

# Appendix K

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## Landscape and visual impact assessment

Roads and Maritime engaged the NSW Government Architects Office (GAO) in 2015 to prepare a Statement of Heritage Impact (SOHI) and Landscape Character and Visual Impact Assessment (LCVIA) for the proposed demolition of Gee Gee Bridge. These two documents would assess heritage impacts on removing the existing Dare Truss bridge that is listed under the NSW State Heritage Register (SHR).

In early 2016, the NSW Government announced that GAO's strategic arm would be disbanded and transferred to the Department of Planning and Environment (DPE). This has resulted in GAO's authors no longer being available to amend or finalise the draft SOHI and LCVIA.

Details on the proposal have developed since the GAO submitted draft documents to Roads and Maritime. This is the result of advancing the design, including proposed heritage impact mitigation measures, administration changes and further negotiations between stakeholders.

The SOHI assesses heritage impacts of demolishing the existing bridge and includes mitigation measures to reduce the impact on the bridge's key heritage values. Roads and Maritime has amended the draft document as submitted by GAO by updating details to reflect changed circumstances.

GAO's draft LCVIA forms an important appendix to the SOHI. This document describes the landscape character and visual setting of the existing site and assesses the impact of the proposed activity. The LCVIA is therefore a key related document to the SOHI. Roads and Maritime has amended the GAO report to also reflect amendments in the SOHI.

Key amendments to the documents are outlined below:

- Changed the title of the Heritage Impact Statement to Statement of Heritage Impacts
- Changed Wakool Shire Council to Murray River Council to reflect local government area administration changes
- Corrected formatting and grammar; such as fonts, labels, text size and punctuation.
- Restructured sentences to provide clarity
- Changed road names throughout to provide accuracy and consistency
- Updated descriptions to better reflect current Roads and Maritime strategies, policies and guidelines
- Changed descriptions to remove jargon and provide clarity; and
- Removed or updated redundant or non-relevant information





# GEE GEE BRIDGE OVER WAKOOL RIVER

## LANDSCAPE CHARACTER AND VISUAL IMPACT ASSESSMENT

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PREPARED FOR ROADS AND MARITIME SERVICES

AUGUST 2015

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# GEE GEE BRIDGE OVER THE WAKOOL RIVER

## LANDSCAPE CHARACTER AND VISUAL IMPACT ASSESSMENT

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# 1. INTRODUCTION



Figure 1 NSW State context  
Source: SIX Viewer, 2015

## 1.1 PROJECT OVERVIEW

Roads and Maritime Services (Roads and Maritime) is proposing to demolish the existing heritage listed timber truss bridge and flood relief bridge at the Gee Gee crossing over the Wakool River, in the state's south west.

The Gee Gee Bridge is located along Noorong Road, between the towns of Swan Hill and Deniliquin. It is approximately 630km from Sydney and 310km from Melbourne. No towns are located adjacent to the bridge.

The proposal is to replace the current bridges with a single structure. The project is part of the Roads and Maritime 'NSW Bridges for the Bush' program. It also responds to the NSW Freight and Ports strategy which acknowledges the need for High Mass Limit transport access throughout the region.

Roads and Maritime is currently preparing the design for the new bridge. This bridge will be located adjacent to the existing bridge. The approach roads will be altered to cater for an increase in speed limit to the bridge.





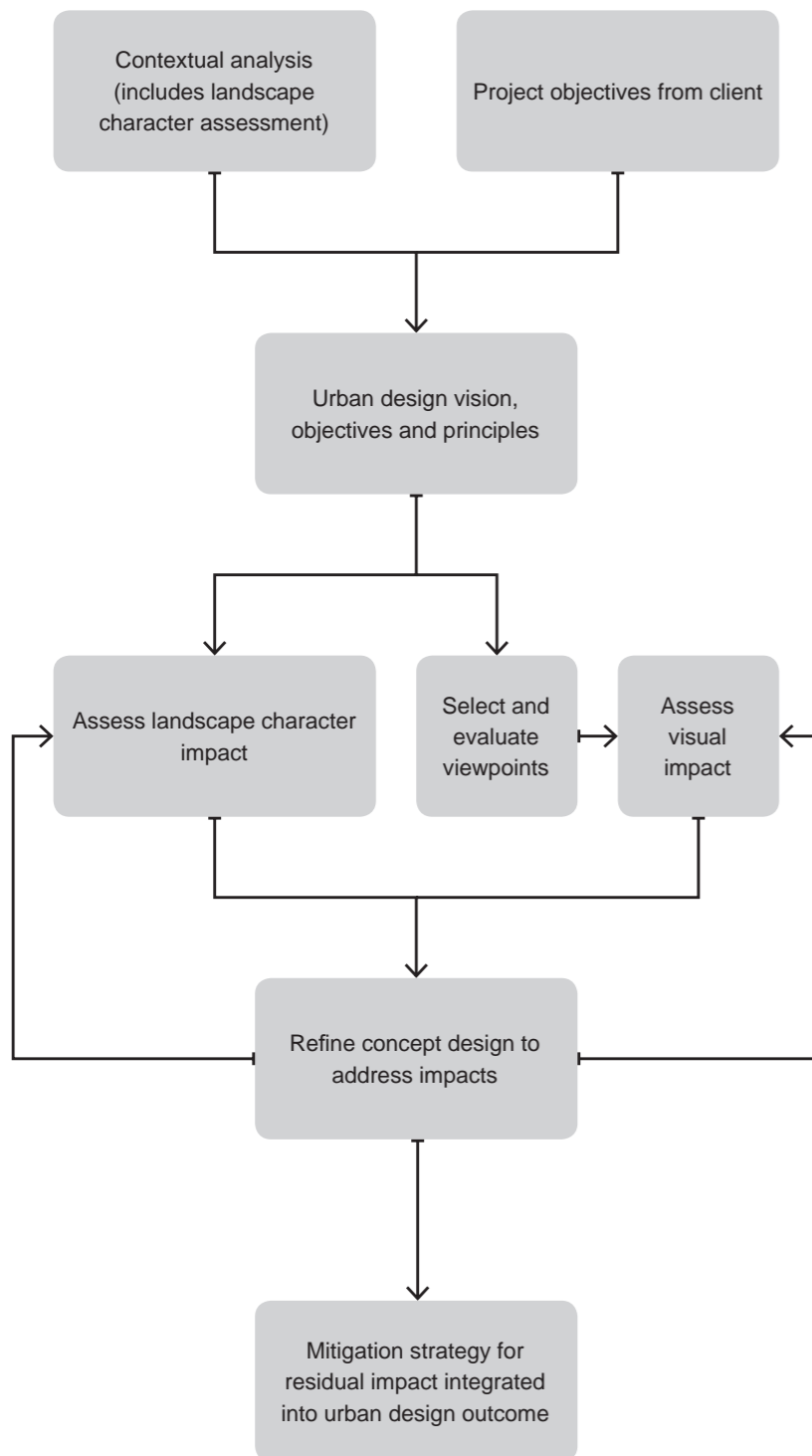


Figure 2 Chart showing the relationship of the Landscape Character and Visual Impact Assessment to the overall project development  
Source: Roads and Maritime, 2013

## 1.2 PURPOSE AND METHODOLOGY

The Environmental Planning and Assessment Act (1979) requires that Roads and Maritime completes a Review of Environmental Factors (REF) for the proposal to replace the existing Gee Gee bridge and flood relief bridge. The NSW Government Architect's Office (GAO) has been engaged to prepare a landscape character and visual impact assessment for inclusion in the REF.

The purpose of this landscape character and visual impact assessment is to provide a critical analysis of the proposed visual impacts of the new bridge. It measures and reports on how well the design fits into its surrounding context.

This assessment seeks to inform the concept design of the proposal. It also seeks to inform a range of stakeholders about the landscape character and visual impact of the proposal and what mitigation strategies can be implemented to reduce these impacts.

The landscape character and visual impact of the proposal is defined based on an analysis of the sensitivity and magnitude of the proposal on the area, as per the Roads and Maritime *Environment Impact Assessment Practice Note Guideline for Landscape Character and Visual Impact Assessment (2013)*.

The methodology used to complete this study was:

1. Visit to the site to inspect the area
2. Review background documentation for the project
3. Prepare the landscape character assessment using the Roads and Maritime methodology
4. Prepare the visual impact assessment using the Roads and Maritime methodology
5. Collaborate with the project team including Heritage Architect, Project Manager, Planner and Engineers to finalise the assessment, and provide advice regarding the design of the new bridge and any landscape design issues impacting on the demolition and interpretation of the existing heritage listed bridge structure



## 2. THE PROPOSAL

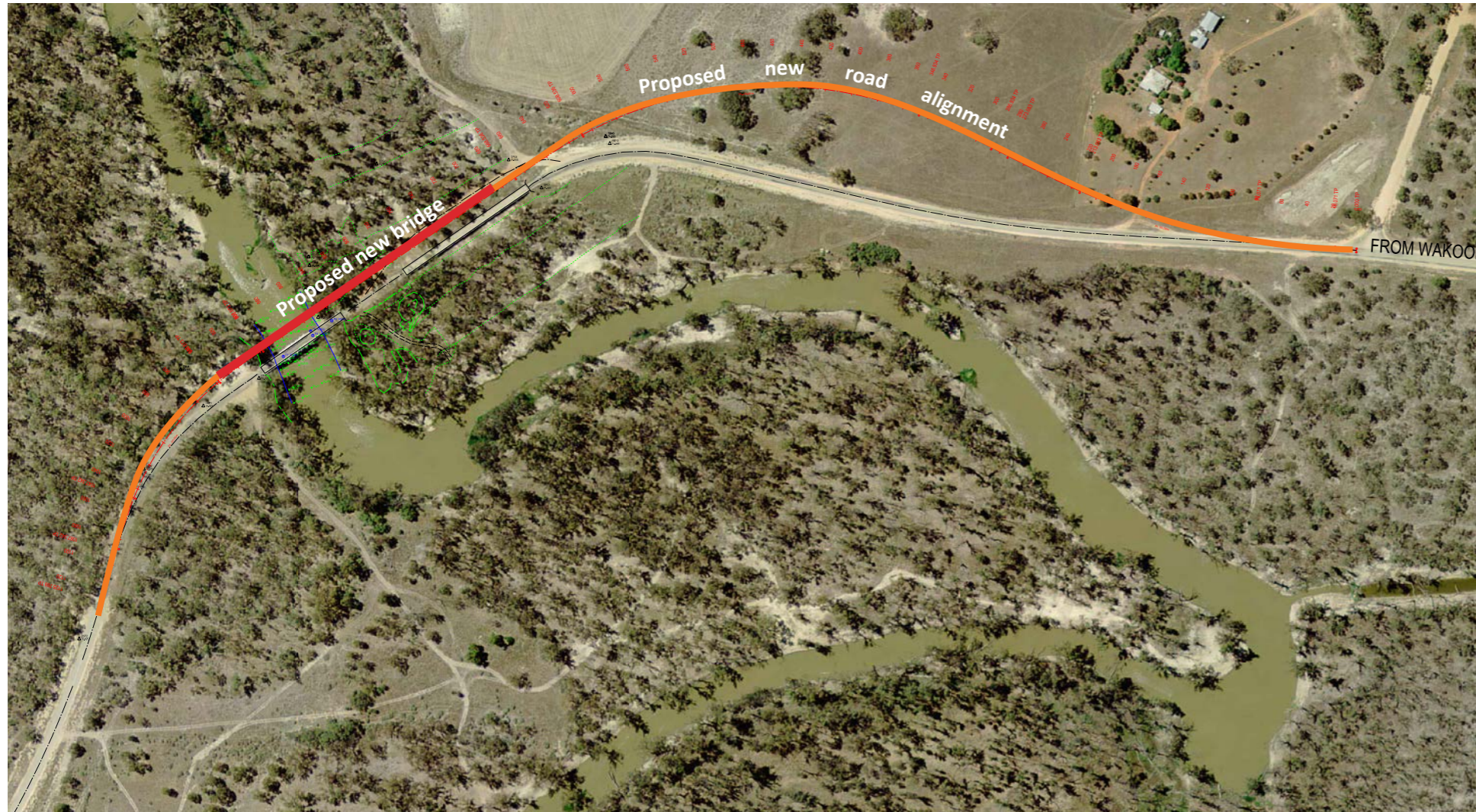


Figure 3 Concept plan showing location of proposed new bridge and road approaches

Source: Roads and Maritime, 2015

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### 2.1 THE PROPOSAL

Roads and Maritime is proposing to demolish the existing heritage listed timber truss bridge over the Wakool River, as well as the existing flood relief bridge, and replace them with a single structure.

The new bridge is a straight bridge to be located adjacent to the existing bridge, approximately 10m to the north-west. The bridge will allow two way traffic. It will also accommodate an increased load limit in accordance with network upgrading priorities throughout the region.

The decision to proceed with a straight bridge rather than a curved bridge was the result of a number of factors. A straight bridge is a less complex structure, enables the existing bridge to remain operational during construction of the new bridge and has limited impact on adjacent National Park.

The existing bridge corridor runs through the Murray Valley National Park and the proposed new alignment of the bridge is designed to remain within this road corridor where possible. An existing service track is located alongside the bridge on the northern side of the river, and the majority of the proposed bridge alignment is within this already disturbed area.

The northern bridge approach is proposed to be reconfigured to accommodate an increase in speed limit to 80km/hour. This will result in intrusion of the road corridor through the National Park land. This land is owned by National Parks but is leased. National Parks have agreed in principle to do a land swap with Roads and Maritime for the residual road corridor land.



### 3. CONTEXTUAL ANALYSIS



Figure 4 Regional Context  
Source: Google Maps, 2015



Figure 5 Local Context  
Source: Google Maps, 2015

#### 3.1 THE LOCALITY

The Gee Gee Bridge is located on the Noorong Road, between the towns of Swan Hill, in Victoria, and Deniliquin, in New South Wales. It is approximately 630km from Sydney and 310km from Melbourne.

The study area is located in the Murray River Council. The Council LGA is a predominately agricultural region. Crops including canola and lucerne are grown in the region. Land is also used for sheep and cattle grazing.

No towns are located adjacent to the bridge. The closest major town is Swan Hill in Victoria, about 45 minutes drive away.

The existing bridge corridor is bordered on both sides by the Murray Valley National Park. The river is occasionally used for fishing by local residents. A cluster of buildings at the start of the northern approach road are the only buildings in the area. The agricultural character of the star picket and steel wire fencing typify the property boundaries.

#### 3.2 ROAD CONTEXT

Noorong Road is a local road that provides a connection between the towns of Swan Hill, in Victoria, and Deniliquin, in New South Wales. The road leading to the bridge approaches is a sealed bitumen road, two lanes wide.

Nacurrie Road north is an unsealed road leading north towards Moulamein from Noorong Road. This is the only other public road in the vicinity of the study area.

Noorong Road is used for local traffic, as well heavy vehicles travelling between states. The road is also used to transport farming equipment and stock. Current traffic over the existing bridge is around 160-200 vehicles per day (Roads and Maritime 2015). About a quarter of these vehicles are heavy vehicles.

The current bridge is not strong or wide enough to accommodate freight trucks or modern farming equipment. It only allows B-Doubles at a semi-trailer loading (42 tonnes). It is also a restriction to higher mass limit (HML) freight vehicle movements which limits traffic movement throughout the region. The replacement of the bridge provides an opportunity to widen the bridge, allowing equipment to be transported more easily along the local road network and freight truck movement.



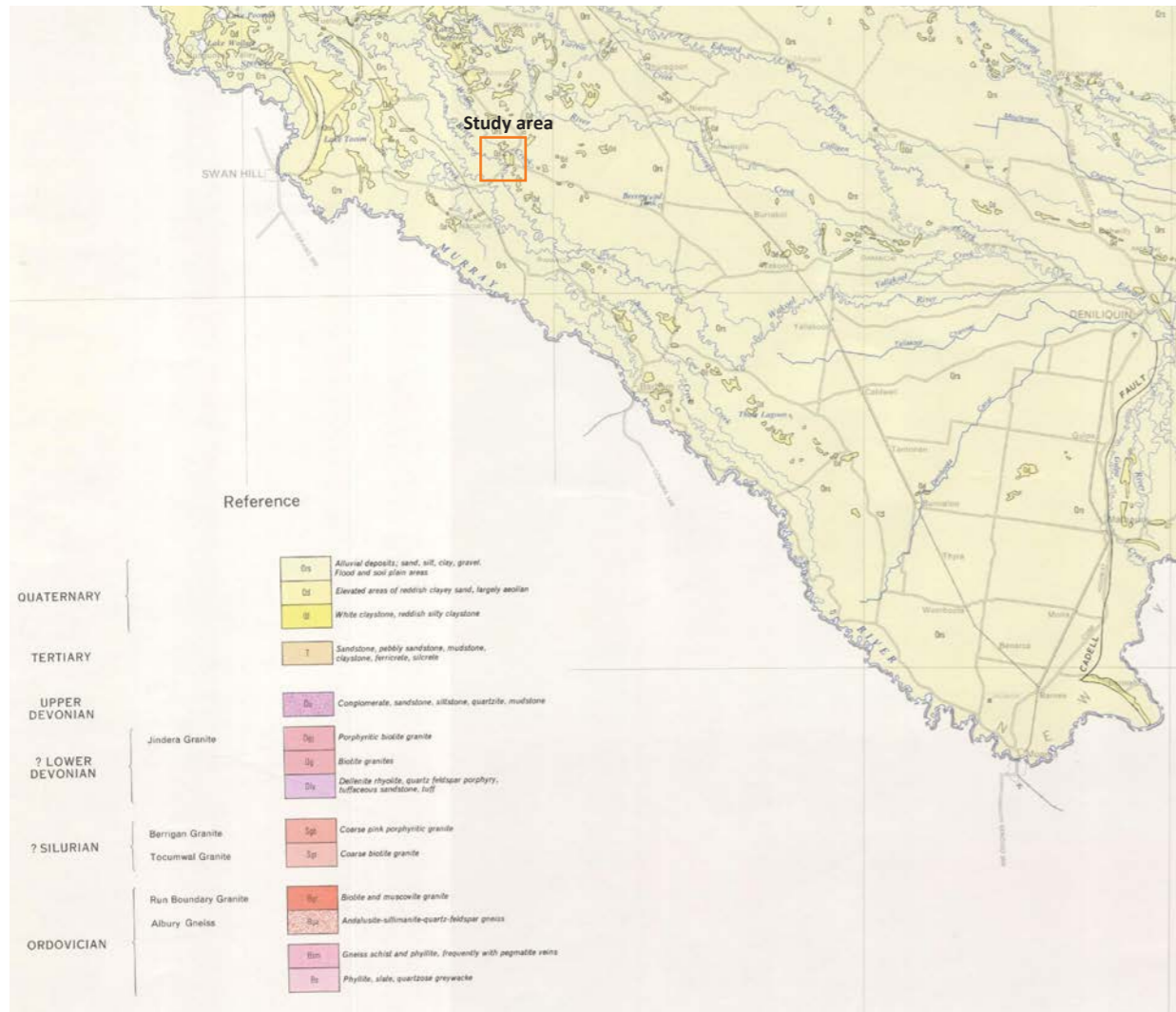


Figure 6 Urana 1:500 000 Geological Map  
Source: Geological Survey of New South Wales, 1972



Figure 7 The Wakool Riverbank and low water level  
Source: GAO, 2015



Figure 8 Banking along the eastern bridge approach  
Source: GAO, 2015



Figure 9 Banking along the western bridge approach  
Source: GAO, 2015

### 3.3 LANDFORM AND TOPOGRAPHY

The study area is located along the Wakool River. The Wakool River is one of the major anabranches of the Murray River. The river meanders throughout the surrounding landscape. The Wakool River system is comprised of a highly braided mix of rivers, creeks and wetlands and provides habitat for a wide range of flora and fauna species in the area. The river is a mix of lengths of shallow, dry and pooling areas.

The river meanders through the flat landscape. It twists and turns as it flows towards the Murray River. The water level falls and rises with the seasons, floods and water allocations upstream. At the time of the site visit, the river was approximately 1 metre lower than its usual height (see Figure 7).

The landform adjacent to the bridge rises steeply from the river bank. At the bridge crossing, the bank on the northern side of the river is generally more gentle than on the southern side of the river. The land immediately behind the river banks is uneven and varied.

Moving away from the river, the land is generally flat. Localised banking has been undertaken to the bridge approach roads. The land extending away from the river is very flat, and is subject to flooding (see figure 10).

The 1:500 000 Geological Map shows the study area is underlain by quaternary alluvial deposits of sand, silt, clay and gravel. The area is part of the flood and soil plains that extend across south western New South Wales. Localised deposits of white claystone and reddish silty claystone are located to the north of the study area.





Figure 10 Map showing the extent of National Park and Flood Prone land in the study area  
Source: SIX Maps, 2015



Figures 11, 12 and 13 Vegetation within the study area  
Source: GAO, 2015

### 3.4 VEGETATION

The Murray Valley National Park is located on either side of the river. The land was part of the Noorong State Forest before it was recently handed to the National Parks and Wildlife Service.

The study area consists of agricultural land and River Red Gum forests and woodland.

River Red Gums (*Eucalyptus camaldulensis*) grow along the banks of the Wakool River. The species forms a continuous forest along each side of the river bank. The trees are growing to a height of approximately 20 metres. The forest floor is generally very sparse, with little vegetation growing (see Figure 12).

*Eucalyptus camaldulensis* is an iconic and important species of the Murray-Darling catchment, both ecologically and economically (CSIRO, 2004). They are a good source of timber for construction and play an important role in the ecological functioning of the river. River Red Gums grow on riverine sites, in locations with either permanent or seasonal water.

Adjacent to the flood relief bridge, a clearing has already been made through the River Red Gum Forest. It is proposed that the majority of the new bridge alignment be located in this existing service track, to reduce the amount of vegetation clearing required.

River Red Gum Forest extends onto the flat floodplains adjacent the River. Young to mature River Red Gums and Block Box (*Eucalyptus largiflorens*) are sparsely scattered. Understorey vegetation is sparse.

Moving away from the river, agricultural land dominates the landscape. Flat to very gently rolling hills and grassy fields extend across the landscape, broken up by stands of remnant trees dotted throughout. Crops grown in the area include wheat, lucerne and canola.

A cluster of trees is located in the vicinity of the structures and house in the north-eastern of the study area. This screens the residence from the adjacent roads.





Figure 14 The Bridge - single Dare Truss and southern approach span  
Source: GAO, 2015



Figure 15 The northern-eastern bridge approach  
Source: GAO, 2015



Figure 16 The view looking north-east from the south-western end of the bridge  
Source: GAO, 2015

### 3.5 GEE GEE BRIDGE AND HERITAGE

Construction of the bridge at Gee Gee began in 1928. The bridge is 5.5m wide and consists of a single 'Dare Truss' span over the river. Three approach spans on the south and two on the north are constructed on timber trestles. A 90m long flood relief bridge was constructed north of the main bridge in 1934. A 60m earth abutment spans between this bridge and the Truss bridge.

Timber truss bridges were used widely throughout New South Wales from 1860 to 1936. Five different types of truss' were developed over that time, 'Dare truss' being one of them.

The Gee Gee Bridge is listed as a heritage item in the Wakool Shire Local Environmental Plan, in the Roads and Maritime Heritage and Conservation register and on the State Heritage Register.

The bridge is one of 22 timber truss bridges scheduled for progressive replacement in line with the *Timber Truss Bridge Conservation Strategy - Submission Report and Revised Conservation Strategy* (Roads and Maritime, 2012).

The bridge is currently in poor condition, with many original parts of the bridge having been replaced over the years. The *Gee Gee Crossing Timber Truss Bridge - O Heritage Impact* (GAO, July 2015) contains more detailed information about the heritage significance of the bridge.



## 4. LANDSCAPE CHARACTER ASSESSMENT

		Magnitude			
		High	Moderate	Low	Negligible
Sensitivity	High	High Impact	High-Moderate	Moderate	Negligible
	Moderate	High-Moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Figure 17 Landscape character and visual impact grading matrix

Source: Roads and Maritime 2013

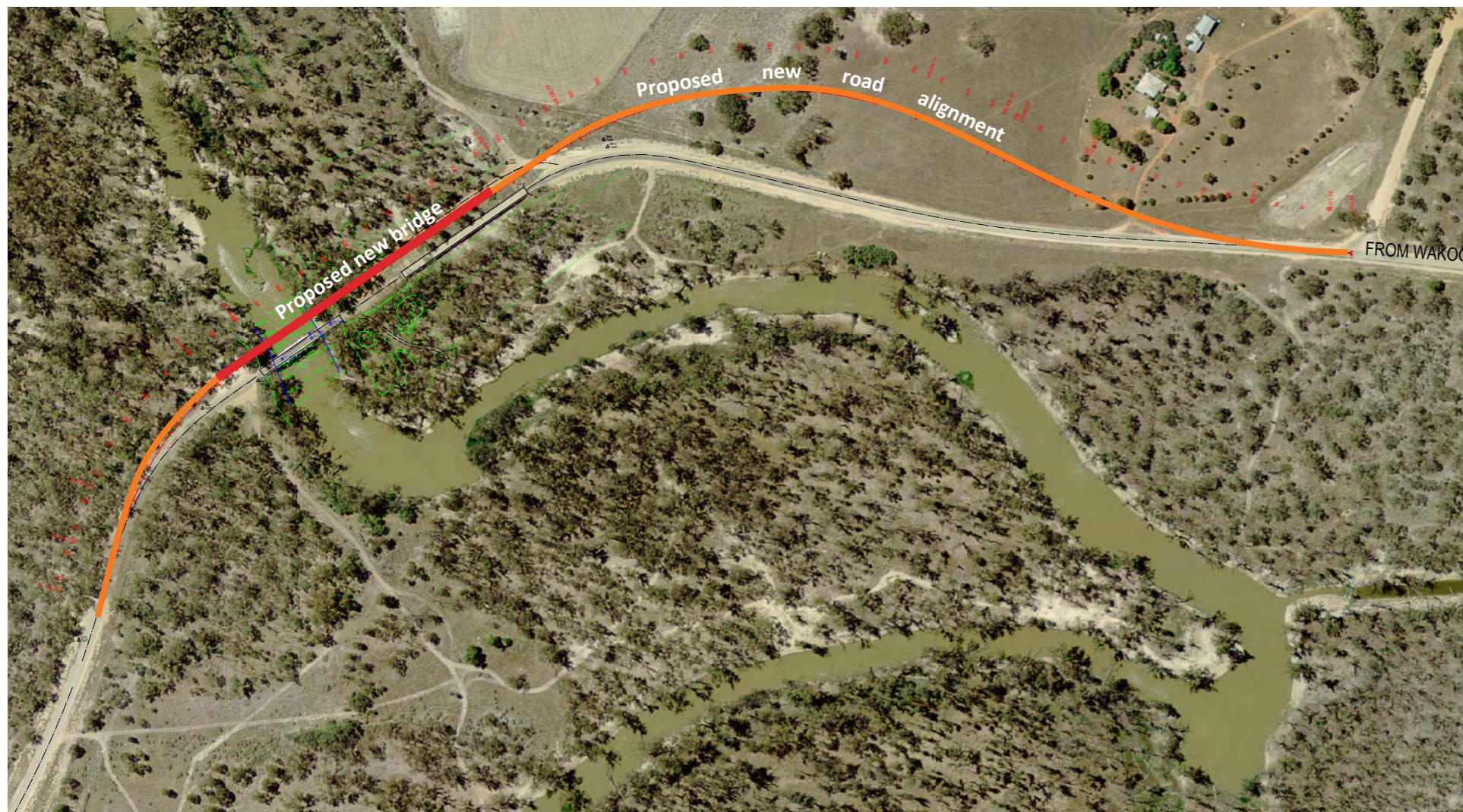


Figure 18 Study Area

Source: Base plan Roads and Maritime, 2015

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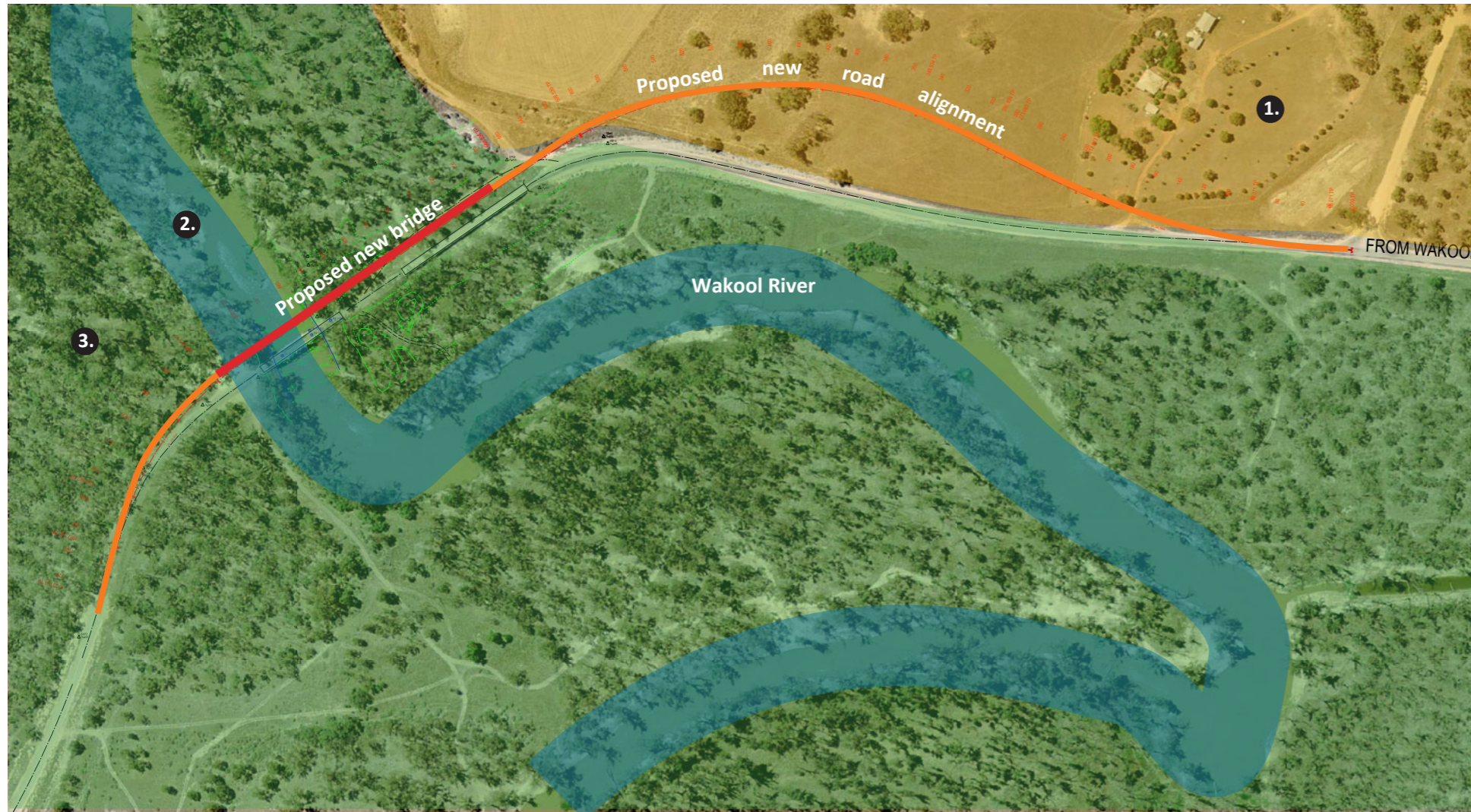
### 4.1 METHODOLOGY

This Landscape Character Assessment has been carried out in accordance with the Roads and Maritime *EIA Guideline for Landscape Character and Visual Impact Assessment* (2013).

As a starting point, the existing landscape character of the area has been reviewed and analysed (refer Section 3).

This has been followed by identification of the landscape character zones within the study area and an assessment of the impacts on the character of each zone. This assessment includes grading of the sensitivity of the landscape character of each zone and of the magnitude of the impacts on each zone. Sensitivity refers to 'the qualities of an area and the inherent capability of the area to absorb change caused by the proposal.' (Roads and Maritime, 2013). Magnitude refers to 'the measurement of the scale, form and character of a development proposal when compared to the existing condition.' (Roads and Maritime, 2013).





#### 4.2 LANDSCAPE CHARACTER ZONES

Three of landscape character zones were identified in the study area. These zones each have a distinct character and have similar spatial qualities which differentiate them from other zones.

The landscape character zones identified as part of this assessment are:

- Agriculture including house and associated structures
- 2. Wakool River and river banks
- 3. River Red Gum Forest

Figure 19 Landscape Character Zones

Source: Base plan Roads and Maritime  
2015





**1. Landscape Character Zone 1**



Figure 20 Agriculture including house and associated structures Source: GAO, 2015

**2. Landscape Character Zone 2**



Figure 21 Wakool River and river banks Source: GAO, 2015

**3. Landscape Character Zone 3**



Figure 22 River Red Gum Forest Source: GAO, 2015

**4.3 LANDSCAPE CHARACTER IMPACT**

The impact of the proposal on each of the zones has been assessed as per the table below.

Measurement of Impact

Zone	Sensitivity	Magnitude	Overall Level of Impact	Comments
1	Low	Moderate	Low-moderate	The relocation of the bridge approach road will bisect the agricultural land and be located closer to the existing house and associated structures.
2	Moderate	Moderate	Moderate	Construction of the new bridge will require the removal of a number of trees and careful consideration of erosion control to the river banks. The design of the bridge could make a positive contribution to the landscape character of the zone.  Levels of the bridge approaches will require careful consideration to ensure that the road doesn't become dominant in the landscape and that fill batters are minimised.
3	Moderate	Low	Moderate-Low	The majority of the new bridge in this zone will be located along an existing service road on the north side of the River. Clearing of the forest will also be required on the southern side of the river.  Levels of the bridge approaches will require careful consideration to ensure that the road doesn't become dominant in the landscape and that fill batters are minimised.



## 5. VISUAL IMPACT ASSESSMENT

		Magnitude			
		High	Moderate	Low	Negligible
Sensitivity	High	High Impact	High-Moderate	Moderate	Negligible
	Moderate	High-Moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Figure 23 Landscape character and visual impact grading matrix

Source: Roads and Maritime 2013

### 5.1 METHODOLOGY

This visual impact assessment has been carried out in accordance with the Roads and Maritime *EIA Guideline for Landscape Character and Visual Impact Assessment* (2013).

As a starting point, the visual impact of the proposal has been assessed based on the view shed analysis and the key viewpoints. The extent of the area from which the proposal will be visible has been defined through a Visual Envelope Map (VEM).

Key existing viewpoints were defined and rated as to their sensitivity to change by the proposal, using the grading matrix outlined in the Roads and Maritime *EIA Guideline for Landscape Character and Visual Impact Assessment* (Figure 22). This matrix defines the categories on which the assessment has been based. Sensitivity was assessed in relation to the quality of the view and the sensitivity to the proposed change.

The level of visual impact on each view was then determined through assessment of the magnitude of visual change in the landscape and its proximity to viewers, as well as the sensitivity.

Combining the rating of the sensitivity and the magnitude of the visual impact has given an overall assessment of the impact on each viewpoint.



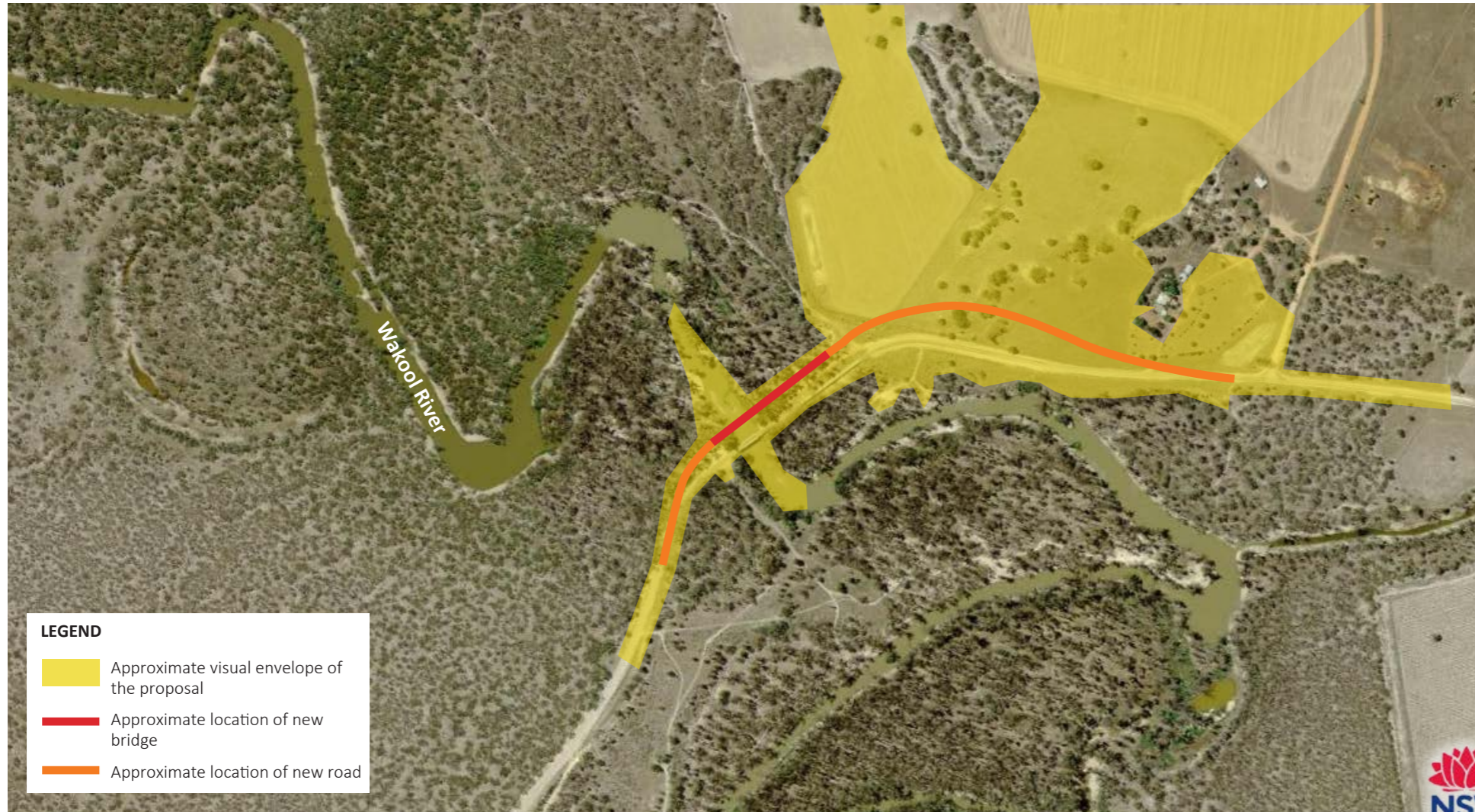


Figure 24 Visual Envelope Map  
 Source: SIX Maps 2015

## 5.2 VIEWSHED ANALYSIS

The land gently slopes down to the Wakool River on either side of the river. The banks of the river are sloped more steeply. Immediately adjacent to the bridge, the steepest banks are located on the southern side of the river. Localised mounding underneath the existing bridge approach roads result in the road level being higher than the surrounding levels. The vegetation along the river is dominant and the Red Gum Forest hinders views across the landscape. As a result of this vegetation and the layout of the road, views of the existing bridge are limited.

The visual envelope map is shown in Figure 24. This map illustrates the extent of the area from which the proposal will be visible.

As the bridge is not located in or adjacent to a town, the viewing points for the new bridge are from Noorong Road, as well as the river.

The viewing points for the new road approaches are from the existing road, the surrounding agricultural land and national parks land (where not obscured.. The agricultural land is flat to gently sloping towards the river so views extend across the landscape in these areas. Scattered trees break up the long vistas.

There is a cluster of buildings, including a single house, that is located to the north of the new road at the eastern end. This house is screened by vegetation which limits views to and from the road.







Figure 25 Key viewpoints  
Source: Base plan Roads and Maritime, 2015

### 5.3 IMPACT ASSESSMENT: VIEWPOINTS AND SENSITIVITY

Key viewpoints (as shown on Figure 25) have been identified following a site visit and from the viewshed analysis mapping.

The visual impact assessment determines the sensitivity of each key view point to the proposal, as shown in the table below.

#### Viewpoint description and sensitivity

View point	Description of setting	Sensitivity	Comments
1	Start of new road leading to south-western approach to the bridge	Negligible	Determined by minor realignment of road through Red Gum Forest setting
2	View at curve to south-western approach to the bridge	Moderate	Determined by Red Gum Forest and alignment of bridge approach road. Loss of some River Red Gums and forest.
3	View from top of river bank	High	Determined by Red Gum Forest, alignment of bridge and approach road, removal of existing bridge and abutments, and method of erosion control applied to the river banks
4	View from top of river bank	High	Determined by Red Gum Forest, alignment of bridge and approach road, removal of existing bridge and abutments and method of erosion control applied to the river banks
5	View from junction of existing road and service road to start of bridge from northern side of river	Moderate	Determined by location of new bridge, River Red Gum Forest and existing service road
6	View at curve of road to start of bridge	Low	Determined by location of approach road
7	View to new bridge approach road from rural dwelling - field	Moderate	Determined by location of approach road through existing field
8	View from the start of the new bridge approach road	Moderate	Determined by location of approach road through existing field





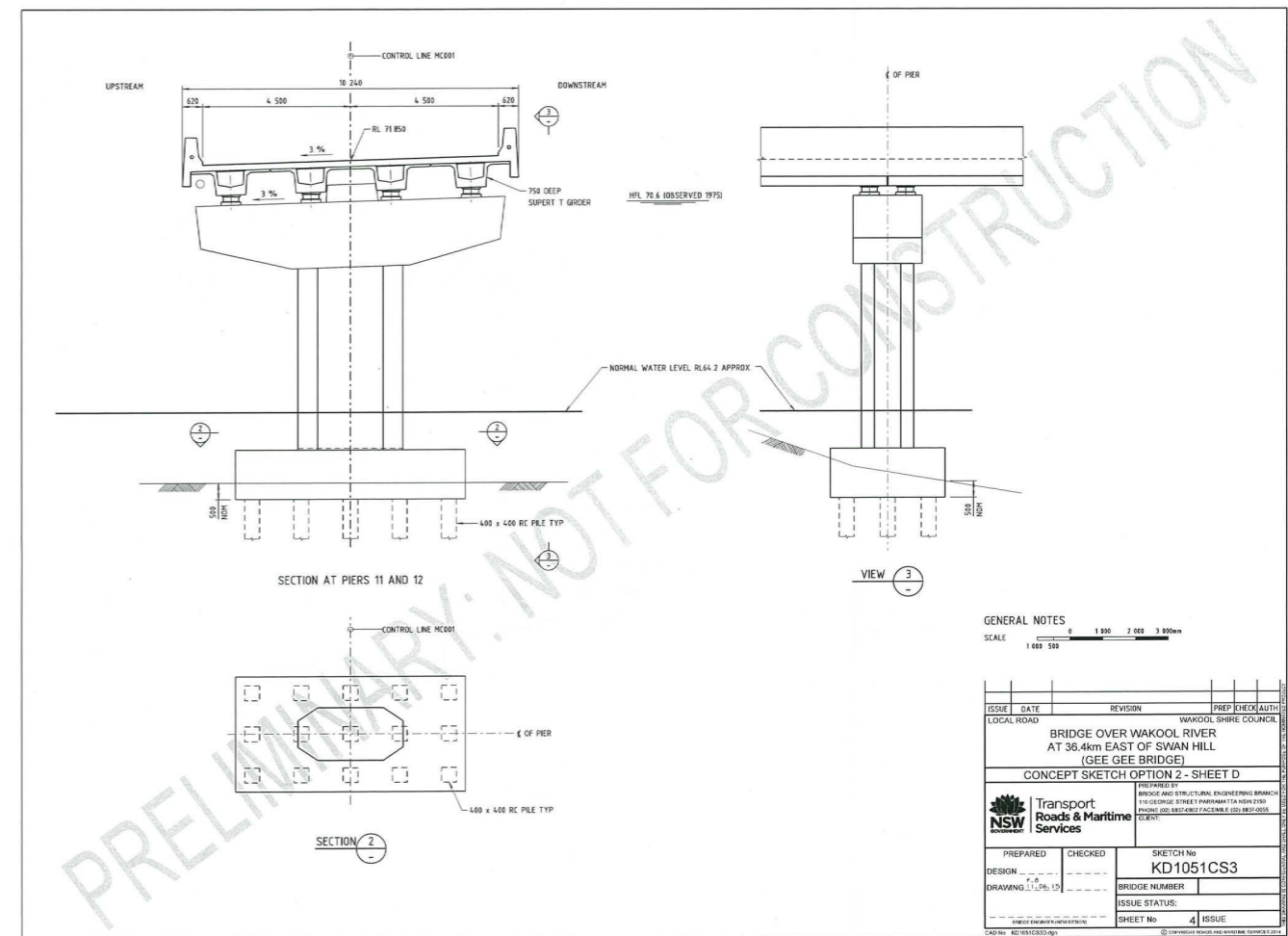
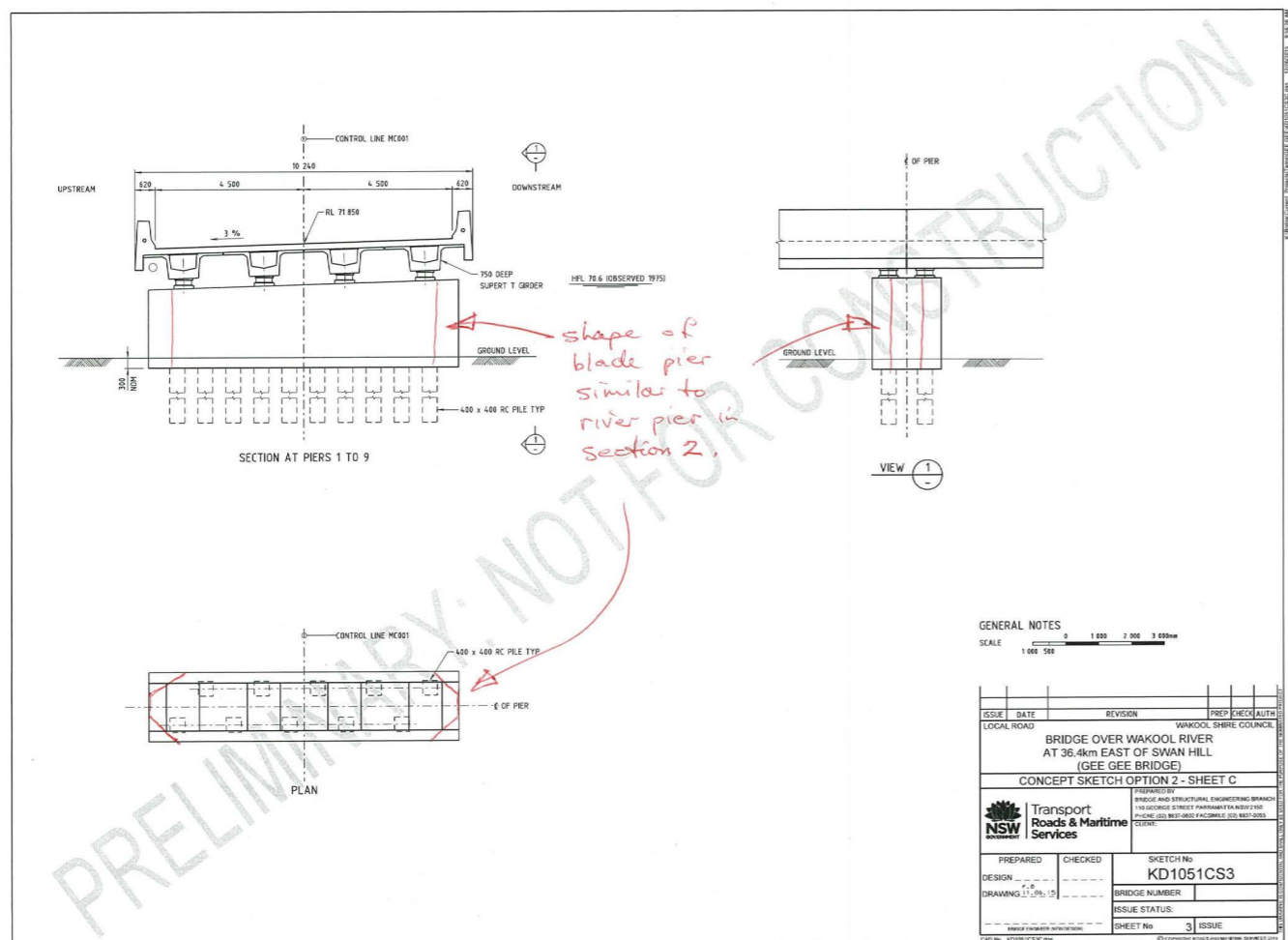
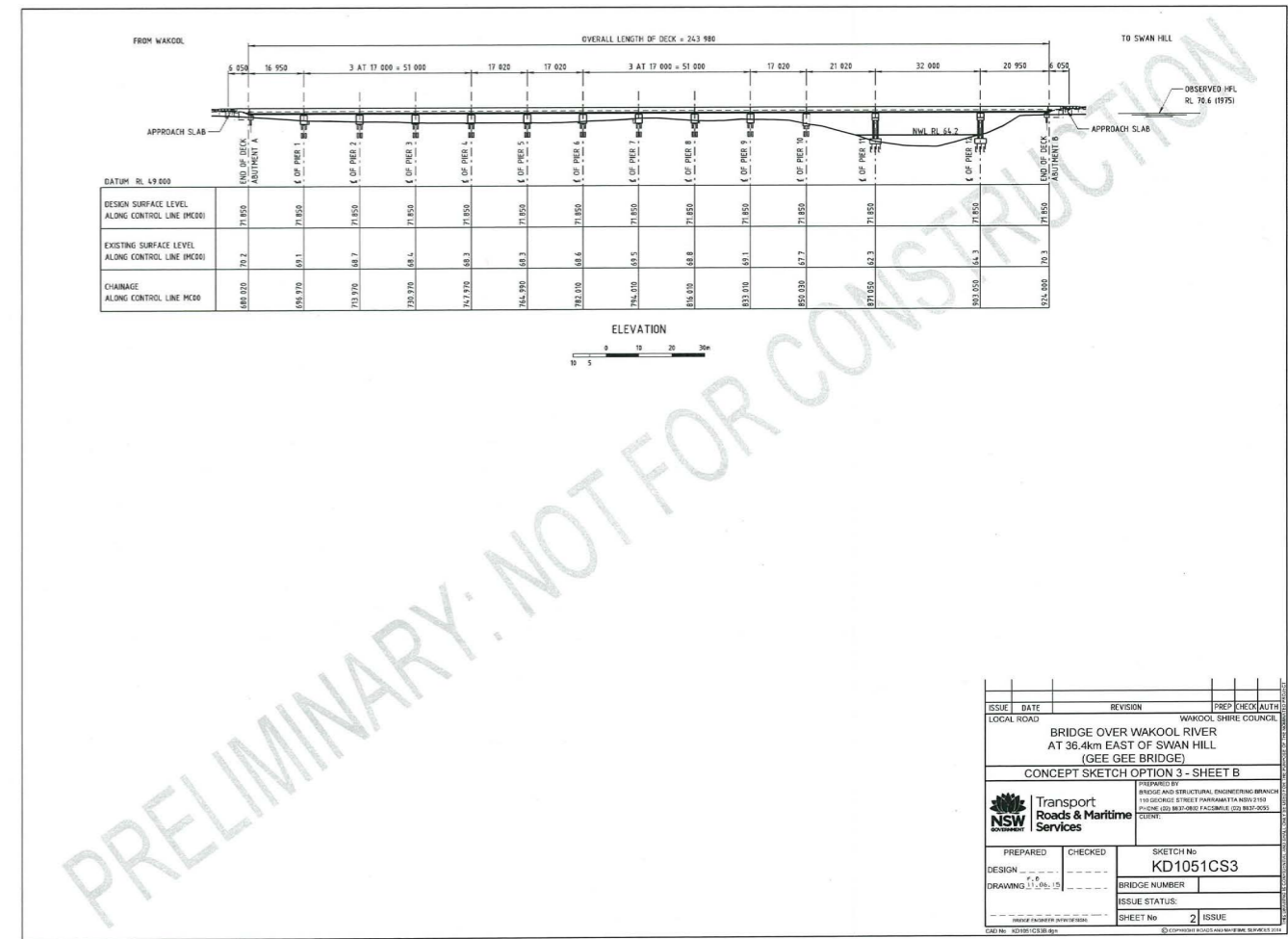
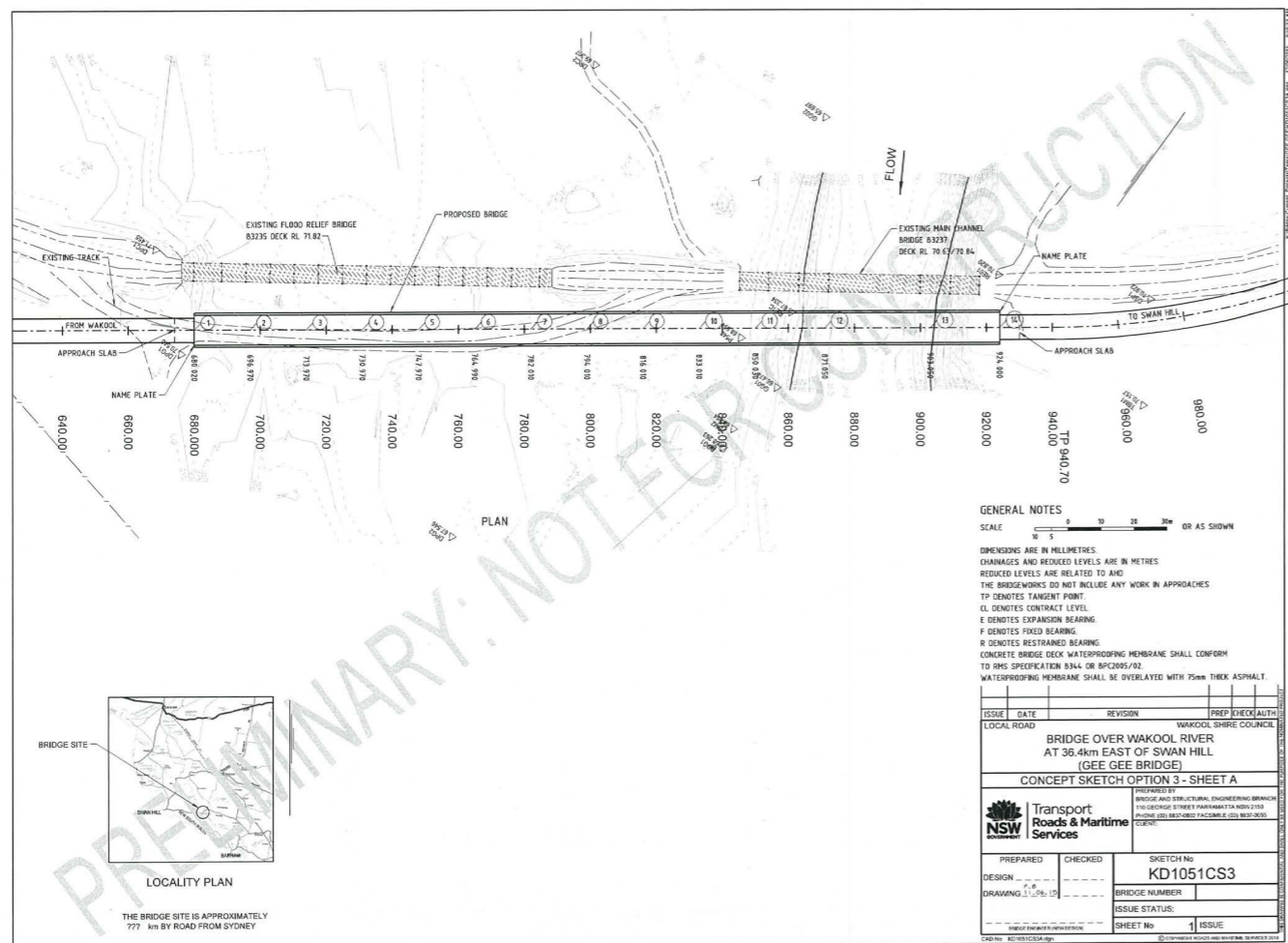


Figure 26 Current Concept Design Plans  
 Source: Roads and Maritime, 2015



5.3 IMPACT ASSESSMENT: VIEWPOINTS AND SENSITIVITY (CONT.)

Images of the selected key viewpoints



View 1 : Start of new road leading to south-western approach to the bridge



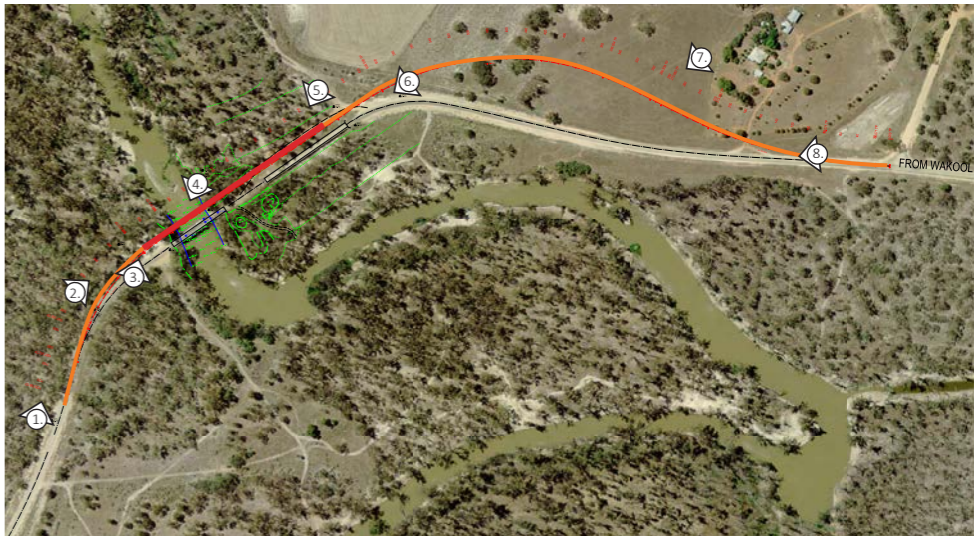
View 2 : South-western approach to the bridge



View 3 : View from top of southern side of river bank



View 4 : View from top of northern side of river bank





5.3 IMPACT ASSESSMENT: VIEWPOINTS AND SENSITIVITY (CONT.)

Images of the selected key viewpoints



View 5 : View from junction of existing road and service road to start of bridge from northern side of river



View 6 : View at curve of road to start of bridge



View 7 : View to new bridge approach road from rural dwelling - field



View 8 : View from the start of the new bridge approach road

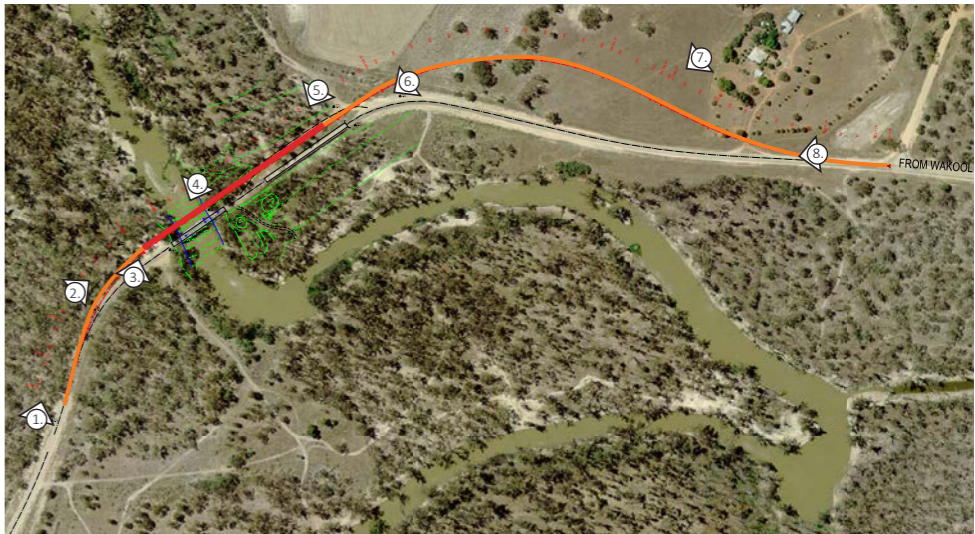






Figure 27 Key viewpoints  
 Source: Base map Roads and Maritime, 2015

#### 5.4 VISUAL IMPACT ASSESSMENT

View point	Visual Sensitivity	Magnitude of visual effect	Resultant rating of visual impact	Comments
1	Negligible	Negligible	Negligible	
2	Moderate	Moderate	Moderate	The visual impact will be moderate due to clearing of trees and regrading required for the new bridge approach road
3	High	Moderate	Moderate - High	The visual impact will be moderate-high due to clearing of trees on the river bank, removal of the existing bridge and construction of new bridge
4	High	Moderate	Moderate - High	The visual impact will be moderate-high due to clearing of trees on the river bank, removal of the existing bridge and construction of new bridge
5	Moderate	Moderate	Moderate	The visual impact will be moderate due to clearing of trees and construction of the new bridge
6	Low	Low	Low	The visual impact will be low as the new bridge alignment is utilising the existing service track
7	Moderate	Moderate	Moderate	The visual impact will be moderate from this viewpoint as the road will be relocated closer to the existing property.
8	Moderate	Moderate	Moderate	The visual impact will be moderate due to the road relocation and flat, sparsely treed landscape which provides long vistas over the area





## 6. DISCUSSION

### 6.1 RECOMMENDATIONS

Assessing the impact of the proposal at the chosen viewpoints reveals that there are a range of visual impacts on the landscape, rated from 'negligible to high', should no mitigation of the impacts be undertaken.

A range of options should be considered to mitigate the impacts of the proposal. These can be summarised as a series of recommendations:

- Minimise the removal of vegetation
- Protect vegetation adjacent to the work adequately during construction. Measures such as tree protection fencing should be put in place to protect trees.
- Prepare a revegetation strategy for the riverbanks and forest to mitigate the impact from the proposal.
- Revegetate river banks to mitigate the 'moderate-high' impacts to the river banks
- Carefully consider erosion control measures required to stabilise the riverbanks to ensure that they are sympathetic with the surrounding natural context.
- Minimise levels and fill batters to bridge approaches where possible
- Retain the extensive views over the flat landscape and ensure the road is not a dominant element in the landscape setting. Review the levels set for the new approach roads and minimise grading where possible.
- Capitalise on the opportunity for interpretation of the original bridge structure and the history associated with it.
- In line with the Statement of Heritage Impact prepared for this project, provide access to the site of the old bridge. The bridge abutment on the southern side of the existing bridge and adjacent clearing can be retained. This can be designed to provide road users the chance to stop, enjoy the riverside location, read some interpretive signage and learn about the history of timber truss bridges in the local area and throughout New South Wales.
- Explore options for the re-use of timber or steel elements from the bridge, either on site, in interpretation, or off site in local towns such as Moulamein.
- Maintain informal access to the river and riverbank

### 6.2 REVEGETATION

Revegetation is an important part of the mitigation of visual and landscape character impacts on this site. As the project bisects the Murray Valley National Park, revegetation should be undertaken to mitigate some of the impacts.

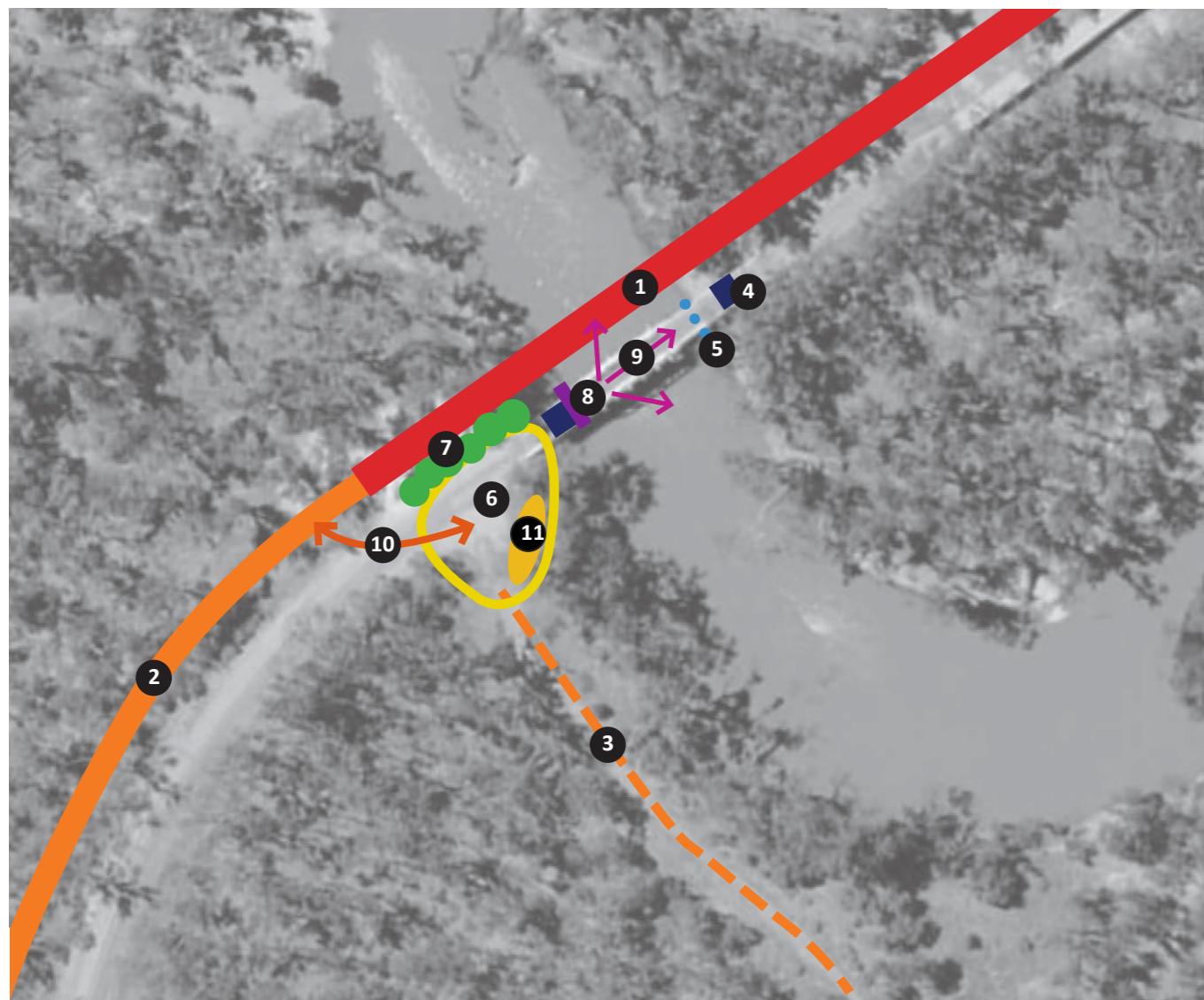
As such, further guidelines are provided below to guide the development of a comprehensive revegetation strategy:

- Revegetation should be undertaken to riverbanks, existing road corridor and location of existing road that will be removed as part of the work.
- Revegetation should be undertaken in collaboration with local stakeholders including Landcare groups, Aboriginal Land Council, National Parks and Wildlife Service and the Murray River Council.
- Reference should be made to the Roads and Maritime *Guideline for Biodiversity Offsets* (2011) which outlines the requirements for offsets to zones affected by loss of habitat and ecological communities.
- Species selected for re-vegetation should be part of the River Red Gum Forest and Wetlands communities which are currently present. They include
  - River Red Gum and Black Box
  - a mix of sedges, rushes and reeds including *Eleocharis*, *Juncus*, *Cyperus* and *Cynodon dactylon* and *Phragmites australis*
  - River Cooba (*Acacia stenophylla*)
- where possible use seeds or plants sourced locally



Figures 28 and 29 Revegetation activities





**LEGEND**

- 1 Approximate location of new bridge
- 2 Approximate location of new road
- 3 Existing track
- 4 Existing bridge abutment
- 5 Existing trestle
- 6 Proposed Rest Area
- 7 Informal planting to provide screening from road
- 8 Viewpoint. Interpretation panels fixed to bridge abutment
- 9 Views
- 10 Vehicular Circulation
- 11 Vehicle parking

**6.3 VIEWING / REST AREA**

The following design principles are a guide for the development of the proposed viewing / rest area to the south of the Wakool River. The *Gee Gee Timber Truss Bridge Cunninyeuk Statement of Heritage Impact* (GAO, 2015) also provides complementary recommendations for the area.

**Viewing / Rest Area Design Principles**

- Consider retaining the bridge abutment as a viewing point and opportunity to display interpretation
- Provide access to the site of the old bridge
- Provide opportunity to stop and view the site of the old bridge.
- Provide provision for vehicle parking (cars, campervans etc).
- Provide interpretation elements in line with the Roads and Maritime *Timber Bridge*

*Interpretation Guidelines*, to illustrate the history of the bridge and local historic issues connected with agricultural transport and travelling stock routes. The scale, materials and design of the interpretation should respond to the context.

- Re-use materials from the bridge where possible, for items such as seating, signage, shelters, balustrades, paths and wheelstops.
- Ensure vehicle turning movements permit access to and from Noorong Road safely
- Provide safe and clear pedestrian routes

Figure 28 Rest Area preliminary concept sketch design  
Source: SIX Maps, 2015



## 7. REFERENCES

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3D projects, 2014, *Timber Truss Bridges Draft Heritage Interpretation Strategy*

CSIRO, 2004, Taxon Attribute Profiles Eucalyptus camaldulensis, <<http://www.cpbr.gov.au/cpbr/WfHC/Eucalyptus-camaldulensis/>>, accessed 11 August 2015

Google Maps, 2015, <<https://www.google.com.au/maps>>, accessed 9 August 2015

NSW Government Architect's Office, 2015, Gee Gee Timber Truss Bridge Cunninyeuk Statement of Heritage Impact

NSW Office of Land and Property Information, 2015, SIX Maps, <[www.six.nsw.gov.au](http://www.six.nsw.gov.au)>, accessed 10 August 2015

NSW Department of Transport Roads and Maritime Services, 2013, *Environmental Impact Assessment Practice Note Guideline for Landscape Character and Visual Impact Assessment*,

NSW Department of Transport Roads and Maritime Services, 2011, *EPBC Act Strategic Assessment - Strategic Assessment Report Appendix C Guideline for Biodiversity Offsets (under review)*

NSW Department of Transport Roads and Maritime Services, 2015, *MPRC presentation document Gee Gee Bridge Replacement*

Offenburg A.C., 1972, *Urana 1:500 000 Geological Map*, 1st edition, Geological Survey of New South Wales, Sydney



