6. Existing traffic and road infrastructure

One of the Pacific Highway Program objectives is to maximise the reuse of the existing highway asset. The reuse may involve the use of existing pavement as either one of the through carriageways or as a service road. This chapter provides a description of the existing highway and an outline of the areas where existing assets are to be reused. Relevant information has been included in Section 6.5.

6.1 Review of existing alignment

6.1.1 Section A

Existing carriageway typical section

Existing carriageways consist of lane widths of 3.5 metres for single and overtaking lanes. Shoulder widths are generally two metres for single lanes and one metre for overtaking lanes.

For the northbound carriageway, an overtaking lane exists from the project limit to Chainage 2000. For the southbound carriageway, an overtaking lane exists from Chainage 2100 to 3600.

The existing crossfall varies throughout this section and is difficult to determine. In general, the northbound carriageway crossfall is 1.5 per cent and the southbound is 3 per cent.

Batter slopes and clear zones

Batter slopes range from 1:2 (fill) to 1:2 (cut). The 1:2 fills are protected by W beam safety barrier. In general, the clear zone width is four metres to five metres from the edge line to the edges of obstacles, such as trees and cuttings.

Bridges

There are no existing bridges within this section.

6.1.2 Section B (Chainage 3485 to 9100)

Existing carriageway typical section

Existing carriageways consist of 3.5 m lane widths. Shoulder widths vary between one metre and two metres.

For the northbound carriageway, an overtaking lane exists from Chainage 7500 to 8700. For the southbound carriageway, an overtaking lane exists from Chainage 8000 to 9400.

The existing crossfall varies throughout this section and ranges between 2.5 per cent and 3 per cent, with the exception of tight horizontal curves, which are superelevated up to 5 per cent.

Batter slopes and clear zones

Batters are generally flat and obstacles within the clear zone are limited along the low-lying farming areas.

Elsewhere, batter slopes range from 1:2 (fill) to 1:2 (cut). In general, the clear zone width for the flatter tree-lined areas is four metres to five metres. In the vicinity of cuts, the clear zone width is generally three metres.

Bridges

There are three existing bridges within this section. These are described in Table 6-1 below.

Table 6-1 Existing bridges in Section B

Chainage	Location	Shoulder width	Total bridge width
4800	Corindi River	0.75 metres	8.6 metres
5500	Blackadder Gully	Two metres on western side 3.5 metres on eastern side	12.75 metres
6500	Cassons Creek	One metre	8.85 metres

6.1.3 Section C

Existing carriageway typical section

Existing carriageways contain lane widths of 3.5 metres for single and overtaking lanes. Shoulder widths are two metres adjacent to single lane and one metre adjacent to overtaking lanes.

For the northbound carriageway, an overtaking/climbing lane exists from Chainage 10,800 to 14,200. There is no overtaking lane on the southbound carriageway.

The existing crossfall varies throughout this section and ranges between 2 per cent and 3 per cent. 600 metre horizontal curves are superelevated up to 5 per cent for each direction.

Batter slopes and clear zones

Batter slopes range from 1:2 (fill) to 1:2 (cut), in general, the clear zone width for the flatter tree-lined areas is five metres. In the vicinity of cuts, the clear zone width is generally three metres to four metres. Fill areas of up to 1:1.5 slopes are protected with safety barrier.

Bridges

There are no existing bridges within this section.

6.1.4 Section D

Existing carriageway typical section

Existing carriageways contain lane widths of 3.5 metres for single and overtaking lanes. Shoulder widths are two metres adjacent to single lanes and one metre adjacent to the overtaking lane.

There is no overtaking lane along the northbound carriageway. For the southbound carriageway, an overtaking lane exists from Chainage 13,500 to 15,800.

The existing crossfall varies throughout this section. In general, the carriageway crossfall along straights is 2.5 per cent. Horizontal curves are superelevated up to 2 per cent for each direction.

Batter slopes and clear zones

Batter slopes range from 1:2 (fill) to 1:2 (cut). In general, the clear zone width for the flatter tree-lined areas is five metres. In the vicinity of cuts, the clear zone width is generally three metres. Fill areas of up to 1:2 slopes are protected with safety barrier.

Batter slopes within the recently completed Halfway Creek duplication range from 1:2 (fill) to 1:2 (cut). In general, the clear zone width for the flatter tree-lined areas is eight to ten metres. In the vicinity of cuts, the clear zone width is generally four metres to five metres. Fill areas of up to 1:2 slopes are protected with safety barrier.

Bridges

There are no bridges in this section.

6.1.5 Section E (Chainage 19,700 to 27,823)

Existing carriageway typical section

Existing carriageways contain lane widths of 3.5 metres for single and overtaking lanes. An existing overtaking lane along the northbound carriageway is located between Chainages 25,000 and 26,900. For the southbound carriageway, an overtaking lane exists from Chainage 23,500 to 24,600.

Shoulder widths are two metres adjacent to single lanes and one metre adjacent to overtaking lanes, with the exception of Chainage 27,000 to 27,300, where shoulder widths on both sides are approximately 0.5 metres.

The existing crossfall varies throughout this section and is difficult to determine. In general, the carriageway crossfall is 2.3 per cent along straights. All horizontal curves in this section are tight and are superelevated up to 5 per cent with the exception of one curve, which is superelevated up to 8 per cent.

Batter slopes and clear zones

Batter slopes on both sides are generally 1:4 (fill). The clear zone width for these areas is approximately four to five metres to the line of trees.

Bridges

There are two existing bridges within this section. These are described in Table 6-2 below.

Table 6-2 Existing bridge widths

Chainage	Location	Shoulder width	Total bridge width
22,800	Halfway Creek	1.0 m	9.2 m
24,500	Wells Crossing	1.0 m	9.35 m

6.2 Existing highway access

The existing highway is predominantly a two-lane road. Table 6-3 describes the number of accesses along the highway over the area of interest. From this information it is clear that there are a number of significant challenges associated with the development of this highway from an access perspective.

Table 6-3 Access along existing highway

Section	Public roads		Private roads		Driveways		Total accesses
	East	West	East	West	East	West	
Arrawarra Creek to Corindi Beach (Coral Street)	3	3	0	2	0	1	11
Corindi Beach to foot of Dirty Creek Range	5	3	3	4	6	4	25
Dirty Creek Range to Halfway Creek deviation (Lemon Tree Road)	2	3	4	4	1	1	15
Halfway Creek deviation to Bald Knob Tick Gate Road	2	2	5	5	1	3	18

The highway is the only link in the region providing for local, intra and inter regional movements of traffic. This has led to a mix of different traffic using the highway and has reduced its operating capacity.

6.3 Existing provision for pedestrians and cyclists

Currently there is no defined pedestrian or cycling network within the study area. Pedestrian and cyclists have been observed to use the existing road shoulders.

6.4 Existing public transport network

There are a number of bus services operating along the Pacific Highway. Busways operate both school and general public bus services within the study area. The services are summarised below in Table 6-4.

Table 6-4 Busways services

Bus route	Days	Frequency	School / passenger service
Coffs Harbour to Grafton	Mon - Fri	AM: 1 per day PM: 1 per day	Public and school service (continues to operate in school holidays to different timetable).
Grafton to Coffs Harbour	Mon - Fri	AM: 1 per day PM: 1 per day	Public and school service (continues to operate in school holidays to different timetable).

Bus route	Days	Frequency	School / passenger service
Coffs Harbour to Woolgoolga	Mon – Fri, Sat	AM: 2 per day (M-F); 1 per day (Sat) PM: 2 per day (M-F); 1 per day (Sat)	Mon – Fri AM: One public and school service (continues to operate in school holidays to different timetable) and one public service (continues to Red Rock on request). Mon – Fri PM: One public and school service (continues to Red Rock on school days) and one school only service (continues to Red Rock on request).
Woolgoolga to Coffs Harbour	Mon – Fri, Sat	AM: 1 per day PM: 2 per day (M-F); 1 per day (Sat)	Public services
Red Rock to Coffs Harbour	Mon – Fri	AM: 2 per day	One public and school service (operates during school term only). One public service
Woolgoolga to Red Rock	Mon – Fri	AM: 1 per day PM: 1 per day	AM: Public service PM: School service

Other bus operators include:

- Greyhound operates four services per day in both directions. Every service stops in Woolgoolga, however there are no stops within the study area and the times do not coincided with the other bus services.
- Premier Motor Service operates three services per day in both directions. Every service stops at Woolgoolga however there no are stops within the study area and the times do not coincide with the other bus services.

The maximum number of buses operating daily on any section of the highway between Woolgoolga and Wells Crossing is estimated at 18 buses.

6.5 Existing highway traffic

Traffic data was collated as part of the preliminary traffic assessment (December 2005). Additional traffic data has since been obtained from local councils and the RTA.

6.5.1 Existing highway traffic

Annual daily traffic obtained from tube counts in 2004 are shown below in Table 6-5.

Table 6-5 Annual Average Daily Traffic (vehicles per day) along the highway from tube counts (29/11/04 – 5/12/04)

Day	Bald Knob	Dirty Creek Range	Corindi Beach	Average
Monday	7049	7792	9940	**8260**
Tuesday	7078	7646	10,040	**8255**
Wednesday	7084	7718	9986	**7042**
Thursday	7670	8272	10,729	**8890**
Friday	8423	8892	11,378	**9564**
Saturday	6988	7691	9920	**8200**
Sunday	7019	7669	9526	**8071**
AADT	**7330**	**7954**	**10,217**	**8326**

Notes: Annual Average Daily Traffic is the total traffic per year divided by the number of days in the year (366 days in 2004). It is measured by the average number of axle pairs passing in both directions in a 24 hour period estimated over a period of one year.

Traffic characteristics have been determined from tube count surveys conducted in 2004 and are summarised below:

- The Annual Average Daily Traffic is greater at the southern end of the job than the northern end.
- The Annual Average Daily Traffic range for the highway is 7,330 to 10,217 vehicles per day. Heavy vehicles comprise approximately 20 per cent of the highway traffic.
- The Annual Average Daily Traffic flow profile is similar along the route with the exception of the area south of Corindi Beach, which shows a higher traffic profile. This indicates more locally generated traffic towards the southern end of the project.
- Traffic from 10 pm to 5 am is low, averaging around 100 vehicles per hour, of which over 50 per cent are heavy vehicles.
- The greatest volume of heavy vehicles occurs during the period between 3 pm and 11 pm.
- The average 85th percentile speed is 107 km/h; the average speed is 101 km/h based on speed surveys completed at four locations along the highway over seven days.
- The highest speeds occur during the early morning hours (midnight – 6 am).
- The proportion of heavy vehicles as part of the traffic stream at night is more than double that during the day.

6.5.2 Travel time on existing highway

The travel time along the existing section of highway between Arrawarra Beach Road (north of Woolgoolga) and Bald Knob Tick Gate Road (north of Wells Crossing) has been determined to be approximately 17 minutes as highlighted in Table 6-6. This has been based on the assumption that the traffic flow is unimpeded and motorists are able to travel at the sign posted speed limit of 100 km/h.

Table 6-6 Existing highway - travel time (free flow conditions)

Scenario	Distance	Speed limited (km/h)	Travel time (min)
Existing	27.836	100	16 min 42 sec

The total travel time (vehicle hours) for the existing highway has been estimated using the projected AADT and average speeds calculated using *Austroads Part 2 Guide to Traffic Engineering Practice Roadway Capacity (Section 3 Uninterrupted 2 lane 2 way flows)*.

6.5.3 Origin-destination survey

An origin-destination survey was conducted in December 2004 to determine the proportion of through and local traffic. This survey was compared with a subsequent survey undertaken on behalf of the RTA in 2006. The data of both surveys indicates that approximately 60 per cent of southbound traffic at Bald Knob Tick Gate Road continues through to the southern project limits. It was also found that approximately 47 per cent of northbound traffic at Arrawarra Creek continues north to Bald Knob Tick Gate Road.

A review of the traffic counter data for night and day travel indicates that the through heavy vehicle component appears to increase substantially to 90 per cent of all through vehicle trips in the evening hours. However there appears to be no substantial change in the light vehicle travel patterns. This indicates that the travel patterns only appear to change at night for heavy vehicles where the proportion of through vehicles nearly doubles.

6.6 Existing crash history

The five-year crash history provided by the RTA has been analysed to identify any historical crash trends from the location and types of crashes. This analysis has been performed for the Pacific Highway over the length of works included in this project.

An assessment of crashes for the highway section between Woolgoolga and Wells Crossing for the period 2002 to 2006 shows that:

- 105 crashes occurred in this period:
  - Four fatal crashes.
  - Forty crashes resulting in injuries.
  - 61 crashes without injuries.
- 8.9 per cent of all crashes occurred in the vicinity of intersections.
- 61.9 per cent of all crashes involved single vehicles while 34.9 per cent involved multiple vehicles.
- 57.4 per cent off all crashes occurred during daytime.
- The main crash movements (66 per cent) involved:
  - Off road, on straight, hit object 17.1 per cent.
  - Off road, on curve, hit object 13.3 per cent.
  - Head on, not overtaking, 10.5 per cent.
  - Hit animal 9.5 per cent.

6.6.1 Crash locations

Figure 5 illustrates the locations of all crashes for the period 2002 to 2006 along the Pacific Highway within the study area. Whilst the crashes are dispersed throughout the entire section of Pacific Highway, there is a clear concentration of crashes around the intersection with Coral Street south of Corindi, the intersection with Hawthorn Close (2.5 km north of Corindi), and in the vicinity of Kungala Road.

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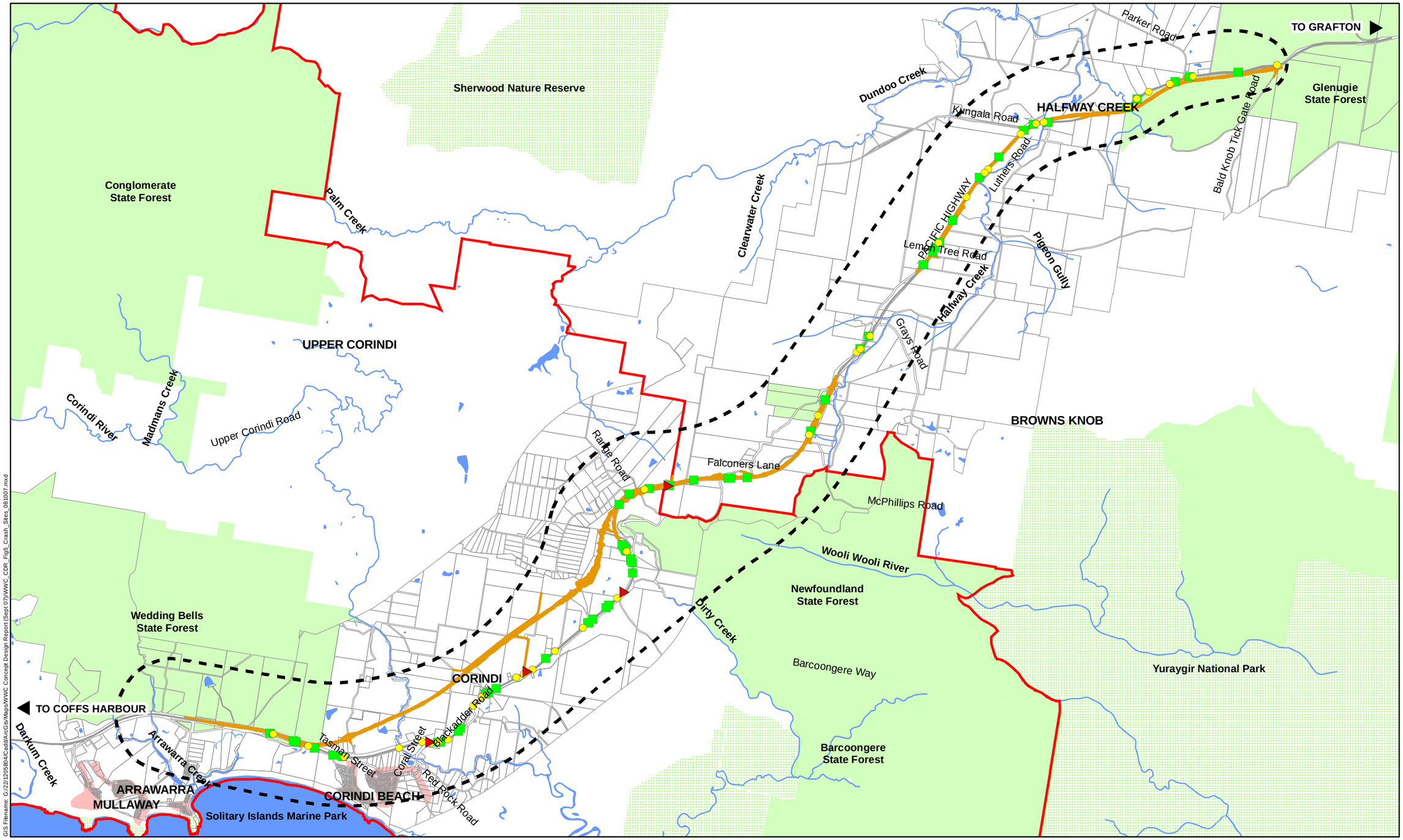

GIS Filename: G:/22/12050804/Cadd/ArcGis/Maps/WWC Concept Design Report (Sept 07)/WWC_CDR_Fig5_Crash_Sites_081007.mxd

SCALE 1:70,000 @ A3

0 0.5 1 2 Km

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

GRID N

Legend

- Preferred Route
- Watercourse
- Local Govt Area
- Cadastre
- Builtup areas
- National parks, Nature reserves
- State forests
- Study Area
- Crashes 2002 - 2006
- Fatality
- Serious Casuality Crash
- Minor Crash

Spatial layers courtesy of Coffs Harbour City Council, NSW Department of Lands, NSW Roads & Traffic Authority, Geoscience Australia, NSW Department of Environment & Conservation, NSW Department of Primary Industries.

Crash Locations

Figure 5

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6.7 Reuse of existing infrastructure

Table 6-7 below provides a summary of the reuse of the existing highway.

A total of 24.4 km (82 per cent) out of the existing 29.9 km (including 2.5 km of existing dual carriageway) is being reused as either through carriageway, retained as Halfway Creek Duplication or reused as service roads.

Of the existing highway 9250 m (31 per cent) would be used as one of the through carriageways, 4900 m (16 per cent) will be reused in the existing Halfway Creek Duplication (both carriageways), and 10,200m (34 per cent) will be used as service road.

The remainder of the existing highway has been reconstructed to remove sections of sub-standard horizontal and vertical alignment.

Table 6-7 Reuse of the existing highway asset

Section	Chainage	Indicative reuse for existing highway
A	1100–3350	Southbound carriageway
A	3300–3900	Reconstruction
A / B	3900–9400	Service road
C	9400–10,600	Service road
C	10,600–12,300	Reconstruction
C / D	12,300–15800	Southbound carriageway
D	15,800–16,600	Southbound carriageway (some reconstruction required)
D	16,600–19,050	Halfway Creek Duplication – no changes proposed
E	19,050–21,000	Southbound carriageway
E	21,000–21,400	Reconstruction
E	21,400–22,150	Southbound carriageway
E	22,150–22,900	Realignment (existing highway not used)
E	22,900–23,500	Service road (Luthers Road realignment)
E	23,500–23,700	Reconstruction
E	23,700–24,100	Northbound carriageway
E	24,100–24,500	Realignment (existing highway not used – possible use as continuous access road if upgraded to motorway standard)
E	24,500-27,400	Service road