5.2.4 Tyndale to Maclean (Section 4)

The section between Tyndale to Maclean (Section 4) would be about 13.2 kilometres long and would be a deviation to the east of the existing highway. Section 4 is described below and shown in Figure 5-37 to Figure 5-42.

Motorway standard

Section 4 would be a direct upgrade to full motorway standard that would involve a deviation about 800 metres to the east of the existing highway. It would start at the interchange at Tyndale and head north to join the existing highway at the interchange at Maclean.

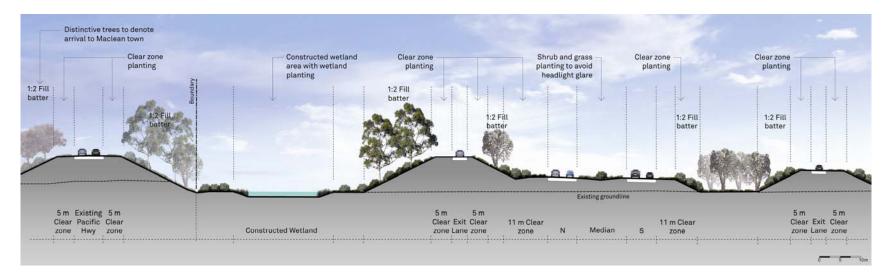
Access to the south would be via the interchange at Tyndale and the interchange at Maclean would provide further opportunities for traffic to enter or exit the project. At the Maclean interchange, two roundabouts would be provided either side of the upgraded highway. These would provide access to Cameron Street (west) and Goodwood Street (east). Northbound access would be via the roundabout at Cameron Street and southbound access would be via the roundabout at Goodwood Street. Access from Gulmarrad to Maclean would be provided through the interchange at Maclean.

The existing highway would form a new service road network. Overpasses or underpasses would be constructed to maintain access along local roads crossed by the project. Access from the existing highway to Byrons Lane would be provided via an overpass at Byrons Lane. At Maclean, pedestrian and cyclist access would be provided under the upgraded highway to Jubilee Street, from the Townsend and Gulmarrad areas. Vehicle access to Maclean via Jubilee Street would be restricted. McIntyres Lane would connect to a service road to the east of the alignment and connect to the highway and the local road network at the interchange at Maclean.

A bridge about 450 metres long would be required for the crossing of Shark Creek and its floodplain. Gallaghers Lane and Shark Creek Road would pass under the Shark Creek Bridge. A set of triple bridges would also cross Edwards Creek.

Drainage structures would be provided at station 70.5 and station 73.4. These structures would maintain existing connections to cane drains.

An indicative cross section of the alignment at station 80.6 within Section 4 is shown below.



Cross section at station 80.6 showing entrance into Maclean at Cameron Street (indicative only)

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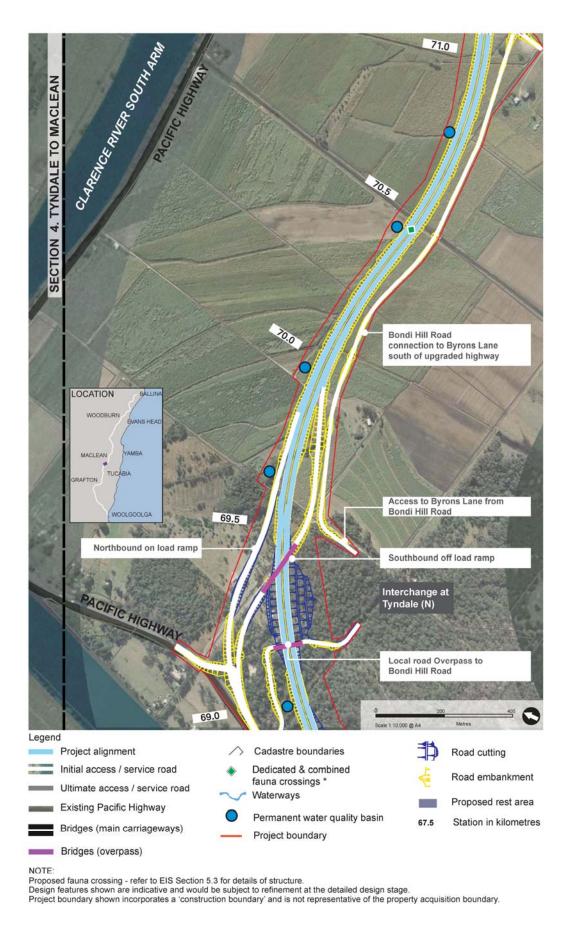


Figure 5-37: The project: Section 4 (Station 69.0 to 71.0)

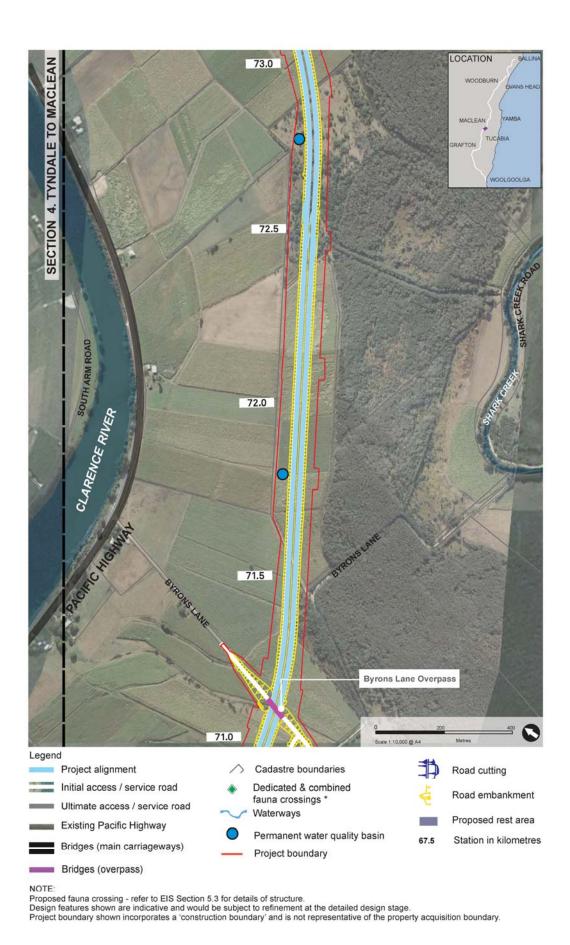


Figure 5-38: The project: Section 4 (Station 71.0 to 73.0)

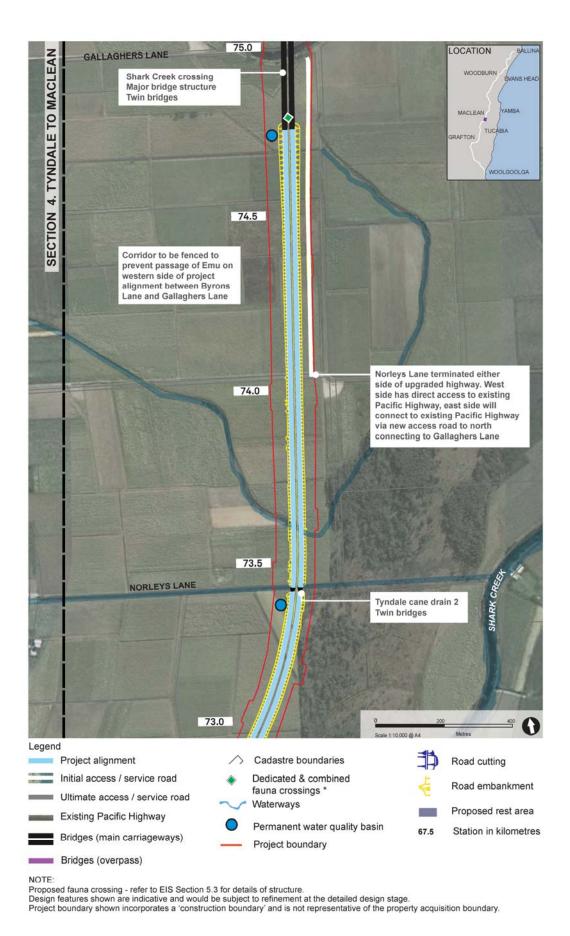


Figure 5-39: The project: Section 4 (Station 73.0 to 75.0)

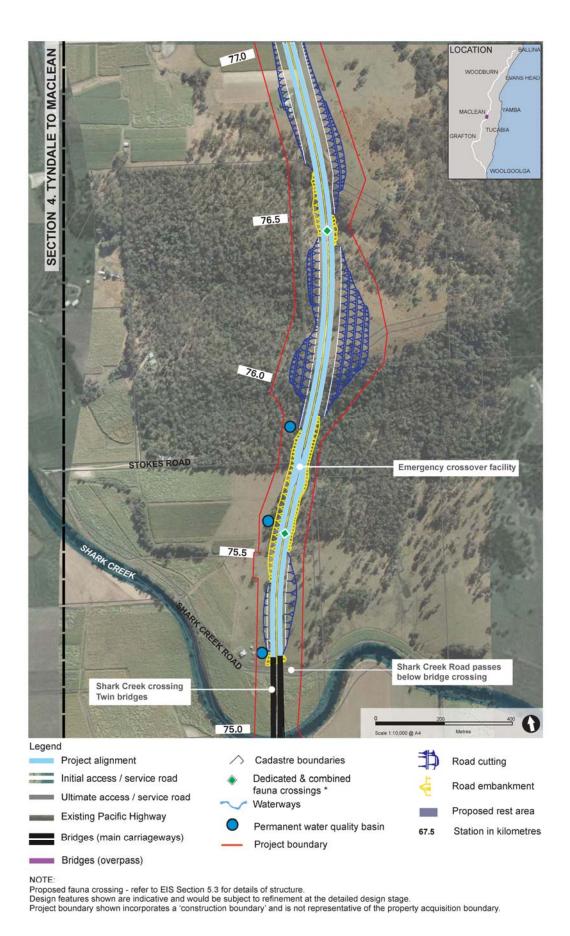


Figure 5-40: The project: Section 4 (Station 75.0 to 77.0)

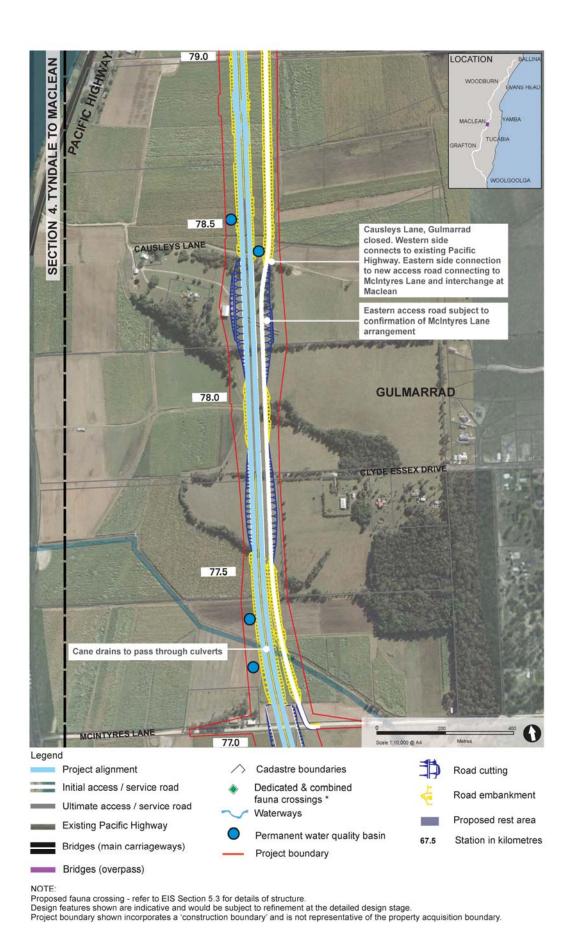


Figure 5-41: The project: Section 4 (Station 77.0 to 79.0)

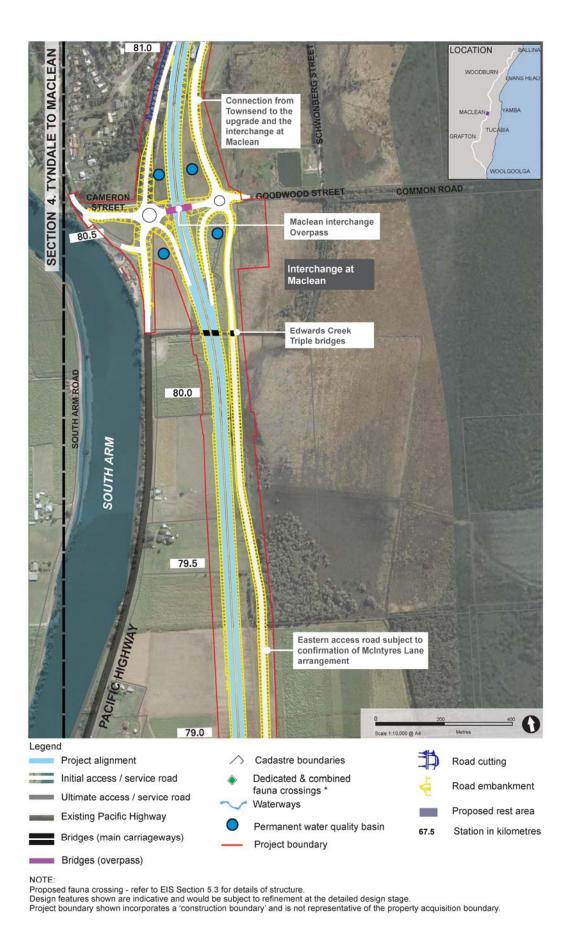


Figure 5-42: The project: Section 4 (Station 79.0 to 81.0)

5.2.5 Maclean to Iluka Road (Section 5)

The section between Maclean to Iluka Road (Section 5) would be about 14.4 kilometres long, extending from Maclean to Iluka Road at Woombah.

Section 5 would be upgraded to motorway standard, following an initial upgrade of part of the project to arterial standard. All current intersections onto the existing highway would be closed. The entire length of Section 5 would be a duplication of the existing Pacific Highway alignment.

Section 5 of the project is described below and shown in Figure 5-43 to Figure 5-50.

Motorway standard

Section 5 would start north of Jubilee Street at the interchange at Maclean at station 82.0. The existing highway, including the existing crossing of the Clarence River at Harwood Bridge, would form the local service road network.

Access to the highway between Maclean and Iluka Road would be via three interchanges:

- Interchange south of Yamba Road just south of the Clarence River: This would provide access to Yamba and Maclean, in addition to access to the upgrade for southbound motorists
- Interchange at Watts Lane, Harwood: This would provide access to the village of Harwood and local roads such as River Road and Morpeth Street, in addition to access to the upgrade for northbound motorists
- Interchange at Iluka Road to the south of Jubilee Street, Woombah: This would be located adjacent to Mororo Creek Nature Reserve and provide access to Illuka.

The project would also change the following roads:

- Ryans Lane, Chatsworth Road, Serpentine Channel Road North and Carrols Lane would have access over the upgraded highway and onto the proposed service road network
- Fischers Road, Chatsworth, would require realignment to the south, with access provided to Carrols Lane
- Garrets Lane would be realigned to the north, and would have access to Iluka Road at Woombah
- Iluka Road would have access over the upgraded highway via an overpass
- Banana Road would be connected to the service road network.

The Serpentine Channel would be crossed with a twin bridge. An overpass at Carrols Lane would be provided to maintain local road access between the northern and southern sides of the North Arm and between Fischers Lane and Chatsworth Road.

The project would cross the Clarence River via a new high-level bridge to the east of the existing Harwood Bridge. This bridge would be a single four-lane bridge, with bridge approaches on the southern side between James Creek Road and Yamba Road and bridge approaches on the northern side between Morpeth Street and River Street. The bridge would be about 1.3 kilometres long (including approaches), 22 metres wide and have a vertical clearance above the Clarence River of at least 30 metres. The bridge would be fixed with no lift-span elements. Further details on the proposed bridge crossing the Clarence River are provided in Section 5.3.5.

In addition, twin bridges about 215 metres long would be constructed at station 94.0 where the project would cross the North Arm of the Clarence River. The bridges would be located on the eastern side of the existing Mororo Bridge and provide access across the North Arm of the Clarence River, access to the north of Chatsworth Road and Fischers Lane, and to the south of Garretts Lane.

Several waterway openings (culvert banks) would be provided across Harwood and Chatsworth islands to convey floodwater. Further details of flood protection structures are provided in Section 5.3.8.

Initial upgrade to arterial standard

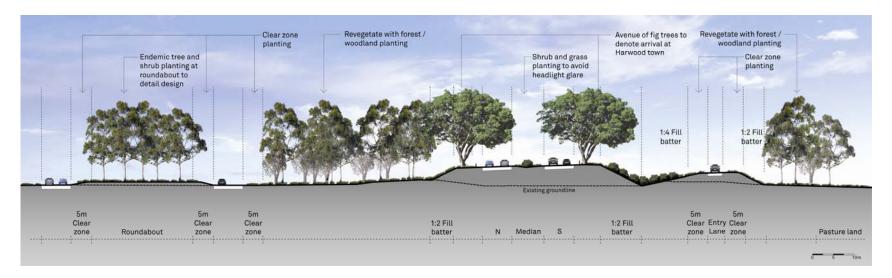
From Watts Lane to Iluka Road interchange, the project would be constructed initially as an arterial standard upgrade. Intersections would be provided to allow access to the project. These would be at Anderson Lane (northbound), Serpentine Channel South (southbound), Ryans Road (northbound), Chatsworth Road / Serpentine Channel Road North (southbound and northbound), Carrols Lane (southbound and northbound), Garretts Lane (southbound), Lewis Lane (northbound) and Banana Road (northbound).

These intersections would be closed as part of the upgrade to motorway standard.

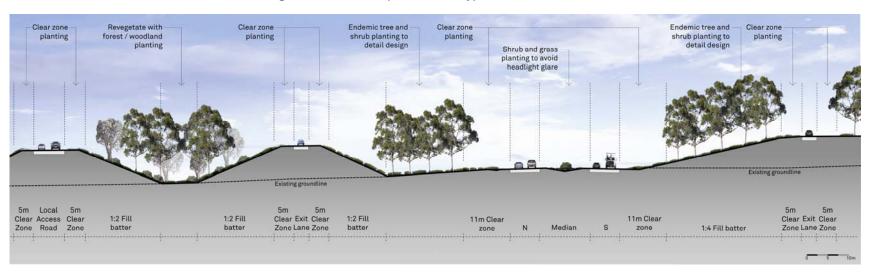
Indicative cross sections of the alignment at station 85.7 and 95.3 within Section 5 is shown below.



Photo 2: Watts Lane looking south to Harwood and the Clarence River



Cross section at station 85.7 south of interchange at Yamba Road (indicative only)



Cross section at station 95.3 south of interchange at Iluka Road (indicative only)

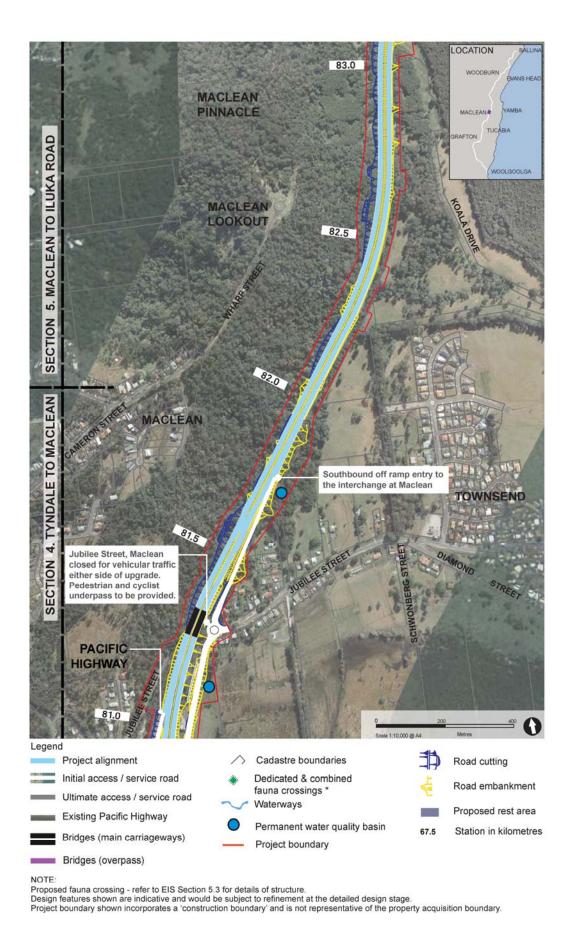


Figure 5-43: The project: Section 5 (Station 81.0 to 83.0)

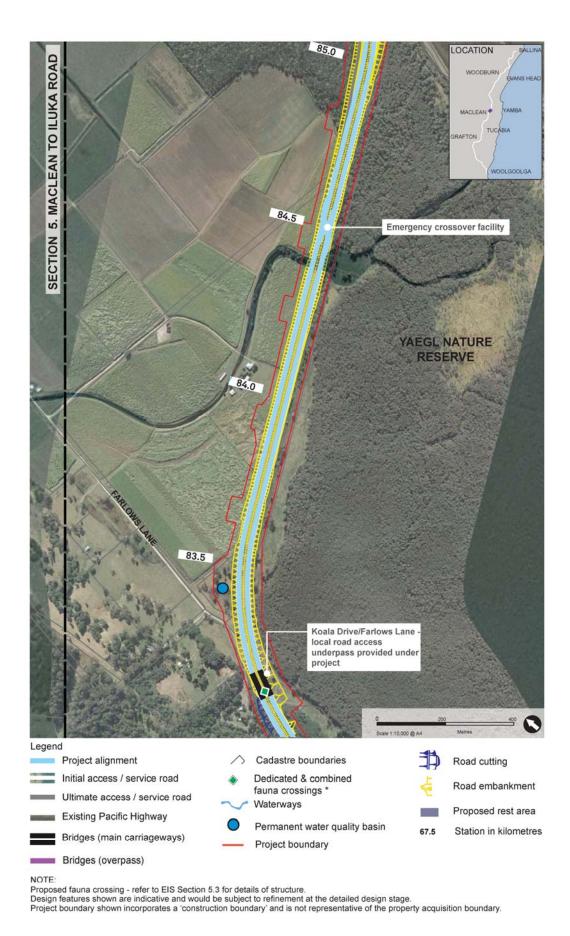


Figure 5-44: The project: Section 5 (Station 83.0 to 85.0)

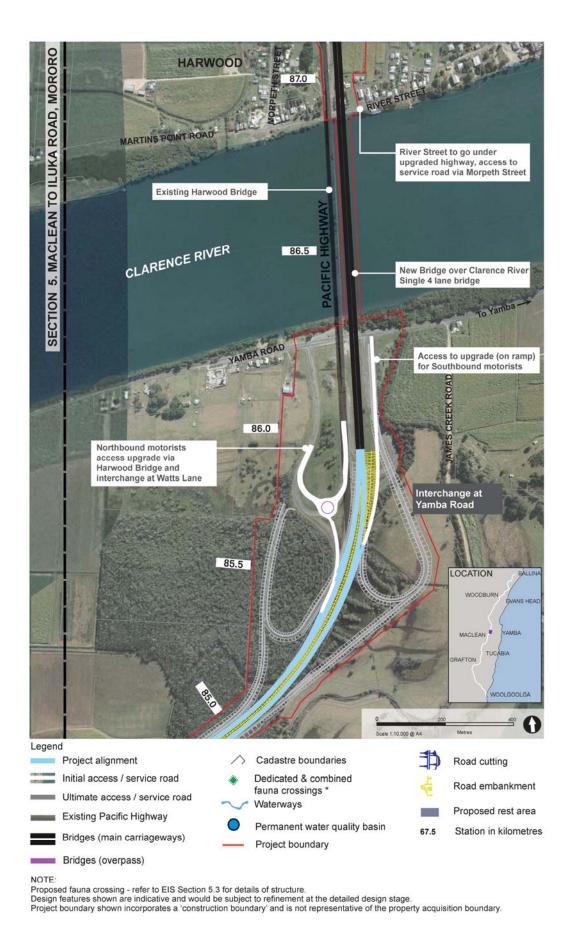


Figure 5-45: The project: Section 5 (Station 85.0 to 87.0)

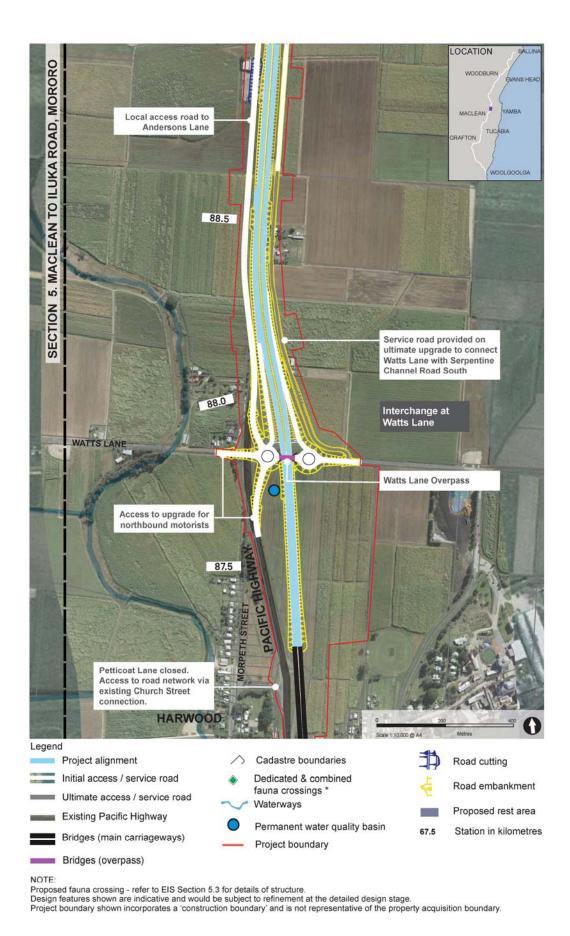


Figure 5-46: The project: Section 5 (Station 87.0 to 89.0)

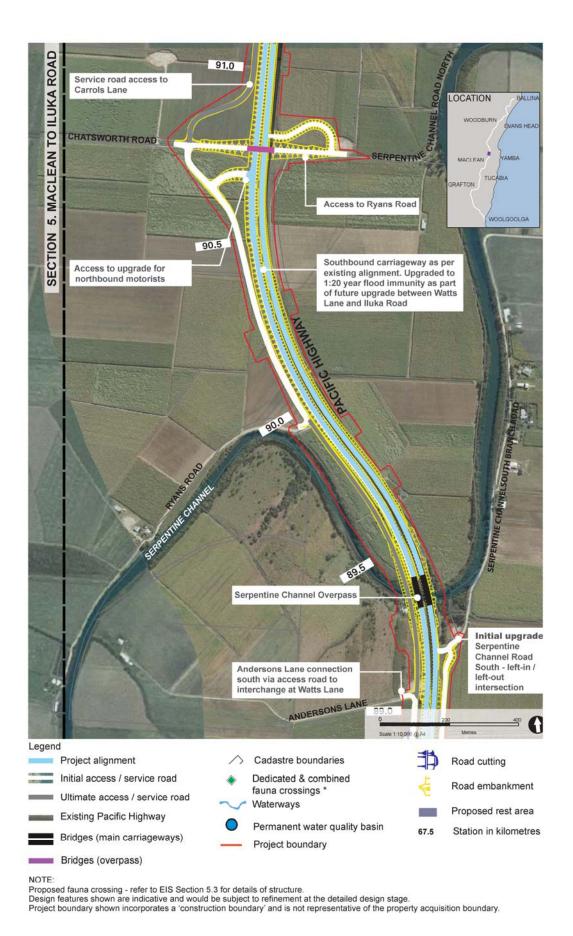


Figure 5-47: The project: Section 5 (Station 89.0 to 91.0)

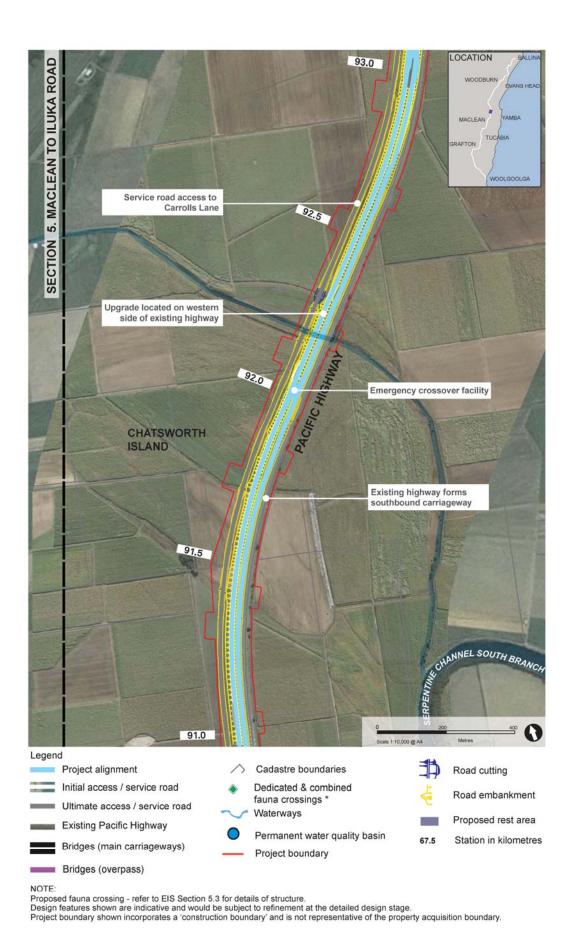


Figure 5-48: The project: Section 5 (Station 91.0 to 93.0)

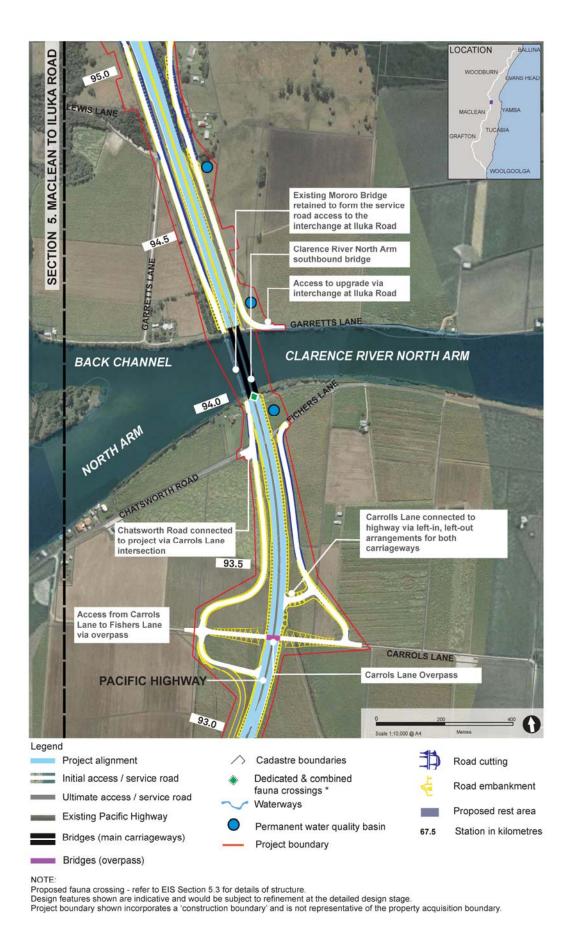


Figure 5-49: The project: Section 5 (Station 93.0 to 95.0)

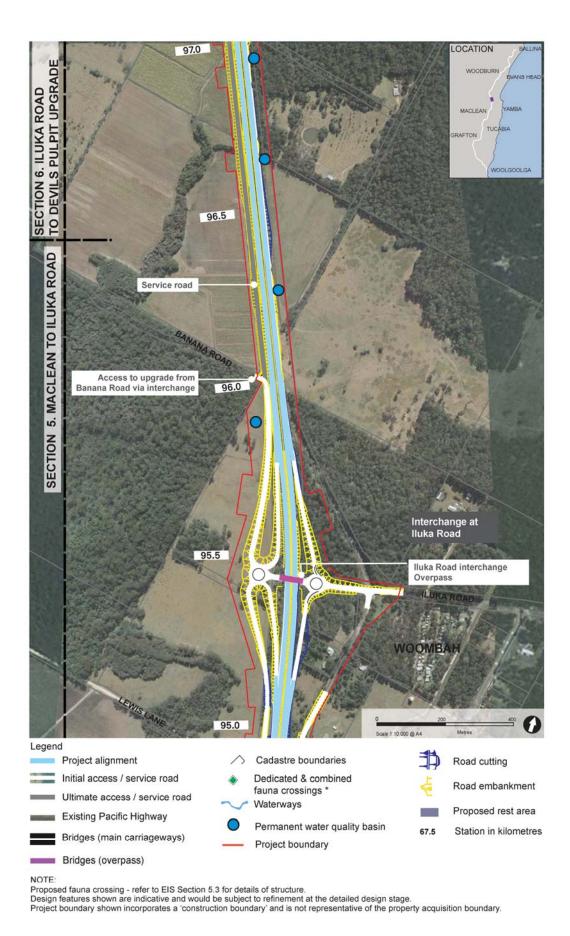


Figure 5-50: The project: Section 5 (Station 95.0 to 97.0)

5.2.6 Iluka Road to Devils Pulpit upgrade (Section 6)

The section between Iluka Road and the Devils Pulpit upgrade would be about 9.2 kilometres long. It would extend from Iluka Road, Mororo to the southern tie-in with the Devils Pulpit upgrade.

Section 6 would be upgraded to motorway standard, following an initial upgrade to arterial standard. The entire length of Section 6 would be a duplication of the existing Pacific Highway alignment.

Section 6 is described below and shown in Figure 5-51 to Figure 5-55.

Motorway standard

The project would follow the existing highway alignment, with small deviations to meet current design standards for road gradient and curvature. A service road would be built on the western side of the project between Banana Road and Devils Pulpit State Forest. All intersections would be closed and access would be via the interchange at Iluka Road (provided within Section 5 of the project) and the interchange at Woodburn.

A southbound carriageway would be constructed next to the existing highway on the eastern side. The existing highway would be used as the northbound carriageway. A service road would be provided on the western side between Banana Road and the Devils Pulpit upgrade.

A southbound rest area would be provided within Section 6, north of Mororo Road, between station 100.2 and 100.7. The rest area would provide layover facilities for motorists and would be able to accommodate heavy vehicles.

A northbound bridge would be provided at Tabbimoble Creek at station 101.5. Bridge crossings would be provided at Tabbimoble Creek and Tabbimoble overflow north of Jacky Bulbin Road.

Mororo Road would be connected to the service road on the western side. The existing highway at Mororo would be connected to local access roads and the service road via an overpass crossing of the upgraded highway.

Initial upgrade to arterial standard

A number of intersections and short lengths of access road would provide access to the project. These would include intersections at Mororo Road (northbound), the existing Pacific Highway, Tullymorgan – Jacky Bulbin Road and Pine Road.

These intersections would be closed as part of the upgrade to motorway standard.

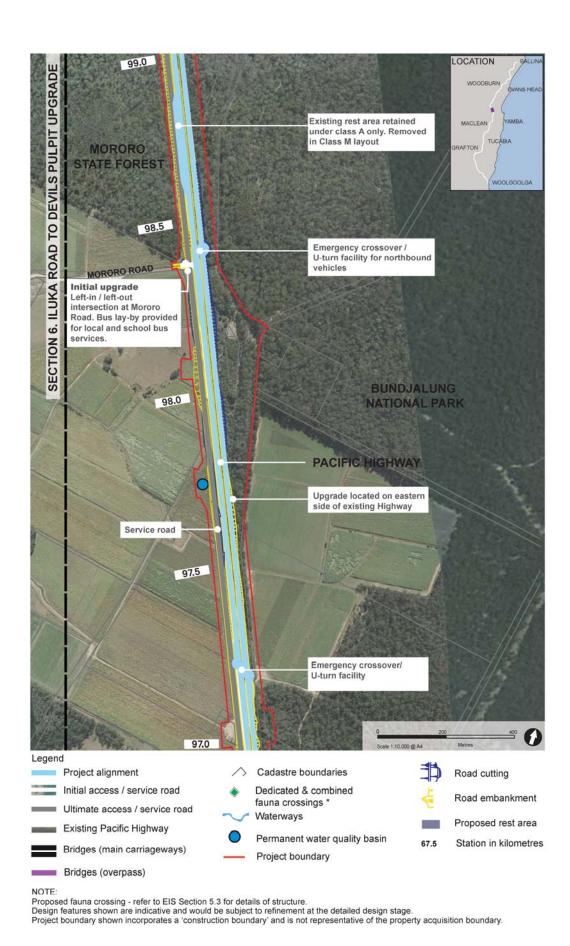


Figure 5-51:The project: Section 6 (Station 97.0 to 99.0)

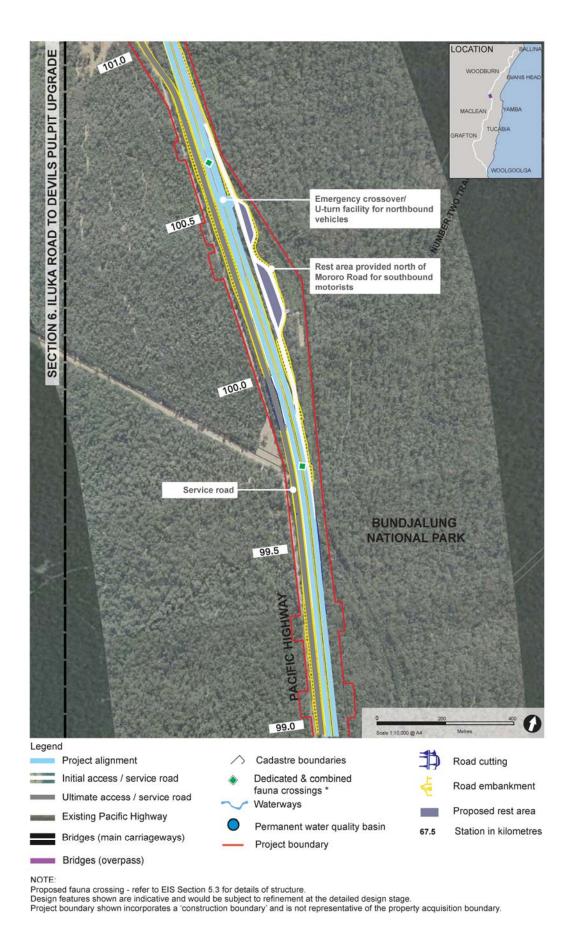


Figure 5-52: The project: Section 6 (Station 99.0 to 101.0)

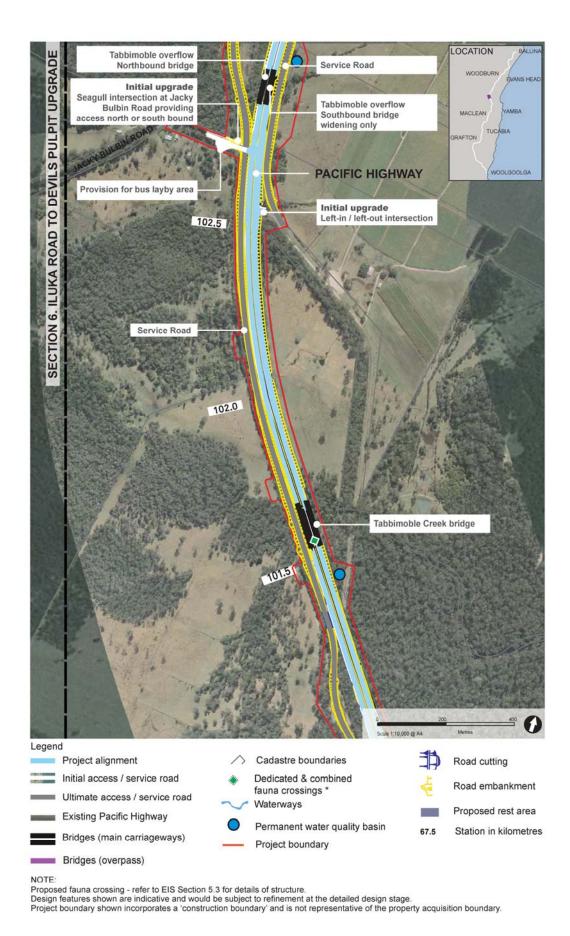


Figure 5-53: The project: Section 6 (Station 101.0 to 103.0)

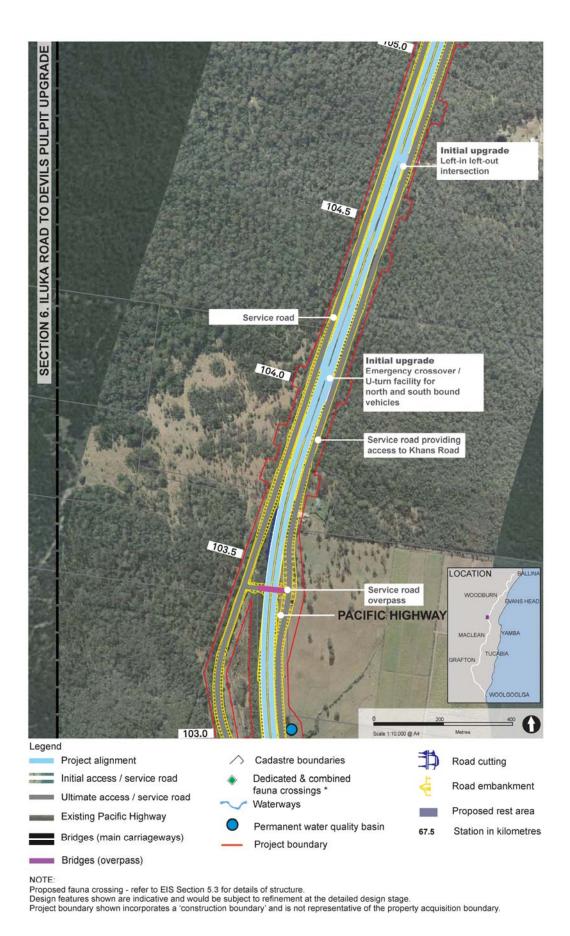


Figure 5-54: The project: Section 6 (Station 103.0 to 105.0)

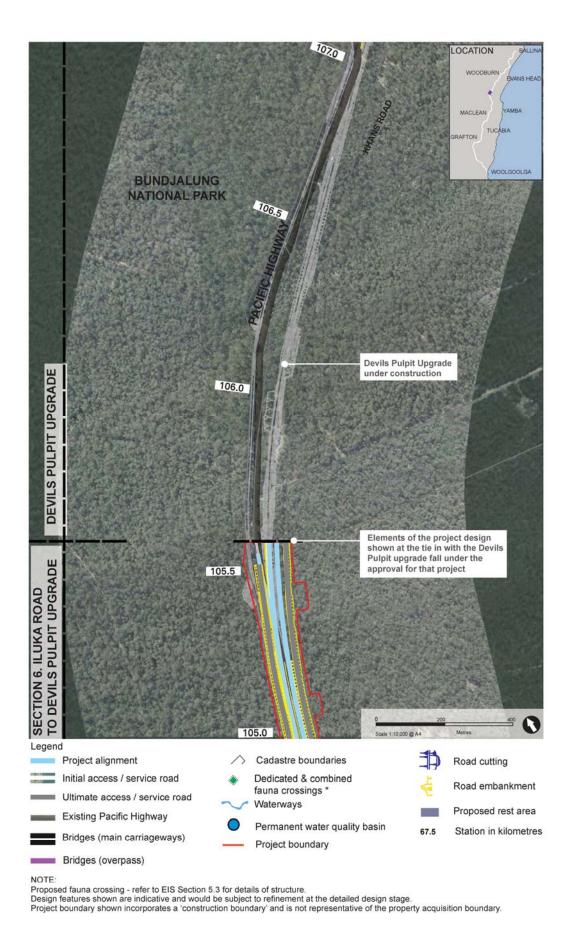


Figure 5-55: The project: Section 6 (Station 105.0 to 105.6)

5.2.7 Devils Pulpit upgrade to Trustums Hill (Section 7)

The section between Devils Pulpit to Trustums Hill (Section 7) would be about 15.3 kilometres long. It would extend from the northern end of the Devils Pulpit upgrade at Tabbimoble State Forest, to just south of Gap Road, Trustums Hill.

Section 7 would be upgraded to motorway standard, following an initial upgrade to arterial standard. The entire length of Section 7 would be a duplication of the existing Pacific Highway alignment. The project would follow the existing highway alignment, with small deviations to meet current design standards for road gradient and curvature.

Section 7 is described below and shown in Figure 5-56 to Figure 5-63.

Motorway standard

Local access across the project would be maintained via new underpasses, overpasses and service roads. Access to the upgraded highway from local roads would be via the interchange at Trustums Hill Road, Woodburn (located in Section 8 of the project).

The project would result in changes to the following roads:

- An overpass would be provided at Serendipity Road, Swan Bay New Italy Road, as well as a southbound crossing of the Tabbimoble floodway.
- Tullymorgan Jacky Bulbin Road would have access provided to the service road. Serendipity Road would be realigned over the upgraded highway and would have access to the service road
- Glencoe Road would have access to the service road provided to the south of the project around station 114.5. Minyumai Road, Cypress Road, Whites Road, Swan Bay – New Italy Road, Turners Road and Nortons Road at New Italy would have access provided to the service road
- An underpass would be constructed at Serendipity Road and an overpass at Swan Bay New Italy Road to maintain access along local roads crossed by the project.

In addition, a widened median for fauna connectivity would be provided between station 114.1 and station 121.1. An aerial crossing for fauna around station 116.4 would be provided in this part of the project within Devils Pulpit State Forest. A fauna bridge would also be provided near Tabbimoble Swamp Nature Reserve near Minyumai Road.

Initial upgrade to arterial standard

As part of an initial upgrade to arterial standard, a number of intersections would provide private property access to the adjoining local road network. These intersections would be either full seagull intersections providing access northbound and southbound or would provide vehicle movements left-in or left-out. These intersections would include Serendipity Road, Glencoe Road, Minyumai Road, New Italy – Swan Bay Road, Whites Road, Redgates Road, Turners Road and Nortons Road.

These intersections would be closed as part of the upgrade to motorway standard.

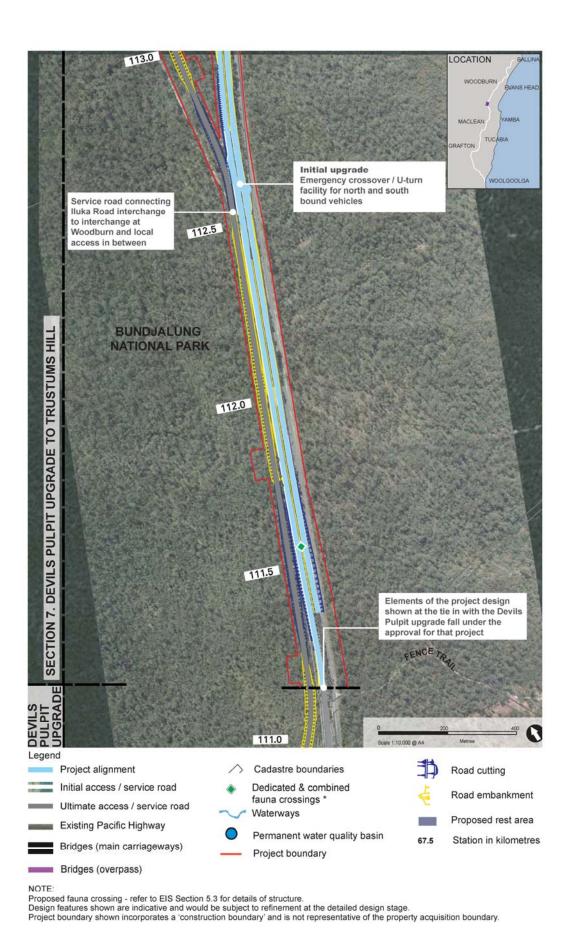


Figure 5-56: The project: Section 7 (Station 111.1 to 113.0)

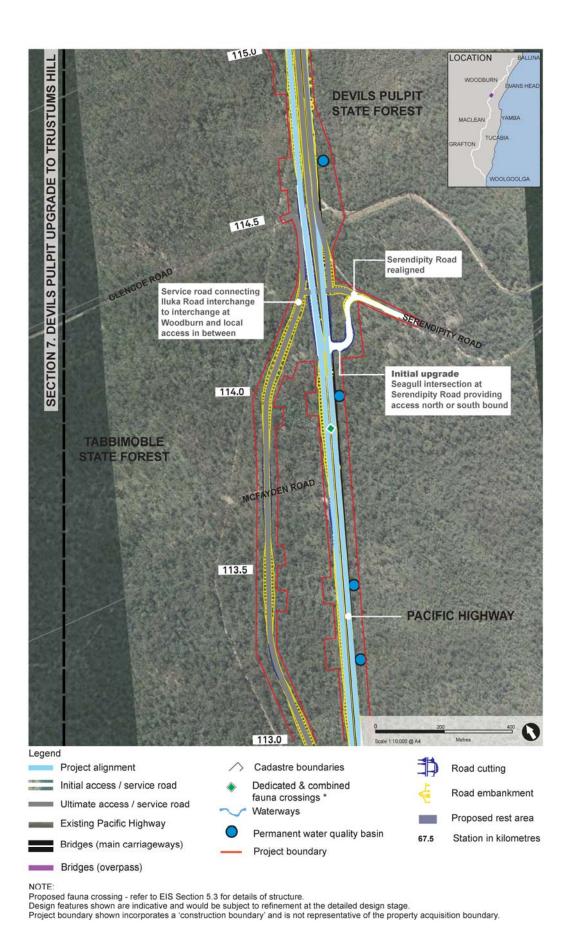


Figure 5-57: The project: Section 7 (Station 113.0 to 115.0)

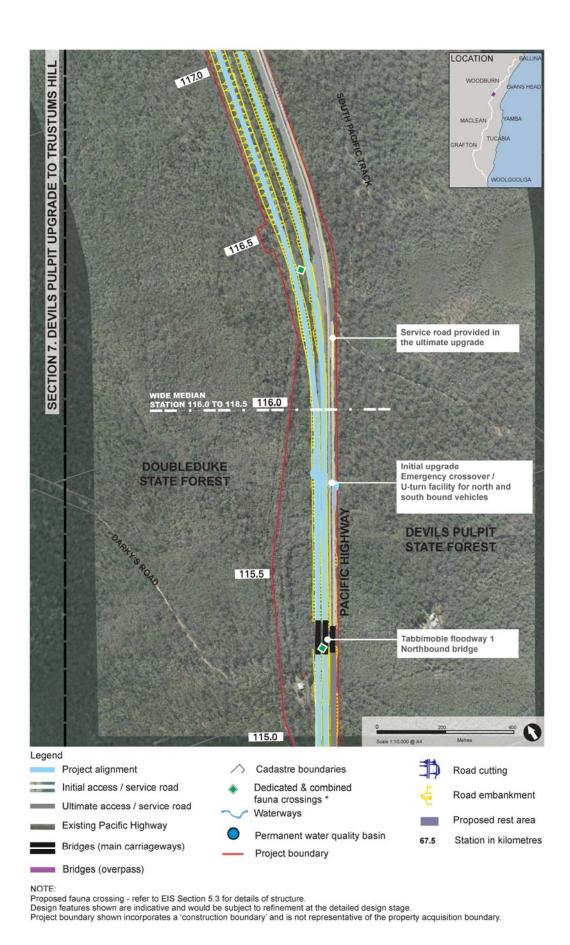


Figure 5-58: The project: Section 7 (Station 115.0 to 117.0)

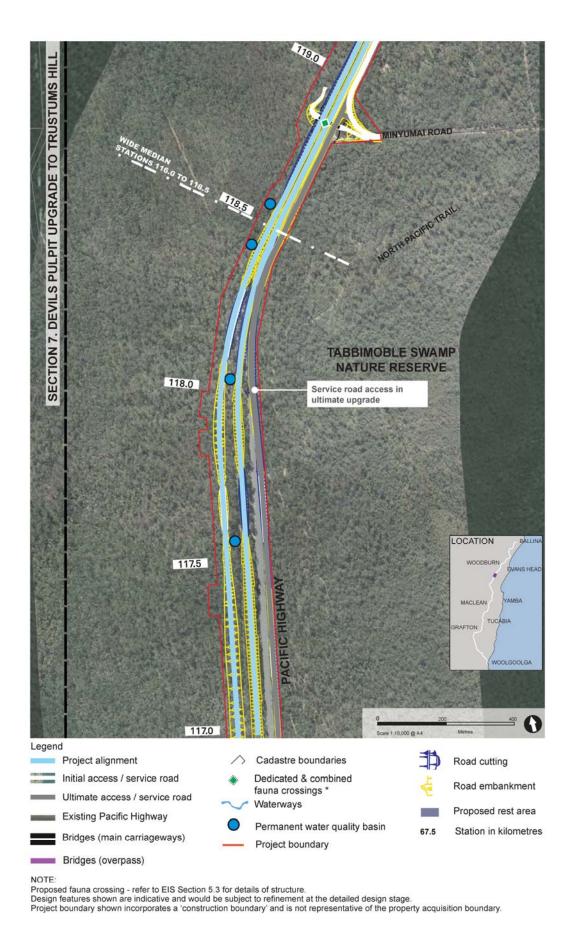


Figure 5-59: The project: Section 7 (Station 117.0 to 119.0)

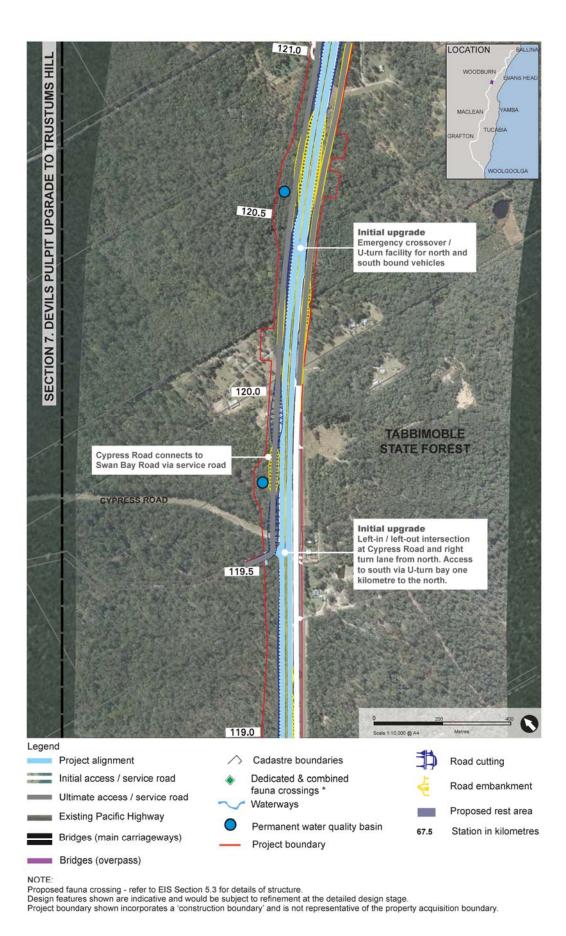


Figure 5-60: The project: Section 7 (Station 119.0 to 121.0)

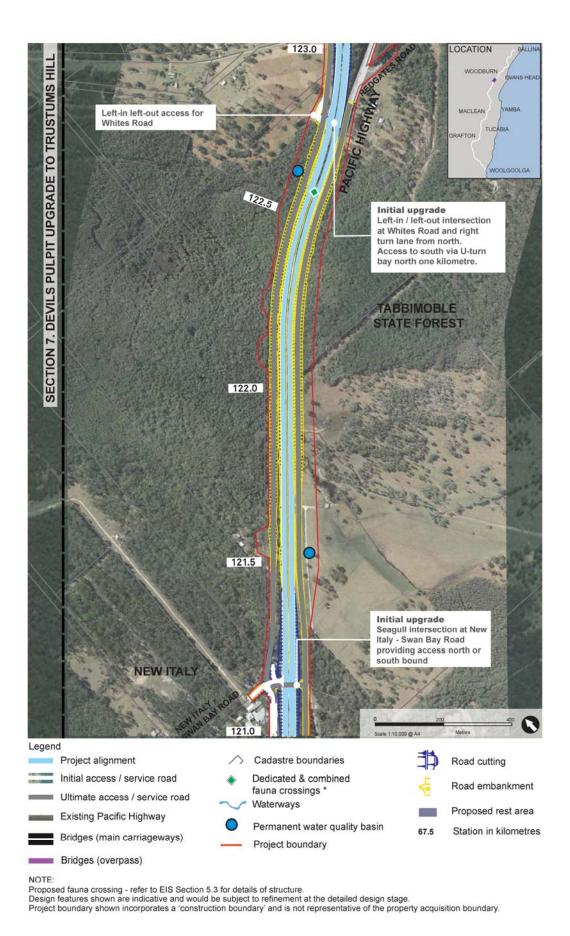


Figure 5-61: The project: Section 7 (Station 121.0 to 123.0)

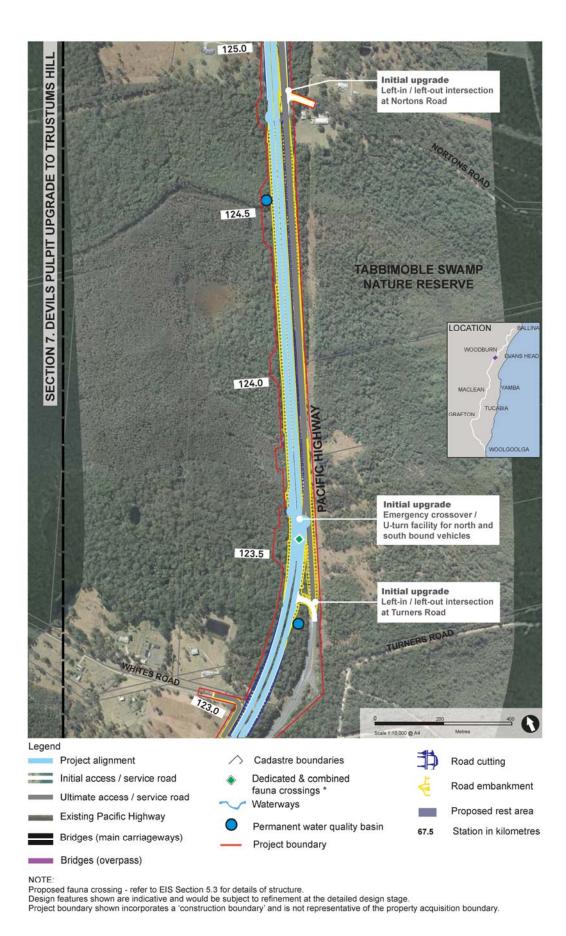


Figure 5-62: The project: Section 7 (Station 123.0 to 125.0)

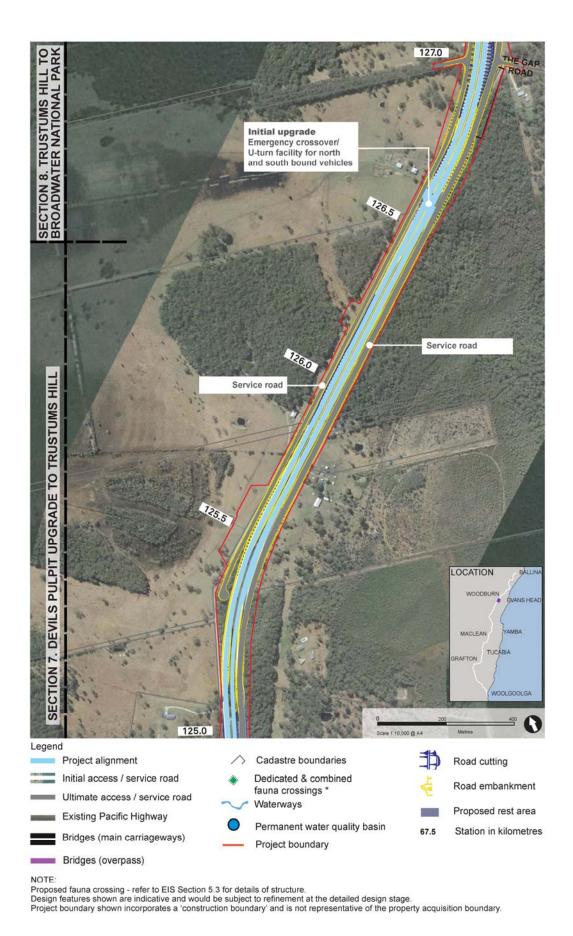


Figure 5-63: The project: Section 7 (Station 125.0 to 127.0)

5.2.8 Trustums Hill to Broadwater National Park (Section 8)

The section between Trustums Hill and Broadwater National Park (Section 8) would be about 11 kilometres long. It would extend from just south of Gap Road to Broadwater National Park (station 137.6), about 600 metres south-west of the Montis Trail.

Section 8 would be upgraded directly to motorway standard. It is described below and shown in Figure 5-64 to Figure 5-69.

Motorway standard

Section 8 would duplicate the existing highway for about 2.8 kilometres from Gap Road.

It would then deviate west at the interchange at Woodburn. North of the interchange it would cross the existing highway and follow a new alignment to the east. Section 8 would bypass Woodburn and rejoin the existing highway at the southern end of the Broadwater National Park. The deviation would be about 8.4 kilometres long and, on average, about 1.1 kilometres to the east of the existing highway.

The interchange at Woodburn would include north-facing and south-facing ramps to provide access north towards Broadwater, Wardell and Ballina and southbound towards the interchange at Iluka Road. The main carriageways would pass below the interchange at Woodburn. Two roundabouts located either side of the upgraded highway would be connected by a bridge.

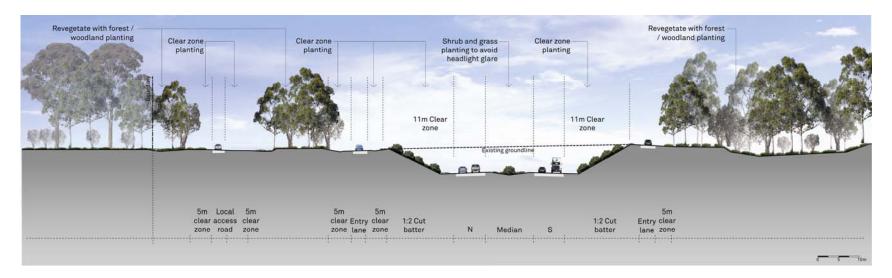
The upgrade of this section would involve constructing new northbound and southbound carriageways. Access would be via an interchange at Woodburn with no intersections. Local access would be along the service road created from using the existing Pacific Highway.

The project would result in the following changes to local roads:

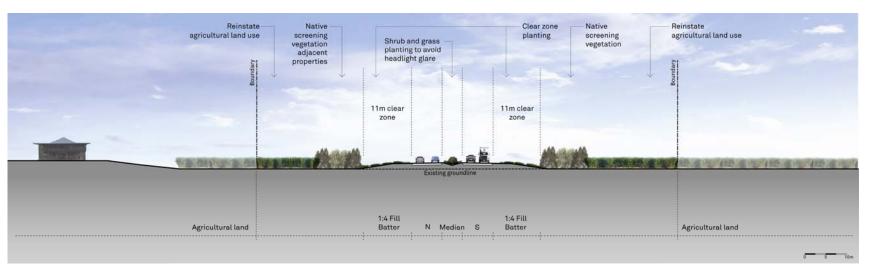
- The Gap Road would have access to the service road
- Wondawee Way would access the interchange at Woodburn via a western access road connection
- Trustums Hill Road would not have direct access to the upgraded highway. This would instead be
 via the existing highway that would form a service road to Woodburn from the interchange
- Woodburn Evans Head Road would be realigned and pass over the upgraded highway. The overpass embankment at this location would be about four metres high.

Twin bridges would be provided across Tuckombil Canal and at McDonalds Creek.

Indicative cross sections of the alignment at station 128.7 and 132.0 within Section 8 is shown below.



Cross section at station 128.7 showing interchange at Woodburn (indicative only)



Cross section at station 132.0 south of Evans Head – Broadwater Road overpass (indicative only)

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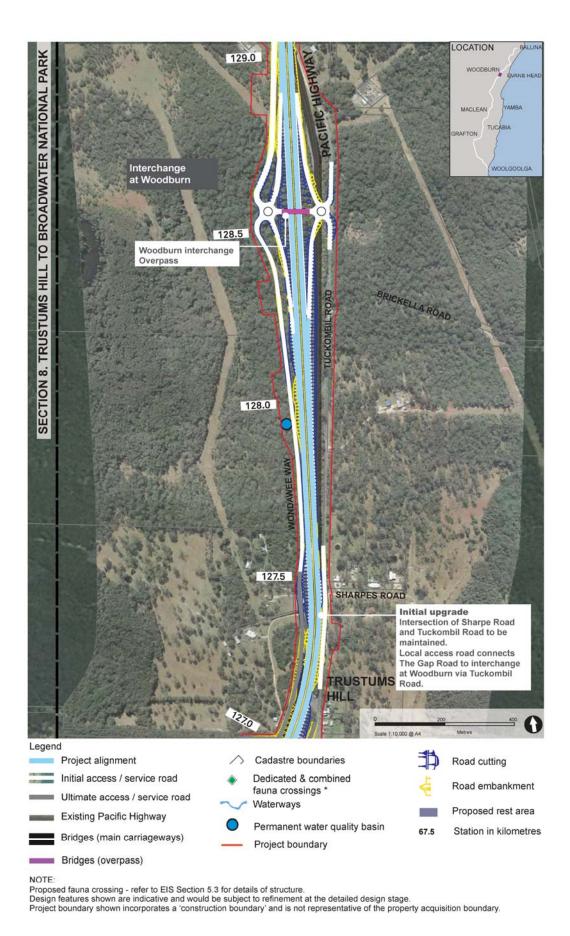


Figure 5-64: The project: Section 8 (Station 127.0 to 129.0)

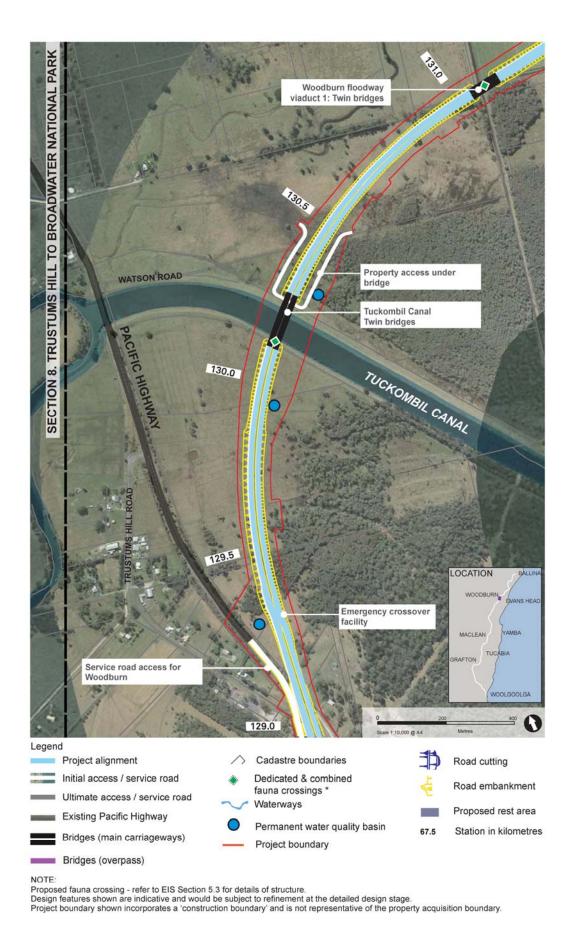


Figure 5-65: The project: Section 8 (Station 129.0 to 131.0)

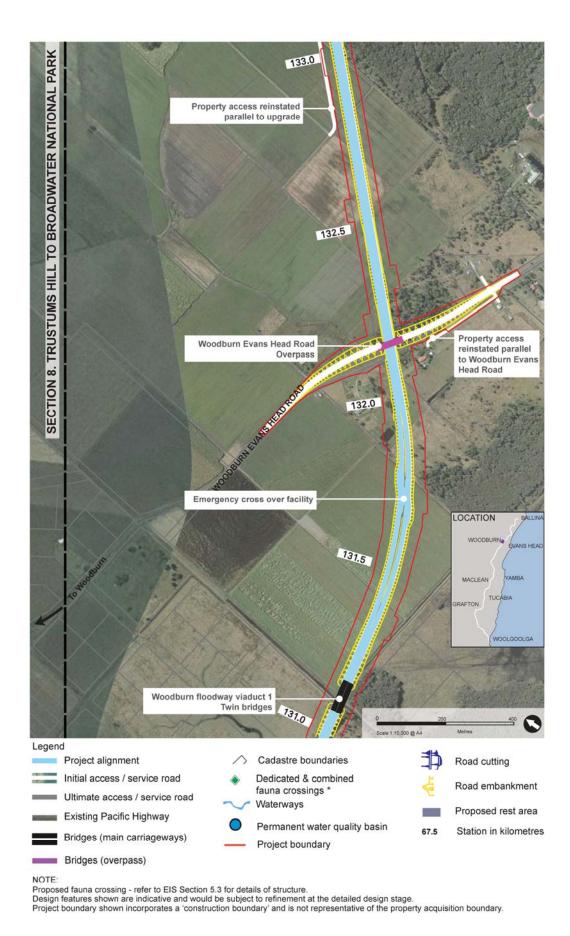


Figure 5-66: The project: Section 8 (Station 131.0 to 133.0)

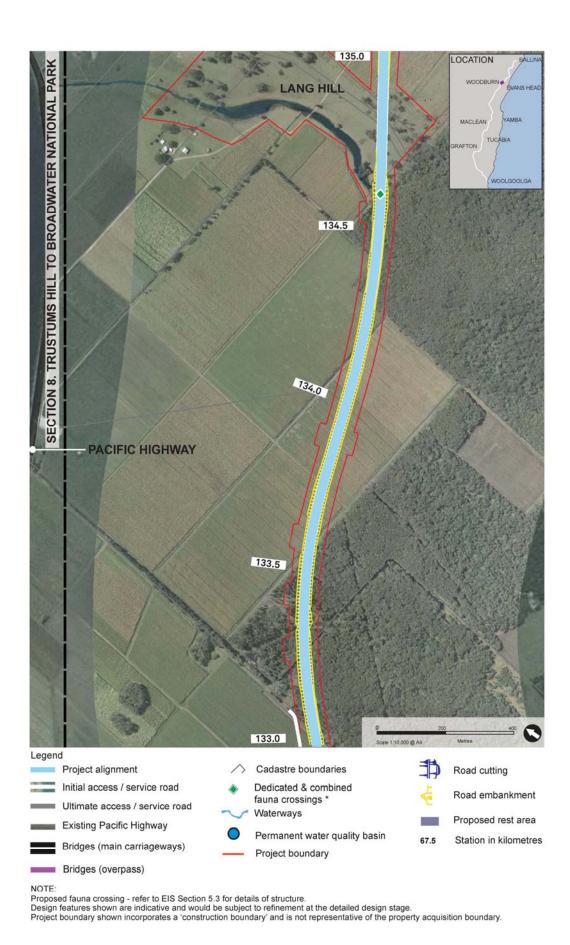


Figure 5-67: The project: Section 8 (Station 133.0 to 135.0)

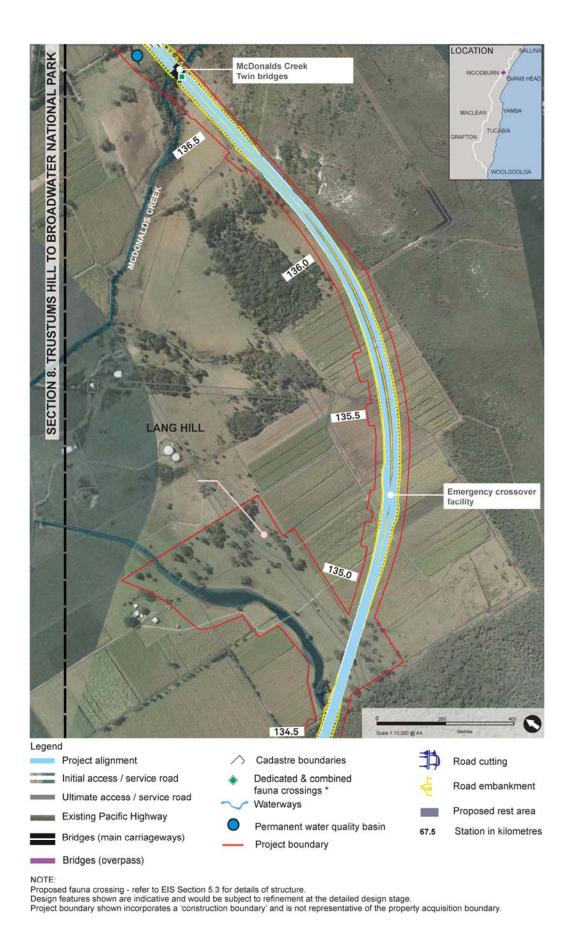


Figure 5-68: The project: Section 8 (Station 134.5 to 137.0)

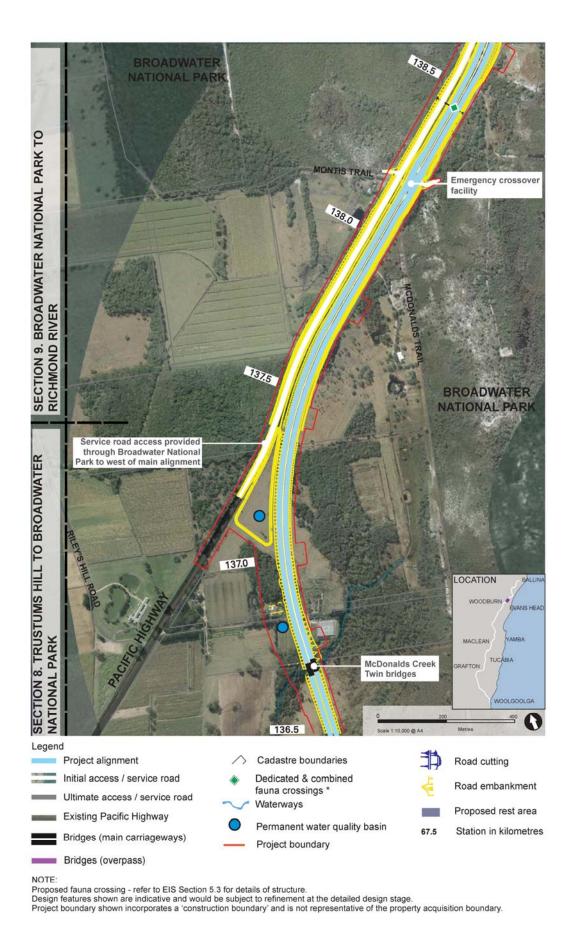


Figure 5-69: The project: Section 8 (Station 136.5 to 138.5)

5.2.9 Broadwater National Park to Richmond River (Section 9)

The section between Broadwater National Park and Richmond River (Section 9) would be about 7.5 kilometres long. This section would be upgraded directly to full motorway standard. It is described below and shown in Figure 5-70 to Figure 5-73.

Motorway standard

The first three kilometres of this section would duplicate the existing highway through Broadwater National Park. The existing Pacific Highway road reserve would form the southbound carriageway and the northbound lanes would require a new carriageway constructed on the western side. In addition, a service road would be constructed on the western side. Around 17 hectares of land would be acquired from Broadwater National Park to form the future road reserve.

Between the northern end of Broadwater National Park and the Richmond River (about 4.5 kilometres), the project would deviate about 800 metres east of the existing highway, bypassing the town of Broadwater. Where the project meets Richmond River the road corridor accommodated by the project is considerably wider. This is to allow the existing highway to tie in safely with the project should this section of the project be built ahead of the crossing of the Richmond River.

Access to the project would be via interchanges at:

- Woodburn (part of Section 8)
- Broadwater (located at Evans Head Broadwater Road) to provide access to Broadwater to the
 west and Evans Head to the east. The interchange would include two roundabouts located either
 side of the upgraded highway. North-facing ramps would provide access to the interchange from
 the north only.

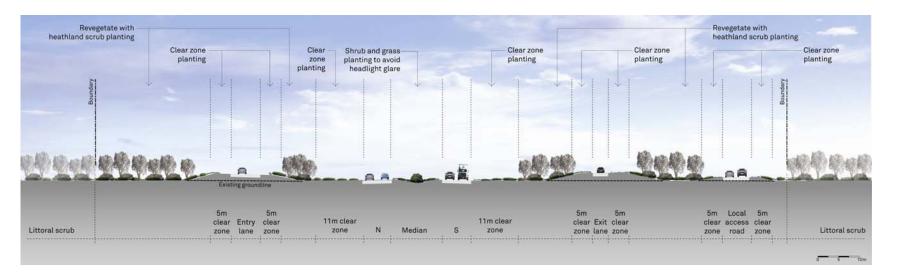
A new two-lane service road connecting Woodburn and Broadwater would be constructed on the western side of the project. This would provide a connection between local roads and the interchanges. It would also provide a continuous alternative route to the project.

Overpass bridges would be provided for wildlife connectivity between either side of Broadwater National Park. The overpasses would be about 12 metres wide and either 80 or 90 metres long and would be planted with native vegetation. These overpasses would also provide emergency vehicle access.

The NSW Sugar Milling Co-operative operates a conveyor that crosses the project just east of Cooks Hill at station 143.65. The project corridor is about 90 metres wide where the conveyor crosses. The conveyor has a steel truss set 10 metres above existing ground at the crossing point. Concrete upstanding walls and mesh protection screens would be provided as an overhead protection measure. This would prevent debris or maintenance equipment from falling onto the upgraded highway. This conveyor has previously been designed and constructed in consideration of the current project design.

A realignment of about 200 metres of Eversons Creek would also be required south of Richmond River (station 143.7). Further details of this creek realignment are provided in Section 5.3.10.

An indicative cross section of the alignment at station 142.9 within Section 9 is shown below.



Cross section at station 142.9 showing interchange at Broadwater (indicative only)

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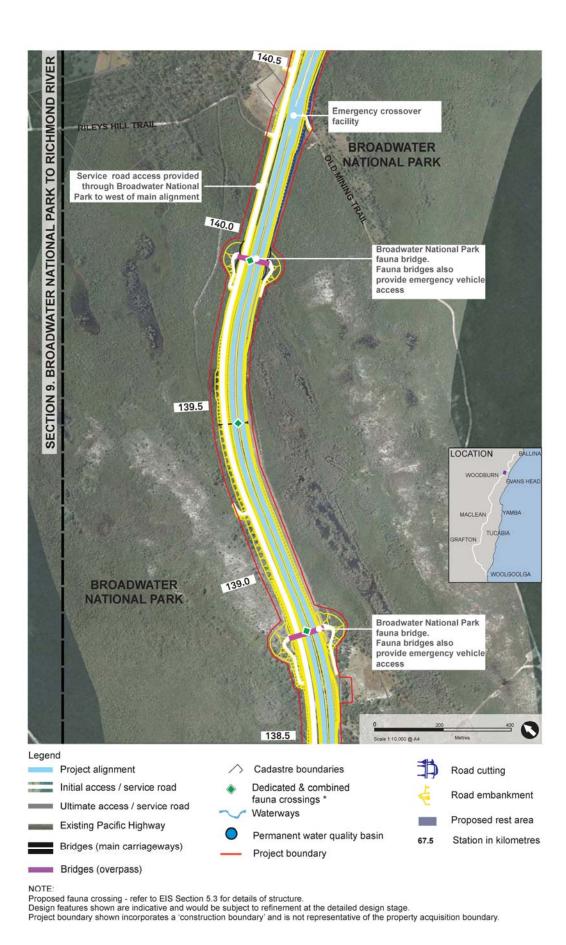


Figure 5-70: The project: Section 9 (Station 138.5 to 140.5)

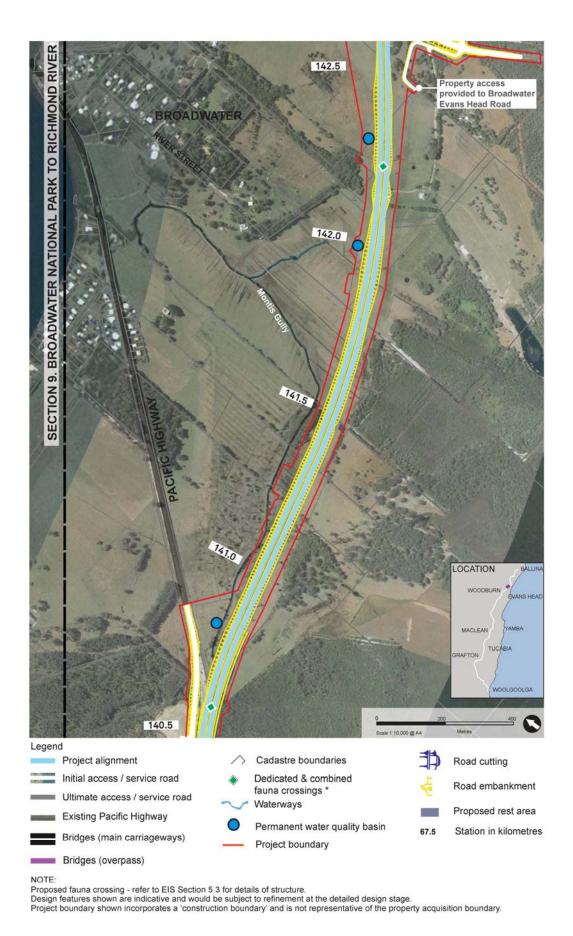


Figure 5-71: The project: Section 9 (Station 140.5 to 142.5)

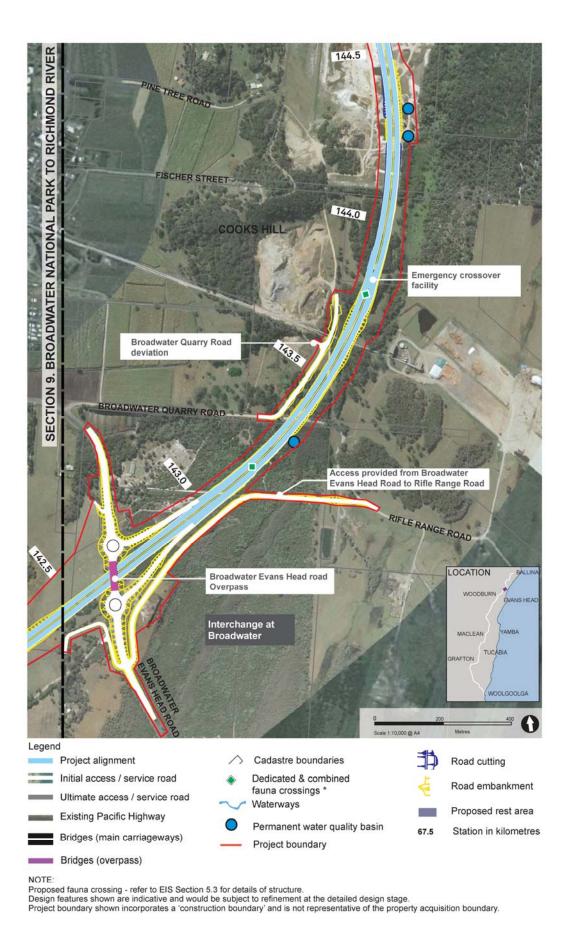


Figure 5-72: The project: Section 9 (Station 142.5 to 144.5)

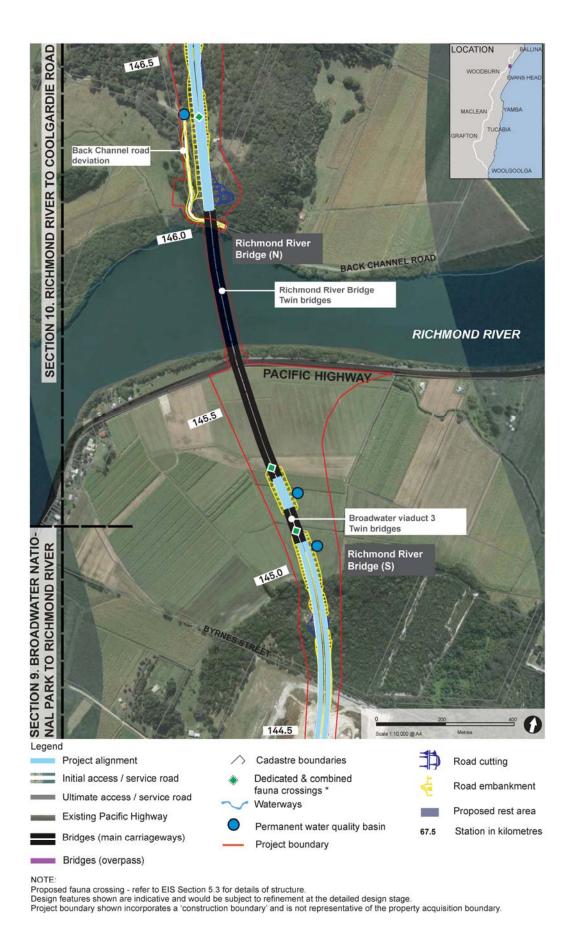


Figure 5-73: The project: Section 9 (Station 144.5 to 146.5)

5.2.10 Richmond River to Coolgardie Road (Section 10)

The section between Richmond River and Coolgardie Road (Section 10) would be about 13.5 kilometres long. It extends from the southern side of the Richmond River just east of Broadwater to a new interchange proposed at Coolgardie Road, Wardell.

Section 10 would be upgraded directly to motorway standard. It is described below and shown in Figure 5-74 to Figure 5-79.

Motorway standard

All of Section 10 would be a deviation of the existing highway, on average about 2.5 kilometres to the west of the existing highway.

The project would cross the Richmond River around station 145.5, following a new alignment west of the existing highway around Wardell Heath. It would bypass Wardell before rejoining the existing highway at Coolgardie Road.

The Richmond River crossing would require construction of a major high-level bridge about 800 metres long (this would be a twin bridge structure). It would have a vertical clearance above the Richmond River of about 15 metres. To the south of the crossing of Richmond River, the carriageway would be formed from additional twin bridges to convey floodwaters across the floodplain at around station 145.0 (Richmond River bridge south).

Section 10 would also feature a rest area north of Richmond River (for northbound and southbound traffic) between station 63.3 and 64.3. The rest area would be about one kilometre long and about 150 metres wide, and would be designed to accommodate trucks (up to B-double size) and cars. Adjacent to the rest area is a heavy vehicle checking station.

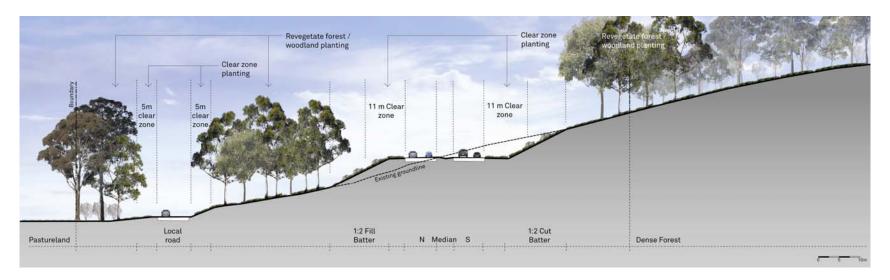
The project would result in the following changes to local roads:

- Old Bagotville Road would be realigned to the north, passing over the upgraded highway. A connection would be provided between Old Bagotville Road and Montis Road
- Thurgates Lane would be realigned around station 151.2. A connection would be provided to
 Hillside Lane and Wardell Road. Wardell Road would be realigned to the north and would pass
 over the upgraded highway via an overpass.

In addition, an interchange at Coolgardie Road north of Wardell, would provide access to Wardell. The interchange would include two roundabouts located either side of the upgraded highway. These would be connected by a bridge providing access to each side of the upgrade. North-facing and south-facing ramps would provide access to the interchange and connections to Coolgardie Road and Wardell. An additional roundabout would provide access between the existing highway about 200 metres to the east and the interchange via a connecting road.

In order to provide wildlife connectivity between the Blackwall Range and Wardell Heath, a fauna overpass is proposed at station 156.0, about one kilometre to the east of Lumleys Lane. The overpass would be about 12 metres wide and 60 metres long and would be planted with native vegetation to provide cover for fauna. Vehicle access would not be permitted on this overpass.

An indicative cross section of the alignment at station 146.1 within Section 10 is shown below.



Cross section at station 146.1 showing the location at the northern abutment of the bridge over Richmond River (indicative only)

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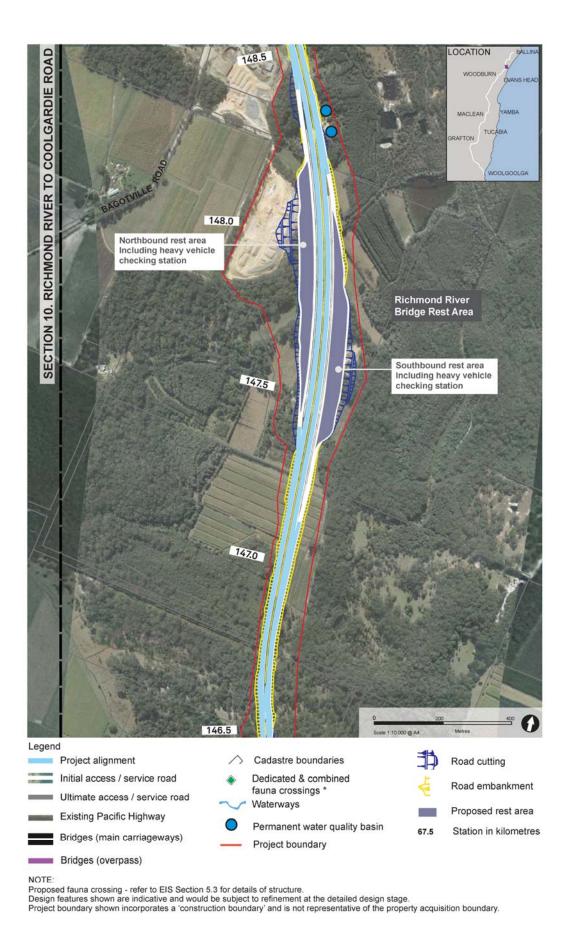


Figure 5-74: The project: Section 10 (Station 146.5 to 148.5)

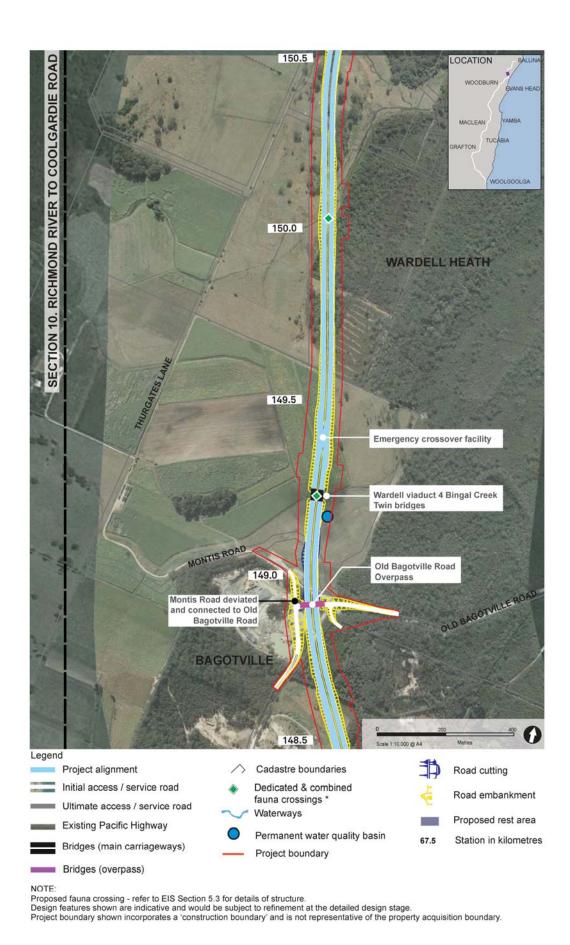


Figure 5-75: The project: Section 10 (Station 148.5 to 150.5)

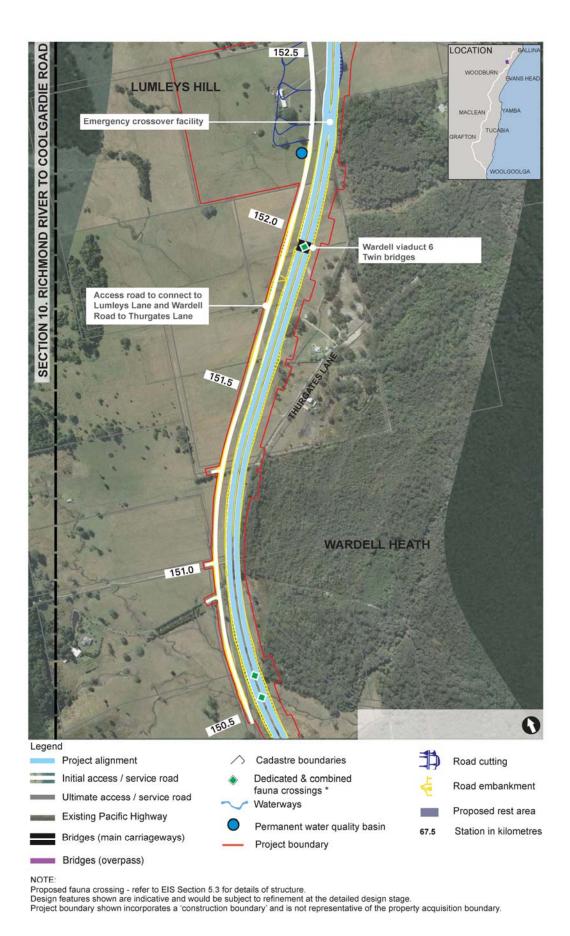


Figure 5-76: The project: Section 10 (Station 150.5 to 152.5)

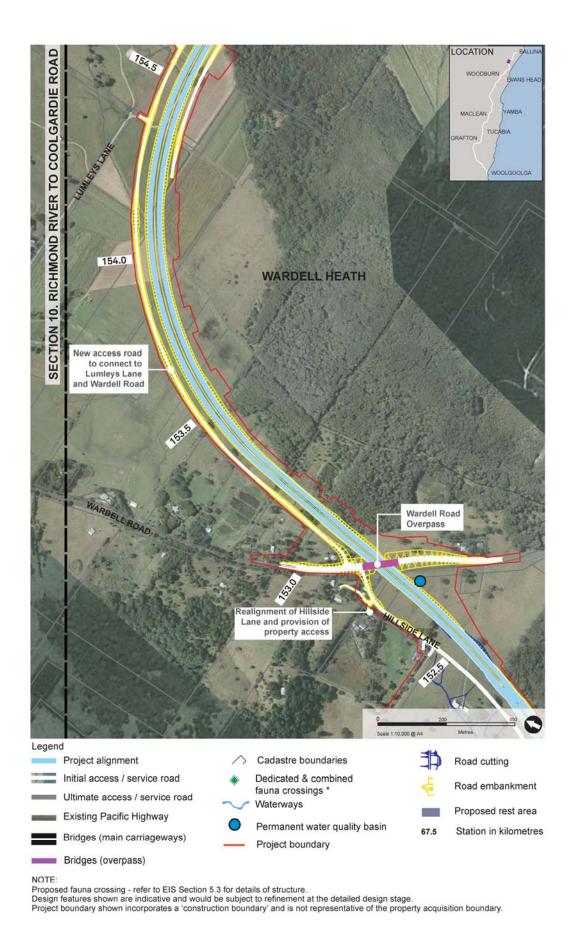


Figure 5-77: The project: Section 10 (Station 152.5 to 154.5)

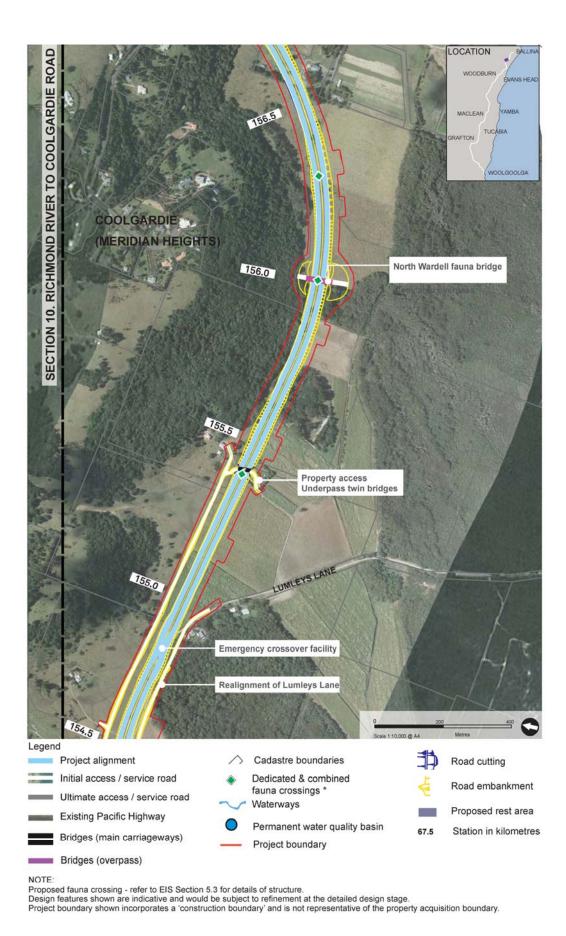


Figure 5-78: The project: Section 10 (Station 154.5 to 156.5)

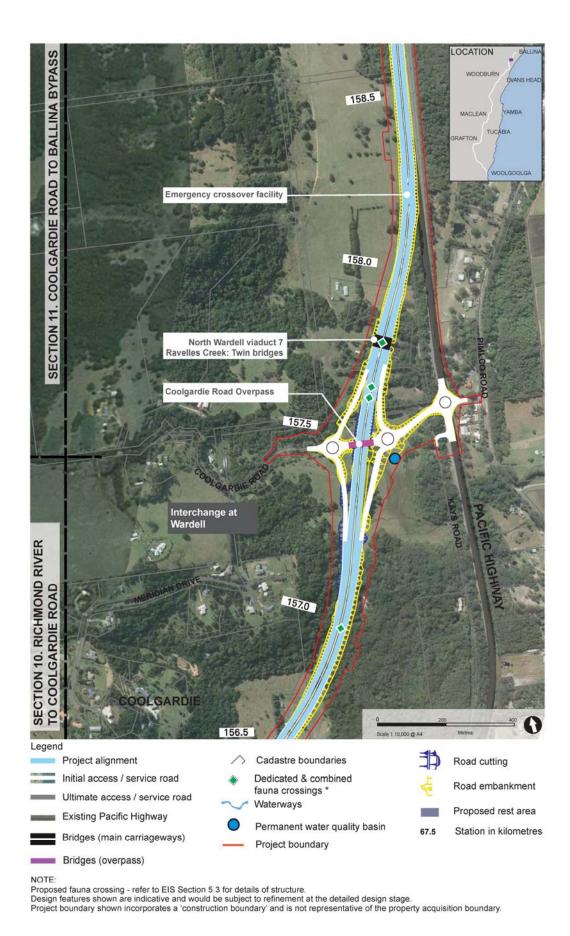


Figure 5-79: The project: Section 10 (Station 156.5 to 158.5)

5.2.11 Coolgardie Road to Ballina bypass (Section 11)

The section between Coolgardie Road and the Ballina bypass (Section 11) would be about 5.4 kilometres long and would involve duplication of the existing highway. It would extend from Coolgardie Road to the tie-in with the recently opened Ballina bypass. Section 11 of the project would be upgraded directly to motorway standard.

Section 11 is described below and shown in Figure 5-80 to Figure 5-82.

Motorway standard

Between Coolgardie Road and about 150 metres north of Whytes Lane, northbound and southbound carriageways would be constructed adjacent to the existing highway on the western side. The southbound lanes of the existing highway would become a local service road and the single northbound lane would be decommissioned.

The project would result in the following changes to local roads:

- Whytes Lane would be realigned to the south and would have a connection to the interchange at Coolgardie Road, using the existing highway as a service road
- McAndrews Lane would pass over the upgraded highway, connecting to Whytes Lane via an overpass
- Whytes Lane West, Pimlico would be realigned so that it can connect to McAndrews Lane. Pimlico Road would be closed at the connection with the bridge crossing of Emigrant Creek at Smiths Drive
- At the northern end of the tie-in with Ballina bypass, a 220-metre single carriageway bridge would be built over Emigrant Creek to connect Pimlico Road to Smiths Drive. This connection would form part of the service road for the project between Teven Road Junction and the Bruxner Highway Interchange.

From about 150 metres north of Whytes Lane to the connection with the Ballina bypass, a northbound carriageway would be constructed to the west of the existing highway. The existing highway would then become the southbound carriageway.

Access to the project would be provided from the south by the interchange at Coolgardie Road and from the north by the interchange at the Ballina bypass and the Bruxner Highway. This interchange would be constructed as part of the Ballina bypass upgrade (which is a separate project and not part of this EIS). The tie-in with the Ballina bypass would be to the south of Pimlico Road at station 164.0.

All parts of the Pacific Highway upgrade north of Pimlico Road are part of the Ballina bypass upgrade project.

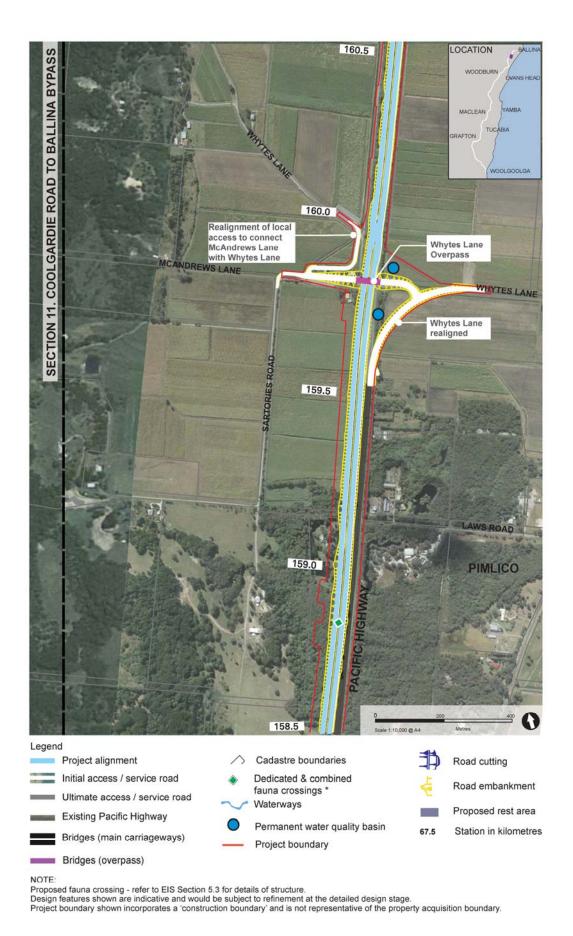


Figure 5-80: The project: Section 11 (Station 158.5 to 160.5)

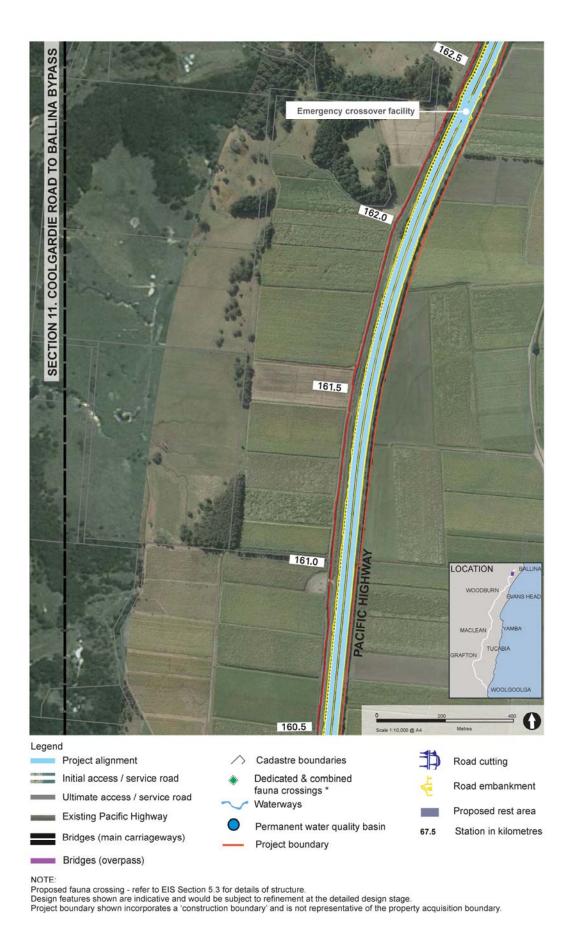


Figure 5-81: The project: Section 11 (Station 160.5 to 162.5)

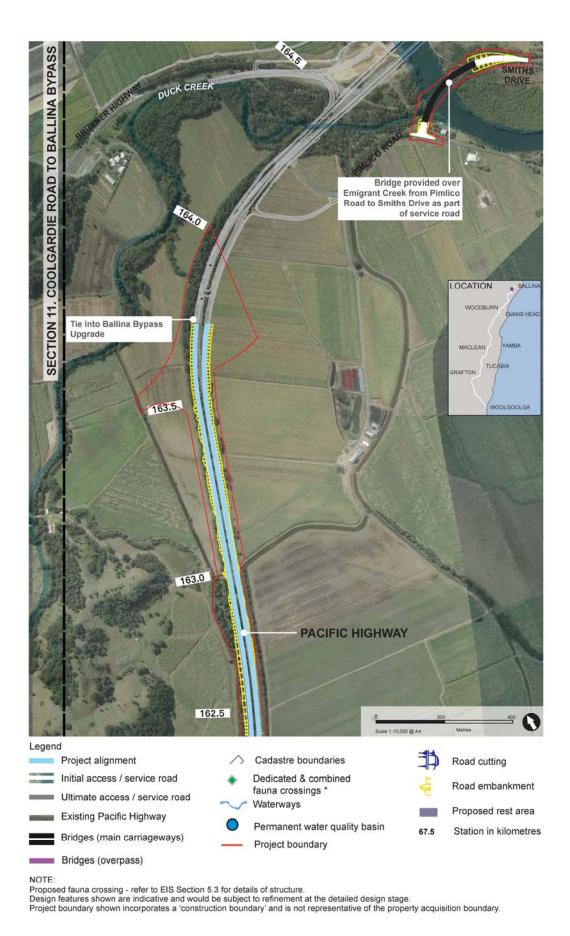


Figure 5-82: The project: Section 11 (Station 162.5 to 164.0)