, or**
- **Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which will kill or inhibit the growth of species in the ecological community**

Interfere with the recovery of an ecological community

The removal of approximately 3.9 hectares of this ecological community from the study area would modify the patch in which it occurs. Given the current fragmentation, disturbance and edge effects, it is unlikely that the proposal will assist invasive species to become established further in the community as a result of the construction and operation of the road.

With the implementation of safeguards and management protocols, the proposal is unlikely to cause the regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community.

Although the patch of the community is already disturbed due to historical factors, any recovery of the ecological community in the patch proposed for removal will be prevented in perpetuity. With an offset strategy in place that has an objective of enhancing remnant patches, and their connectivity within the road corridor and locality through revegetation, regeneration and management, losses of this EEC due to the proposal will largely be compensated for.

Conclusion

It is likely that the proposal will have an effect on the extent, composition, and level of fragmentation of this community within the study area. However, considering the existing levels of disturbance and proportionally small area to be impacted by the proposal compared to the remaining extent of this community within the study area, the proposal works is not considered likely to have a significant impact on this community, such that it needs to be referred further.

Sand Hill Spider Orchid

An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

Lead to a long-term decrease in the size of a population of a species?

Based on the results of the survey and assessment of habitat within the study area, it is considered unlikely that a population of the species occurs within the study area. The proposal is unlikely to result in a decrease to the size of a population

Reduce the area of occupancy of the species?

The proposal would remove approximately 0.5 hectares of habitat for this species which is considered to be marginal and unoccupied. The proposal is unlikely to reduce the area of occupancy of this species.

Fragment and existing population into two or more populations?

No existing populations are considered likely to occur within the study area. As such no populations would become fragmented as a result of the proposal.

Adversely affect habitat critical to the survival of a species?

No areas of critical habitat have been declared for this species. The habitats within the study area are modified and fragmented and not considered critical to the survival of the species.

Disrupt the breeding cycle of a population?

As discussed above, it is unlikely that a population occurs within the study area. The proposal is unlikely to disrupt the breeding cycle of a population.

Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

The proposal would remove approximately 0.5 hectares of habitat for this species but as the species is unlikely to be occupying the habitat, there would be no decline in the species.

Result in invasive species that are harmful to an endangered species becoming established in the endangered species habitat or;

Introduce disease that may cause the species to decline?

The proposal has the potential to introduce weeds and pathogens that may be harmful to the species however, as the species is considered unlikely to occur, they are unlikely to harm the species. Measures have been specified within the biodiversity assessment to reduce the potential for the introduction of harmful species and pathogens.

Interfere substantially with the recovery of the species?

The proposal would remove 0.5 hectares of marginal habitat for the species. This habitat is not likely to contribute to the recovery of the species.

Conclusion

It is considered unlikely the Sand-hill Spider orchid occurs within the study area and direct impacts to the species are unlikely. The habitat to be removed is marginal and not likely to interfere with the recovery of the species. The proposal not considered likely to have a significant impact on this species, such that it needs to be referred further.

Superb Parrot

An action is likely to have a significant impact on a vulnerable if there is a real chance or possibility that it will:

Lead to a long-term decrease in the size of an important population of a species?

A population of the Superb Parrot is known to occur in the area. As this species is listed as endangered under the EPBC Act, all populations could be considered to be important. The population in the study area locality is likely to occupy a large area. Breeding is likely to be focused on riparian areas along nearby waterways including Bundidgerry Creek and the Murrumbidgee River to the south of the study area.

A small area (4.7ha) of foraging habitat and approximately nine hollow-bearing trees that could potentially be utilised by the Superb Parrot (but not preferred) would be removed. This is considered minor relative to the extensive similar or more preferred habitats in the locality and unlikely to result in a decrease to the size of the population.

Reduce the area of occupancy of an important population of a species?

The proposal would remove 4.7 hectares of potential foraging habitat in an area where similar habitat is common. The minor fragmentation that may result from the proposal would not prevent the movement of the species to other areas of habitat and as such the area of occupancy is unlikely to be reduced.

Fragment and existing important population into two or more populations?

Additional fragmentation as a result of the proposal would be minor with regard to the Superb Parrot which is a highly mobile species.

Adversely affect habitat critical to the survival of a species?

No areas of declared critical habitat occur within the study area. The habitat to be removed by the proposal is not preferred breeding habitat and not considered critical to the survival of the Superb Parrot.

Disrupt the breeding cycle of an important population?

As discussed above, the hollow-bearing trees to be impacted by the proposal are not generally preferred by the Superb Parrot in the context of the surrounding landscape where mature River Red Gums are available along waterways such as Bundidgerry Creek and the Murrumbidgee River. The proposal is unlikely to disrupt the breeding cycle of the species.

Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

A relatively small area of previously modified foraging habitat would be removed by the proposal. This is considered minor in the context of similar and better habitat in the locality and unlikely to result in the decline of a highly mobile species such as the Superb Parrot.

Result in invasive species that are harmful to an endangered species becoming established in the vulnerable species habitat or;

Introduce disease that may cause the species to decline?

The proposal is unlikely to result in the introduction of any species or diseases that could cause harm to the Superb Parrot.

Interfere substantially with the recovery of the species?

The proposal is inconsistent with the objectives of the National Recovery Plan for this species however, as discussed above the impacts are relatively minor. The impacts are unlikely to interfere with the recovery of the species within the broader locality. An offset strategy will be prepared to compensate for the loss of endangered ecological communities within the study area that will also lead to positive outcomes for the Superb Parrot.

Conclusion

The habitats within the study area are not considered important for the breeding of the Superb Parrot but do provide foraging habitat and facilitate movement of the species. The area of habitat to be removed however, is relatively small compared to extensive similar habitats in the local area and the impacts associated with the removal of habitat are considered unlikely to place the local population of Superb Parrots at risk of decline. The habitat to be removed is not considered critical to the survival of the Superb Parrot nor is it likely to reduce the area of occupancy of the species. The proposal is unlikely to interfere with the recovery of the species and may contribute through the protection of habitat in the establishment of an offset area for the proposal. The proposal not considered likely to have a significant impact on this species, such that it needs to be referred further.

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