

Edendale - Wyndham Trail

Project Feasibility

May 2016



Contents

1	BACKGROUND	2
1.1	THE COMMUNITIES.....	2
1.2	THE PROBLEM.....	2
2	ROUTE FEASIBILITY	3
2.1	PROPOSED ROUTE	3
2.2	THE MATAURA RIVER	4
2.3	THE MATAURA RIVER BRIDGE	6
2.3.1	<i>Chesterhope Bridge Clip-On, Hastings</i>	7
2.4	OTHER CONSTRAINTS.....	8
2.4.1	<i>Stock Under Pass</i>	8
2.4.2	<i>Waste Water Treatment Plant</i>	8
2.4.3	<i>Wyndham Primary School - Memorial Drive</i>	10
2.4.4	<i>Edendale</i>	10
3	TRAIL DEMAND.....	11
3.1.1	<i>Population</i>	11
3.1.2	<i>Potential users</i>	11
4	SAFETY.....	12
5	COSTS	14
6	CONCLUSION	14
	APPENDIX A – ROUGH ORDER OF COST ESTIMATE	15

1 Background

1.1 THE COMMUNITIES

The rural communities of Edendale and Wyndham are located in the Southland District between Gore and Invercargill. Edendale is separated from Wyndham by the Mataura River. Access between the two townships is via Edendale-Wyndham Road and across the Mataura River Bridge to Ferry Street, a distance of some 6 kilometers.

While the communities are physically separated there are strong relationships between the two. Edendale is the location of Fonterra's oldest and largest milk processing site in New Zealand with some 600 employees, while Wyndham is a service centre for the surrounding districts with a shopping centre, library, museum and hotel.

Edendale and Wyndham each have a primary school with around 120 students per school. Wyndham's secondary school, Menzies College, has approximately 300 students who range from year seven to year 13.

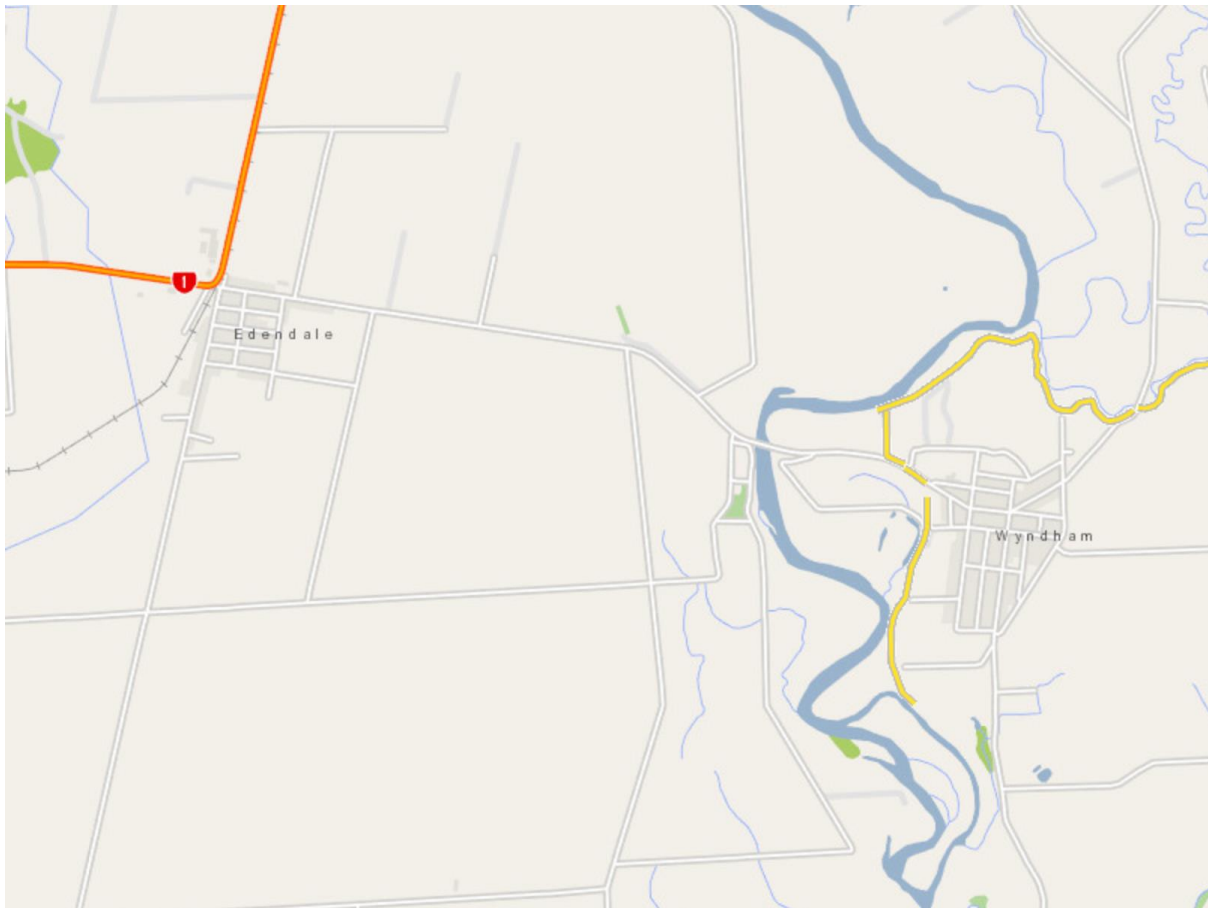


Figure 1 Location

1.2 THE PROBLEM

Travel between the two townships is largely limited to private vehicles as there are no public transport services. Walking or cycling along Edendale-Wyndham Road is somewhat hazardous with the open road used by heavy vehicles. In particular, the Mataura River Bridge is unsafe for pedestrians and hazardous

for cyclists as there is no room outside of the relatively narrow traffic lanes. As such the river and bridge are the major physical barriers between the two townships.

Interest has been expressed in providing a shared cycle and walking trail between Edendale and Wyndham to provide opportunities for local residents to walk or cycle between the townships.

TRC Tourism with Xyst Limited has been engaged to provide a feasibility report into the proposal addressing:

1. The feasibility of constructing a trail including consideration of route options
2. The likely demand for the trail and benefits
3. Rough order of cost estimate

2 Route Feasibility

2.1 PROPOSED ROUTE

The recommended route for the trail is to follow the existing road network crossing the Matura River by attaching a clip-on to the existing road bridge.

The trail would follow the Edendale-Wyndham Road and be constructed on the verge at a nominal width of 2.5m with a compacted gravel surface equivalent to a Grade 1 cycle trail suitable for use by all ages and abilities.

In Edendale the route (See Attachment 1) would start/finish at the reserve (1) on Seaward Downs Road, opposite the convenience store, where an existing kiosk, playground, toilets and parking is provided. The route would then use Hunter and Melvin Street to meet Edendale-Wyndham Road (2) where it would cross in proximity to the child care facility (possibly with a formal pedestrian crossing). It would then travel along the northern side of the Edendale-Wyndham Road leaving the immediate road side at the wastewater treatment station (4) to provide a reduced gradient meeting Coal Pit Road (5).

From Coal Pit Road the trail will travel along the northern side of the Edendale-Wyndham Road crossing the Matura River via a Clip-on bridge (6) before continuing to cross the stock underpass (7) near Memorial Drive by way of an over bridge connecting with the stop bank.

The trail would then follow Memorial Drive (8) passing the schools (9), racecourse (10) and golf course (11) before exiting at the Memorial Gates (12) and turning right to the park at the corner of Raglan and Balaclava Streets where a playground, parking and public toilets (13) are located.

While a trail would be feasible on the southern side of the Edendale-Wyndham Road, the northern side of the road is favoured as:

1. It avoids constructing the trail under the power lines (see figure 2) for the majority of the trails length
2. There are three minor roads to cross (George Street, Compton Road and Coal Pit Road) however there are only six driveway crossings compared with 27 driveways on the south side and three minor roads (Manse Road, Island-Edendale Road and Redan Street)

Both routes would require one crossing of the Edendale-Wyndham Road, although the Edendale crossing is considered safer.



Figure 2 Power poles in trail centre - Round the Mountain Trail, Mossburn

2.2 THE MATAURA RIVER

The crossing of the Mataura River is the single most significant factor in considering the feasibility of the proposed trail. Not only is the river wide during normal flows, the river is prone to frequent flooding including significant flood events such as in 1978 and 1999.

The nature of the flood plain is such that it is impractical to consider the construction of an independent foot/cycle bridge (such as a suspension bridge) as sooner or later such a bridge will be destroyed by flood debris. Consideration was given to crossing points such as at the “Melting Pot” upstream of the racecourse and downstream to cross from Wyndham to Kamahi Road but these would also be affected by flood events.

A suggestion was also made to consider reinstating the Menzies Ferry. This has not been investigated and while it would have some appeal as a tourism opportunity, operating costs and risk management would be a significant barrier to its re-establishment.

As such TRC Tourism considers the only practical crossing point to be via the existing Mataura River Road Bridge. This limits consideration of other potential route options using back roads and as such a route following the main road is considered the most practical option

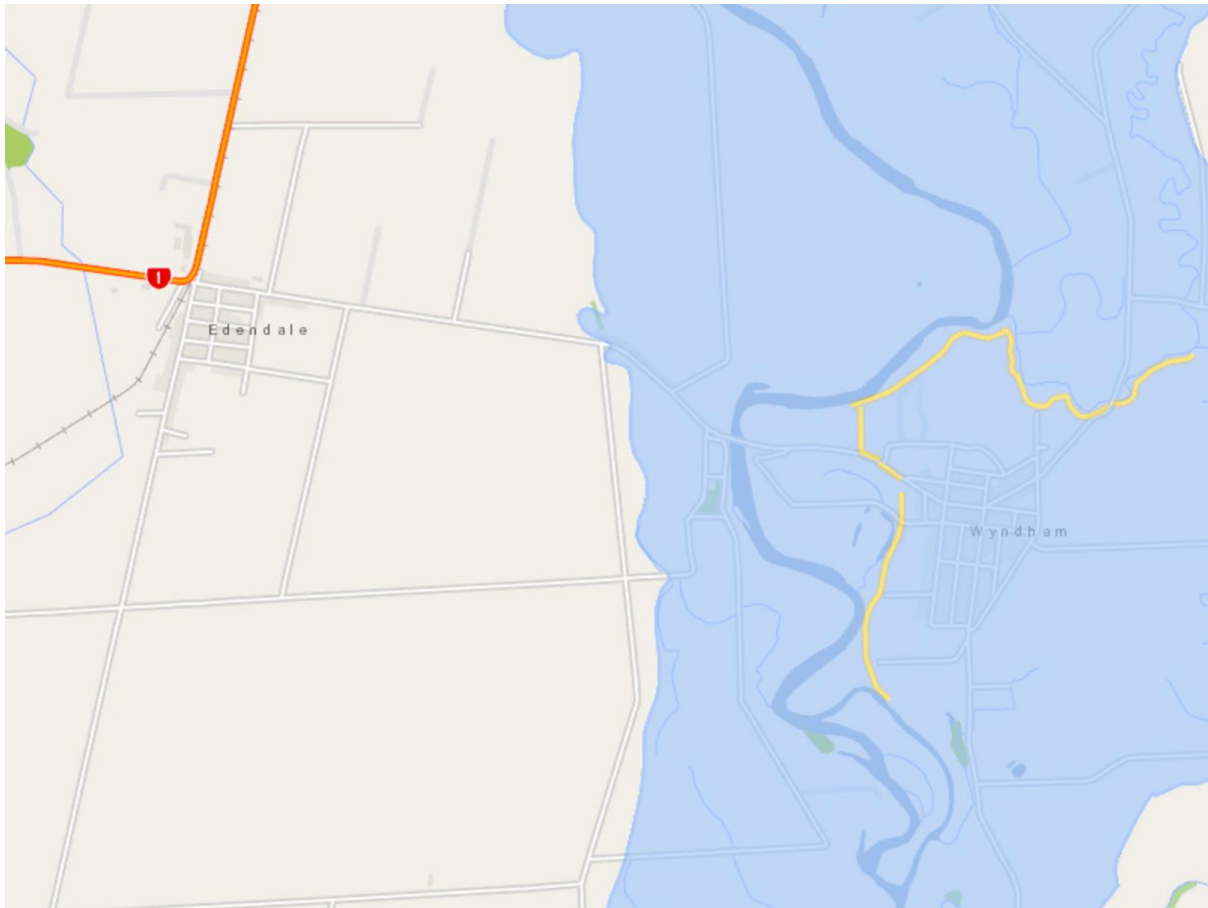


Figure 3 Matura River Flood Plain – Blue Shading with Yellow showing stop banks. Source: Environment Southland



Figure 4 looking towards Wyndham during the 1999 Flood. Source: Environment Southland

2.3 THE MATAURA RIVER BRIDGE

The bridge consists of a two lane reinforced concrete bridge constructed on piers. The bridge is approximately 189m long excluding approaches. Plans for the bridge are currently located at the MWH Invercargill Office and are held in hard copy form.

Southland District Council engineers do have concerns regarding the capacity of the bridge, especially for overloads. Some calculations prepared in 1988 show that the bridge could carry Class 1 (0.85 HN) loading, including an asphalt overlay with some reserve capacity but this would need to be reviewed to confirm how much reserve capacity the bridge has including potential to withstand seismic events¹.

As the bridge has insufficient width between the balustrades to accommodate a walking or cycling lane, other options such as a “clip-on” pedestrian/cycle bridge need to be considered.



Figure 5 Mataura River Bridge showing potential position for clip-on bridge

Clip on bridges have famously been used on the Auckland Harbour Bridge (“Nippon Clipons” – 1965) and more recently are being used to provide for safe pedestrian and cycle passage across road and rail bridges.

The Taramakau River Bridge (SH6) clip-on is a timber bridge attached to the current road/rail bridge. The bridge is approximately 200m long and opened in late 2015. The construction cost was approximately \$1,000,000 and the work was undertaken by Fulton Hogan for NZTA.

¹ Pers comm; H Hare, SDC Rooding Asset Management Engineer 11/5/16



Figure 6 Taramakau Clip On Bridge (SH6) Under construction November 2015. Source NZTA

2.3.1 Chesterhope Bridge Clip-On, Hastings

The Chesterhope Bridge, Hastings is a 440m long reinforced concrete bridge constructed on piers in a similar design to the Maitai River Bridge. As such, it is the best bridge to use as a benchmark to estimate costs.

The Bridge² required improvements to be made to the bridge to increase its strength given concerns for the bearing capacity of the bridge. A clip-on pedestrian – cycle bridge is currently being constructed at a cost of \$2,500,000. This figure includes required strengthening work to accommodate the clip on, bridge approaches, design and project management.³

The clip-on is made of composite fiber (CFT) to reduce the weight of the clip-on bridge. This bridge is the first of its kind in New Zealand and is manufactured in Australia.

Based on the cost of the Chesterhope Bridge and excluding cost inflation, the indicative cost for a similar bridge across the Maitai would be \$1,079,000.

In the case of the Chesterhope Bridge, the New Zealand Transport Agency contributed 61% of the cost with the Hastings District Council meeting the balance.

² <http://www.hastingsdc.govt.nz/chesterhope-clip-cyclists>

³ Pers Comm: Gavin O'Connor, Hastings District Council 18/5/16

2.4 OTHER CONSTRAINTS

2.4.1 Stock Under Pass

A stock underpass (see Attachment 1 – note 7) is located near the intersection of Memorial Drive and Ferry Street. This would need to be bridged either by extending the existing underpass box construction or via a bridge approximately 10m in length. The height of the bridge above the underpass would be determined by the gradient from the top of the stopbank to the east and the road verge to the west.



Figure 7 Stock underpass to be bridged

2.4.2 Waste Water Treatment Plant

The Southland District Council waste water plant is located to the west of Coal Pit Road in a disused quarry opposite the transfer station (see Attachment 1 – note 4). The main road at the point climbs in a sweeping turn and the verge narrows such that continuing the trail on the roadside would be difficult. It is recommended that the trail enter the Waste Water Treatment Plant site via the access road at Coal Pit Road and then climb gently between the edge of the quarry and the exiting boundary fence adjacent to the road emerging at the intersection of Edendale-Wyndham Road and Island Edendale Road.

A new fence would be required to separate trail users from the waste water treatment plant which is below a steep drop off. A deer fence or similar would be suitable and this could be supplemented with planting to screen the treatment ponds from view.



Figure 8 Edendale - Wyndham Rd Opposite Waste Water Treatment Plant



Figure 9 Fencing and screening required of plant

2.4.3 Wyndham Primary School - Memorial Drive

A deer fence has been erected on the school boundary near the intersection of Memorial Drive and Ferry Street (see Attachment 1 – note 8). At this point the road is suitable for cycling however it would be ideal to take the trail off-road at this point before climbing onto the existing stop bank. This would avoid potential conflicts of vehicles turning off Ferry Street into Memorial Drive as some of these vehicles will be heavy vehicles doing milk collection or going to the racecourse.



Figure 10 Intersection of Ferry St and Memorial Drive

2.4.4 Edendale

A section of Edendale – Wyndham Road has an extensive toetoe shelter belt (see Attachment 1 – note 3) which appears to be planted on the public road side of the boundary. This does restrict the ability to construct a trail in this section unless the shelter belt is reduced. The shelter belt is 575m long but impacts on the verge to varying degrees.



Figure 11 Toetoe Shelter Belt

3 Trail demand

The community has expressed a desire to see a cycle trail developed between Edendale and Wyndham. While there is some potential for use by visitors from Southland, use would primarily be by local residents of whom there are approximately 1,100. It is estimated that the trail would take approximately 1 hour and 15 minutes to walk or 20 minutes to bike for a person with average fitness so it would be suitable for a wide range of people with varying degrees of fitness and skills.

3.1.1 Population

At the 2013 census the Edendale Census Area Unit recorded a total population of 555 people with a median age of 41.1 years while the Wyndham Census Area Unit recorded a total population of 534 people with a median age of 41.1 years. Note these figures are for the immediate townships of Edendale and Wyndham and do not include the rural population surrounding the immediate township boundary which could potentially double the number of potential users.

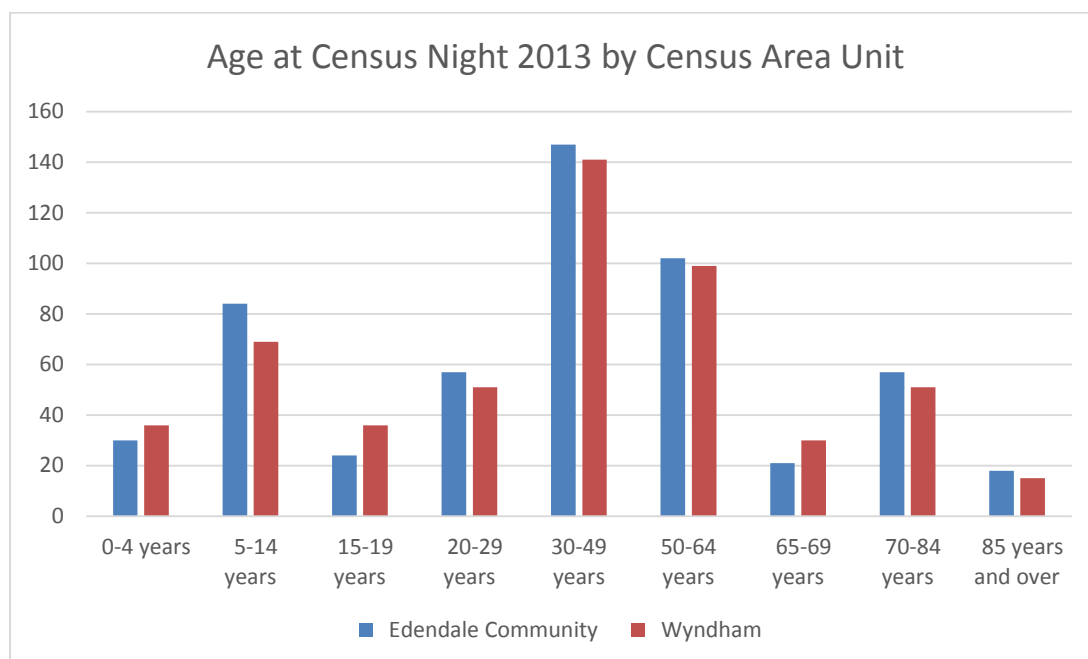


Figure 12 Age distribution by life stage of Edendale- Wyndham residents

The population of Edendale and Wyndham have a similar structure with the largest demographic being the 30-40 year olds, many of whom will have children in the 0 – 19 age group. This group and the 50 – 64-year-old group would be the primary users of a trail for walking, running and cycling.

3.1.2 Potential users

The local population would be the primary users but the trail would also make a good day excursion for families from the population centers of Invercargill and Gore.

The trail would also provide safe access to the Mataura River, opening up recreation opportunities for local residents and visiting fishers.

The trail would be of limited benefit to primary school children for school travel, as primary school travel is localised to each community but would be a safe and popular opportunity outside of school hours. Students of Menzies College who reside in Edendale or along the trail route would be able to use the trail as a community option for school travel. It would also provide a much needed recreational activity and

safe route for young people outside of school to visit friends and participate in other activities in the communities. It is also important to note that there are no scheduled public transport services that pass through Wyndham (Catch-a-bus South operates on request to Wyndham) while Intercity bus services pass through Edendale. The trail would enable Wyndham residents to bike to Edendale to meet scheduled bus services to Invercargill, Gore and Dunedin.

Workers at the Edendale Dairy Plant who reside in Wyndham could also feasibly use the trail.

4 Safety

If an off-road trail is not provided, walking and cycling opportunities between Edendale and Wyndham will continue to be limited to experienced riders only. There are significant risks in crossing the Mataura River Bridge without some form of safety improvement such as a warning signal as shown below.



Figure 13 Inductive loop activated warning sign on narrow Appleby bridge, SH 60, near Nelson (NZTA/NZCT)

The Annual Average Daily Traffic (AADT) on the Edendale –Wyndham Road is around 1200 vehicles per day (1420 in 2012) of which approximately 11% are heavy vehicles.⁴ The portion of heavy vehicles as remained relatively static at between 7-11% between 2006 and 2012. Data beyond 2012 is not available.

According to the New Zealand Cycle Trail Design Guidelines (NZCTDG), an on-road shoulder/cycle of more than 1m would be required for a grade 3/4 (intermediate/advanced) trail and 0 to 0.01m shoulder is required for a grade 5 (expert) trail. A grade 3 trail is described in the NZCTDG as “On-road route suitable for cyclists at least 12 years old with some on-road cycling experience and reasonable level of fitness”.

The NZCTDG states “On rural roads, no special cycling provisions are needed if motor vehicle operating speeds and traffic volumes are below 1000 AADT. Otherwise, sealed shoulders are the main type of provision for cycling on country roads. It is essential that good inter-visibility between cyclists and motorists is achieved, particularly for higher speed locations.”

⁴ Source SDC/MWH Vehicle Counts

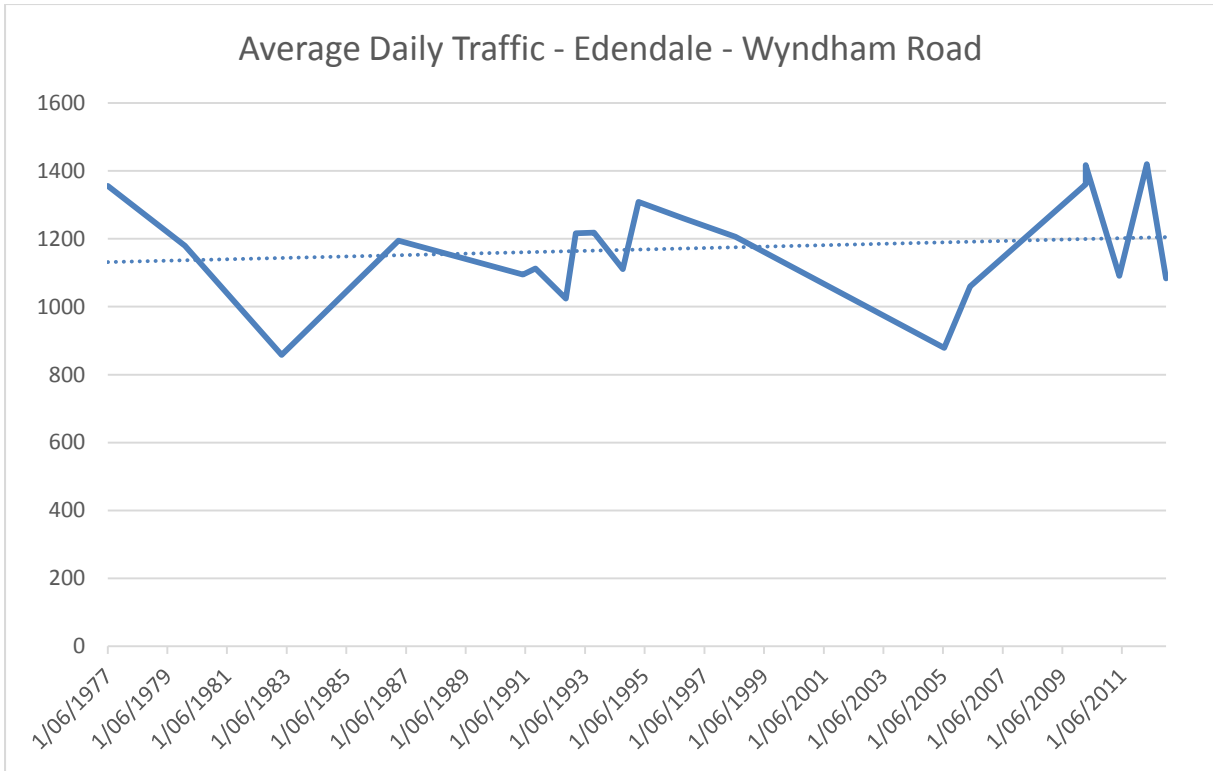


Figure 14 Average Daily Traffic Data 1977-2012

The NZCTDG notes that a grade 1 – grade 2 trail with 2-way traffic volume exceeding 1000 vehicles per day on the open road (100km/h) has unacceptable traffic conditions for unskilled cyclists. This is the situation for the Edendale-Wyndham Road. On-road cycle facilities would be appropriate for the local roads such as Hunter Street, Manse Street and Memorial Drive.

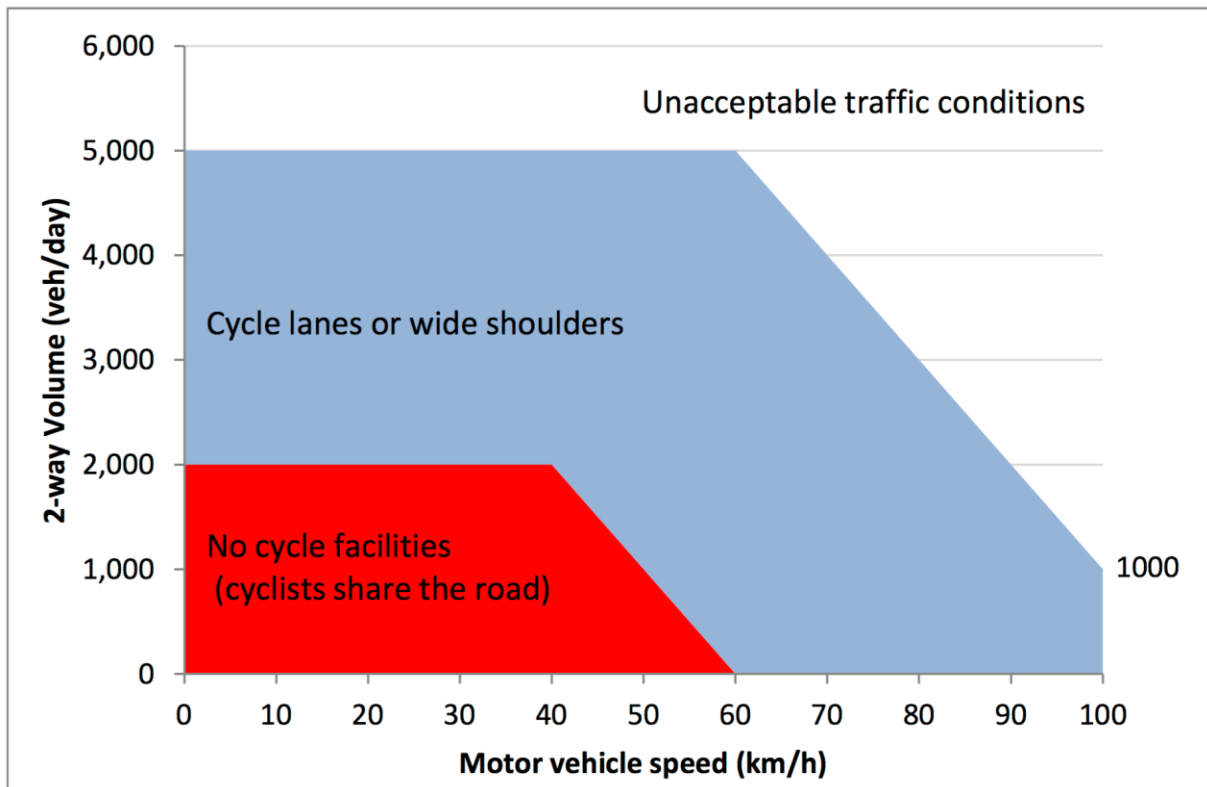


Figure 15 Recommended trail type for grade 1-2 on-road trails (NZCTDG)

5 Costs

A preliminary rough order of cost has been prepared based on a site inspection and comparison with similar cycle trail projects in Southland. Clip on bridge costs are based on the Chesterhope Bridge that is currently under construction.

Costs have not allowed for inflation and will be subject to detailed site investigation and planning.

The rough order of cost estimate for the project is \$1,685,000 excluding GST.

There may be potential for funding assistance from Land Transport New Zealand or other sources.

Given the nature of the project with the trail being built in the road corridor and the need for traffic management and other safety measures the project would not be suitable for voluntary community based construction.

Community/voluntary effort could however be used to supplement the trail with items such as locally made signs and furniture.

6 Conclusion

The construction of a trail between Edendale and Wyndham is technically feasible by following the main Edendale-Wyndham Road and utilising the existing Mataura River Road Bridge. The extension of the bridge with a 'clip-on' is the most significant and costly component to the project.

Without a dedicated off-road trail, only a limited number of older and more experienced cyclists will safely make the journey between the towns given the traffic volumes, narrow shoulder and the narrow Mataura Bridge with no shoulder for cyclists or pedestrians.

The creation of a dedicated trail between the towns would have predominately local benefit for commuting and recreational use but it would come at significant cost.

The Council will need to consider how this cost could be reduced, particularly via contributions from other funders such as NZTA, and consider the priority for this project compared with other desired improvements for the communities of Edendale and Wyndham.

Should the Council wish to progress investigations, TRC Tourism recommends that preliminary engineering investigations on the Mataura Road Bridge be undertaken to ascertain its bearing capacity and suitability or otherwise for a clip on pedestrian/cycle lane.

Appendix A – Rough Order of Cost Estimate

The following table summarises Southland’s range of cycling and associated infrastructure and services.

Section	Type	Quantity	Unit	Rate	Total	Notes
Preliminary and General						
Project Management		1	Provisional Sum		\$70,000.00	Assuming external project management
Survey		1	Provisional Sum		\$5,000.00	Survey of existing boundaries and verge
Signs		1	Provisional Sum		\$10,000.00	
Engineering Investigation		1	Provisional Sum		\$50,000.00	Bridge investigation and design
Construction						
Edendale Reserve (1) to Edendale Road	Existing Asphalt Road	500	metres	\$-	\$-	
Edendale-Wyndham Rd Crossing	on grade crossing	1	Provisional Sum	\$10,000.00	\$10,000.00	
Melvin Street to end of footpath	Existing Footpath upgrade	180	metres	\$35.00	\$6,300.00	
End of footpath to George Street (2)	Form 2.5m wide compacted gravel path	125	metres	\$35.00	\$4,375.00	
George Street Crossing	Road crossing barriers/sign	2	Each	\$500.00	\$1,000.00	
George Street (2) to Compton Road (3)	Form 2.5m wide compacted gravel path	1190	metres	\$35.00	\$41,650.00	
	Remove/trim toetoe	1	Provisional Sum	\$15,000.00	\$15,000.00	

Section	Type	Quantity	Unit	Rate	Total	Notes
Compton Road (3) to Waste Treatment Station (4)	Form 2.5m wide compacted gravel path	830	metres	\$35.00	\$29,050.00	
Waste treatment station (4) to Coal Pit Road (5)	Form 2.5m wide compacted gravel path	670	metres	\$35.00	\$23,450.00	Recommend to package with Main bridge supply and construction.
	Screen planting to treatment ponds	1	Provisional Sum	\$15,000.00	\$15,000.00	
	Construct fence to treatment ponds	240	metres	\$40.00	\$9,600.00	
	Cattlestop	1	Each	\$2,500.00	\$2,500.00	
	Form 2.5m wide compacted gravel path			\$35.00		
	Road crossing barriers/sign	1	Each	\$500.00	\$500.00	
Coal Pit Road (5) to Mataura Bridge (6)	Form 2.5m wide compacted gravel path	430	metres	\$35.00	\$15,050.00	
6. Mataura River Bridge	Supply and install Fibre Composite clip-on bridge including approaches	196	metres	\$5,510.00	\$1,079,960.00	Based on Chesterhope Clip-On Bridge, Hawkes Bay 2016
Mataura Bridge (6) to Stock underpass bridge (7)	Construct bridge over stock underpass cutting	10	metres	\$3,500.00	\$35,000.00	Recommend to package with Main bridge supply and construction.
	Form 2.5m wide compacted gravel path	680	metres	\$35.00	\$23,800.00	
Stock underpass bridge (7) to Memorial Drive (8)	Form 2.5m wide compacted gravel path	170	metres	\$35.00	\$5,950.00	
	Ramp approach to flood bank to 1:12	10	meters	\$750.00	\$7,500.00	

Section	Type	Quantity	Unit	Rate	Total	Notes
	Relocate fence	80	meters	\$20.00	\$1,600.00	
	Form 2.5m wide compacted gravel path	80	metres	\$35.00	\$2,800.00	
	Road crossing barriers/sign	1	Each	\$500.00	\$500.00	
Memorial Drive (8) to Menzies Arch (12)	Existing Asphalt Road	935	meters	\$-	\$-	
Menzies Arch (12) to Wyndham Park (13)	Existing Asphalt Road	120	metres		\$-	
Total Estimate Edendale (1) to Wyndham (13) Reference numbers relate to Attachment 1					\$1,465,585.00	Excl GST
Contingency					\$219,837.75	15%
Grand Total					\$1,685,422.75	Excl GST



Edendale - Wyndham proposed cycle trail route

May 2016