BEFORE INDEPENDENT HEARINGS COMMISSIONERS

UNDER	of the Resource Management Act 1991 (RMA)
IN THE MATTER	notices of requirement under section 168 of the RMA for the construction, operation, maintenance and improvement of approximately 11.5km of new State Highway between Ashhurst and Woodville.
BY	**NZ TRANSPORT AGENCY** Requiring Authority

EVIDENCE OF SHANE ANDREW VULETICH
FOR PALMERSTON NORTH CITY COUNCIL

15 March 2019

Simpson Grierson
Barristers & Solicitors

M G Conway / K E Viskovic
Telephone: +64-4-924 3430
Facsimile: +64-4-472 6986
Email: matt.conway@simpsongrierson.com / katherine.viskovic@simpsongrierson.com
DX SX11174
P O Box 2402
Wellington

TABLE OF CONTENTS

1. QUALIFICATIONS AND EXPERIENCE

1.1 My full name is Shane Andrew Vuletich.

1.2 I am the Managing Director of Fresh Information Limited (Fresh Info) and I have held this position since October 2013. My qualifications are a Bachelor of Commerce majoring in economics (first class honours) and commercial law from the University of Auckland.

1.3 I have worked as a consulting economist since 1998. During that time I have undertaken a large number of studies which have required me to estimate the economic and social impacts of a wide range of initiatives.

1.4 I am an expert in cost-benefit analysis, which is highly relevant to Palmerston North City Council's (**PNCC**) submission on the Te Ahu A Turanga notice of requirement project. I have recently conducted a cost-benefit analysis for MFAT to inform the business case for hosting APEC in 2021; measured the costs and benefits of Auckland Museum; and developed a cost-benefit framework for measuring major event impacts which is being used by several councils.

1.5 I am also an expert in tourism analysis and forecasting. I have designed and/or managed several of New Zealand's major tourism research programmes, including the government's annual tourism forecasting programme (10 years) and the International Visitor Survey (5 years).

1.6 I have a sound understanding of the strategic and policy environments in Palmerston North through my involvement in several major projects. These include: development of a visitor strategy for the Central Economic Development Agency (**CEDA**); economic analysis to inform the business case for redevelopment of Palmerston North's Museum, Te Manawa; economic analysis to inform the detailed business case for the proposed Palmerston North ring road; and a PGF-sponsored assessment of the feasibility of transforming Te Apiti into a major tourism destination.

1.7 My role in relation to this project is measuring the potential economic benefits of different walking and cycling options along the new Te Ahu a Turanga route.

1.8 The key documents that I have reviewed in preparing this evidence are:

(a) Te Ahu a Turanga Project, NOR Volume 2, Assessment of Effects on the Environment;

(b) Te Ahu a Turanga Project, Detailed Business Case;

(c) Ngā Haerenga Cycle Trail Evaluation Report 2016, prepared for Ministry for Business and Innovation ('MBIE');

(d) Manawatu Gorge Mountain Bike Trails Business Case, 2016;

(e) Market Assessment for Ashhurst to Woodville Cycle Trail, prepared by Jonathan Kennett of NZTA, March 2019.

(f) Government Policy Statement on Land Transport 2018;

(g) Draft Te Apiti Master Plan;

(h) Accelerate 25 Manawatu-Whanganui Regional Economic Development Plan;

(i) Provincial Growth Fund Express Application 'Transforming Te Apiti into a major tourism destination' 2018, prepared for CEDA;

(j) Documents referenced in Common Inputs Table in Appendix;

(k) Section 42A tourism and recreation report by Jeff Baker;

(l) Section 42A traffic and transport report by Harriet Fraser;

(m) Section 42A social impact report by Kirsty Austin;

(n) NZTA evidence by Jonathan Kennett;

(o) NZTA evidence prepared by Sarah Downs, Andrew Whaley and David Dunlop to the extent they discuss walking and cycling;

(p) PNCC transport evidence by Mark Read;

(q) PNCC planning evidence by David Murphy.

1.9 I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and have complied with it in preparing this evidence. I confirm that the issues addressed in this evidence are within my area of expertise and I have not omitted material facts known to me that might alter or detract from my evidence.

2. SCOPE OF EVIDENCE

2.1 My evidence will address the following matters:

(a) the potential economic benefits of investment in walking and cycling infrastructure along the Te Ahu a Turanga project route; and

(b) the difference in economic value between a 2-metre-wide highway shoulder and a separate walking and cycling path, in terms of the benefits that each would be expected to generate for the region.

3. SUMMARY OF EVIDENCE

3.1 Manawatu Gorge (**Te Apiti**) is a highly-valued asset to the region. It has significant recreation and tourism potential due to its unique geological features and diverse flora and fauna.

3.2 There is an opportunity as part the Te Ahu a Turanga project to build a walking and cycling path along the northern side of Te Apiti. PNCC, Horizons Regional Council, the Manawatu Chamber of Commerce, CEDA and a significant number of community groups and individuals are advocating for this.

3.3 NZ Transport Agency (**NZTA**) has stated that a dedicated walking and cycling path is not included in the scope of the project. NZTA has designed a 2-metre-wide shoulder which it says will be sufficient to accommodate cyclists, however it does not intend the new road to be a primary walking/cycling route.

3.4 PNCC has asked me to estimate the difference in economic value between a 2 metre highway shoulder and a separate path for walking and cycling, in terms of the benefits that each would be expected to generate for the region. To do this I have developed a model that analyses a range of potential user demand scenarios for a separate walking/cycling path and compares the expected economic benefits of these scenarios with the expected economic benefits of a 2 metre shoulder scenario.

3.5 To account for uncertainty regarding what a separate walking/cycling path would look like from a design perspective, I have considered two sub-scenarios. One represents a path located right next to the highway (the 'on-highway' option) and the other represents a path built far enough away from the highway to achieve visual and auditory separation from traffic (the 'off-highway' option).

3.6 User demand estimates have been developed for each scenario that take into account usage data for the existing Te Apiti walking trails and estimates of expected demand developed by NZTA. The user demand estimates adopted in the model reflect the expectation that a 2 metre shoulder would be used by a relatively small group of serious cyclists but would not be attractive to the much larger pool of recreational cyclists, walkers and visitors for whom safety and enjoyability are the most important requirements. I would expect a separate walking/cycling path to be significantly more popular than a 2 metre shoulder, particularly if it is set apart from the highway and incorporates design elements such as lookouts, sub-loops, and interactions with the Manawatu Gorge Scenic Reserve.

3.7 In relation to each scenario I have estimated the following types of benefits which are commonly associated with walking and cycling infrastructure:

(a) health benefits – the impacts of people becoming healthier and incurring lower health costs as a result of using the walking/cycling path;

(b) safety benefits – resulting from a reduced risk of crashes between motor vehicles and walkers/cyclists;

(c) consumer surplus benefits – increased satisfaction, or happiness, arising from use of the walking/cycling path; and

(d) tourism benefits – the impact on local business income resulting from increased spending by visitors who come to the region, or stay longer, to use the walking/cycling path.

3.8 The high-level results of the modelling are summarised in the table below, which presents the net benefits of each separate path scenario relative to a 2 metre shoulder scenario in present value terms over a 20-year evaluation period.

Difference in value between separate path and shoulder (present value over 20 years)	
On Highway path	$4,617,089
Off-Highway path -- low scenario	$14,242,759
Off-Highway path -- medium scenario	$19,233,830
Off-Highway path -- high scenario	$24,224,901

3.9 Based on the model, an on-highway separate path would be expected to generate approximately $4.6m more in quantified benefits compared with a 2 metre shoulder over a 20-year period. A separate off-highway walking/cycling path would be expected to generate around $19.2m more in benefits than a 2 metre shoulder over the same period, with a sensitivity range of $14.2m to $24.2m.

3.10 The scope of my work did not extend to analysing the costs of providing a separate path, however I have seen some initial cost estimates provided by Jonathan Kennett, Senior Project Manager for Walking and Cycling at NZTA. These range from $8m for a mostly aggregate surface walking/cycling trail that runs beside the highway at both ends of the route and departs from the

highway in the middle 8-10 kms, to $20m for a separate sealed path along the full length of the highway.

3.11 The expected benefits of a separate walking/cycling path are significant across all scenarios and are not out of proportion to NZTA's initial cost estimates. In my opinion there would be value in NZTA carrying out a full evaluation of the feasibility, costs and benefits of incorporating a separate walking and cycling path into the project.

4. BACKGROUND

4.1 The following aspects of NZTA's preliminary design of the Te Ahu a Turanga project are relevant to the subject matter of my evidence:

(a) Separate walking/cycling facilities are not included within the project design. NZTA has stated that these facilities were out of scope from the outset of the project.[1]

(b) NZTA's preliminary design includes a 2-metre-wide sealed shoulder along the 12km length of the project route. The shoulder is separated from live traffic by double lines/hatching and Audio Tactile Profile (ATP) markings.[2]

(c) NZTA has stated that the 2 metre shoulders will accommodate cyclists, but that the new road is not intended to be a primary walking/cycling route. NZTA intends that Pahiatua Track and Saddle Road will continue to be the main options for cycling between the western and eastern ends of the Gorge, and DOC's Manawatu Gorge Walking Track will be the primary walking route.[3]

(d) NZTA has committed to constructing a dedicated pedestrian and cycling facility on or adjacent to the existing Ashhurst Bridge, which is located approximately 300m to the west of the beginning of the project route. NZTA has also committed to extending

1 Ref. NZTA media statement 27 February 2019.
2 Ref. NOR and Detailed Business Case.
3 Ref. footnote 2.

walking/cycling facilities along the stretch of road that connects the Ashhurst Bridge to the Manawatu Gorge Scenic Reserve carpark.[4]

(e) The Te Ahu a Turanga project design includes a new bridge to be built over the Manawatu River at the western end of the Gorge. The bridge will be approximately 350m long and is expected to provide spectacular views of the Gorge, river and wider region. NZTA has recently committed to providing dedicated pedestrian space on the bridge. Apart from the proposed 2 metre shoulder, no provision for cycling has been made on the new bridge, and no provision for walking or cycling has been made on the road leading up to the bridge on either side.[5]

5. TE APITI'S RECREATION AND TOURISM POTENTIAL

5.1 Te Apiti is a valuable asset to the region, often described as "the jewel in Manawatu's crown".[6] As well as its important environmental and cultural values, Te Apiti has significant recreation and tourism potential that is becoming increasingly recognised at a regional and national level.

5.2 Existing activities in Te Apiti include several DOC walking tracks (including the very popular 4km Tawa Loop at the western end of the Gorge and the 11km Manawatu Gorge Walking Track), a 3.6km mountain biking loop trail, horse trekking, fly fishing, heli tours, kayaking, camping and swimming. Te Apiti is also home to Maori cultural sites, two wind farms, diverse tree and bird species and a unique geological landscape. These characteristics make it an ideal destination for recreation and tourism.

5.3 Te Apiti's trail network is currently suboptimal in that it lacks a series of trails that are able to be used by cyclists (except for a relatively small mountain biking loop), and it does not have a loop trail of significant length for either walkers or cyclists.

4 Ref. evidence of Sarah Downs for NZTA, pp 12-16.
5 Ref. footnote 4.
6 See, e.g. Section 42A tourism and recreation report by Jeff Baker, p 29; and planning evidence of David Murphy for PNCC, p 29.

5.4 There is also no safe access to Te Apiti for people wishing to walk or cycle there from the nearby towns of Ashurst, Woodville or Palmerston North. The 340m long Ashhurst Bridge, which has very little room for walkers and cyclists outside the live traffic lanes, is understood to be a significant impediment for these groups.

5.5 Te Apiti is well-used despite these limitations. DOC data show that there were around 84,000 visits to the walking tracks in 2016, up from around 30,000 visits in 2011. The popularity of Te Apiti is evidence of the strength of its natural features and the appetite of local residents and visitors for natural recreation experiences.

5.6 The potential Te Apiti offers from a tourism perspective is highlighted in the 'Accelerate 25' Manawatu-Whanganui Regional Action Plan, which recommends the development of a 'Manawatu Gorge Cycle Trail' to help drive additional visitation to the region. In addition to this, CEDA has recently received a $100,000 PGF grant to assess the feasibility of transforming Te Apiti into a major tourism destination.

6. PLANS FOR FUTURE DEVELOPMENT OF TE APITI

6.1 The Manawatu Gorge Governance Group[7] is in the process of preparing a 'Te Apiti Master Plan' which focusses on cultural, education, recreation, biodiversity and leadership initiatives to protect and enhance the area. While not yet finalised the draft Master Plan reveals a clear intention to expand recreational opportunities in Te Apiti. The Plan also notes that Te Apiti "is one of the few, readily accessible locations in the Manawatū to recreate, especially for walking, running and mountain biking."[8]

6.2 The four main recreation projects envisaged in the Master Plan are:

(a) a new 24km shared path (walk/cycle) around the northern side of Te Apiti - this would connect with the existing southern walking track to form a 35km loop around both sides of the Gorge with connections into Ashhurst and Woodville at either end;

7 This is a partnership of local government, Iwi, DOC and the community, led by Palmerston North City Council.
8 Draft Te Apiti master Plan p. 24.

(b) a new purpose built 11km mountain biking track across the southern side of Te Apiti which would connect into the new northern walking/cycling path;

(c) a 45km 'Skyline' walk connecting the Ruahine Ranges with the Tararua Ranges across and around Te Apiti, linking into the Te Araroa Trail; and

(d) a new 8km walking loop at the eastern end of Te Apiti which would utilise a 3km section of the old Gorge Road.

6.3 The first two projects noted above would provide significant walking and cycling loop options which are currently missing from Te Apiti.

6.4 According to PNCC, the need to secure funding and the complexities of obtaining land access for the northern walking/cycling path mean that, if it is not delivered as part of the NZTA project, it is not likely to be delivered until "the medium-term or even longer-term".[9] The Te Ahu a Turanga project provides an opportunity to realise the vision for a northern walking/cycling pathway much earlier by developing it wholly or partly within the highway corridor.

6.5 PNCC expects the southern mountain biking trail to be completed within the next 5-10 years as part of the roll out of projects associated with the Te Apiti Masterplan (which is expected to be formally approved in mid-2019). The trail would likely be funded by a combination of the Council, the Manawatu Mountain Biking Club, local businesses and trusts. PNCC believes a new separate walking/cycling path along the northern side of the Gorge would provide additional impetus to speed up delivery of the southern mountain biking trail, which would form a loop with the new walking/cycling path and enable the Mountain Biking Club to offer a range of packages to people utilising the trails.

9 Ref. evidence of Jeff Baker (tourism and recreation expert), p.28.

6.6 Alongside the Te Apiti Master Plan, the regional economic development agency CEDA is investigating an opportunity to develop Te Apiti into a major tourism destination with a cluster of high-quality tourism experiences promoted under the Te Apiti brand. Potential experiences include walking and biking trails (a mix of existing and new trails), cultural experiences, on-water experiences (e.g. rafting, kayaking, jet boating, fishing), over-water experiences (e.g. flying foxes, adrenalin rides), land-based experiences (e.g. canopy walks, ziplining, ecotourism), built environment experiences (e.g. new SH3 bridge, windfarm attractions), and developments on adjacent private property (e.g. wedding and function venue, amphitheatre, visitor/cultural centre, commercial accommodation).

6.7 The Te Apiti cluster concept is still in its very early stages. If executed, it will significantly expand tourism volumes over the next 10-20 years and put Manawatu 'on the map' for visitors touring the North Island.

6.8 The plans above demonstrate a clear aspiration from the region to develop more and better recreation experiences in Te Apiti, to serve both local residents and tourists. The opportunity afforded by the Te Ahu a Turanga project to develop a high-quality walking/cycling path wholly or partly within the NZTA designation should be viewed in this context.

6.9 Another opportunity relates to the New Zealand Cycle Trail (**NZCT**) national touring route. Currently, NZCT uses Pahiatua Track as a connecting 'Heartland Ride' across the ranges.[10] My understanding, based on the expert evidence of others, is that neither Pahiatua Track nor Saddle Road provides a high-quality cycling experience due to their narrow, hilly and windy terrain.[11] Given the shortcomings of these existing cycling routes, there appears to be a genuine opportunity as part of this project to build a safe and enjoyable cycle path through Te Apiti that would become the new NZCT route in the area.

10 Although it is currently closed to NZCT due to high vehicle numbers following the closure of SH3.

11 See, e.g. evidence of safety expert Harriett Fraser stating that neither road is safe for cyclists (pp 39, 90). See also evidence of recreation expert Jeff Baker, noting that Pahiatua Track's steep and windy alignment makes it unsuitable for use by cyclists (p. 35).

7. WALKING AND CYCLING IN NEW ZEALAND

7.1 The number of New Zealanders and overseas visitors who participate in some form of cycling in this country has grown significantly in recent years. Approximately 300,000 international visitors engaged in cycling during their visit in 2018, up 50% from around 200,000 in 2013. This growth trend has at least partially been the result of significant investment by local and central government in dedicated cycling infrastructure, ranging from urban cycleways to multi-day cycle trails that cover more rural areas (the most well-known of which are the Great Rides of the NZCT).

7.2 The Government Policy Statement on Land Transport (2018) (GPSLT) prioritises investment in the provision of "good quality, safe, fit-for-purpose walking and cycling infrastructure" to improve access to and uptake of walking and cycling. The GPSLT supports "extending greater priority on urban and rural routes for walking, cycling and public transport" and "continued development of the New Zealand Cycle Network, including the premium tourism trails (the Great Rides) and the connecting Heartland Rides."[12]

7.3 The Manawatu region is no exception to the growing national focus on walking and cycling. PNCC has invested considerable funds to develop a network of trails in and around Palmerston North. This includes the partially built Manawatu River Pathway which, when complete, will provide approximately 30kms of sealed shared pathway between Palmerston North and the Ashhurst Bridge along the banks of the Manawatu River.

8. THE ECONOMIC BENEFITS OF WALKING AND CYCLING INFRASTRUCTURE

8.1 Investment in high-quality walking and cycling infrastructure can lift the social and economic wellbeing of host communities by:

(a) increasing the range of recreation opportunities available to local residents, making them healthier and happier;

12 See GPS pp. 17-19.

(b) attracting visitors from elsewhere in New Zealand and overseas, who spend money with local businesses, boosting local employment and income;

(c) decreasing the frequency and severity of injuries incurred by walkers and cyclists as a result of crashes with motor vehicles; and

(d) reducing the volume of motor vehicles on our roads, helping to relieve congestion and harmful environmental impacts (particularly relevant to cycle commuting projects).

8.2 According to the Nga Haerenga NZ Cycle Trail survey, 77% of NZ Cycle Trail users in 2017-2018 were visiting from out of region and 13.5% of these visitors were from overseas. Visitors typically spend in the range of $150-$250 per night in the host region on items including accommodation, eating and drinking, shuttle services, etc.

8.3 Expenditure in the local economy by visiting trail users causes an immediate uplift in economic activity. Over time the economic effects can be much larger as businesses are created to support the trails and to offer additional goods and services to visitors. This increased level of tourism product can in turn attract more visitors to the area, beyond those using the trails.

8.4 High-quality walking and cycling infrastructure can also help to prevent 'leakage' from the local area by reducing the need for residents to travel elsewhere to access safe and enjoyable trails.

9. CHARACTERISTICS OF SUCCESSFUL WALKING AND CYCLING TRAILS

9.1 Except for certain 'existence values' that are connected with environmental conservation, most of the value associated with natural assets like Te Apiti is driven by their use. The more Te Apiti is used by local residents and visitors (within sustainable limits to ensure natural and cultural values are preserved) the more value will be derived from Te Apiti from a social, economic and recreational perspective.

9.2 The usage of a given trail tends to be highest when the trail has the following characteristics ("success factors"):

(a) the trail is safe – this is as much an issue of perceived safety as it is of actual safety;

(b) the trail's environment is pleasant, considering views, noise levels, smells, etc. – this and the safety factor above are significantly impacted by proximity to active vehicle lanes;

(c) the trail connects with other trails and with a range of visitor experiences, e.g. towns, natural sights, etc.;

(d) the experiences offered on the trail are unique, e.g. unusual landscapes, distinctive cultural experiences;

(e) the trail is not too difficult – although the emergence of e-bikes will have the effect of flattening gradients for a growing percentage of users;

(f) there are good support services and facilities available, e.g. accommodation, cafes and restaurants, shuttle services, etc.; and

(g) there is effective marketing and education about the trail or network of trails.

9.3 The section 42A report has recommended a condition requiring NZTA to build a separate sealed walking/cycling path along the entire length of the new road. The condition would require the path to be at least 3 metres wide and separated from the carriageway of the new road by, at minimum, a wire barrier. In addition to the 3 metre minimum width of the path, the condition requires at least 0.2 metres of clearance from any barrier.[13]

9.4 I understand that compliance with the recommended condition would allow for a range of possible designs, including a path immediately next to the

13 Refer to recommended condition 26D: Provision of a shared path along the Project route.

highway that follows the curvature of the road for its entire length, a path that is separated from the highway by 10-20 metres or more and follows a different topography, or any number of other possibilities. The key minimum requirement of the recommended condition is physical separation from motor vehicles. Beyond this the recommended condition has been drafted in such a way as to leave room for discussion regarding the appropriate design.

10. INTRODUCTION TO MODELLING

10.1 I was asked by PNCC to estimate the difference in economic value between NZTA's proposed provision for walking/cycling, i.e. a 2 metre shoulder, and a separate walking/cycling path.

10.2 To do this I have developed an economic model that analyses a range of potential user demand scenarios for a separate walking/cycling path (together the 'factual') and compares the expected economic benefits of these scenarios with the expected economic benefits of a 2 metre shoulder scenario (the 'counterfactual').

10.3 Below I describe the methodology used for the modelling, the key inputs and assumptions, and the outputs. Further detail is provided in the Appendix.

11. METHODOLOGY

Step 1: Identify scenarios of interest

11.1 Given the uncertainty regarding what a separate walking/cycling path would look like from a design perspective, it made sense to choose more than one design scenario for the 'factual.' I selected the following two scenarios, noting that distance from traffic is one of the main determinants of user demand:

(a) 'On Highway' walking/cycling path scenario: a sealed walking/cycling path with the minimum possible separation between path and highway required to satisfy the Council's proposed condition; and

(b) 'Off-Highway' walking/cycling path scenario: a sealed walking/cycling path that is far enough away from the highway to provide visual and auditory separation from it, and generally designed to optimise the experience of pathway users (e.g. by utilising the DOC scenic reserve for segments of the trail, providing lookout points and adjoining loop options, etc.).

11.2 Of the two scenarios above, the Off-Highway option offers the most potential from a recreation and tourism perspective. I analysed three sub-scenarios within this option (high, medium and low user scenarios) to provide some sensitivity to differences in user demand.

Step 2: Identify types of users

11.3 Broadly speaking there are three groups of people who would be expected to use a walking/cycling path in Te Apiti:

(a) Local recreational walkers and cyclists – people who live locally and use the path on foot or on a bike;

(b) Commuters – people who live locally and use the path to cycle to work; and

(c) Visiting walkers and cyclists – people who live outside the region and use the path on foot or on a bike.

11.4 Economic modelling allows us to estimate the incremental value to the region generated by use of the path by each of these user groups.

Step 3: Estimate usage numbers

11.5 A well-designed walking/cycling path could boost local recreation and tourism demand directly and indirectly by:

(a) attracting people to experience all or part of the path itself;

(b) increasing access to and use of other recreation activities in the area, e.g. Te Apiti walking and mountain biking trails and local towns Ashhurst, Woodville and Palmerston North; and

(c) accelerating the development of Te Apiti as a recreation and tourism destination – a well-used walking/cycling path is likely to catalyse investment in other attractions such as those envisioned in the Te Apiti Master Plan and Te Apiti tourism cluster initiative, which would in turn generate more visitation to the Gorge and the wider region.

11.6 To help estimate how many people would use the facility I evaluated the likely appeal of each option in relation to the 'success factors' for walking and cycling paths listed in section 9.2. My observations are summarised in Table 1.

Table 1: Performance of separate path and 2 metre shoulder in relation to 'success factors' for walking and cycling paths

Success factor	Potential performance of separated path vs 2 metre shoulder
Safety (actual and perceived)	Safety from motor vehicle crash risk and road shrapnel requires an impenetrable physical barrier, or sufficient distance between users and the roadway. This is achieved in the off-highway scenario and, potentially to a lesser extent, the on-highway scenario. This is not achieved in the 2 metre shoulder scenario.
Enjoyability (pleasantness of environment)	Enjoyability is maximised with separation/distance from the roadway where vehicle noises/smells/views are replaced with those of the natural environment. Visual/noise barriers such as plantings can help to achieve a sense of separation. The enjoyment factor is highest in the off-highway path scenario and lowest in the 2 metre shoulder scenario.
Connectivity	If well-used, a walking and cycling facility on the northern side of Te Apiti would greatly enhance connectivity with other trails, towns and visitor experiences, e.g.: - forming iconic loops with the current Manawatu Gorge Track for walkers, with the planned new mountain bike track on the south side of Gorge for mountain bikers, and with Saddle Rd and/or Pahiatua Track for road cyclists. - improving access to other (existing and future) parts of Te Apiti e.g. other DOC trails, lookouts, picnic areas, the new bridge over the Manawatu River, and future Te Apiti tourism attractions.

	- connecting the region's walking and cycling networks by linking the Manawatu River shared pathway (which, once complete will connect Palmerston North and Ashhurst) to Woodville via the Gorge. A separate walking/cycling path would be expected to do more to enhance connectivity than a 2 metre shoulder, due in part to the likelihood that the separate path would be used by a larger and more diverse group of people than a 2 metre shoulder. Note that connectivity and visitor experience would be further enhanced if stairs were installed to connect the Te Apiti carpark at the western end of the Gorge with the new bridge that is to be built over the River. The new bridge is likely to be very popular with both locals and visitors, assuming safe and convenient access to it is provided.
Distinctive experiences	There is high potential for distinctive experiences, including: - the new bridge at the western end of the route offering spectacular views of the Gorge and river; - the variation in landscape between the southern side of the Gorge (predominantly regenerating native forest) and the northern side (open views of the Gorge, wind turbines and the wider region); - Maori cultural experiences; - multiple stream crossings and interactions with the river; and - opportunities to experience local towns, each with its own distinctive character. Some distinctive experiences would be available in both shoulder and separate path scenarios, however some (e.g. views from the new bridge) would be more accessible via a separate path.
Difficulty	Under all scenarios the route is expected to be grade 3 (intermediate) due to the maximum 8% grade at the beginning and end of the route. Overall I understand it would be flatter and straighter than Saddle Rd and Pahiatua Track which are currently the main cycling routes. Shorter/easier options would be available to suit families and people with lesser physical abilities, e.g. to the new bridge, windfarm or lookouts at the western end of the route and/or shorter loop trails at either end of the trail. As above, some of these options would be more accessible via a separate path than via a 2 metre shoulder.
Support services	Palmerston North offers a range of accommodation options, restaurants/cafes and other services. Ashhurst and Woodville offer a smaller number of accommodation and café/restaurants options. If an appealing separate walking/cycling path is built, we would expect more businesses to develop to service trail users over time.
Effective marketing/education	A separate walking/cycling path and the connectivity it creates would enable Manawatu to promote itself as a true cycling/hiking destination.

11.7 As noted in the table, an off-highway walking/cycling path around the northern side of Te Apiti has the potential to score highly on most if not all of

the success factors for cycleways and walkways. On this basis I would expect a well-designed path to have significant appeal to local residents and visitors of varying ages and abilities.

11.8 Table 2 presents the annual user number scenarios analysed in the model. Below the table I provide a high-level explanation of how each of the usage numbers was developed.

Table 2: Annual user number scenarios for 2 metre shoulder and separate path

User numbers	2 metre shoulder (counter-factual)	Separate path scenarios			
		On Highway	Off-Highway Low	Off-Highway Medium	Off-Highway High
All users	5,000	20,000	60,000	80,000	100,000
Commuters	500	1,000	1,125	1,500	1,875
Recreational users	4,500	19,000	58,875	78,500	98,125
Local recreational users	3,375	14,250	44,156	58,875	73,594
Visiting recreational users	1,125	4,750	14,719	19,625	24,531

11.9 2 metre shoulder (5,000 users): A 2 metre shoulder would be used by some serious road cyclists but would miss out on a much larger pool of recreational locals and tourists due to users' proximity to the busy highway and related safety and enjoyability concerns. The modelled value of 5,000 users is the same as NZTA's Jonathan Kennett's estimate of likely demand for a 2 metre shoulder.[14]

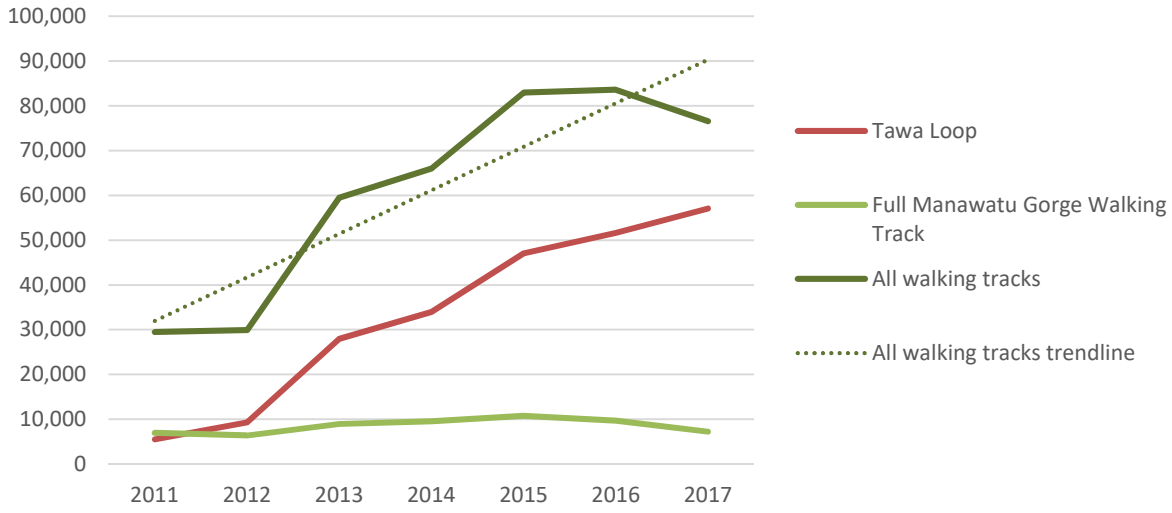
11.10 Separate path On-Highway scenario (20,000 users): A separate on-highway walking/cycling path with a safety barrier separating the highway from path users would be expected to attract significant numbers of recreational users in addition to more serious cyclists. However, demand for this type of path would be constrained by its close proximity to the highway and the associated enjoyability and safety issues. An estimate of 20,000 users for a separate on-highway walking/cycling path is broadly consistent with Mr. Kennett's estimate (of 19,400 users) for this scenario.[15]

14 Ref. March 2019 Market Assessment for Ashhurst to Woodville Cycle Trail, prepared by Jonathan Kennett of NZTA.
15 Ref. evidence of Jonathan Kennett for NZTA, p. 10.

11.11 Separate path Off-Highway medium scenario: (80,000 users): I believe an off-highway scenario has the most potential from a recreation and tourism perspective. Users would be able to enjoy the connectivity and distinctive experiences that are provided by the path along with the elevated safety and enjoyability of a path that is set apart from the highway. A high-quality off-highway walking/cycling path would also open up the potential for hosting cycling, running and multi-sport events that would be expected to attract significant numbers of visitors and boost Te Apiti's profile as a walking, running and cycling destination.

11.12 A medium scenario of 80,000 users is broadly consistent with Mr. Kennett's estimates for an off-road trail (he estimated 77,400 users).[16] It is also consistent with DOC track data which shows that the Te Apiti walking tracks were used 83,600 times in 2016, up from 29,500 in 2011 (see Figure 1 below).

Figure 1 Te Apiti DOC track visits 2011-2017



Source: DOC track counts (calibrated to reflect number of visits)

11.13 Following strong growth in the 6 years from 2011 to 2016, usage of the DOC tracks decreased in 2017. This drop is considered to have been a direct result of the closure of the highway, which made it difficult for people to park cars at both ends of the Gorge in order to do the full-length Manawatu Gorge

16 Ref. footnote 14.

Walk.[17] It also created confusion among the public regarding whether the tracks were open. If the growth trajectory between 2011 and 2016 had continued, the level of usage of the Te Apiti walking tracks would have been comfortably in excess of 100,000 visits in 2018.

11.14 I agree with Mr. Kennett's comments that it is reasonable to assume a high-quality separate walking/cycling path would be more popular than any of the existing DOC tracks, considering that the current tracks only provide for walkers whereas the separate path would also cater for cyclists.[18]

11.15 The modelled level of usage is also supported by a 2016 business case for a new Te Apiti mountain biking trail prepared by Tourism Recreation Conservation (TRC) for DOC.[19] TRC estimated that there were around 85,000 cyclists living in and visiting the region each year. Adding walkers (who do not also run) to this number and allowing for people to use the path more than once in a given year, suggests that a medium scenario of 80,000 pathway users per year is reasonable.

11.16 Separate path Off-Highway Low (60,000 users) and Separate path Off-Highway High (100,000 users): These scenarios were developed to provide some sensitivity around the Off-highway medium scenario. They allow for the possibility that the medium use estimate is overly optimistic by 20,000 users or overly conservative by 20,000 users.

11.17 Commuter numbers for all 5 scenarios are based on a combination of Mr Kennett's estimates for commuter demand,[20] the populations of nearby towns and commuting mode share statistics.[21]

11.18 The split of local versus visiting recreational users is assumed to be 75% locals/25% visitors in all scenarios (further detail regarding this assumption is provided in the **Appendix**).

17 Ref. section 42A Report Jeff Baker, paragraph [38].
18 Ref. evidence of Jonathan Kennett for NZTA, p. 8.
19 Manawatu Gorge Mountain Bike Trails Business Case, 29 July 2016.
20 Ref. Jonathan Kennett's evidence, p. 10.
21 Population figures are from PNCC Long term projections for Palmerston North (2016) and CEDA Annual population Report (2018).

Step 4: Model the economic benefits of each scenario

11.19 For each of the three user groups (local recreational walkers & cyclists, commuters and visitors) I examined the following potential benefits resulting from use of the new walking/cycling facility:

(a) Health benefits – the impacts of people becoming healthier as a result of using the new walking/cycling facility. These are measured as the reduction in public health costs caused by people being induced to exercise more than they otherwise would have. The impacts are assessed for local recreational users and commuters only (not for visitors because it is assumed that their health costs are incurred outside the region).

To calculate health benefits I first calculated the total kms of "new" physical activity that would be induced by the walking/cycling facility in each scenario of interest (2 metre shoulder, on-highway scenario, and three off-highway scenarios). To do this I:

i. discounted the expected number of users (from Table 2) by 75% to represent displacement;[22] and

ii. multiplied the result from i by the assumed average kms and hours per use, which are summarised in Table 3. Note that a 'use' in this context includes time spent on the path itself as well as on other segments that form part of a single activity or outing (e.g. a loop walk comprising the new walking/cycling path and the existing Manawatu Gorge Walking Track would cover ~23 km).

Table 3: Assumed average km and hours per use of walking/cycling facility

	Average km per use				Average hours per use			
	Shoulder	Notes	Separate path	Notes	Shoulder	Notes	Separate path	Notes

22 A 75% displacement assumption means I am assuming that 75% of local recreational users and commuters using the new walking/cycling facility would have engaged in another form of active recreation if the facility didn't exist (i.e. in the do minimum). These people are assumed to receive no new health benefits as a result of using the new facility. Only 25% of the total users of the new facility (expressed in total kms or hours of use) are assumed to be incremental, and therefore to accrue health benefits. See section 12 for further discussion of displacement.

Local recreational cyclists	25	(1)	19.75	(2)	1.25	(3)	1.32	(4)
Local recreational walkers	3	(5)	8.6	(6)	0.75	(7)	2.15	(8)
Commuters	54	(9)	54	(10)	2.70	(11)	2.70	(12)

Notes

(1) Assumes most shoulder cyclists would ride return journey or loop @ ~30 km. Avg of 25 km accounts for portion of riders who only go one way.

(2) Assumes mix of families, etc. who ride an average of 10 kms and more serious cyclists who ride an average of 25 kms.

(3) Assumes avg cycle speed of 20 km/h.

(4) Assumes avg cycle speed of 15 km/h (slower than on shoulder due to there being more families, mountain bikers, etc.)

(5) Assumes walkers would go as far as bridge and back, averaging 3 km.

(6) Assumes some walkers do a short walk (~3km), some do a full length one-way walk (~12km) and some do a loop (~23km).

(7) Assumes avg walking speed of 4 km/h.

(8) As above.

(9) Assumes most commuters cycle Woodville-Palmerston North return @ ~60 km, and a small portion cycle Woodville-Ashhurst return @ ~ 30 km.

(10) As above.

(11) Assumes avg cycle speed of 20 km/h.

(12) As above.

iii. I then multiplied the total kms of new physical activity from ii by the average health cost savings per km (as per the input values listed in the **Appendix**)[23] to get the total estimated health savings for each scenario.

(b) Safety benefits – the impacts of improved safety resulting from a separate walking/cycling facility. These are measured as the difference in the public cost of deaths and injuries arising from crashes involving walkers/cyclists and motor vehicles, between the 2 metre shoulder scenario and the separate path scenarios.

The assumptions adopted regarding relative risk levels for different road types, and the social costs of deaths and injuries, are listed in the **Appendix**.

In calculating safety impacts I assumed that 50% of the recreational cycling hours spent on the separate path, and 90% of the recreational cycling hours spent on the 2 metre shoulder, would have been spent cycling on alternative road cycling routes (e.g.

23 All input values and references are provided in Appendix 1.

Saddle Road, Pahiatua Track or the Manawatu Cycleway Heartland Ride) in the do minimum. The resulting estimates reflect the benefits that would be expected to arise from the ability of cyclists to substitute away from these more dangerous roads[24] to the new 2 metre shoulder, or to a separate walking/cycling path.

(c) Consumer surplus benefits – increased user satisfaction (happiness) arising from use of the facilities. This is assessed for local recreational users and commuters only (not for visitors since their happiness does not accrue to the region) and is calculated as the difference between what users would have been willing to pay to use the trail and the costs they actually incurred in doing so. The underlying assumption is that users will only use the trail if the enjoyment they receive exceeds their costs.

I calculated consumer surplus benefits for each scenario of interest by summing i and ii below:

i. The gain in consumer surplus for users who transferred from other forms of active recreation.[25] This is calculated as the opportunity cost of these users' time (total hours transferred from other forms of active recreation x standard NZTA values for non-work time) multiplied by a consumer surplus uplift assumption (12% as per the **Appendix**);

ii. The gain in consumer surplus for users who transferred from sedentary activities.[26] This is calculated as the opportunity cost of these users' time (total hours transferred from sedentary activities x standard NZTA values for non-work time) multiplied by a consumer surplus uplift assumption (24% for people transferring from sedentary activities -- it is assumed that these individuals would get a

24 See, e.g. NZTA Detailed Business Case, p.vi, 10 describing hazardous conditions on Saddle Road and Pahiatua Track.
25 Users who 'transferred' from other forms of active recreation are the 75% of users whose use of the new facility displaced other forms of active recreation.
26 This represents the 25% of user hours that did not displace other forms of active recreation. It is assumed that these user hours would have been spent in some form of sedentary activity if the path didn't exist.

larger uplift in satisfaction/happiness than people who transfer from other forms of physical activity).

(d) Tourism benefits – the impacts on local income resulting from increased spending by visitors who come to the region, or stay longer, to use the trail. I calculated this for each scenario of interest by:

i. Estimating the number of new visitor nights and new visitor days induced by the walking/cycling facility (taking into account 50% displacement[27] and assumptions regarding the percentage of visits than include an overnight stay and the average length of an overnight stay as listed in the **Appendix**). These are calculated separately for domestic visitors and international visitors to account for differences in spending behaviour between these two groups;

ii. Multiplying the results from i by values for average visitor spend per night and average visitor spend per day, for both domestic visitors and international visitors, to get the total amount of new visitor spending.

iii. Multiplying new visitor spending by a 20% 'producer surplus' filter to estimate the gross surplus that would be expected to remain after businesses have paid for the resources used in the provision of goods and services to visitors. The value of 20% is broadly consistent with the gross surplus ratio reported by Statistics New Zealand in the Tourism Satellite Account 2018.

11.20 I estimated the incremental economic impacts of the separate path (factual) scenarios by comparing each of them and the 2 metre shoulder (counterfactual) scenario with a 'do minimum' scenario (no replacement road and no new walking/cycling infrastructure built in Te Apiti). I then compared

27 For the purpose of the model it is assumed that 50% of visiting trail users would have visited the region if the trail didn't exist.

the impacts of the factual and counterfactual scenarios against each other, and recorded the differences.

11.21 I modelled the expected impacts over a 20-year time period,[28] assuming 2% annual growth in user numbers and a discount rate of 6%.[29]

11.22 A common inputs table is provided in the **Appendix**. This describes the inputs that apply to all of the modelled scenarios, together with a brief explanation of how the input values were estimated.

11.23 Finally, it is worth pointing out that this is not intended to be a cost-benefit analysis. I assessed the potential benefits of walking/cycling infrastructure, but did not assess the costs of such infrastructure. I note that Mr. Kennett provided some initial cost estimates in his evidence. I touch on these briefly in section 13 below.

12. DISPLACEMENT

12.1 Importantly, only incremental benefits caused by investment in the new walking/cycling facility are counted in the model. For example, if a local resident who uses the new trail would have engaged in another form of active recreation if the trail had not been built (of approximately the same difficulty and duration), the health benefits connected with this user would not be included.

12.2 Likewise, a tourist who uses the trail but spends no more time or money in the region than (s)he would have had the trail not existed, is not counted. The question from a tourism perspective is: how many tourists will be induced to visit the area, or stay longer and spend more, as a result of the new walking/cycling facility?

12.3 As discussed above, in my opinion the tourism impacts of a well-designed walking/cycling path have the potential to be significant, particularly considering the connectivity the path would provide with other trails and

28 A 20-year evaluation period is considered reasonable (and possibly conservative) given the expected useful life of asphalt (20+ years) and cement (30+ years), which we understand to be the most likely construction materials for a sealed path.
29 Use of a 6% discount rate is consistent with the NZTA Economic Evaluation Manual.

attractions in the area, and the relatively low appeal that the region holds currently for visiting cyclists and walkers/runners (meaning there is a lot of potential for growth in this visitor segment).

12.4 The level of visitation (or physical activity in the context of other benefits) that would have taken place absent investment in a walking/cycling facility, is referred to as "displacement." For the purpose of this model, displacement is assumed to be:

(a) 75% in the case of local recreational walkers/cyclists and commuters (meaning that 75% of users in these categories would have engaged in another form of active recreation if the facility didn't exist); and

(b) 50% in the case of visitors (meaning that 50% of visiting users would have visited the region if the facility didn't exist).

12.5 The 50% value for visitation reflects my view that a high-quality walking/cycling path in Te Apiti would create a step change in walking and cycling tourism in the region. I am assuming that 50% of visiting users would be induced to visit by the new walking/cycling facility and the options for other experiences that it creates. In addition, I am assuming that 40% of the remaining visiting users would be induced to extend their stay in the region by 1 night.

13. MODEL OUTPUTS

13.1 Table 4 and Table 5 below summarise the estimated differences in economic value between a separate path and a 2 metre shoulder, expressed as the present value of the differences over a 20-year period. Table 4 presents the differences by User Group while Table 5 presents them by Benefit Type.

Table 4: Difference in value between separate path and 2 metre shoulder (present value over 20 years)

By User Group	On Highway	Off-Highway Low	Off-Highway Medium	Off-Highway High
Local recreational cyclists	$2,156,360	$7,116,213	$9,557,269	$11,998,325

Local recreational walkers	$486,685	$1,561,373	$2,090,295	$2,619,217
Commuting cyclists	$666,030	$767,182	$1,070,637	$1,374,093
Visitors	$1,308,014	$4,797,991	$6,515,629	$8,233,267
TOTAL	**$4,617,089**	**$14,242,759**	**$19,233,830**	**$24,224,901**

Table 5: Difference in value between separate path and 2 metre shoulder (present value over 20 years)

By Benefit Type	On Highway	Off-Highway Low	Off-Highway Medium	Off-Highway High
Health	$1,013,370	$3,518,555	$4,825,327	$6,132,100
Safety	$1,879,892	$4,527,435	$5,992,686	$7,457,937
Consumer surplus	$415,813	$1,398,778	$1,900,188	$2,401,597
Tourism	$1,308,014	$4,797,991	$6,515,629	$8,233,267
TOTAL	**$4,617,089**	**$14,242,759**	**$19,233,830**	**$24,224,901**

13.2 Based on the model, a separate on-highway walking/cycling path would be expected to generate approximately $4.6m more in quantified benefits compared with a 2 metre shoulder over a 20-year period. A separate off-highway walking/cycling path would be expected to generate around $19.2m more in benefits than a 2 metre shoulder over the same period, with a sensitivity range of $14.2m to $24.2m.

13.3 The scope of my work did not extend to analysing the costs of providing a separate path, however I have seen some initial cost estimates provided by Mr. Kennett at NZTA. These range from $8m for a mostly aggregate surface walking/cycling trail that runs beside the highway at both ends of the route and departs from the highway in the middle 8-10 kms, to $20m for a separate sealed path along the full length of the highway.[30]

13.4 The expected benefits of a separate walking/cycling path are significant across all scenarios and are not out of proportion to NZTA's initial cost estimates. In my opinion there would be value in NZTA carrying out a full evaluation of the feasibility, costs and benefits of incorporating a separate walking and cycling path into the project.

30 Ref. Jonathan Kennett's evidence, p.11.

14. COST OF DEFERRAL

14.1 Finally, PNCC has asked me to comment from an economic perspective on the implications of deferring the provision of a walking and cycling path and leaving it to be delivered via a separate process sometime in the future. Apart from delaying delivery of the significant benefits estimated above for an unknown period of time, I believe the following risks are inherent in this approach:

(a) Design risk: Given the geographic proximity between the road and pathway, designing the road without knowing the preferred options for a pathway would risk generating a suboptimal design outcome for the pathway when it is ultimately built. As the highway project progresses it will become increasingly difficult to go back and make changes to the design without incurring significant additional expense. This situation could be avoided if both pieces of infrastructure were designed together.

(b) Land risk: NZTA's current round of landowner negotiations provides an opportunity to secure the space required for a separate walking/cycling path now. There may be a heightened risk of pushback from some landowners if a second approach is made to acquire land not long after the Highway designation process. Any need to downgrade the quality of the path because of a failure to secure land would be likely to result in lower levels of usage and fewer social and economic benefits.

(c) Construction cost risk: I expect there would be significant opportunities for cost savings if both projects were delivered in parallel, since this would avoid the need to mobilise construction workers and machinery twice.

(d) Operational risk: Construction of a walking/cycling path at a date further down the track may require parts of the recently opened highway to be closed again to allow access for equipment and work

crews. This would result in further disruption to traffic flows which would frustrate road users.

Shane Vuletich
15 March 2019

APPENDIX: TABLE OF COMMON INPUTS

PARAMETER	VALUE	NOTES
Time horizon parameters		
Evaluation period	20 years	As per 2016 Nga Haerenga, The Great Rides of NZ Cycle Trails: Some Benefits in Relation to Costs, Victorio, 2016
Discount rate	6%	NZTA Economic Evaluation Manual, 2018.
Base year for costs	2018	
Annual growth rate in user numbers	2%	Great Rides CBA model medium growth rate is 2%. NZTA assumes 3% annual growth in traffic volumes.
Breakdown of recreational users		
Locals as % of recreational users (rest visitors)	75%	Nga Haerenga, The New Zealand Cycle Trail Survey 2015-2018 gives 77% visiting the area/23% local. Compare 2018 Waikato Regional Trails Network Business Case: 75% of users are from Waikato Region. Wd expect higher mix of locals on Gorge ride since not a Great Ride and area not a popular tourist destination.
% of recreational users who are cyclists (rest walkers)	70%	New Zealand Cycle Trail Evaluation, Four Cycle Trail Case Studies, Angus & Associates 2013: Main Travel Method (87%, 92%, 60% and 83% of visiting users were cyclists). More walkers expected here assuming true 'shared path'.
Displacement		
Local recreational users	75%	Great Rides CBA model uses 75%. 2016 Nga Haerenga, The Great Rides of NZ Cycle Trails: Some Benefits in Relation to Costs, Victorio, 2016 assumes 67% displacement for spending and health benefits.
Visitors	50%	Nga Haerenga, NZCT Survey 2015-2018 gives 82% for trail being only or main reason for visit, 18% for visiting the area for other reasons. Assume Gorge has significantly lower pulling power than Great Rides. 2016 Nga Haerenga, The Great Rides of NZ Cycle Trails: Some Benefits in Relation to Costs, Victorio, 2016 assumes 67% displacement for spending and health benefits.
Commuters	75%	Assume same as for local recreators.
Health impacts		
Health benefits per cyclist per km	$1.30	NZTA Economic Evaluation Manual, 2018. New Cycle facility health benefits. Also used in Great Rides CBA model.
Health benefits per walker per km	$2.60	NZTA Economic Evaluation Manual, 2018. New pedestrian facility health benefits.

Safety		
Deaths/injuries per million hrs travelled - cyclists (all road types)	30	NZTA Cyclist Crash Facts 2017: Deaths/injuries in motor vehicle crashes per million hours spent travelling, July 2010–June 2014.
Deaths/injuries per million hrs travelled - pedestrians (all road types)	5	NZTA Cyclist Crash Facts 2017: Deaths/injuries in motor vehicle crashes per million hours spent travelling (July 2010–June 2014).
Adjustment for lower risk on roads with 2m shoulder	92%	Assumes risk of death/injury on state highway with 2m shoulder is 92% of the risk of death/injury across all road types.
Derived deaths/injuries per million hrs travelled on road with shoulder - cyclists	27.6	Calculated by multiplying cyclist deaths/injuries per million hrs by adjustment factor.
Derived deaths/injuries per million hrs travelled on road with shoulder - peds	4.6	Calculated by multiplying pedestrian deaths/injuries per million hrs by adjustment factor.
Deaths/injuries per million hrs travelled on alternative road cycling routes	37.5	Assumes risk of death/injury on alternative road cycling routes (e.g. Saddle Road, Pahiatua Track, Manawatu Cycleway Heartland Ride) in the do minimum is 25% higher than the risk of death/injury across all road types.
Deaths/injuries per million hrs travelled on separate path	0.0	Assumes risk of death/injury due to crash with motor vehicle on separate path is practically zero.
Average cost per injury crash (100km/h speed limit) - cyclists	$677,250	NZTA Economic Evaluation Manual, 2018: Average cost per injury crash on near rural rds (100km/h speed limit) (Table A6.5(c): Cost per reported injury crash by Mode ($000 May 2015) - adjusted to 2018 value using NZTA adjustment factors).
Average cost per injury crash (100km/h speed limit) - pedestrians	$1,443,750	NZTA Economic Evaluation Manual, 2018: Average cost per injury crash on near rural rds (100km/h speed limit) (Table A6.5(c): Cost per reported injury crash by Mode ($000 May 2015) - adjusted to 2018 value using NZTA adjustment factors).
Consumer surplus		
Opportunity cost of leisure time	$10.35	NZTA Economic Evaluation Manual, 2018. Value of non-work time. 2002 value of $6.90/hr converted to 2018 value of $10.35 using NZTA adjustment factor of 1.5.
Consumer surplus uplift when transferring from other forms of active recreation	12%	Nga Haerenga, The New Zealand Cycle Trail Survey 2015-2018 reports 76% of users 'very satisfied,' 20% 'satisfied.' 2016 MBIE CBA applies average consumer surplus of 36% of domestic user spending.
Consumer surplus uplift when transferring from sedentary activities	24%	Assumes consumer surplus uplift is larger when transferring from sedentary activity.

Tourism		
Domestic visitors as % of total visitors (rest international)	85%	Nga Haerenga, The New Zealand Cycle Trail Survey 2015-2018 reports 86.5% domestic visitors/23% international. 2018 Waikato Regional Trails Network Business Case reports similar ratio (25% of visitors are international). Would expect slightly higher mix of domestic visitors on Gorge ride since not a Great Ride.
Share of visits that include overnight stay	50%	Fresh Info assumption based on tourism industry knowledge.
Average nights per overnight stay	1.86	AA Traveller Monitor statistics for year ending June 2018: average length of stay for overnight holiday visitors; MBIE Nga Haerenga NZ Cycle Trail Evaluation Report 2013 reports avg # nights in region per visitor as 1.3, 2.2, 5.2, 1.3 for 4 case studies.
Average spend per night - international visitor	$200	Avg international visitor spend per night at a national level = $197.98 per IVS YE June 2018. This is similar to findings of around $200/night for international cycle visitors as reported in various cycle trail reports.
Average spend per international day visitor	$75	Fresh Info assumption based on tourism industry knowledge.
Average spend per night - domestic visitor	$167	83.5% of international visitor spend, based on ratio of 2016 Great Rides CBA (Victorio) values of $173 for domestic visitors/$207 for international visitors.
Average spend per domestic day visitor	$63	83.5% of international day visitor spend, as above.
Producer surplus (% of spend)	20%	Tourism Satellite Account: 2018, Stats NZ. Gross operating surplus in tourism characteristic industries. 2016 Great Rides study used 44.77%.