

Post Implementation Review

Gisborne CBD Cycleway

Stage one: Sponge Bay to Wainui

Tairawhiti Roads



May 2017

The purpose of NZ Transport Agency Post Implementation Reviews are to:

- assess how well a project (or package) has delivered its expected benefits
- explain any variation between actual results and expected benefits and costs
- identify any lessons learned that can be used to improve future projects

Executive Summary

This project was stage one of a multi stage programme to provide a shared cycle/walkway from Wainui to link up with Gisborne City's central business district. The project was a joint effort between the NZ Transport Agency and Gisborne District Council through their joint delivery unit Tairawhiti Roads.

Project benefits appear to have been realised...

Benefits from the stage one shared path are already apparent but the full benefits will not be realised until the entire route is constructed (currently planned for completion late 2018).

Health and environmental benefits (through increased cycling and walking activity) dominated the expected project benefits. Count data of cyclists and pedestrians using the shared path were not available to assess the extent to which the project has achieved its main expected benefits. However, through discussion with affected parties and site visit observations, the review team has concluded that the predicted increases in pedestrian and cyclist numbers are likely to have been achieved.

It is too soon to provide conclusive crash trends, but there have been no recorded crashes since 2011 within the project. Overall, the shared path felt safe and provides a pleasant corridor for pedestrians and cyclists with a range of experience and cycling ability.

Road safety audit processes were followed during the project, but some deficiencies in project documentation were noted. Most significantly, 'actions taken' as a result of the road safety audit were not recorded.

...although there are opportunities to consider safety improvements

There are a number of areas where safety can be further enhanced. These include reconsidering the use of width restrictors, improving shared path connections and extending this stage to terminate at a safer (lower) speed area. Vegetation maintenance also needs more attention to ensure the shared path remains clear and safe for users.

Construction has been to a very high standard except for some minor exceptions. There was also there was no evidence to support the decision to construct the shared path using concrete surfacing.

The 1.7km long concrete shared pathway was completed in October 2014. Its construction timeframe of six months was two months longer than budgeted. This contributed to the construction cost of \$966,270 being modestly (+9%) above budget. The review team calculated the construction costs through contract payments but we were unable to confirm this with Tairawhiti Roads despite numerous requests for further information.

This review identified lessons to be shared for future projects, including a greater scrutiny of where shared paths terminate, the use of steel strips in concrete joints, and the safety impact of width restrictors on cycleways.

Recommendations

A number of recommendations are made in this post implementation review. These are summarised below.

That Tairawhiti Roads:

- a) Undertakes traffic count and usage monitoring surveys to evaluate how well the existing cycleway and its future extensions achieve predicted user levels.
- b) Undertakes a review of the potential risks posed by the 'width restrictors' on the Gisborne to Wainui shared path.
- c) Undertakes regular maintenance activity on the cycleway including vegetation control.
- d) Follows the formalised process documented in 'Road Safety Audit Procedures for Projects – Guidelines' (NZTA, 2013) with future projects.
- e) Confirms with evidence the final construction costs incurred over this project.

That the NZ Transport Agency:

- a) Develops national policy guidance/design standards regarding use of 'width restrictors' on cycleways.
- b) Investigates reviewing its approval processes to ensure that consideration is given to the long-term least-cost option for pavement and surfacing selection on cycleways.

1. Project outcomes

Project description and objectives

The Sponge Bay to Wainui project provided a new 1.7km long concrete shared pathway adjacent to State Highway 35. The project forms part of a wider programme of works to improve overall cycle and pedestrian safety and connectivity within the Gisborne area. The Sponge Bay to Wainui section is stage one of a shared pathway which is planned in future to link Wainui with Gisborne's inner city cycling network.

Figure 1 below highlights the route and extent of the new shared path.

Figure 1: Project Location and Details Plan



The project had a reported benefit cost ratio of 3.1. Health and environment accounted for 92% of the benefit cost ratio, dominating the expected benefits. The remaining project benefits consisted of crash cost savings (5%) and travel time cost savings (3%).

Physical works commenced in May 2014 and saw the shared path opening to the public in 30th November 2014.

Project outcomes were based on a review of available data, observations made on site and through discussions with project personnel are discussed in the following sections.

Health and environment benefits

Project health and environment benefits were claimed on the basis of the facility attracting a total of 79 new daily pedestrian and cyclist trips, maintaining the 42 cyclist movements recorded in November 2006, and sustaining a cyclist growth rate of 1% per year.

In the absence of traffic count data it was not possible to reconcile with certainty whether the expected increase in pedestrian and cyclist numbers has been achieved by the project. Subjectively however, it is expected that the increases have been generally achieved. This conclusion is based on:

- Discussions with businesses in the Gisborne District, well placed to inform the review team's opinion,
- The numbers of pedestrians observed using the shared path during site visits, despite the prevailing poor weather,
- The size of adjacent catchments and the relative level of connectivity offered by the shared path facility,
- The general attractiveness of the facility, and its ability to cater to a range of cyclist groups including those 'less-confident', and
- High tourist numbers in the region likely to take part in recreational activities such as walking and cycling.

RECOMMENDATION

It is recommended that Tairawhiti Roads undertakes traffic count and usage monitoring or surveys to evaluate how well the existing cycleway and its future extensions achieve predicted user levels.

Use of monitoring data collected would help inform the business cases for future cycle/pedestrian network development.

Some opportunities to reduce potential safety risk identified

It is too soon to make robust conclusions on recorded crash trends given that typically at least five years post-construction crash data is required to undertake meaningful analysis. Within the project area there have been no recorded crashes since 2011. Crash records relating to vulnerable road users¹ are typically not a good indicator of actual safety due to high under-reporting rates generally associated with such users.

Overall, the shared path felt safe and is expected to provide a safe and pleasant corridor for vulnerable road user activity. The level of safety afforded to shared path users could however be further enhanced in several ways. These are covered below.

Shared path termination

The shared path terminates in a 70 k/m zone. Terminating the shared path approximately 1km west where there is a 50km/hr posted speed limit would provide a safer walking and cycling environment – see Figure 2 below. While it is acknowledged that this extension forms part of Phase 2 of the project, it was not clear why this could not have proceeded as part of Phase 1 particularly when approval for it was provided on 12 June 2014.

¹ Vulnerable users covers cyclists of immature or novice rider level, such as younger children requiring supervision or beginner adult riders.

Figure 2: Termination of shared path at 70 kph zone.



Potential safety risks with width restrictors

The ongoing use of ‘width restrictors’ (figure 3), which presumably are intended to slow cyclists down on the approach to intersections and heavily used accessways, should be evaluated. The width restrictors are considered by the review team to adversely impact on safety as they will likely be inconspicuous during low light conditions despite the presence of reflectorised strips on the horizontal faces of some of the restrictors. Their inconspicuous nature arises due to the small surface area facing the direction of travel, which in conjunction with the generally poor lighting used by cyclists travelling during low light conditions, would make them hard to see.

Figure 3: The metal width restrictors



The horizontal components associated with the width restrictors showed evidence of being struck (figures 4 and 5). The horizontal components were found to be positioned at a height where they could conflict with adult cyclist handlebars, and upper body parts (including the face/head) of younger shared path users which could result in significant injury.

Figure 4: Width restrictor evidence of being struck



Figure 5: Width restrictor evidence of being struck



As a result of these observations of the use and potential risks with width restrictors on this project recommendations for action are made to both Tairawhiti Roads and the NZ Transport Agency.

RECOMMENDATION

It is recommended that Tairawhiti Roads undertakes a review of the potential risks posed by the 'width restrictors' on the Gisborne to Wainui shared path.

This review should include consideration of the risk posed to shared path user strike due to the combination of their form/height and visibility during low-light conditions. It should then undertake the necessary actions to ensure that the level of safety afforded to shared path users is acceptable.

RECOMMENDATION

It is recommended that the NZ Transport Agency develops national policy guidance/design standards regarding use of 'width restrictors' on cycleways.

This should be based on a detailed review of their existing use on shared paths and cycleways, and assessment of risks they pose to cyclists due to their design and visibility during low-light conditions.

Lateral shared path connections issue

Lateral shared path connections, such as that at Murdoch Road (Figure 6) could place vulnerable road users in direct conflict with traffic due to the absence on onward pedestrian and cycle facilities.

Figure 6: Lateral shared path connections at Murdoch Road



Need for regular vegetation control maintenance

Regular maintenance activities need to be done to ensure that vegetation does not encroach on the shared path and impede users. Examples of encroaching vegetation were observed during the site visit, particularly 150m southwest of Oneroa Road where there is a thorny hedge (see Figures 7 and 8).

RECOMMENDATION

It is recommended that Tairawhiti Roads undertakes regular maintenance activity on the cycleway including vegetation control.

This will ensure that vegetation does not encroach on the shared path and impede users.

Figure 7: Encroaching vegetation on cycleway



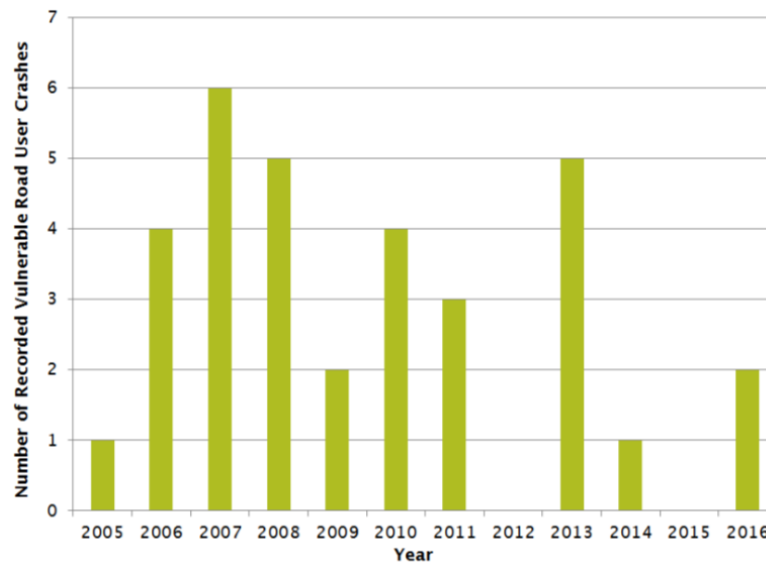
Figure 8: Encroaching vegetation on access way



Road Safety

It is reasonable to expect that the shared path has increased the presence of vulnerable road users at adjacent locations on the wider road network. A review of crash records from the wider road network, as depicted in Figure 9, does not provide any evidence to suggest a notable change in either vulnerable road user crash frequency or severity trends.

Figure 9: Number of recorded crashes within the greater project area



Source: NZ Transport Agency, Crash Analysis System (CAS)

Road safety audit processes were followed during the project. Safety audit documentation, however, did not align well with the 'Road Safety Audit Procedures for Projects – Guidelines' (NZTA, 2013) with regard to the formalised approach to recording: Designer, Safety Engineer and Client comments/decisions. This feedback cycle is considered a key part in maintaining a safe system and requires a self-improvement process.

RECOMMENDATION

It is recommended that Tairawhiti Roads follows the formalised process documented in 'Road Safety Audit Procedures for Projects – Guidelines' (NZTA, 2013) with future projects.

This supports the self-improvement process between safety auditors, designers and decision makers and directly supports the safe system approach.

Construction quality and decision making

Construction has been to a very high standard. There are, however, a number of minor but notable exceptions. These include:

- Significant chip loss had occurred on Wainui Road due to the vehicle stresses induced by the steep gradient of the access way serving this property. Loose gravel had migrated onto the shared path and could pose a hazard for shared path users (figure 11)

Figure 11: Significant chip loss on Wainui Road



- A short section of the constructed shared path near Oneroa Road (figure 12) does not meet the recommended 3m minimum desirable width. Should the shared path be extended in future as planned this will necessitate the removal of a short, but recently formed, section of pathway.

Figure 12 : Section of shared path below minimum widths



- The steel safety railings installed opposite Heath Johnston Park were identified as a safety hazard by the project team prior to the shared path opening (figure 13). To address this risk, the vertical elements of the rails were either capped with a horizontal top rail, or bent outwards. Where vertical rails were bent outwards fractures were apparent in the steel, which without suitable treatment will not likely endure and may require premature replacement.

Figure 13: Steel safety railings



- Steel strips were observed to have been installed in a number of the shared path's concrete shrinkage control joints. The review team were unable to establish the purpose of the steel strips, but observed a correlation to their presence and surface defects in adjoining concrete slabs.

Figure 14: Surface defects at path joins with steel strips



Figure 15: Surface defects at path joins with steel strips



There was no evidence in the available project documentation reviewed to support the decision to construct the shared path using concrete. Despite higher maintenance costs, asphalt or a small graded chipseal may have provided a higher net present value construction option while simultaneously providing an equal or better surface (due to the absence of concrete shrinkage control joints).

RECOMMENDATION

It is recommended that the NZ Transport Agency investigate reviewing its approval processes to ensure that consideration is given to the long-term least-cost option for pavement and surfacing selection on cycleways.

This will help provide greater alignment with 'value for money' principles and consistency with broader Transport Agency funding requirements. Impacts on facility attractiveness to new and existing users, and therefore economics, will need to be considered in any such amendment.

Project scope and cost creep

Tairāwhiti Roads was formed in 2015 and is responsible for managing both highways and local roads throughout the Gisborne region. Prior to this, the responsibilities were split between the Gisborne Highway and Network Operations (HNO Gisborne) and Gisborne District Council (GDC).

This project was part of the HNO Gisborne's state highway programme, but GDC procured and managed this project under a multi-party funding agreement (MPFA) signed in 2014. Under the terms of the MPFA, Council paid all the contractor's invoices during the construction, and these were later reimbursed by HNO Gisborne.

The review team noted that the MPFA had envisaged that the enabling works (approx. \$200,000) would be procured by direct appointment under GDC's maintenance and operations contract, and the physical works would be procured separately. However, due to the available contracting resources available at the time, Council decided to procure the physical works through a variation to GDC's pavement rehabilitation contract with Fulton Hogan.

Given the rehabilitation project was unrelated to the this type of capital works i.e. a concrete cycleway, a separate schedule of quantities and price was submitted for Council to consider. We believe that although directly appointed through a variation, there was still constructive tension to the contract price with the cycleway project separately quoted. The final cost established through the contactors payment certificates totalled \$966,270, approximately 9% over budget estimates. The project but took six months complete, two months longer than that submitted in the proposed original funding application.

Although GDC managed the project, the funding application and cost estimates were obtained through HNO Gisborne’s Transport Investment Online (TIO) records. The claims for funding assistance were made by HNO over three years ending June 2016.

Despite several requests for further information to Gisborne District Council, we were unable to match either the HNO reimbursement transactions or the contractor’s costs against Council’s general ledger. Council needs to confirm with evidence, the final construction costs incurred over this project. This will ensure that all costs associated with this project have been captured and accounted for correctly. A procedural audit of Gisborne District Council is planned later this year, and we intend to verify these costs against Council’s general ledger.

Figure 16: Budgeted and actual cost comparison

Description	Cost	Difference
Construction cost estimate per funding application	\$790,000	
Tendered Price (through variation)	\$887,220	
Project cost claimed through Gisborne HNO:		
2013/14 \$350,000		
2014/15 \$436,638		
<u>2015/16 \$173,263</u>		
Total \$965,901		
Contractor’s final claim	\$966,270	+\$79,050 (+ 9%) over estimate

RECOMMENDATION

It is recommended that Tairawhiti Roads confirms with evidence the final construction costs incurred over this project.

This will ensure that all costs relevant to this project have been captured accurately in its general ledger.

2. Lessons learned

Lessons with relevance for other future projects were identified as follows:

Greater scrutiny of where shared paths terminate is required to ensure that their attractiveness to new users is maximised. At the western end of the facility for example, cyclists are required to ride in a 70km/hr road environment in order to connect to the new facility. This requirement is likely to have deterred many 'interested but concerned' cyclists, who typically contribute significantly to new user numbers. While subsequent phases of the programme will resolve this shortcoming, economically, the project may have benefited from deferral.

The inclusion of steel strips in concrete shrinkage control joints can result in surface defects. During the course of the audit it was not possible to ascertain why the steel strips were used, but if possible, it would be desirable to avoid their inclusion in future projects.

The provision of width restrictors on facilities used by cyclists should be supported with evidence of their need, and height of any horizontal components carefully considered. The decision to include width restrictors should offset the anticipated benefit from the potential risk posed to cyclist strike. The height of horizontal components should be positioned to ensure they do not pose a risk to cyclists.

3. Tairawhiti Roads response to findings

Before being finalised, this report was referred to Tairawhiti Roads for comment. As no response was received, the report has been finalised without comment.