03 Visual impact assessment

3.7 Section 4_Tyndale to Maclean

20A_ Pacific Highway, Tyndale
20B_ Cane Fields, Tyndale (North)
20C_ Byrons Lane, Tyndale (North)
21_ Pacific Highway, South Arm
22_ McIntyre's Lane, Green Hill
23_ Cameron Hill Estate, Gulmarrad
24A_ Ferry Park, Maclean Interchange
24B_ Schwonberg Street, Townsend
25_ Maclean Lookout, Wharf Street, Maclean

The landscape character assessment assessed the impact of the project on Section 4 to be moderate.
03 Visual impact assessment

3.7.1 Viewpoint 20A, 20B & 20C
Pacific Highway, Tyndale

Section 4: Tyndale to Maclean
Character precinct 17: Low–moderate ability to visually absorb change.

Site description
The project continues on a new alignment to the east of the existing highway across the South Arm River floodplain comprising sugar cane plantations. The landscape is open and the visual catchment extensive. Distant views to prominent hills and ridge lines are evident.

Project description
The project passes over the floodplain on a fill embankment, typically two metres up to four metres. It comprises a new dual carriageway and numerous service roads to connect to the local road network.

Vantage point selection
Viewpoint 20A is considered to represent a typical view of the proposed highway crossing the sugar cane fields on the floodplain as viewed from the existing highway which carries the majority of traffic in the area. Views from a number of local residences on the existing highway would be similar. Viewpoints 20B and 20C specifically address the changed view from two individual residences located on the floodplain away from the existing highway but close to the project.

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>20A</td>
<td>Middle ground view</td>
<td>Moderate–low</td>
<td>New road infrastructure in an agricultural setting.</td>
<td>Moderate–low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate–low</td>
<td>This changed view would be visible from a low number of local residences, and a high number of motorists would have fleeting glimpses of this new road corridor.</td>
<td>Moderate–low</td>
</tr>
</tbody>
</table>

Oblique view looking north

Annotated diagrammatic approximation of the project as photographed from viewpoint. 20A. View south-east, Pacific highway, north of Tyndale. Location: 29°32'27"S 153°09'43"E
03 Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>20B Foreground view</td>
<td>High</td>
<td>Considerable sensitivity for the residents of the adjacent home who will experience repeated and long duration views.</td>
<td>Moderate-high</td>
<td>Minimise loss of existing vegetation. Provide screen tree and shrub planting on embankments and between access and service roads in accordance with the landscape concept strategy and to provide a screen to nearby homes. Prepare detail landscape designs in accordance with the landscape concept strategy.</td>
</tr>
</tbody>
</table>

Significant new road infrastructure in an agricultural setting. Minor filling and disturbance to pockets of existing vegetation is proposed. The new work would dominate the view from this vantage point.

Annotated diagrammatic approximation of the project as photographed from viewpoint. 20B. View north, sugarcane farm house, north of Tyndale. Location: 29°32'56"S 153°09'52"E
03 Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>20C Foreground view</td>
<td>High</td>
<td>Moderate</td>
<td>Moderate–high</td>
<td><em>Minimise loss of existing vegetation</em> Provide screen tree and shrub planting on embankments and between access and service roads in accordance with the landscape concept strategy and to provide a screen to nearby homes Prepare detail landscape designs in accordance with the landscape concept strategy</td>
</tr>
</tbody>
</table>

Significant new road infrastructure in an agricultural setting. Minor filling and disturbance to pockets of existing vegetation is proposed. The new work would dominate the view from this vantage point.

Considerable sensitivity for the residents of the adjacent home who will experience repeated and long duration views.

Annotated diagrammatic approximation of the project as photographed from viewpoint. 20C View north-west, Byrons Lane, north of Tyndale. Location: 29°32'36"S 153°10'36"E
03 Visual impact assessment

3.7.2 Viewpoint 21
Pacific Highway, South Arm

Section 4: Tyndale to Maclean
Character precinct 17: Low-moderate ability to visually absorb change.

Site description
The project continues on a new alignment to the east of the existing highway across the South Arm River floodplain comprising sugar cane plantations with a backdrop of wetland vegetation associated with Shark Swamp. The landscape is open and the visual catchment extensive. Distant views to prominent hills and ridge lines are evident.

Project description
The project passes over the floodplain on a fill embankment, typically two metres up to four metres. It comprises a new dual carriageway. An overpass at Bryons Lane is proposed.

Vantage point selection
This vantage point represents the typical view that would be experienced from a number of local residences located along the existing highway.

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Moderate–low</td>
<td>Moderate–low</td>
<td>Moderate–low</td>
<td>Plant dense low grasses/ground covers on fill batters</td>
</tr>
<tr>
<td></td>
<td>Middle ground view</td>
<td>New road infrastructure in an agricultural setting.</td>
<td></td>
<td>Reinstall agricultural land where possible</td>
</tr>
</tbody>
</table>

Annotated diagrammatic approximation of the project as photographed from viewpoint 21. View east-south-east, Pacific highway, South Arm. Location: 29°32'21"S 153°10'57"E
03 Visual impact assessment

3.7.3 Viewpoint 22
McIntyre’s Lane, Green Hill

Section 4: Tyndale to Maclean
Character precinct 22: Moderate ability to visually absorb change.

Site description
Green Hill is a natural elevated landmark considerably narrowing the width of the South Arm floodplain at this point. Much of the hill is forested and it is surrounded by sugar cane plantations and other agricultural activity. The visual catchment opens up to the north and the south of Green Hill.

Project description
The project cuts through Green Hill in a deep cutting in excess of 20 m. Most of the work passes just to the east of remnant forest vegetation and is located away from existing residences publicly accessible roads. The proposed work comprises a new dual carriageway and additional access road connection to McIntyres Lane extending up the Maclean Interchange.

Vantage point selection
The vantage point reveals the cutting in the hillside as the new carriageway passes through Green Hill and is typical of the view that would be experienced by the residence on McIntyres Lane and by local residents using McIntyres Lane. There is no overpass proposed over McIntyres Lane so it is anticipated that traffic in the area would remain low.

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>High–moderate</td>
<td>Moderate–low</td>
<td>Moderate</td>
<td><em>Minimise loss of existing forest trees</em> <em>Lay back and feather top cut batters to blend with natural landform</em> <em>Plant local forest trees on cut batters</em></td>
</tr>
</tbody>
</table>

Foreground view
New road infrastructure in a natural setting. Major tree removal and earthworks is proposed. Location of the proposed highway in a cutting reduces its visibility generally from vantage points in the landscape. At times the view would be obscured by sugar plantation vegetation.

Oblique view looking north-east
Annotated diagrammatic approximation of the project as photographed from viewpoint 22. View south-east, McIntyres Lane, Green Hill. Location: 29°30′10″S 153°12′08″E
03 Visual impact assessment

3.7.4 Viewpoints 23
Cameron Hill Estate, Gulmarrad

Section 4: Tyndale to Maclean
Character precinct 17: Low-moderate ability to visually absorb change.

Site description
The project follows an alignment across low lying sugar cane fields parallel and to the east of the existing highway. The visual catchment is expansive over this flood plain area associated with South Arm creek limited by a prominent ridge line to the west and by Green Hill and scattered patches of existing vegetation to the east. There is a large number of residences in this area along Clyde Essex Drive. Patches of vegetation provide local screening of the project to some of these residences.

Project description
The project has fill batters up to three metres in height and through some cuttings as it passes through undulating land at the base of Green Hill. A dual carriageway is proposed and an extensive new access road to the east connecting McIntyres Lane to the new Maclean Interchange.

Vantage point selection
This vantage point is considered to typically represent the view of the project that might be experienced from some local residences and local streets in this area.

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>Moderate–low</td>
<td>Moderate</td>
<td>Moderate–low</td>
<td></td>
</tr>
</tbody>
</table>

- New road infrastructure in an agricultural setting would affect a portion of the middle ground view. Major tree removal and earthworks is proposed causing removal of existing vegetation. Location of the proposed highway in a cutting reduces its visibility from some vantage points in the landscape.

- This changed view would be available to a low number of local residents and from the local road network.

- Provide screen planting using local species on cut/fill embankments to screen the project to views from Gulmarrad.

- Reinstate existing riparian vegetation where possible.

Oblique view looking north-west

Annotated diagrammatic approximation of the project as photographed from viewpoint 23. View north west, Cameron Hill Estate, Gulmarrad. Location: 29°29′40″S 153°12′37″E
03 Visual impact assessment

3.7.5 Viewpoint 24A
Ferry Park, Interchange at Maclean

Section 4: Tyndale to Maclean
Character precinct 22: Moderate ability to visually absorb change.
Character precinct 24: High ability to visually absorb change.

Site description
The township of Maclean marks the northernmost extent of the South Arm floodplain which is dominated by sugar cane plantations. The project follows an alignment to the east of the existing highway and the Maclean township below the prominent Maclean Pinnacle. Much of the township of Maclean is not visible from the highway. To the south of Goodwood Street the visual catchment area is open and expansive. To the north the visual catchment area is restricted by existing vegetation and the Maclean Pinnacle.

Project description
A major interchange is proposed at Maclean providing access west to Maclean and east to the townships of Townsend and Gulmarrad. The work provides a new dual carriageway over the floodplain as well as on/off ramps and access roads connecting to two new elevated roundabouts at either side of the new overpass. All new work is located on fill batters typically three metres in height along the highway and up to 11 m for the new roundabouts and overpass. The view also shows the highway passing over the floodplain on the approach to the interchange.

Vantage point selection
This vantage point addresses the impact of the major interchange proposed at Maclean, and represents the typical view of the proposed highway travelling to the east of the existing highway over the floodplain.

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>24A</td>
<td>High</td>
<td>Moderate</td>
<td>Moderate-high</td>
<td>Provide landmark tree planting to highlight to entry to Maclean from the exiting highway. In accordance with the concept design. Consider additional fill between highway service roads to minimise the excessive height of embankments</td>
</tr>
</tbody>
</table>

Oblique view looking north

Annotated diagrammatic approximation of the project as photographed from viewpoint. 24A. View east, Ferry Park, Maclean. Location: 29°28'23"S 153°12'18"E
### Visual impact assessment

#### 3.7.6 Viewpoint 24B
Schwonberg Street, Townsend

**Section 4: Tyndale to Maclean**  
Character Precinct 24: High ability to visually absorb change.

**Site description**  
The township of Townsend is tucked below the alignment of the existing highway which passes to the west and north of a small settlement of suburban homes. A dense screen of existing roadside and embankment vegetation provides visual screening between the existing highway and nearby homes fronting to Schwonberg and Jubilee Streets.

**Project description**  
The existing highway carriageway would be duplicated on the west side, and a new service road providing connection to a new roundabout at Jubilee Road and further to Goodwood Road would be provided on the east side. The proposed work would cause removal of substantial existing roadside vegetation which will negatively impact on views from existing homes from the vicinity of this vantage point.

**Vantage point selection**  
This vantage point addresses the typical view that might be experienced from homes fronting onto Schwonberg and Jubilee Streets in Townsend.

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>24B Foreground view</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate–high</td>
<td>Replace existing roadside screen vegetation to provide a screen between the highway and local homes along Schwonberg and Jubilee Streets</td>
</tr>
</tbody>
</table>

Duplicated highway infrastructure at the base of the prominent Maclean Pinnacle and above the small township of Townsend, the new infrastructure is typical of infrastructure already in place at this location.

Considerable sensitivity for a low number of residents at locations along Schwonberg and Jubilee Streets who will have long duration and/or repeated access to a changed foreground view because of removal of existing roadside screen vegetation.

Annotated diagrammatic approximation of the project as photographed from viewpoint. 24B, View west, Schwonberg Street, Townsend. Location: 29°27'51"S 153°12'45"E
03 Visual impact assessment

3.7.7 Viewpoint 25
Maclean Lookout, Wharf Street, Maclean

Section 5 Maclean to Iluka Road
Character precinct 25: Moderate ability to visually absorb change.

Site description
The project follows the alignment of the existing highway directly at the base of the prominent Maclean Pinnacle. Much of the upgrade is screened by topography and vegetation from this vantage point at a public look out. A view of the elevated southern highway approach and the new high level Bridge over the Clarence River would be prominent from this location in the distance.

Project description
A new dual carriageway is proposed to the east of the existing highway pavement located on a low embankment rising to the south to join to the proposed bridge over the Clarence River. Embankments at this point would be around eight metres in height.

Vantage point selection
This vantage point addresses the proposed interchange at North Harwood.

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Low</td>
<td>High</td>
<td>Moderate</td>
<td>minimise loss of existing forest trees, provide landmark tree planting to highlight entry to Harwood in accordance with the concept design</td>
</tr>
</tbody>
</table>

Distant view (to the bridge) Low Major new infrastructure is proposed at the proposed bridge over the Clarence River but at considerable distance so the change only affects a small portion of the view.

High The Maclean lookout is a popular destination for panoramic views over the area.

Annotated diagrammatic approximation of the project as photographed from viewpoint 25. View east, Maclean Lookout, Wharf Road, Maclean. Location: 29°27’18"S 153°12’56”E
03 Visual impact assessment

3.8 Section 5 Maclean to Iluka Road

26A_ Yamba Road, Harwood
26B_ Yamba Road, Harwood
27A_ Palmers Channel bridge, Yamba Road, Harwood
27B_ South Bank Road, Palmers Channel
28_ Public Jetty, Clarence River, Harwood
29_ End Harwood Road, Harwood
30_ Corner Cannons Lane & River Street, Harwood
31_ Ashby Heights
32A_ Watts Lane (East)
32B_ Watts Lane (West)
33_ North Arm Drive
34_ Fischers Lane, Iluka
35_ Gargetts Lane, Iluka
36A_ Old Pacific Highway, Iluka
36B_ Pacific Highway, Iluka

The landscape character assessment assessed the impact of the project on Section 5 to be moderate.
03 Visual impact assessment

Clarence River Bridge and Interchanges at Harwood

Section 5: Maclean to Iluka
Character precinct 27: Low-moderate ability to visually absorb change
Character precinct 29: Low-moderate ability to visually absorb change

Site description
The project follows the alignment of the existing highway across the Clarence River and through the town of Harwood. The highway traverses cleared and vegetated land on the approaches to the town in both directions, including areas of threatened ecological communities (EEC). Removal of patches of forest vegetation would be required to the south of the river. The Harwood town ship comprises a number of local heritage sites including heritage buildings, the Harwood bridge, a war memorial, old tram tracks, some trees, and the Harwood Heritage Conservation Zone which demonstrates the development and decline of the town through its association with the Harwood Sugar Mill.

Project description
Duplication of the bridge at Harwood across the Clarence River is proposed to the east of the existing bridge. The deck height of the new bridge would be substantially higher than the existing bridge, reaching to about 12 m below the top of the recognisable existing lift span towers. The existing towers are visible from a number of locations around the town of Harwood for a distance of several kilometres and the new bridge would, similarly, have a considerable visual catchment area.

Two new interchanges are proposed at the approaches to the river, one on each side. The interchange to the south comprises a dual carriageway bridge approach on a low 1.5–2.0 m embankment. A new northbound off ramp, roundabout, and southbound on-ramp connection to the existing local road system are proposed. To the north the project duplicates to the east of the existing highway to the major interchange at Watts Lane. This comprises new dual carriageway on two to three metres fill embankments and a considerably elevated local road overpass (nine metres), two new roundabouts and ramp access to the local road system.

Vantage point selection
These vantage points were selected to represent views of the major new bridge crossing over the Clarence River and the major interchanges at Harwood South and Harwood North. The vantage points are selected locations on the main public roads, areas representing groups of existing homes as well as distant vantage points which take in the bridge crossing and interchange locations.

Bridge over Clarence River design
The current design proposal for the Harwood bridge comprises a simple box girder structure. This design forms the basis of the visual assessment and the annotated diagrammatic representations of the bridge presented in this section. For two of the vantage points (28 and 29) more detailed visualisations of the proposed structure have been prepared to most fully address the anticipated visual impact in Harwood. A fully rendered photomontage version has also been prepared as viewed from the same two locations (refer to section 4.7).

Two alternative bridge designs are also under consideration. These include a balanced cantilever and cable stayed option. If one of these designs is selected the visual impact assessment in Harwood would need to be updated. Visualisations of all three bridge options are provided for information (refer pages 176-178).
### Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
</table>
| **26A**   | **Foreground view** | Moderate–low | Moderate-high | Considerable sensitivity around the local heritage listed existing Harwood bridge. Many local residents and motorists will have repeated access to this view. | Moderate | _Minimise the loss of existing trees_  
_Minimise the depth of the bridge deck_  
_Avoid adding acoustic barriers above the bridge deck. If necessary use transparent barriers_  
_Provide a high quality bridge design in accordance with the Bridge Aesthetic Guideline, Centre for Urban Design, RMS: 2012_  
_Refer to specific landscape and urban design strategies (Chapter 4)_ |

Major new elevated bridge infrastructure would be visible but existing vegetation screens much of it in this view.

---

**Proposed Clarence River Bridge**

Annotated diagrammatic approximation of the project as photographed from viewpoint 26A. View north-east near the public boat ramp, Yamba Road, South Harwood. Location: 29°26′0″S 153°14′18″E

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
</table>
| **26B**   | **Ultimate stage. Middle ground view** | High-moderate | Moderate-high | Considerable sensitivity around the local heritage listed existing Harwood bridge. Sensitivity for residents of a few homes with long duration views and lower sensitivity for local people generally who will have short term repeated visual access to the changed view | Moderate-high | _Minimise the loss of existing riparian vegetation as much as possible_  
_Minimise the depth of the bridge deck_  
_Avoid adding acoustic barriers above the bridge deck. If this is necessary use transparent barriers_  
_Provide a high quality bridge design in accordance with the Bridge Aesthetic Guideline, Centre for Urban Design, RMS: 2012_  
_Refer to specific landscape and urban design strategies (Chapter 4)_  
_Provide screen planting to the new elevated approach road embankment in accordance with the concept design_ |

Major new bridge infrastructure and fill embankments would dominate this foreground to middle ground view.
03 Visual impact assessment

Annotated diagrammatic approximation of the project as photographed from viewpoint 26B. View west along Yamba Road, Harwood (South). Location: 29°25'58"S 153°14'31"E

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>27A</td>
<td>Low</td>
<td>Moderate</td>
<td>Moderate</td>
<td>_Minimise the loss of existing riparian vegetation</td>
</tr>
<tr>
<td>Distant view</td>
<td></td>
<td></td>
<td>Moderate</td>
<td>_Minimise the depth of the bridge deck</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Moderate</td>
<td>_Avoid adding acoustic barriers above the bridge deck. If this is necessary use transparent barriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Moderate</td>
<td>_Provide a high quality bridge design in accordance with the Bridge Aesthetic Guideline, Centre for Urban Design, RMS: 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Moderate</td>
<td>_Refer to specific landscape and urban design strategies (Chapter 4)</td>
</tr>
</tbody>
</table>

Annotated diagrammatic approximation of the project as photographed from viewpoint 27A. View north-west near Palmers Channel Bridge, Yamba Road, Harwood. Location: 29°25'54"S 153°15'51"E
03 Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>27B Distant View</td>
<td>Low</td>
<td>A distant view of the new elevated bridge would intercept the horizon in this view however it impacts only a small portion of the view.</td>
<td>Moderate</td>
<td>Considerable sensitivity for a low number of residents and local people who will have long duration and/or repeated access to a changed foreground view. Moderate – Low</td>
</tr>
</tbody>
</table>

Annotated diagrammatic approximation of the project as photographed from viewpoint 26A. View north-west, South Bank Road, Palmer Channel. Location: 29°26′22″S 153°15′34″E

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 Foreground view</td>
<td>High</td>
<td>Major new elevated bridge infrastructure at an existing bridge crossing.</td>
<td>High</td>
<td>Considerable sensitivity around the local heritage listed existing Harwood bridge. Many local residents would have repeated access to this changed view in a highly scenic setting. High</td>
</tr>
</tbody>
</table>

Annotated diagrammatic approximation of the project as photographed from viewpoint 28. View south-east from a public jetty on the Clarence River, Harwood. Location: 29°25′39″S 153°14′21″E
## 03 Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>(<em>{\text{Minimise the loss of existing riparian vegetation}}) (</em>{\text{Minimise the depth of the bridge deck}}) (<em>{\text{Avoid adding acoustic barriers above the bridge deck. If this is necessary use transparent barriers}}) (</em>{\text{Align new bridge piers with existing bridge piers}}) (<em>{\text{Provide a high quality bridge design in accordance with the Bridge Aesthetic Guideline, Centre for Urban Design, RMS: 2012}}) (</em>{\text{Refer to specific landscape and urban design strategies (Chapter 4)}})</td>
</tr>
</tbody>
</table>

Annotated diagrammatic approximation of the project as photographed from viewpoint 29. View south-west, end of Harwood Road, Harwood. Location: 29°25'37"S 153°14'37"E

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>(<em>{\text{Minimise the loss of existing riparian vegetation}}) (</em>{\text{Minimise the depth of the bridge deck}}) (<em>{\text{Avoid adding acoustic barriers above the bridge deck. If this is necessary use transparent barriers}}) (</em>{\text{Provide a high quality bridge design in accordance with the Bridge Aesthetic Guideline, Centre for Urban Design, RMS: 2012}}) (_{\text{Refer to specific landscape and urban design strategies (Chapter 4)}})</td>
</tr>
</tbody>
</table>

Annotated diagrammatic approximation of the project as photographed from viewpoint 30. Right: View east from the intersection of Cannons Lane and River Street, Harwood. Left: Zoom of the bridge across the Clarence River from same location. Location: 29°25'38"S 153°13'29"E
### Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
</table>
| 31        | Low       | Low         | Low    | _Plant dense low grasses/ground covers on fill batters_  
                                      _Reinstate agricultural land where possible_  
                                      _Reinstate riparian vegetation where possible_ |
| 32A       | High–moderate | High–moderate | Moderate–high | _Minimise loss of existing trees_  
                                      _Plant dense low grasses/ground covers on fill batters_  
                                      _Reinstate agricultural land where possible_ |

Annotated diagrammatic representation of the project as photographed from viewpoint 31_ Murrayville Road, Ashby Heights. Location: 29°24′21″S 153°12′34″E
## Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>32B Foreground view</td>
<td>High</td>
<td>Considerable disturbance to the existing agricultural landscape with the addition of a new highway overpass, associated roundabouts and service roads. The considerable elevation of the overpass (9m) makes it highly prominent in the flat floodplain landscape. New embankments are squeezed around existing homes located at the intersection.</td>
<td>Moderate</td>
<td>Considerable sensitivity for residents of a few homes with long duration views. Many motorists on the highway with fleeting views of the change.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em>Provide screen tree and shrub planting on embankments and between access and service roads in accordance with the landscape concept strategy and to provide a dense screen to nearby homes</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em>Highlight the highway and overpass routes with formal tree planting</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em>Prepare detail landscape design in accordance with the landscape concept strategy</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em>Consider filling between service roads and highway to reduce height of embankments</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em>Retain existing Araucaria which is prominent in the existing landscape</em></td>
</tr>
</tbody>
</table>

Annotated diagrammatic approximation of the project as photographed from viewpoint 32B, Watts Lane (East), Harwood. Location: 29°25’09”S 153°14’35”E
03 Visual impact assessment

Harwood Bridge_box girder design option.
Visualisation from viewpoint 28

Harwood Bridge_box girder design option.
Visualisation from viewpoint 29
03 Visual impact assessment

Harwood Bridge balanced cantilever design option.
Visualisation from viewpoint 28

Harwood Bridge balanced cantilever design option.
Visualisation from viewpoint 29
03 Visual impact assessment

Harwood Bridge_cable stayed design option.
Visualisation from viewpoint 28

Harwood Bridge_cable stayed design option.
Visualisation from viewpoint 29
Visual impact assessment

3.8.2 Viewpoints 33, 34 & 35
Clarence River North Arm Crossing

Section 5. Maclean to Iluka Road
Character precinct 27: Low-moderate ability to visually absorb change

Site description
The project follows the alignment of the existing highway across the Clarence River North Arm. The highway traverses cleared sugar cane fields and open pastureland in an open floodplain landscape. Native tree vegetation is sparse, comprising lines of trees and shrubs following the river banks of the Clarence River North Arm and patches of trees around isolated homesteads. The existing dual bridges over the Clarence River North Arm (the bridge at Mororo) would be supplemented with a third new crossing to the east at the same elevation as the existing bridge infrastructure.

Project description

Interim option
Duplication to the east of the existing highway carriageway is proposed south of the river. The new carriageway and upgraded existing carriageway would be located on low fill embankments up to about two metres in height. New connections to the existing local road network are proposed. To the north of the river access lanes on both sides of the highway present a four carriageway corridor connecting to the Iluka Road interchange. An elevated overpass at Iluka Road connects to two elevated roundabouts connecting on/off ramps to the proposed highway and access roads to the local road network. An major elevated overpass at Carroll’s Lane (10m) and an additional access road to the west connecting to the local road network.

Ultimate option
An additional service road is to be provided on the western side of the highway running south.

Vantage point selection
These vantage points were selected to typically represent views of the project crossing the Clarence River North Arm floodplain through extensive areas of sugar cane plantation. The vantage points are selected locations on the main public roads in the area and adjacent to housing areas.
## 03 Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>Moderate–high</td>
<td>Moderate–low</td>
<td>Moderate</td>
<td>Minimise loss of existing trees, Plant dense low grasses/ground covers on fill batters, Reinstate agricultural land where possible, Reinstate riparian vegetation where possible</td>
</tr>
</tbody>
</table>

Highway upgrade and interchange is located on a low embankment traversing the floodplain at considerable distance from this viewpoint. A new elevated overpass and associated access roads are proposed at a considerable distance from this viewpoint.

A new elevated overpass and associated access roads are proposed at a considerable distance from this viewpoint.

An additional service road is proposed on a low embankment.

This changed view would be repeatedly visible from a low number of local residences and from local streets.

Annotated diagrammatic approximation of the project as photographed from viewpoint 33._ View east from North Arm Drive, Chatswood. Location: 29°22'19"S 153°14'37"E
## 03 Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
</table>
| 34 | Low Foreground view | Low | Low | _Minimise loss of existing trees._  
_Plant dense low grasses/ground covers on fill batters._  
_Reinstate agricultural land where possible._  
_Reinstate riparian vegetation where possible._ |

 proposed bridge structure are generally screened by riparian vegetation. |

 This changed view would be repeatedly visible from a low number of local residences and from local streets. |

 **Middle ground view**

 New bridge infrastructure at an existing bridge crossing comprising a similar character and scale to the existing development in a scenic river location. |

 Moderate–low |

 This changed view in a scenic setting would be repeatedly visible from a low number of local residences and from local streets. |

 Moderate–low |

 _Minimise loss of existing trees._  
_Plant dense low grasses/ground covers on fill batters._  
_Reinstate agricultural land where possible._  
_Reinstate riparian vegetation where possible._  
_Minimise the depth of the bridge deck._ |

 Annotated diagrammatic approximation of the project as photographed from viewpoint 34_ View west from Fischers Lane, Iluka. Location: 29°22'01"S 153°15'14"E

 Bridge at Mororo. |

 Annotated diagrammatic approximation of the project as photographed from viewpoint 35_ View west from Gargetts Lane, Iluka. Location: 29°21'56"S 153°15'17"E
03 Visual impact assessment

3.8.3 Viewpoint 36A & 36B
Iluka Interchange

Section 5 Maclean to Iluka Road
Character precinct 31: Moderate ability to visually absorb change

Site description
The Iluka Road Interchange marks a transition in the landscape from the Clarence River floodplain to a long stretch of forested highway to the north. The area around the interchange at Iluka Road comprises cleared areas containing sugar cane fields and a dense backdrop of forested slopes.

Project description
The major interchange at Iluka Road comprises a dual carriageway upgrade as well as on/off ramps connecting to two new elevated roundabouts. The work is largely located on low cuttings and embankments with higher embankments accommodating the ramps and roundabouts above the highway. The work is in vicinity of a number of existing homes which would experience a considerably changed view

Vantage point selection
This vantage point addresses the major Iluka Interchange and typically represents the changed view experience from a number of existing homes.

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Recommendations</th>
</tr>
</thead>
</table>
| 36A       | Foreground view.            | High–moderate                | Moderate–low | Moderate
            |                             | A major upgrade of existing infrastructure and new elevated overpass is proposed. | This changed view would be available to motorists using the highway. | Provide new screen and forest planting along the alignment of the project (including on/off ramps) in accordance with the concept design |
            |                             |                              |          | Revegetate between the interchange at Iluka Road and existing homes located on the east side in accordance with the concept design |

Oblique view looking north-west

Annotated diagrammatic approximation of the project as photographed from viewpoint 36A. View north on the existing highway, Iluka. Location: 29°19'45"S 153°16'46"E
03 Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
</table>
| 36B Foreground view. | High | High | High | _Retain existing vegetation wherever possible to provide a natural screen to the project.  
_Provide new screen and forest planting along the alignment of the new upgrade (including all service roads) in accordance with the concept design.  
_Revegetate between the interchange at Iluka Road and existing homes located on the east side in accordance with the concept design. |

Loss of roadside vegetation would open up views of the upgrade to local residents in close proximity to development. Major additional road infrastructure and elevated overpass is proposed. Some screening from existing vegetation is possible and will reduce the magnitude rating if retained.

This changed view would be repeatedly visible to a moderate number of local residents from their homes and from local streets.

Annotated diagrammatic approximation of the project as photographed from viewpoint 36B View west from the Old Pacific Highway, Iluka. Location: 29°21′20″S  153°14′54″E
03 Visual impact assessment

3.9_ Section 6_Iluka Road to Devil's Pulpit upgrade

36C_ Typical road widening in the forest, Tabbimoble CH 104,400

The landscape character assessment assessed the impact of the project on Section 6 to be low.
03 Visual impact assessment

3.9.1 Viewpoint 36C
Typical road widening in the forest, Tabbimoble CH 104,400

Section 6: Iluka Road to Devil’s Pulpit
Character Precinct 32: Moderate ability to visually absorb change.

Site description
The proposed highway upgrade follows the alignment of the existing highway travelling through the forested area of Bundjalung National Park. Scattered rural properties are located in small clearings along the existing highway and other minor roads in the area. There are no existing homes in the vicinity of this vantage point

Project description
Interim option
The proposed highway upgrade duplicates the existing highway carriageway to the east. The proposed work would cause removal of existing forest vegetation. Low fill batters are required. All new work is typically accommodated within, and screened by, open woodland vegetation.

Ultimate option
New service roads either side of the dual carriageway are proposed. These will require additional removal of forest vegetation creating a wider corridor through the forest

Vantage point selection
This vantage point is a typical view of the highway duplication where it follows the existing highway alignment through open forest vegetation. The view addresses the impact of the work as it would affect motorists.
## Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
</table>
| **36C** Interim stage Foreground view | Low | Considerable disturbance to the existing native woodland, however the new infrastructure is typical of infrastructure already in place at this location. | Low | _Plant local forest trees on fill batters_  
_Reinstate the forest edge where applicable_ |
| **36C** Ultimate stage Foreground view | Low | Considerable additional disturbance to the existing native woodland creates a much wider corridor through the forest, however the new infrastructure is typical of infrastructure already in place at this location. | Low | _Plant local forest trees on fill batters_  
_Reinstate the forest edge where applicable_ |
03 Visual impact assessment

3.10 Section 7 Devil's Pulpit upgrade to Trustums Hill

37 Cnr Minyumai Road, Pacific Highway
38 Swan Bay - New Italy Road, New Italy

The landscape character assessment assessed the impact of the project on Section 7 to be low.
Visual impact assessment

3.10.1 Viewpoint 37
Tabbimobile Swamp Nature Reserve

Section 7 Devils Pulpit upgrade to Trustoms Hill
Character precinct 36: Moderate ability to visually absorb change

Site description
The project continues to approximately follow the existing highway alignment through densely vegetated elevated country to the west of the Tabbimobile Swamp Nature Reserve. This is a highly valued natural landscape comprising high conservation value old growth forest listed on the State Heritage Register.

Project description

Interim option
The project comprises a new carriageway to the west of the existing highway as far as Minyumai Road located on a minor bench in the locally undulating landscape. Continuing north a new dual carriageway is proposed. A new access road access to Minyumai Road and a new fauna overpass would be provided. Major removal of existing forest vegetation would be required but most of the work would be enclosed in the existing forest landscape.

Ultimate option
The class M upgrade would provide a new carriageway between the existing highway and the new class A work. Minor additional work is proposed to re-link the existing highway sections and to provide a new service road north of Cypress Road on the western side.

Vantage point locations
This vantage point addresses proposed minor connections with the existing local road network at Minyumai Road. There are no existing residences in the vicinity of this vantage point.

Oblique view looking north

Annotated diagrammatic approximation of the project as photographed from viewpoint 37 View north, intersection Minyamai Road and Pacific Highway. Location: 29°10'09"S 153°16'59"E
## Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
</table>
| 37        | High–moderate | Low | Moderate | _Minimise loss of existing trees_  
_plant local forest trees on cut/fill batters_  
_reinstate local forest vegetation where applicable_ |

Interim stage. Foreground view.

New road infrastructure in a natural setting. Disturbance to the existing woodland vegetation is anticipated.

This changed view would be available to a low number of people using the local road network.

Moderate

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
</table>
| 37        | High–moderate | Low | Moderate | _Minimise loss of existing trees_  
_plant local forest trees on cut/fill batters_  
_reinstate local forest vegetation where applicable_ |

Ultimate stage. Foreground view.

Additional new road infrastructure in a natural setting. Additional disturbance to the existing woodland vegetation is anticipated.

This changed view would be available to a low number of people using the local road network.
03 Visual impact assessment

3.10.2 Viewpoint 38
Little Italy

Section 7 Devils Pulpit upgrade to Trustoms Hill
Character precinct 37: High ability to visually absorb change

Site description
The project continues to follow the existing highway alignment through a forest landscape past the New Italy Settlement. The New Italy Settlement, nestled in the existing forest landscape, is an historic cultural landmark commemorating the tenacity, forbearance and technical skills of a group of migrant Australian settlers. The site now comprises a museum, hall, restaurant, caretakers building, and several monuments. The site has high cultural and historical value and is listed on the State Heritage Register.

Project description
Interim option
The new upgrade comprises duplication on the western side of the existing highway alternately on fill batters up to 3.5 m and through cuttings at the Swan Bay New Italy junction up to 4.5 m.

Ultimate option
The class M upgrade would see the introduction of extensive service roads both sides of the highway from just south of the Swan Bay New Italy intersection to Whites Road in the north, a distance of about 2 km. A new overpass at Swan Bay New Italy is also proposed. This work would result in considerable additional forest clearing. The existing car park at New Italy would adjusted to accommodate the new western access road.

Vantage point locations
This vantage point addresses the proposed interchange at New Italy and the impact of the project at this sensitive heritage site.
## Visual impact assessment

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Magnitude</th>
<th>Sensitivity</th>
<th>Impact</th>
<th>Management Measures</th>
</tr>
</thead>
</table>
| 38        | Moderate  | High        | Moderate –high | _Minimise loss of existing trees_  
            |           |             | _Plant local woodland/forest trees on cut/fill batters_  
            |           |             | _Reinstate local forest vegetation where applicable_     |

Interim stage. Foreground view

New infrastructure introduced to the existing setting. The new work is typical of infrastructure already in place but represents a major change in scale. This site has high sensitivity because of its heritage and cultural status. It is a tourist destination which attracts public visitation.

Ultimate stage. Foreground view

High

New infrastructure introduced to the existing setting. The new work is typical of infrastructure already in place but represents a major change in scale. This site has high sensitivity because of its heritage and cultural status. It is a tourist destination which attracts public visitation.