
Edendale Realignment Project

1 Background

This report provides a brief assessment of the advantages and benefits of the proposed SH1 realignment from a traffic perspective and has been written to inform the Notice of Requirement application. The SH1 Realignment project (the realignment) was developed to improve the efficiency and reduce delays to the SH1 traffic when travelling through Edendale.

1.1 Previous Options Assessed

Previous Scheme Assessment reports completed by MWH consultants considered a grade separated intersection for access into Fonterra and Edendale. This option was subsequently replaced with a roundabout with separate legs providing access to Fonterra and Edendale Township. The decision to replace the grade separated interchange with roundabout was made due to the high cost and low traffic numbers. The costs could not be justified due to the low Benefit Cost Ratio (BCR).

2 Option for the detailed design

The chosen option for the detailed design of the realignment consists of roundabout at the southern end and left turn in only at the northern end of the realignment. A passing lane is being proposed north of the roundabout to mitigate and improve travel time benefits, by allowing overtaking of the slow moving vehicles (Fonterra traffic).

3 Intersections

There is only one main intersection at Ferry Road within Edendale on the current SH1 alignment. With the new alignment there will be two intersections formed.

3.1 Southern End

The intersection at the southern end will be a rural roundabout with a circulating speed of 30km/hr to 40km/hr depending on the vehicle. The roundabout has a radius of 52m which is above the requirement of 45m, to accommodate the trucks entering and exiting the roundabout. The bigger radius also helps in accommodating more vehicles to circulate within the roundabout. With the existing traffic numbers and the future traffic growth a single lane roundabout was deemed adequate based on the modelling results. The left turn slip lane for SH1 traffic going north was considered, but was deemed unsafe due to the presence of the access to the waste water plant and this would force the vehicles to merge and diverge for the passing lanes which has the potential to create conflicts.

3.2 Northern End

The intersection at the northern end will be a left turn in only from the new alignment. The northern leg coming into the new alignment will be one way, vehicles travelling from Mataura to Edendale will only be allowed to enter and all exits are banned.

Every intersection added to any section of the road increases the crash rate by 20% due to the exposure to conflicts between the various movements. To mitigate the exposure and conflicts the proposal is to not allow the vehicles exiting at the northern leg. The one way section will allow for vehicles to enter Edendale from Mataura and will limit the movements at the intersection. The location of the intersection at the northern end is right after the passing lane where the vehicles will be merging which creates safety issues due to increased speeds. By restricting this intersection to entrance only, this eliminates this risk.

3.3 Wastewater Treatment Access

The existing access to the waste treatment plant is almost in the middle of the new proposed alignment. The access in its existing location would have been in the middle of the proposed passing lane. This would have created issues for vehicles turning out to the access, with 100 vehicles per day using the access it was proposed the access would be provided closer to the roundabout where the speeds are slow and the access would be only left turn in/out.

3.4 Roundabout delays

The modelling report was completed for current and future traffic growth and detailed below in table 1 & 2 – are the results. The roundabout will perform at a level of service A during peak periods.

	4-Leg Roundabout	4-Leg Slip Lane +	3-Leg Roundabout
Intersection Level of Service	A	A	A
Average Intersection Delay (s)	7.5	7.1	7.8
Average Delay South (s)	6.7	6.7	4.6 (southeast)
Average Delay East (s)	4.4	4.4	-
Average Delay North (s)	11.5	11.5	10.3
Average Delay West (s)	7.7	6.1	7.9
95% Queue Length South (m)	11	11	10 (southeast)
95% Queue Length East (m)	14	14	-
95% Queue Length North (m)	14	14	11
95% Queue Length West (m)	17	5	13

Table 1 – Modelling results for intersection layout options (2026 AM)

	4-Leg Roundabout	4-Leg Slip Lane +	3-Leg Roundabout
Intersection Level of Service	A	A	A
Average Intersection Delay (s)	8	7.7	8.3
Average Delay South (s)	7.4	7.4	4.9 (southeast)
Average Delay East (s)	5	5	-
Average Delay North (s)	11.5	11.5	10.5
Average Delay West (s)	7.7	6.6	8.2
95% Queue Length South (m)	7	7	12 (southeast)
95% Queue Length East (m)	19	19	-
95% Queue Length North (m)	18	18	16
95% Queue Length West (m)	17	5	15

Table 2 – Modelling results for intersection layout options (2026 PM).

4 Traffic

Currently the AADT of the SH1 is 4600 vehicles per day. Of this 2800 to 3000 vehicles are through traffic travelling from Matura to Invercargill which will bypass Edendale completely.

All the trucks and traffic from Fonterra travelling to Matura and Invercargill will be eliminated from the township.

Ferry Road intersection estimated daily traffic is 3000vpd, where 1500vpd enters SH1 and 1500vpd exits SH1 at this intersection.

Residents on Crescent Road and closer to the northern end of the realignment will have to travel extra 3km or 3mins to get to the northern end due to the banned movements at the intersection.

For those living in the Edendale township and further afield, exiting via the Ferry Rd/SH1 intersection (750), will now have to access SH1 by going through the roundabout. This less than 1km further to travel, which is less than 1 minutes additional travel time.

Traffic from Gore (southbound) will still access North Rd and Crescent Rd in much the same way as they do now.

4.1 Heavy Vehicles passing through Edendale

Currently 780 heavies go past the school. (400 Fonterra, 180 from Ferry Road, 200 that travel between Matura and Invercargill)

- 400 are Fonterra generated vehicles traveling towards Invercargill which will be eliminated.
- 200 heavies travelling between Matura and Invercargill will be eliminated.
- Currently 360 heavies come in and out of ferry road onto SH1, assuming half of them travel to/from Matura (180) and other half travel to/from Invercargill (180).
- With the realignment the vehicles travelling to Matura from Ferry Road (90) will be added to go past the school. The number of heavies that will go past the school post realignment will be $180 + 90 = 270$
- There is an approximate reduction of 510 heavy vehicles going through Edendale Township past the school.

5 Safety In design

As explained above the following design elements have been designed purely from a safety perspective

- No intersections within the passing lanes
- Restricted movements from the northern intersection to avoid conflicts. Allowing vehicles to exit out onto the new alignment would be dangerous due to:
 1. Increased speed due to the presence of passing lane and merging movements

2. Vehicles exiting would have to travel across the lane with adverse cross fall due to the presence of the curve.
- Access to the Fonterra waste water treatment plant closer to the roundabout, with movements restricted to left turn in and left turn out only.

6 Project Benefits

6.1 Travel Time savings

The projects main benefits are due to the efficiencies and travel time savings for the state highway traffic. These are due to:

- Increased speeds due to the new alignment and the passing lane.
- Not having to stop at the railway tracks during shunting operations
- Avoiding the slow 35km/hr speed curve in Edendale.

There will be an increase in travel time for vehicles travelling from Ferry Road intersection to Matura. Residents living close to the northern entrance and crescent road will face increase travel time.

6.2 Crash Savings /Safety Benefits

Within the existing alignment there has been 15 reported crashes in the past 10yrs and 7 in the past 5yrs. Of those 7 crashes there has been 4 serious injuries and 3 minor.

- Roundabouts are the safest form of intersection due to the elimination of right turn movements.
- The project bypasses the 45km/h right angle bend, two rail sidings, the school and other activity/residents (particularly along Salford St).
- Inclusion of a passing lane provides for an increase in safe passing opportunities.

The safety benefits for the proposed realignment is reduced due to the introduction of two intersections and also due to the increased speeds.

6.3 Non Tangible benefits

- The number of vehicles going through Edendale Township will be reduced.
- Less exposure to traffic within the township.
- Reduced delays for traffic at Ferry Road Intersection.